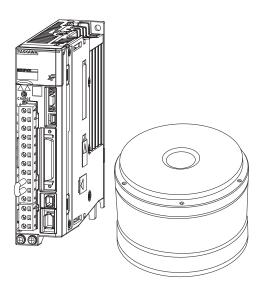
YASKAWA

Σ-7-Series AC Servo Drive
Σ-7S SERVOPACK with
FT/EX Specification
for Application with Special Motor,
SGM7D Motor
Product Manual

Model: SGD7S-DDDDDDDDDDF82D, -DDDDD00ADDDF83D





Basic Information on SERVOPACKs

SERVOPACK Ratings and Specifications

Maintenance

Parameter Lists

4

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About this Manual

This manual describes the SGM7D motor drive application option for the Σ -7-Series AC Servo Drive Σ -7S SERVOPACKs for special motors.

Read and understand this manual to ensure correct usage of the Σ -7-Series AC Servo Drives. Keep this manual in a safe place so that it can be referred to whenever necessary.

Outline of Manual

The contents of the chapters of this manual are described in the following table.

When you drive an SGM7D motor with a Σ -7-Series AC Servo Drive Σ -7S SERVOPACK for application with special motors, use this manual together with the relevant Σ -7-Series product manual.

◆ FT82 SERVOPACKs

ltem		This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
	The Σ -7 Series	_	1.1	1.1	1.1	1.1
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	SigmaWin+	1.5	_	_	_	_
	Combining the SERVO- PACKs with MP-Series Machine Controllers and the MPE720 Engi- neering Tool	1.6	-	-	-	-
	Ratings	2.1	_	_	_	_
	SERVOPACK Overload Protection Characteristics	_	2.1.2	2.1.2	2.1.2	2.1.2
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					Con	tinued on next page.

					Continued	from previous page.
	Item	This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
	ctions That Require	_	Chapter 5	Chapter 5	Chapter 5	Chapter 5
	efore Operation		·			· ·
	n Functions ation and Actual	-	Chapter 6	Chapter 6	Chapter 6	Chapter 6
Operation		-	Chapter 7	Chapter 7	Chapter 7	Chapter 7
Tuning		_	Chapter 8	Chapter 8	Chapter 8	Chapter 8
Monitoring	g	_	Chapter 9	Chapter 9	Chapter 9	Chapter 9
Fully-Clos	ed Loop Control	-	Chapter 10	Chapter 10	Chapter 10	Chapter 10
Safety Fu		-	Chapter 11	Chapter 11	Chapter 11	Chapter 11
	or the INDEXER Module	_	-	-	-	Chapter 12
	with Digital I/O	-	-	_	-	Chapter 13
	s with Serial I Communications	-	-	-	-	Chapter 14
	Inspections and Part Replacement	-	12.1	12.1	12.1	15.1
	Alarm Displays	3.1.1, 3.2.1, 3.3.1, 3.4.1	-	-	_	-
	List of Alarms	3.1.2, 3.2.2, 3.3.2, 3.4.2	-	-	_	-
	Troubleshooting Alarms	3.1.3, 3.2.3, 3.3.3, 3.4.3	-	-	-	-
	INDEXER Module Alarm Displays and Troubleshooting	3.4.4	-	-	-	-
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Mainte-	Displaying the Alarm History	-	12.2.4	12.2.4	12.2.4	15.2.5
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	Troubleshooting Warnings	3.1.6, 3.2.6, 3.3.6, 3.4.7	_	-	_	-
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	ltem	This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Mainta	Monitoring Communications Data during Alarms or Warnings	-	-	12.4	12.4	-
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	Parameter Recording Table	_	14.2	13.2	13.3	16.3
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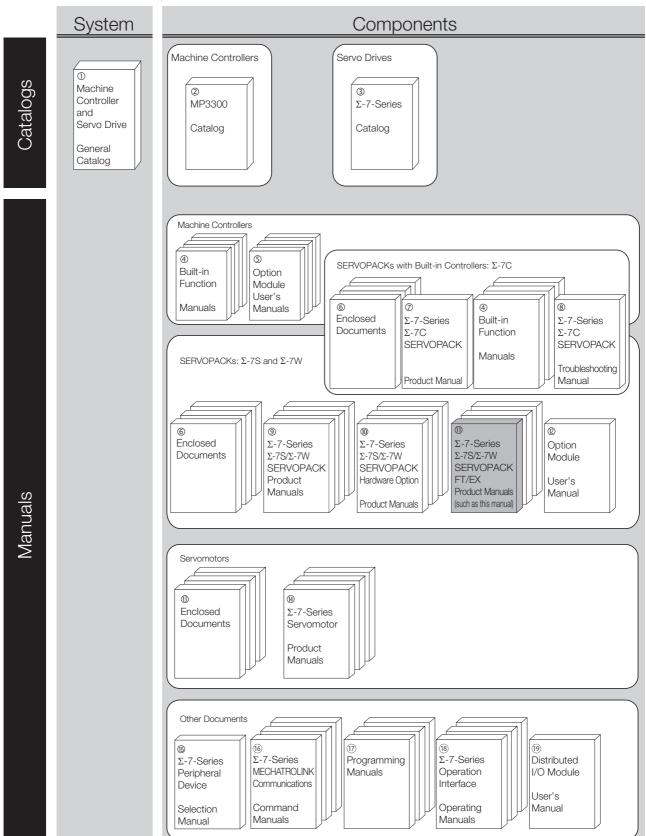
◆ FT83 SERVOPACKs

	Item	This Man- ual	Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	Σ-7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No.: SIEP S800001 84)
	The Σ-7 Series	_	1.1	-
	Product Introduction	1.1	_	_
	Interpreting the Nameplates	_	1.2	_
	Part Names	_	1.3	_
	Model Designations	1.2	_	_
Basic Information on SERVOPACKs	Combinations of SERVOPACKs and Servomotors	1.3	-	-
SERVOI AGRS	Functions	_	1.6	_
	SigmaWin+	1.5	_	_
	Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool	1.6	-	-
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SERVOPACKs	I/O Signal Connections	_	_	3.2
	Connecting Safety Function Signals	_	4.6	_
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Basic Functions	That Require Setting before Operation	_	Chapter 5	_
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• • • • • • • • • • • • • • • • • • • •	Flow of Trial Operation	_	7.1	_
	Inspections and Confirmations before Trial Operation	_	7.2	-
	Trial Operation of Servomotor without a Load	-	7.3	-
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	Convenient Function to Use during Trial Operation	-	7.6	-
Tuning		-	Chapter 8	-
	Monitoring Product Information	-	9.1	-
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Monitoring	Monitoring Machine Operation Status and Signal Waveforms	-	-	5.2
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ltem		This Man- ual	Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	Σ-7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No.: SIEP S800001 84)
	Control Method Selection	-	-	6.1
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	Settings for References	_	-	6.4
Origin Settings		_	-	6.5
	Operation Functions	_	_	7.1
Operation with	Origin Return	-	_	7.2
Digital I/O	Program Table Operation	_	_	7.3
2.g.ta, 0	Jog Speed Table Operation	-	_	7.4
	ZONE Outputs	-	_	7.5
	Inspections and Part Replacement	-	12.1	_
	Alarm Displays	3.5.1	_	_
	List of Alarms	3.5.2	_	_
	Troubleshooting Alarms	3.5.3	_	_
	INDEXER Module Alarm Displays and Troubleshooting	3.5.4	-	-
	Resetting Alarms	_	12.2.3	-
	Displaying the Alarm History	-	12.2.4	-
	Clearing the Alarm History		12.2.5	-
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Related Documents

The relationships between the documents that are related to the Servo Drives are shown in the following figure. The numbers in the figure correspond to the numbers in the table on the following pages. Refer to these documents as required.



Classification	Document Name	Document No.	Description
Machine Controller and Servo Drive General Catalog	Machine Controller and AC Servo Drive Solutions Catalog	KAEP S800001 22	Describes the features and application examples for combinations of MP3000-Series Machine Controllers and Σ -7-Series AC Servo Drives.
② MP3300 Catalog	Machine Controller MP3300	KAEP C880725 03	Provides detailed information on MP3300 Machine Controllers, including features and specifications.
③ Σ-7-Series Catalog	AC Servo Drives Σ-7 Series	KAEP S800001 23	Provides detailed information on Σ -7-Series AC Servo Drives, including features and specifications.
Built-in Function Manuals	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Motion Control User's Manual	SIEP S800002 03	Provides detailed information on the specifications, system configuration, and application methods of the Motion Control Function Modules (SVD, SVC4, and SVR4) for Σ-7-Series Σ-7C SERVOPACKs.
	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Provides detailed information on the specifications, system configuration, and communications connection methods for the Ethernet communications that are used with MP3000-Series Machine Controllers and Σ -7-Series Σ -7C SERVO-PACKs.
	Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04	
	Machine Controller MP2000 Series 262IF-01 FL-net Communication Module User's Manual	SIEP C880700 36	Provide detailed information on the specifications and communications methods for the Communications Modules that can be mounted to MP3000-Series Machine Controllers and Σ-7-Series Σ-7C
⑤ Option Module User's Manuals	Machine Controller MP2000 Series 263IF-01 EtherNet/IP Communication Module User's Manual	SIEP C880700 39	SERVOPACKs.
	Machine Controller MP2000 Series I/O Module User's Manual	SIEP C880700 34	Dupi ide detailed information on the
	Machine Controller MP2000 Series Analog Input/Analog Output Module Al-01/AO-01 User's Manual	SIEP C880700 26	Provide detailed information on the specifications and communications methods for the I/O Modules that can be mounted to MP3000-Series Machine Controllers and Σ-7-Series Σ-7C SERVOPACKs.
	Machine Controller MP2000 Series Counter Module CNTR-01 User's Manual	SIEP C880700 27	

Classification	Document Name	Document No.	Continued from previous page.
Classification		Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S and Σ-7W SERVOPACK Safety Precautions	TOMP C710828 00	Provides detailed information for the safe usage of Σ-7-Series SERVOPACKs.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Safety Precautions Option Module	TOBP C720829 00	Provides detailed information for the safe usage of Option Modules.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Command Option Module	TOBP C720829 01	Provides detailed procedures for installing the Command Option Module in a SERVOPACK.
© Enclosed Documents	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Fully-closed Module	TOBP C720829 03	Provides detailed procedures for installing the Fully-closed Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Safety Module	TOBP C720829 06	Provides detailed procedures for installing the Safety Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide INDEXER Module	TOBP C720829 02	Provides detailed procedures for installing the INDEXER Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide DeviceNet Module	TOBP C720829 07	Provides detailed procedures for installing the DeviceNet Module in a SERVOPACK.
⑦ Σ-7-Series Σ-7C SERVOPACK Product Manual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Product Manual	SIEP S800002 04	Provides detailed information on selecting Σ -7-Series Σ -7C SERVO-PACKs; installing, connecting, setting, testing in trial operation, and tuning Servo Drives; writing, monitoring, and maintaining programs; and other information.
® Σ-7-Series Σ-7C SERVOPACK Troubleshooting Manual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Troubleshooting Manual	SIEP S800002 07	Provides detailed troubleshooting information for Σ -7-Series Σ -7C SERVOPACKs.

Classification	Document Name	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 28	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual	SIEP S800001 27	
⑤Σ-7-SeriesΣ-7S/Σ-7W	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP S800001 26	Provide detailed information on selecting Σ-7-Series SERVO-PACKs and information on installing, connecting, setting, performing
SERVOPACK Product Manuals	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual	SIEP S800001 64	trial operation for, tuning, monitoring, and maintaining the Servo Drives.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with DeviceNet Module Product Manual	SIEP S800001 70	
	Σ-7-Series AC Servo Drive Σ-7W SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 29	
$^{\textcircled{0}}$ Σ-7-Series Σ-7S/Σ-7W	Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifica- tions Dynamic Brake Product Manual	SIEP S800001 73	Provide detailed information on
SERVOPACK with Hardware Option Specifications Product Manuals	Σ-7-Series AC Servo Drive Σ-7W/Σ-7C SERVOPACK with Hardware Option Specifica- tions HWBB Function Product Manual	SIEP S800001 72	Hardware Options for Σ-7-Series SERVOPACKs.

Classification	Document Name	Document No.	Continued from previous page.
Classification	Σ-7-Series AC Servo Drive	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual	SIEP S800001 84	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Track- ing Application Product Manual	SIEP S800001 89	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Application with Special Motor, SGM7D Motor Product Manual	This manual (SIEP S800001 91)	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application Product Manual	SIEP S800001 94	
$^{\scriptsize{\scriptsize{\scriptsize{\scriptsize{\scriptsize{0}}}}}}$ Σ -7-Series Σ -7S/ Σ -7W SERVOPACK	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Transfer and Alignment Application Product Manual	SIEP S800001 95	Provide detailed information on the FT/EX Option for Σ -7-Series
FT/EX Product Manuals	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Torque/Force Assistance for Conveyance Application Product Manual	SIEP S800002 09	SERVOPACKs.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Cutting Application Feed Shaft Motor Product Manual	SIEP S800002 10	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Three-Point Latching for Conveyance Application Product Manual	SIEP S800002 17	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Semi-/Fully-Closed Loop Control Online Switching for Conveyance Application	SIEP S800002 27	
	Σ-7-Series AC Servo Drive Σ-7W SERVOPACK with FT/EX Specification for Gantry Applications	SIEP S800002 29	
© Option Module User's Manual	AC Servo Drives Σ-V Series/Σ-V Series for Large-Capacity Models/ Σ-7 Series User's Manual Safety Module	SIEP C720829 06	Provides details information required for the design and maintenance of a Safety Module.

01 10 11			Continued from previous page.
Classification	Document Name	Document No.	Description
®	AC Servo Drive Rotary Servomotor Safety Precautions	TOBP C230260 00	Provides detailed information for the safe usage of Rotary Servomo- tors and Direct Drive Servomotors.
Enclosed Documents	AC Servomotor Linear Σ Series Safety Precautions	TOBP C230800 00	Provides detailed information for the safe usage of Linear Servomotors.
	Σ-7-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP S800001 36	
[®] Σ-7-Series Servomotor Product Manuals	Σ-7-Series AC Servo Drive Linear Servomotor Product Manual	SIEP S800001 37	Provide detailed information on selecting, installing, and connecting the Σ -7-Series Servomotors.
	Σ-7-Series AC Servo Drive Direct Drive Servomotor Product Manual	SIEP S800001 38	
® Σ-7-Series Peripheral Device Selection Manual	Σ-7-Series AC Servo Drive Peripheral Device Selection Manual	SIEP S800001 32	 Provides the following information in detail for Σ-7-Series Servo Systems. Cables: Models, dimensions, wiring materials, connector models, and connection specifications Peripheral devices: Models, specifications, diagrams, and selection (calculation) methods
© Σ-7-Series	Σ-7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual	SIEP S800001 30	Provides detailed information on the MECHATROLINK-II communications commands that are used for a Σ -7-Series Servo System.
MECHATROLINK Communications Command Manuals	Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual	SIEP S800001 31	Provides detailed information on the MECHATROLINK-III communications standard servo profile commands that are used for a Σ-7-Series Servo System.
(f)	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Provides detailed information on the ladder programming specifications and instructions for MP3000-Series Machine Controllers and Σ -7-Series Σ -7C SERVOPACKs.
Programming Manuals	Machine Controller MP3000 Series Motion Programming Manual	SIEP C880725 14	Provides detailed information on the motion programming and sequence programming specifications and instructions for MP3000-Series Machine Controllers and Σ-7-Series Σ-7C SERVOPACKS.

Classification	Document Name	Document No.	Description
	Machine Controller MP2000/MP3000 Series Engineering Tool MPE720 Version 7 User's Manual	SIEP C880761 03	Describes in detail how to operate MPE720 version 7.
[®] Σ-7-Series Operation Interface Operating Manuals	Σ-7-Series AC Servo Drive Digital Operator Operating Manual	SIEP S800001 33	Describes the operating procedures for a Digital Operator for a Σ-7-Series Servo System.
	AC Servo Drive Engineering Tool SigmaWin+ Operation Manual	SIET S800001 34	Provides detailed operating procedures for the SigmaWin+ Engineering Tool for a Σ -7-Series Servo System.
® Distributed I/O Module User's Manual	MECHATROLINK-III Compatible I/O Module User's Manual	SIEP C880781 04	Describes the functions, specifications, operating methods, and MECHATROLINK-III communications for the Remote I/O Modules for MP2000/MP3000-Series Machine Controllers.

Using This Manual

◆ Technical Terms Used in This Manual

The following terms are used in this manual.

Term	Meaning
Servomotor	A Σ-7-Series Direct Drive Servomotor.
SERVOPACK	A Σ -7-Series Σ -7S SERVOPACK.
Servo Drive	The combination of a Servomotor and SERVOPACK.
Servo System	A servo control system that includes the combination of a Servo Drive with a host controller and peripheral devices.
servo ON	Supplying power to the motor.
servo OFF	Not supplying power to the motor.
base block (BB)	Shutting OFF the power supply to the motor by shutting OFF the base current to the power transistor in the SERVOPACK.
servo lock	A state in which the motor is stopped and is in a position loop with a position reference of 0.
Main Circuit Cable	One of the cables that connect to the main circuit terminals, including the Main Circuit Power Supply Cable, Control Power Supply Cable, and Servomotor Main Circuit Cable.
SigmaWin+	The Engineering Tool for setting up and tuning Servo Drives or a computer in which the Engineering Tool is installed.

Notation Used in this Manual

■ Notation for Reverse Signals

The names of reverse signals (i.e., ones that are valid when low) are written with a forward slash (/) before the signal abbreviation.

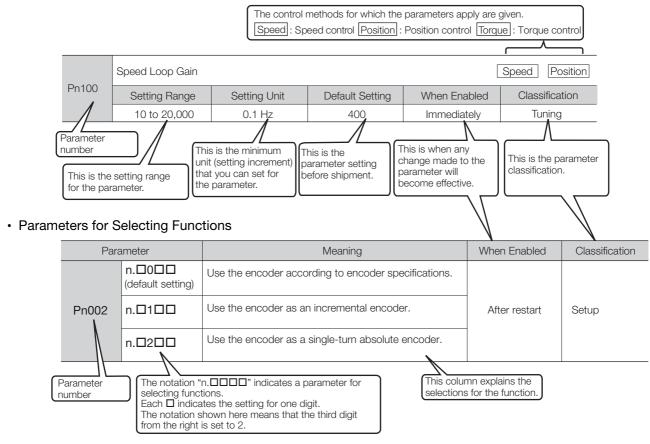
Notation Example

BK is written as /BK.

■ Notation for Parameters

The notation depends on whether the parameter requires a numeric setting (parameter for numeric setting) or requires the selection of a function (parameter for selecting functions).

· Parameters for Numeric Settings



Notation Example

Notation Examples for Pn002

	Digit Notation			Numeric Value Notation
n.0000 Notation		Meaning	Notation	Meaning
	Pn002 = n.□□□X	Indicates the first digit from the right in Pn002.	Pn002 = n.□□□1	Indicates that the first digit from the right in Pn002 is set to 1.
	Pn002 = n.□□X□	Indicates the second digit from the right in Pn002.	Pn002 = n.□□1□	Indicates that the second digit from the right in Pn002 is set to 1.
—	Pn002 = n.□X□□	Indicates the third digit from the right in Pn002.	Pn002 = n.□1□□	Indicates that the third digit from the right in Pn002 is set to 1.
	Pn002 = n.X□□□	Indicates the fourth digit from the right in Pn002.	Pn002 = n.1□□□	Indicates that the fourth digit from the right in Pn002 is set to 1.

Engineering Tools Used in This Manual

This manual uses the interfaces of the SigmaWin+ for descriptions.

♦ Trademarks

- QR code is a trademark of Denso Wave Inc.
- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

◆ Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Indicates precautions or restrictions that must be observed.

Also indicates alarm displays and other precautions that will not result in machine damage.



Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

Example Indicates operating or setting examples.

Information Indicates supplemental information to deepen understanding or useful information.

Safety Precautions

Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.

DANGER

• Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.

WARNING

• Indicates precautions that, if not heeded, could result in loss of life, serious injury, or fire.

M CAUTION

 Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or in fire.

NOTICE

• Indicates precautions that, if not heeded, could result in property damage.

Safety Precautions That Must Always Be Observed

General Precautions

DANGER

- Read and understand this manual to ensure the safe usage of the product.
- Keep this manual in a safe, convenient place so that it can be referred to whenever necessary.
 Make sure that it is delivered to the final user of the product.
- Do not remove covers, cables, connectors, or optional devices while power is being supplied to the SERVOPACK.

There is a risk of electric shock, operational failure of the product, or burning.

MARNING

- Use a power supply with specifications (number of phases, voltage, frequency, and AC/DC type) that are appropriate for the product.
 There is a risk of burning, electric shock, or fire.
- Connect the ground terminals on the SERVOPACK and Servomotor to ground poles according to local electrical codes (100 Ω or less for a SERVOPACK with a 100-VAC or 200-VAC power supply, and 10 Ω or less for a SERVOPACK with a 400-VAC power supply). There is a risk of electric shock or fire.
- Do not attempt to disassemble, repair, or modify the product.
 There is a risk of fire or failure.
 The warranty is void for the product if you disassemble, repair, or modify it.

CAUTION

- The SERVOPACK heat sinks, regenerative resistors, External Dynamic Brake Resistors, Servomotors, and other components can be very hot while power is ON or soon after the power is turned OFF. Implement safety measures, such as installing covers, so that hands and parts such as cables do not come into contact with hot components.
 There is a risk of burn injury.
- For a 24-VDC power supply, use a power supply device with double insulation or reinforced insulation.

There is a risk of electric shock.

- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch cables. There is a risk of failure, damage, or electric shock.
- The person who designs the system that uses the hard wire base block safety function must have a complete knowledge of the related safety standards and a complete understanding of the instructions in this document.

There is a risk of injury, product damage, or machine damage.

 Do not use the product in an environment that is subject to water, corrosive gases, or flammable gases, or near flammable materials.

There is a risk of electric shock or fire.

- Do not attempt to use a SERVOPACK or Servomotor that is damaged or that has missing parts.
- Install external emergency stop circuits that shut OFF the power supply and stops operation immediately when an error occurs.
- In locations with poor power supply conditions, install the necessary protective devices (such as AC reactors) to ensure that the input power is supplied within the specified voltage range.
 There is a risk of damage to the SERVOPACK.
- Use a Noise Filter to minimize the effects of electromagnetic interference.

 Electronic devices used near the SERVOPACK may be affected by electromagnetic interference.
- Always use a Servomotor and SERVOPACK in one of the specified combinations.
- Do not touch a SERVOPACK or Servomotor with wet hands.
 There is a risk of product failure.

Storage Precautions

M CAUTION

 Do not place an excessive load on the product during storage. (Follow all instructions on the packages.)

There is a risk of injury or damage.

NOTICE

- Do not install or store the product in any of the following locations.
 - Locations that are subject to direct sunlight
 - Locations that are subject to ambient temperatures that exceed product specifications
 - Locations that are subject to relative humidities that exceed product specifications
 - · Locations that are subject to condensation as the result of extreme changes in temperature
 - Locations that are subject to corrosive or flammable gases
 - · Locations that are near flammable materials
 - · Locations that are subject to dust, salts, or iron powder
 - Locations that are subject to water, oil, or chemicals
 - Locations that are subject to vibration or shock that exceeds product specifications
 - · Locations that are subject to radiation

If you store or install the product in any of the above locations, the product may fail or be damaged.

■ Transportation Precautions

A CAUTION

- Transport the product in a way that is suitable to the mass of the product.
- Do not use the eyebolts on a SERVOPACK or Servomotor to move the machine. There is a risk of damage or injury.
- When you handle a SERVOPACK or Servomotor, be careful of sharp parts, such as the corners. There is a risk of injury.
- Do not place an excessive load on the product during transportation. (Follow all instructions on the packages.)

There is a risk of injury or damage.

- Do not hold onto the front cover or connectors when you move a SERVOPACK.
 There is a risk of the SERVOPACK falling.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock.
 There is a risk of failure or damage.
- Do not subject connectors to shock.

 There is a risk of faulty connections or damage.
- If disinfectants or insecticides must be used to treat packing materials such as wooden frames, plywood, or pallets, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.

Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

Do not overtighten the eyebolts on a SERVOPACK or Servomotor.
 If you use a tool to overtighten the eyebolts, the tapped holes may be damaged.

■ Installation Precautions

CAUTION

- Install the Servomotor or SERVOPACK in a way that will support the mass given in technical documents.
- Install SERVOPACKs, Servomotors, regenerative resistors, and External Dynamic Brake Resistors on nonflammable materials.

Installation directly onto or near flammable materials may result in fire.

 Provide the specified clearances between the SERVOPACK and the control panel as well as with other devices.

There is a risk of fire or failure.

- Install the SERVOPACK in the specified orientation. There is a risk of fire or failure.
- Do not step on or place a heavy object on the product. There is a risk of failure, damage, or injury.
- Do not allow any foreign matter to enter the SERVOPACK or Servomotor. There is a risk of failure or fire.

- Do not install or store the product in any of the following locations.
 - · Locations that are subject to direct sunlight
 - · Locations that are subject to ambient temperatures that exceed product specifications
 - · Locations that are subject to relative humidities that exceed product specifications
 - · Locations that are subject to condensation as the result of extreme changes in temperature
 - Locations that are subject to corrosive or flammable gases
 - · Locations that are near flammable materials
 - · Locations that are subject to dust, salts, or iron powder
 - Locations that are subject to water, oil, or chemicals
 - · Locations that are subject to vibration or shock that exceeds product specifications
 - · Locations that are subject to radiation

If you store or install the product in any of the above locations, the product may fail or be damaged.

- Use the product in an environment that is appropriate for the product specifications. If you use the product in an environment that exceeds product specifications, the product may fail or be damaged.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock.
 There is a risk of failure or damage.
- Always install a SERVOPACK in a control panel.
- Do not allow any foreign matter to enter a SERVOPACK or a Servomotor with a Cooling Fan and do not cover the outlet from the Servomotor's cooling fan.
 There is a risk of failure.

Wiring Precautions

A DANGER

• Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.

MARNING

- Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.
- Check all wiring and power supplies carefully.

 Incorrect wiring or incorrect voltage application to the output circuits may cause short-circuit failures. If a short-circuit failure occurs as a result of any of these causes, the holding brake will not work. This could damage the machine or cause an accident that may result in death or injury.
- Connect the AC and DC power supplies to the specified SERVOPACK terminals.
 - Connect an AC power supply to the L1, L2, and L3 terminals and the L1C and L2C terminals on the SERVOPACK.
 - Connect a DC power supply to the B1/⊕ and ⊕2 terminals and the L1C and L2C terminals on the SERVOPACK.

There is a risk of failure or fire.

• If you use a SERVOPACK that supports a Dynamic Brake Option, connect an External Dynamic Brake Resistor that is suitable for the machine and equipment specifications to the specified terminals

There is a risk of unexpected operation, machine damage, burning, or injury when an emergency stop is performed.

CAUTION

 Wait for six minutes after turning OFF the power supply and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK.

There is a risk of electric shock.

 Observe the precautions and instructions for wiring and trial operation precisely as described in this document.

Failures caused by incorrect wiring or incorrect voltage application in the brake circuit may cause the SERVOPACK to fail, damage the equipment, or cause an accident resulting in death or injury.

- Check the wiring to be sure it has been performed correctly.
 Connectors and pin layouts are sometimes different for different models. Always confirm the pin layouts in technical documents for your model before operation.
 There is a risk of failure or malfunction.
- Connect wires to power supply terminals and motor connection terminals securely with the specified methods and tightening torque.
 Insufficient tightening may cause wires and terminal blocks to generate heat due to faulty contact, possibly resulting in fire.
- Use shielded twisted-pair cables or screened unshielded multi-twisted-pair cables for I/O Signal Cables and Encoder Cables.
- The maximum wiring length is 3 m for I/O Signal Cables, and 50 m for Encoder Cables or Servomotor Main Circuit Cables.
- Observe the following precautions when wiring the SERVOPACK's main circuit terminals.
 - Turn ON the power supply to the SERVOPACK only after all wiring, including the main circuit terminals, has been completed.
 - If a connector is used for the main circuit terminals, remove the main circuit connector from the SER-VOPACK before you wire it.
 - Insert only one wire per insertion hole in the main circuit terminals.
 - When you insert a wire, make sure that the conductor wire (e.g., whiskers) does not come into contact with adjacent wires.
- Install molded-case circuit breakers and other safety measures to provide protection against short circuits in external wiring.

There is a risk of fire or failure.

NOTICE

- Whenever possible, use the Cables specified by Yaskawa. If you use any other cables, confirm the rated current and application environment of your model and use the wiring materials specified by Yaskawa or equivalent materials.
- Securely tighten cable connector screws and lock mechanisms.

 Insufficient tightening may result in cable connectors falling off during operation.
- Do not bundle power lines (e.g., the Main Circuit Cable) and low-current lines (e.g., the I/O Signal Cables or Encoder Cables) together or run them through the same duct. If you do not place power lines and low-current lines in separate ducts, separate them by at least 30 cm. If the cables are too close to each other, malfunctions may occur due to noise affecting the low-current lines.
- Install a battery at either the host controller or on the Encoder Cable.

 If you install batteries both at the host controller and on the Encoder Cable at the same time, you will create a loop circuit between the batteries, resulting in a risk of damage or burning.
- When connecting a battery, connect the polarity correctly.
 There is a risk of battery rupture or encoder failure.

Operation Precautions

WARNING

- Before starting operation with a machine connected, change the settings of the switches and parameters to match the machine.
 - Unexpected machine operation, failure, or personal injury may occur if operation is started before appropriate settings are made.
- Do not radically change the settings of the parameters.

 There is a risk of unstable operation, machine damage, or injury.
- Install limit switches or stoppers at the ends of the moving parts of the machine to prevent unexpected accidents.

There is a risk of machine damage or injury.

- For trial operation, securely mount the Servomotor and disconnect it from the machine. There is a risk of injury.
- Forcing the motor to stop for overtravel is disabled when the Jog, Origin Search, or Easy FFT utility function is executed. Take necessary precautions.

 There is a risk of machine damage or injury.
- When an alarm occurs, the Servomotor will coast to a stop or stop with the dynamic brake
 according to the SERVOPACK Option specifications and settings. The coasting distance will
 change with the moment of inertia of the load and the resistance of the External Dynamic Brake
 Resistor. Check the coasting distance during trial operation and implement suitable safety measures on the machine.
- Do not enter the machine's range of motion during operation. There is a risk of injury.
- Do not touch the moving parts of the Servomotor or machine during operation.
 There is a risk of injury.

CAUTION

- Design the system to ensure safety even when problems, such as broken signal lines, occur.
 For example, the P-OT and N-OT signals are set in the default settings to operate on the safe side if a signal line breaks. Do not change the polarity of this type of signal.
- When overtravel occurs, the power supply to the motor is turned OFF and the brake is released.
 If you use the Servomotor to drive a vertical load, set the Servomotor to enter a zero-clamped state after the Servomotor stops. Also, install safety devices (such as an external brake or counterweight) to prevent the moving parts of the machine from falling.
- Always turn OFF the servo before you turn OFF the power supply. If you turn OFF the main circuit power supply or control power supply during operation before you turn OFF the servo, the Servomotor will stop as follows:
 - If you turn OFF the main circuit power supply during operation without turning OFF the servo, the Servomotor will stop abruptly with the dynamic brake.
 - If you turn OFF the control power supply without turning OFF the servo, the stopping method that is used by the Servomotor depends on the model of the SERVOPACK. For details, refer to the manual for the SERVOPACK.
 - If you use a SERVOPACK that supports a Dynamic Brake Option, the Servomotor stopping methods
 will be different from the stopping methods used without the Option or for other Hardware Option
 specifications. For details, refer to the Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with
 Hardware Option Specifications Dynamic Brake Product Manual.
- Do not use the dynamic brake for any application other than an emergency stop. There is a risk of failure due to rapid deterioration of elements in the SERVOPACK and the risk of unexpected operation, machine damage, burning, or injury.

- When you adjust the gain during system commissioning, use a measuring instrument to monitor the torque waveform and speed waveform and confirm that there is no vibration.
 If a high gain causes vibration, the Servomotor will be damaged quickly.
- Do not frequently turn the power supply ON and OFF. After you have started actual operation, allow at least one hour between turning the power supply ON and OFF (as a guideline).
 Do not use the product in applications that require the power supply to be turned ON and OFF frequently.

The elements in the SERVOPACK will deteriorate quickly.

- An alarm or warning may occur if communications are performed with the host controller while the SigmaWin+ or Digital Operator is operating.
 - If an alarm or warning occurs, it may interrupt the current process and stop the system.
- After you complete trial operation of the machine and facilities, use the SigmaWin+ to back up
 the settings of the SERVOPACK parameters. You can use them to reset the parameters after
 SERVOPACK replacement.

If you do not copy backed up parameter settings, normal operation may not be possible after a faulty SERVOPACK is replaced, possibly resulting in machine or equipment damage.

■ Maintenance and Inspection Precautions

A DANGER

Do not change any wiring while power is being supplied.
 There is a risk of electric shock or injury.

⚠ WARNING

• Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.

M CAUTION

- Wait for six minutes after turning OFF the power supply and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK.
 - There is a risk of electric shock.
- Before you replace a SERVOPACK, back up the settings of the SERVOPACK parameters. Copy
 the backed up parameter settings to the new SERVOPACK and confirm that they were copied
 correctly.

If you do not copy backed up parameter settings or if the copy operation is not completed normally, normal operation may not be possible, possibly resulting in machine or equipment damage.

NOTICE

 Discharge all static electricity from your body before you operate any of the buttons or switches inside the front cover of the SERVOPACK.

There is a risk of equipment damage.

■ Troubleshooting Precautions

DANGER

If the safety device (molded-case circuit breaker or fuse) installed in the power supply line operates, remove the cause before you supply power to the SERVOPACK again. If necessary, repair or replace the SERVOPACK, check the wiring, and remove the factor that caused the safety device to operate.

There is a risk of fire, electric shock, or injury.

WARNING

The product may suddenly start to operate when the power supply is recovered after a momentary power interruption. Design the machine to ensure human safety when operation restarts.
 There is a risk of injury.

CAUTION

- When an alarm occurs, remove the cause of the alarm and ensure safety. Then reset the alarm or turn the power supply OFF and ON again to restart operation.
 There is a risk of injury or machine damage.
- If the Servo ON signal is input to the SERVOPACK and an alarm is reset, the Servomotor may suddenly restart operation. Confirm that the servo is OFF and ensure safety before you reset an alarm

There is a risk of injury or machine damage.

- Always insert a magnetic contactor in the line between the main circuit power supply and the
 main circuit power supply terminals on the SERVOPACK so that the power supply can be shut
 OFF at the main circuit power supply.
 - If a magnetic contactor is not connected when the SERVOPACK fails, a large current may flow, possibly resulting in fire.
- If an alarm occurs, shut OFF the main circuit power supply.
 There is a risk of fire due to a regenerative resistor overheating as the result of regenerative transistor failure.
- Install a ground fault detector against overloads and short-circuiting or install a molded-case circuit breaker combined with a ground fault detector.
 There is a risk of SERVOPACK failure or fire if a ground fault occurs.
- The holding brake on a Servomotor will not ensure safety if there is the possibility that an external force (including gravity) may move the current position and create a hazardous situation when power is interrupted or an error occurs. If an external force may cause movement, install an external braking mechanism that ensures safety.

■ Disposal Precautions

When disposing of the product, treat it as ordinary industrial waste. However, local ordinances
and national laws must be observed. Implement all labeling and warnings as a final product as
required.

■ General Precautions

- Figures provided in this document are typical examples or conceptual representations. There may be differences between them and actual wiring, circuits, and products.
- The products shown in illustrations in this document are sometimes shown without covers or protective guards. Always replace all covers and protective guards before you use the product.
- If you need a new copy of this document because it has been lost or damaged, contact your nearest Yaskawa representative or one of the offices listed on the back of this document.
- This document is subject to change without notice for product improvements, specifications changes, and improvements to the manual itself.
 We will update the document number of the document and issue revisions when changes are made.
- Any and all quality guarantees provided by Yaskawa are null and void if the customer modifies
 the product in any way. Yaskawa disavows any responsibility for damages or losses that are
 caused by modified products.

Warranty

Details of Warranty

■ Warranty Period

The warranty period for a product that was purchased (hereinafter called the "delivered product") is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

■ Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the above warranty period.

This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

- Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
- · Causes not attributable to the delivered product itself
- Modifications or repairs not performed by Yaskawa
- Use of the delivered product in a manner in which it was not originally intended
- Causes that were not foreseeable with the scientific and technological understanding at the time of shipment from Yaskawa
- · Events for which Yaskawa is not responsible, such as natural or human-made disasters

Limitations of Liability

- Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
- Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
- The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
- Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

Suitability for Use

- It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
- The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
- Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
 - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions or environments not described in product catalogs or manuals
 - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
 - Systems, machines, and equipment that may present a risk to life or property
 - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
 - · Other systems that require a similar high degree of safety
- Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
- The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
- Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

◆ Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

Compliance with UL Standards, EU Directives, and Other Safety Standards

Certification marks for the standards for which the product has been certified by certification bodies are shown on nameplate. Products that do not have the marks are not certified for the standards.

North American Safety Standards (UL)





Product	Model	North American Safety Standards (UL File No.)
SERVOPACKs	SGD7S	UL 61800-5-1 (E147823), CSA C22.2 No.274

◆ European Directives







Product	Model	EU Directive	Harmonized Standards
SERVOPACKs	SGD7S	Machinery Directive 2006/42/EC	EN ISO13849-1: 2015
		EMC Directive 2014/30/EU	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environment)
		Low Voltage Directive 2014/35/EU	EN 50178 EN 61800-5-1
		RoHS Directive 2011/65/EU	EN 50581
Direct Drive Servomotors	SGM7D	EMC Directive 2014/30/EU	EN 55011 group 1, class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environment)
		Low Voltage Directive 2014/35/EU	EN 60034-1 EN 60034-5
		RoHS Directive 2011/65/EU	EN 50581

Note: 1. We declared the CE Marking based on the harmonized standards in the above table.

Safety Standards



Product	Model	Safety Standards	Standards
SERVOPACKs	SGD7S	Safety of Machinery	EN ISO13849-1:2015 IEC 60204-1
		Functional Safety	IEC 61508 series IEC 62061 IEC 61800-5-2
		EMC	IEC 61326-3-1

^{2.} These products are for industrial use. In home environments, these products may cause electromagnetic interference and additional noise reduction measures may be necessary.

■ Safety Parameters

Item Standards Performance L		ance Level		
Cafaty Intogrity Laval	IEC 61508	SIL3		
Safety Integrity Level	IEC 62061	SILCL3		
Mission Time	IEC 61508	10 years	20 years	
Probability of Dangerous Failure per Hour	IEC 61508 IEC 62061	PFH = 4.04×10^{-9} [1/h] (4.04% of SIL3)	PFH = 4.05×10^{-9} [1/h] (4.05% of SIL3)	
Performance Level	EN ISO 13849-1	PLe (Category 3)		
Mean Time to Dangerous Failure of Each Channel	EN ISO 13849-1	MTTFd: High		
Average Diagnostic Coverage	EN ISO 13849-1	DCavg: Medium		
Stop Category	IEC 60204-1	Stop category 0		
Safety Function	IEC 61800-5-2	STO		
Hardware Fault Tolerance	IEC 61508	HFT = 1		
Subsystem	IEC 61508	В		

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Revision History

Basic Information on SERVOPACKs

1

This chapter provides basic information, including an introduction to the product, and describes how to interpret model numbers and combinations with Servomotors.

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1.1

Product Introduction

The SERVOPACKs described in this manual were developed to drive SGM7D motors.

The SGM7D motors were designed for applications that require high torque, easy operation, and high precision. The SERVOPACK will make the most of machine performance in the shortest time possible, thus contributing to improving productivity.

Model Designations

1.2.1 Interpreting FT82 SERVOPACK Model Numbers

SGD7S

 Σ -7-Series Σ-7S

001 . 3th+9th+10th

11th+12th+13th



SERVOPACKs

1st+2nd+3rd digits

Maximum Applicable Motor Capacity

Voltage	Code	Specification
Three-	2R8*1	0.4 kW
Phase, 200 VAC	120*2	1.5 kW
Single- Phase, 100 VAC	2R8	0.4 kW

4th digit Voltage

Code	Specification
Α	200 VAC
F	100 VAC

5th+6th digits Interface

Code	Specification			
00	Analog voltage/pulse train reference			
10	MECHATROLINK-II communications references			
20	MECHATROLINK-III communications reference			
E0	Command option attachable type*3			



Hardware Options 8th+9th+10th digits Specification

Code	Specification	Applicable Models		
None	\A/ithau it antique	All mandala		
000	Without options	All models		
001	Rack-mounted	All models		
002	Varnished	All models		
800	Single-phase, 200-VAC power supply input	SGD7S-120A		
000*4	No dynamic brake	SGD7S-2R8A and -2R8F		
020*4	External dynamic brake resistor	SGD7S-120A		

11th+12th+13th digits FT/EX Specification

Code	Specification
F82	Application function option for special motors, SGM7D motor drive

14th digit BTO Specification*5

•		от вто оросшения
Co	de	Specification
No	ne	None
E	3	BTO specification

- *1. You can use these models with either a single-phase or three-phase input.
- *2. A model with a single-phase, 200-VAC power supply input is available as a hardware option (model: SGD7S-120A00A008).
- This interface is supported only by an INDEXER Module. Refer to the following catalog for details. \square AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)
- *4. Refer to the following manual for details.
 - Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- *5. The BTO specification indicates if the SEVOPACK is customized by using the MechatroCloud BTO service. You need a BTO number to order SERVOPACKs with customized specifications. Refer to the following catalog for details on the BTO specification.
 - AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)

Interpreting FT83 SERVOPACK Model Numbers 1.2.2

SGD7S F83 3th+9th+10th 1th+12th+13th Σ -7-Series Σ-7S **SERVOPACKs**

Maximum Applicable 1st+2nd+3rd digits Motor Capacity Voltage Code Specification Three-2R8*1 0.4 kW Phase 120*2 1.5 kW 200 VAC Single-2R8 0.4 kW Phase,

100 VAC

4th digit Voltage Code Specification 200 VAC Α 100 VAC

5th+6th digits Interface Code Specification 00 Analog voltage/pulse train reference

7th digit Design Revision Order Α

Specification					
Code	Specification	Applicable Models			
None	\A/!+!	Alll - l -			
000	Without options	All models			
001	Rack-mounted	All models			
002	Varnished	All models			
800	Single-phase, 200-VAC power supply input	SGD7S-120A			
020*3	No dynamic brake	SGD7S-2R8A and -2R8F			
	External dynamic	SGD7S-120A			

Hardware Options

11th+12th+13th digits FT/EX Specification Code Specification Application function option F83 for special motors, SGM7D motor drive, indexing

brake resistor

14th digit BTO Specification*4 Specification Code None None В BTO specification

- *1. You can use these models with either a single-phase or three-phase input.
- *2. A model with a single-phase, 200-VAC power supply input is available as a hardware option (model: SGD7S-120A00A008).
- *3. Refer to the following manual for details.
 - \square Σ -7-Series AC Servo Drive Σ -7S/ Σ -7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- *4. The BTO specification indicates if the SEVOPACK is customized by using the MechatroCloud BTO service. You need a BTO number to order SERVOPACKs with customized specifications.
 - \square AC Servo Drives Σ -7 Series (Manual No.: KAEP S800001 23)

1.2.3 Interpreting Direct Drive Servomotor Model Numbers

SGM7D - 30 F 7 C 4 1

Direct Drive Servomotors:

Signature

Servomotors:

Servomotors:

Direct Drive Servomotors:

Servomotors

1st+2nd digits Rated Torque

SGM7D

Code	Specification	Code	ode Specification		Specification
01	1.30 N·m	18	18.0 N·m	58	58.0 N·m
02	2.06 N·m	20	20.0 N·m	70	70.0 N·m
03	3.00 N·m	24	24.0 N·m	90	90.0 N·m
05	5.00 N·m	28	28.0 N·m	1Z	100 N·m
06	6.00 N·m	30	30.0 N·m	1A	110 N·m
08	8.00 N·m	34	34.0 N·m	1C	130 N·m
09	9.00 N·m	38	38.0 N·m	2B	220 N·m
12	12.0 N·m	45	45.0 N·m	2D	240 N·m

3rd digit Servomotor Outer Diameter

Code	Specification	Code	Specification
F	264-mm dia.	J	150-mm dia.
G	160-mm dia.	K	107-mm dia.
Н	116-mm dia.	L	224 mm × 224 mm
I	264-mm dia.		

Note: 1. Direct Drive Servomotors are not available with holding brakes.

2. This information is provided to explain model numbers.

It is not meant to imply that models are available for all combinations of codes.

4th digit Serial Encoder

Code	Specification
7	24-bit multiturn absolute encoder
F	24-bit incremental encoder

5th digit Design Revision Order

6th digit Flange

	Code	Mounting		Servomotor Outer Diameter Code (3rd Digit)						
				F	G	Н	1	J	K	L
Ī	4	n-load side	With cable on side	✓	✓	✓	-	-	-	✓
I	5	Non- sic	With cable on bottom	✓	√ *	-	✓	✓	✓	-

- ✓: Applicable models.
- * SGM7D-01G and -05G are not available with a cable extending from the bottom.

7th digit Options

Code	Specification
1	Standard mechanical precision
2	High mechanical precision*

^{*} The SGM7D-01G, -05G, and -03H are available only with high mechanical precision.

Manufactured Models

Rated	Servomotor Outer Diameter						
Torque N·m	F (264-mm dia.)	G (160-mm dia.)	H (116-mm dia.)	(264-mm dia.)	J (150-mm dia.)	K (107-mm dia.)	L (224 mm × 224 mm)
1.30	-	SGM7D-01G	_	-	-	-	-
2.06	-	_	_	-	-	SGM7D-02K	-
3.00	-	-	SGM7D-03H	-	-	-	-
5.00	-	SGM7D-05G	-	-	-	-	-
6.00	-	-	-	-	SGM7D-06J	SGM7D-06K	SGM7D-06L
8.00	-	SGM7D-08G	-	-	-	SGM7D-08K	-
9.00	-	-	-	-	SGM7D-09J	-	-
12.0	-	-	-	-	-	-	SGM7D-12L
18.0	-	SGM7D-18G	-	-	SGM7D-18J	-	-
20.0	-	-	-	-	SGM7D-20J	-	-
24.0	-	SGM7D-24G	-	-	-	-	-
28.0	-	-	-	SGM7D-28I	-	-	-
30.0	SGM7D-30F	_	_	-	-	-	SGM7D-30L
34.0	-	SGM7D-34G	_	-	-	-	-
38.0	-	_	_	-	SGM7D-38J	-	-
45.0	-	SGM7D-45G	_	-	-	-	-
58.0	SGM7D-58F	-	-	-	-	-	-
70.0	-	-	-	SGM7D-70I	-	-	-
90.0	SGM7D-90F	-	-	-	-	-	-
100	-	-	-	SGM7D-1ZI	-	-	-
110	SGM7D-1AF	-	-	-	-	-	-
130	-	-	-	SGM7D-1CI	-	-	-
220	-	-	-	SGM7D-2BI	-	-	-
240	-	-	-	SGM7D-2DI	-	-	-

Note: The above table shows combinations of the rated torque and outer diameter. The fourth through seventh digits have been omitted.

1.3

Combinations of SERVOPACKs and Servomotors

Direct Drive Servomotor Model	Capacity	SERVOPACK Model	
Direct Drive Servornotor Moder	Сараспу	SGD7S-	
SGM7D-30F	188 W		
SGM7D-58F	364 W	120A	
SGM7D-90F	565 W	120A	
SGM7D-1AF	691 W		
SGM7D-01G	16 W	ODOA and ODOE	
SGM7D-05G	63 W	- 2R8A and 2R8F	
SGM7D-08G	101 W		
SGM7D-18G	226 W		
SGM7D-24G	302 W	120A	
SGM7D-34G	320 W		
SGM7D-45G	565 W		
SGM7D-03H	38 W	2R8A and 2R8F	
SGM7D-28I	264 W		
SGM7D-70I	440 W		
SGM7D-1ZI	628 W		
SGM7D-1CI	817 W		
SGM7D-2BI	691 W		
SGM7D-2DI	754 W	120A	
SGM7D-06J	75 W		
SGM7D-09J	113 W		
SGM7D-18J	226 W		
SGM7D-20J	251 W		
SGM7D-38J	358 W		
SGM7D-02K	52 W		
SGM7D-06K	151 W		
SGM7D-08K	201 W	2R8A and 2R8F	
SGM7D-06L	113 W		
SGM7D-12L	226 W		
SGM7D-30L	565 W	120A	

Functions

This section lists the functions provided by SERVOPACKs. Refer to the following manuals for details on the functions.

- FT82 SERVOPACKs
 - □Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
 - ΩΣ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
 - Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
 - ΩΣ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
- FT83 SERVOPACKs

 - Σ -7-Series Σ -7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No. SIEP S800001 84)

Functions in bold boxes in the functions tables are restricted if the above SERVOPACKs are used. Refer to the following section for details on restrictions to these functions.

1.4.2 Function Application Restrictions on page 1-10

SERVOPACK Functions 1.4.1

Multiturn Limit Setting

External Latches*

Forcing the Motor to Stop Overheat Protection

Speed Ripple Compensation Current Control Mode Selection Current Gain Level Setting

Speed Detection Method Selection

Functions Related to the Machine		
Functions		
Power Supply Type Settings for the Main Circuit and Control Circuit		
Automatic Detection of Connected Motor		
Motor Direction Setting		
Setting the Linear Encoder Pitch		
Writing Linear Servomotor Parameters		
Selecting the Phase Sequence for a Linear Servomotor		
Polarity Sensor Setting		
Polarity Detection		
Overtravel Function and Settings		
Holding Brake		
Motor Stopping Method for Servo OFF and Alarms		
Resetting the Absolute Encoder		
Setting the Origin of the Absolute Encoder		
Setting the Regenerative Resistor Capacity		
Operation for Momentary Power Interruptions		
SEMI F47 Function		
Motor Maximum Speed Setting		
Software Limits and Settings*		

Fully-closed Loop Control Safety Function

Adjustment of Motor Current Detection Signal Offset

^{*} These functions can be used with SERVOPACKs with MECHATROLINK-II Communications References and SERVOPACKs with MECHATROLINK-III Communications References.

1.4.1 SERVOPACK Functions

• Functions Related to the Host Controller

Functions				
Electronic Gear Setting				
I/O Signal Allocations				
ALM (Servo Alarm) Signal				
ALO1 to ALO3 (Alarm Code) Signals*				
/WARN (Warning) Signal				
/TGON (Rotation Detection) Signal				
Servo Ready Output (/S-RDY) Signal				
Speed Control*				
Basic Settings for Speed Control*				
Speed Reference Filter*				
Zero Clamping*				
/V-CMP (Speed Coincidence Detection) Signal				
Position Control*				
Reference Pulse Form*				
CLR (Position Deviation Clear) Signal Function and Settings*				
Reference Pulse Input Multiplication Switching*				
/COIN (Positioning Completion) Signal				
/NEAR (Near) Signal				
Reference Pulse Inhibition Function and Settings*				
Torque Control*				
Basic Settings for Torque Control*				
Torque Reference Filter Settings*				
Speed Limit during Torque Control				
/VLT (Speed Limit Detection) Signal				
Encoder Divided Pulse Outputs				
Selecting Torque Limits				
Initializing the Vibration Detection Level				
Resetting Alarms				
Replacing the Battery				
Setting the Position Deviation Overflow Alarm Level				
* There is no still and and he would with OFD\/ODAO\/o with Andle a \/al				

 $[\]hbox{* These functions can be used with SERVOPACKs with Analog Voltage/Pulse Train References}.$

• Functions to Achieve Optimum Motions

Functions			
Speed Control*1			
Soft Start Settings*1			
Position Control*1			
Smoothing Settings*1			
Torque Control*1			
Tuning-less Function			
Autotuning without Host Reference			
Autotuning with a Host Reference			
Custom Tuning			
Anti-resonance Control Adjustment			
Vibration Suppression			
Gain Selection			
Friction Compensation			
Gravity Compensation			
Backlash Compensation*2			
Model Following Control			
Compatible Adjustment Functions			
Mechanical Analysis			
Easy FFT			

^{*1.} These functions can be used with SERVOPACKs with Analog Voltage/Pulse Train References.

• Functions for Trial Operation during Setup

Functions			
Software Reset			
Trial Operation for the Servomotor without a Load			
Program Jogging			
Origin Searches			
Test without a Motor			
Monitoring Machine Operation Status and Signal Waveforms			

• Functions for Inspection and Maintenance

Functions
Write Prohibition Setting for Parameters
Initializing Parameter Settings
Automatic Detection of Connected Motor
Monitoring Product Information
Monitoring Product Life
Displaying the Alarm History
Alarm Tracing
···

^{*2.} These functions can be used with SERVOPACKs with MECHATROLINK-II Communications References and SERVOPACKs with MECHATROLINK-III Communications References.

1.4.2 Function Application Restrictions

The following functional restrictions apply when you use the FT82/FT83 SERVOPACKs.

Function	Restriction		
Setting the Linear Encoder Pitch	Cannot be used.		
Writing Linear Servomotor Parameters	Cannot be used.		
Selecting the Phase Sequence for a Linear Servomotor	Cannot be used.		
Polarity Sensor Setting	Cannot be used.		
Polarity Detection	Cannot be used.		
Speed Ripple Compensation	Cannot be used. Do not change the following default setting: Pn423 = n.□□□0.		
Tuning-less Function	Cannot be used if the load moment of inertia ratio is 10 or greater.		

1.5 SigmaWin+

To use the SigmaWin+, a model information file for the SERVOPACK must be added to SigmaWin+ version 7.

- FT82 SERVOPACKs
 Add the FT82 model information file to SigmaWin+ to use the SigmaWin+.
- FT83 SERVOPACKs
 Add the FT83 model information file to SigmaWin+ to use the SigmaWin+.

1.6

Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool

If you combine the SERVOPACK with an MP-Series Machine Controller or the MPE720 Engineering Tool, it will be recognized as a SERVOPACK with standard specifications. To use the parameters that have been added or changed for the SERVOPACKs described in this manual, use the SigmaWin+.

SERVOPACK Ratings and Specifications

This chapter provides information required to select SERVOPACKs, such as specifications.

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		Pulse Train References 2-19

2.1.1 Three-Phase, 200 VAC

2.1 Ratings

The ratings of the FT82 and FT83 SERVOPACKs are the same. This section gives the ratings of SERVOPACKs.

2.1.1 Three-Phase, 200 VAC

	Model SGD7S	2R8A	120A	
Maximum Applicable Motor Capacity [kW]			0.4	1.5
Continuous Ou	utput Current [Arms]		2.8	11.6
Instantaneous	Maximum Output Curre	nt [Arms]	9.3	28
Main Circuit	Power Supply		200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
Circuit	Input Current [Arms]*		2.5	7.3
Control	Power Supply		200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
	Input Current [Arms]*		0.2	0.2
Power Supply Capacity [kVA]*			1.0	3.2
	Main Circuit Power Loss [W]		22.5	72.6
Power Loss*	Control Circuit Power Loss [W]		12	15
Power Loss.	Built-in Regenerative Resistor Power Loss [W]		-	12
	Total Power Loss [W]		34.5	97.6
Regenerative Resistor	Built-In Regenerative Resistor	Resistance $[\Omega]$	-	20
		Capacity [W]		60
	Minimum Allowable Ex	ternal Resistance [Ω]	40	20
Overvoltage Category			II	I

^{*} This is the net value at the rated load.

2.1.2 Single-Phase, 200 VAC

	Model SGD7S	2R8A	120A	
Maximum App	licable Motor Capacity [I	0.4	1.5	
Continuous Ou	utput Current [Arms]		2.8	11.6
Instantaneous	Maximum Output Curre	nt [Arms]	9.3	28
Main Circuit	Power Supply		200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
	Input Current [Arms]*		5.0	16
Control	Power Supply		200 VAC to 240 VAC, -15% to +10%, 50 Hz/60 Hz	
	Input Current [Arms]*		0.2	0.25
Power Supply Capacity [kVA]*			1.2	4.0
	Main Circuit Power Lo	ss [W]	23.7	71.8
Power Loss*	Control Circuit Power	Loss [W]	12	16
LOMEL F022.	Built-in Regenerative Resistor Power Loss [W]		_	12
	Total Power Loss [W]		35.7	103.8
Regenerative Resistor	Built-In Regenerative Resistor	Resistance $[\Omega]$	-	12
		Capacity [W]	_	60
30.0.01	Minimum Allowable Ex	$\overline{Resistance\left[\Omega ight]}$	40	12
Overvoltage C	Overvoltage Category			I

^{*} This is the net value at the rated load.

2.1.3 Single-Phase, 100 VAC

	SGD7S-	2R8F	
Maximum Appl	icable Motor Capacity [kW]	0.4	
Continuous Ou	tput Current [Arms]	2.8	
Instantaneous Maximum Output Current [Arms]		9.3	
Main Circuit	Power Supply	100 VAC to 120 VAC, -15% to +10%, 50 Hz/60 Hz	
Mairi Circuit	Input Current [Arms]*	10	
Control	Power Supply	100 VAC to 120 VAC, -15% to +10%, 50 Hz/60 Hz	
Control	Input Current [Arms]*	0.38	
Power Supply Capacity [kVA]*		1.4	
	Main Circuit Power Loss [W]	26.2	
Power Loss*	Control Circuit Power Loss [W]	12	
	Total Power Loss [W]	38.2	
$ \begin{array}{ccc} \text{Regenerative} & \text{Minimum Allowable Resistance} \\ \text{Resistor} & [\Omega] \end{array} $		40	
Overvoltage Category		III	

^{*} This is the net value at the rated load.

2.2

SERVOPACK Overload Protection Characteristics

The overload protection characteristics of the FT82/FT83 SERVOPACKs are the same as the standard Σ -7-Series SERVOPACKs. Refer to the following manual for details.

- FT82 SERVOPACKs
 - Σ -7-Series Σ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
 - Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
 - Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
 - Σ -7-Series Σ -7S Command Option Attachable-type SERVOPACK with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
- FT83 SFRVOPACKs
 - Σ -7-Series Σ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

2.3 Specifications

2.3.1 FT82 SERVOPACKs with Analog Voltage/Pulse Train References

Item		Specification			
Control Meth	Control Method		IGBT-based PWM control, sine wave current drive		
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)			
	Surrounding Air Temperature*1	Refer to t	5°C ating, usage is possible between 55°C and 60°C.) the following manual for derating specifications. Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References uct Manual (Manual No.: SIEP S800001 26)		
	Storage Temperature	-20°C to 85°C			
	Surrounding Air Humidity	95% relat	ive humidity max. (with no freezing or condensation)		
	Storage Humidity	95% relat	ive humidity max. (with no freezing or condensation)		
	Vibration Resistance	4.9 m/s ²			
	Shock Resistance	19.6 m/s ²	2		
		Degree	SERVOPACK Models		
Environ- mental Conditions	Degree of Protection	IP20	SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F		
Ooriditions		IP10	SGD7S-120A00A008 (single-phase, 200-VAC input)		
	Pollution Degree	 Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust. 			
	Altitude*1	 1,000 m max. (With derating, usage is possible between 1,000 m and 2,000 m.) Refer to the following manual for derating specifications. Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26) 			
	Others	Do not use the SERVOPACK in the following locations: Locations ject to static electricity noise, strong electromagnetic/magnetic fie or radioactivity			
Applicable S	standards	Refer to the following section for details. © Compliance with UL Standards, EU Directives, and Other Safety Standards on page xxx			
Mounting		Base-moi	unted or rack-mounted		
	Speed Control Range		at the rated torque, the lower limit of the speed control range cause the Servomotor to stop.)		
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)			
Dorfor	Coefficient of Speed Fluctuation*2	0% of rated speed max. (for a load fluctuation of ±10%)			
Perfor- mance	Tiuctuation	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)			
	Torque Control Precision (Repeatability)	±1%			
	Soft Start Time Set- ting	0 s to 10 s (Can be set separately for acceleration and deceleration.)			

Continued from previous page.

Item			Specification
	Encoder Di Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
	Overheat F	rotection	Number of input points: 1
	Input		Input voltage range: 0 V to +5 V
		Fixed	Allowable voltage range: 5 VDC ±5%
		Input	Number of input points: 1
			SEN (Absolute Data Request) signal
			Allowable voltage range: 24 VDC ±20% Number of input points: 7
			Input method: Sink inputs or source inputs Input Signals
			/S-ON (Servo ON) signal
			P-CON (Proportional Control) signal
			P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals
	Sequence		/ALM-RST (Alarm Reset) signal
	Input Signals	Input Signals	P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals
		That Can Be Allo-	/SPD-D (Motor Direction) signal
		cated	/SPD-A and /SPD-B (Internal Set Speed Selection) signals
		oatoa	/C-SEL (Control Selection) signal
			/ZCLAMP (Zero Clamping) signal
			/INHIBIT (Reference Pulse Inhibit) signal
			• /P-DET (Polarity Detection) signal
			/G-SEL (Gain Selection) signal /PSEL (Pataranae Pulse Input Multiplication Switch) signal
I/O Signals			
			A signal can be allocated and the positive and negative logic can be
			changed.
		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC
			Number of output points: 1
			Output signal: ALM (Servo Alarm) signal
			Allowable voltage range: 5 VDC to 30 VDC Number of output points: 6
			(A photocoupler output (isolated) is used for three of the outputs.)
			(An open-collector output (non-isolated) is used for the other three out-
			puts.)
			Output signals
			/COIN (Positioning Completion) signal
	Sequence	Output	V-CMP (Speed Coincidence Detection) signal
	Output Signals	Signals	/TGON (Rotation Detection) signal // Company Read to a signal
	Olgitals	That Can	
		Be	Number of the following signal Number of the following signal Number of the following signal Number of the following signal
		Allocated	/VEI (Speed Ellin Detection) signal /BK (Brake) signal
			/WARN (Warning) signal
			• /NEAR (Near) signal
			/PSELA (Reference Pulse Input Multiplication Switching Output) signal
			ALO1, ALO2, and ALO3 (Alarm Code) signals
			A signal can be allocated and the positive and negative logic can be
		1	changed.

Continued from previous page.

2.3.1 FT82 SERVOPACKs with Analog Voltage/Pulse Train References

Item			Specification
		Inter- faces	Digital Operator (JUSP-OP05A-1-E) and personal computer (with SigmaWin+)
	RS-422A Communi- cations	1:N Commu- nications	Up to N = 15 stations possible for RS-422A port
Communi- cations	(CN3)	Axis Address Setting	Set with parameters.
	USB	Interface	Personal computer (with SigmaWin+)
	Communications (CN7)	Communications Standard	Conforms to USB2.0 standard (12 Mbps).
Displays/Ind	icators		CHARGE indicator and five-digit seven-segment display
Panel Opera	tor		Four push switches
Analog Monitor (CN5)			Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)
Dynamic Bra	Dynamic Brake (DB)		Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.
Regenerative	e Processing		Built-in Refer to the following catalog for details. Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)
Overtravel (C	OT) Preventio	n	Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal
Protective Fr	unctions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.
Utility Functi	Utility Functions		Gain adjustment, alarm history, jogging, origin search, etc.
	Inputs		/HWBB1 and /HWBB2: Base block signals for Power Modules
Safety	Output		EDM1: Monitors the status of built-in safety circuit (fixed output).
Functions	Applicable Stan-dards*3		ISO13849-1 PLe (Category 3) and IEC61508 SIL3
Applicable C	Applicable Option Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.

Continued from previous page.

		Iter	n		Specification
		Soft Sting	Start T	ime Set-	0 s to 10 s (Can be set separately for acceleration and deceleration.)
				Refer- ence Voltage	 Maximum input voltage: ±12 V (forward motor rotation for positive reference). 6 VDC at rated speed (default setting). Input gain setting can be changed.
		Input Signa		Input Imped- ance	Approx. 14 kΩ
	Speed Con- trol			Circuit Time Con- stant	30 μs
		Internal Set Speed Control		Rota- tion Direc- tion Selec- tion	With Proportional Control signal
				Speed Selec- tion	With Forward/Reverse External Torque Limit signals (speed 1 to 3 selection). Servomotor stops or another control method is used when both signals are OFF.
		Feedforward Compensation Output Signal Positioning Completed Width Setting			0% to 100%
Controls				nal Posi- npleted	0 to 1,073,741,824 reference units
Cor			Ref- eren	Refer- ence Pulse Form	One of the following is selected: Sign + pulse train, CW + CCW pulse trains, and two-phase pulse trains with 90° phase differential
	Posi-			Input Form	Line driver or open collector
	tion Con- trol	rol In- put Sig-		Maxi- mum Input Fre- quency	 Line Driver Sign + pulse train or CW + CCW pulse trains: 4 Mpps Two-phase pulse trains with 90° phase differential: 1 Mpps Open Collector Sign + pulse train or CW + CCW pulse trains: 200 kpps Two-phase pulse trains with 90° phase differential: 200 kpps
					Input Multiplica- tion Switching
			Clear	Signal	Position deviation clear Line driver or open collector
	Torque	ue n- Signal Ir a		Refer- ence Voltage	 Maximum input voltage: ±12 V (forward torque output for positive reference). 3 VDC at rated torque (default setting). Input gain setting can be changed.
	Con- trol			Input Imped- ance	Approx. 14 kΩ
				Circuit Time Constant	16 μs

^{*1.} If you combine a Σ -7-Series SERVOPACK with a Σ -V-Series Option Module, the following Σ -V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

- *3. Always perform risk assessment for the system and confirm that the safety requirements are met.

2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

Item		Specification		
Control Met	hod	IGBT-based PWM control, sine wave current drive		
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)		
	Surrounding Air Temperature*1	-5°C to 55°C (With derating, usage is possible between 55°C and 60°C.) Refer to the following manual for derating specifications. Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)		
	Storage Temperature	-20°C to 85°C		
	Surrounding Air Humidity	95% relative humidity max. (with no freezing or condensation)		
	Storage Humidity	95% relative humidity max. (with no freezing or condensation)		
	Vibration Resistance	4.9 m/s ²		
	Shock Resistance	19.6 m/s ²		
		Degree SERVOPACK Models		
Environ- mental Conditions	Degree of Protection	IP20 SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F		
		IP10 SGD7S-120A10A008 (single-phase, 200-VAC input)		
	Pollution Degree Altitude*1	 Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust. 1,000 m max. (With derating, usage is possible between 1,000 m and 2,000 m.) Refer to the following manual for derating specifications. 		
	Others	Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27) Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity		
		Refer to the following section for details.		
Applicable S	Standards	Compliance with UL Standards, EU Directives, and Other Safety Standards on page xxx		
Mounting		Base-mounted or rack-mounted		
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)		
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)		
D (Coefficient of Speed	0% of rated speed max. (for a voltage fluctuation of ±10%)		
Perfor- mance	Fluctuation*2	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)		
	Torque Control Precision (Repeatability)	±1%		
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)		
		Continued on next page.		

2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

Continued from previous page.

Item			Specification
	Encoder Div Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
	Overheat Protection Input		Number of input points: 1 Input voltage range: 0 V to +5 V
			Allowable voltage range: 24 VDC ±20% Number of input points: 7
	Sequence Input Signals That Can Be Allo- cated		Input method: Sink inputs or source inputs Input Signals • /DEC (Origin Return Deceleration Switch) signal • /EXT1 to /EXT3 (External Latch Input 1 to 3) signals • P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals • /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals • /P-DET (Polarity Detection) signal A signal can be allocated and the positive and negative logic can be changed.
I/O Signals		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm) signal
	Sequence Output Signals	Output Signals That Can Be Allo- cated	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.) Output Signals • /COIN (Positioning Completion) signal • /V-CMP (Speed Coincidence Detection) signal • /TGON (Rotation Detection) signal • /S-RDY (Servo Ready) signal • /CLT (Torque Limit Detection) signal • /VLT (Speed Limit Detection) signal • /WLT (Speed Limit Detection) signal • /WARN (Warning) signal • /WARN (Warning) signal • /NEAR (Near) signal A signal can be allocated and the positive and negative logic can be changed.
	RS-422A Communi- cations (CN3)	Interfaces 1:N Communications	Digital Operator (JUSP-OP05A-1-E) and Personal computer (with SigmaWin+) Up to N = 15 stations possible for RS-422A port
Communi- cations		Axis Address Setting	Set with parameters.
	USB Com-	Interface	Personal computer (with SigmaWin+)
	munica- tions (CN7)	Communications Standard	Conforms to USB2.0 standard (12 Mbps).
Displays/Indicators			CHARGE, PWR, and COM indicators, and one-digit seven-segment display

2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

Continued from previous page.

Item		Specification	
		Specification	
	Communications Protocol	MECHATROLINK-II	
MECHA- TROLINK-II	Station Address Settings	41h to 5Fh (maximum number of slaves: 30) Selected with the combination of a rotary switch (S2) and DIP switch (S3).	
Communi- cations	Baud Rate	10 Mbps, 4 Mbps A DIP switch (S3) is used to select the baud rate.	
	Transmission Cycle	250 μs or 0.5 ms to 4.0 ms (multiples of 0.5 ms)	
	Number of Transmission Bytes	17 or 32 bytes/station A DIP switch (S3) is used to select the number of transmission bytes.	
Reference	Performance	Position, speed, or torque control with MECHATROLINK-II communications	
Method	Reference Input	MECHATROLINK-I or MECHATROLINK-II commands (sequence, motion, data setting, data access, monitoring, adjustment, etc.)	
MECHATRO	LINK-II Communica-	Rotary switch (S2) positions: 16	
tions Setting	g Switches	Number of DIP switch (S3) pins: 4	
Analog Monitor (CN5)		Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)	
Dynamic Br	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.	
Regenerativ	re Processing	Built-in Refer to the following catalog for details. Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)	
Overtravel (OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal	
Protective F	unctions	Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.	
Utility Funct	ions	Gain adjustment, alarm history, jogging, origin search, etc.	
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules	
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).	
Functions	Applicable Standards*3	ISO13849-1 PLe (Category 3), IEC61508 SIL3	
Applicable (Option Modules	Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.	

^{*1.} If you combine a Σ -7-Series SERVOPACK with a Σ -V-Series Option Module, the following Σ -V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\begin{tabular}{lll} Coefficient of speed fluctuation = & \hline No-load motor speed - Total-load motor speed & \times 100\% \\ \hline Rated motor speed & \times 100\% \\ \hline \end{tabular}$

st2. The coefficient of speed fluctuation for load fluctuation is defined as follows:

^{*3.} Always perform risk assessment for the system and confirm that the safety requirements are met.

2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

Item		Specification			
Drive Method	Drive Method		IGBT-based PWM control, sine wave current drive		
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)			
	Surrounding Air Temperature*1	Refer to t	5°C and 60°C.) ating, usage is possible between 55°C and 60°C.) he following manual for derating specifications. series Σ-7S SERVOPACK with MECHATROLINK-III Communications ences Product Manual (Manual No.: SIEP S800001 28)		
	Storage Temperature	-20°C to	85°C		
	Surrounding Air Humidity	95% relat	ive humidity max. (with no freezing or condensation)		
	Storage Humidity	95% rela	tive humidity max. (with no freezing or condensation)		
	Vibration Resistance	4.9 m/s ²			
	Shock Resistance	19.6 m/s ²	2		
		Degree	SERVOPACK Models		
Environ- mental Conditions	Degree of Protection	IP20	SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F		
Ooriditions		IP10	SGD7S-120A20A008 (single-phase, 200-VAC input)		
	Pollution Degree Altitude*1	 Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust. 1,000 m max. (With derating, usage is possible between 1,000 2,000 m.) Refer to the following manual for derating specifications. Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communic References Product Manual (Manual No.: SIEP S800001 28) 			
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity			
Applicable S	tandards	Refer to the following section for details. © Compliance with UL Standards, EU Directives, and Other Safety Standards on page xxx			
Mounting		Base-mounted or rack-mounted			
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)			
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)			
Б. (Coefficient of Speed Fluctuation*2	0% of rated speed max. (for a load fluctuation of ±10%)			
Perfor- mance		±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)			
	Torque Control Precision (Repeatability)	±1%			
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)			

2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

Continued from previous page.

Item			Specification	
	Encoder Div Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.	
	Overheat Protection Input		Number of input points: 1 Input voltage range: 0 V to +5 V	
			Allowable voltage range: 24 VDC ±20% Number of input points: 7	
	Sequence Input Signals That Can Signals Be Allocated		Input method: Sink inputs or source inputs Input Signals • /DEC (Origin Return Deceleration Switch) signal • /EXT1 to /EXT3 (External Latch Input 1 to 3) signals • P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals • /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals • /P-DET (Polarity Detection) signal A signal can be allocated and the positive and negative logic can be changed.	
/O Signals	Sequence Output Signals	Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm) signal	
		Output Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.)	
			Output Signals • /COIN (Positioning Completion) signal • /V-CMP (Speed Coincidence Detection) signal • /TGON (Rotation Detection) signal • /S-RDY (Servo Ready) signal • /CLT (Torque Limit Detection) signal • /VLT (Speed Limit Detection) signal • /WLT (Speed Limit Detection) signal • /WARN (Warning) signal • /WARN (Warning) signal • /NEAR (Near) signal A signal can be allocated and the positive and negative logic can be changed.	
		Inter- faces	Digital Operator (JUSP-OP05A-1-E) and personal computer (with SigmaWin+)	
	RS-422A Communi- cations (CN3)	1:N Commu- nications	Up to N = 15 stations possible for RS-422A port	
Communi- cations		Axis Address Setting	Set with parameters.	
	USB	Interface	Personal computer (with SigmaWin+)	
	Communi- cations (CN7)	Commu- nications Standard	Conforms to USB2.0 standard (12 Mbps).	
Displays/Indicators			CHARGE, PWR, CN, L1, and L2 indicators, and one-digit seven-seg-	

2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

Continued from previous page.

	Item	Specification	
	Communications Protocol	MECHATROLINK-III	
MECHA-	Station Address Settings	03h to EFh (maximum number of slaves: 62) The rotary switches (S1 and S2) are used to set the station address.	
TROLINK-III Communi-	Baud Rate	100 Mbps	
cations	Transmission Cycle	125 μs, 250 μs, 500 μs, 750 μs, 1.0 ms to 4.0 ms (multiples of 0.5 ms)	
	Number of Transmission Bytes	32 or 48 bytes/station A DIP switch (S3) is used to select the number of transmission bytes.	
	Performance	Position, speed, or torque control with MECHATROLINK-III communications	
Reference Method	Reference Input	MECHATROLINK-III commands (sequence, motion, data setting, data access, monitoring, adjustment, etc.)	
	Profile	MECHATROLINK-III standard servo profile	
MECHATRO	LINK-III Communica-	Rotary switch (S1 and S2) positions: 16	
tions Setting	Switches	Number of DIP switch (S3) pins: 4	
Analog Mon	itor (CN5)	Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)	
Dynamic Bra	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.	
Regenerative	e Processing	Built-in Refer to the following catalog for details. Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)	
Overtravel (0	OT) Prevention	Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal	
Protective F	unctions	Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.	
Utility Functi	ons	Gain adjustment, alarm history, jogging, origin search, etc.	
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules	
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).	
Functions	Applicable Standards*3	ISO13849-1 PLe (Category 3), IEC61508 SIL3	
Applicable Option Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.	

^{*1.} If you combine a Σ-7-Series SERVOPACK with a Σ-V-Series Option Module, the following Σ-V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\begin{tabular}{ll} \begin{tabular}{ll} Coefficient of speed fluctuation = & \hline & No-load motor speed - Total-load motor speed \\ \hline & Rated motor speed \\ \end{tabular} \times 100\% \\ \end{tabular}$

^{*2.} The coefficient of speed fluctuation for load fluctuation is defined as follows:

^{*3.} Always perform risk assessment for the system and confirm that the safety requirements are met.

Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

2.3.4

The specifications when the INDEXER Module is combined with a Command Option Attachable-type SERVOPACK are given in the following table.

Item		Specification	
Control Met	hod	IGBT-based PWM control, sine wave current drive	
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)	
	Surrounding Air Temperature	0°C to 55°C	
	Storage Temperature	-20°C to 85°C	
	Surrounding Air Humidity	90% relative humidity max. (with no freezing or condensation)	
	Storage Humidity	90% relative humidity max. (with no freezing or condensation)	
	Vibration Resistance	4.9 m/s ²	
Environ-	Shock Resistance	19.6 m/s ²	
mental Conditions	Degree of Protection	IP10	
	Pollution Degree	 Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust. 	
	Altitude	1,000 m or less.	
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity	
Applicable S	Standards	Refer to the following section for details. © Compliance with UL Standards, EU Directives, and Other Safety Standards on page xxx	
Mounting		Base-mounted or rack-mounted	
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)	
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)	
	Coefficient of Speed	0% of rated speed max. (for a voltage fluctuation of ±10%)	
Perfor- mance	Fluctuation*1	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)	
	Torque Control Precision (Repeatability)	±1%	
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)	
		Continued on port page	

2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

Item				Specification		
	Encoder Divided Pulse Output			Phase A, phase B, phase C: Line-c Number of divided output pulses: A	•	
	Overheat Protection Input			Number of input points: 1 Input voltage range: 0 V to +5 V		
				Allowable voltage range: 24 VDC ±2 Number of input points: 6	20%	
		SERVOPACK		Input method: Sink inputs or source inputs Input signals: • /ALM-RST (Alarm Reset) signal • P-OT (Forward Drive Prohibit) signal • N-OT (Reverse Drive Prohibit) signal • /DEC (Origin Return Deceleration) switch • /RGRT (Registration Input) signal • /S-ON (Servo ON) signal Positive or negative logic can be changed in the parameters.		
				Allowable voltage range: 24 VDC ±10% Number of input points: 11		
				/MODE 0/1 (Mode Switch Input) signal		
I/O Signals				Mode 0	Mode 1	
	Sequence Input Signals	INDEXER Module	Fixed Inputs	 /START-STOP (Program Table Operation Start-Stop Input) signal /PGMRES (Program Table Operation Reset Input) signal /SEL0 (Program Step Selection Input 0) signal /SEL1 (Program Step Selection Input 1) signal /SEL2 (Program Step Selection Input 2) signal /SEL3 (Program Step Selection Input 3) signal /SEL4 (Program Step Selection Input 4) signal /SEL5 (Program Step Selection Input 5) signal /SEL6 (Program Step Selection Input 6) signal /SEL7 (Program Step Selection Input 7) signal 	 /HOME (Origin Return Input) signal /JOGP (Forward Jog Input) signal /JOGN (Reverse Jog Input) signal /JOG0 (Jog Speed Table Selection Input 0) signal /JOG1 (Jog Speed Table Selection Input 1) signal /JOG2 (Jog Speed Table Selection Input 2) signal /JOG3 (Jog Speed Table Selection Input 3) signal 	

2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

Item				Specification
			Fixed Out- puts	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm Output) signal
		SERVOPACK	Output Signals for Which Allocations Can Be Changed	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.)
I/O Signals	Sequence Output Signals			Output signals: • /WARN (Warning Output) signal • /BK (Brake Output) signal • /S-RDY (Servo Ready Output) signal • ALO1, ALO2, and ALO3 (Alarm Code Output) signals Signal allocations and positive or negative logic can be changed in the parameters.
		INDEXER Module	Fixed Out- puts	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 9 Output signals: • /INPOSITION (Positioning Completion Output) signal • /POUT0 (Programmable Output 0) signal • /POUT1 (Programmable Output 1) signal • /POUT2 (Programmable Output 2) signal • /POUT3 (Programmable Output 3) signal • /POUT4 (Programmable Output 4) signal • /POUT5 (Programmable Output 5) signal • /POUT6 (Programmable Output 6) signal • /POUT7 (Programmable Output 7) signal
	DO 400A	Interfaces		Digital Operator (JUSP-OP05A-1-E) and Personal computer (with SigmaWin+)
	RS-422A Commu- nica- tions	1:N Communi- cations		Up to N = 15 stations possible for RS-422A port
Communi- cations	(CN3)	Axis Address Setting		Set with parameters.
	USB	Inter	face	Personal computer (with SigmaWin+)
	Communications (CN7)	Communi- cations Standard		Conforms to USB2.0 standard (12 Mbps).
	SERVOPA	CK		CHARGE and PWR indicators, and one-digit seven-segment display
Displays/ Indicators	INDEXER	Modu	ule	Refer to the following manual for details. Σ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
				Continued on payt page

2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

	Item		Specification		
	Program Table Method		 Program table positioning in which steps are executed sequentially by commands given through contact input or serial communications Positioning in which station numbers are specified by commands given through contact input or serial communications 		
	Max. Number of Steps		256		
Operating Methods	N	lax. lumber of ables	256		
Methods	N	lax. lumber of tations	256		
	Serial Communicat Method	tions	Serial command by 1-channel ASCII code Communications specifications: RS-422/485 (50 m max.)		
	Other Function	ons	Registration (positioning by external signals), origin return		
Analog Mon	Analog Monitor (CN5)		Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)		
Dynamic Brake (DB)			Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.		
Regenerative	e Processing		Built-in Refer to the following manual for details. Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)		
Overtravel (0	OT) Prevention	1	Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal		
Protective F	unctions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.		
Utility Functi	Utility Functions		Gain adjustment, alarm history, jogging, origin search, etc.		
	Inputs		/HWBB1 and /HWBB2: Base block signals for Power Modules		
Safety	Output		EDM1: Monitors the status of built-in safety circuit (fixed output).		
Functions	Applicable Standards*2		ISO13849-1 PLe (Category 3), IEC61508 SIL3		
Applicable C	option Modules	S	Fully-Closed Module Note: You cannot use a Safety Module if you are using an INDEXER Module.		

^{*2.} Always perform risk assessment for the system and confirm that the safety requirements are met.

The product specifications are given below.

Item		Specification			
Control Met	hod	IGBT-based PWM control, sine wave current drive			
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)			
	Surrounding Air Temperature*1	0°C to 55°C			
	Storage Temperature	-20°C to 85°C			
	Surrounding Air Humidity	90% relative humidity max. (with no freezing or condensation)			
	Storage Humidity	90% relative humidity max. (with no freezing or condensation)			
	Vibration Resistance	4.9 m/s ²			
Environ- mental	Shock Resistance	19.6 m/s ²			
Conditions	Degree of Protection	IP10			
	Pollution Degree	 2 • Must be no corrosive or flammable gases. • Must be no exposure to water, oil, or chemicals. • Must be no dust, salts, or iron dust. 			
	Altitude*1	1,000 m max.			
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity noise, strong electromagnetic/magnetic fields, or radioactivity			
Applicable S	Standards	Refer to the following section for details. © Compliance with UL Standards, EU Directives, and Other Safety Standards on page xxx			
Mounting		Base-mounted or rack-mounted			
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed cortrol range must not cause the Servomotor to stop.)			
	Operficient of Operand Floring	±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)			
Perfor-	Coefficient of Speed Fluctua- tion*2	0% of rated speed max. (for a load fluctuation of ±10%)			
mance	tion .	$\pm 0.1\%$ of rated speed max. (for a temperature fluctuation of 25°C ± 25 °C)			
	Torque Control Precision (Repeatability)	±1%			
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)			
I/O Signala	Encoder Divided Pulse Output	Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.			
I/O Signals	Overheat Protection Input	Number of input points: 1 Input voltage range: 0 V to +5 V			
	•	Continued on next page.			

Continued from previous page.

Item				Specification		
	10011		Fixed Input	Allowable voltage range: 5 VDC ±5% Number of input points: 1 SEN (Absolute Data Request) signal Number of input points: 1		
I/O Signals	Sequence Input Signals	SERVO- PACKs	Input Signals for Which Alloca- tions Can Be Changed	Input method: Line driver or open collector Input Signals ·/DEC (Origin Return Deceleration Switch) signal ·/RGRT (Registration Input) signal ·CLR (Clear) signal Allowable voltage range: 24 VDC ±20% Number of input points: 7 Input method: Sink inputs or source inputs Input Signals ·/S-ON (Servo ON) signal ·/P-CON (Proportional Control) Signal ·P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals ·/ALM-RST (Alarm Reset) signal ·/P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals ·/SPD-D (Motor Direction) signal ·/SPD-A and /SPD-B (Internal Set Speed Selection) signals ·/C-SEL (Control Selection) signal ·/ZCLAMP (Zero Clamping) signal ·/INHIBIT (Reference Pulse Inhibit) signal ·/P-DET (Polarity Detection) signal ·/P-SEL (Reference Pulse Input Multiplication Switch) Signal ·/PSEL (Reference Pulse Input Multiplication Switch) Signal ·/BCC (Origin Return Deceleration Switch) signal ·/BCC (Origin Return Deceleration Switch) signal ·/START-STOP (Program Table Operation Start-Stop Input) signal ·/JOGN (Reverse Jog Input) signal ·/JOGN (Reverse Jog Input) signal ·/JOGN (Reverse Jog Input) signal ·/BOMS (Program Step Selection Input 0) signal ·/SEL0 (Program Step Selection Input 1) signal ·/SEL1 (Program Step Selection Input 1) signal ·/SEL2 (Program Step Selection Input 1) signal ·/SEL3 (Program Step Selection Input 1) signal ·/SEL4 (Program Step Selection Input 1) signal ·/SEL4 (Program Step Selection Input 1) signal ·/SEL5 (Program Step Selection Input 1) signal ·/JOG0 (Jog Speed Table Selection Input 2) signal ·/JOG1 (Jog Speed Table Selection Input 2) signal ·/JOG2 (Jog Speed Table Selection Input 2) signal ·/JOG2 (Jog Speed Table Selection Input 2) signal		

				Continued from previous page.			
	Item	1		Specification			
			Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm) signal			
I/O Signals	Sequence Output Signals	SERVO- PACKs	Output Signals That Can Be Allocated	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 6 (A photocoupler output (isolated) is used for three of the outputs.) (An open-collector output (non-isolated) is used for the other three outputs.) Output Signals • /COIN (Positioning Completion) Signal • /V-CMP (Speed Coincidence Detection) Signal • /TGON (Rotation Detection) Signal • /S-RDY (Servo Ready) signal • /CLT (Torque Limit Detection) Signal • /VLT (Speed Limit Detection) Signal • /WARN (Warning) Signal • /MARN (Warning) Signal • /PSELA (Reference Pulse Input Multiplication Switching Output) signal • /POUT0 (Programmable Output 0) signal • /POUT1 (Programmable Output 1) signal • /POUT1 (Programmable Output 2) signal • /POUT3 (Programmable Output 3) signal • /POUT3 (Programmable Output 4) signal • /POUT4 (Programmable Output 4) signal • /POUT4 (Programmable Output 4) signal • /POSRDY (Origin Return Completed Output) signal • /POSRDY (Origin Return Completed Output) signal • /POSRDY (Origin Return Completed Output) signal • A signal can be allocated and the positive and negative logic can be changed.			
	Digital	Interfaces		Digital Operator (JUSP-OP05A-1-E)			
	Operator Communi-	1:N Communications		Up to N = 15 stations possible for RS-422A port			
Communi- cations	cations (CN3)	Axis Address Set- ting		Set with parameters.			
oationo	USB	Interface		Personal computer (with SigmaWin+)			
	cations (CN7)	Communications Standard		Conforms to USB2.0 standard (12 Mbps).			
Displays/ Indicators	SERVOPAC	K		CHARGE indicator and five-digit seven-segment display			
Panel Opera	ator			Four push switches			
Operating	Program Ta	ble		 Program table positioning in which steps are executed in sequence with commands from contact inputs Positioning by specifying station numbers with commands from contact inputs 			
Methods	Maxii Steps	mum Numb	per of	256 steps (32 steps max. if input signals are used)			
	Other Func	tions		Registration (positioning with external signals) and origin returns.			
Analog Mon	itor (CN5)			Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)			

Continued from previous page.

		Item		Specification			
Dyn	amic Bra	ake (DB)		Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.			
Reg	jenerative	e Processing		Built-in (An external resistor must be connected to the SGD7S-470A to -780A.) Refer to the following catalog for details. Σ-7 Series AC Servo Drive Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)			
Ove	ertravel (C	OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal			
Pro	tective Fu	unctions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.			
Utili	ty Functi	ons		Gain adjustment, alarm history, jogging, origin search, etc.			
		Inputs		/HWBB1 and /HWBB2: Base block signals for Power Modules			
Safe Fun	ety ctions	Output		EDM1: Monitors the status of built-in safety circuit (fixed output).			
		Applicable Standards	*3	ISO13849-1 PLe (Category 3) and IEC61508 SIL3			
App	olicable C	option Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.			
		Soft Start Time Setting	9	0 s to 10 s (Can be set separately for acceleration and deceleration.)			
		Input Signal	Refer- ence Voltage	 Maximum input voltage: ±12 V (forward motor rotation for positive reference). 6 VDC at rated speed (default setting). Input gain setting can be changed. 			
			Input Imped- ance	Approx. 14 kΩ			
Controls	Speed Con- trol		Circuit Time Con- stant	30 μs			
		Internal Set Speed Control	Rota- tion Direc- tion Selec- tion	With Proportional Control signal			
			Speed Selec- tion	With Forward/Reverse External Torque Limit signals (speed 1 to 3 selection). Servomotor stops or another control method is used when both signals are OFF.			

Continued from previous page.

		Item	ı		Specification
		Feedforward Compensation			0% to 100%
		Output Signal Positioning Completed Width Setting			0 to 1,073,741,824 reference units
		Input Sig- nals		Refer- ence Pulse Form	One of the following is selected: Sign + pulse train, CW + CCW pulse trains, and two-phase pulse trains with 90° phase differential
	Posi-		Refer- ence pulses	Input Form	Line driver or open collector
Controls	tion Con- trol			Maxi- mum Input Fre- quency	 Line Driver Sign + pulse train or CW + CCW pulse trains: 4 Mpps Two-phase pulse trains with 90° phase differential: 1 Mpps Open Collector Sign + pulse train or CW + CCW pulse trains: 200 kpps Two-phase pulse trains with 90° phase differential: 200 kpps
Ö				Input Multiplica- tion Switching	1 to 100 times
			Clear Signal		Position deviation clear Line driver or open collector
	Torque	en Vo Input Signal Inp		Refer- ence Voltage	 Maximum input voltage: ±12 V (forward torque output for positive reference). 3 VDC at rated torque (default setting). Input gain setting can be changed.
	Con- trol			Input Imped- ance	Approx. 14 k Ω
			Circuit Time Constant		16 μs

^{*1.} If you combine a Σ-7-Series SERVOPACK with a Σ-V-Series Option Module, the following Σ-V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\label{eq:coefficient} \mbox{Coefficient of speed fluctuation} = \frac{\mbox{No-load motor speed - Total-load motor speed}}{\mbox{Rated motor speed}} \times 100\%$

^{*2.} The coefficient of speed fluctuation for load fluctuation is defined as follows:

^{*3.} Always perform risk assessment for the system and confirm that the safety requirements are met.

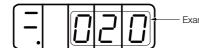
This chapter provides information on the meaning of, causes of, and corrections for alarms and warnings.

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3.1.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if $\Box\Box\Box\Box\Box$ appears on the panel display, the display will indicate a SERVOPACK system error. Replace the SERVOPACK.



Example: If an A.020 alarm occurs, "020" will flash on the display.

3.1.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, alarm reset possibility, and alarm code output in order of the alarm numbers.

Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

List of Alarms

Alarm			Servo- motor	Alarm Reset	Alarm Code Output		
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.020	Parameter Checksum Error	There is an error in the parameter data in the SER-VOPACK.	Gr.1	No	Н	Н	Н
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.022	System Checksum Error	There is an error in the parameter data in the SER-VOPACK.	Gr.1	No	Н	Н	Н
A.024	System Alarm	An internal program error occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.025	System Alarm	An internal program error occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes	Н	Н	Н

3.1.2 List of Alarms

Continued from previous page.

			Co	ntinued fr			
Alarm	Alexandra Na	Alexandra Maria	Servo- motor	Alarm Reset	_	arm Co Output	
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No	Н	Н	Н
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Res- olution) is outside of the set- ting range or does not satisfy the setting conditions.	Gr.1	No	Н	Н	Н
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No	Н	Н	Н
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No	Н	Н	Н
A.050	Combination Error	The capacities of the SER-VOPACK and Servomotor do not match.	Gr.1	Yes	Н	Н	Н
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No	Н	Н	Н
A.0b0	Invalid Servo ON Com- mand Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes	Н	Н	Н
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No	L	Н	Н
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes	L	L	Н
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes	L	L	Н
A.330	Main Circuit Power Supply Wiring Error	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	Gr.1	Yes	L	L	Н
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes	Н	Н	L
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes	Н	Н	L
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes	L	Н	L
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes	L	Н	L
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes	L	Н	L
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes	L	Н	L

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	Alarm Name	Alarm Meaning	Servo- motor	Alarm	Alarm Coo Output				
Alarm Number			Stop- ping Method	Reset Possi- ble?	ALO1				
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes	L	Н	L		
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes	L	L	L		
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes	L	L	L		
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes	L	L	L		
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L	L	L		
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes	L	L	L		
A.7A2	Internal Temperature Error 2 (Power Board Tempera- ture Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes	L	L	L		
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No	L	L	L		
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVO-PACK stopped.	Gr.1	Yes	L	L	L		
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No	Н	Н	Н		
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No	Н	Н	Н		
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes	Н	Н	Н		
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No	Н	Н	Н		
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No	Н	Н	Н		
A.860	Encoder Overheated	The internal temperature of the rotary encoder or linear encoder is too high.	Gr.1	No	Н	Н	Н		
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No	Н	Н	Н		

3.1.2 List of Alarms

Continued from previous page.

Alarm	Alarm Name		Servo- motor	Alarm Reset	Alarm Code Output		ode
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes	Н	Н	Н
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes	Н	Н	Н
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.b10	Speed Reference A/D Error	An error occurred in the A/D converter for the speed reference input.	Gr.2	Yes	Н	Н	Н
A.b11	Speed Reference A/D Data Error	An error occurred in the A/D conversion data for the speed reference.	Gr.2	Yes	Н	Н	Н
A.b20	Torque Reference A/D Error	An error occurred in the A/D converter for the torque reference input.	Gr.2	Yes	Н	Н	Н
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No	Н	Н	Н
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н

Continued from previous page.

Alarm	Alarm Nama	Alarm Maaning	Servo- motor	Alarm Reset	Ala	rm Co Outpu	de
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes	L	Н	L
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L
A.C90	Encoder Communications Error	Communications between the encoder and SERVO-PACK is not possible.	Gr.1	No	L	Н	L
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No	L	Н	L
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No	L	Н	L
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No	L	Н	L
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No	L	Н	L
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No	L	Н	L
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No	L	Н	L
A.d00	Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes	L	L	Н
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes	L	L	Н
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if reference pulses are input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н

3.1.2 List of Alarms

Continued from previous page.

Alarm			Servo- motor	Alarm Reset	Ala	rm Co Outpu	ode
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes	L	L	Н
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No	L	L	Н
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No	Н	L	L
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No	Н	L	L
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was con- nected.	Gr.1	No	Н	L	L
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No	Н	L	L
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No	Н	L	L
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No	Н	L	L
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*							
FL-2*		A					
FL-3*	System Alarm	An internal program error occurred in the SERVO-	_	No	Ur	ndefine	ed.
FL-4*		PACK.					
FL-5* FL-6*							
CPF00	Digital Operator Commu- nications Error 1	Communications were not possible between the Digital					
CPF01	Digital Operator Communications Error 2	Operator (model: JUSP- OP05A-1-E) and the SERVO- PACK (e.g., a CPU error occurred).	-	No	Ur	ndefine	ed.

^{*} These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER- VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference	
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-	
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-	
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_	
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1	
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-	
ting Error (A parameter set- ting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-	
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1	
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1	
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1	
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1	
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number:	Possible Cause	Confirmation	Continued from pro-	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
allowable cur- rent.)	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.101: Motor Overcurrent Detected (The current to the motor exceeded the allowable current.)	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3. Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit. Note: If an External Regenerative Resistor or Regenerative Resistor Or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:		-	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	_
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name		Committation		TOTOTOTO
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
A.410: Undervoltage (Detected in the main circuit power supply	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
section of the SERVOPACK.)	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over-speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning,	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
Easy FFT, or the tuning-less function.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
A.710: Instantaneous	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number			Continued from pr	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A4.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A9.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.		The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	-	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data Alarm	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	-
(Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
۸ 850۰	The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860: Encoder Over- heated (Detected at the encoder.)	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	-
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SERVOPACK.	_
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	_

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Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	_
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	_
A.b10: Speed Reference	A malfunction occurred in the speed reference input section.	_	Reset the alarm and restart operation.	*1
A'D Error (Detected when the servo is turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A h44.	A malfunction occurred in the speed reference input section.	_	Reset the alarm and restart operation.	*1
A.b11: Speed Reference A/D Data Error	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b20: Torque Reference A/D Error (Detected when the servo is turned ON.)	A malfunction occurred in the reading section for the torque reference input.	_	Reset the alarm and restart operation.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3.1.3 Troubleshooting Alarms

Continued from previous page				evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Communications Position Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	_
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

Continued from previous page.

Alarm Number: Possible Cause Confirmation Correction Reference Alarm Name Noise entered on the Implement countermeasignal line from the sures against noise for the encoder. encoder wiring. Reduce machine vibra-Excessive vibration or Check the operating tion. shock was applied to conditions. Correctly install the Serthe encoder. vomotor. Turn the power supply to A.C92: the SERVOPACK OFF and Encoder Commu-A failure occurred in ON again. If an alarm still nications Timer occurs, the Servomotor the encoder. Error may be faulty. Replace the Servomotor. Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still A failure occurred in the SERVOPACK. occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Turn the power supply to the SERVOPACK OFF and A failure occurred in ON again. If an alarm still the encoder. occurs, the Servomotor may be faulty. Replace the A.CA0: Servomotor. Encoder Parame-Turn the power supply to

ter Error

A failure occurred in the SERVOPACK.

Continued on next page.

the SERVOPACK OFF and ON again. If an alarm still

occurs, the SERVOPACK may be faulty. Replace the

SERVOPACK.

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
Alaili Naile	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	-
	The Encoder Cable is too long and noise entered on it.	_	The encoder cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

			Continued from pre	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
A.d00: Position Devia-	The frequency of the position reference pulse is too high.	Reduce the reference pulse frequency and try operating the SERVO- PACK.	Reduce the position reference pulse frequency or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
tion Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO- PACK.	Apply smoothing, i.e., by using Pn216 (Position Reference Acceleration/ Deceleration Time Constant).	*1
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if reference pulses are input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10: Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	_
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
	There is a faulty connection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number: 5 11 0 0 11 12 12 12 12 12 12 12 12 12 12 12 12				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.E74: Unsupported	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
Communications Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_
CPF01: Digital Operator	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
Communications Error 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

^{*1.} Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

Maintenance

*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min⁻¹] × Encoder resolution
$$\leq$$
 Pn20E Pn210

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution Approx. 3.66×10^{12} \geq Pn20E

*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min⁻¹]
$$\times$$
 1/3 \times $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

- *4. Refer to the following manual for details.
 - Ω Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)
- *5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.1.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

3.1.5 List of Warnings

The list of warnings gives the warning name, warning meaning, and warning code output in order of the warning numbers.

Warning	Warning Warning Name Meaning		Warning Code Output		
Number			ALO1	ALO2	ALO3
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: (Pn520 × Pn51E/100)	Н	Н	Н
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	Н	Н	Н
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	Н	Н
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	L	Н	Н
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Н	L	Н
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Н	L	Н
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Н	L	Н
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	L	L	Н
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н
A.941	Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	Н	Н	L
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SER-VOPACK.	Н	Н	L
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Н	L	L

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Warning Number	Warning Name	Meaning Warning C Output		ode	
Number			ALO1	ALO2	ALO3
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Н	L	Н

- Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).
 - 2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	- (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

3.1.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
	The frequency of the position refer- ence pulse is too high.	Reduce the reference pulse frequency and try operating the SERVO- PACK.	Reduce the position reference pulse frequency or the reference acceleration rate, or reconsider the electronic gear ratio.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Apply smoothing, i.e., by using Pn216 (Position Reference Acceleration/ Deceleration Time Constant).	*
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number:	Possible Cause	Confirmation	Correction	Reference
Warning Name		Oominiation	Correction	Helefelice
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	*
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

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Warning Number:	Possible Cause	Confirmation	Continued from pre	Reference
Warning Name	1 Ussible Gause		Correction	ricicience
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

3.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
Overheat Warning	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.941: Change of Parame- ters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	_	Turn the power supply to the SERVOPACK OFF and ON again.	-
	The speed ripple	-	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SER-VOPACK.	_	Set Pn423 to n. \(\sigma\) (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
tion bisagreement		-	Set Pn423 to n. \(\sum \subseteq \subseteq 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	-	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

3.1.6 Troubleshooting Warnings

Continued from previous page.

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*

^{*} Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

3.1.7

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage between the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\)\\ according to the type of the encoder that is being used.	*
	No speed or position reference is input.	Turn OFF the power supply to the servo system. Check the allocation status of the input signals.	Allocate an input signal so that the speed and position references are input correctly.	*
	There is a mistake in the input signal allocations (Pn50A to Pn50D, Pn515, and Pn516).	Check the input signal allocations (Pn50A to Pn50D, Pn515, and Pn516).	Correctly allocate the input signals (Pn50A to Pn50D, Pn515, and Pn516).	*
	The /S-ON (Servo ON) signal is OFF.	Check the settings of Pn50A = n.□□□X (Input Signal Allocation Mode) and Pn50A =n.□□X□ (Servo ON (/S-ON) Signal Mapping).	Set Pn50A = n.□□XX correctly and turn ON the /S-ON signal.	*
	The function setting of the /P-CON (Proportional Control) signal is not correct.	Check the setting of Pn000 = n.□□X□ (Control Method Selection).	Set the parameter to match the application.	*
	The SEN input is OFF.	Check the ON/OFF status of the SEN input.	If you are using an absolute encoder, turn ON the SEN signal.	*

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Problem	Possible Cause	Confirmation	Correction	Reference
	The reference pulse mode selection is not correct.	Check the setting of Pn200 =n.□□□X (Reference Pulse Form) and the reference pulse form.	Set Pn200 =n. \(\begin{align*} \pi \pi \) so that is agrees with the reference pulse form.	*
	Speed control: The speed reference input is not appropriate.	Check between the speed reference input (V-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
	Torque control: The torque reference input is not appropriate.	Check between the torque reference input (T-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
	Position control: The reference pulse input is not appropriate.	Check the setting of Pn200 =n.□□□X (Reference Pulse Form) and the sign and pulse signals.	Correctly set the control method and input method.	*
	The /CLR (Position Deviation Clear) input signal has not been turned OFF.	Check the /CLR signal (CN1-14 and CN1-15).	Turn OFF the /CLR signal.	*
Servomotor Does Not Start	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	Turn ON the FSTP signal. If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	_
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	- next page.

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	Speed control: The speed reference input is not appropriate.	Check between the speed reference input (V-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
Servomotor Moves with-	Torque control: The torque reference input is not appropriate.	Check between the torque reference input (T-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
out a Refer- ence Input	The speed reference offset is not correct.	The SERVOPACK offset is adjusted incorrectly.	Adjust the SERVO- PACK offset.	*
	Position control: The reference pulse input is not appropriate.	Check the setting of Pn200 =n.□□□X (Reference Pulse Form) and the sign and pulse signals.	Correctly set the control method and input method.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

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Possible Cause	Confirmation	Continued from pre	Reference
1 Ossible Gause	Commination		Helefelice
The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	_
Turn OFI ply to the Check to misalign pling.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
Secure.	Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	_
Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	_
Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	-
Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	_
	considerably while performing the tuning-less function with the default settings. The machine mounting is not secure. The machine mounting is not secure. The bearings are defective. There is a vibration source at the driven machine. Noise interference occurred because of incorrect I/O signal cable specifications. Noise interference occurred because an I/O signal cable is too long. Noise interference occurred because of incorrect Encoder Cable specifications.	The Servomotor vibrated considerably while performing the tuning-less function with the default settings. The machine mounting is not secure. Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws. Turn OFF the power supply to the servo system. Check to see if the coupling. Turn OFF the power supply to the servo system. Check to see if the coupling is balanced. Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings. Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings. Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts. Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm². Noise interference occurred because of incorrect Encoder Cable specifications. Noise interference occurred because of incorrect Encoder Cable specifications. Noise interference occurred because the Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm². Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables. Turn OFF the power supply to the servo system. Check the length of the Encoder Cable is damaged.	The Servomotor vibrated considerably while performing the tuning-less function with the default settings. Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling. Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced. Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced. Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced. Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced. Turn OFF the power supply to the servo system. Check for noise and wibration around the bear ings. Turn OFF the power supply to the servo system. Check for noise and the driven machine. There is a vibration source at the driven machine. Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts. Turn OFF the power supply to the servo system. Check the I/O signal cable is too long. Noise interference occurred because of incorrect I/O signal cable. Is too long. Noise interference occurred because of incorrect Encoder Cable specifications. Noise interference occurred because of incorrect Encoder Cable specifications. Noise interference occurred because of incorrect encoder Cable specifications. Noise interference occurred because of incorrect encoder Cable specifications. Noise interference occurred because of incorrect encoder Cable is too long. Noise interference occurred because of incorrect encoder Cable is too long. Noise interference occurred because of incorrect encoder Cable is too long. Noise interference occurred because of incorrect encoder Cable is too long. Noise interference occurred because of incorrect encoder Cable is too long. Noise interference occurred because the Encoder Cable is too long.

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	_
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	_
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	_
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Campanatan	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	_

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Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Large Motor Speed	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	_
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	-
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
troller when the power was turned OFF is dif- ferent from the posi- tion when	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
the power was next turned ON.)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Absolute	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Encoder Position Deviation Error (The position that was saved in the host con- troller when the power was turned OFF is dif- ferent from the posi-	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	_
tion when the power was next turned ON.)	Host Controller Multiturn Data or Absolute Encoder	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	_
	Position Data Reading Error	Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement countermeasures against noise and then perform parity checks again for the multiturn data or absolute encoder position data.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
		Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	_
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
Overtravel Occurred		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
	Reverse Drive Prohibit) sig- nal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Overtravel	The selection of the Servo-	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
Occurred	motor stopping method is not correct.	Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
Improper Stop Posi-	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	-
tion for Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
Position	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Deviation (without Alarm)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	_
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Position Deviation (without Alarm)	If reference pulse input multiplication switching is being used, noise may be causing the I/O signals used for this function (/PSEL and /PSELA) to be falsely detected.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	-

^{*} Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

3.2.1 Alarm Displays

3.2

FT82 SERVOPACK with MECHATROLINK-II Communications References

3.2.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if $\Box\Box$ - $\Box\Box$ appears on the panel display, the display will indicate a SERVOPACK system error. Replace the SERVOPACK.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

3.2.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

List of Alarms

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No

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Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.XDDD (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.0b0	Invalid Servo ON Com- mand Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730		When the dynamic brake was applied, the rota-		
A.731	Dynamic Brake Overload	tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes

3.2.2 List of Alarms

Continued from previous page.

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No
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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SER-VOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
A.E02	MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHA-TROLINK communications with the SERVO-PACK.	Gr.1	Yes
A.E40	MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
A.E50*	MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHA-TROLINK communications.	Gr.2	Yes

3.2.2 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.E51	MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Commu- nications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was connected.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
FL-1*				
FL-2*				
FL-3*	System Alarm	An internal program error occurred in the SER-		No
FL-4*	System Alarm	VOPACK.	_	INO
FL-5*				
FL-6*				
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and	_	No
CPF01	Digital Operator Communications Error 2	the SERVOPACK (e.g., a CPU error occurred).		INO

^{*} These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

Troubleshooting Alarms

3.2.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER- VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter setting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	_	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	_	Reduce the total amount of bank data to 64 or less.	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the following condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction Correction	Reference
Alarm Name	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Al Ni			Continued from pro	evious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	_
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
A.300:	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3. Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
Regeneration Error	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit. Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:		-	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	_
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
A.410: Undervoltage (Detected in the main circuit power supply	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
section of the SERVOPACK.)	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over-speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.521: Autotuning Alarm (Vibration was detected while executing the	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuningless level settings.	*1
custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
A.710: Instantaneous Overload	Operation was per- formed that exceeded the overload protec- tion characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Tempera- ture Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7AO	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
assany	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
۸ 950،	The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	_
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	_
A.860: Encoder Over- heated (Detected at the encoder.)	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	-
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6b: MECHATROLINK Communications ASIC Error 2	A malfunction occurred in the MECHATROLINK communications section due to noise.	-	Implement the following countermeasures against noise. • Check the MECHA-TROLINK Communications Cable and FG wiring. • Attach a ferrite core to the MECHATROLINK Communications Cable.	_
AGIO EIIGI Z	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	1 00012.10 04400	- Committee of	Turn the power supply to	.1010101100
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	_	the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turried Orv.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	-

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C80: Encoder Clear	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Error or Multiturn Limit Setting Error	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Communications Position Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder. Continued o	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	_
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	-
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
A.CC0: Multiturn Limit Disagreement	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
A -100-	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	_
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Continued from previous pa				
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10: Motor-Load Position Deviation Overflow	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E02: MECHATROLINK Internal Synchro- nization Error 1	The MECHATROLINK transmission cycle fluctuated.	_	Remove the cause of transmission cycle fluctuation at the host controller.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	-
A.E50*5: MECHATROLINK Synchronization Error	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3.2.3 Troubleshooting Alarms

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Alarm Number: Continued from previous page				evious page.
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E51: MECHATROLINK Synchronization	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
Failed	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the MECHA-TROLINK wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring. Correctly connect the ter- minator.	_
A.E60*5: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
Interval Error in MECHATROLINK Transmission Cycle	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E71: Safety Option Module Detec- tion Failure	There is a faulty connection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	_
	The Safety Option Module was discon- nected.	-	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	_	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	-
A.E74: Unsupported	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.Ed1: Command Execution Timeout	A timeout error occurred for a	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	_
	MECHATROLINK command.	For fully-closed loop control, check the status of the external encoder when the command is executed.	Execute the SENS_ON command only when an external encoder is connected.	_

3.2.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
(The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm				
FL-2*5: System Alarm FL-3*5:			Turn the power supply to	
System Alarm	A failure occurred in	ON again. If an alarm occurs, the SERVOP	the SERVOPACK OFF and ON again. If an alarm still	_
FL-4*5: System Alarm	the SERVOPACK.		occurs, the SERVOPACK may be faulty. Replace the	
FL-5*5: System Alarm			SERVOPACK.	
FL-6*5: System Alarm				
CPF00: Digital Operator	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
Communications Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

^{*1.} Refer to the following manual for details. Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual No.: SIEP S800001 27)

*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min⁻¹] × Encoder resolution
$$6 \times 10^5$$
 \leq Pn20E Pn210

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution Approx. 3.66×10^{12} \geq Pn20E

*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min⁻¹]
$$\times$$
 1/3 \times $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

*4. Refer to the following manual for details.

Ω Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.2.4 Warning Displays

3.2.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

3.2.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: $(Pn520 \times Pn51E/100)$
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 \times Pn528/100)
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).
A.942	Speed Ripple Com- pensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVOPACK.
A.94A	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.
A.94b	Data Setting Warning 2 (Out of Range)	The command data is out of range.
A.94C	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.
A.94d	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.
	Data Setting Warning 5	A latch mode error was detected.

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Continued from previous page.

Warning Number	Warning Name	Meaning
A.95A	Command Warning 1 (Unsatisfied Com- mand Conditions)	A command was sent when the conditions for sending a command were not satisfied.
A.95b	Command Warning 2 (Unsupported Command)	An unsupported command was sent.
A.95d	Command Warning 4 (Command Interference)	There was command interference, particularly latch command interference.
A.95E	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.
A.95F	Command Warning 6 (Undefined Command)	An undefined command was sent.
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHATROLINK communications.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.9A0	Overtravel	Overtravel was detected while the servo was ON.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.

- Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).
 - 2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	_ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

3.2.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

3.2.6 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso- lute encoder is con- nected.)	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3.2.6 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The sensor attached to the machine is faulty.	-	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. \(\sigma\) \(\sigma\) (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
tion bisagreement	tion information stored in the SER- VOPACK.	-	Set Pn423 to n. \(\sum \sup \sup 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	Use the correct parameter number.	*
A.94b: Data Setting Warning 2 (Out of Range)	The set command data was clamped to the minimum or maximum value of the setting range.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	*
A.94E: Data Setting Warn- ing 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value.	*
A.95A: Command Warning 1 (Unsatisfied Com- mand Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warning.	Do not send unsupported commands.	*

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latchrelated commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	Send the command after the conditions are satisfied.	*
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warning.	Do not send undefined commands.	*
	The MECHA- TROLINK Com- munications Cable is not wired cor- rectly.	Check the wiring conditions.	Correct the MECHA- TROLINK communications cable wiring. Or, connect a terminator to the final sta- tion.	*
A.960: MECHATROLINK Communications Warning	A MECHA- TROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	-	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

3.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Over- travel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	-	Replace the part. Contact your Yaskawa representative for replacement.	*

^{*} Refer to the following manual for details. Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

3.2.7

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n.□X□□ (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\)\\ according to the type of the encoder that is being used.	*
	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*

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Problem	Possible Cause	Confirmation	Continued from pre	Reference
1 TODIETTI	1 000ible Oddge	Committation	Turn ON the FSTP	, loidielide
Servomotor Does Not Start	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	signal. If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	-
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

	Continued from previous page Possible Cause Confirmation Correction Reference				
Problem	Possible Cause	Confirmation	Correction	Reference	
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*	
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-	
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-	
	Securio.	Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	-	
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-	
Abnormal Noise from	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-	
Servomotor	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-	
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-	
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-	
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-	
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	_	

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	_
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Samamatan	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Large Motor Speed Overshoot on Starting and Stop- ping	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	_
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	_
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Absolute	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Encoder Position Deviation Error (The position that was	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	_
saved in the host con- troller when the power was turned	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
OFF is dif- ferent from the posi-	Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check the error detection section of the host controller.	Correct the error detection section of the host controller.	-
tion when the power was next turned ON.)		Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
		Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	-

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Problem	Possible Cause	Confirmation	Correction	Reference
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	_
	Drive Prohibit) signal was input.	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
Overtravel	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
Occurred	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
		Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
		Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	_
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	_	Install the overtravel limit switch at the appropriate position.	-
Position Deviation (without Alarm)	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment. Continued or	_

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
Position	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Deviation (without Alarm)	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
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Problem	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	-
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	-

^{*} Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

3.3.1 Alarm Displays

3.3

FT82 SERVOPACK with MECHATROLINK-III Communications References

3.3.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if $\Box\Box\Box\Box\Box$ appears on the panel display, the display will indicate a SERVOPACK system error. Replace the SERVOPACK.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

3.3.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

List of Alarms

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.0b0	Invalid Servo ON Com- mand Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730		When the dynamic brake was applied, the rota-		.,
A.731	Dynamic Brake Overload	tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes

3.3.2 List of Alarms

Continued from previous page.

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Tempera- ture Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SER-VOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
A.E02	MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHA-TROLINK communications with the SERVO-PACK.	Gr.1	Yes
A.E40	MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
A.E41	MECHATROLINK Communications Data Size Setting Error	The setting of the MECHATROLINK communications data size is not correct.	Gr.2	Yes

3.3.2 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.E42	MECHATROLINK Station Address Setting Error	The setting of the MECHATROLINK station address is not correct.	Gr.2	No
A.E50*	MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes
A.E51	MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Communications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E63	MECHATROLINK Syn- chronization Frame Not Received	Synchronization frames were continuously not received during MECHATROLINK communications.	Gr.2	Yes
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was connected.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
FL-1*				
FL-2*				
FL-3*	System Alarm	An internal program error occurred in the SER-	_	No
FL-4*		VOPACK.		.,0
FL-5*				
FL-6*				
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and	_	No
CPF01	Digital Operator Communications Error 2	the SERVOPACK (e.g., a CPU error occurred).		IVO

^{*} These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

Troubleshooting Alarms

3.3.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER-VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter set- ting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.XDDD (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	_	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	_	Reduce the total amount of bank data to 64 or less.	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	-	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	The Main Circuit Cable is not wired		23334.511	
	correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable current.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
A.300:	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3. Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
Regeneration Error	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit. Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	_
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:		-	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	_
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name		Commination		TIGIGIGIIGE
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
A.410: Undervoltage (Detected in the main circuit power supply	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
section of the SERVOPACK.)	The SERVOPACK fuse is blown out.	_	Replace the SERVO-PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511: Encoder Output	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning,	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
Easy FFT, or the tuning-less function.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
A.710: Instantaneous	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
4.740	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	-	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Cir- cuit Cable or by ground- ing the encoder.	-
۸ 850۰	The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	_
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	_
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	_	_	Continued from pr	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	-
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	-
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Converter Unit.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6b: MECHATROLINK Communications	A malfunction occurred in the MECHATROLINK communications section due to noise.	_	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
ASIC Error 2	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turried ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C80: Encoder Clear	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Error or Multiturn Limit Setting Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	_
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Communications Position Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	_
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	- n next page.

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed- back Option	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
Module Communications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
A .100	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10: Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E02:	The MECHATROLINK transmission cycle fluctuated.	-	Remove the cause of transmission cycle fluctuation at the host controller.	-
MECHATROLINK Internal Synchro- nization Error 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	-
A.E41: MECHATROLINK Communications Data Size Setting Error	The number of transmission bytes set on DIP switch S3 is not correct.	Check the MECHA-TROLINK communications data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E42: MECHATROLINK	The station address is outside of the setting range.	Check rotary switches S1 and S2 to see if the station address is between 03 and EF.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
Station Address Setting Error	Two or more stations on the communications network have the same address.	Check to see if two or more stations on the communications network have the same address.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	
A.E50*5:	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	-
MECHATROLINK Synchronization Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E51: MECHATROLINK Synchronization Failed	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the MECHA-TROLINK wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring. Correctly connect the ter- minator.	-
A.E60*5: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Division of the continued from previous particles and the continued from the contin				Vicuo pago.
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
Interval Error in MECHATROLINK Transmission Cycle	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the Servomotor wiring.	Correct the MECHA- TROLINK Communica- tions Cable wiring.	_
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHA- TROLINK Communica- tions Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	There is a faulty connection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_
A.E72: Feedback Option Module Detec- tion Failure	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
	The Feedback Option Module was discon- nected.	-	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	_	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pre	Reference
A.E74: Unsupported	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	_
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	_
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	_
A 500:	A failure occurred in the SERVOPACK.	-	Replace the SERVO-PACK.	-
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.Ed1:	A timeout error occurred for a	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	_
Command Execution Timeout	MECHATROLINK command.	For fully-closed loop control, check the sta- tus of the external encoder when the com- mand is executed.	Execute the SENS_ON command only when an external encoder is connected.	-
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.)	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	_
	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications Error 1	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

*1. Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min⁻¹]
$$\times$$
 Encoder resolution \leq Pn20E Pn210

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution
Approx. 3.66×10^{12} \geq Pn20E
Pn210

*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min⁻¹]
$$\times$$
 1/3 \times $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

*4. Refer to the following manual for details.

Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.3.4 Warning Displays

3.3.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

3.3.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning	Resetting
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: (Pn520 × Pn51E/100)	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: $(Pn526 \times Pn528/100)$	Required.
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	Required.
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Required.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Required.
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Required.
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	Required.
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVOPACK.	Required.
A.94A	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.	Automatically reset.*
A.94b	Data Setting Warning 2 (Out of Range)	The command data is out of range.	Automatically reset.*
A.94C	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.	Automatically reset.*

Continued from previous page.

Warning Number	Warning Name	Meaning	Resetting
A.94d	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.	Automatically reset.*
A.94E	Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Required.
A.95A	Command Warning 1 (Unsatisfied Command Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.*
A.95b	Command Warning 2 (Unsupported Com- mand)	An unsupported command was sent.	Automatically reset.*
A.95d	Command Warning 4 (Command Interference)	There was command interference, particularly latch command interference.	Automatically reset.*
A.95E	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.	Automatically reset.*
A.95F	Command Warning 6 (Undefined Command)	An undefined command was sent.	Automatically reset.*
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHA-TROLINK communications.	Required.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.97A	Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	Automatically reset.*
A.97b	Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the allowable setting range.	Automatically reset.*
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Required.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Required.

^{*} If using the commands for the MECHATROLINK-III standard servo profile, the warning will automatically be cleared after the correct command is received. If you use MECHATROLINK-II-compatible profile commands, send an ALM_CLR (Clear Warning or Alarm) command to clear the warning.

Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).

2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.

However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960 and A.97A to A.97b	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

3.3.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

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Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the over- load warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
A.911: Vibration	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

3.3.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Continued from pre	Reference
waniing Name	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso- lute encoder is con- nected.)	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3.3.6 Troubleshooting Warnings

Continued from previous page.

Warning Number:			Continued from pre	, ,
Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	-	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n.□□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	aje
tion is store	tion information stored in the SER- VOPACK.	_	Set Pn423 to n. \(\sum \sup 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	Use the correct parameter number.	*
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set command data was clamped to the minimum or maximum value of the setting range.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	*
A.94E: Data Setting Warn- ing 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value. (The applies when using the MECHATROLINK-II-compatible profile.)	*
A.95A: Command Warning 1 (Unsatisfied Command Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*

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Warning Number: Course Confirmation Correction Reference				
Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warning.	Do not send unsupported commands.	*
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latchrelated commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	Send the command after the conditions are satisfied.	*
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warning.	Do not send undefined commands.	*
	The MECHA- TROLINK Com- munications Cable is not wired cor- rectly.	Check the wiring conditions.	Correct the MECHA-TROLINK communications cable wiring.	*
A.960: MECHATROLINK Communications Warning	A MECHA- TROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHA-TROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	-	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3.3.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation Correction		Reference
A.97A: Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	_	Send the command after the command conditions are satisfied.	-
A.97b: Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the setting range.	_	Set the command data within the setting ranges.	-
A.9A0: Overtravel (Over- travel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*

^{*} Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

3.3.7

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connec- tor (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n.□X□□ (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n.□X□□ according to the type of the encoder that is being used.	*
	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
			Turn ON the FSTP	
Servomotor Does Not Start	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	signal. • If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

Continued from previous page. Possible Cause Confirmation Correction Reference Problem Reduce the load so that the moment of inertia ratio or mass The Servomotor vibrated ratio is within the allowconsiderably while perform-Check the waveform of able value, or increase ing the tuning-less function the motor speed. the load level or reduce with the default settings. the rigidity level in the tuning-less level settings. Turn OFF the power supply to the servo system. The machine mounting is not Tighten the mounting Check to see if there are secure. screws. any loose mounting screws. Turn OFF the power supply to the servo system. Check to see if there is Align the coupling. misalignment in the cou-The machine mounting is not pling. secure. Turn OFF the power supply to the servo system. Balance the coupling. Check to see if the coupling is balanced. Turn OFF the power supply to the servo system. Replace the Servomo-The bearings are defective. Check for noise and tor. vibration around the bearings. Abnormal Turn OFF the power sup-Noise from ply to the servo system. Servomotor There is a vibration source at Consult with the Check for any foreign the driven machine. matter, damage, or deformachine manufacturer. mation in the machine's moving parts. Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they sat-Noise interference occurred isfy specifications. Use Use cables that satisfy because of incorrect I/O sigshielded twisted-pair wire the specifications. nal cable specifications. cables or screened twisted-pair cables with conductors of at least 0.12 mm². Turn OFF the power sup-Noise interference occurred The I/O signal cables ply to the servo system. because an I/O signal cable must be no longer than Check the lengths of the 3 m. is too long. I/O signal cables. Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable Noise interference occurred

satisfies the specifica-

tions. Use a shielded

twisted-pair wire cable or a screened twisted-pair

cable with a conductors of at least 0.12 mm².

because of incorrect Encoder

Cable specifications.

Continued on next page.

Use cables that satisfy

the specifications.

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Abnormal Noise from	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	-	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

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Droblom	Problem Possible Cause Confirmation Correction F					
Problem	Possible Cause	Check to see if the servo	Perform autotuning	Reference		
Large Motor Speed	The servo gains are not balanced.	gains have been correctly tuned.	without a host reference.	*		
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	_		
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_		
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-		
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-		
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-		
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*		
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-		
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-		
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-		
troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-		
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-		
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-		

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Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Position Deviation Error (The position that was	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
saved in the host con- troller when the power was turned	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
OFF is dif- ferent from the posi-		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	_
tion when the power was next turned ON.)	Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
		Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	-
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
Overtravel Occurred		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-

Confirmation

Reference

Correction

If another signal is allo-

Overtravel	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□. Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead. If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	. *
Occurred	The selection of the Servo- motor stopping method is	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
	not correct.	Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	-
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Position Deviation	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
(without Alarm)	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	_
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	_
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Con-	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit	-

encoder or Serial Con-

verter Unit.

wiring.

Problem

Possible Cause

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
		Turn OFF the power sup-		
	The encoder was subjected to excessive vibration or shock.	ply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	_
Position Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	_
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	_
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	_

^{*} Refer to the following manual for details.

 $[\]Sigma$ -7-Series Σ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

3.4.1 Alarm Displays

If an error occurs in the SERVOPACK, the status is displayed as described below.

◆ Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following section for details. Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Indicators	Green indicator: Remains unlit Red indicator: Remains lit Refer to the following section for details. Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Digital Operator	The alarm code is displayed at the top left of the screen.
Response to the Alarm or Warning Read Command (ALM)	Alarm code
Response to the Most Recent Error Read Command (ERR)	No change
ALM Signal	The alarm signal turns ON. (The photocoupler turns OFF.)
/WARN Signal	No change

3.4.2 List of Alarms

The alarms when the INDEXER Module is combined with a Command Option Attachable-type SERVOPACK are given in the following table.

			Servo-	Alarm	Alarm	Code C	Output
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No			
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.024	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No			
A.025	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes			
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No			
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No			
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No			
A.044	Semi-Closed/Fully- Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No			
A.04A	Parameter Setting Error 2	There is an error in setting of parameters reserved by the system.	Gr.1	No			
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes	Н	Н	Н
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No			
A.0b0	Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes			
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No		''	''
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes			
A.320	Regenerative Over- load	A regenerative overload occurred.	Gr.2	Yes			
A.330	Main Circuit Power Supply Wiring Error	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	Gr.1	Yes		L	Н
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes			
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes	- H	Н	L

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping	Alarm Reset Possi-	Alarm	Code C			
			Method	ble?					
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes	L	Н	L		
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes					
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes					
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes					
A.550	Maximum Speed Set- ting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes					
A.710	Instantaneous Over- load	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes		L	L		
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes					
A.730	Dynamic Brake Over-	When the dynamic brake was applied, the rotational or linear kinetic energy	Gr.1	Yes					
A.731	load	exceeded the capacity of the dynamic brake resistor.	GI. I	162					
A.740	Inrush Current Limit- ing Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L				
A.7A1	Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes					
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes					
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No					
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes					
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No	Н	П	Н		
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No					
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes					
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No					
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No					
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No					
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No					
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes					

3.4.2 List of Alarms

Continued from previous page.

			Servo-	OOTHIN	Alarm Code Output			
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?		/ALO2	·	
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes				
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes				
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes				
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes	Н	Н	Н	
A.8A5	External Encoder Overspeed	An overspeed error occurred in the external encoder.	Gr.1	Yes				
A.8A6	External Encoder Overheated	An overheating error occurred in the external encoder.	Gr.1	Yes				
A.AEF	INDEXER Module Alarm	Some kind of alarm has occurred at the INDEXER Module.	Gr.1	Depends on module alarm.*1	Н	L	L	
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No				
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVOPACK.	Gr.1	No				
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVOPACK.	Gr.1	No				
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVOPACK.	Gr.1	No				
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н	
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVOPACK.	Gr.1	No				
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVOPACK.	Gr.1	No				
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVOPACK.	Gr.1	No				
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVOPACK.	Gr.1	No				
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVOPACK.	Gr.1	No				
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes				
A.C80	Encoder Clear Error or Multiturn Limit Set- ting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L	
A.C90	Encoder Communica- tions Error	Communications between the encoder and SERVOPACK is not possible.	Gr.1	No				

Continued from previous page.

					nued from previous page. Alarm Code Output		
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?		/ALO2	
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No			
A.C92	Encoder Communica- tions Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No			
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No			
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L
A.CC0	Multiturn Limit Dis- agreement	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No			
A.CF1	Reception Failed Error in Feedback Option Module Communica- tions	Receiving data from the Feedback Option Module failed.	Gr.1	No			
A.CF2	Timer Stopped Error in Feedback Option Module Communica- tions	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No			
A.d00	Position Deviation Overflow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes			
A.d01	Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes			
A.d02	Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes			
A.d30	Position Data Over- flow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No			
A.E00	Command Option Module IF Initializa- tion Timeout Error	Communications initialization failed between the SERVOPACK and the Command Option Module.	Gr.2	Yes			
A.E02	Command Option Module IF Synchroni- zation Error 1	An synchronization error occurred between the SERVOPACK and the Command Option Module.	Gr.1	Yes	Н	L	
A.E03	Command Option Module IF Communi- cations Data Error	An error occurred in the data of communications between the SERVOPACK and the Command Option Module.	Gr.1	Yes			
A.E70	Command Option Module Detection Failure	Detection of the Command Option Module failed.	Gr.1	No			

3.4.2 List of Alarms

Continued from previous page.

			Corre	Contin	Alarm Code Output		
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.E71	Safety Option Module Detection Failure	Detection of the safety option module failed.	Gr.1	No			
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No			
A.E73	Unsupported Com- mand Option Module	An unsupported command option module was connected.	Gr.1	No			
A.E74	Unsupported Safety Option Module	An unsupported safety option module was connected.	Gr.1	No			
A.E75	Unsupported Feed- back Option Module	An unsupported feedback option module was connected.	Gr.1	No			
A.E80	Command Option Module Unmatched Error	The command option module was replaced with a different model.	Gr.1	No			
A.EA2	Alarm in Current Communications between the INDEXER Module and SERVO- PACK 1	An error occurred in communications between the INDEXER Module and SER-VOPACK during operation.	Gr.1	Yes	Н	L	L
A.EA3	Alarm in Current Communications between the INDEXER Module and SERVO- PACK 2	An error occurred in communications between the INDEXER Module and SER-VOPACK during operation.	Gr.1	Yes			
A.Eb1	Safety Function Sig- nal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No			
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No			
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No			
A.Ed1	Command Option Module IF Command Timeout Error	Processing of command from the command option module was not completed.	Gr.2	Yes			
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*2 FL-2*2 FL-3*2 FL-4*2 FL-5*2 FL-6*2	-System Alarm	An internal program error occurred in the SERVOPACK.	_	No	U	Indefined	d.
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model:	_	No			
CPF01	Digital Operator Com- munications Error 2	JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).					

^{*2.} These alarms are not stored in the alarm history. They are only displayed on the panel display.

Troubleshooting Alarms

3.4.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER- VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro	Reference
A.024: System Alarm (An internal program error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter set- ting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Com- bination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set- ting Error 2	A parameter reserved by the system was changed.	_	Set the following reserved parameters to the default settings. Pn200.2 Pn207.1 Pn50A.0 Pn50A.1 Pn50A.2 Pn50C Pn50D	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

Continued from previous page.

Alarm Number:	Describe O	0 5 1'	Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	_
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3. Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit. Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	_
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference			
A.330: Main Circuit Power Supply Wiring Error	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	_			
	DC power was supplied when an AC power supply input was specified in the settings. AC power was sup-	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1			
(Detected when the main circuit power supply is turned ON.)	plied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.				
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1			
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_			
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_			
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_			
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	_			
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4			
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_			
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-			

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference			
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	_			
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-			
A.410: Undervoltage (Detected in the main circuit power supply	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1			
section of the SERVOPACK.)	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-			
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-			
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-			
A.510: Overspeed	A reference value that exceeded the over-speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.				
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_			
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-			
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1			
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-			
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1			
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1			
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1			

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
A.710: Instantaneous	Operation was per- formed that exceeded the overload protec- tion characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A 720 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.730 and A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 740.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data	The encoder malfunctioned.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A 950.	The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned ON.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Converter Unit.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	_
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	-
A.AEF: INDEXER Module Alarm	Some kind of alarm has occurred at the INDEXER Module.	Use the SigmaWin+ to check the serial command negative response of the INDEXER Module.	Observe the processing method for serial command negative responses from the INDEXER Module.	*1
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	Possible Gause	Commation	23112311311	Reference
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	_
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	_
tumod GN.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	-
A.C80: Encoder Clear	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	_
Error or Multiturn Limit Setting Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	_
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	_
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	n next page.

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed- back Option Module Commu- nications	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	-	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods. • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table. • Reduce the settings of PnB29 (Acceleration Rate) and PnB2B (Deceleration Rate).	_
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d10: Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E00: Command Option Module IF Initial- ization Timeout Error	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
	A command option module fault occurred.	_	Replace the command option module.	-
	A SERVOPACK fault occurred.	_	Replace the SERVO- PACK.	-
A.E02: Command Option Module IF Synchronization Error 1	The timing of synchro- nization between the servomotor and com- mand option module changed due to change in the com- munications cycle of the host controller connected to the command option module.	_	Turn the power supply OFF and then ON again. If the alarm occurs again, restart communications processing from the host controller.	-
	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	_
	A command option module fault occurred.	_	Replace the command option module.	_
	A SERVOPACK fault occurred.	_	Replace the SERVO- PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E03:	An error occurred due to noise in the communications between the SERVOPACK and the command option module.	-	Take measures against noise.	-
Command Option Module IF Com- munications Data Error	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
	A command option module fault occurred.	-	Replace the command option module.	_
	A SERVOPACK fault occurred.	_	Replace the SERVO-PACK.	_
	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
A.E70: Command Option Module Detec-	The command option module is not connected.	_	Correctly connect the command option module.	-
tion Failure	A command option module fault occurred.	-	Replace the command option module.	-
	A SERVOPACK fault occurred.	-	Replace the SERVO-PACK.	-
	The connection between the SERVO-PACK and the safety option module is faulty.	Check the connection between the SERVO-PACK and the safety option module.	Correctly connect the safety option module.	-
A.E71: Safety Option Module Detec- tion Failure	The safety option module was disconnected.	_	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	*1
	A safety option module fault occurred.	-	Replace the safety option module.	_
	A SERVOPACK fault occurred.	_	Replace the SERVO-PACK.	_
	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		Committation	Correction	neierence
A.E73: Unsupported	A command option module fault occurred.	-	Replace the command option module.	-
Command Option Module	A unsupported command option module was connected.	_	Connect a compatible command option module.	-
A.E74: Unsupported	A safety option module fault occurred.	_	Replace the safety option module.	-
Safety Option Module	A unsupported safety option module was connected.	_	Connect a compatible safety option module.	_
A.E75*3:	A feedback option module fault occurred.	_	Replace the feedback option module.	-
Unsupported Feedback Option Module	A unsupported feed- back option module was connected.	Refer to the catalog of the connected feed- back option module or the manual of the SER- VOPACK.	Connect a compatible feedback option module.	-
A.E80: Command Option Module Unmatched Error	The command option module was replaced with a different model.	_	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	-
A.EA2: Alarm in Current Communications between the INDEXER Module and SERVO- PACK 1	An error occurred in communications between the INDEXER Module and SERVO-PACK during operation.	_	Take steps to reduce noise in the system such as improving frame ground.	*1
A.EA3: Alarm in Current Communications between the INDEXER Module and SERVO- PACK 2	An error occurred in communications between the INDEXER Module and SERVO-PACK during operation.	_	Take steps to reduce noise in the system such as improving frame ground.	*1
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer. A failure occurred in	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected. Replace the SERVO-	-
	the SERVOPACK.	_	PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.Ed1: Command Option	Processing of the servo ON command from the command option module is not completed.	-	Input a servo ON command when the motor is stopped.	-
Module IF Com- mand Timeout Error	Processing of the sensor ON command from the command option module is not completed.	-	Check that the encoder is connected properly.	-
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
(The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
power supply was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	-
Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

^{*1.} Refer to the following manual for details.

 Σ -7-Series Σ -7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min⁻¹] ×
$$\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$$

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution Approx. 3.66×10^{12} \ge Pn20E Pn210

*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed
$$[min^{-1}] \times 1/3 \times \frac{Encoder resolution}{6 \times 10^5} \le \frac{Pn20E}{Pn210}$$

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

*4. Refer to the following manual for details.

Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.4.4 INDEXER Module Alarm Displays and Troubleshooting

The INDEXER Module alarm list and the corresponding corrective actions are shown below.

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E12A	A.AEF	Firmware Execution Alarm	The firmware processing time was too long.	Upgrade the firm-ware version. Reduce the number of functions being used.	Gr.1	N/A
E13A	A.AEF	Firmware Version Unmatched	The SERVOPACK does not supported this function, because the software version do not match.	Upgrade the SER-VOPACK software version. Use the SERVO-PACK that supports the corresponding function. Use the SERVO-PACK with the function set disabled.	Gr.1	N/A
E14A	A.AEF	Parameter Checksum Alarm (Detected only when control power supply is turned ON.)	Incorrect or corrupted parameters are stored in EEPROM. (This alarm can occur if the control power supply is turned OFF while the parameters are being initialized or changed.)	Initialize the parameters with the PRMINIT command or FnB0B. If the problem is not solved, correct the parameters.	Gr.1	N/A
E15A	A.AEF	Parameter Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version number and the parameter version number is wrong.	Change the firmware version. Change the parameter version to match the firmware version.	Gr.1	N/A
E16A	A.AEF	Parameter Out- of-range Alarm (Detected only when control power supply is turned ON.)	The moving method is set to a rotary method (PnB20 = 1, 2, or 3), but the origin set in PnB25 exceeds the software limits set in PnB21 and PnB23.	Correct the origin setting (PnB25) or the software limits (PnB21 and PnB23).	Gr.1	N/A

3.4.4 INDEXER Module Alarm Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
	A.E00	Initial Communi- cation Alarm	The INDEXER Module failed in initialization of communications with the SERVO-PACK when the control power was turned ON.	Take steps to reduce noise in the system such as improving frame ground.		
E17A cati bet INC ule PAG (De wh pow	A.AEF		The SERVOPACK is not compatible with the INDEXER Module.	Upgrade the SER-VOPACK's software version. Replace the SER-VOPACK with a SERVOPACK that is compatible with the INDEXER Module.		
	between INDEXER Module and SERVO-PACK (Detected only when control power supply is turned ON.)	The INDEXER Module failed in parameter calcula- tion during initial communications with the SERVO- PACK when the control power was turned ON. This can happen in the following cases: When a parame- ter has been changed while the encoder is not connected When a parame- ter has been changed during occurrence of A.040 alarm	Connect the encoder and then change the parameter. Cancel the A.040 alarm and then change the parameter. (If the alarm display is other than A.E00, it can be reset by turning the power OFF and back ON.)	Gr.1	N/A	
E18A	A.EA2, A.EA3	Communication Alarm between INDEXER Mod- ule and SERVO- PACK	An error occurred in communications between the INDEXER Module and SERVOPACK during operation.	Take steps to reduce noise in the system such as improving frame ground.	Gr.1	Available
E19A	A.AEF	Program Table Checksum Alarm (Detected only when control power supply is turned ON.)	The program table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the program table is being saved or initialized.)	 Initialize the program table with the PGMINIT command or FnB06. If the problem is not solved, correct the program table. 	Gr.1	Available*1

Continued from previous page.

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E1AA	A.AEF	Program Table Version Unmatched (Detected only when the control power is ON.)	The combination of the firmware version and the program table version is wrong.	Change the firm-ware version. Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1BA	A.AEF	Program Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the program table is not within the allowed setting range.	Change the firm-ware version. Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1CA	A.AEF	Zone Table Checksum Alarm (Detected only when control power supply is turned ON.)	The zone table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the zone table is being saved or initialized.)	Initialize the zone table with the ZONEINIT command or FnB07.*2 If the problem is not solved, correct the zone table.	Gr.1	Available*2
E1DA	A.AEF	ZONE Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the ZONE table version is wrong.	Change the firmware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1EA	A.AEF	Zone Table Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the zone table is not within the allowed setting range.	Change the firm-ware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1FA	A.AEF	JOG Speed Table Check- sum Alarm (Detected only when control power supply is turned ON.)	The JOG speed table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the JOG speed table is being saved or initialized.)	Initialize the JOG speed table with the JSPDINIT command or FnB08. If the problem is not solved, correct the JOG speed table.	Gr.1	Available*3
E21A	A.AEF	JOG Speed Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the JOG speed table version is wrong.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3

3.4.4 INDEXER Module Alarm Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E22A	A.AEF	JOG Speed Table Out-of- range Alarm (Detected only when control power supply is turned ON.)	A value set in the JOG speed table is not within the allowed setting range.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3
E23A	A.AEF	Insufficient Registration Distance Alarm	The registration distance was shorter than the deceleration distance when the /RGRT signal went ON to start registration operation. (The current position will exceed the position specified by registration.)	Either increase the registration distance or reduce the deceleration distance (increase the deceleration rate). The registration distance can be set by executing the RDST command or changing the RDST parameter in the program table. The deceleration rate can be changed by executing the DEC command or changing parameter PnB2B.	Gr.1	Available

^{*1.} These alarms can be reset, but a Canceled Program Table Error (E44E) will occur the next time you attempt to start program table operation, so program table operation will not be possible.

^{*2.} These alarms can be reset, but it is possible that the zone signals (POUT0 to POUT7) will be output incorrectly. When using the zone table, correct the zone table without resetting.

^{*3.} These alarms can be reset, but a Canceled JOG Speed Table Error (E46E) will occur the next time you attempt to start JOG speed table operation, so JOG speed table operation will not be possible.

3.4.5 Warning Displays

Warnings are displayed to warn you before an alarm occurs. If a warning occurs in the SERVO-PACK, the status is displayed as described below.

◆ Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following section for details. Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Indicator	Green indicator: Remains unlit Red indicator: Remains lit Refer to the following section for details. Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Digital Operator	When a warning occurs, the warning code is displayed at the top left of the screen.
Response to the Alarm or Warning Read Command (ALM)	Warning code
Response to the Most Recent Error Read Command (ERR)	No change
ALM Signal	No change
/WARN Signal	Turns ON.

3.4.6 List of Warnings

◆ Troubleshooting Warnings

This section gives the warning names, warning meanings, and warning code outputs in order of the warning numbers.

Warning	Warning Name	Meaning		Warning Code Output		
Number	Warring Name	Wearing	/ALO1	/ALO2	/ALO3	
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: $(Pn520 \times Pn51E/100)$	н	1.1	Н	
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 \times Pn528/100)	П	H	П	
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.				
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	L	Н	H	

3.4.6 List of Warnings

Continued from previous page.

Warning Number	Warning Name	Meaning		Warning Code Output		
				/ALO2	/ALO3	
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.				
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.				
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	H	
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.				
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.				
A.930	Absolute Encoder Battery Error	Bat- This warning occurs when the voltage of absolute encoder's battery is low.		L	Н	
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н	
A.942	Speed Ripple Com- pensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVO-PACK.	Н	Н	L	
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L	
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Н	L	L	
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Н	L	Н	
A.A9F	Error	Some kind of error has occurred at the INDEXER Module.*	L	Н	Н	

^{*} Refer to the following manual for details.

^{2.} Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n. \$\square\$ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

Note: 1. A warning code is not output unless you set Pn001 to n.1□□□ (Output both alarm codes and warning codes).

3.4.7 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods. • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table. • Reduce the settings of PnB29 (Acceleration Rate) and PnB2B (Deceleration Rate).	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

3.4.7 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3.4.7 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. \(\sigma\) \(\sigma\) (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
	tion information stored in the SER- VOPACK.	_	Set Pn423 to n. \(\sum \sup 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	_
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

3.4.7 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	-	Replace the part. Contact your Yaskawa representative for replacement.	*
A.A9F: Error	An error occurred in the INDEXER Module.	Use the SigmaWin+ to check the serial command negative response of the INDEXER Module.	Observe the processing method for serial command negative responses from the INDEXER Module.	*

^{*} Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

INDEXER Module Error Displays and Troubleshooting

Negative responses (error responses) to input signals, serial commands, or operations from the Digital Operator are known as errors.

The servo will not be turned OFF when an error occurs.

Status Displays

3.4.8

SERVOPACK Panel Display	"A.A9F" is displayed for 2 seconds.
Indicator	Red indicator: Flashes for 2 seconds. Refer to the following manual for details. S-7-Series S-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Digital Operator	"A.A9F" is displayed for 2 seconds at the top left of the screen.
Response to the Alarm or Warning Read Command (ALM)	No change
Response to the Most Recent Error Read Command (ERR)	Error code (the most recent (closest) error code)
ALM Signal	No change
/WARN Signal	The signal is valid for 2 seconds.

The INDEXER Module error displays and the corrective actions are shown below.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E41E	A.A9F	Program Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a program table by using a PGMSTORE command While saving a program table by using FnB03 While initializing a program table by using a PGMINIT command While initializing a program table by using FnB06 	Repair the hard- ware.
E42E	A.A9F	Zone Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a zone table by using a ZONESTORE command While saving a zone table by using FnB04 While initializing a zone table by using a ZONEINIT command While initializing a zone table by using FnB07 	Repair the hard- ware.

3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E43E	A.A9F	JOG Speed Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a JOG speed table by using a JSPDSTORE command While saving a JOG speed table by using FnB05 While initializing a JOG speed table by using a JSPDINIT command While initializing a JOG speed table by using FnB08 	Repair the hard- ware.
E44E	A.A9F	Canceled Pro- gram Table Error	There was a request to start program table operation even though an E19A or E1BA alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E46E	A.A9F	Canceled JOG Speed Table Error	There was a request to start JOG speed table operation even though an E1FA or E22A alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E47E	A.A9F	Serial Communications Receiving Buffer Overflow Error	There was an overflow in the reception buffer used for serial commands. • An error will occur if too many serial commands are sent consecutively without waiting for the responses. (Normally, the reception buffer will not overflow if there is command/response handshaking.) • When an overflow has occurred, error code E47E will be returned and all of the data that has accumulated in the reception buffer will be discarded.	Wait for a response to be received before sending the next command. The reception buffer can contain up to 100 commands.
E48E	A.A9F	Serial Communications Parity Error	 A parity check error occurred with the serial command. This error will occur if even parity is not being used. The command that caused this error will be discarded and no response will be returned. There will be no response, but the /WARN output and LED indicators will indicate that an error has occurred. 	Check the serial communications protocol (PnB00) and bit rate (PnB01) settings. Check the wiring. If noise may be causing the problem, take steps to reduce noise such as using communications cables with ferrite cores.

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Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E49E	A.A9F	Serial Communications Framing Error	A stop bit detection error occurred with the serial command. • The command that caused this error will be discarded and no response will be returned. • There will be no response, but the /WARN output and LED indicators will indicate that an error has occurred.	Check the serial communications protocol (PnB00) and bit rate (PnB01) settings. Check the wiring. If noise may be causing the problem, take steps to reduce noise such as using communications cables with ferrite cores.
E4AE	A.A9F	Serial Communi- cations Overrun Error	Serial command reception failed. The hardware's reception buffer was overwritten with the subsequent data. (Normally, data is read before it is overwritten, so this error does not occur.)	Repair the hard- ware.
E4BE	A.A9F	Moving Disabled Error due to P-OT	Travel in the forward direction was requested when P-OT was in effect. (Forward movement is disabled when P-OT (forward overtravel) is in effect.)	 When P-OT is being used, move to a position where the P-OT is not in effect. When P-OT is not being used, disable P-OT in the parameter (PnBOF = 3).
E4CE	A.A9F	Moving Disabled Error due to N-OT	Travel in the reverse direction was requested when N-OT was in effect. (Reverse movement is disabled when N-OT (reverse overtravel) is in effect.)	 When N-OT is being used, move to a position where the N-OT is not in effect. When N-OT is not being used, disable N-OT in the parameter (PnB10 = 3).

3.4.8 INDEXER Module Error Displays and Troubleshooting

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Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E4DE	A.A9F	Moving Disabled Error due to P-LS	The specified target position exceeds the position reference of forward software limit set in PnB21.	 Check the target position specification. Check the forward software limit in PnB21. Check the moving mode (rotary or linear) set in PnB20. If software limits are not being used, either select a rotary moving mode in PnB20 or disable the software limits by setting PnB21 = PnB23 = 0.
E4EE	A.A9F	Moving Disabled Error due to N-LS	The specified target position exceeds the position reference of reverse software limit set in PnB23.	 Check the target position specification. Check the reverse software limit in PnB23. Check the moving mode (rotary or linear) set in PnB20. If software limits are not being used, either select a rotary moving mode in PnB20 or disable the software limits by setting PnB21 = PnB23 = 0.
E4FE	A.A9F	Position Reference Out-of-range Error	The moving method is set to rotary (PnB20 = 1, 2, or 3) and the target position specification exceeds the position reference limits in PnB21 and PnB23.	Check the target position specification. Check the positioning range set with PnB21 and PnB23. Check the moving method (rotary or linear) set in PnB20.

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Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E51E	A.A9F	Target Position Unspecified Error	Even though the target position was not specified even once, there was a request by the ST command to start positioning or a request by the RS command to start registration positioning.	Specify a target position with a command such as the POS command, STnnnnnnnnn command, or RSnnnnnnnn command.
E52E	A.A9F	Registration Distance Unspecified Error	Even though the registration distance was not specified even once, there was a request by the RS command to start registration positioning.	Specify a registration distance with the RDST command.
E53E	A.A9F	Move Reference Duplication Error	There was a new move reference requested even though the system was already moving in a positioning or other traveling operation.	Send the next move reference request only after the current movement is completed (Position reference distribution is completed). A movement can be interrupted or canceled with the HOLD or SKIP commands. Also, STOP can be specified in the target position specification (POS) with the program table.

3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E54E	A.A9F	Servo ON Incomplete Error	The servo is not ON. • There was a positioning request or other move reference request in servo OFF status. The servo went OFF during program table operation. (Program table operation will be interrupted while just the step that was being executed is canceled (If LOOP ≠ 1, the first LOOP is canceled.))	Send the move reference request only after turning the servo ON by turning ON the / S-ON signal, setting PnBOE = 2 so that the /S-ON signal is always ON, or executing the SVON command. There are two possibilities. The program can be canceled with the / PGMRES signal or PGMRES command. The servo can be turned ON and the program can be restarted with the /START-STOP signal or the START command.
E55E	A.A9F	Servo ON Failure Error	The servo could not be turned ON within 2 s after turning ON the /S-ON signal or executing the SVON command. The motor is rotating during servo ON execution. The main power supply went OFF during servo ON execution. Hard wire base block status (HWBB status) Error E5BE will occur if there was an alarm when the servo ON request was sent using the SVON command. Error E5CE will occur if the main power supply was OFF when the servo ON request was sent.	 Turn the servo ON when the motor is stopped. Check the main power supply. Turn ON signals /HWBB1, /HWBB2. After that, temporarily establish the servo OFF status by turning the /S-ON signal OFF or sending the SVOFF command, then turn the servo ON again.
E56E	A.A9F	Undefined Serial Command Error	There was a syntax error in the serial command. There was a number in the serial command longer than 8 digits or 10 digits.	Check the serial command's character string.
E57E	A.A9F	Address Out-of- range Error	The specified address was incorrect for a parameter, program table, zone table, JOG speed table, alarm history, or monitor read/write command.	Check the address.

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E58E	A.A9F	Data Out-of- range Error	The specified setting was incorrect in a parameter or program table write command.	Check the set- ting.
E59E	A.A9F	Communication Failure Error between INDEXER Module and SERVOPACK	Communications between the INDEXER Module and the SERVOPACK have failed.	Check the version of the SER-VOPACK.
E5AE	A.A9F	Execution Dis- abled while Servo ON Error	Some of the utility functions, such as parameter initialization, has been requested while still in the servo ON status. For safety, the following functions cannot be executed in the servo ON status. • Serial commands: Parameter initialization, absolute encoder reset, motor current zero adjustment • SigmaWin+: Parameter initialization	Execute these functions after turning the servo OFF.
E5BE	A.A9F	Execution Dis- abled while Alarm Activated Error	Servo ON was requested (the SVON command was executed) while there was an alarm.	Turn the servo ON after eliminating the cause of the alarm and clearing the alarm.
E5CE	A.A9F	Execution Dis- abled while Main Power OFF Error	Servo ON was requested (the SVON command was executed) while the main power supply was OFF.	Turn the servo ON after turning ON the main power supply.
E5DE	A.A9F	Origin Return Method Unspeci- fied Error	The origin return method is not specified. • An origin return start was requested (/ HOME signal was turned ON or ZRN command was executed) without setting the origin return method.	Specify the origin return method in PnB31.
E5EE	A.A9F	Execution Dis- abled during Pro- gram Table Operation Error	There was a request to execute a process that is not allowed during program table operation while program table operation was in progress or on hold. There was an attempt to change the program table while program table operation was in progress or on hold. There was a request to start positioning by a serial command while program table operation was in progress or on hold.	Request execution of the process again after canceling program table operation by turning the /PGMRES signal ON.
E5FE	A.A9F	Session Conflict Error	There was a request that could not be executed at the same time as the function that was being executed. Example: There was a request to start program table operation while the program table was being initialized.	Execute the operation again after the execution of the current function is completed.

3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E61E	A.A9F	Encoder Mis- match Error	There was a request that was incompatible with the connected encoder. Examples: • An Absolute Encoder Reset (ABSPGRES command) was requested when an incremental encoder is connected. • An origin return start was requested (/ HOME signal was turned ON or ZRN command was executed) when an absolute encoder is connected. (An absolute encoder can be used as an incremental encoder if parameter Pn002.2 = 1.)	Check the encoder.
E62E	A.A9F	No A.CC0 Alarm Occurred Error	A Multi-turn Limit Setting (MLTLIMSET command) was requested even though alarm A.CC0 has not occurred. (Alarm A.CC0 indicates that Pn205 does not match the setting in the encoder after the multi-turn limit setting in Pn205 was changed and the control power supply was turned OFF and ON.)	Use the Multi- turn Limit Setting operation to adjust the setting in the encoder to match Pn205 only after alarm A.CC0 has occurred.
E63E	A.A9F	Continuous Stop Execution Dis- abled Error	An attempt was made to execute a continuous stop under conditions where it could not be executed. Examples: • The coordinates have been set to linear moving method. • The immediately-preceding table target position is not ±INFINITE. • The immediately-preceding table target position is ±INFINITE, but the registration distance is set. • A value other than 1 has been set for the execution count.	Execute a continuous stop under conditions where it can be executed.
E65E	A.9F9	Execution Error during Position Deviation Clear	Program table operation, JOG speed table operation, or homing was executed during position deviation clear.	Clear the status of position deviation clear.

Troubleshooting Based on the Operation and Conditions of the Servomotor

3.4.9

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
Servomotor Does Not Start	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta \Delta \Delta \) (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\) according to the type of the encoder that is being used.	*
	Settings for input signals PnB03 to PnB12 are incor- rect.	Check settings of input signals PnB03 to PnB12.	Correct the settings of input signals PnB03 to PnB12.	*
	The /S-ON (Servo ON) signal was not received.	Check the commands sent from the host controller.	Turn ON the /S-ON signal from the host controller.	*
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The current position of the servomotor is outside the software limit setting range.	Check the error at the INDEXER Module.	Check the motor position and software limit setting (PnB21, PnB23), then move the servomotor into the software limit setting range.	-
	There is no position reference, or it is incorrect.	Check the error at the INDEXER Module.	Set the program table correctly.	_

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Problem	Possible Cause	Commitmation		neierence
Servomotor Moves Instanta- neously, and Then Stops	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
		Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	-
Abnormal Noise from Servomotor	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Canyamatan	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	_
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause Confirmation Correction Re		Reference	
1 10010111	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Large Motor Speed Overshoot on Starting and Stop- ping	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	_
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	_
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	_
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
Absolute Encoder Position	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
Deviation Error (The position that was	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
saved in the host controller when the power was turned OFF is different from the position when the power was next turned ON.)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	_
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	_

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

	Continued from previous page.				
Problem	Possible Cause	Confirmation	Correction	Reference	
Absolute Encoder Position	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-	
Deviation Error (The position that was saved in the host con- troller when the power was turned OFF is dif-	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-	
ferent from the posi- tion when the power was next	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-	
turned ON.)	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-	
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	_	
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-	
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*	
		Check the settings of PnB0F and PnB10.	Set the parameters to correct values.	*	
Overtravel Occurred		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	-	
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_	
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-	
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or PnB1F.	Select a Servomotor stopping method other than coasting to a stop.	*	
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	_	Install the limit switch at the appropriate position.	_	
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	_	Install the overtravel limit switch at the appropriate position. Continued or	-	

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if is satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Position Deviation (without Alarm)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor. Replace the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications. Continued or	-

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
Position Deviation (without Alarm)	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	-

^{*} Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

FT83 SERVOPACKs with Analog Voltage/Pulse Train References

Alarm Displays 3.5.1

If an error occurs in the SERVOPACK, the status is displayed as described below.

Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following manual for details. Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
Digital Operator	The alarm code is displayed at the top left of the screen.
ALM Signal	The alarm signal turns ON. (The photocoupler turns OFF.)
/WARN Signal	No change

3.5.2 **List of Alarms**

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, alarm reset possibility, and alarm code output in order of the alarm numbers.

Servomotor Stopping Method for Alarms

Refer to the following manual for information on the stopping method for alarms.

 \square Σ -7-Series Σ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

List of Alarms

			Servo-	Alarm	Alarm	Code C	utput
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No			
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.024	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.025	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No			
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes			
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No			

3.5.2 List of Alarms

Continued from previous page.

					Alarm Code Ou		
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No			
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No			
A.044	Semi-Closed/Fully- Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No			
A.04A	Parameter Setting Error 2	There is an error in setting of parameters reserved by the system.	Gr.1	No	Н	H	H
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes			
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No			
A.0b0	Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes			
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No		11	''
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes			
A.320	Regenerative Over- load	A regenerative overload occurred.	Gr.2	Yes			
A.330	Main Circuit Power Supply Wiring Error	 The AC power supply input setting or DC power supply input setting is not correct. The power supply wiring is not correct. 	Gr.1	Yes	L	L	H
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes	Н	Н	L
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes	- ' '	11	
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes			
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes			
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes	L	Н	L
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes			
A.550	Maximum Speed Set- ting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes			

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Continued from previous page.

			Servo-		Alarm	Code C	<u> </u>
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.710	Instantaneous Over- load	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes			
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes			
A.730 A.731	Dynamic Brake Over- load	When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes			
A.740	Inrush Current Limit- ing Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L	L	L
A.7A1	Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes			
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes			
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No			
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes			
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No			
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No			
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes			
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No			
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No			
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No			
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No			
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes	Н	Н	Н
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes			
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes			
A.8A5	External Encoder Overspeed	An overspeed error occurred in the external encoder.	Gr.1	Yes			
A.8A6	External Encoder Overheated	An overheating error occurred in the external encoder.	Gr.1	Yes			

3.5.2 List of Alarms

Continued from previous page.

			Servo-		Alarm	Code C	
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No			
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVOPACK.	Gr.1	No			
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVOPACK.	Gr.1	No			
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVOPACK.	Gr.1	No			
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVOPACK.	Gr.1	No	H	Н	Н
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVOPACK.	Gr.1	No		''	
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVOPACK.	Gr.1	No			
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVOPACK.	Gr.1	No			
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVOPACK.	Gr.1	No			
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVOPACK.	Gr.1	No			
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes			
A.C80	Encoder Clear Error or Multiturn Limit Set- ting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L
A.C90	Encoder Communica- tions Error	Communications between the encoder and SERVOPACK is not possible.	Gr.1	No			
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No			
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No			
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No			
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L
A.CC0	Multiturn Limit Dis- agreement	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No			
A.CF1	Reception Failed Error in Feedback Option Module Communica- tions	Receiving data from the Feedback Option Module failed.	Gr.1	No			
A.CF2	Timer Stopped Error in Feedback Option Module Communica- tions	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No		nd on no	

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	Servo- Alarm Code Ou						
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	· ·
A.d00	Position Deviation Overflow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes			
A.d01	Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes			
A.d02	Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes			
A.d30	Position Data Over- flow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No			
A.E71	Safety Option Module Detection Failure	Detection of the safety option module failed.	Gr.1	No			
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No			
A.E74	Unsupported Safety Option Module	An unsupported safety option module was connected.	Gr.1	No	H	L	L
A.E75	Unsupported Feed- back Option Module	An unsupported feedback option module was connected.	Gr.1	No			
A.Eb1	Safety Function Sig- nal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No			
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No			
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No			
A.EF9	INDEXER Alarm	An alarm occurred in the INDEXER.	Gr.1	No			
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*							
FL-2*							
FL-3*	System Alarm	An internal program error occurred in the	_	No			
FL-4*	Oystein Alann	SERVOPACK.	_	INO			
FL-5*					1	Indefined	1.
FL-6*							~ •
CPF00	Digital Operator Com- munications Error 1	Communications were not possible between the Digital Operator (model:	_	No			
CPF01	Digital Operator Com- munications Error 2	JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).		INO			

st These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.5.3 Troubleshooting Alarms

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

3.5.3 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	*1
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	-
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
data format in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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A1 N' '			Continued from pro	l l l l l l l l l l l l l l l l l l l
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER- VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.040: Parameter Setting Error (A parameter setting is outside of	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
the setting range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
	Out-of-Range Origin Setting	See if the origin is between the settings of Pn638 and Pn63A.	Set the origin between Pn638 and Pn63A.	-
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

3.5.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.XDDD (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set- ting Error 2	A parameter reserved by the system was changed.	_	Set the following reserved parameters to the default settings. Pn200.2 Pn207.1 Pn50A.0 Pn50A.1 Pn50A.2 Pn50C Pn50D	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative resistor value exceeded the SER-VOPACK regenerative processing capacity.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

3.5.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pre	Reference
Alailli Näille	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals. Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit. Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

3.5.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:			Continued from pre	evious page.
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.330: Main Circuit Power Supply Wiring Error (Detected when the main circuit power supply is turned ON.)	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
	DC power was supplied when an AC power supply input was specified in the settings. AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply. Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply. Correct the power supply setting to match the actual power supply.	*1
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	-
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

3.5.3 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.410: Undervoltage (Detected in the main circuit power supply section of the SERVOPACK.)	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	_
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.510: Overspeed (The motor exceeded the maximum speed.)	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	_
	A reference value that exceeded the over-speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511: Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	_
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1

Continued from previous page. Alarm Number: Possible Cause Confirmation Reference Correction Alarm Name Reduce the load so that the moment of inertia ratio The Servomotor A.521: is within the allowable vibrated considerably Check the waveform of Autotuning Alarm value. Or increase the while performing the the motor speed. (Vibration was load level or reduce the tuning-less function. detected while rigidity level in the tuningexecuting the less level settings. custom tuning. The Servomotor Easy FFT, or the Check the operating provibrated considerably tuning-less func-Check the waveform of cedure of corresponding *1 while performing custion.) the motor speed. function and implement tom tuning or Easy corrections. FFT. Check the setting of The setting of Pn385 Pn385, and the upper A.550: Set Pn385 to a value that (Maximum Motor limits of the maximum Maximum Speed does not exceed the max-Speed) is greater than motor speed setting imum motor speed. Setting Error the maximum speed. and the encoder output resolution setting. The wiring is not cor-Make sure that the Servorect or there is a faulty *1 Check the wiring. motor and encoder are contact in the motor correctly wired. or encoder wiring. Operation was per-Reconsider the load and Check the motor overformed that exceeded operating conditions. Or, A.710: load characteristics and the overload protecincrease the motor Run command. Instantaneous tion characteristics. capacity. Overload An excessive load A.720: was applied during Continuous Check the operation Correct the mechanical operation because the Overload reference and motor Servomotor was not problem. speed. driven due to mechanical problems. The SERVOPACK may be A failure occurred in faulty. Replace the SERthe SERVOPACK. VOPACK. Implement measures to The Servomotor was Check the operation ensure that the motor will rotated by an external not be rotated by an status. force. external force. A.730 and Reconsider the following: A.731: When the Servomo-• Reduce the Servomotor tor was stopped with Dynamic Brake Check the power concommand speed. the dynamic brake, Overload sumed by the DB resis-• Decrease the moment (An excessive the rotational or linear tor to see how of inertia ratio or mass power consumpkinetic energy frequently the DB is ratio. exceeded the capaction by the Reduce the frequency of

being used.

ity of the dynamic

A failure occurred in

the SERVOPACK.

The allowable fre-

tor was exceeded

power supply was

turned ON and OFF.

A failure occurred in

the SERVOPACK.

quency of the inrush

current limiting resis-

when the main circuit

brake resistor.

dynamic brake

was detected.)

Inrush Current

Limiting Resistor

(The main circuit

power supply

was frequently

turned ON and

A.740:

OFF.)

Overload

Continued on next page.

stopping with the

faulty. Replace the SER-

Reduce the frequency of

The SERVOPACK may be

faulty. Replace the SER-

turning the main circuit

power supply ON and

dynamic brake. The SERVOPACK may be

VOPACK.

OFF.

VOPACK.

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A2:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Temperature Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: 2 11 0 0 7 11 0 0 12 15 15 15 15 15 15 15 15 15 15 15 15 15				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER- VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810:	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower than the speci- fied level.)	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A 0.50.	The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	_
A.850: Encoder Overspeed (Detected at the encoder when the control power	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
supply is turned ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pre	Wiede page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	_
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SERVOPACK.	_
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	_
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	-
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	-
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is	A failure occurred in the encoder.	-	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C91: Encoder Communications Position Data Acceleration Rate	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	_
Error	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	_
A.C92: Encoder Commu- nications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number:	De ceileil O	0 1'	Continued from pro	1 0
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	-
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
A.CC0: Multiturn Limit Disagreement	The multiturn limit of the encoder is differ- ent from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed- back Option Module Commu- nications	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	-	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods. • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table. • Reduce the settings of Pn63E (Acceleration Rate) and Pn640 (Deceleration Rate).	*1
servo was ON.)	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d10: Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
	The connection between the SERVO-PACK and the safety option module is faulty.	Check the connection between the SERVO-PACK and the safety option module.	Correctly connect the safety option module.	-
A.E71: Safety Option Module Detec- tion Failure	The safety option module was disconnected.	_	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	*1
	A safety option module fault occurred.	_	Replace the safety option module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_
	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
A.E74:	A safety option module fault occurred.	_	Replace the safety option module.	-
Unsupported Safety Option Module	A unsupported safety option module was connected.	_	Connect a compatible safety option module.	-
A.E75*3:	A feedback option module fault occurred.	_	Replace the feedback option module.	-
Unsupported Feedback Option Module	A unsupported feed- back option module was connected.	Refer to the catalog of the connected feed- back option module or the manual of the SER- VOPACK.	Connect a compatible feedback option module.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.EF9: INDEXER Alarm	An alarm occurred in the INDEXER.	Use the SigmaWin+ to identify the INDEXER alarm.	Use the correction for the INDEXER alarm.	*1
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	_
Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
CPF00: Digital Operator Communications Error 1	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

*1. Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min⁻¹] ×
$$\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$$

• Maximum motor speed [min⁻¹]
$$\times$$
 Encoder resolution
Approx. 3.66×10^{12} \geq Pn20E
Pn210

*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min⁻¹]
$$\times$$
 1/3 \times $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$

• Maximum motor speed [min⁻¹]
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

*4. Refer to the following manual for details.

Σ-7-Series AC Servo Drive Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.5.4 INDEXER Alarm Displays and Troubleshooting

INDEXER alarms and corrections for them are given in the following table.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E12A	A.EF9	System Alarm	The firmware processing time was too long.	Upgrade the firm-ware version. Reduce the number of functions being used.	Gr.1	N/A
E13A	A.EF9	Firmware Version Unmatched	The SERVOPACK does not support this function, because the software version do not match.	Upgrade the SER-VOPACK software version. Use the SERVO-PACK that supports the corresponding function. Use the SERVO-PACK with the function set disabled.	Gr.1	N/A
E14A	A.EF9	Parameter Checksum Alarm (Detected only when control power supply is turned ON.)	Incorrect or corrupted parameters are stored in EEPROM. (This alarm can occur if the control power supply is turned OFF while the parameters are being initialized or changed.)	Initialize the parameters. (Fn005) If the problem is not solved, correct the parameters.	Gr.1	N/A
E15A	A.EF9	Parameter Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version number and the parameter version number is wrong.	Change the firm-ware version. Change the parameter version to match the firmware version.	Gr.1	N/A
E16A	A.EF9	Parameter Out- of-range Alarm (Detected only when control power supply is turned ON.)	The origin position (Pn63C) exceeded the position range (Pn638 and Pn63A) for rotational coordinates (Pn637 not set to n.□□□0).	Correct the origin setting (Pn63C) or the position range (Pn638 and Pn63A).	Gr.1	N/A

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Continued from previous page.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E17A	A.C90 or A.040	Initial Communication Alarm between INDEXER Module and SERVO-PACK (Detected only when control power supply is turned ON.)	The INDEXER failed in parameter calculation during initial communications with the SERVOPACK when the control power was turned ON. This can happen in the following cases: When a parameter has been changed while the encoder is not connected When a parameter has been changed during occurrence of A.040 alarm	Connect the encoder and then change the parameter. Cancel the A.040 alarm and then change the parameter. (If the alarm display is other than A.E00, it can be reset by turning the power OFF and back ON.)	Gr.1	N/A
E19A	A.EF9	Program Table Checksum Alarm (Detected only when control power supply is turned ON.)	The program table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the program table is being saved or initialized.)	 Initialize the program table. (Fn063) If the problem is not solved, correct the program table. 	Gr.1	Available*1
E1AA	A.EF9	Program Table Version Unmatched (Detected only when the control power is ON.)	The combination of the firmware version and the program table version is wrong.	Change the firm-ware version. Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1BA	A.EF9	Program Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the program table is not within the allowed setting range.	Change the firm-ware version. Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1CA	A.EF9	Zone Table Checksum Alarm (Detected only when control power supply is turned ON.)	The zone table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the zone table is being saved or initialized.)	 Initialize the zone table. (Fn064) If the problem is not solved, correct the zone table. 	Gr.1	Available*2

3.5.4 INDEXER Alarm Displays and Troubleshooting

Continued from previous page.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E1DA	A.EF9	ZONE Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the ZONE table version is wrong.	Change the firmware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1EA	A.EF9	Zone Table Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the zone table is not within the allowed setting range.	Change the firm-ware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1FA	A.EF9	JOG Speed Table Check- sum Alarm (Detected only when control power supply is turned ON.)	The JOG speed table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the JOG speed table is being saved or initialized.)	 Initialize the JOG speed table. (Fn065) If the problem is not solved, correct the JOG speed table. 	Gr.1	Available*3
E21A	A.EF9	JOG Speed Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the JOG speed table version is wrong.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3
E22A	A.EF9	JOG Speed Table Out-of- range Alarm (Detected only when control power supply is turned ON.)	A value set in the JOG speed table is not within the allowed setting range.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3
E23A	A.EF9	Insufficient Registration Distance Alarm	The registration distance was shorter than the deceleration distance when the /RGRT signal went ON to start registration operation. (The current position will exceed the position specified by registration.)	Either increase the registration distance or reduce the deceleration distance (increase the deceleration rate). Registration distance: RDST in the program table Deceleration Rate: Pn640	Gr.1	Available

3.5.4 INDEXER Alarm Displays and Troubleshooting

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E24A	A.9F9	Homing Failure	The torque limit was cleared after torque was increased to the torque limit or before homing completed during pressing homing.	Change the setting value of Pn652 (Pressing Time for Pressing Homing).	Gr.1	Available
E25A	A.9F9	Homing Over- speed	Excessive position deviation due to a mechanical cause during homing.	Fix the mechanical cause and implement countermeasures to prevent excessive position deviation.	Gr.1	Available

Continued from previous page.

^{*1.} These alarms can be reset, but a Canceled Program Table Error (E44E) will occur the next time you attempt to start program table operation, so program table operation will not be possible.

^{*2.} These alarms can be reset, but it is possible that the zone signals (POUT0 to POUT4) will be output incorrectly. When using the zone table, correct the zone table without resetting.

^{*3.} These alarms can be reset, but a Canceled JOG Speed Table Error (E46E) will occur the next time you attempt to start JOG speed table operation, so JOG speed table operation will not be possible.

3.5.5 Warning Displays

Warnings are displayed to warn you before an alarm occurs. If a warning occurs in the SERVO-PACK, the status is displayed as described below.

Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following manual for details. Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	
Digital Operator	When a warning occurs, the warning code is displayed at the top left of the screen.	
ALM Signal	No change	
/WARN Signal	Turns ON.	

3.5.6 List of Warnings

This section gives the warning names, warning meanings, and warning code outputs in order of the warning numbers.

Warning	Warning Name	Meaning		Warning Code Outpo		
Number	warning warne	Wearing	/ALO1	/ALO2	/ALO3	
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: $(Pn520 \times Pn51E/100)$	Н	н	Н	
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	11	11	11	
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.		Н		
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	L		Н	
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.				
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.				
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н	
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.				
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.				
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	L	L	Н	

Continued from previous page.

Warning	Warning Name	Meaning		Warning Code Output		
Number	vvarning ivaine	Wieariing	/ALO1	/ALO2	/ALO3	
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н	
A.941	Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	Н	Н	L	
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVO-PACK.	Н	Н	L	
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L	
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Н	L	L	
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Н	L	Н	
A.9F9	INDEXER Warning	A warning occurred in the INDEXER.	L	Н	Н	

- Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).
 - 2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.

 However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection	Reference
A.911	Pn310 = n.□□□X (Vibration Detection Setting)	_
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)	_
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)	_
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)	_
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)	_
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)	_

3.5.7 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	-
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods. • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table. • Reduce the settings of Pn63F (Acceleration Rate) and Pn640 (Deceleration Rate).	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	-
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	-
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	-
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	_

3.5.7 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	-
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	-
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	_
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	_
	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia or mass. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	_
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	_
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3.5.7 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The sensor attached to the machine is faulty.	-	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.941: Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	_	Turn the power supply to the SERVOPACK OFF and ON again.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	_
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SER-VOPACK.	_	Set Pn423 to n.□□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	-
tion Disagreement		_	Set Pn423 to n. \(\sum \sup 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	-
	The SERVOPACK fuse is blown out.		Replace the SERVOPACK and connect a reactor.	_
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	-
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	-
A.9F9: INDEXER Warning	A warning occurred in the INDEXER.	Use the SigmaWin+ to identify the INDEXER warning.	Use the correction for the INDEXER warning.	page 3-246

3.5.8 INDEXER Warning Displays and Troubleshooting

INDEXER warning displays and corrections for them are given in the following table.

Error No.	Alarm Number	Error Name	Meaning	Corrective Action
E41E	A.9F9	Program Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a program table by using Fn060 While initializing a program table by using Fn063 	Repair the hard- ware.
E42E	A.9F9	Zone Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a zone table by using Fn061 While initializing a zone table by using Fn064 	Repair the hard- ware.
E43E	A.9F9	JOG Speed Table Save Failure Error	 While writing data to the flash memory, a failure occurred during one of the following operation. While saving a JOG speed table by using Fn061 While initializing a JOG speed table by using Fn065 	Repair the hard- ware.
E44E	A.9F9	Canceled Pro- gram Table Error	There was a request to start program table operation even though an E19A or E1BA alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E46E	A.9F9	Canceled JOG Speed Table Error	There was a request to start JOG speed table operation even though an E1FA or E22A alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E4BE	A.9F9	Moving Disabled Error due to P-OT	Travel in the forward direction was requested when P-OT was in effect. (Forward movement is disabled when P-OT (forward overtravel) is in effect.)	When P-OT is being used, move to a position where the P-OT is not in effect. When P-OT is not being used, disable P-OT in the parameter.
E4CE	A.9F9	Moving Disabled Error due to N-OT	Travel in the reverse direction was requested when N-OT was in effect. (Reverse movement is disabled when N-OT (reverse overtravel) is in effect.)	 When N-OT is being used, move to a position where the N-OT is not in effect. When N-OT is not being used, disable N-OT in the parameter.

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Error No.	Alarm Number	Error Name	Meaning	Corrective Action
E4DE	A.9F9	Moving Disabled Error due to P-LS	The specified target position exceeds the position reference of forward software limit set in Pn638.	Check the target position specification. Check the forward software limit in Pn638. Check the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□X) If the software limits are not being used, select rotational coordinates with Pn637= n.□□□X (Moving Mode) or disable the software limits by setting Pn638 = Pn63A = 0.
E4EE	A.9F9	Moving Disabled Error due to N-LS	The specified target position exceeds the position reference of reverse software limit set in Pn63A.	Check the target position specification. Check the reverse software limit in Pn63A. Check the setting of the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□X). If the software limits are not being used, select rotational coordinates for the (i.e., set Pn637 to n.□□□1) or disable the software limits by setting Pn638 = Pn63A = 0.
E4FE	A.9F9	Position Reference Out-of-range Error	The Moving Mode is set to rotational coordinates (i.e., Pn637 is not set to n. \$\square\$ and the target position designation exceeded the position range setting (Pn638 and Pn63A).	 Check the target position specification. Check the positioning range set with Pn638 and Pn63A. Check the setting of the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□X).

3.5.8 INDEXER Warning Displays and Troubleshooting

Continued from previous page.

Error No.	Alarm Number	Error Name	Meaning	Corrective Action
E53E	A.9F9	Move Reference Duplication Error	There was a new move reference requested even though the system was already moving in a positioning or other traveling operation.	Send the next move reference request only after the current movement is completed. Also, STOP can be specified in the target position specification (POS) with the program table.
E54E	A.9F9	Servo ON Incom- plete Error	The servo is not ON. There was a positioning request or other move reference request in servo OFF status. The servo went OFF during program table operation. (Program table operation will be interrupted while just the step that was being executed is canceled (If LOOP ≠ 1, the first LOOP is canceled.))	Request positioning and other operations after turning ON the servo by turning ON the /S-ON signal or setting the /S-ON signal to always be ON. Either just cancel the operation with the /PGMRES signal or turn ON the servo and restart with the /START-STOP signal.
			An E23A alarm (Insufficient Registration Distance Alarm) occurred.	Increase the registration distance or shorten the deceleration distance (i.e., increase the deceleration rate). Registration distance: RDST in the program table Deceleration rate: Pn640
E55E	A.9F9	Servo ON Failure Error	The servo could not be turned ON within 2 s of when the /S-ON signal turned ON. • The motor is rotating during servo ON execution. • The main power supply went OFF during servo ON execution. • Hard wire base block status (HWBB status) If there was already an alarm when a servo ON request made by turning ON the /S-ON signal is received, an E5BE error will occur instead. If the main power supply was OFF, an E5CE error will occur.	Turn the servo ON when the motor is stopped. Check the main power supply. Turn ON the / HWBB1 and / HWBB2 signals. Then turn OFF the /S-ON signal to first turn OFF the servo and then turn ON the servo again.
E58E	A.9F9	Data Out-of-range Error	The specified setting was incorrect in a parameter or program table write command.	Check the setting.
E5DE	A.9F9	Origin Return Method Unspeci- fied Error	The origin return method is not specified. Starting an origin return operation was requested by turning ON the /HOME signal without setting the origin return method.	Specify the origin return method with Pn642 = n.□□□X.

3.5.8 INDEXER Warning Displays and Troubleshooting

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	Continued from previous page.			
Error No.	Alarm Number	Error Name	Meaning	Corrective Action
E5EE	A.9F9	Execution Dis- abled during Pro- gram Table Operation Error	There was a request to execute a process that is not allowed during program table operation while program table operation was in progress or on hold. There was an attempt to change the program table while program table operation was in progress or on hold.	Request execution of the process again after canceling program table operation by turning the /PGMRES signal ON.
E5FE	A.9F9	Session Conflict Error	There was a request that could not be executed at the same time as the function that was being executed. Example: There was a request to start program table operation while the program table was being initialized.	Execute the operation again after the execution of the current function is completed.
E63E	A.9F9	Continuous Stop Execution Dis- abled Error	An attempt was made to execute a continuous stop under conditions where it could not be executed. Examples: • The coordinates have been set to linear moving method. • The immediately-preceding table target position is not ±INFINITE. • The immediately-preceding table target position is ±INFINITE, but the registration distance is set. • A value other than 1 has been set for the execution count.	Execute a continuous stop under conditions where it can be executed.
E65E	A.9F9	Execution Error during Position Deviation Clear	Program table operation, JOG speed table operation, or homing was executed during position deviation clear.	Clear the status of position deviation clear.

3.5.9

Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	-
Servomotor Does Not Start	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\sigma \times \sigma \sigma \sigma \sigma \times \sigma	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n.\(\pi\)X\(\pi\) according to the type of the encoder that is being used.	-
	Settings for input signals Pn630 to Pn64D are incor- rect.	Check settings of input signals Pn630 to Pn64D.	Correct the settings of input signals Pn630 to Pn64D.	_
	The /S-ON (Servo ON) signal was not received.	Check the commands sent from the host controller.	Turn ON the /S-ON signal from the host controller.	_
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	-
	The current position of the servomotor is outside the software limit setting range.	Check for INDEXER errors.	Check the motor position and software limit setting (Pn638 and Pn63A), then move the servomotor into the software limit setting range.	-
	There is no position reference, or it is incorrect.	Check for INDEXER errors.	Set the program table correctly.	_

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Does Not Start	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	-
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	_
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Abnormal Noise from Servomotor		Communication	Reduce the load so that the moment of inertia ratio or mass	. 101010100
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
		Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

			Continued from pre	vious page.
Problem	Possible Cause	Confirmation	Correction	Reference
Abnormal Noise from Servomotor	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	-
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
Large Motor Speed Overshoot on Starting and Stop- ping	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	-
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position Deviation Error (The position that was saved in the host controller when the power was turned OFF is different from the position when the power was next turned ON.)	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

		-	Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	_
Overtravel Occurred	input.	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	_
		Check the settings of PnB0F and PnB10.	Set the parameters to correct values.	-
		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or PnB1F.	Select a Servomotor stopping method other than coasting to a stop.	-
Improper Stop Posi-	The limit switch position and dog length are not appropriate.	_	Install the limit switch at the appropriate position.	-
Stop Position for Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	_	Install the overtravel limit switch at the appropriate position.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if is satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Position Deviation (without Alarm)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

			Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Position	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	

Parameter Lists

This chapter provides information on the parameters.

4.1	FT82 SE	ERVOPACKs with Analog Voltage/Pulse Train References 4-2
4.2	FT82 SEI	RVOPACK with MECHATROLINK-II Communications References4-32
4.3	FT82 SEF	RVOPACK with MECHATROLINK-III Communications References 4-67
	4.3.1 4.3.2	List of Servo Parameters
		Parameters
4.4	Command	d Option Attachable-type FT82 SERVOPACKs with INDEXER Modules4-114
4.5	FT83 SE	RVOPACKs with Analog Voltage/Pulse Train References 4-138

FT82 SERVOPACKs with Analog Voltage/Pulse Train References

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings.

 Reserved parameter

 Parameters not given in this manual

 Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Basic Fundations 0	ction Selec-	0000h to 10B1h	-	0000h	All	After restart	Setup	-	
			Rotation Di	Rotation Direction Selection							
		n.□□□X	0 U	se CCW as the t	forward dir	rection.			*1		
				Use CW as the forward direction. (Reverse Rotation Mode)							
			Control Me	hod Selection					Refere	ence	
			+	peed control wit							
			+	osition control w	<u> </u>		nces				
				rque control wit							
				ternal set speed							
				witching betwee nces and speed				ontact refer-			
Pn000		n.□□X□		witching betweences and position							
				witching betweences and torque				ontact refer-	*1		
				witching betwee beed control with			h pulse train r	eferences an	d		
				witching betwee rque control wit			h pulse train r	eferences an	d		
				witching betwee beed control with			analog refere	ences and			
				witching betwee beed control with			analog refere	nces and			
				witching betwee osition control w				eferences an	d		
		n.□X□□	Reserved p	arameter (Do no	ot change	.)					
		n.XDDD	Reserved p	arameter (Do no	ot change	.)					
				(=0)							

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence					
	2	Application Selections		0000h to 1142h	-	0000h	All	After restart	Setup	-					
			Motor Stopp	Motor Stopping Method for Servo OFF and Group 1 Alarms											
	- DDDV		0 St	op the motor by	applying	the dynam	ic brake.								
n.□□□		n.□□□X		Stop the motor by the applying dynamic brake and then release the dynamic brake.											
		2 Co	ast the motor to	o a stop w	ithout the	dynamic brak	e.								
			Overtravel S	topping Metho	d				Refere	ence					
			ply the dynamic opping method				op (use the								
		- DDVD		celerate the mo e maximum torq											
		n.□□X□		celerate the mo e maximum torq				in Pn406 as	*1						
Pn001				celerate the mo 30A and then s			ne deceleratio	n time set in							
			4 De	celerate the mo 30A and then le	tor to a st	op using to or coast.	ne deceleratio	n time set in							
	Ī		Main Circuit Power Supply AC/DC Input Selection						Refere	ence					
				Input AC power as the main circuit power supply using the L1, L2, and L3 terminals (do not use shared converter).				.,							
		n.□X□□	1 an	out DC power as d \ominus 2 terminals nverter or the sl	or the B1	and ⊖ 2	117	0 -							
			Warning Co	de Output Sele	ction				Refere	ence					
			0 Ou	itput only alarm ls.	codes on	the ALO1,	ALO2, and A	LO3 termi-							
		n.X□□□	1 an	Itput both warni d ALO3 termina tput, the ALM (S al state).	ls. Howev	er, while a	n warning cod	le is being							

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer
	2	Application Selections		0000h to 4213h	_	0000h	_	After restart	Setup	-
								A 1: 1.		
			Speed/Posit	ion Control Op	tion (T-RE	F Input Al	location)	Applicable Motors	Refere	ence
			0 Do	not use T-REF		-				
n.□I	n.□□□X		e T-REF as an			•	A II	*1		
				e T-REF as a to		-		All		
				e T-REF as an e -CL or /N-CL is		rque limit i	nput when	*1		
			Torque Cont	rol Option (V-F	REF Input	Allocation)		Applicable Motors	Refere	ence
		n.□□X□	0 Do	not use V-REF				All	*1	
			1 Us	e V-REF as an	external sp	peed limit i	nput.	7411		
Pn002		n.□X□□	Encoder Usa	age				Applicable Motors	Refere	ence
				Use the encoder according to encoder specifications.				All		
			1 Us	e the encoder	oder as an incremental encoder.				*1	
				e the encoder a coder.	as a single	-turn abso	lute	Rotary		
			External End	coder Usage				Applicable Motors	Refere	ence
			0 Do	not use an ext	ernal enco	oder.				
		n.X000	1 Th tio	e external enco n for CCW mot	der moves or rotation	s in the for	ward direc-			
			2 Re	served setting	(Do not us	e.)		Rotary	*1	
				e external enco n for CCW mot			erse direc-			
			4 Re	served setting	(Do not us	e.)				

Default

Setting

0002h

Setting

Unit

Continued from previous page.											
Applicable Motors	When Enabled	Classi- fication	Refer- ence								
All	Immedi- ately	Setup	*1								

	_	Analog Mo	onitor 1 Signal Selection
		00	Motor speed (1 V/1,000 min ⁻¹)
		01	Speed reference (1 V/1,000 min ⁻¹)
		02	Torque reference (1 V/100% rated torque)
		03	Position deviation (0.05 V/reference unit)
		04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)
		05	Position reference speed (1 V/1,000 min ⁻¹)
		06	Reserved setting (Do not use.)
		07	Load-motor position deviation (0.01 V/reference unit)
Pn006	n.□□XX	08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)
1 11000		09	Speed feedforward (1 V/1,000 min ⁻¹)
		0A	Torque feedforward (1 V/100% rated torque)
		0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)
		0C	Completion of position reference distribution (completed: 5 V, not completed: 0 V)
		0D	External encoder speed (1 V/1,000 min ⁻¹ : value at the motor shaft)
		0E	Reserved setting (Do not use.)
		0F	Reserved setting (Do not use.)
		10	Main circuit DC voltage
		11 to 5F	Reserved settings (Do not use.)
	n.□X□□	Reserved	parameter (Do not change.)
	n.X□□□	Reserved	parameter (Do not change.)
		-	

Setting

Range

0000h to 105Fh

Parameter

No.

Size

2

Name

Application Function Selections 6

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections		0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1		
			Analog Moni	itor 2 Signal Se	election							
				Motor speed (1		nin ⁻¹)						
			01 §	Speed reference	e (1 V/1,00	00 min ⁻¹)						
			02 T	orque reference	e (1 V/100	% rated to	rque)					
			03 F	Position deviation	n (0.05 V/	reference	unit)					
			04 F	Position amplifie	er deviation	n (after ele	ctronic gear) (0.05 V/enco	der pulse	unit)		
			05 F	Position referen	ce speed (1 V/1,000	min ⁻¹)					
			06 F	Reserved setting	g (Do not ı	use.)						
			07 L	oad-motor pos	ition devia	tion (0.01	V/reference u	nit)				
Pn007		n.□□XX		Positioning com pleted: 0 V)	pletion (po	sitioning o	completed: 5	V, positionino	g not com	-		
			09 8	Speed feedforw	ard (1 V/1	,000 min ⁻¹))					
			0A 7	orque feedforw	ard (1 V/1	00% rated	I torque)					
				Active gain (1st	-		-					
				Completion of position reference distribution (completed: 5 V, not completed: 0 V)								
			OD E	External encode	er speed (1	V/1,000 r	min ⁻¹ : value at	the motor s	haft)			
			OE F	Reserved setting	g (Do not ı	ıse.)						
			OF F	Reserved setting	g (Do not ι	ıse.)						
				Main circuit DC								
			11 to 5F Reserved settings (Do not use.)									
		n.□X□□	Reserved parameter (Do not change.)									
		n.X□□□	Reserved pa	rameter (Do no	ot change.)						
	2	Application Selections		0000h to 7121h	-	0000h	Rotary	After restart	Setup	_		
			Low Battery	Voltage Alarm	/Warning S	Selection			Refere	ence		
		n.□□□X		tput alarm (A.8			oltage.					
				tput warning (A					*1			
			Function Sel	ection for Und	ervoltage				Refere	ence		
Pn008			0 Do	not detect und	lervoltage.							
FIIUUO		n.□□X□		tect undervolta	•		<u> </u>		*1			
			2 De Pn	tect undervolta 425 (i.e., only ir	ge warning n SERVOP	g and limit ACK).	torque with F	n424 and				
			Warning Det	ection Selection	on				Refere	ence		
		n.□X□□		tect warnings.								
				not detect war	nings exce	ept for A.9	71.		*1			
		n.X000	Reserved pa	rameter (Do no	ot change)						
			, losor vou pa	and Done	onange.	1						

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 0121h	-	0010h	All	After restart	Tuning	-
		n.□□□X	Reserved na	rameter (Do no	ot change	\				
		11.000		`)			I	
				trol Mode Sele e current contro					Refere	nce
Pn009		n.□□X□	1 -3	SERVOPACK Models SGD7S-R70A, -R90A, -1R6A, -2R8A, -3R8A, -5R5A, and -7R6A: Use current control mode 1. SERVOPACK Models SGD7S-120A, -180A, -200A, -330A, -470A, -550A, -590A, and -780A: Use current control mode 2.						
			2 Us	e current contro	ol mode 2.					
			Speed Detec	ction Method S	election				Refere	nce
		n.□X□□		e speed detect					*1	
			1 Us	e speed detect	ion 2.					
		n.X□□□	Reserved pa	rameter (Do no	ot change.)				
	2	Application Selections		0000h to 0044h	_	0001h	All	After	Setup	_
		Selections	A	004411				restart	·	
				oing Method fo	•				Refer	ence
				oply the dynami opping method				op (use tne		
		n.□□□X	1 th	ecelerate the me e maximum tore atus after stopp	que. Use tl					
			2 De	ecelerate the me e maximum tor	otor to a s que and th	top using ten let the	the torque set motor coast.	in Pn406 as	* 1	
			3 Pr	ecelerate the m 130A. Use the s opping.	otor to a s setting of F	top using t n001 = n.	the deceleration	on time set ir e status after	n '	
				ecelerate the m			the decelerati	on time set ir	ı	
Pn00A				ethod for Force	•				Refer	ence
				oply the dynami opping method				op (use the		
			1 th	ecelerate the me e maximum tore atus after stopp	que. Use tl					
		n.□□X□	2 De th	ecelerate the me e maximum tor	otor to a s que and th	top using ten let the	the torque set motor coast.	in Pn406 as	* 1	
			3 Pr	ecelerate the m 130A. Use the sopping.	otor to a s setting of F	top using to n001 = n.	the deceleration	on time set ir e status after	n -	
				ecelerate the m 130A and then			the decelerati	on time set ir	1	
		n.□X□□	Reserved pa	arameter (Do n	ot change	.)				
		n.X□□□	Reserved p	arameter (Do n	ot change	.)				
			riosorvou pr	amotor (D0 II	or onange	•1				

Daramatan	<i>a</i>				Cotting	Cottina	Default		Continued fr			
Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Applicatio Selections	n Function B		0000h to 1121h	_	0000h	All	After restart	Setup	-	
	Ī		Operator	Para	ameter Display	/ Selection	า			Refere	nce	
		n.□□□X	0		olay only setup	•	rs.			*1		
			1	DISE	olay all parame	ters.						
				Motor Stopping Method for Group 2 Alarms								
Pn00B		n.□□X□		Stop the motor by setting the speed reference to 0.Apply the dynamic brake or coast the motor to a stop (use the								
				stopping method set in Pn001 = n.□□□X).								
			2	2 Set the stopping method with Pn00A = n.□□□X.								
				Power Input Selection for Three-phase SERVOPACK Use a three-phase power supply input.							nce	
		n.□X□□	0			·			haaa nausar	*1		
			1		a three-phase oly input.	power su	ppiy iriput	as a sirigie-pi	nase power			
	Ī	n.X000	Reserved	l par	ameter (Do no	t change.))					
	-											
	2	Applicatio Selections	n Function s C		0000h to 0131h	_	0000h	-	After restart	Setup	*1	
			Function	Sele	ection for Test	without a	Motor			Applica Motor		
		n.□□□X	0	Dis	able tests with	out a moto	or.			All		
			1	Ena	able tests with	out a moto	or.			7 11		
			Encoder	Res	olution for Tes	sts without	t a Motor			Applica Motor		
Pn00C		n.□□X□	0	-	e 13 bits.							
			2	-	e 20 bits. e 22 bits.					Rotar	у	
			3		e 24 bits.							
			Encoder	Encoder Type Selection for Tests without a Motor							ble s	
		n.□X□□	0	Use	an increment	al encoder				All		
			1	Use	e an absolute e	encoder.				7 111		
		n.X□□□	Reserve	d pai	rameter (Do n	ot change.	.)					
	2	Applicatio Selections	n Function S D		0000h to 1001h	_	0000h	All	After restart	Setup	*1	
		n.□□□X	Reserve	d pai	rameter (Do n	ot change.	.)					
D-00D		n.□□X□	Reserve	d pai	rameter (Do n	ot change.	.)					
Pn00D		n.□X□□	Reserve	d pai	rameter (Do n	ot change	.)					
		n.X□□□	Overtrav 0	1	arning Detect							
			1	-	ect overtravel		9~1					
						-						
									0	ed on nev	.4	

	_	

							(Continued fro	om previou	ıs page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000h to 2011h	_	0000h	All	After restart	Setup	_			
		00.001.01.0	·	201111				rootart					
	Ī		Preventative	Maintenance \	Warning S	election			Reference				
		n.□□□X		ot detect preve	*1								
Pn00F		- 00/0		Detect preventative maintenance warnings. Reserved parameter (Do not change.)									
		n. 🗆 🗆 X 🗆		`		,							
		n. 🗆 X 🗆 🗆		rameter (Do no		,							
	_	n.X□□□	Reserved pa	rameter (Do no	ot change.)							
Pn010	2		ess Selection USB Commu-	0000h to 007Fh	_	0001h	All	After restart	Setup	-			
Pn021	2	Reserved p	oarameter (Do e.)	-	-	0000h	All	-	-	-			
Pn022	2	Reserved p	parameter (Do e.)	-	-	0000h	All	-	-	-			
Pn040	2	Reserved p	oarameter (Do e.)	-	-	0000h	_	-	-	-			
	2	Application Selections	Function 81	0000h to 1111h	-	0000h	All	After restart	Setup	*1			
Pn081		n.000X	0 Ou 1 Ou Reserved pa	se Output Sele tput phase-C p tput phase-C p rameter (Do no	oulses only oulses in boot change.	oth the for			otions.				
	-	n. 🗆 X 🗆 🗆		rameter (Do no		,							
		n.X□□□	Reserved pa	rameter (Do no	ot change.)							
Pn100	2	Speed Loc	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn101	2	Speed Loc Time Cons	pp Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn102	2	Position Lo		10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn103	2	Moment of	f Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1			
Pn104	2	Second Sp Gain	peed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn105	2	Second Sp Integral Tir	need Loop me Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn106	2	Second Po Gain	osition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn109	2	Feedforwa	rd	0 to 100	1%	0	All	Immedi- ately	Tuning	*1			
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1			

Continued from previous page.

| Setting | Setting | Default | Applicable | When | Classi- | Refer-

Parameter	Φ			Setting	Setting	Default	Applicable	Oontinued from When	Classi-	Refer-
No.	Size	Na	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Gain Applications	cation Selec	0000h to 5334h	-	0000h	All	-	Setup	-
			Mode Swi	tching Selection				When Enabled	Refere	ence
				Use the internal to (level setting: Pn1		ence as th	e condition			
			-	Use the speed reting: Pn10D).	ference as	the condit	ion (level set-			
		n.□□□X		Use the speed reting: Pn181).	ference as					
				Use the accelerat setting: Pn10E).	ion referen	Immedi ately	- *1			
Pn10B			2	Use the accelerat setting: Pn182).	ion referen	ce as the	condition (leve	el		
				Use the position (ting: Pn10F).	deviation a	s the conc	lition (level set	-		
			When Enabled	Refere	ence					
		n.□□X□	-	PI control				After		
				I-P control Reserved settings	restart	*1				
		n.□X□□		parameter (Do n						
	-			, ,		,				
		n.X□□□	Reserved	parameter (Do n	ot change.	.)				
D=100	0	Mode Swite	ching Level	0.4 000	4.0/	000	All	Immedi-	Turker	*1
Pn10C	2	for Torque Mode Swite		0 to 800	1%	200	All	ately Immedi-	Tuning	
Pn10D	2	for Speed F	Reference	0 10 10,000	1 min ⁻¹	0	Rotary	ately	Tuning	*1
Pn10E	2	Mode Swite for Acceler		0 to 30,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swite for Position		0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Int Constant	egral Time	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain	mpensatior	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fri- pensation (10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient	mpensatior	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	mpensatior Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Co Gain Corre		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switch	hing Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switch	hing Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switch Time 1		0 10 05,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switch Time 2	hing Waiting	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
								Continue	ed on nex	t page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default	Applicable Motors	Continued from When Enabled	Classi- fication	Refer-
NO.	2	Automatic ing Selection		ch-	0000h to	-	Setting 0000h	All	Immedi- ately	Tuning	ence *1
	-	n.□□□X	Gain Sw 0	Use The	ng Selection e manual gain s gain is switch served setting (ed manua	,	· /G-SEL (Gain	n Selection) :	signal.	
			2	The swi	e automatic gai e gain is switche tching conditio cond gain to the	ed automa n A is sati	atically fron sfied. The	n the first gair gain is switch	ed automati	cally from	hen the
Pn139			Gain Sw	itchi	ng Condition A						
			0	/C0	OIN (Positioning	Complet	ion Output) signal turns	ON.		
			1	/C0	OIN (Positioning	Complet	ion Output) signal turns	OFF.		
		n.□□X□	2		AR (Near Outp	, ,					
			3		AR (Near Outp	, ,					
			4		sition reference			l reference pu	ılse input is (OFF.	
			5	Pos	sition reference	pulse inp	ut is ON.				
		n.□X□□	Reserved	d pa	rameter (Do no	t change	.)				
		n.XDDD	XDDD Reserved parameter (Do not change.)								
		neserved parameter (Do not change.)									
Pn13D	2	Current Ga	ain Level		100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1
	2	Model Follo			0000h to 1121h	_	0100h	All	Immedi- ately	Tuning	_
		ti oi i iolato	G 30.001.0.						acory		<u> </u>
			Model Fo	ollov	ing Control Se	election				Referer	ice
		n.□□□X			ot use model fo		ontrol.			*1	
			1 1	Jse i	model following	g control.					
	Ī		Vibration	Sup	pression Sele	ction				Referer	nce
		- DDVD	0 1	Do n	ot perform vibr	ation supp	oression.				
		n.□□X□	1 1	Perfo	orm vibration su	ppressior	for a spec	cific frequenc	y.	*1	
			2 1	Perfo	orm vibration su	uppressior	n for two sp	pecific freque	ncies.		
Pn140	İ		Vibration	Sur	pression Adju	stment Se	election			Referen	nce
		n. 🗆 X 🗆 🗆	0	Do tior	not adjust vibra n of autotuning st reference, an	ation supp without a	ression au host refere	tomatically du ence, autotun	uring execu- ing with a		
			1	aut	ust vibration suotuning withou otuning withou nce, and custo	t a host re				*1	
	i		Speed F	eedf	orward (VFF)/T	orque Fe	edforward	(TFF) Selecti	on	Referen	nce
		n.X□□□	0	Do	not use model of together.	•		` ,			
			1		e model following ther.	ng control	and speed	d/torque feed	forward	*1	
Pn141	2	Model Follo	owing Cor	1-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn142	2	Model Folk trol Gain C	owing Cor orrection)-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn143	2	Model Follo trol Bias in Direction	owing Cor the Forwa	n- ard	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
									Continue		

Parameter	Φ			Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration S Frequency	Suppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration S Frequency	Suppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2	Model Follo trol Speed Compensa	owing Con- Feedforward Ition	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Moing Contro	odel Follow- I Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2		odel Follow- I Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration S Frequency	Suppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration S Correction	Suppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Retions	elated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	-
		Model Following Control Type Selection Refe							Refere	ence
		n.□□□X	0 Use	e model followir	ng control	type 1.			*1	
			1 Use	1 Use model following control type 2.						
			Defense							
Pn14F				Type Selection					Refere	ence
		n.□□X□	+	e tuning-less ty	•					
			+	e tuning-less ty	•				*1	
			2 Use	e tuning-less ty	pe 3.					
		n.□X□□	Reserved pa	rameter (Do no	t change.)				
		n.X□□□	Reserved pa	rameter (Do no	t change.	.)				
	2		nance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	-
			1						l	
				nce Control Se					Refere	nce
		n.□□□X		not use anti-re					*1	
			1 Use	e anti-resonanc	e control.					
			Anti-Resonar	nce Control Ad	justment	Selection			Refere	ence
Pn160		n.□□X□	0 tion	not adjust anti- n of autotuning v erence, and cus	without a l	host refere	utomatically once, autotunin	during execuing with a hos	- st *1	
			1 aut	just anti-resona otuning without ce, and custom	t a host re					
		n.□X□□	Reserved pa	rameter (Do no	t change.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change)				
	_				2.10.190.	,				
Pn161	2	Anti-Resor quency	nance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Resor		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	-	Correction 1601,000 1% 100 All ate						 	t	
Pn163	2	Anti-Resor	nance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1

	Continued from previous pag								
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn164	2	Anti-Resonance Filter Time Constant 1 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2	Anti-Resonance Filter Time Constant 2 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resonance Damp- ing Gain 2	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Function- Related Selections	0000h to 2711h	_	1401h	All	-	Setup	*1

		Tuning-le	ess Selection	When Enabled	
	n.□□□X	0	Disable tuning-less function.	After	
		1	Enable tuning-less function.	restart	
		Speed C	control Method	When Enabled	
Pn170	n.□□X□	0	Use for speed control.	After	
PHI70		1	Use for speed control and use host controller for position control.	restart	
	n.□X□□	Rigidity	Level	When Enabled	
	П.ЦХЦЦ	0 to 7	Set the rigidity level.	Immedi- ately	
	п.ХППП	Tuning-le	ess Load Level	When Enabled	
	11.7000	0 to 2	Set the load level for the tuning-less function.	Immedi- ately	

	Continued from										
Parameter No.	Size	٨	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence	
	2	Position C ence For S	ontrol Refer- Selections	0000h to 2236h	_	0000h	All	After restart	Setup	_	
			Reference P						Refere	ence	
				n and pulse tra							
				V and CCW pul o-phase pulse		'		ohace A and			
			2 ph	ase B) ×1, posi	tive logic	•					
		n.□□□X	3 ph	o-phase pulse ase B) ×2, posi	tive logic	•			*1		
				o-phase pulse ase B) ×4, posi		90° phase	e differential (p	ohase A and			
			<u> </u>	n and pulse tra							
			6 CV	6 CW and CCW pulse trains, negative logic							
			Clear Signal Form							ence	
Pn200			0 Cle	O Clear position deviation when the signal is at high level.							
		n.□□X□		ear position dev			0	,	*1		
				ear position dev							
			3 Cle	ear position dev	iation on t	the falling e	edge of the sig	gnal.			
			Clear Operat	Refere	ence						
				ear position dev rm occurs).	viation at a	base bloc	k (at servo Ol	FF or when			
		n.□X□□		not clear posit	ion error (cleared on	ly with CLR (C	Clear Position	*1		
				ear position dev	viation whe	en an alarn	occurs.				
			Filter Selecti	on					Refere	ence	
			0 Us	e the reference	input filte	r for a line-	driver signal.	(1 Mpps max	(.)		
		n.X□□□		e the reference	input filte	r for an op	en-collector s	ignal. (200	*1		
				os max.) e reference inp	ut filter 2 f	or a line-di	river signal (1	to 4 Mnns)			
		FI.7									
Pn205	2	Multiturn L	_imit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1	
	2	Position C	Control Func-	0000h to 2210h	_	0000h	All	After restart	Setup	_	
		tion Selec	110113	221011				restart			
		n.□□□X	Reserved pa	rameter (Do no	ot change	.)					
			Position Cor	trol Option					Refere	ence	
		n.□□X□	0 Do	not use V-REF					*1		
			1 Us	e V-REF as a s	peed feed	back input					
		n.□X□□	Reserved pa	rameter (Do no	ot change	.)					
Pn207			/COIN (Posit	ioning Comple	etion Outp	ut) Signal	Output Timin	g	Refe		
			0 sar	tput when the me or less than dth).							
		n.X□□□	1 or	Output when the absolute value of the position error is the same							
			2 or	tput when the less than the so d the reference	etting of P	n522 (Posi					
									1		

After restart

*1

Setup

4

							Continued fro	m previol	ıs page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn20A	4	Number of External Encoder Scale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic Gear Ratio (Numerator)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	4	Electronic Gear Ratio (Denominator)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Encoder Output Pulses	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn216	2	Position Reference Acceleration/Decelera- tion Time Constant	0 to 65,535	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn217	2	Average Position Reference Movement Time	0 to 10,000	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn218	2	Reference Pulse Input Multiplier	1 to 100	× 1	1	All	Immedi- ately	Setup	*1

0000h to 1003h

Pn22A

Fully-closed Control Selections

2

n.□□□X	Reserve	Reserved parameter (Do not change.)							
n.□□X□	Reserve	leserved parameter (Do not change.)							
$n.\Box X\Box\Box$	Reserve	Reserved parameter (Do not change.)							
	Fully-clo	sed Control Speed Feedback Selection							
n.X□□□	0 Use motor encoder speed.								
	1 Use external encoder speed.								

0000h

Rotary

Pn281	2	Encoder Output Resolution	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn300	2	Speed Reference Input Gain	150 to 3,000	0.01 V/ Rated motor speed	600	All	Immedi- ately	Setup	*1
Pn301	2	Internal Set Speed 1	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1
Pn302	2	Internal Set Speed 2	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	200	Rotary	Immedi- ately	Setup	*1
Pn303	2	Internal Set Speed 3	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	300	Rotary	Immedi- ately	Setup	*1
Pn304	2	Jogging Speed	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start Acceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start Deceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn307	2	Speed Reference Filter Time Constant	0 to 65,535	0.01 ms	40	All	Immedi- ately	Setup	*1
Pn308	2	Speed Feedback Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Deceleration Time for Servo OFF and Forced Stops	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2	Speed Feedforward Average Movement Time	0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
	2	Vibration Detection Selections	0000h to 0002h	_	0000h	All	Immedi- ately	Setup	*1
		•	•	•		•		,	

Pn310

	Vibration	n Detection Selection						
n.□□□X	0	Do not detect vibration.						
11.000	1	Output a warning (A.911) if vibration is detected.						
	2	Output an alarm (A.520) if vibration is detected.						
n.□□X□	Reserve	Reserved parameter (Do not change.)						
n.□X□□	Reserve	Reserved parameter (Do not change.)						
» VOOO	Poponio	d nevernator (De not abondo)						

n.X□□□ Reserved parameter (Do not change.)

Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration Detection Level	0 to 5,000	1 min ⁻¹	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn400	2	Torque Reference Input Gain	10 to 100	0.1 V/ rated torque	30	All	Immedi- ately	Setup	*1
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*2	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1

Δ.

	Continued from previous page										
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Torque-Related Function Selections	0000h to 1111h	-	0000h	All	-	Setup	-		
	_										
							\ \ / / l= = ==				

			Notch F	ilter S	Selection 1				When Enabled	Refere	ence
		n.□□□X	0	Dis	able first stage	notch filte	r.		Immedi-	. *1	
			1	Ena	able first stage	notch filter			ately	*1	
			Speed L	imit :	Selection				When Enabled	Refere	ence
			0		e the smaller of ting of Pn407 a			speed and the	;		
D - 400		n.□□X□	0		e the smaller of ting of Pn480 a			speed and the	After	*1	
Pn408			1	spe	e the smaller of eed and the set	tting of Pn	407 as the	speed limit.	restart		
					e the smaller of eed and the set						
	- DVDD	Notch F	ilter S	Selection 2				When Enabled	Refere	ence	
		n.□X□□	0	Dis	able second st	Immedi-	. *1	*1			
			1	Ena	able second sta	ately					
			Friction	Com	pensation Fun	ction Sele	ection		When Enabled	Refere	ence
		n.X□□□	0	Dis	able friction co	mpensatio	n.		Immedi-	. *1	
			1	Ena	able friction cor	mpensatio	n.		ately		
					T			T T		1	ı
Pn409	2	First Stage Frequency			50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*
Pn40A	2	First Stage Q Value			50 to 1,000	0.01	70	All	Immedi- ately	Tuning	
Pn40B	2	First Stage Depth	Notch Fil	Iter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	,
Pn40C	2	Second St ter Freque		า Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*
Pn40D	2	Second St ter Q Value	age Notch	r Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	4
Pn40E	2	Second St ter Depth			0 to 1,000	0.001	0	All	Immedi- ately	Tuning	,
Pn40F	2	Second St Torque Ref Frequency	ference Fi	lter	100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	3
Pn410	2	Second St Torque Ret Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	
Pn412	2	First Stage Torque Ref Time Cons	erence Fi	lter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	
Pn415	2	T-REF Filte	r Time Co	on-	0 to 65,535	0.01 ms	0	All	Immedi-	Setup	

								Continued fro	om previou	us page.
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Selecti		0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1
			Notch Filter S					-		
		n.□□□X		able third stage						
Pn416		n.□□X□		Selection 4 able fourth stag able fourth stag						
		n.□X□□	Notch Filter S	Selection 5 able fifth stage	notob filte					
		11.0/00		able fifth stage						
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)				
	-									
Pn417	2	Third Stage Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stage Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Depth	e Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2		ourth Stage Notch Fil- er Frequency		1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Stag ter Q Value	ourth Stage Notch Fil-		0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	ter Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Ripp sation Sele	ole Compen- ctions	0000h to 1111h	-	0000h	Rotary	_	Setup	*1
			Speed Ripple	e Compensatio	n Functio	n Selectio	n		Whe Enab	
		n.□□□X		able speed rippable speed ripp					Imme	
	-			e Compensation	·		reement Wa	rning Detec-	. Whe	en
Pn423		n.□□X□	tion Selection						Enab Afte	
				not detect A.9					resta	
			Speed Ripple	e Compensatio	n Enable	Condition	Selection		Whe Enab	
		n.□X□□		eed reference tor speed					Afte	
		n.X000		rameter (Do no	ot change)				
			110001 Vou pai	Tamotor (DO 110	onange.					
Pn424	2	Torque Lim	it at Main Cir- e Drop	0 to 100	1%*2	50	All	Immedi- ately	Setup	*1
				1	ı	1	1	Continue	ed on nex	t page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn425	2	Release Tir Limit at Ma Voltage Dro		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1	
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1	
Pn427	2	Speed Ripp sation Enal	ple Compen- ble Speed	0 to 10,000	1 min ⁻¹	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1	
Pn456	2	Sweep Tore	que Refer- itude	1 to 800	1%	15	All	Immedi- ately	Tuning	*1	
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1	
	-	n.□□□X	Do	Adjustment Se not adjust the ing without a h ing.	first stage	notch filtence, autotu	r automatically	y during exec ost reference	cution of a	uto- tom	
	_			ust the first sta nout a host refe							
Pn460		n.□□X□	Reserved par	rameter (Do no	ot change.	.)					
		n.□X□□	0 Do fund	Adjustment Se not adjust the ction is enabled otuning with a	second sta	execution	of autotuning	y wiťhout a h			
			Adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)					
	2		mpensation-	0000h to	ot change.	0000h	All	After restart	Setup	*1	
Pn475		Gravity Con Related Se	mpensation- lections Gravity Comp 0 Disa 1 Ena	0000h to 0001h ensation Selection Se	- etion mpensation mpensation	0000h	All		Setup	*1	
Pn475		Gravity Con Related Se n.□□□X	mpensation- lections Gravity Comp 0 Disa 1 Ena Reserved para	0000h to 0001h ensation Selectable gravity contable gravi	- etion mpensation mpensation change.)	0000h	All		Setup	*1	
Pn475		Gravity Con Related Se	mpensation- lections Gravity Comp 0 Disc 1 Ena Reserved para	0000h to 0001h ensation Selectable gravity contable gravity contameter (Do not	etion mpensation mpensation change.)	0000h	All		Setup	*1	
Pn475		Gravity Con Related Se n.□□□X	mpensation- lections Gravity Comp 0 Disc 1 Ena Reserved para	0000h to 0001h ensation Selectable gravity contable gravi	etion mpensation mpensation change.)	0000h	All		Setup	*1	
Pn475		Gravity Con Related Se	mpensation- lections Gravity Comp 0 Disc 1 Ena Reserved para	0000h to 0001h ensation Selectable gravity contable gravity contameter (Do not	etion mpensation mpensation change.)	0000h	All		Setup	*1	
		Gravity Con Related Se	mpensation- lections Gravity Comp 0 Disa 1 Ena Reserved para Reserved para Reserved para	0000h to 0001h ensation Selectory control of the pravity control of	- ction mpensation change.) change.)	0000h		restart Immedi-			
Pn476	2	Gravity Con Related Se n.□□X□ n.□□X□ n.□X□□ n.X□□□ Gravity Con Torque Zero Clamp	mpensation- lections Gravity Comp 0 Disa 1 Ena Reserved para Reserved para Reserved para	on on one of the control of the cont	change.)	0000h	All	Immediately Immedi-	Tuning	*1	
Pn476 Pn501	2 2	Related Se n.□□X n.□□X□ n.□X□□ n.X□□□ Gravity Cortorque Zero Clamp Rotation Description Speed Coin	mpensation-lections Gravity Comp 0 Disc 1 Ena Reserved para Reserved para Reserved para mpensation bing Level etection Level	on one of the control	change.) 0.1% 1 min ⁻¹	0000h on. n. 0	All	Immediately Immediately Immediately	Tuning	*1	
Pn476 Pn501 Pn502	2 2 2	Related Se	mpensation-lections Gravity Comp 0 Disa 1 Ena Reserved para Reserved para Reserved para mpensation bing Level etection Level ncidence Signal Output	one on the control of the control on	change.) 0.1% 1 min ⁻¹ 1 min ⁻¹	0000h on. n. 0 10 20	All Rotary Rotary	Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup	*1 *1 *1	
Pn476 Pn501 Pn502 Pn503	2 2 2	Gravity Cor Related Se	mpensation-lections Gravity Comp 0 Disa 1 Ena Reserved para Reserved para Reserved para mpensation bing Level etection Level ncidence Signal Output erence-Servo Time erence Out-	on on to on the control of the control on the contr	change.) 0.1% 1 min ⁻¹ 1 min ⁻¹	0000h on. n. 0 10 20 10	All Rotary Rotary Rotary	Immediately Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Setup	*1 *1 *1 *1	
Pn476 Pn501 Pn502 Pn503 Pn506	2 2 2 2 2	Related Se n.□□X□ n.□□X□ n.□□X□ n.□□X□ Caravity Control Torque Zero Clamp Rotation Detection Some Width Brake Reference Of Delay Brake Reference Speed Coin Separate Reference Separate Reference Speed Reference Refe	mpensation-lections Gravity Comp 0 Disa 1 Ena Reserved para Reserved para Reserved para mpensation bing Level etection Level ncidence Signal Output brence-Servo Time erence Out- Level Brake Com-	on on to on to on the control of the	change.) change.) change.) change.) 1 min ⁻¹ 1 min ⁻¹ 10 ms	0000h on. n. 0 10 20 10 0	All Rotary Rotary Rotary All	Immediately Immediately Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Setup Setup	*1 *1 *1 *1 *1	

Momentary Power Inter-ruption Hold Time

20 to 50,000

20

1 ms

ΑII

2

Pn509

Setup Continued on next page.

*1

Immedi-ately

Continued from previous page. When Classi- Refer-

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	Continued fro When Enabled	Classi- fication	Refer
INO.		Input Signa	al Selection					After		ence
	2	1		FFF2h	_	2100h	All	restart	Setup	_
			Input Sig	nal Allocation Mo	de				Refere	ence
		n.□□□X	0	Use the sequence tions.	e input sigi	nal termina	als with the de	fault alloca-		
			1	Change the sequ			cations.		*1	
			2	Reserved setting	(Do not us	se.)				
			/S-ON (S	ervo ON) Signal A	Allocation				Refere	ence
			0	Active when CN1	-40 input s	signal is Ol	V (closed).			
			1	Active when CN1	-41 input s	signal is Ol	V (closed).			
			2	Active when CN1	-42 input s	signal is Ol	V (closed).			
			3	Active when CN1	-43 input s	signal is Ol	V (closed).			
			4	Active when CN1	-44 input s	signal is Ol	V (closed).			
			5	Active when CN1	-45 input s	signal is Ol	V (closed).			
			6	Active when CN1	-46 input s	signal is Ol	V (closed).			
		n.□□X□	7	The signal is alwa	ays active.				*1	
			8	The signal is alwa	ays inactive).			*1	
			9	Active when CN1	-40 input s	signal is Ol	F (open).			
			Α	Active when CN1	-41 input s	signal is Ol	F (open).			
			В	Active when CN1						
			С	Active when CN1-43 input signal is OFF (open).						
			D	Active when CN1-44 input signal is OFF (open).						
Pn50A			Е	Active when CN1	-45 input s	signal is Ol	F (open).			
			F	Active when CN1	-46 input s	signal is Ol	F (open).			
			/P-CON	(Proportional Con	trol) Signa	l Allocatio	n		Refere	ence
		n.□X□□	0 to F	The allocations at cations.	re the sam	e as the /S	S-ON (Servo C	N) signal allo	*1	
			P-OT (Fo	rward Drive Prohi	bit) Signal	Allocation	า		Refere	ence
			0	Enable forward d	rive when (CN1-40 in	out signal is C	N (closed).		
			1	Enable forward d	rive when (CN1-41 in	put signal is C	N (closed).		
			2	Enable forward d	rive when (CN1-42 in	put signal is C	N (closed).		
			3	Enable forward d	rive when (CN1-43 in	put signal is C	N (closed).		
			4	Enable forward d	rive when (CN1-44 in	put signal is C	N (closed).		
			5	Enable forward d	rive when (CN1-45 in	put signal is C	N (closed).		
			6	Enable forward d	rive when (CN1-46 in	put signal is C	N (closed).		
		n.X□□□	7	Set the signal to	always pro	hibit forwa	rd drive.			
			8	Set the signal to	always ena	able forwar	d drive.		*1	
			9	Enable forward d	rive when (CN1-40 in	out signal is C	OFF (open).		
			А	Enable forward d	rive when (CN1-41 in	out signal is C	OFF (open).		
			В	Enable forward d						
			С	Enable forward d				,		
			D	Enable forward d				,		
								,	1	
			Е	Enable forward d	rive when (CN1-45 in	out signal is C	FF (open).		
			E F	Enable forward d Enable forward d				,		

Continued from previous page.

Parameter	Size	N	lame	Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.			al Selection	Range s 0000h to	Unit	Setting	Motors	Enabled After	fication	ence		
	2	2	ai Selection	FFFFh	_	6543h	All	restart	Setup	_		
			- ` 	verse Drive Prohi	, ,				Refere	ence		
			0	Enable reverse dr				, ,				
				Enable reverse dr Enable reverse dr		<u> </u>						
				Enable reverse dr		<u>'</u>		, ,				
			4	Enable reverse dr		'		,				
			5		Enable reverse drive when CN1-45 input signal is ON (closed).							
			6	Enable reverse dr	ive when (CN1-46 inp	ut signal is C	N (closed).				
		n.□□□X	7	Set the signal to a	always pro	hibit revers	se drive.		*1			
				Set the signal to a								
				Enable reverse dr		· · · · · · · · · · · · · · · · · · ·		,				
			В	Enable reverse dr Enable reverse dr		<u>'</u>		,				
				Enable reverse dr		<u>'</u>		,				
				Enable reverse dr		· · · · · · · · · · · · · · · · · · ·						
			E	Enable reverse dr		<u>'</u>		,				
			F	Enable reverse dr	ive when (N1-46 inp	out signal is C	PFF (open).				
				Γ (Alarm Reset) S	ignal Alloc	cation			Refere	ence		
				Active on signal e OFF (open) to ON	dge when		put signal ch	anges from	110101			
				Active on signal e OFF (open) to ON	dge when	CN1-41 in	put signal ch	anges from				
			2	Active on signal e OFF (open) to ON	dge when	CN1-42 in	put signal ch	anges from				
Pn50B			3	Active on signal e OFF (open) to ON	dge when	CN1-43 in	put signal ch	anges from				
				Active on signal e OFF (open) to ON		CN1-44 in	put signal ch	anges from				
			5	Active on signal e OFF (open) to ON		CN1-45 in	put signal ch	anges from				
				Active on signal e OFF (open) to ON		CN1-46 in	put signal ch	anges from				
		n.□□X□	7	Reserved setting	-				*1			
			8	The signal is alwa	<u> </u>		and alone of all		N.			
			9	Active on signal education of the control of the co	pen).							
			A	Active on signal education (closed) to OFF (closed) Active on signal education (closed)	pen).							
			В	(closed) to OFF (c Active on signal e	pen).							
				(closed) to OFF (c	pen).							
			D	Active on signal e	pen).							
				Active on signal e	pen).							
			F	Active on signal e (closed) to OFF (c		CN 1-46 Inp	out signai cha	inges from O	N			
		n. 🗆 X 🗆 🗆	/P-CL (Fo	rward External To	orque Limi	t Input) Siç	gnal Allocatio	on	Refere	ence		
			0 to F	The allocations are	the same a	s the /S-ON	I (Servo ON) si	gnal allocation	S. *1			
		n.X000	/N-CL (Re	everse External To	orque Limi	t Input) Si	gnal Allocatio	on	Refere	ence		
		11.7000	0 to F	The allocations are	the same a	s the /S-ON	I (Servo ON) si	gnal allocation	S. *1			

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signa	al Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	-
			0 Ad 1 Ad 2 Ad 3 Ad	tor Direction) Setive when CN1- ctive when CN1- ctive when CN1- ctive when CN1- ctive when CN1-	40 input s 41 input s 42 input s 43 input s	ignal is ON signal is ON signal is ON signal is ON	V (closed). V (closed). V (closed).		Refere	ence
		n.□□□X	6 Ad 7 Th 8 Th	ctive when CN1- stive when CN1- tie signal is alway the signal is alway	46 input s ys active. ys inactive	signal is ON	(closed).		*1	
Pn50C			A Ad B Ad C Ad	etive when CN1- etive when CN1- etive when CN1- etive when CN1- etive when CN1-	41 input s 42 input s 43 input s	signal is OF signal is OF signal is OF	F (open). F (open). F (open).		_	
			-	ctive when CN1- ctive when CN1-						
	Ī		/SPD-A (Inte	ernal Set Speed	l Selection	n Input) Sid	anal Allocatio	on	Refere	ence
		n.□□X□	O to E	e allocations are l allocations.						
	Ī		/SPD-B (Int	ernal Set Speed	d Selection	n Input) Si	gnal Allocatio	on	Refere	ence
		n.□X□□	0 to F Th	e allocations are l allocations.	e the same	e as the /S	PD-D (Motor	Direction) siç	*1	
	Ī		/C-SEL (Co	ntrol Selection I	nput) Sigr	nal Allocat	ion		Refere	ence
		n.X□□□		e allocations are l allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	- *1	

	Continued from previous page.												
Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence					
2	Input Signal Selections 4	0000h to FFFFh	_	8888h	-	After restart	Setup	-					

Parameter No.

		/ZCLAM	P (Zero Clamping Input) Signal Allocation	Applicable Motors	Reference
		0	Active when CN1-40 input signal is ON (closed).		
		1	Active when CN1-41 input signal is ON (closed).		
		2	Active when CN1-42 input signal is ON (closed).		
		3	Active when CN1-43 input signal is ON (closed).		
		4	Active when CN1-44 input signal is ON (closed).		
		5	Active when CN1-45 input signal is ON (closed).		
		6	Active when CN1-46 input signal is ON (closed).		
	n.□□□X	7	The signal is always active.	All	*1
		8	The signal is always inactive.	All	*1
		9	Active when CN1-40 input signal is OFF (open).		
n50D		А	Active when CN1-41 input signal is OFF (open).		
11002		В	Active when CN1-42 input signal is OFF (open).		
		С	Active when CN1-43 input signal is OFF (open).	=	
		D	Active when CN1-44 input signal is OFF (open).		
		Е	Active when CN1-45 input signal is OFF (open).		
		F	Active when CN1-46 input signal is OFF (open).		
	- DDVD	/INHIBIT	(Reference Pulse Inhibit Input) Signal Allocation	Applicable Motors	Reference
	n.□□X□	0 to F	The allocations are the same as the /ZCLAMP (Zero Clamping Input) signal allocations.	All	*1
	- DVDD	/G-SEL	(Gain Selection Input) Signal Allocation	Applicable Motors	Reference
	n.□X□□	0 to F	The allocations are the same as the /ZCLAMP (Zero Clamping Input) signal allocations.	All	*1
	n.XDDD	D	d parameter (Do not change.)		

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig	nal Selec-	0000h to 6666h	-	3211h	All	After restart	Setup	_
Pn50E		n.□□X□ n.□X□	0 Dis 1 Ou 2 Ou 3 Ou 4 Ou 5 Ou 6 Ou //-CMP (Spe 0 to 6 The	doning Completabled (the above the signal apput the signal allocations are allocation	ve signal of from the C from the	out) Signal output is not CN1-25 or CN1-27 or CN1-37 ou CN1-38 ou CN1-39 output e as the /C	Allocation of used). CN1-26 outpoor CN1-28 outpoor CN1-30 outpoor tput terminal. tput terminal. tput terminal. COIN (Position cation	ut terminal. ut terminal. ut terminal. eation ing Comple-	Refere *1 Refere *1	ence
		n.X□□□ /S-RDY (Servo Ready) Signal Allocation 1 to 6 The allocations are the same as the /COIN (Positioning Completion) signal allocations.								ence
	2	Output Sig tions 2	nal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	-
Pn50F		n.000X n.00X0 n.0X00	0 Dis 1 Ou 2 Ou 3 Ou 4 Ou 5 Ou 6 Ou //LT (Speed 0 to 6 The Ou /BK (Brake C 0 to 6 The Ou	Limit Detection abled (the above tput the signal tput the sign	ve signal of from the Confrom	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 ou CN1-38 ou CN1-39 ou Allocation e as the /C	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal. tput terminal.	ut terminal. ut terminal. mit Detection	Refere	ence
	n.XDDD 0 to 6 The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.									ance .

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								Continued fro					
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig tions 3	gnal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_			
			/NEAR (Nea	r Output) Signa	al Allocatio	on			Refere	ence			
				sabled (the abo			ot used).						
			1 Ou	tput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.					
		n.□□□X	2 Ou	Itput the signal	from the C	N1-27 or	CN1-28 outp	ut terminal.					
				itput the signal			•	ut terminal.	*1				
				tput the signal									
Pn510				Itput the signal									
			0 00	6 Output the signal from the CN1-39 output terminal.									
		$n.\Box\Box X\Box$	Reserved pa	arameter (Do no	ot change.	.)							
			/PSELA (Ref	ference Pulse I	nput Multi	plication S	Switching Ou	tput) Signal	Refere	ence			
		n.□X□□	0 to 6 The allocations are the same as the /NEAR (Near) signal allocations.										
		n.XDDD	Reserved pa	arameter (Do no	ot change	.)							
						-,							
		Output Sic	gnal Inverse	0000h to				After					
	2	Settings	griai iriverse	1111h	_	0000h	All	restart	Setup	*1			
			Output Sign	al Inversion for	· CN1_25 4	and CN1-2	6 Terminals						
		n.□□□X		e signal is not in		and ON1-2	.o reminais						
				e signal is inver									
						and ONA C	10 Tawasin ala						
		n.□□X□		Output Signal Inversion for CN1-27 and CN1-28 Terminals 0 The signal is not inverted.									
Pn512		11.00		e signal is inver									
		- 0/00	<u> </u>	Output Signal Inversion for CN1-29 and CN1-30 Terminals									
		n.□X□□		e signal is not in e signal is inver									
				al Inversion for		Terminal							
		n.X□□□		e signal is not in									
			1 Th	e signal is inver	tea.								
	2	Output Sig	nal Inverse	0000h to	_	0000h	All	After	Setup	*1			
		Settings 2		0011h		3333		restart					
			Output Sign	al Inversion for	CN1-38	Terminal							
		n.□□□X	0 Th	e signal is not i	nverted.								
			1 Th	e signal is inver	ted.								
Pn513			Output Sign	al Inversion for	CN1-39	Terminal							
		n.□□X□		e signal is not i									
				e signal is inver									
		n. 🗆 X 🗆 🗆	Reserved no	arameter (Do no	ot change	.)							
		n.X□□□	Reserved pa	arameter (Do no	ot change	.)							

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig tions 4	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	_			
		n.000X		parameter (Do no		,							
	Ī		/PM (Preve	PM (Preventative Maintenance Output) Signal Allocation									
		n. 🗆 X 🗆 🗆	0 [isabled (the abo									
Pn514			1 (utput the signal									
			2 (Output the signal from the CN1-27 or CN1-28 output terminal.									
		1.0/00	3 (utput the signal	from the C	N1-29 or	CN1-30 outp	ut terminal.	*1				
			4 (utput the signal	from the C	N1-37 out	tput terminal.						
			5 C	utput the signal	from the C	N1-38 out	tput terminal.						
			6 0	utput the signal	from the C	N1-39 out	tput terminal.	erminal.					
	ı												

Applicable

Default

Setting

Continued	from	previous	page

Classi-

Refer-

When

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Signa 6	al Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	-	
					•						
	l		SEN (Absolu	ite Data Reque	st Input) S	Signal Allo	cation		Refere	ence	
			0 Ac	tive when CN1-	40 input s	ignal is ON	V (closed).				
			1 Ac	tive when CN1-	41 input s	ignal is ON	V (closed).				
			2 Ac	tive when CN1-	42 input s	ignal is ON	V (closed).				
			3 Ac	tive when CN1-	43 input s	ignal is ON	l (closed).				
			4 Ac	tive when CN1-	44 input s	ignal is ON	l (closed).				
			5 Ac	Active when CN1-45 input signal is ON (closed). Active when CN1-46 input signal is ON (closed).							
			6 Ac								
		n.□□□X	7 Th	3							
			8 En	able when 5 V i	s input to	CN1-4.			*1		
			9 Ac	tive when CN1-	40 input s	ignal is OF	F (open).				
			A Ac	tive when CN1-	41 input s	ignal is OF	F (open).				
			B Ac	tive when CN1-	42 input s	ignal is OF	F (open).				
			C Ac	tive when CN1-	43 input s	ignal is OF	F (open).				
			D Ac	tive when CN1-	44 input s	ignal is OF	F (open).				
			E Ac	tive when CN1-	45 input s	ignal is OF	F (open).				
			F Ac	tive when CN1-	46 input s	ignal is OF	F (open).				
15			/PSEL (Refe	rence Pulse Inp	out Multipl	lication Sv	vitching Input	i) Signal Allo	Refere	ence	
			0 Ac	tive when CN1-	40 input s	ignal is ON	l (closed).				
			1 Ac	tive when CN1-	41 input s	ignal is ON	V (closed).				
			2 Ac	tive when CN1-	42 input s	ignal is ON	V (closed).				
			3 Ac	tive when CN1-	43 input s	ignal is ON	V (closed).				
			4 Ac	tive when CN1-	44 input s	ignal is ON	V (closed).				
			5 Ac	tive when CN1-	45 input s	ignal is ON	V (closed).				
			6 Ac	tive when CN1-	46 input s	ignal is ON	V (closed).				
		n.□□X□	7 Th	e signal is alway	ys enabled	d.			*1		
			8 Th	e signal is alway	ys inactive				- 1		
			9 Ac	tive when CN1-	40 input s	ignal is OF	F (open).				
			A Ac	tive when CN1-	41 input s	ignal is OF	F (open).				
			B Ac	tive when CN1-	42 input s	ignal is OF	F (open).				
			C Ac	tive when CN1-	43 input s	ignal is OF	F (open).				
			D Ac	tive when CN1-	44 input s	signal is OF	F (open).				
			E Ac	tive when CN1-	45 input s	ignal is OF	F (open).				
			F Ac	tive when CN1-	46 input s	ignal is OF	F (open).				
	n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□	Reserved pa	rameter (Do no	ot change.)					
	-										
	L							0 1	1		

Setting

Size

Parameter

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sigr	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	_
										I
			FSTP (Forced	Stop Input) Si	gnal Alloc	ation			Refere	ence
			0 En	able drive wher	n CN1-40	input signa	al is ON (close	ed).		
			1 En	able drive wher	n CN1-41	input signa	al is ON (close	ed).		
				able drive wher						
				able drive wher		' '	`	,		
				able drive wher		·				
				able drive wher			•	· · · · · · · · · · · · · · · · · · ·		
			So	t the signal to a		·)	
	r	n.000X	, sto	p).					*1	
Pn516			o mo	t the signal to a stor to stop).						
				able drive wher						
				able drive wher			· · ·	·		
				able drive wher able drive wher		' '	` '	,		
				able drive wher				·		
				able drive wher						
			F En	able drive wher	n CN1-46	input signa	al is OFF (ope	n).		
	r	n.00X0	Reserved para	ameter (Do not	t change.)				·	
	r	n.0X00	Reserved para	ameter (Do not	t change.)					
	r	n.X000	Received par	ameter (Do not	t change)					
		1.7000	ricacived para	ameter (Bo not	conange.,					
		Output Si	gnal Selec-	0000h to				After		
	2	tions 5	griai Selec-	0666h	_	0654h	All	restart	Setup	*1
	Ī		ALO1 (Alarm	Code Output)	Signal All	ocation				
				abled (the abov			ot used).			
			1 Out	put the signal	from the C	N1-25 or	CN1-26 outpu	ut terminal.		
		n.□□□X		put the signal						
				put the signal				ut terminal.		
				put the signal			•			
Pn517				put the signal put the signal			•			
			U Out	.put the signal		7141-39 0u	tput terriiriai.			
		~ UUVU	<u> </u>	Code Output)						
		n.□□X□	0 to 6	e allocations are is.	e the same	e as the Al	-O1 (Alarm Co	ode Output) :	signal allo	ca-
	Ī		ALO3 (Alarm	Code Output)	Signal All	ocation				
		n.□X□□		allocations are			O1 (Alarm Co	ode Output)	signal allo	ca-
	_		tion	IS.						
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)				
Pn518*3	-	Safety Mo Paramete	odule-Related rs	_	_	_	All	-	_	-
			·					Continue	d on nov	t nago

Applicable

Motors

Continued	from	provious	2222
COHIHITAGO	попп	NIENIOUS	Daue

Classi-

fication

Refer-

ence

When

Enabled

Pn51E 4 Motor-Load Position 0 to 1,073,741,824 1 reference 1000 Rolary Immediately Setup *1		٠,			riange	Offic	Octimig	Wiotors	Lilabica	Hoation	CITOC
Pn520	Pn51B	4	Deviation (Overflow		ence	1000	Rotary		Setup	*1
Pn520 4 Position Deviation Over- flow Alarm Level 1,073,741,823 ence ence or 1,073,741,823 ence or 1,073,741,824 ence or 7 All Immediately setup *1 Pn524 4 Near Signal Width 1,073,741,824 ence or 7 All Immediately setup *1 Pn526 4 Position Deviation Over- flow Alarm Level at Servo ON 1,073,741,824 ence or 0 Pn526 2 Position Deviation Over- flow Warming Level at Servo ON 1,073,741,824 ence or 0 Pn528 2 Speed Limit Level at Servo ON 1,000 1 min¹ 1,000 All Immediately Setup *1 Pn529 2 Speed Limit Level at Servo ON 2,000 1,000 1 min¹ 1,000 Rotary Immediately Servo Pn529 2 ence or 2,000 1,000 1,000 1,000 1,000 Enchange in	Pn51E	2			10 to 100	1%	100	All		Setup	*1
Pn522	Pn520	4				ence		All		Setup	*1
Pn524	Pn522	4		Completed		ence	7	All		Setup	*1
Pn526	Pn524	4	Near Signa	al Width	1 to 1,073,741,824	ence		All		Setup	*1
Pn528 2 flow Warning Level at Servo ON 10 to 100 1% 100 All aftely 3 setup *1 servo ON 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary Immediately 3 setup *1 1 min *1 10000 Rotary 1 min *1 10000 Rotary 1 min *1 10000 Rotary 1 1 1 1 1 1 1 1 1	Pn526	4	flow Alarm		I TO	ence		All		Setup	*1
Pn52A 2 Servo ON	Pn528	2	flow Warni		10 to 100	1%	100	All		Setup	*1
Pn52B 2 Overload Warning Level 1 to 100 1% 20 All Immediately Setup *1 Base Current Derating at Motor Overload 10 to 100 1% 100 All After restart Setup *1 Pn52F 2 Monitor Display at 0000h to 0FFFh - 0FFFh All Immediately Setup *1 2 Program Jogging 0000h to 0000h to 1 Mail Immediately Setup *1 Program Jogging Operation Pattern 0 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance	Pn529	2		it Level at	0 to 10,000	1 min ⁻¹	10000	Rotary		Setup	*1
Pn52C 2 Base Current Derating at Motor Overload Detection 10 to 100 1% 100 All After restart Setup *1 Pn52F 2 Monitor Display at 0000h to 0FFFh All Immediately Setup *1 2 Program Jogging 0000h to 0005h - 0000h All Immediately Setup *1 Pn52F 2 Program Jogging 0000h to 0005h - 0000h All Immediately Setup *1 Program Jogging Operation Pattern 0 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Forward by travel distance in Pn531 × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Forward by travel distance in Pn531 × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in	Pn52A	2	Multiplier p	er Fully- tation	0 to 100	1%	20	Rotary		Tuning	*1
Pn52C 2 at Montor Overload Detection 10 to 100 1% 100 All All All Program Jogaing Travel 10 to 100 1% 100 All All All Immediately Setup *1 Setup 5 Detection 1000	Pn52B	2	Overload V	Varning Level	1 to 100	1%	20	All		Setup	*1
Pn530 Program Jogging O000h to O000h All Immediately Setup *1 Program Jogging Operation Pattern Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn536 → Reverse by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536	Pn52C	2	at Motor C		10 to 100	1%	100	All		Setup	*1
Pn530 Program Jogging Operation Pattern 0 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 1 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Porward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 Reserved parameter (Do not change.)	Pn52F	2		splay at		-	0FFFh	All		Setup	*1
Pn531 Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531) × Number of movements in Pn536 Reserved parameter (Do not change.) Description Pn531 Program Jogging Travel 1 to 1 refer Pn531 Program Jogging Travel 1 to 1 refer Pn531 Program Jogging Travel 1 to 1 refer Pn531 Pn5		2	Program J Related Se	ogging- elections		_	0000h	All		Setup	*1
Pn531 4 Program Jogging Iravel 1 to ence 32768 All Immediately Setup *1	Pn530		n.00X0 n.0X00	0 (W min with the content of the con	Vaiting time in Provements in	$1535 \rightarrow Fc$ $1536 \rightarrow Fc$ $1535	everse by to prward by the everse by the eve	travel distance travel distance travel distance travel distance travel distance in Pn531) ×	e in Pn531) > e in Pn531 - Number of n e in Pn531 -	Number Number Number Number Number Number Number Number Number	of of of of of ime s in
Pn531 4 Program Jogging Iravel 1 to ence 32768 All Immediately Setup *1			Π.ΧΔΔΔ	neserved pa	arameter (DO NO	or change.	.)				
	Pn531	4		ogging Travel		ence	32768	All		Setup	*1

Setting

Range

Setting

Unit

Default

Setting

Parameter

No.

Size

Name

	Continued from previous page								us page.		
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn533	2	Program Joment Spee		ove-	1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Joeration/Dec		cel-	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Joing Time	ogging Wa	iit-	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jober of Mov		m-	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Mo Voltage			-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Mo Voltage	Analog Monitor 2 Offset Voltage		-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Mo nification		0	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Mo nification			-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Cor Monitor Ur	nit Time		1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual V Detection \	Width		1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Level			0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerati Capacity*4	Capacity*4		Depends on model.*5	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	tor Allowab	Dynamic Brake Resistor Allowable Energy Consumption		0 to 65,535	10 J	0	All	After restart	Setup	*6
Pn603	2	Regenerati tance	ive Resis-		0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic B tance	Brake Resis	S-	0 to 65,535	10 mΩ	0	All	After restart	Setup	*6
	2	Overheat F Selections	Protection		0000h to 0003h	-	0000h	Linear	After restart	Setup	*1
	١.										
	'	n.□□□X	1		ection Selection						
			1		able overheat post overheat prot		ha Vaaltau	o Linnor Com	amatar*7		
			2	Mor	nitor a negative	voltage ii				nachine ar	nd
Pn61A			3	Mor	overheat prote	voltage in	put from a	sensor attac	hed to the m	nachine an	ıd
	-	n.□□X□	Reserved		overheat prote						
		n.□X□□		•	ameter (Do not	<u> </u>					
	-	n.X000		•	meter (Do not	,					
				•	,	3 /					
Pn61B *8	2	Overheat A	Alarm Leve	_	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *8	2	Overheat V	Varning Le	vel	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *8	2	Overheat A Time	Alarm Filter	-	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*3	_	Safety Mod Parameters		ed	-	_	_	All	_	_	_

*2. Set a percentage of the motor rated torque.

*1. Refer to the following manual for details.

- *3. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
 - Σ -V-Series/ Σ -V-Series for Large-Capacity Models/ Σ -7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

- *4. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *6. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details. Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- *7. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- *8. Enabled only when Pn61A is set to n. \$\square\$000 or n. \$\square\$000.

FT82 SERVOPACK with MECHATROLINK-II Communications References

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings.

 Reserved parameters

 Parameters not given in this manual

 Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Basic Fund tions 0	ction Selec-		0000h to 10B1h	_	0000h	All	After restart	Setup	_
		1				I	I.		I		
			Rotation D)ire	ction Selectio	n				Refere	ence
		n.□□□X			CCW as the f					*1	
Pn000			1	Jse	CW as the fo	rward dire	ction. (Rev	erse Rotation	Mode)		
		n.□□X□	Reserved	par	ameter (Do no	ot change.	.)				
		n.□X□□	Reserved parameter (Do not change.)								
		n.X□□□	Reserved	par	ameter (Do no	ot change.	.)				
	2	Application Selections			0000h to 1142h	-	0000h	All	After restart	Setup	_
								<u>I</u>			
			Motor Sto	nni	ng Method fo	· Servo Ol	FF and Gro	oup 1 Alarms		Refere	ence
				•	p the motor by			<u> </u>		1101010	
		n.□□□X	1 S	Sto _l	p the motor by dynamic brake	the apply	ing dynam	ic brake and	then release	*1	
			2 (Coa	ast the motor to	o a stop w	rithout the	dynamic brak	æ.		
			Overtravel Stopping Method							Refere	ence
			0 8	App stop	ly the dynamic oping method	brake or set in Pn0	coast the 01 = n.□□	motor to a sto I□X).	op (use the		
			1 [Dec the	elerate the mo maximum toro	otor to a st ue and the	op using t en servo-lo	he torque set ock the motor	in Pn406 as		
Pn001		n.□□X□			elerate the mo maximum toro				in Pn406 as	*1	
					elerate the mo OA and then s			he deceleration	on time set in		
					elerate the mo OA and then le			he deceleration	on time set in		
			Main Circu	uit F	Power Supply	AC/DC In	put Select	tion		Refere	ence
		n (1)			ut AC power as L3 terminals (ng the L1, L2),	
	n.□X□□	1 8	Input DC power as the main circuit power supply using the B1/ \oplus and \ominus 2 terminals or the B1 and \ominus 2 terminals (use an external converter or the shared converter).								
		n.X□□□	Reserved	par	ameter (Do no	ot change.	.)				

D	-			0.411	0-4		Jontinued ind			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	Function 2	0000h to 4213h	-	0000h	-	After restart	Setup	_
			MECHATE Option	OLINK Comman	d Position	and Spee	ed Control	Applicable Motors	Refere	ence
			0 I	gnore the settings	of P_TLII	M, NTLIM,	and TFF.			
		n.□□□X	1 l	Jse P_TLIM and N	N_TLIM as	torque lim	nits.			
				Jse TFF as a torq		· ·		All	*2	
			3	Jse P_TLIM or N_ P_CL or N_CL in t	TLIM as the OPTIO	limit when DN.				
			Torque Co	ntrol Option		Applicable Motors	Refere	ence		
		n.□□X□		gnore the setting rol (VLIM).	of the spe	ed limit for	torque con-	All	*2	
			1 1	Jse the speed limi speed limit.	t for torqu	e control (VLIM) as the	All		
Pn002			Encoder U	Encoder Usage					Refere	ence
		n. 🗆 X 🗆 🗆		Jse the encoder a ions.	All					
			1 (Jse the encoder a	as an incre	mental en	coder.		*1	
		_		Use the encoder a encoder.	as a single	-turn abso	lute	Rotary		
			External E	ncoder Usage				Applicable Motors	Refere	ence
			0 0	Do not use an ext	ernal enco	der.				
		n.X□□□		The external enco tion for CCW moto			ward direc-			
			2	Reserved setting (Do not us	e.)		Rotary	*1	
				The external enco ion for CCW moto			erse direc-	-		
			4	Reserved setting (Do not us	e.)				

Parameter _N

Continued from previous page.

Classi- Refer-

When

No.	Siz	Name		Range	Unit	Setting	Motors	Enabled	fication	ence
Pn006	2	Application Function Selections 6		0000h to 105Fh	_	0002h	All	Immedi- ately	Setup	*1
	li		Analog Monitor 1 Signal Selection							
		n.□□XX	00	Motor speed (1 V/1,000 min ⁻¹)						
			01	Speed reference (1 V/1,000 min ⁻¹)						
			02	Torque reference (1 V/100% rated torque)						
			03	Position deviation (0.05 V/reference unit)						
			04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)						
			05	Position reference speed (1 V/1,000 min ⁻¹)						
			06	Reserved setting (Do not use.)						
			07	Load-motor position deviation (0.01 V/reference unit)						
			08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)						
			09	Speed feedforward (1 V/1,000 min ⁻¹)						
			0A	Torque feedforward (1 V/100% rated torque)						
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)						
			0C	Completion of position reference distribution (completed: 5 V, not completed: 0 V)						
			0D	External encoder speed (1 V/1,000 min ⁻¹ : value at the motor shaft)						
			0E	Reserved setting (Do not use.)						
			0F	Reserved setting (Do not use.)						
			10	Main circuit DC voltage						
			11 to 5F	Reserved settings (Do not use.)						
		n.□X□□ Reserved parameter (Do not change.)								
	Ī	n.X□□□	Reserved parameter (Do not change.)							

Setting

Setting

Default Applicable

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence				
	2	Application Selections		0000h to 105Fh	_	0000h	All	Immedi- ately	Setup	*1				
			Angles M	onitor 2 Signal S	alaatian									
				onitor 2 Signal S		·1v								
			00	Motor speed (1										
			01	Speed referenc										
			02	Torque reference										
			03	Position deviation Position amplification				0 05 \//opoo	dor pulos	i+\				
			04			,	- , ,	0.05 V/enco	der puise	uriit)				
			05	Position referen			min ')							
			06	Reserved settin		· ·	\//roforonoo u	ni+\						
					Load-motor position deviation (0.01 V/reference unit) Positioning completion (positioning completed: 5 V, positioning not com-									
Pn007		n.□□XX	08	pleted: 0 V)				v, positioning	y not com					
			09	Speed feedforw	,									
			0A	Torque feedforv	-									
			0B	Active gain (1st										
			0C	Completion of pleted: 0 V)										
			0D	External encode	External encoder speed (1 V/1,000 min ⁻¹ : value at the motor shaft)									
			0E	Reserved settin	Reserved setting (Do not use.)									
		_	0F	Reserved settin	Reserved setting (Do not use.)									
			10											
			11 to 5F	Reserved settin	gs (Do not	use.)								
		n.□X□□	Reserved	ved parameter (Do not change.)										
		n.X□□□	Reserved	parameter (Do n	ot change)								
					<u> </u>	,								
	2	Application Selections		0000h to 7121h	_	4000h	Rotary	After restart	Setup	_				
			Low Batte	ery Voltage Alarm	/Warning :	Selection			Refere	ence				
		n.□□□X	0	Output alarm (A.8	330) for low	battery vo	oltage.		*1					
			1	Output warning (A	4.930) for I	ow battery	voltage.							
			Function	Selection for Unc	lervoltage				Refere	ence				
			0	Do not detect und	dervoltage.									
Pn008		n.□□X□	1	Detect undervolta	ige warning	g and limit	torque at hos	t controller.	*1					
			2	Detect undervolta Pn425 (i.e., only i	ige warning n SERVOP	g and limit ACK).	torque with F	n424 and						
			Warning [Detection Selection	on				Refere	ence				
		n.□X□□		Detect warnings.										
			1 Do not detect warnings except for A.971.											
			1	Do not detect wa	rnings exc	ept for A.9	<i>t</i> 1.							
		n.X000		parameter (Do n		•	71.							

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections		0000h to 0121h	-	0010h	All	After restart	Tuning	-	
		n.□□□X	Reserved	parameter (Do no	ot change.)					
	!			` ` `		,			1		
				ontrol Mode Sele					Refere	ence	
				Jse current contro SERVOPACK Mo			D004 1D6	A 0D0A	-		
Pn009		n.□□X□	1	-3R8A, -5R5A, a SERVOPACK Mo 470A, -550A, -5	and -7R6A odels SGD	: Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. a, -330A, -	*1		
			2 l	Jse current contro	ol mode 2.						
	Ī		Speed Det	tection Method S	election				Refere	ence	
		n.□X□□		Jse speed detect							
			1 l	Jse speed detect	ion 2.				*1		
	i	n.X□□□	Reserved	parameter (Do no	ot change)					
		11.7000	ricocived	parameter (De ne	or orialigo.	,					
		Application	n Function	0000h to		00015	A II	After	0-4		
	2	Selections		0044h	_	0001h	All	restart	Setup	_	
			Motor Sto	opping Method fo	or Group 2	Alarms			Refer	ence	
		n.□□□X	0	Apply the dynamistopping method	ic brake or	coast the		op (use the	710101		
			1	the maximum tor	ecelerate the motor to a stop using the torque set in Pn406 as e maximum torque. Use the setting of Pn001 = n. \(\sigma \square\) for the atus after stopping.						
				Decelerate the m	*	1					
			3	Decelerate the m Pn30A. Use the s stopping.							
				Decelerate the m Pn30A and then			the decelerati	on time set ir	1		
Pn00A			Stopping	Method for Force	ed Stops				Refer	ence	
				Apply the dynamistopping method				op (use the			
			1	Decelerate the m the maximum tor status after stopp	que. Use tl						
		n.□□X□		Decelerate the m				t in Pn406 as	*	1	
			3	Decelerate the motor to a stop using the deceleration time set in							
				Decelerate the m Pn30A and then			the decelerati	on time set ir	1		
		n.□X□□	Reserved	parameter (Do n	ot change	e.)					
		n.X□□□	Reserved	parameter (Do n	ot change	·.)					

Continued from previous page. Parameter Size Setting Setting Default **Applicable** When Classi-Refer-Name No. Range Unit Setting Motors Enabled fication ence Application Function 0000h to After 2 0000h ΑII Setup Selections B 1121h restart Operator Parameter Display Selection Reference n.□□□X Display only setup parameters. 1 Display all parameters. Motor Stopping Method for Group 2 Alarms Reference Stop the motor by setting the speed reference to 0. $n.\Box\Box X\Box$ Pn00B Apply the dynamic brake or coast the motor to a stop (use the 1 *1 stopping method set in $Pn001 = n.\square\square\squareX$). Set the stopping method with $Pn00A = n.\square\square\square\square X$. 2 Power Input Selection for Three-phase SERVOPACK Reference 0 Use a three-phase power supply input. $n.\Box X\Box\Box$ Use a three-phase power supply input as a single-phase power *1 1 supply input. n.XDDD Reserved parameter (Do not change.) Application Function Selections C 0000h to After 2 0000h *1 Setup 0131h restart Applicable Function Selection for Test without a Motor Motors $n.\Box\Box\Box X$ 0 Disable tests without a motor ΑII 1 Enable tests without a motor. Applicable Encoder Resolution for Tests without a Motor Motors 0 Use 13 bits. Pn00C n.□□X□ Use 20 bits. 1 Rotary 2 Use 22 bits. Use 24 bits. 3 Applicable Encoder Type Selection for Tests without a Motor Motors $n.\Box X\Box\Box$ 0 Use an incremental encoder. ΑII 1 Use an absolute encoder. n.X□□□ Reserved parameter (Do not change.) Application Function Selections D 0000h to After 2 0000h ΑII Setup 1001h restart n.□□□X Reserved parameter (Do not change.) n.□□X□ Reserved parameter (Do not change.) Pn00D $n.\square X\square\square$ Reserved parameter (Do not change.) Overtravel Warning Detection Selection n.X□□□ Do not detect overtravel warnings.

Detect overtravel warnings.

								Continued fro		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 2011h	-	0000h	All	After restart	Setup	_
			Preventative	Maintenance \	Warning S	election			Reference	се
		n.□□□X	0 Do n	ot detect preve	entative ma	aintenance	warnings.		*1	
Pn00F			1 Dete	ct preventative	maintena	nce warnir	ngs.		- 1	
		n.□□X□	Reserved par	rameter (Do no	ot change.)				
		n.□X□□	Reserved par	rameter (Do no	ot change.)				
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)				
		D	/5		1				1	
Pn021	2	not change	•	-	-	0000h	All	_	-	_
Pn022	2	not change	•	_	-	0000h	All	_	-	_
Pn040	2		Reserved parameter (Do not change.)		_	0000h	-	-	_	_
	2	Application Selections		0000h to 1111h	_	0000h	All	After restart	Setup	*1
Pn081		n.000X	0 Out 1 Out	se Output Sele tput phase-C p tput phase-C p rameter (Do no	ulses only oulses in bo	oth the for			ns.	
		n.□X□□		rameter (Do no		,				
	-			,		,				
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)				
Pn100	2	Speed Loc	pp Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn101	2	Speed Loc Time Cons		15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn103	2	Moment of	f Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Sp Gain	·	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	Ŭ	ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Po Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforwa		0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1

Applicable

Motors

Default

Setting

Continued from previous page.

Classi-

fication

ence

When

Enabled

	2	Gain Appli tions	cation Sele	ec-	0000h to 5334h	_	0000h	All	-	Setup	_
			Mode Sw	vitch	ing Selection				When Enabled	Refere	ence
			0		the internal to el setting: Pn1		ence as th	e condition			
			1		the speed ref : Pn10D).	erence as	the condit	ion (level set-			
		n.□□□X	<u>'</u>		the speed ref : Pn181).	erence as	the condit	ion (level set-			
			2		the accelerati ing: Pn10E).	on referen	ce as the o	condition (leve	Immedi ately	*1	
Pn10B					the accelerati ing: Pn182).	on referen	ce as the o	condition (leve	el		
			3	ting	the position on the thick			ition (level set	-		
			4	Do	not use mode		When				
				Speed Loop Control Method						Refere	ence
		n.□□X□	1	PI control I-P control						*1	
			2 to 3	Res	served settings	(Do not u	se.)		restart		
		n. 🗆 X 🗆 🗆			rameter (Do no		,				
		n.X□□□	Reserved	d par	ameter (Do no	ot change.	.)				
Pn10C	2	Mode Swit for Torque			0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Swit for Speed		el	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Swit for Acceler		el	0 to 30,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swit for Position	tching Leve n Deviation	el 1	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position In Constant	tegral Time	Э	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain	ompensatio	n	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fr pensation	Gain		10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient	t .		0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	Correction	1	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2		Friction Compensation Gain Correction			1%	100	All	Immedi- ately	Tuning	*1

Setting

Range

Setting

Unit

Size

2

2

2

2

Time 1

Time 2

Gain Switching Time 1

Gain Switching Time 2

Gain Switching Waiting

Gain Switching Waiting

0 to 65,535

0 to 65,535

0 to 65,535

0 to 65,535

0

0

0

0

1 ms

1 ms

1 ms

1 ms

All

ΑII

ΑII

ΑII

Pn131

Pn132

Pn135

Pn136

Name

Parameter

No.

Tuning Continued on next page.

Tuning

Tuning

Tuning

*1

*1

*1

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	Continued from previous page. Setting Setting Default Applicable When Classic Refer-												
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Automatic ing Selection	Gain Switch- ons 1	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1			
			Gain Switch	ing Selection									
			0 Us	e manual gain s e gain is switch	switching. ed manua	lly with G_	SEL in the Op	otion field.					
		n.□□□X		served setting (•	•							
			2 The	e automatic gain is switch itching condition to the condition on the condition on the condition is a suit of the condition of the condition is a suit of the condition of the co	ed automa n A is sati	atically fror sfied. The	n the first gair gain is switch	ned automati	cally from	hen the			
Pn139			Gain Switch	ing Condition A	4								
				OIN (Positioning	· '		,						
				OIN (Positioning) signal turns	OFF.					
		n.□□X□		EAR (Near Outp	, ,								
			-	EAR (Near Outposition reference	, 0			rongo input i	o OEE				
			-	sition reference	•		i position rele	rence input i	5 011.				
					•					_			
		n.□X□□	n. IXIII Reserved parameter (Do not change.)										
		n.XDDD	n.X□□□ Reserved parameter (Do not change.)										
Pn13D	2	Current Ga	ain Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1			
	2		owing Con- d Selections	0000h to 1121h	_	0100h	All	Immedi- ately	Tuning	_			
		n.□□□X	0 Do r	wing Control Senot use model following	ollowing c	ontrol.			Referen	ice			
			Vibration Su	ppression Sele	ction				Referen	ice			
		n.□□X□	0 Dor	not perform vibr	ation supp	oression.							
			1 Perf	orm vibration su	uppressior	for a spe	cific frequenc	y.	*1				
			2 Perf	orm vibration su	uppressior	for two s	pecific freque	ncies.					
Pn140			Vibration Su	ppression Adju	stment Se	election			Referen	ice			
		n.□X□□	0 tio	not adjust vibra n of autotuning st reference, an	without a	host refere							
			1 au	just vibration su totuning withou ence, and custo	t a host re				*1				
			Speed Feed	forward (VFF)/1	Torque Fe	edforward	(TFF) Selecti	ion	Referen	ice			
			O Do	not use model	•		` ,						
		n.X□□□	wa	rd together.					*1				
			1 Us	e model followi gether.	ng control	and speed	d/torque feed	forward					
D. C. C.	_	Model Follo	owing Con-	101 25	0	F0.5		Immedi-	- .				
Pn141	2	trol Gain	owing Con-	10 to 20,000	0.1/s	500	All	ately	Tuning	*1			
Pn142	2	trol Gain C	orrection	500 to 2,000	0.1%	1000	All	ately	Tuning	*1			
Pn143	2		owing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
								Continue	d on nev	t nage			

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn144	2	Model Following Control Bias in the Reverse Direction	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration Suppression 1 Frequency A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration Suppression 1 Frequency B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2	Model Following Control Speed Feedforward Compensation	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Model Follow- ing Control Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2	Second Model Follow- ing Control Gain Correc- tion	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration Suppression 2 Frequency	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration Suppression 2 Correction	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Related Selections	0000h to 0021h	-	0021h	All	After restart	Tuning	-
		n.□□□X 0 Us	wing Control Ty e model following e model following		Refere	ence			
Pn14F			Type Selection	9 1 1 1	21			Refere	ence
F11141		0 Us 1 Us	e tuning-less ty e tuning-less ty e tuning-less ty	pe 2.				*1	
	ı	n.□X□□ Reserved pa	rameter (Do no	ot change.	.)				
		n.XDDD Reserved pa	rameter (Do no	ot change	.)				
	2	Anti-Resonance Control-Related Selections	0000h to 0011h	_	0010h	All	Immedi- ately	Tuning	_
		n. 🗆 🗆 🕠 🕠 Do	nce Control Se not use anti-re e anti-resonanc	sonance o				Refere	ence
			nce Control Ac	,				Refere	ence
Pn160	ı	n.□□X□ 0 tion ref	not adjust anting of autotuning erence, and cus	without a stom tunin	host refere ig.	nce, autotuni	ng with a hos		
		1 aut	just anti-resona totuning withou ce, and custom	t a host re				-	
	I	n.□X□□ Reserved pa	rameter (Do no	ot change	.)				
		n.X□□□ Reserved parameter (Do not change.)							
Pn161	2	Anti-Resonance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi-	Tuning	*1
Pn162	2	Anti-Resonance Gain Correction	1 to 1,000	1%	100	All	ately Immedi- ately	Tuning	*1
Pn163	2	Anti-Resonance Damping Gain	0 to 300	1%	0	All	Immedi- ately	Tuning	*1

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-	
No.		Anti-Reson	ance Filter	-1,000 to	Unit	Setting	Motors	Enabled Immedi-	fication	ence	
Pn164	2	Time Cons rection	tant 1 Cor-	1,000	0.01 ms	0	All	ately	Tuning	*1	
Pn165	2	Anti-Resor Time Cons rection		-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn166	2	Anti-Resor	ance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1	
	2	Tuning-less Related Se	Function- lections	0000h to 2711h	_	1401h	All	-	Setup	*1	
Pn170	_	n.00X0 n.0X0	1 En. Speed Contr 0 Us 1 Us Rigidity Leve 0 to 7 Se	able tuning-lessable tuning-lessable tuning-lessable tuning-lessable tuning-lessable to Method e for speed core for speed core e for speed core t the rigidity lev	e function. Introl. Introl and u	se host co		sition contro	Whe Enab Afteresta Whe Enab Afteresta Whe Enab Immeratel Whe Enab	en en eled	
Pn205	2	Multiturn L		t the load level 0 to 65,535	for the tun	ing-less fu 65535	nction. Rotary	After restart	Setup		
	2	Position Co	ontrol Func-	0000h to 2210h	_	0010h	All	After restart	Setup	_	
		n.□□□X n.□□X□ n.□X□□	Reserved pa	rameter (Do no rameter (Do no rameter (Do no	ot change.)					
Pn207			Reserved parameter (Do not change.) COIN (Positioning Completion Output) Signal Output Timing Reference								
			0 sar	ne or less than dth).							
		n.X000	0 sar Wi 1 or and 2 or		absolute value of Prafter the pabsolute value of Prafter the pabsolute value of Prafter	g of Pn522 alue of the n522 (Posi- position ref alue of the n522 (Posi-	position error position error tioning Comp erence filter is position error	r is the same leted Width) s 0.	*1		
Pn20A	4	Number of	0 sar Wi 1 or and 2 or and	oth). It put when the all ess than the set the reference the the set than the set	absolute value of Prafter the pabsolute value of Prafter the pabsolute value of Prafter	g of Pn522 alue of the n522 (Posi- position ref alue of the n522 (Posi-	position error position error tioning Comp erence filter is position error	r is the same leted Width) s 0.	*1	*1	
Pn20A Pn20E		Number of	0 sar Will Out or and 2 or and External cale Pitches Gear Ratio	tput when the alless than the sed the reference tput when the alless than the sed the reference	absolute value the pattern the passolute value thing of Prafter the passolute value thing of Prinput is 0. 1 scale pitch/revolu-	g of Pn522 alue of the n522 (Posi position ref alue of the n522 (Posi	position error tioning Comp erence filter is position error tioning Comp	r is the same leted Width) s 0. r is the same leted Width)	*1	*1	

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
Pn212	4	Number of Encode Output Pulses	r	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1			
	2	Fully-closed Contro Selections	ol	0000h to 1003h	_	0000h	Rotary	After restart	Setup	*1			
	1	n.□□□X Reserv	ed pa	rameter (Do no	ot change.)							
Pn22A	r	n.□□X□ Reserv	ed pa	rameter (Do no	t change.)							
	1	n.□X□□ Reserv	ed pa	rameter (Do no	t change.)							
				Control Speed		k Selectio	n						
	r	1.XDDD 0		e motor encode e external enco	<u> </u>	<u> </u>							
	2	Position Control Ex sion Function Sele	pan- ctions	0000h to 0001h	_	0000h	All	After restart	Setup	*1			
			Backlash Cor		l				II.				
	Ī	Backla	Backlash Compensation Direction										
Pn230	r	1.	0 Compensate forward references. 1 Compensate reverse references.										
P11230	n.□□X□ Reserved parameter (Do not change.)												
	n.□□X□ Reserved parameter (Do not change.) n.□X□□ Reserved parameter (Do not change.)												
	_		served parameter (Do not change.)										
		I.XUUU Neserv	served parameter (Do not change.)										
Pn231	4	Backlash Compen	sation	-500,000 to 500,000	0.1 reference units	0	All	Immedi- ately	Setup	*1			
Pn233	2	Backlash Compen- tion Time Constan		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1			
Pn281	2	Encoder Output Retion	esolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1			
Pn304	2	Jogging Speed		0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1			
Pn305	2	Soft Start Accelera	tion	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2			
Pn306	2	Soft Start Decelera	tion	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2			
Pn308	2	Speed Feedback F Time Constant	ilter	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1			
Pn30A	2		Deceleration Time for Servo OFF and Forced		1 ms	0	All	Immedi- ately	Setup	*1			
Pn30C	2	Speed Feedforwar Average Movemen Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1			

								Continued from	om previou	us page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Vibration D Selections	etection	0000h to 0002h	_	0000h	All	Immedi- ately	Setup	*1
	_									
			Vibration Det	ection Selection	on					
		n.□□□X	0 Do	not detect vibr	ation.					
		11.000	1 Out	put a warning	(A.911) if v	ibration is	detected.			
Pn310			2 Out	put an alarm (A	A.520) if vi	bration is	detected.			
		n.□□X□	Reserved par	rameter (Do no	ot change.)				
		n.□X□□	Reserved par	rameter (Do no	ot change.)				
		n.XDDD	Reserved par	rameter (Do no	ot change.)				
	-		1							
Pn311	2	Vibration D sitivity	etection Sen-	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration D Level	etection	0 to 5,000	1 min ⁻¹	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum I	Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary	After restart	Setup	*1
Pn324	2		Inertia Cal- arting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn401	2	First Stage Reference Constant	First Torque Filter Time	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward To	orque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse To	orque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward Ex Limit	ternal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse Ex Limit	ternal Torque	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency	/ Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Lim Torque Cor		0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1

Default

Setting

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Applicable	When	Classi-	Refer-
Motors	Enabled	fication	ence
		_	

	2	Torque-Rel tion Selecti		; -	0000h to 1111h	-	0000h	All	-	Setup	_
	Ī		Notch Fi	Iter S	Selection 1				When Enabled	Refere	ence
		n.□□□X	0	Disa	able first stage	notch filte	er.		Immedi	*1	
			1	Ena	able first stage	notch filte	r.		ately		
			Speed L	imit (Selection				When Enabled	Refere	ence
			0	sett	e the smaller of ting of Pn407 a	as the spe	ed limit.				
D : 400		n.□□X□			e the smaller of ting of Pn480 a			speed and th	After	*1	
Pn408			1		e the smaller of eed and the set				restart		
			ı		e the smaller of eed and the set						
			Notch Fi	Iter S	Selection 2				When Enabled	Refere	ence
		n.□X□□	0		able second st				Immedi ately	*1	
			1	Ena	able second sta	age notch	atery				
		.,	Friction (tion Compensation Function Selection						Refere	ence
		n.X□□□	0		able friction co	•	Immediately	*1			
			1	Ena	Enable friction compensation.						
Pn409	2	First Stage Frequency	Notch Filt	ter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value	Notch Filt	ter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filt	ter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second Stater Frequer		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second Stater Q Value	age Notch	Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stater Depth	age Notch	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second Sta Torque Ref Frequency			100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second Sta Torque Ref Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ref Time Cons	erence Fil	ter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1

Setting

Range

Setting

Unit

Size

Name

Parameter

No.

	Continue									us page.
Parameter No.	Size		ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel	lated Func- ions 2	0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1
										<u>I</u>
	ī		Notch Filter	Selection 3						
		n.□□□X		sable third stage	e notch filt	er.				
			1 En	able third stage	notch filte	er.				
D: 440	Ī		Notch Filter	Selection 4						
Pn416		n.□□X□		sable fourth sta						
			1 En	able fourth stag	ge notch fi	iter.				
		n.□X□□	Notch Filter 0 Dis		notob filte					
		11.0700		sable fifth stage able fifth stage						
		n.X□□□	Reserved na	arameter (Do no	nt change)				
			Tiodol vod po	aramotor (Bo ne	or onango	.,				
Pn417	2	Third Stage Frequency	e Notch Filter	5000	All	Immedi- ately	Tuning	*1		
Pn418	2	Third Stage Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Depth	e Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Stater Frequer	ge Notch Fil- ncy	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth State ter Q Value	ge Notch Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth Stater Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Fifth Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Rip sation Sele	ple Compen- ections	0000h to 1111h	_	0000h	Rotary	_	Setup	*1
			Speed Rippl	e Compensation	on Functio	n Selectio	n		Whe Enab	
		n.□□□X	0 Dis	sable speed ripp	ole compe	nsation.			Imme	
			1 En	able speed ripp	le compe	nsation.			ate	
Pn423			Speed Rippl	le Compensation	on Informa	ation Disaç	greement Wa	rning Detec-	- Whe	
F11423		n.□□X□	0 De	tect A.942 aları	ms.				Afte	
			1 Do	not detect A.9	42 alarms				resta	art
			Speed Rippl	e Compensation	on Enable	Condition	Selection		Whe Enab	
		n.□X□□		eed reference					Afte resta	
	1 Motor speed								16316	
		n.X□□□	Reserved pa	arameter (Do no	ot change	.)				
		Torrect	sit of Mair O'		1	1		les es s el		1
Pn424	2	cuit Voltage	•	0 to 100	1%*3	50	All	Immedi- ately	Setup	*1
Pn425	2	Limit at Ma Voltage Dro		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
		J = 1.1	•	1	1	I	1	Continue	ed on nex	t nage

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1		
Pn427	2	Speed Rip sation Ena	ple Compen- ble Speed	0 to 10,000	1 min ⁻¹	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1		
Pn456	2	Sweep Tor ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1		
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1		
	Ī		Notch Filter	Adjustment Se	lection 1							
		n.□□□X	0 tui	not adjust the ning without a hing.	first stage ost referer	notch filter nce, autotu	automatically ning with a ho	/ during exec ost reference	cution of a e, and cust	uto-		
				Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
Pn460		n.□□X□	Reserved pa	arameter (Do no	ot change.)						
	Ī		Notch Filter	Adjustment Se	lection 2							
		n.□X□□	0 fur	not adjust the socion is enabled totuning with a	d or during	execution	of autotuning	without a h				
			1 tio	ljust the second n is enabled or totuning with a	during exe	ecution of a	autotuning wit	hout a host	ng-less fur reference,	nc-		
	Ī	n.X□□□	Reserved parameter (Do not change.)									
	2	Gravity Co Related Se	mpensation- elections	0000h to 0001h	_	0000h	All	After restart	Setup	*1		
	Ī	n.□□□X	Gravity Com	pensation Selec	tion							
				sable gravity co	•							
Pn475			1 Er	Enable gravity compensation.								
		n.□□X□	Reserved pa	rameter (Do not	change.)							
		n.□X□□ Reserved parameter (Do not change.)										
	-	n.LIXLIL	Reserved pa	rameter (Do not	change.)							
		n.X000		rameter (Do not rameter (Do not	0 ,							
Pn476	2	n.X□□□		,	0 ,	0	All	Immedi- ately	Tuning	*1		
Pn476 Pn502	_	n.XDDD Gravity Co Torque	Reserved pa	rameter (Do not -1,000 to 1,000	change.)	0 20	All Rotary		Tuning Setup	*1		
	2	Gravity Co Torque Rotation D	Reserved pa	-1,000 to 1,000 1 to 10,000	0.1%			ately Immedi-				
Pn502	2	Gravity Co Torque Rotation D Speed Coi Detection 9 Width	mpensation etection Leve ncidence Signal Output erence-Servo	-1,000 to 1,000 1 to 10,000	0.1% 1 min ⁻¹	20	Rotary	ately Immediately Immediately	Setup	*1		
Pn502 Pn503	2 2 2	Rotation D Speed Coi Detection S Width Brake Refe OFF Delay	mpensation etection Leve ncidence Signal Output erence-Servo Time erence Out-	-1,000 to 1,000 1 to 10,000 0 to 100	0.1% 1 min ⁻¹	20	Rotary	ately Immediately Immediately Immediately	Setup	*1		
Pn502 Pn503 Pn506	2 2 2	Gravity Co Torque Rotation D Speed Coi Detection S Width Brake Refe OFF Delay Brake Refe put Speed	Reserved pa mpensation etection Leve ncidence Signal Output erence-Servo Time erence Out- Level -Brake Com-	-1,000 to 1,000 1 to 10,000 0 to 100 0 to 50	0.1% 1 min ⁻¹ 10 ms	20 10 0	Rotary Rotary All	ately Immediately Immediately Immediately Immediately Immediately	Setup Setup Setup	*1		

Continued from previous page.

When Classi- Refer-

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Sign	al Sele	ctions	0000h to FFF2h	-	1881h	All	After restart	Setup	_	
	ī	- DDDV	Dana				\					
		n.□□□X	Rese	rved par	ameter (Do no	ot cnange.	.)					
		n.□□X□	Rese	rved par	ameter (Do no	ot change.	.)					
		n.□X□□	Rese	rved par	ameter (Do no	ot change.	.)					
			P-OT	(Forwa	d Drive Prohib	oit) Signal	Allocation			Refere	ence	
			0	Enable	forward drive	when CN1	-13 input	signal is ON (closed).			
			1	Enable forward drive when CN1-7 input signal is ON (closed).								
			2	Enable	forward drive	when CN1	-8 input si	gnal is ON (cl	osed).			
D 504			3	3 Enable forward drive when CN1-9 input signal is ON (closed).								
Pn50A			4	4 Enable forward drive when CN1-10 input signal is ON (closed).								
			5	Enable forward drive when CN1-11 input signal is ON (closed).								
			6	Enable	nable forward drive when CN1-12 input signal is ON (closed).							
		n.X□□□	7	Set the	signal to alwa	ys prohibi	t forward c	Irive.		*1		
			8	Set the	signal to alwa	gnal to always enable forward drive.						
			9	Enable	forward drive	when CN1	-13 input	signal is OFF	(open).			
			Α	Enable	forward drive	when CN1	-7 input si	gnal is OFF (c	open).			
			В		forward drive			· ·	' '			
			С		forward drive			· · ·	' '			
			D			ve when CN1-10 input signal is OFF (open).						
			E		forward drive			Ŭ.	\ I /			
			F Enable forward drive when CN1-12 input signal is OFF (open).									

Applicable

Motors

Default

Setting

Setting

Unit

Setting

Range

1

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COHIHITAGO	попп	NIENIOUS	Daue

Classi-

fication

Refer-

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When

Enabled

					9								
	2	Input Signa 2	al Selection		0h to FFh	-	8882h	All	After restart	Setup	_		
		•								•	•		
			N-OT (Re	everse Drive	e Prohil	oit) Signal	Allocation	l		Refere	ence		
			0	Enable rev	erse dri	ve when C	N1-13 inp	ut signal is O	N (closed).				
			1	Enable rev	erse dri	ve when C	CN1-7 inpu	t signal is ON	(closed).				
			2	Enable rev	erse dri	ve when C	CN1-8 inpu	t signal is ON	(closed).				
			3	Enable reverse drive when CN1-9 input signal is ON (closed).									
			4	Enable rev	erse dri	ve when C	CN1-10 inp	ut signal is O	N (closed).				
			5	Enable rev	erse dri	ve when C	CN1-11 inp	ut signal is O	N (closed).				
			6					ut signal is O	N (closed).				
	r	n.□□□X	7	Set the sig	ınal to a	lways pro	hibit revers	e drive.		*1			
			8	Set the sig	ınal to a	lways ena	ble reverse	e drive.					
			9	Enable rev	erse dri	ve when C	CN1-13 inp	ut signal is O	FF (open).				
			Α	Enable rev	erse dri	ve when C	CN1-7 inpu	t signal is OF	F (open).				
			В	Enable rev	erse dri	ve when C	CN1-8 inpu	t signal is OF	F (open).				
			С	Enable rev	erse dri	ve when C	CN1-9 inpu	t signal is OF	F (open).				
			D	Enable rev	erse dri	ve when C	CN1-10 inp	ut signal is O	FF (open).				
			E	Enable rev	erse dri	ve when C	CN1-11 inp	ut signal is O	FF (open).				
			F	F Enable reverse drive when CN1-12 input signal is OFF (open).									
D 50D	r	n.□□X□	Reserved parameter (Do not change.)										
PHOUB	Pn50B												
			/P-CL (F	orward Exte	ernal To	rque Limi	t Input) Si	gnal Allocatio	n	Refere	ence		
			/P-CL (F	orward Extended Active whe		•			n	Refere	ence		
					en CN1-	13 input s	signal is ON	l (closed).	n	Refere	ence		
			0	Active whe	en CN1- en CN1-	13 input s 7 input siç	signal is ON	V (closed).	n	Refere	ence		
			0	Active whe	en CN1- en CN1- en CN1-	13 input s 7 input siç 8 input siç	signal is ON gnal is ON gnal is ON	(closed).	n	Refere	ence		
			0 1 2	Active whe	en CN1- en CN1- en CN1- en CN1-	13 input s 7 input siç 8 input siç 9 input siç	signal is ON gnal is ON gnal is ON gnal is ON	(closed). (closed). (closed).	n	Refere	ence		
			0 1 2 3	Active whe	en CN1- en CN1- en CN1- en CN1-	13 input s 7 input sig 8 input sig 9 input sig 10 input s	signal is ON gnal is ON gnal is ON gnal is ON signal is ON	I (closed). (closed). (closed). (closed). I (closed).	n	Refere	ence		
			0 1 2 3 4	Active whe Active whe Active whe Active whe	en CN1- en CN1- en CN1- en CN1- en CN1-	13 input s 7 input siç 8 input siç 9 input siç 10 input s	signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	n	Refere	ence		
	r	n.0X00	0 1 2 3 4 5	Active whe Active whe Active whe Active whe Active whe Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1-	13 input s 7 input sig 8 input sig 9 input sig 10 input s 11 input s 12 input s	signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	n	Refere			
	r	n.0X00	0 1 2 3 4 5 6	Active whe Active whe Active whe Active whe Active whe Active whe	en CN1-	13 input s 7 input sig 8 input sig 9 input sig 10 input s 11 input s 12 input s	signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	n				
	r	n.0X00	0 1 2 3 4 5 6 7	Active whe Active whe Active whe Active whe Active whe Active whe The signal The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alway	13 input s 7 input sig 8 input sig 9 input sig 10 input s 11 input s 12 input s ys active. ys inactive 13 input s	signal is ON gnal is ON gnal is ON gnal is ON signal is ON	J (closed). (closed). (closed). (closed). J (closed). J (closed). J (closed).	n				
	r	n.□X□□	0 1 2 3 4 5 6 7	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa; is alwa; en CN1-	13 input signation of the signature of t	signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is ON gnal is ON gnal is ON gnal is OF gnal is OFF	I (closed). (closed). (closed). (closed). I (closed). I (closed). I (closed). I (closed). I (closed).	n				
	r	n.ロXロロ	0 1 2 3 4 5 6 7 8	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa is alwa en CN1- en CN1-	13 input signification 13 input signification 13 input signification 13 input signification 14 input signification 15 input signification	signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON gnal is ON gnal is ON gnal is ON gnal is OF gnal is OFF	I (closed). (closed). (closed). (closed). I (closed).	n				
	r	n.0X00	0 1 2 3 4 5 6 7 8 9 A B	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alway en CN1- en CN1- en CN1- en CN1-	13 input signification 13 input signification 13 input signification 13 input signification 14 input signification 15 input signification	signal is ON gnal is ON gnal is ON gnal is ON signal is ON gnal is OF gnal is OFF gnal is OFF	I (closed). (closed). (closed). (closed). I (closed).	n				
	r	n.□X□□	0 1 2 3 4 5 6 7 8 9 A B C	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa; is alwa; en CN1- en CN1- en CN1- en CN1-	13 input signation of the control of	signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is ON gnal is OF gnal is OFF	J (closed). (closed). (closed). (closed). J (closed). J (closed). J (closed). J (closed). J (closed). F (open). G (open). G (open). F (open). F (open).	n				
	,	n.□X□□	0 1 2 3 4 5 6 7 8 9 A B C D	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa- is alwa- is alwa- is alwa- ien CN1- en CN1- en CN1- en CN1-	13 input signation of the control of	signal is ON gnal is ON gnal is ON gnal is ON gnal is ON gignal is ON gignal is ON gignal is ON gignal is OF gnal is OFF gnal	I (closed). (closed). (closed). (closed). I (closed).	n				
	r	n. 🗆 X 🗆 🗆	0 1 2 3 4 5 6 7 8 9 A B C	Active whe Active whe Active whe Active whe Active whe The signal Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa- is alwa- is alwa- is alwa- ien CN1- en CN1- en CN1- en CN1-	13 input signation of the control of	signal is ON gnal is ON gnal is ON gnal is ON gnal is ON gignal is ON gignal is ON gignal is ON gignal is OF gnal is OFF gnal	I (closed). (closed). (closed). (closed). I (closed).	n				
			0 1 2 3 4 5 6 7 8 9 A B C D E	Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa- is alwa- is alwa- is alwa- is n CN1- en CN1-	13 input signature 13 input signature 14 input signature 15 input signature 15 input signature 16 input signature 17 input signature 18 input signature 19 input sign	signal is ON gnal is ON signal is ON signal is ON signal is ON gnal is ON signal is ON signal is ON signal is ON signal is OF gnal is OFF gnal is OFF gnal is OFF signal is OFF	I (closed). (closed). (closed). (closed). I (closed).	ın				
		n.0X00	0 1 2 3 4 5 6 7 8 9 A B C D E	Active whe	en CN1- en CN1- en CN1- en CN1- en CN1- en CN1- is alwa is alwa is alwa en CN1-	13 input signature 13 input signature 14 input signature 15 input signature 16 input signature 17 input signature 18 input signature 18 input signature 19 input sign	signal is ON gnal is ON gignal is ON gignal is ON gnal is OF gnal is OFF gnal is O	I (closed). (closed). (closed). (closed). I (closed).	ın	*1	ence		

Parameter

No.

Size

Name

								Continued fro	m previou	ıs page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig	gnal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	-
		1		1						
			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Allocation		Refere	ence
			0 Dis	sabled (the abo	ve signal c	output is no	ot used).			
		n.□□□X	1 Ou	tput the signal	from the C	CN1-1 or C	N1-2 output	terminal.		
			2 Ou	tput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.	*1	
			3 Ou	tput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.		
			4 to 6 Re	served setting	(Do not us	e.)				
Pn50E			/V-CMP (Spe	ed Coincidend	ce Detecti	on Output) Signal Alloc	ation	Refere	ence
		n.□□X□		0 to 6 The allocations are the same as the /COIN (Positioning Completion) signal allocations.						
			/TGON (Rota	/TGON (Rotation Detection Output) Signal Allocation						
		n.□X□□	0 to 6 The	Refere						
			/S-RDY (Ser	vo Ready) Sigr	nal Allocat	ion			Refere	ence
		n.X□□□	O to 6 The	e allocations ar	e the same		OIN (Position	ing Comple-	*1	
		tion) signal allocations.						1		
	_	Output Sid	gnal Selec-	0000h to				After		
	2	tions 2		6666h	_	0100h	All	restart	Setup	-
			/CLT (Torque	Limit Detection	on Output)	Signal All	ocation		Refere	ence
			0 Dis	abled (the abo	ve signal c	output is no	ot used).			
	n	n.□□□X		tput the signal						
				tput the signal					*1	
				tput the signal			CNT-26 OUTP	ut terminai.		
D 505				4 to 6 Reserved setting (Do not use.)						
Pn50F		n.□□X□		Limit Detectio	, ,		N.T. /T		Refere	ence
		11.0000		e allocations ar tput) signal allo		e as the /C	LI (Iorque LI	mit Detection	*1	
			/BK (Brake C	Output) Signal A	Allocation				Refere	ence
		n.□X□□		e allocations ar		e as the /C	CLT (Torque Li	mit Detection	*1	
				tput) signal allo	cations.					
		. VOOD	+ • • • •	ning Output) S					Refere	ence
		n.X□□□		e allocations ar tput) signal allo		e as the /C	CLT (Torque Li	mit Detection	*1	
				17 - 7 - 3						
	2		gnal Selec-	0000h to	_	0000h	All	After	Setup	_
		tions 3		0666h				restart		
			_ `	Output) Signa					Refere	ence
			+	abled (the abo			•	tamain al		
		n.□□□X		tput the signal tput the signal					*1	
Pn510			+	tput the signal					1	
				served setting (0111 20 oatp	at torriniar.		
		n.□□X□			`					
			Reserved parameter (Do not change.)							
		n.□X□□	Reserved pa	rameter (Do no	or change.	.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)				

Applicable

Motors

Default

Setting

Continued from previous page.

Classi-

fication

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When

Enabled

	2	Input Signa 5	al Selection	าร	0000h to FFFFh	-	6543h	All	After restart	Setup	*1	
								I	I.			
	١.		/DEC (O::		Datawa Danala		للبريديدا واجائ	Cianal Allaa	_4:			
					Return Decele			-	ation			
			0		ve when CN1-	•		-				
			2	Active when CN1-7 input signal is ON (closed).								
			3	Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed).								
			4		ve when CN1-							
			5		ve when CN1-							
			6		ve when CN1-		_					
		n.□□□X	7		signal is alway		igriai io Oi	v (010000a).				
			8		signal is alway							
			9		ve when CN1-			F (open).				
			A		ve when CN1-			,				
			В		ve when CN1-							
		С	Active when CN1-9 input signal is OFF (open).									
			D	Active when CN1-10 input signal is OFF (open).								
Pn511			Е	Active when CN1-11 input signal is OFF (open).								
			F	Active when CN1-12 input signal is OFF (open).								
			/EXT1 (External Latch Input 1) Signal Allocation									
			0 to 3	The	signal is alway	s inactive						
			4	Active when CN1-10 input signal is ON (closed).								
			5	Acti	ve when CN1-	11 input s	ignal is ON	l (closed).				
		n.□□X□	6	Acti	ve when CN1-	12 input s	ignal is ON	l (closed).				
			D	Acti	ve when CN1-	10 input s	ignal is OF	F (open).				
			E	Acti	ve when CN1-	11 input s	ignal is OF	F (open).				
			F	Acti	ve when CN1-	12 input s	ignal is OF	F (open).				
			7 to C	The	signal is alway	s inactive						
			/EXT2 (Ex	kterr	al Latch Input	: 2) Signal	Allocation	1				
	n.□X□□ 0 to F				allocations are	e the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-	
			/EXT3 (Ex	kterr	al Latch Input	3) Signal	Allocation	1				
	n.XDDD 0 to F				The allocations are the same as the /EXT1 (External Latch Input 1) signal allocations.							

Setting

Range

Setting

Unit

Size

Name

Parameter

No.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
NO.	2	Output Sig Settings	nal Inverse	0000h to	-	0000h	All	After restart	Setup	*1
				1	1				1	
			Output Signa	al Inversion for	CN1-1 ar	nd CN1-2	Terminals			
		n.□□□X	0 The	e signal is not ir	nverted.					
			1 The	e signal is inver	ted.					
D = 40			Output Signa	al Inversion for	CN1-23 a	and CN1-2	4 Terminals			
Pn512		n.□□X□	0 The	e signal is not in	nverted.					
			1 The	e signal is inver	ted.					
			<u> </u>	al Inversion for		and CN1-2	6 Terminals			
		n.□X□□		e signal is not in						
			1 The	e signal is inver	ted.					
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
	2	Output Sig tions 4	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	-
		n.□□□X	Reserved pa	rameter (Do no	ot change)				
		n.□□X□	Reserved pa	rameter (Do no	ot change)				
			/PM (Preven	tative Maintena	ance Outp	ut) Signal	Allocation		Refere	ence
Pn514			0 Dis	abled (the abo	ve signal c	utput is no	ot used).			
		n.□X□□	1 Ou	tput the signal	from the C	N1-1 or C	N1-2 output t	erminal.		
				tput the signal					*1	
				tput the signal			CN1-26 outpu	ut terminal.		
			4 to 6 Re	served setting ((Do not us	e.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signal Selections 7	0000h to FFFFh	_	8888h	All	After restart	Setup	_

		FSTP (Fo	rced Stop Input) Signal Allocation	Reference	
		0	Enable drive when CN1-13 input signal is ON (closed).		
		1	Enable drive when CN1-7 input signal is ON (closed).		
		2			
	n.000X	3	Enable drive when CN1-9 input signal is ON (closed).		
		4	Enable drive when CN1-10 input signal is ON (closed).		
		5	Enable drive when CN1-11 input signal is ON (closed).		
		6	Enable drive when CN1-12 input signal is ON (closed).		
		7	Set the signal to always prohibit drive (always force the motor to stop).		
Pn516		8	Set the signal to always enable drive (always disable forcing the motor to stop).	*1	
		9	Enable drive when CN1-13 input signal is OFF (open).		
		А	Enable drive when CN1-7 input signal is OFF (open).		
		В	Enable drive when CN1-8 input signal is OFF (open).		
	- - - -	С	Enable drive when CN1-9 input signal is OFF (open).		
		D	Enable drive when CN1-10 input signal is OFF (open).		
		E Enable drive when CN1-11 input signal is OFF (open).			
		F	Enable drive when CN1-12 input signal is OFF (open).		

n.□□X□ Reserved parameter (Do not change.)

n.□X□□ Reserved parameter (Do not change.)

n.X□□□ Reserved parameter (Do not change.)

Pn518*4	_	Safety Module-Related Parameters	-	-	-	All	-	-	-
Pn51B	4	Motor-Load Position Deviation Overflow Detection Level	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position Deviation Over- flow Warning Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	4	Position Deviation Over- flow Alarm Level	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn522	4	Positioning Completed Width	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1
Pn524	4	Near Signal Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1
Pn526	4	Position Deviation Over- flow Alarm Level at Servo ON	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn528	2	Position Deviation Over- flow Warning Level at Servo ON	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Limit Level at Servo ON	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier per Fully- closed Rotation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1

						T		Continued fro	om previou	us page.
Parameter No.	Size		ıme	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn52C	2	Base Currer at Motor Ov Detection		10 to 100	1%	100	All	After restart	Setup	*1
	2	Program Jo Related Sel	gging- ections	0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1
				ging Operation						
				aiting time in Pr vements in Pna		orward by t	travel distance	e in Pn531) >	< Number	of
				aiting time in Pr vements in Pns		everse by t	ravel distance	e in Pn531) >	Number	of
			2 mo (Wa	aiting time in Provements in Properties in Properties in Provements in Provements in Professional Professiona	536 1535 → Re	_		•		
Pn530		n.□□□X	3 mo (Wa	aiting time in Provements in Provents in P	536 n535 → Fo	•		,		
			4 in F	aiting time in Pr Pn535 → Rever 536	n535 → Fo rse by trav	orward by t rel distance	ravel distance in Pn531) ×	e in Pn531 — Number of n	Waiting to	ime s in
			5 in F	aiting time in Pr Pn535 → Forwa 536						
		n.□□X□	□□X□ Reserved parameter (Do not change.)							
	Ī	n.□X□□ Reserved parameter (Do not change.)								
	Ī	n.X□□□ Reserved parameter (Do not change.)								
Pn531	4	Program Jo Distance	gging Travel	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Jo ment Speed	gging Move- d	1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jo eration/Dec Time	gging Accel- eleration	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jo ing Time	gging Wait-	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jo ber of Move	gging Num- ements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Mor Voltage	nitor 1 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Mor Voltage	nitor 2 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Mor	nitor 1 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Mor	nitor 2 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Cons Monitor Uni		1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vill Detection W	oration Vidth	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot [Level	Detection	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerativ Capacity*5	e Resistor	Depends on model.*6	10 W	0	All	Immedi- ately	Setup	*1

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	M

plicable Motors	When Enabled	Classi- fication	Refer- ence		
All	After restart	Setup	*7		
All	Immedi-	Setup	*1		

F	Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
F	Pn601	2	Dynamic Brake Resistor Allowable Energy Consumption	0 to 65,535	10 J	0	All	After restart	Setup	*7
F	Pn603	2	Regenerative Resistance	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
F	Pn604	2	Dynamic Brake Resistance	0 to 65,535	10 mΩ	0	All	After restart	Setup	*7
		2	Overheat Protection Selections	0000h to 0003h	_	0000h	Linear	After restart	Setup	*1

Pn61A

n.□□□X	Overheat Protection Selection								
	0	Disable overheat protection.							
	1	Use overheat protection in the Yaskawa Linear Servomotor.*8							
	2	Monitor a negative voltage input from a sensor attached to the machine and use overheat protection.							
	3	Monitor a positive voltage input from a sensor attached to the machine and use overheat protection.							
n.□□X□	Reserved	d parameter (Do not change.)							

n.□□X□	Reserved parameter (Do not change.)
n.□X□□	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn61B *9	2	Overheat Alarm Level	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *9	2	Overheat Warning Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *9	2	Overheat Alarm Filter Time	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*4	-	Safety Module-Related Parameters	-	-	-	All	-	-	_
	2	Communications Controls	0000h to 0F73h	_	0040h	All	Immedi- ately	Setup	*2

	0	Do not mask.
n.□□□X	1	Ignore MECHATROLINK communications errors (A.E60).
	2	Ignore WDT errors (A.E50).
	3	Ignore both MECHATROLINK communications errors (A.E60) and WDT errors (A.E50).

MECHATROLINK Communications Check Mask for Debugging

Pn800

	Warning Check Masks							
	0	Do not mask.						
	1	Ignore data setting warnings (A.94□).						
	2	Ignore command warnings (A.95□).						
n.□□X□	3	Ignore both A.94□ and A.95□ warnings.						
	4	Ignore communications warnings (A.96□).						
	5	Ignore both A.94□ and A.96□ warnings.						
	6	Ignore both A.95□ and A.96□ warnings.						
	7	Ignore A.94□, A.95□, and A.96□ warnings.						
n.□X□□	Reserv	red parameter (Do not change.)						
·	_							
n.X□□□	Reserv	red parameter (Do not change.)						

	Continued from previous							us page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections Limits)	n Function 6 (Software	0000h to 0103h	-	0003h	All	Immedi- ately	Setup	*1	
Pn801		n.□□□X	1 Disak 2 Disak	nit Selection ble both forward ble forward soft ble reverse soft ble both forward	ware limit ware limit.					[- - -	
	n.□□X□ Reserved parameter (Do not change.)									Ī	
		n. □ X□□	0 Do n	mit Check for References not perform software limit checks for references. form software limit checks for references.							
		n.X□□□	Reserved pa	rameter (Do no	t change.	.)					
Pn803	2	Origin Range		0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2	
Pn804	4	Forward So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1	
Pn806	4	Reverse So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1	
Pn808	4	Absolute E Offset	Absolute Encoder Origin Offset		1 refer- ence unit	0	All	Immedi- ately *10	Setup	*1	
Pn80A	2	First Stage eration Cor	Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2	
Pn80B	2	Second Sta Acceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2	
Pn80C	2	Acceleration Switching S	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2	
Pn80D	2	First Stage Deceleration	Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2	
Pn80E	2	Second Sta Deceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2	
Pn80F	2	Deceleration Switching	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2	
Pn810	2		al Accelera- eration Bias	0 to 65,535	100 reference units/s	0	All	Immedi- ately *12	Setup	*2	
Pn811	2		al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2	
Pn812	2	Movement Time	Average	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2	
Pn814	4	External Po Final Trave	ositioning I Distance	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2	

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							(Continued fr	om previo	us page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
140.	2	Origin Retu	urn Mode Set-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	*2
	ungs									
	Ī		Origin Return Direction							1
	n.□□□X		0 Return in forward direction.						_	
Pn816			1 Retu	rn in reverse di	rection.					_
	n.□□X□ Reserved parameter (Do not change.)									
		n.□X□□	Reserved pa	rameter (Do no	ot change.)				
	Ī	n.X□□□	Reserved pa	rameter (Do no	ot change.)				
										_
Pn817	2	Origin App	Origin Approach Speed		100 reference units/s	50	All	Immedi- ately *11	Setup	*2
Pn818 *14	2	Origin App	roach Speed	0 to 65,535	100 reference units/s	5	All	Immedi- ately *11	Setup	*2
Pn819	4	Final Trave Origin Retu	l Distance for urn	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
	2	Input Signa Selections		0000h to AAAAh	-	0000h	All	Immedi- ately	Setup	*2
	Ī		IO12 Signal	Mapping						Ī
				ot map.						_
			1 Mon	tor CN1-13 inp	ut termina	ıl.				_
			2 Mon	tor CN1-7 inpu	ıt terminal.					=
		n.□□□X	3 Mon	tor CN1-8 inpu	ıt terminal.					_
			4 Mon	tor CN1-9 inpu	ıt terminal.					_
Pn81E			5 Mon	tor CN1-10 inp	ut termina	ıl.				_
			6 Mon	tor CN1-11 inp	ut termina	ıl.				_
			7 Mon	tor CN1-12 inp	out termina	l.				_
	l		IO13 Signal	Mapping						
		n.□□X□		mappings are t	he same a	s the IO12	signal mappi	ngs.		_
	I	n. 🗆 X 🗆 🗆	IO14 Signal	Mapping						Ī
		11. LI ALL	0 to 7 The	mappings are t	he same a	s the IO12	? signal mappi	ings.		-
	I =		1							_

0 to 7 The mappings are the same as the IO12 signal mappings.

IO15 Signal Mapping

n.X□□□

Parameter No.	Size	N	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Command tions	Data All	loca-	0000h to 1111h	-	0000h	All	After restart	Setup	*2	
			Option	Field	Allocation						Ī	
Pn81F		n.□□□X	0	Disab	ole option field	allocation.						
			1	Enab	le option field a	allocation.					_	
	Ī	Position Control Command TFF/TLIM Allocation										
		n.□□X□	0	Disab	le allocation.							
			1	Enab	Enable allocation.							
		n.□X□□	X□□ Reserved parameter (Do not change.)								I	
		n.X□□□	Reserv	ed par	rameter (Do no	t change.)				Ī	
	-										_	
Pn820	4	Forward La	Forward Latching Area		-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2	
Pn822	4	Reverse La	atching A	Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2	

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Monitor 1 Selection	0000h to FFFFh	-	0000h	-	Immedi- ately	Setup	*2

Settir	g Monitor	Applicable Moto
High-S	peed Monitor Region	
0000h	Motor speed [1000000h/overspeed detection speed]	All
0001h	Speed reference [1000000h/overspeed detection speed]	All
0002h	Torque [1000000h/maximum torque]	All
0003h	Position deviation (lower 32 bits) [reference units]	All
0004h	Position deviation (upper 32 bits) [reference units]	All
000Ah	Encoder count (lower 32 bits) [reference units]	All
000Bh	Encoder count (upper 32 bits) [reference units]	All
000Ch	FPG count (lower 32 bits) [reference units]	All
000Dh	FPG count (upper 32 bits) [reference units]	All
Low-Sp	need Monitor Region	
0010h	Un000: Motor speed [min ⁻¹]	All
0011h	Un001: Speed Reference [min ⁻¹]	All
0012h	Un002: Torque Reference [%]	All
0013h	Un003: Rotational Angle 1 [encoder pulses] Number of encoder pulses from origin within one encoder rotation displayed in decimal	All
0014h	Un004: Rotational Angle 2 [deg] Electrical angle from polarity origin	All
0015h	Un005: Input Signal Monitor	All
0016h	Un006: Output Signal Monitor	All
0017h 0018h 0019h	Un007: Input Reference Speed [min ⁻¹]	All
	Un008: Position Deviation [reference units]	All
	Un009: Accumulated Load Ratio [%]	All
001Ah	Un00A: Regenerative Load Ratio [%]	All
001Bh	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
001Ch	Un00C: Input Reference Pulse Counter [reference units]	All
001Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
001Eh	Un00E: Fully-closed Loop Feedback Pulse Counter [external encoder resolution]	Rotary
0023h	Initial multiturn data [Rev]	Rotary
0024h	Initial incremental data [pulses]	Rotary
0040h	Un025: SERVOPACK Installation Environment Monitor	All
0041h	Un026: Servomotor Installation Environment Monitor	All
0042h	Un027: Built-in Fan Remaining Life Ratio	All
0043h	Un028: Capacitor Remaining Life Ratio	All
0044h	Un029: Surge Prevention Circuit Remaining Life Ratio	All
0045h	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
0046h	Un032: Instantaneous Power	All
0047h	Un033: Power Consumption	All
0048h	Un034: Cumulative Power Consumption	All
	inications Module Only	
0080h	Previous value of latched feedback position (LPOS) [encoder pulses]	All
All Area	. , , , , , , , , , , , , , , , , , , ,	
Other values	Reserved settings (Do not use.)	All

ъ .					0	0	5 (1)	1	Continued fro				
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Option Mor	nitor 2 S	Selec-	0000h to FFFFh	-	0000h	All	Immedi- ately	Setup	*2		
					1			1					
Pn825	-	0000h to 0080h	The s	ettings	are the same	as those fo	or the Opti	on Monitor 1	Selection.		_		
Pn827	2	Linear Dec Constant 1			1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2		
Pn829	2	SVOFF Waiting Time (for SVOFF at Deceleration to Stop)		ne (for ation	0 to 65,535	10 ms	0	All	Immedi- ately *11	Setup	*2		
	2	Option Field Allocations			0000h to 1E1Eh	-	1813h	All	After restart	Setup	*2		
	Ī		ACCFI	L Alloc	ation (Option)								
			0		ate bits 0 and	1 to ACCF	IL.				_		
			1	Alloc	ate bits 1 and 2	2 to ACCF	IL.				_		
			2	Alloc	ate bits 2 and 3	3 to ACCF	IL.				_		
			3	Alloc	ate bits 3 and 4	4 to ACCF	IL.				_		
			4	Alloc	ate bits 4 and 8	5 to ACCF	IL.				_		
			5		ate bits 5 and 6								
		n.□□□X	6		Allocate bits 6 and 7 to ACCFIL.								
			7 8		Allocate bits 7 and 8 to ACCFIL.								
			9		Allocate bits 8 and 9 to ACCFIL. Allocate bits 9 and 10 to ACCFIL.								
			A		ate bits 10 and						_		
Pn82A			В	-	ate bits 11 and						_		
			С	-	ate bits 12 and						_		
			D	Alloc	ate bits 13 and	14 to AC	OFIL.				_		
			Е	Alloc	ate bits 14 and	15 to AC	CFIL.				_		
	Ī		ACCFI	L Alloc	ation Enable/[Disable Se	election				Ī		
		n.□□X□	0	Disab	ole ACCFIL allo	cation.					_		
			1	Enab	le ACCFIL alloc	cation.					_		
											_		
		n.□X□□			ation (Option)		5 + la A O .	OFIL allegation					
			0 to E	rne s	settings are the	same as	or the AC	UFIL AIIOCATIO	IIIS.		_		
			G_SEL	Alloca	ation Enable/D	isable Sel	ection						
		n. X□□□	0		ole G_SEL alloc						_		
			1	Enab	le G_SEL alloc	ation.					_		
									0 +	nd on nov			

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Option Fie	ld Allocatio	ons	0000h to 1F1Fh	-	1D1Ch	All	After restart	Setup	*2		
			V_PPI All	locati	ion (Option)								
			0 A	Alloca	te bit 0 to V_F	PPI.					_		
					te bit 1 to V_F						_		
					te bit 2 to V_F						_		
					te bit 3 to V_F						_		
					te bit 4 to V_F te bit 5 to V_F						_		
					te bit 6 to V_F						_		
		n.□□□X			te bit 7 to V_F						_		
					te bit 8 to V_F						_		
					ocate bit 9 to V_PPI.								
					te bit 10 to V						_		
			ВА	Alloca	te bit 11 to V	_PPI.					=		
Pn82B			C A	Alloca	te bit 12 to V	_PPI.					_		
			D A	Alloca	te bit 13 to V	_PPI.					_		
			E A	Alloca	te bit 14 to V	_PPI.					_		
			F A	Alloca	te bit 15 to V	_PPI.					<u> </u>		
			V_PPI All	locati	on Enable/Di	sable Sele	ection						
		n.□□X□	0 [Disabl	e V_PPI alloc	ation.					_		
	1 Enable V_PPI allocation.												
	P_PI_CLR Allocation (Option)												
		n.□X□□					for the V	PPI allocations	3		-		
		0 to F The settings are the same as for the V_PPI allocations.											
			P_PI_CL	R Allo	ocation Enabl	e/Disable	Selection						
		n.X□□□			e P_PI_CLR a						_		
			1 E	Enable	e P_PI_CLR a	llocation.					_		
	2	Option Fie	ld Allocatio	ons	0000h to	_	1F1Eh	All	After	Setup	*2		
		3			1F1Fh				restart				
			D CL AII	o o o eti.	an (Ontion)								
		n.□□□X			on (Option) ettings are the	same as	for the V	PPI allocations	2				
			0 10 1	1110 30	ottings are the	Jame as	101 1110 1-1	1 Tallocations			_		
			P_CL Alle	ocatio	on Enable/Dis	sable Sele	ction						
		n.□□X□	0 [Disabl	e P_CL alloca	ation.					_		
Pn82C			1 E	Enable	e P_CL alloca	tion.							
			NI CL AT		(0 -::)						-		
		n.□X□□			on (Option)		for +b = \/ 5						
			0 to F T	rie se	ettings are the	same as	ior the V_F	rı allocations	э.		_		
			N CL AII	ocati	on Enable/Dis	sable Sele	ction						
		n.X□□□			le N_CL alloca		0.1011						
					e N_CL alloca						_		
					_ = = = = = = = = = = = = = = = = = = =	-					<u> </u>		
									Continue	ed on nev	4		

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Option Fiel 4	ld Allocatior	าร	0000h to 1F1Ch	-	0000h	All	After restart	Setup	*2		
			BANK_SE	L1 /	Allocation (Op	tion)							
			0 AI	loca	te bits 0 to 3	to BANK_	SEL1.						
			1 Al	Allocate bits 1 to 4 to BANK_SEL1.									
					2 Allocate bits 2 to 5 to BANK_SEL1.								
			3 AI	loca	te bits 3 to 6	to BANK_	SEL1.				_		
			4 Al	loca	ite bits 4 to 7	to BANK_	SEL1.				_		
		n.□□□X		loca	te bits 5 to 8	to BANK_	SEL1.				_		
			7 AI	loca	ite bits 7 to 10	to BANK	_SEL1.				_		
			8 AI	loca	ite bits 8 to 11	to BANK	_SEL1.				_		
			9 AI	loca	ite bits 9 to 12	to BANK	_SEL1.				_		
Pn82D			A AI	loca	ite bits 10 to 1	3 to BANI	K_SEL1.						
				loca	ite bits 11 to 1	4 to BANI	K_SEL1.				_		
			C AI	loca	ite bits 12 to 1	5 to BANI	K_SEL1.				_		
	i		DANIK OF		A.I: =	(5: 1					_		
		- DDVD			Allocation Ena			on					
		n.□□X□			le BANK_SEL						_		
			1 Er	iabi	e BANK_SEL1	allocation	1.				_		
	LT_DISABLE Allocation (Option)												
		n.□X□□	0 to F Th	ne s	ettings are the	same as	for the V_F	PPI allocations	S.		_		
					Allocation Ena			on					
		n.X□□□	0 Di	sab	le LT_DISABLI	E allocatio	n.				_		
			1 Er	nable LT_DISABLE allocation.					_				

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Option Fie 5	ld Allocations	0000h to 1D1Fh	-	0000h	All	After restart	Setup	*2			
			1			`							
	-	n.□□□X	Reserved pa	rameter (Do no	ot change.	.)							
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)							
			OUT_SIGNA	L Allocation (O	ption)								
				ate bits 0 to 2						_			
				ate bits 1 to 3						=			
				ate bits 2 to 4						_			
				ate bits 3 to 5						_			
				ate bits 4 to 6						_			
Pn82E		n.□X□□		ate bits 5 to 7						_			
		11. LI ALL		ate bits 7 to 9						_			
										_			
				-									
				ate bits 10 to 1						_			
			B Alloc	ate bits 11 to 1	13 to OUT	SIGNAL.				=			
			C Alloc	ate bits 12 to 1	14 to OUT_	_SIGNAL.				_			
		D Allocate bits 13 to 15 to OUT_SIGNAL.											
			OUT SIGNA	L Allocation Er	nable/Disa	ble Select	tion						
		n.X□□□				-							
				ole OUT_SIGNA ble OUT_SIGNA						_			
	2	Motion Se	ttings	0000h to	_	0000h	All	After	Setup	*2			
		WOULDIT SE	ttii igs	0001h		000011	All	restart	Getup				
			Linear Assal	eration/Decele	ration Car	natant Cal	aatian						
				Pn80A to Pn80				831 to Pn81	O are				
		n.□□□X	0 ignor		ח מווט דווכ)Z1. (111 6 8	ettings of File	334 10 11104	U ale				
Pn833				Pn834 to Pn84	0. (The se	ttings of P	n80A to Pn80	F and Pn82	7 are	_			
			' igno	red.)						_			
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)							
	Ī	n.□X□□	Reserved pa	rameter (Do no	ot change.	.)				I			
	Ī	n.X□□□	Reserved pa	rameter (Do no	ot change)							
	_		110001 Vod pa	rameter (Bo ne	or oriango.	·)							
					40.000								
D=004	4	First Stage	e Linear Accel-	1 to	10,000 refer-	100	A II	Immedi-	Catura	*2			
Pn834	4	eration Co		20,971,520	ence units/s ²	100	All	ately *11	Setup	*2			
					10.000								
Pn836	4	Second St	tage Linear	1 to	refer-	100	All	Immedi-	Setup	*2			
F11030	4	Acceleration	on Constant 2	20,971,520	ence units/s ²	100	All	ately *11	Setup	2			
		A 1	0	_	1 refer-			Image = =!					
Pn838	4	Acceleration Switching	on Constant Speed 2	0 to 2,097,152,000	ence	0	All	Immedi- ately *11	Setup	*2			
		1 19	•		unit/s 10,000								
Pn83A	4	First Stage		1 to	refer-	100	All	Immedi-	Setup	*2			
. 1100/	7	Decelerati	on Constant 2	20,971,520	ence units/s ²	100	/All	ately *11	Cotup	_			
					ui iito/ o		1	0	nd on nov	4			

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83C	4	Second Stage Linear Deceleration Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2
Pn83E	4	Deceleration Constant Switching Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *11	Setup	*2
Pn840	4	Linear Deceleration Constant 2 for Stopping	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *11	Setup	*2
Pn842 *13	4	Second Origin Approach Speed 1	0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately *11	Setup	*2
Pn844 *14	4	Second Origin Approach Speed 2	0 to 20,971,520	100 ref- erence units/s	0	All	Immedi- ately *11	Setup	*2
Pn850	2	Number of Latch Sequences	0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Latch Sequence Count	0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence 1 to 4 Settings	0000h to 3333h	ı	0000h	All	Immedi- ately	Setup	*2

		Latch S	Sequence 1 Signal Selection								
		0	Phase C								
	n.□□□X	1	EXT1 signal								
		2	EXT2 signal								
		3	EXT3 signal								
Pn852											
		Latch S	atch Sequence 2 Signal Selection								
	n.□□X□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.								
		Latch S	Latch Sequence 3 Signal Selection								
	n.□X□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.								
		Latch S	Sequence 4 Signal Selection								
	n.X□□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.								

Continued from previous page. When Classi- Refer-

Parameter No.	Size	Name		Setting Range	_	ting nit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Latch Sec Settings	quence 5 to	8 0000h 3333h		-	0000h	All	Immedi- ately	Setup	*2
	Ī		0 P	quence 5 Sigr hase С	nal Select	ion					I
		n.□□□X		XT1 signal XT2 signal							_
				XT3 signal							_
Pn853	Ī		Latch Sec	quence 6 Sigr	nal Select	ion					
		n.□□X□	0 to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.								
			Latch Sequence 7 Signal Selection								
		n.□X□□	0 to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.								_
			Latch Sec	quence 8 Sigr	nal Select	ion					
		n.X□□□		to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.							_
		0: :: 4						T		1	
Pn880	2		ddress Moni aintenance,	40h to 5	iFh -	-	_	All	_	Setup	-
Pn881	2	Count Mo	mission Byte initor [bytes] enance, rea	17 20	2 -	-	-	All	-	Setup	-
Pn882	2	ting Monit	sion Cycle S cor [× 0.25 μ enance, rea	s] Ob to FEI	FFh -	-	_	All	-	Setup	-
Pn883	2	Setting M mission cy	cations Cyc onitor [trans ycles] (for nce, read or	0 to 32	2 -	-	_	All	_	Setup	-
	2	Communi trols 2	cations Cor	0000h 0001h		-	0000h	All	Immedi- ately	Setup	-
	_										
				OLINK Comm						on a MEC	μ Λ_
Pn884	n	.00X	U TR	OLINK commi	unications	erro	r occurs.				
1 11004	n	.00X0		parameter (Do			a WEOTIAT	TIOLINI COIII	manications	01101 0000	JI 5.
	n	.0X00	Reserved	parameter (Do	not char	nge.)					
	n	.X000	Reserved	parameter (Do	not char	nge.)					
Pn88A	2	Monitor (for mainte only)	rror Counte enance, rea	0 to 65,5	535 -	-	0	All	Immedi- ately	Setup	-
Pn890 to Pn89E	Command Data Monitor during Alarm/Warning (for maintenance, read only) Command Data Monitor Oh to FFFFFFFh — Oh All Immediately Setup					*2					
									Continue	ed on nex	t page.

							Jonana III		
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn8A0 to Pn8AE	4	Response Data Monitor during Alarm/Warning (for maintenance, read only)	Oh to FFFFFFFh	-	0h	All	lmmedi- ately	Setup	*2
Pn900	2	Number of Parameter Banks	0 to 16	-	0	All	After restart	Setup	*2
Pn901	2	Number of Parameter Bank Members	0 to 15	-	0	All	After restart	Setup	*2
Pn902 to Pn910	2	Parameter Bank Member Definition	0000h to 08FFh	-	0h	All	After restart	Setup	*2
Pn920 to Pn95F	2	Parameter Bank Data (Not saved in nonvolatile memory.)	0000h to FFFFh	_	Oh	All	Immedi- ately	Setup	*2

- *1. Refer to the following manual for details.
 - Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
- *2. Refer to the following manual for details.
 - $\stackrel{-}{\square}$ Σ -7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual (Manual No.: SIEP S800001 30)
- *3. Set a percentage of the motor rated torque.
- *4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
 - Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)
- *5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
 - Σ -7-Series AC Servo Drive Σ -7S/ Σ -7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- *8. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- *9. Enabled only when Pn61A is set to n.□□□2 or n.□□□3.
- *10.The parameter setting is enabled after SENS_ON command execution is completed.
- *11. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- *12. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- *13. The setting of Pn842 is valid while Pn817 is set to 0.
- *14.The setting of Pn844 is valid while Pn818 is set to 0.

FT82 SERVOPACK with MECHATROLINK-III Communications References

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
 Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

4.3.1 **List of Servo Parameters**

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer		
	2	Basic Functions 0	tion Selec-	0000h to 10B1h	_	0000h	All	After restart	Setup	-		
Pn000		n.000X	0	Direction Selection Use CCW as the formula of the comparameter (Do not parameter (Do	orward dire	ction. (Rev	erse Rotation	Mode)	Refere			
		n. 🗆 X 🗆 🗆		,		,						
		n.X000		Reserved parameter (Do not change.) Reserved parameter (Do not change.)								
		11.7000	neserveu	parameter (DO no	or change	.)						
	2	Application Selections		0000h to 1142h	-	0000h	All	After restart	Setup	-		
	,		0 :	pping Method for Stop the motor by	Refere	ence						
		n.□□□X	!	Stop the motor by the applying dynamic brake and then release the dynamic brake. Coast the motor to a stop without the dynamic brake.								
			Overtrave	Refere	ence							
			0 /	Apply the dynamic stopping method	brake or							
				Decelerate the mo the maximum torg								
Pn001		n.□□X□		Decelerate the mo				in Pn406 as	*1			
			3	Decelerate the mo Pn30A and then s	otor to a st ervo-lock	op using t the motor.	he deceleration	on time set in				
				Decelerate the mo Pn30A and then le			he deceleration	on time set in				
	•		Main Circ	uit Power Supply	AC/DC In	put Select	tion		Refere	ence		
		n.□X□□		Input AC power as and L3 terminals (ng the L1, L2	,			
			1 ,	Input DC power as the main circuit power supply using the B1/ \oplus and \ominus 2 terminals or the B1 and \ominus 2 terminals (use an external converter or the shared converter).								
		n.X□□□	Reserved	parameter (Do no	ot change.	.)						

4.3.1 List of Servo Parameters

Continued from previous page.

When Classi- Refer-

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi-	Refe
NO.	2		n Function 2	0000h to 4213h	-	0011h	-	After restart	Setup	-
			MECHATRO Option	OLINK Comman	d Positior	and Spee	ed Control	Applicable Motors	Refere	ence
		n.□□□X	0 R 1 U 2 R	eserved setting (se TLIM as the t eserved setting (eserved setting (orque limit Do not us	e.)		All	*2	
			Torque Cor	·		Applicable Motors	Refere	ence		
		n.□□X□	, U	eserved setting (se the speed lim beed limit.		VLIM) as the	All	*2		
Pn002			Encoder Us	Encoder Usage						ence
		n.□X□□	tio	ons.	encoder according to encoder specifica-					
			2 U	se the encoder a se the encoder a ncoder.				Rotary	*1	
			External Er	coder Usage				Applicable Motors	Refere	ence
			0 D	o not use an ext	ernal enco	der.				
		n.X□□□		he external enco			ward direc-			
			2 Reserved setting (Do not use.)					Rotary	*1	
				he external enco on for CCW mot	der moves in the reverse direc-					
					Do not us					

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Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn006	2	Application Selections	Function 6	0000h to 105Fh	_	0002h	All	Immedi- ately	Setup	*1	
		n.□□XX		Monitor 1 Signal Selection							
			00	Motor speed (1 V/1,000 min ⁻¹)							
			01	Speed reference (1 V/1,000 min ⁻¹)							
			02	Torque reference (1 V/100% rated torque)							
			03	Position deviation (0.05 V/reference unit)							
			04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)							
			05	Position reference speed (1 V/1,000 min ⁻¹)							
			06	Reserved setting (Do not use.)							
			07	Load-motor position deviation (0.01 V/reference unit)							
			08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)							
			09	Speed feedforward (1 V/1,000 min ⁻¹)							
			0A	Torque feedforward (1 V/100% rated torque)							
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)							
			0C	Completion of position reference distribution (completed: 5 V, not completed: 0 V)							
			0D	External encoder speed (1 V/1,000 min ⁻¹ : value at the motor shaft)							
			0E	Reserved setting (Do not use.)							
			0F	Reserved setting (Do not use.)							
			10	Main circuit DC voltage							
			11 to 5F	Reserved settings (Do not use.)							
	n.□X□□ Reserved parameter (Do not change.)										
	n.X□□□ Reserved parameter (Do not change.)										

4.3.1 List of Servo Parameters

Continued from previous page.

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Function Selections 7		0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1	
			Analog Monitor 2 Signal Selection								
Pn007			00 Motor speed (1 V/1,000 min ⁻¹)								
		n.□□XX	01 5	Speed reference	e (1 V/1,00	00 min ⁻¹)					
			02 T	orque reference	e (1 V/100	% rated to	rque)				
			03 F	Position deviation (0.05 V/reference unit)							
			04 F	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)							
				Position reference speed (1 V/1,000 min ⁻¹)							
				Reserved setting (Do not use.)							
				Load-motor position deviation (0.01 V/reference unit)							
				Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)							
				Speed feedforward (1 V/1,000 min ⁻¹)							
				Active gain (1st gain: 1 V, 2nd gain: 2 V)							
				Completion of position reference distribution (completed: 5 V, not completed: 0 V)							
			OD E	External encoder speed (1 V/1,000 min ⁻¹ : value at the motor shaft)							
				Reserved setting (Do not use.)							
				Reserved setting (Do not use.)							
				10 Main circuit DC voltage							
			11 to 5F Reserved settings (Do not use.)								
	n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□	Reserved parameter (Do not change.)								
Pn008	2	2 Application Function Selections 8		0000h to 7121h	_	4000h	Rotary	After restart	Setup	_	
	L. B.H. V.H. M. C.L.										
		n.□□□X	Low Battery Voltage Alarm/Warning Selection						Reference		
		п.шши	Output alarm (A.830) for low battery voltage. Output warning (A.930) for low battery voltage.						*1		
			3, 11, 11, 11, 11, 11, 11, 11, 11, 11, 1								
		n.00X0	Function Selection for Undervoltage						Reference		
			Do not detect undervoltage. Detect undervoltage warning and limit torque at host controller.								
			De	Detect undervoltage warning and limit torque at host controller. Detect undervoltage warning and limit torque with Pn424 and						*1	
			2 Pn	2 Pn425 (i.e., only in SERVOPACK).							
			Warning Detection Selection						Reference		
		n.□X□□	0 De	0 Detect warnings.						*1	
			1 Do	not detect war	nings exc	ept for A.9	71.		'		
		n.X□□□ Reserved parameter (Do not change.)									
	L							Continue	d on nov	t nago	

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 0121h	_	0010h	All	After restart	Tuning	_
	Ī	n. 🗆 🗆 🗆 X	Reserved pa	rameter (Do no	ot change.)				
			0	wal Maria Cala	-4:				Defere	
				e current contro					Refere	ince
				ERVOPACK Mo			-R90A1R6/	A2R8A.	_	
Pn009		n.□□X□	1 -3	BR8A, -5R5A, a ERVOPACK Mc 70A, -550A, -59	nd -7R6A odels SGD	: Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. A, -330A, -	*1	
			2 Use	e current contro	ol mode 2.					
			Speed Detec	Speed Detection Method Selection						
		n.□X□□	-	e speed detecti					Refere	1100
				e speed detecti					*1	
		» VППП	Pagaryad na	ramatar (Da na	t change	\				
		n.X□□□	Reserved pa	rameter (Do no	n change.)				
	2	Application Selections		0000h to 0044h	-	0001h	All	After restart	Setup	_
	Motor Stopping Method for Group 2 Alarms									
			O Ap	oply the dynami opping method	c brake or	coast the		op (use the	Refer	01100
		n.□□□X	1 the	ecelerate the me e maximum tord atus after stopp	que. Use tl	top using ne setting	the torque set of Pn001 = n.	t in Pn406 as □□□X for th	ne	
				ecelerate the me e maximum tore				t in Pn406 as	* 1	
			3 Pr	Decelerate the motor to a stop using the deceleration time set in Pn30A. Use the setting of Pn001 = n. \square \square X for the status after stopping.						
				ecelerate the mo 30A and then I			the decelerati	on time set ir	n	
Pn00A			Stopping Me	ethod for Force	ed Stops				Refer	ence
			O Ap	pply the dynami opping method	c brake or			op (use the		
			1 the	ecelerate the me e maximum tore atus after stopp	que. Use t					
		n.□□X□		ecelerate the mo				t in Pn406 as	* 1	
			3 Pr	ecelerate the mo 30A. Use the s opping.	otor to a s etting of F	top using 2n001 = n.	the decelerati □□□X for th	on time set ir e status after	n	
				ecelerate the mo 130A and then I			the decelerati	on time set ir	า	
		n.□X□□	Reserved pa	arameter (Do n	ot change	:.)				
	n.X□□□ Reserved parameter (Do not change.)									

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								Continued tr	om previou	is page.	
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Applicatio Selections	n Function B	0000h to 1121h	-	0000h	All	After restart	Setup	_	
								1	\ <u>-</u>		
			<u> </u>	rameter Displa	y Selection	1			Refere	nce	
		n.□□□X	0 Dis	play only setup	paramete	rs.			*1		
			1 Dis	play all parame	ters.						
			Motor Stopp	ing Method for	Group 2	Alarms			Refere	nce	
			0 Sto	op the motor by	setting th	e speed re	eference to 0.			<u>-</u>	
Pn00B		n.□□X□	1 Ap	ply the dynamic	brake or	coast the	motor to a sto	op (use the	*1		
			Sto	pping method							
			2 Se	t the stopping r	netnoa wii	in Phooa =	= n.⊔⊔⊔X.				
			Power Input Selection for Three-phase SERVOPACK							nce	
		n.□X□□		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
				Use a three-phase power supply input as a single-phase power							
			' supply input.								
		n.X□□□	Reserved pa	rameter (Do no	t change.						
	2	Applicatio	n Function	0000h to	_	0000h	_	After	Setup	*1	
	_	Selections	S C	0131h		0000		restart	Cotap		
			Function Se	lection for Test	t without a	Motor			Applica Motor	ble s	
		n.□□□X	0 Di	sable tests with	out a mot	or.			A.II		
			1 Er	able tests with	out a moto	or.			All		
			Encoder Re	solution for Tes	sts without	t a Motor			Applica Motor		
Pn00C			0 Us	se 13 bits.							
1 11000		n.□□X□	1 Us	se 20 bits.					Rotar	,	
			2 Us	se 22 bits.					notai	у	
			3 Us	se 24 bits.							
			Encoder Typ	pe Selection for	r Tests wit	hout a Mo	tor		Applica Motor		
		n.□X□□	0 Us	se an increment	al encode	7.			All		
			1 Us	se an absolute e	encoder.				All		
		n.X□□□	Reserved pa	arameter (Do n	ot change	.)					
						,					
	2	Applicatio Selections	n Function	0000h to 1001h	_	0000h	All	After restart	Setup	*1	
		_ 5.5566716	-		1	<u>I</u>	1	. Jotai t	1	<u> </u>	
		n.□□□X	Reserved pa	arameter (Do n	ot change	.)					
		n.□□X□	Reserved or	arameter (Do.n.	ot change)					
Pn00D		11.00/0	IXD Reserved parameter (Do not change.)								
		n.□X□□	Reserved pa	arameter (Do n	ot change	.)					
		Overtravel Warning Detection Selection									
		n.X□□□	+	not detect over							
			-	etect overtravel		3					
	<u> </u>							Cambia	nd on nov		

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 2011h	_	0000h	All	After restart	Setup	_
			Preventative	Maintenance \	Narning S	election			Reference	ce
		n.□□□X		ot detect preve			warnings.			
Pn00F				ct preventative					*1	
		n.□□X□	Reserved pa	rameter (Do no	ot change.)			'	
		n.□X□□	Reserved pa	rameter (Do no	t change.)				
		n.X□□□	Reserved pa	rameter (Do no	t change.)				
Pn021	2	Reserved p	parameter (Do	_	_	0000h	All	-	_	_
Pn022	2	Reserved p	parameter (Do e.)	_	_	0000h	All		-	_
Pn040	2	Reserved p	parameter (Do e.)	_	_	0000h	-	-	-	_
	2	Application Selections		0000h to 1111h	_	0000h	All	After restart	Setup	*1
			Phase-C Pul	se Output Sele	ection					
		n.□□□X	0 Ou	tput phase-C p	ulses only	in the for	ward direction			
Pn081			1 Ou	tput phase-C p	ulses in b	oth the for	ward and reve	erse direction	ns.	
	n.□□X□ Reserved parameter (Do not change.)									
		n.□X□□	Reserved pa	rameter (Do no	t change.)				
		n.X□□□	Reserved parameter (Do not change.)							
				•		,				
Pn100	2	Speed Loc	pp Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn101	2	Speed Loc Time Cons	pp Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn103	2	Moment of	f Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Sp Gain	peed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	Second Sp Integral Tir	peed Loop ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Po Gain	osition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforwa	rd	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1
		Constant						Continue	d on nov	t page

Parameter

Continued from previous page.

Classi- Refer-

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applications	Gain Application Selections 0000h to 5334h - 0000h All				All	-	Setup	_	
			Mode Sv	Mode Switching Selection							ence
			0		the internal to el setting: Pn1		ence as th	e condition			
		n.□□□X	4		the speed refe: Pn10D).	erence as	the condit	ion (level set-			
			1		the speed refe: Pn181).						
			2	Use the acceleration reference as the condition (level setting: Pn10E).					lmmedi- ately	*1	
Pn10B			2		the accelerati ing: Pn182).	on referen	ce as the	condition (leve	el		
			3		the position on the contract of the contract o	leviation a	s the cond	lition (level set	-		
			4	Doı	not use mode	switching.					
			Speed L	oop (Control Metho	d			When Enabled	Refere	ence
		n.□□X□	0	PI c	ontrol						
			1	I-P	control				After restart	*1	
			2 to 3	Res	erved settings	(Do not u	se.)				
	n.□X□□ Reserved parameter (Do not change.)										
	l	n.X□□□	Reserved parameter (Do not change.)								

Setting

Default

Applicable

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn10C	2	Mode Switching Level for Torque Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switching Level for Speed Reference	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Switching Level for Acceleration	0 to 30,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switching Level for Position Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Integral Time Constant	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Compensation Coefficient	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Compensation Frequency Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Compensation Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switching Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switching Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switching Waiting Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switching Waiting Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
	2	Automatic Gain Switching Selections 1	0000h to 0052h	_	0000h	All	Immedi- ately	Tuning	*1

			Gain Swi	tching Selection									
		п ПППХ	0		Use manual gain switching. The gain is switched manually with G-SEL in the servo command output signals (SVCMD_IO).								
	r	n.000X	1	Reserved setting (Do not use.)									
			Use automatic gain switching pattern 1. The gain is switched automatically from the first gain to the secon switching condition A is satisfied. The gain is switched automatic second gain to the first gain when switching condition A is not satisfied.										
Pn139			Gain Swi	tching Condition A	١								
			0	/COIN (Positioning	Completi	ion Output	signal turns	ON.					
			1	/COIN (Positioning	g Completi	ion Output) signal turns	OFF.					
	r	n.□□X□	2	/NEAR (Near Output) signal turns ON.									
			3	/NEAR (Near Outp	ut) signal	turns OFF.							
			4	Position reference	filter outp	ut is 0 and	position refe	rence input i	s OFF.				
			5	Position reference	input is C	N.							
	1	n.0X00	Reserved	d parameter (Do no	ot change.)							
	n.X□□□ Reserved parameter (Do not change.)												
Pn13D	2	Current Ga	in Level	100 to 2,000	Immedi								

Continued from previous page.

When Classic Reference

Parameter No. Name Setting Range Unit Setting Motors 2 Model Following Control-Related Selections Model Following Control Selection No. Model Following Control Selection Default Setting Motors Applicable Motors All No. No. No. No. No. No. No. N	When Enabled Immedi- ately	Classification Tuning Referer	Reference –		
n.□□□X Model Following Control Selection 0 Do not use model following control. 1 Use model following control.		Referer	nce		
n.□□□X 0 Do not use model following control. 1 Use model following control.			nce		
n.□□□X 0 Do not use model following control. 1 Use model following control.			ice		
n.□□□X 0 Do not use model following control. 1 Use model following control.		*1			
		*1			
Vibration Suppression Selection					
The state of the s		Referer	nce		
0 Do not perform vibration suppression.					
n. DDXD 1 Perform vibration suppression for a specific frequency	y.	*1			
2 Perform vibration suppression for two specific frequen	ncies.				
Pn140 Vibration Suppression Adjustment Selection		Referer	nce		
Do not adjust vibration suppression automatically du tion of autotuning without a host reference, autotuning host reference, and custom tuning.	uring execu- ing with a	*1			
	djust vibration suppression automatically during execution of utotuning without a host reference, autotuning with a host ref-				
Speed Feedforward (VFF)/Torque Feedforward (TFF) Selection	on	Referer	nce		
Do not use model following control and speed/torqu ward together.	ue feedfor-	*1			
1 Use model following control and speed/torque feedfe together.	forward	*1			
Pn1412Model Following Control Gain10 to 20,0000.1/s500All	Immedi- ately	Tuning	*1		
Pn142 2 Model Following Control Gain Correction 500 to 2,000 0.1% 1000 All	Immedi- ately	Tuning	*1		
Pn143 2 Model Following Control Bias in the Forward Direction 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1		
Pn144 2 Model Following Control Bias in the Reverse Direction 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1		
Pn145 2 Vibration Suppression 1 10 to 2,500 0.1 Hz 500 All	Immedi- ately	Tuning	*1		
Pn146 2 Vibration Suppression 1 10 to 2,500 0.1 Hz 700 All	Immedi- ately	Tuning	*1		
Pn147 2 Model Following Control Speed Feedforward Compensation 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1		
Pn148 2 Second Model Follow- ing Control Gain 10 to 20,000 0.1/s 500 All	Immedi- ately	Tuning	*1		
Pn149 2 Second Model Following Control Gain Correction 500 to 2,000 0.1% 1000 All	Immedi- ately	Tuning	*1		
Pn14A 2 Vibration Suppression 2 10 to 2,000 0.1 Hz 800 All	Immedi- ately	Tuning	*1		
Pn14B 2 Vibration Suppression 2 10 to 1,000 1% 100 All	Immedi- ately	Tuning	*1		

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								Continued fro	m previou	ıs page.		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Control-Re	elated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	_		
			Model Follow	ving Control Ty	rpe Select	ion			Refere	ence		
		n.□□□X		e model followi	•				*1			
			1 Use	e model followi	ng control	type 2.			- 1			
Pn14F			Tuning-less T	Type Selection					Refere	nce		
		n.□□X□	0 Use	0 Use tuning-less type 1.								
			1 Use	e tuning-less ty	pe 2.				*1			
	2 Use tuning-less type 3.											
	n. Reserved parameter (Do not change.)											
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)						
	2		nance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	-		
		Anti-Resonance Control Selection							Refere	ence		
		n.□□□X	0 Do	not use anti-re	sonance o	control.			*1			
			1 Use	e anti-resonanc	e control.				*1			
			Anti-Resonar	nce Control Ac	ljustment	Selection			Refere	nce		
Pn160		n.□□X□	0 tion	not adjust anti n of autotuning erence, and cus	without a	host refere			host			
			1 aut	ust anti-resona otuning withou ce, and custom	t a host re							
		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)						
		n.X□□□	Reserved pa	rameter (Do no	ot change.)						
			Trocorroa pa	ramotor (Bo ne	or orialigo.	·)						
Pn161	2	Anti-Resor quency	nance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1		
Pn162	2	Anti-Resor Correction	nance Gain	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1		
Pn163	2	ing Gain	nance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1		
Pn164	2		nance Filter stant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1		
Pn165	2		nance Filter stant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1		
Pn166	2	Anti-Resor ing Gain 2	nance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1		

Continued from previous page.

Parameter	(h)			Setting	Setting	Default	Applicable	Continued from When	Classi-	Refer-			
No.	Size		ame	Range	Unit	Setting	Motors	Enabled	fication	ence			
	2	Tuning-less Related Se	s Function- elections	0000h to 2711h	_	1401h	All	-	Setup	*1			
	Ī		Tuning-less	Selection					Whe Enab				
		n.□□□X	0 Dis	sable tuning-les	s function.				Afte				
			1 En	able tuning-less	function.				restart				
			Speed Cont	rol Method					Whe Enab				
Pn170		n.□□X□		e for speed cor					Afte a resta				
			1 Use for speed control and use host controller for position control.						71.				
		n.□X□□	Rigidity Leve	el					Whe Enab				
		11.0700	0 to 7 Set the rigidity level.							edi- ly			
		n.XDDD	Tuning-less Load Level							en led			
		11.X000	0 to 2 Set the load level for the tuning-less function.						Imme atel				
		1		it 0 to 65,535 1 rev 65535 Rotary After Setup									
Pn205	2	Multiturn L		0 to 65,535 Trev 65535 Rotary restart									
	2	tion Select	ontrol Func- ions	0000h to 2210h	-	0010h	All	After restart	Setup	-			
		n.□□□X	Reserved pa	arameter (Do no	ot change.	.)							
		n.□□X□	Reserved pa	arameter (Do no	ot change.)								
		n.□X□□	Reserved parameter (Do not change.)										
Pn207			/COIN (Posit	tioning Comple	tion Outp	ut) Signal	Output Timin	g	Refe				
			0 sa	Itput when the ame or less than dth).									
		n.X□□□	1 or	Itput when the a less than the se d the reference	etting of Pr	n522 (Posi	tioning Comp	leted Width)					
			2 or	Itput when the a less than the se d the reference	etting of Pr	n522 (Posi							
									·				
Pn20A	4	Number of Encoder So	External cale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1			
Pn20E	4	Electronic (Numerator		1 to 1,073,741,824	1	16	All	After restart	Setup	*1			
Pn210	4	Electronic (Denomina		1 to 1,073,741,824	1	1	All	After restart	Setup	*1			
		(20110111110											

Applicable

Motors

Rotary

ΑII

Default

Setting

0000h

0000h

0

0

20

500

0

0

0

0

0

Setting

Range

0000h to

1003h

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

Fully-closed Control Speed Feedback Selection

Use motor encoder speed.

0000h to

0001h

Backlash Compensation Direction

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

-500,000 to

500,000

0 to 65,535

1 to 4,096

0 to 10,000

0 to 10,000

0 to 10,000

0 to 65,535

0 to 10,000

0 to 5,100

Use external encoder speed.

Compensate forward references.

Compensate reverse references.

0.1 ref-

erence

units

0.01 ms

1 edge/

pitch Rotary: 1 min⁻¹ Direct

Drive: 0.1 min⁻¹

1 ms

1 ms

0.01 ms

1 ms

0.1 ms

Setting

Unit

Parameter

No.

Pn22A

Pn230

Pn231

Pn233

Pn281

Pn304

Pn305

Pn306

Pn308

Pn30A

Pn30C

Size

2

Name

0

1

0

1

Backlash Compensation

Backlash Compensation Time Constant

Jogging Speed

Encoder Output Resolu-

Soft Start Acceleration

Soft Start Deceleration

Speed Feedback Filter

Servo OFF and Forced

Speed Feedforward

Average Movement

Time Constant Deceleration Time for

Position Control Expansion Function Selections

Fully-closed Control

Selections

n.□□□X

 $n.\Box\Box X\Box$

 $n.\Box X\Box\Box$

 $n.X\square\square\square$

n.□□□X

 $n.\Box\Box X\Box$

 $n.\Box X\Box\Box$

n.X□□□

tion

Time

Stops

Time

4

2

2

2

2

2

2

2

2

Classi-

fication

Setup

Setup

Refer-

ence

*1

*1

When

Enabled

After

restart

After

restart

Immedi-		
Immodi		
Immodi		
Immodi		
ately	Setup	*1
Immedi- ately	Setup	*1
After restart	Setup	*1
Immedi- ately	Setup	*1
Immedi- ately	Setup	*2
Immedi- ately	Setup	*2
Immedi- ately	Setup	*1
Immedi- ately	Setup	*1
Immedi- ately	Setup	*1
	ately After restart Immediately Immediately Immediately Immediately Immediately Immediately Immediately	ately Setup After restart Setup Immediately Setup

Continued from previous page.

						(Jontinued in	Enabled fication end Immediately Setup *1 Immediately Tuning *1 Immediately Tuning *1 After restart Setup *1		
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled		Refer- ence	
	2	Vibration Detection Selections	0000h to 0002h	1	0000h	All		Setup	*1	
		Vibration De	tection Selecti	on						
			not detect vib							
	1	n. 🗆 🗆 🗆 🔻	itput a warning		vibration is	detected				
Pn310			itput a warriing itput an alarm (· ,						
	-	2 00	itput air alairii (A.020) II VI	DIALIOIT IS	actocica.				
		n.□□X□ Reserved pa	rameter (Do no	ot change.	.)					
	-	n.□X□□ Reserved parameter (Do not change.)								
	1	n.XDDD Reserved parameter (Do not change.)								
Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1	
Pn312	2	Vibration Detection Level	0 to 5,000	1 min ⁻¹	50	Rotary		Tuning	*1	
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary		Setup	*1	
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1	
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1	
Pn402	2	Forward Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1	
Pn403	2	Reverse Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1	
Pn404	2	Forward External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1	
Pn405	2	Reverse External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1	
Pn406	2	Emergency Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1	
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1	

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Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Re			0000h to	_	0000h	All	_	Setup	_
		1011 001001									
		- DDDV	Notch Filt	ter S	Selection 1				When Enable	Refere	ence
		n.□□□X			able first stage				Immedi ately	- *1	
			Speed Lir						When Enabled	Refere	ence
			0	sett	the smaller of ing of Pn407 a	as the spe	ed limit.				_
Dn/108	n.□□X□			sett	the smaller of ing of Pn480 a	as the spe	After	*1			
P114U6	Pn408			spe	e the smaller of ed and the set the smaller of	ting of Pn	407 as the	speed limit.	restart		
					ed and the set						
			Notch Filt	ter S	Selection 2	When Enabled	Refere	ence			
		n.□X□□			able second st		Immedi ately	- *1			
	Ī		Friction C	om	pensation Fun	ction Sele	When Enable	Refere	ence		
		n.X□□□			able friction co		Immedi ately	- *1			
	_		1	Enable friction compensation.							
Pn409	2	First Stage Frequency		er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value	Notch Filte	er	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filte	er	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second St ter Freque	age Notch	Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second St ter Q Value		Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second St ter Depth	age Notch	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second St Torque Ret Frequency	ference Filte		100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second St Torque Ret Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ret Time Cons	erence Filte	ər	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1

Parameter No. Setting Settin		Continued from pre								om previou	us page.	
Note Filter Selection		Size	N	ame		Setting Unit		Applicable Motors	_			
Pn416 Pn416 Pn416 Pn416 Pn416 Pn416 Pn416 Pn417 Pn417 Pn417 Pn417 Pn418 Pn417 Pn418 Pn41		2				_	0000h	All		Setup	*1	
Pn416 Pn416 Pn416 Pn416 Pn416 Pn416 Pn416 Pn417 Pn417 Pn417 Pn417 Pn418 Pn417 Pn418 Pn41												
1 Enable third stage notch filter.												
Notch Filter Selection 4 0 Disable fourth stage notch filter. 1 Enable fourth stage notch filter.			n.□□□X									
Pn416		-			<u> </u>	11010111111	JI.					
Notch Filter Selection 5	Pn416		n.□□X□			ge notch f	ilter.					
Pn417 2 Third Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately Tuning 1				1 En								
Pn417 2 Third Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately Tuning 1					Filter Selection 5							
Pn417 2 Third Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately Tuning 1			n.⊔X⊔⊔									
Pn417 2 Third Stage Notch Filter 50 to 5,000 1 Hz 5000 All Immediately Tuning 1		i	n.X000	1								
Pn418 2 Trierd stage Notch Filter 0 to 1,000 0.01 70 All Immediately Tuning 1					(=		-7					
Pn419 2 Third Stage Notch Filter 0 to 1,000 0.001 0 All Immediately Tuning *1	Pn417	2		e Notch Filter	50 to 5,000	1 Hz	5000	All		Tuning	*1	
Pn418 2 Depth	Pn418	2		e Notch Filter	50 to 1,000	0.01	70	All		Tuning	*1	
Pn418 2 ter Frequency 50 to 3,000 Friz 3000 All ately turning 1	Pn419	2		e Notch Filter	0 to 1,000	0.001	0	All		Tuning	*1	
Pn41C 2 ter Q Value 30 to 1,000 0.01 70 All lately luming ately 1.0 luming 1.1 luming 1.	Pn41A	2	Fourth Stag ter Frequer	ge Notch Fil- ncy	50 to 5,000	1 Hz	5000	All		Tuning	*1	
Pn41D 2 ter Depth 0 to 1,000 0.001 0 All ately 1 tulling 1 Pn41D 2 Fifth Stage Notch Filter Frequency 50 to 5,000 1 Hz 5000 All Immediately Tuning *1 Pn41E 2 Fifth Stage Notch Filter Q value 0 to 1,000 0.001 70 All Immediately Tuning *1 Pn41F 2 Fifth Stage Notch Filter Q value 0 to 1,000 0.001 0 All Immediately Tuning *1 2 Speed Ripple Compensation 0.000h Rotary - Setup *1 2 Speed Ripple Compensation Function Selection When Enabled Immediately Immediately 4 0 Disable speed ripple compensation Warring When Enabled 1 Enable speed ripple compensation Immediately When Enabled 1 Do not detect A.942 alarms After restart 2 Speed Ripple Compensation Enable Condition Selection When Enabled 1 </td <td>Pn41B</td> <td>2</td> <td>Fourth Stagter Q Value</td> <td>ge Notch Fil-</td> <td>50 to 1,000</td> <td>0.01</td> <td>70</td> <td>All</td> <td></td> <td>Tuning</td> <td>*1</td>	Pn41B	2	Fourth Stagter Q Value	ge Notch Fil-	50 to 1,000	0.01	70	All		Tuning	*1	
Pn41E 2 Frequency 30 to 3,000 Frequency 30 to 3,000 Frequency All ately ately ately ately ately ately ately ately 10 mmediately ately Tuning ately *1 Pn41F 2 Fifth Stage Notch Filter Depth 0 to 1,000 0.001 0 All Immediately Tuning *1 2 Speed Ripple Compensation Selections 0 Double Speed Ripple Compensation Function Selection When Enabled 1 Enable speed ripple compensation. Immediately 1 Enable speed ripple compensation. Immediately 1 Enable speed ripple compensation. Immediately 1 Do not detect A.942 alarms. After restart 2 Speed Ripple Compensation Enable Condition Selection When Enabled 1 Do not detect A.942 alarms. After restart 2 Speed Ripple Compensation Enable Condition Selection After restart 2 Torque Limit at Main Circuit Voltage Drop 0 to 100 1%*3 50 All Immediately Setup *1	Pn41C	2	ter Depth		0 to 1,000	0.001	0	All		Tuning	*1	
Pn41F 2 G Value So to 1,000 0.001 0 All Immediately Tuning 1 2 Speed Ripple Compensation Function Selection	Pn41D	2		Notch Filter	50 to 5,000	1 Hz	5000	All		Tuning	*1	
Pn423 Pn424 2 Depth Dep	Pn41E	2	Fifth Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All		Tuning	*1	
Pn423 Pn423 Speed Ripple Compensation Function Selection O Disable speed ripple compensation. I Enable speed ripple compensation. Speed Ripple Compensation Information Disagreement Warning Detection Selection O Detect A.942 alarms. I Do not detect A.942 alarms. Speed Ripple Compensation Enabled O Detect A.942 alarms. Speed Ripple Compensation Information Disagreement Warning Detection Enabled O Men Enabled After restart Speed Ripple Compensation Enable Condition Selection Name O Speed Ripple Compensation Enable Condition Selection Reserved parameter (Do not change.) Pn424 2 Torque Limit at Main Circuit Voltage Drop O to 100 1%*3 50 All Immediately Setup *1	Pn41F	2		Notch Filter	0 to 1,000	0.001	0	All		Tuning	*1	
Pn423 Pn423 Pn423 Pn424 2 Torque Limit at Main Circuit Voltage Drop Pn424	2	Speed Ripp sation Sele	ple Compen- ections		_	0000h	Rotary	_	Setup	*1		
Pn423 Pn423 Pn423 Pn424 2 Torque Limit at Main Circuit Voltage Drop Pn424												
Pn423 Pn423 Pn423 Pn424 2 Torque Limit at Main Circuit Voltage Drop Pn424			Speed Rippl	e Compensatio	on Function	n Selectio	n					
Pn423 Speed Ripple Compensation Information Disagreement Warning Detection Selection Selection Do not detect A.942 alarms. After restart			n.□□□X	-								
Pn423 Detect A.942 alarms.						·					<u></u>	
After restart Do not detect A.942 alarms. After restart	Pn423		- DDVD			on Informa	ation Disag	greement Wa	rning Detec-			
Speed Ripple Compensation Enable Condition Selection O Speed reference 1 Motor speed N.XDDD Reserved parameter (Do not change.) Pn424 2 Torque Limit at Main Circuit Voltage Drop O to 100 1%*3 50 All Immediately *1			n.⊔⊔X⊔			_						
Pn424 2 Torque Limit at Main Circuit Voltage Drop O to 100 1%*3 50 All Immediately Setup *1				1 D0	not detect A.9	42 alamis						
Pn424 2 Torque Limit at Main Circuit Voltage Drop 0 to 100 1%*3 50 All Immediately Setup *1			» U\UU	Speed Rippl	e Compensatio	n Enable	Condition	Selection				
n.X□□□ Reserved parameter (Do not change.) Pn424 2 Torque Limit at Main Circuit Voltage Drop 0 to 100 1%*3 50 All Immediately Setup *1												
Pn424 2 Torque Limit at Main Circuit Voltage Drop 0 to 100 1%*3 50 All Immediately Setup *1			n УППП			nt change	1					
2 cuit Voltage Drop 0 to 100 1% 3 50 All ately Setup 3				rieserveu pa	rameter (DO NC	or Griange	7					
	Pn424	2			0 to 100	1%*3	50	All	ately	·		

Continued from previous page.

Parameter							`	Continued fro	in provioc	io pago.			
No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
Pn425	2	Release Tir Limit at Ma Voltage Dro		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1			
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1			
Pn427	2	Speed Ripp sation Enal	ple Compen- ble Speed	0 to 10,000	1 min ⁻¹	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1			
Pn456	2	Sweep Tordence Ampli	que Refer- itude	1 to 800	1%	15	All	Immedi- ately	Tuning	*1			
	2	Notch Filte Selections	r Adjustmen 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1			
	_												
			Notch Filte	r Adjustment Se	lection 1								
		n.□□□X	O tu	o not adjust the tuning without a hand									
				Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
Pn460		n.□□X□	Reserved p	eserved parameter (Do not change.)									
	I		Notch Filte	r Adjustment Se	lection 2								
				•		age notch t	filter automati	cally when th	ne tunina-l				
		n.□X□□	0 fu	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
			1 ti	Adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
			a	utoturning with a	nost refere	ence, and o	Justom turning	J .					
		~ VOOO					custom turning).					
		n.X□□□		parameter (Do no			custom turing).					
	2	1	Reserved p	parameter (Do no			All	After restart	Setup	*1			
	2	Gravity Cor Related Se	Reserved p	oarameter (Do no	ot change.)		After	Setup	*1			
	2	Gravity Co	Reserved properties of the control o	0000h to 0001h	tion) 0000h		After	Setup	*1			
	2	Gravity Cor Related Se	mpensation-lections Gravity Cor	0000h to 0001h npensation Selectisable gravity con	tion	0000h		After	Setup	*1			
Pn475	2	Gravity Cor Related Se	mpensation-lections Gravity Cor	0000h to 0001h	tion	0000h		After	Setup	*1			
Pn475	2	Gravity Cor Related Se	mpensation-lections Gravity Cor 0	0000h to 0001h npensation Selectisable gravity con	tion mpensation	0000h		After	Setup	*1			
Pn475	2	Gravity Con Related Se	Reserved p	0000h to 0001h npensation Selectisable gravity connable	tion mpensation change.)	0000h		After	Setup	+1			
Pn475	2	Gravity Con Related Se	Reserved p mpensation- lections Gravity Cor 0 D 1 E Reserved p	0000h to 0001h npensation Selectisable gravity connable gravity contarameter (Do not	tion mpensation change.)	0000h		After	Setup	+1			
Pn475	2	Gravity Con Related Se	Reserved p mpensation- lections Gravity Cor 0 D 1 E Reserved p	on arameter (Do not one	tion mpensation change.)	0000h		After	Setup	*1			
	2	Gravity Cor Related Se	Reserved p mpensation- lections Gravity Cor 0	on arameter (Do not on the one of	tion mpensation change.) change.)) 0000h n.	All	After restart					
Pn476	2	Gravity Con Related Se n.□□X□ n.□□X□ n.□X□□ Gravity Con Torque Rotation Do Speed Coin	Reserved p Gravity Cor O C 1 E Reserved p Reserved p Reserved p mpensation etection Leve	on arameter (Do not not not not not not not not not no	tion mpensation change.) change.)	0000h	All	After restart Immediately Immediately	Tuning	*1			
Pn476 Pn502	2 2 2	Gravity Cor Related Se n.□□X□ n.□□X□ n.□□X□ Gravity Cor Torque Rotation Dot Speed Coir Detection Se Width	Reserved p mpensation- lections Gravity Cor 0	on arameter (Do not not not not not not not not not no	tion mpensation change.) change.) 0.1% 1 min ⁻¹	0000h n. n. 0	All All Rotary	After restart Immediately Immediately Immediately	Tuning	*1			
Pn476 Pn502 Pn503	2 2 2 2	Gravity Cor Related Se n.□□X□ n.□□X□ n.□□X□ Gravity Cor Torque Rotation Dotection Seed Coir Detection Seed Coir Detection Seed Coir Detection Seed Coir Detection Seed Coir Detection Seed Coir Detection Seed Coir	Reserved p Gravity Cor 0	operation Selection is able gravity contains arameter (Do not arameter (Do not arameter (Do not 1,000 to 1,000 to 1 to 100 to 10	tion mpensation change.) change.) 0.1% 1 min ⁻¹	0 0 20 10	All All Rotary Rotary	Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup	*1 *1 *1			
Pn476 Pn502 Pn503 Pn506	2 2 2 2 2	Gravity Cor Related Se n.□□X□ n.□□X□ n.□□X□ Gravity Cor Torque Rotation Dotection S Width Brake Refe OFF Delay Brake Refe put Speed Servo OFF- mand Wait	Reserved p Gravity Cor 0	overameter (Do not not not not not not not not not no	tion mpensation change.) change.) 0.1% 1 min ⁻¹ 1 min ⁻¹	0 0 20 10 0	All All Rotary Rotary All	Immediately Immediately Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Setup	*1 *1 *1			

Continued from previous page.

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Signa 1	al Sele	ctions	0000h to FFF2h	_	1881h	All	After restart	Setup	_	
	,											
		n.□□□X	Rese	rved pai	rameter (Do no	ot change.	.)					
		n.□□X□	Reserved parameter (Do not change.)									
		n.□X□□	□ Reserved parameter (Do not change.)									
			P-OT	(Forwa	rd Drive Prohib	oit) Signal	Allocation	1		Refere	ence	
			0	Enable	forward drive	when CN1	-13 input	signal is ON (closed).			
			1	1 Enable forward drive when CN1-7 input signal is ON (closed).								
			2	2 Enable forward drive when CN1-8 input signal is ON (closed).								
			3	Enable	forward drive	when CN1	-9 input si	gnal is ON (cl	osed).			
Pn50A			4	Enable	forward drive	when CN1	-10 input	signal is ON (closed).			
			5	Enable	forward drive	when CN1						
			6	Enable	forward drive	when CN1	-12 input	signal is ON (closed).			
		n.X□□□	7	Set the	signal to alwa	ys prohibi	t forward c	drive.		*1		
			8	Set the	signal to alwa	ıys enable	forward di	rive.				
			9	Enable	forward drive	when CN1	-13 input	signal is OFF	(open).			
			Α		forward drive			· ·	1 /			
			В		forward drive			· ·	' '			
			C Enable forward drive when CN1-9 input signal is OFF (open).									
			D Enable forward drive when CN1-10 input signal is OFF (open).									
			E Enable forward drive when CN1-11 input signal is OFF (open). F Enable forward drive when CN1-12 input signal is OFF (open).									
			F	Enable	forward drive	when CN1	-12 input	signal is OFF	(open).			

Default

Setting

8882h

Setting

Unit

Setting

Range

0000h to FFFFh

Applicable	When	Classi-	Refer-
Motors	Enabled	fication	ence
All	After restart	Setup	_

	N-OT (F	Reverse Drive Prohibit) Signal Allocation	Reference
	0	Enable reverse drive when CN1-13 input signal is ON (closed).	
	1	Enable reverse drive when CN1-7 input signal is ON (closed).	
	2	Enable reverse drive when CN1-8 input signal is ON (closed).	
	3	Enable reverse drive when CN1-9 input signal is ON (closed).	
	4	Enable reverse drive when CN1-10 input signal is ON (closed).	
	5	Enable reverse drive when CN1-11 input signal is ON (closed).	
	6	Enable reverse drive when CN1-12 input signal is ON (closed).	
n.□□□X	7	Set the signal to always prohibit reverse drive.	
	8	Set the signal to always enable reverse drive.	*1
	9	Enable reverse drive when CN1-13 input signal is OFF (open).	
	А	Enable reverse drive when CN1-7 input signal is OFF (open).	
	В	Enable reverse drive when CN1-8 input signal is OFF (open).	
	С	Enable reverse drive when CN1-9 input signal is OFF (open).	
	D	Enable reverse drive when CN1-10 input signal is OFF (open).	
	Е	Enable reverse drive when CN1-11 input signal is OFF (open).	
	F	Enable reverse drive when CN1-12 input signal is OFF (open).	
n.□□X□	Reserve	ed parameter (Do not change.)	
п.шихи			
	/P-CL (Forward External Torque Limit Input) Signal Allocation	Reference
	/P-CL (Forward External Torque Limit Input) Signal Allocation Active when CN1-13 input signal is ON (closed).	Reference
			Reference
	0	Active when CN1-13 input signal is ON (closed).	Reference
	0	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed).	Reference
	0 1 2	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed).	Reference
	0 1 2 3	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed).	Reference
	0 1 2 3 4	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed).	Reference
n.□X□□	0 1 2 3 4 5	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed).	
n.□X□□	0 1 2 3 4 5 6	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed).	Reference
n.□X□□	0 1 2 3 4 5 6 7	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active.	
n.□X□□	0 1 2 3 4 5 6 7	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive.	
n.□X□□	0 1 2 3 4 5 6 7 8	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open).	
n.ロXロロ	0 1 2 3 4 5 6 7 8 9	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open). Active when CN1-7 input signal is OFF (open).	
n. 🗆 X 🗆 🗅	0 1 2 3 4 5 6 7 8 9 A	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open). Active when CN1-7 input signal is OFF (open).	
n.□X□□	0 1 2 3 4 5 6 7 8 9 A B	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open). Active when CN1-7 input signal is OFF (open). Active when CN1-8 input signal is OFF (open). Active when CN1-9 input signal is OFF (open).	
n.□X□□	0 1 2 3 4 5 6 7 8 9 A B C	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open). Active when CN1-7 input signal is OFF (open). Active when CN1-8 input signal is OFF (open). Active when CN1-9 input signal is OFF (open). Active when CN1-10 input signal is OFF (open).	
n.□X□□	0 1 2 3 4 5 6 7 8 9 A B C D E	Active when CN1-13 input signal is ON (closed). Active when CN1-7 input signal is ON (closed). Active when CN1-8 input signal is ON (closed). Active when CN1-9 input signal is ON (closed). Active when CN1-10 input signal is ON (closed). Active when CN1-11 input signal is ON (closed). Active when CN1-12 input signal is ON (closed). The signal is always active. The signal is always inactive. Active when CN1-13 input signal is OFF (open). Active when CN1-7 input signal is OFF (open). Active when CN1-8 input signal is OFF (open). Active when CN1-9 input signal is OFF (open). Active when CN1-10 input signal is OFF (open). Active when CN1-11 input signal is OFF (open).	*I

Parameter

No.

Size

2

Name

Input Signal Selections 2

							(Continued fro	m previou	us page			
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig tions 1	gnal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	-			
	Ī		/COIN (Po	sitioning Comple	tion Outp	ut) Signal	Allocation		Refere	ence			
			· ` ·	Disabled (the above	•	, 0							
		n.□□□X	1 (Dutput the signal	from the C	2N1-1 or C	N1-2 output	terminal.					
			2 (Output the signal	from the C	N1-23 or	CN1-24 outpi	ut terminal.	*1				
			3 (Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.					
			4 to 6 F	Reserved setting (Do not us	e.)							
n50E			/V-CMP (S	peed Coincidend	e Detecti	on Output) Signal Alloc	ation	Refere	ence			
		n.□□X□		The allocations are ion) signal allocat		e as the /C	OIN (Position	ing Comple-	*1				
			/TGON (Ro	otation Detection	Output) S	Signal Allo	cation		Refere	ence			
		n. DXDD O to 6 The allocations are the same as the /COIN (Positioning Completion) signal allocations.											
	Ī		/S-RDY (S	/S-RDY (Servo Ready) Signal Allocation									
		n.X□□□	0 to 6	The allocations are ion) signal allocat	e allocations are the same as the /COIN (Positioning Comple- in) signal allocations.								
	2	Output Sig	gnal Selec-	0000h to 6666h	_	0100h	All	After restart	Setup	_			
	Ī		/CLT (Torq	ue Limit Detection	n Output)	Signal All	ocation		Refere	ence			
			0 [Disabled (the abov	e signal c	output is no	ot used).						
		n.□□□X	1 (Output the signal	from the C	N1-1 or C	N1-2 output	terminal.					
		11.000	2 (Output the signal	from the C	N1-23 or	CN1-24 outpi	ut terminal.	*1				
			3 (Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.					
			4 to 6	Reserved setting (Do not us	e.)							
n50F	Ī		/VLT (Spee	ed Limit Detection	n) Signal A	Allocation			Refere	ence			
		n.□□X□		The allocations are Dutput) signal allo		e as the /C	CLT (Torque Lir	mit Detectior	*1				
			/BK (Brake	Output) Signal A	Allocation				Refere	ence			
		n.□X□□		The allocations are the same as the /CLT (Torque Limit Detection									
			/WARN (Warning Output) Signal Allocation							ence			
		n.XDDD		0 to 6 The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.									

Parameter No.	Size	N	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Signal Selections 3			0000h to 0666h	-	0000h	All	After restart	Setup	_
			/NEAR (I	NEAR (Near Output) Signal Allocation							ence
			0	Disabled (the above signal output is not used).							
		n.□□□X	1	Out	put the signal						
		n.⊔⊔⊔X	2	Output the signal from the CN1-23 or CN1-24 output terminal.							
Pn510			3	Out	put the signal						
			4 to 6	Reserved setting (Do not use.)							<u>-</u>
		n.□□X□	Reserve	d paı	rameter (Do no	ot change.	.)				
		n.□X□□	Reserve	d pai	rameter (Do no	ot change.	.)				
		n.X□□□	Reserve	Reserved parameter (Do not change.)							

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Input Signa	al Selection	าร	0000h to FFFFh	_	6543h	All	After	Setup	*1			
		5			FFFFII				restart					
			/DEC (Or	igin l	Return Decele	eration Sw	itch Input	Signal Alloc	ation					
			0	Acti	ve when CN1-	-13 input s	ignal is ON	l (closed).						
			1	Acti	ve when CN1-	·7 input siç	gnal is ON	(closed).						
			2	Acti	ve when CN1-	·8 input siç	gnal is ON	(closed).						
			3	Acti	ve when CN1-	·9 input sią	gnal is ON	(closed).						
			4	Active when CN1-10 input signal is ON (closed).										
			5	Active when CN1-11 input signal is ON (closed).										
			6	Active when CN1-12 input signal is ON (closed).										
		n.□□□X												
			8 The signal is always inactive.											
			9	Acti	ve when CN1-	·13 input s	ignal is OF	F (open).						
			А	Acti	ve when CN1-	-7 input sig	gnal is OFF	(open).						
				Active when CN1-8 input signal is OFF (open).										
			С	Active when CN1-9 input signal is OFF (open).										
			D	Active when CN1-10 input signal is OFF (open).										
Pn511			Е	Acti	ve when CN1-	·11 input s	ignal is OF	F (open).						
			F	Acti	ve when CN1-	·12 input s	ignal is OF	F (open).						
	Ī		/EXT1 (External Latch Input 1) Signal Allocation											
			0 to 3	The	signal is alway	ys inactive								
			4	Acti	ve when CN1-	-10 input s	ignal is ON	V (closed).						
			5	Acti	ve when CN1-	-11 input s	ignal is ON	l (closed).						
		n.□□X□	6	Acti	ve when CN1-	-12 input s	ignal is ON	V (closed).						
			D	Acti	ve when CN1-	·10 input s	ignal is OF	F (open).						
			E	Acti	ve when CN1-	·11 input s	ignal is OF	F (open).						
			F	Acti	ve when CN1-	·12 input s	ignal is OF	F (open).						
			7 to C	The	signal is alwa	ys inactive								
			/EXT2 (Ex	xtern	al Latch Inpu	t 2) Signal	Allocation	1						
		n.□X□□	0 to F		allocations arons.	e the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-			
			/EXT3 (E:	xtern	al Latch Inpu	t 3) Signal	Allocation	1						
		n.X□□□	O to F The allocations are the same as the /EXT1 (External Latch cations.						Latch Input	1) signal a	allo-			

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Output Sig Settings	gnal Inverse	0000h to 1111h	_	0000h	All	After restart	Setup	*1			
			Output Sig	nal Inversion for	CN1-1 ar	nd CN1-2	Terminals						
		n.□□□X		he signal is not i									
			1 T	he signal is inver	ted.								
			Output Sig	nal Inversion for	CN1-23	and CN1-2	24 Terminals						
Pn512		n.□□X□	0 T	he signal is not i	nverted.								
			1 T	he signal is inver	ted.								
			Output Sig	Output Signal Inversion for CN1-25 and CN1-26 Terminals									
		n.□X□□	0 The signal is not inverted.										
			1 The signal is inverted.										
		n.X□□□ Reserved parameter (Do not change.)											
						T	T						
	2	Output Sig tions 4	gnal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_			
		n.□□□X	Reserved p	arameter (Do no	ot change	.)							
		n. 🗆 🗆 X 🗆	Bosoniad r	parameter (Do no	at abanga	\							
		11.0000	neserved p	barameter (DO no	or change	.)							
			<u> </u>	ntative Mainten	<u> </u>	, ,			Refere	ence			
Pn514				isabled (the abo									
		n.□X□□		output the signal									
				output the signal			•		*1				
				output the signal			CN1-26 outpi	ut terminal.					
			4 to 6 F	eserved setting	OU TOT US	e.)							
		n.X□□□	Reserved p	arameter (Do no	ot change	.)							

Continued from previous page.

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sigr	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	_
				II.						
			FSTP (Forced	Stop Input) Si	anal Alloc	eation			Refere	ence
			· · · · · · · · · · · · · · · · · · ·	able drive wher			al is ON (close	ed).	1101010	
				able drive wher		· ·	` `			
			2 En	able drive wher	n CN1-8 ir	nput signal	is ON (closed	d).		
			3 En	able drive wher	n CN1-9 ir	nput signal	is ON (closed	d).		
				able drive wher			,	,		
			+	able drive wher						
				able drive wher						
	n	.000X	sto	t the signal to app).					*1	
Pn516				t the signal to a tortor to stop).	always ena	able drive (always disabl	e forcing the		
				able drive wher		· ·		,		
			+	able drive wher				,		
				able drive wher				,		
			+	able drive wher				,		
				able drive wher		· ·		,		
				able drive wher						
	n	.00X0		ameter (Do not			<u></u>	,.		
			neserved par	ameter (Do not	Criarige.)					
	n	.DXDD	Reserved par	ameter (Do not	change.)					
	n	.X000	Reserved par	ameter (Do not	t change.)					
Pn518*4	_	Safety Mo	odule-Related	-	-	_	All	-	_	_
		1 didinoto	10							
D - 54D	4		ad Position	0 to	1 refer-	1000	Data	Immedi-	0.1	
Pn51B	4	Deviation Detection		1,073,741,824	ence unit	1000	Rotary	ately	Setup	*1
Pn51E	2		Deviation Over-	10 to 100	1%	100	All	Immedi-	Setup	*1
		flow Warn			1 refer-			ately		
Pn520	4	Position D	Deviation Over- n Level	1 to 1,073,741,823	ence	524288 0	All	Immedi- ately	Setup	*1
_		Positionin	g Completed	0 to	1 refer-	_		Immedi-		
Pn522	4	Width	g completed	1,073,741,824	ence unit	7	All	ately	Setup	*1
D=504	_	NI== O'	I . \ A /; I ± I -	1 to	1 refer-	107374	Δ.	Immedi-	0-4	**
Pn524	4	Near Sign	iai vvidtn	1,073,741,824	ence unit	1824	All	ately	Setup	*1
Pn526	4	Position D	Deviation Over-	1 to	1 refer- ence	524288	All	Immedi-	Setup	*1
		Servo ON		1,073,741,823	unit	0		ately	Joint	
Pn528	2	Position Description In Position In Indiana Indiana In Indiana In Indiana Indiana In Indiana In Indiana In Indiana In Indiana In Indiana India	Deviation Over- ning Level at	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2		nit Level at	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier closed Ro	per Fully-	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2		Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1
				<u> </u>				,	ed on nex	t nage

Default Applicable

Classi- Refer-

When

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Pn52C 2 Base Current Derating at Motor Overload Detection 10 to 100 1% 100 All After restart Setup Detection 2 Program Jogging Operation Pattern 2 Program Jogging Operation Pattern 0 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 1 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting time in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting tine in Pn536 → Forward by travel distance in Pn531 → Waiting t	Parameter No.	Size	N	ame	Setting Setting Default Applicable When Class Range Unit Setting Motors Enabled fication							Refer- ence
Program Jogging Operation Pattern 0 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 1 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Reverse by travel distance in Pn531 → Waiting to in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting to in Pn536 → Reverse by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in P	Pn52C	2	at Motor O		g	10 to 100	1%	100	All		Setup	*1
Pn530 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Reverse by travel distance in Pn531 → Waiting to in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn535 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → Forward by travel distance in Pn531 → Waiting to in Pn536 → For		2					_	0000h	All		Setup	*1
n.□□X□ Reserved parameter (Do not change.)	Pn530		n.□□□X	0 1 2 3	(Wa mov (Wa mov (Wa mov (Wa mov (Wa mov (Wa in P	iting time in Provements in P	$1535 \rightarrow Fc$	everse by the ev	travel distance travel distance travel distance travel distance travel distance in Pn531) ×	e in Pn531) > e in Pn531 — Number of n	Number Number Number Number Number Number Number Number Number	of of of of ime ime
			n.□□X□	Reserved parameter (Do not change.)								

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

n.□X□□

 $n.X\square\square\square$

Pn531	4	Program Jogging Travel Distance	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Jogging Move- ment Speed	1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jogging Acceleration/Deceleration Time	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jogging Wait- ing Time	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jogging Number of Movements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Monitor 1 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Monitor 2 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monitor 1 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vibration Detection Width	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Detection Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerative Resistor Capacity*5	Depends on model.*6	10 W	0	All	Immedi- ately	Setup	*1

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn601	2	Dynamic B tor Allowak Consumpti		0 to 65,535	10 J	0	All	After restart	Setup	*7
Pn603	2	Regenerati tance	ve Resis-	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic B tance	rake Resis-	0 to 65,535	10 mΩ	0	All	After restart	Setup	*7
	2	Overheat F Selections	Protection	0000h to 0003h	_	0000h	Linear	After restart	Setup	*1
Pn61A		n.00X n.00X n.0X n.0X	0 [1] 2] 1] 3] Reserved p	Protection Selectic Disable overheat protection of the protection	ection in the voltage in ection. voltage in ection. change.)	he Yaskaw nput from a	a sensor attac	ched to the n		
Pn61B *9	2	Overheat A	Alarm Level	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *9	2	Overheat V	Varning Lev	el 0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *9	2	Overheat A	Alarm Filter	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*4	-		Safety Module-Related Parameters		_	_	All	_	_	_

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Communio trols	cations Con-	0000h to 1FF3h	-	1040h	All	Immedi- ately	Setup	-	
			MECHATRO	LINK Commun	ications C	heck Mas	k for Debugg	ing		1	
			0 Dor	ot mask.						_	
		n.□□□X		re MECHATRO		nunication	s errors (A.E6	0).		=	
				re WDT errors (· '			=		_	
				re both MECHA rs (A.E50).	ATROLINK	communic	ations errors	(A.E60) and	WDT	_	
			Warning Che								
				Do not mask. Ignore data setting warnings (A.94□).							
				re command w						=	
				re both A.94			<u> </u>			_	
	4 Ignore communications warnings (A.96□).								_		
D 000			<u> </u>	re both A.94□		-				_	
Pn800			F -	re both A.95						=	
		n.□□X□		re A.94 □ , A.95						_	
				re data setting						_	
			9 Igno	re A.94 □ , A.97	A, and A.S	7b warnin	gs.			_	
			A Igno	re A.95 □ , A.97	A, and A.9	7b warnin	gs.			=	
			B Igno	Ignore A.94□, A.95□, A.97A, and A.97b warnings.							
			C Igno	Ignore A.96□, A.97A, and A.97b warnings.							
			D Igno	re A.94 □ , A.96	□, A.97A,	and A.97	warnings.			_	
			E Igno	re A.95 □ , A.96	□, A.97A,	and A.97	warnings.			_	
			F Igno	re A.94 □ , A.95	□, A.96□	, A.97A, aı	nd A.97b war	nings.		_	
	n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□	Automatic W	arning Clear S	election fo	or Debugg	ing ^{*8}				
		M3 *8	0 Reta	in warnings for	debugging	g.				_	
			1 Auto	matically clear	warnings (MECHATR	OLINK-III spe	cification).		_	
	2	Application Selections Limits)	Function 6 (Software	0000h to 0103h	-	0003h	All	Immedi- ately	Setup	*1	
			Software Lin	nit Selection						1	
			0 Enat	ole both forward	d and reve	rse softwa	re limits.			_	
		n.□□□X	1 Disa	ble forward sof	tware limit.					_	
			2 Disa	ble reverse soft	ware limit.					_	
Pn801			3 Disa	ble both forwar	d and reve	rse softwa	re limits.			_ _	
		n.□□X□	Reserved pa	rameter (Do no	ot change.)					
			Software Lin	nit Check for R	eferences						
		n.□X□□	0 Dor	ot perform soft	ware limit	checks for	references.			_	
			1 Perfe	orm software lir	nit checks	for referen	ices.			_	
		n.X□□□	Reserved pa	rameter (Do no	ot change.)					
Pn803	2	Origin Ran	ge	0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2	
		1		-1	1		I	Continue	d on nev	t nage	

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn804	4	Forward Se	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1
Pn806	4	Reverse So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1
Pn808	4	Absolute E Offset	ncoder Origin	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately *11	Setup	*1
Pn80A	2	First Stage eration Co	Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn80B	2	Second St Acceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn80C	2	Acceleration Switching	on Constant Speed	0 to 65,535	100 ref- erence units/s	0	All	Immedi- ately *12	Setup	*2
Pn80D	2	First Stage Deceleration	Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn80E	2	Second St Deceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn80F	2		Deceleration Constant Switching Speed		100 reference units/s	0	All	Immedi- ately *12	Setup	*2
Pn810	2	Exponentia tion/Decele	al Accelera- eration Bias	0 to 65,535	100 reference units/s	0	All	Immedi- ately *13	Setup	*2
Pn811	2		al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately *13	Setup	*2
Pn812	2	Movement Time	Average	0 to 5,100	0.1 ms	0	All	Immedi- ately *13	Setup	*2
Pn814	4	External Po Final Trave		-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
	2	Origin Retu	urn Mode Set-	0000h to 0001h	_	0000h	All	Immedi- ately	Setup	*14
			Origin Return	Direction						
Pn816		n.□□□X		rn in forward di						_
M2 *15			1 Retu	rn in reverse di	rection.					=
IVIZ 13		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)				
		n.□X□□	Reserved pa	rameter (Do no	ot change)				I
	n.X□□□ Reserved parameter (Do not change.)									
Pn817 *16	2	Origin App	roach Speed	0 to 65,535	100 reference	50	All	Immedi- ately *12	Setup	*2
Pn818 *17	2	Origin App	Origin Approach Speed 2		100 reference units/s	5	All	Immedi- ately *12	Setup	*2
Pn819	4		Final Travel Distance for Origin Return		1 refer- ence unit	100	All	Immedi- ately	Setup	*2

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.	S			Range	Unit	Setting	Motors	Enabled	fication	ence		
	2	Input Signa Selections	al Monitor	0000h to 7777h	-	0000h	All	Immedi- ately	Setup	*14		
			IO12 Signal I	Mapping								
			0 Do n	ot map.						_		
				tor CN1-13 inp						_		
				tor CN1-7 inpu						_		
		n.□□□X		tor CN1-8 inpu						_		
D=04E				tor CN1-9 inpu						_		
Pn81E				tor CN1-10 inp						_		
M2 *15				tor CN1-11 inp						_		
			7 Moni	tor CN1-12 inp	ut termina	ıl.				_		
		IO13 Signal Mapping										
		n.□□X□	0 to 7 The mappings are the same as the IO12 signal mappings.									
	1	IO14 Signal Mapping										
		n.□X□□			opings are the same as the IO12 signal mappings.							
			0 to 7 The r	nappings are ti	ie same a	s the iO12	signai mappi	rigs.		_		
		n.XDDD	IO15 Signal I	Mapping								
		11.7000	0 to 7 The r	mappings are t	ne same a	s the IO12	signal mappi	ngs.		_		
		Command	Data Alloca-	0000h to		00401	A.II	After	0.1	*14		
	2	tions		1111h	_	0010h	All	restart	Setup	*14		
	Ī		Option Field	Allocation						1		
		n.□□□X	-	ole option field	allocation					1		
D : 04 E				le option field a						-		
Pn81F				·						-		
M2 *15				trol Command	TFF/TLIM	1 Allocatio	n					
L		n.□□X□		ole allocation.						_		
			1 Enab	le allocation.						_		
	n.□X□□ Reserved parameter (Do not change.)											
	1	· VOOD	D			`				-		
		n.X□□□	neserved pa	rameter (Do no	i change.)				ı		
				T	Т					Г		
Pn820	4	Forward La	atching Area	-2,147,483,648 to	1 refer- ence	0	All	Immedi-	Setup	*2		
. 11020		1 ST WATA LE		2,147,483,647	unit		, 111	ately	Colup			
Dn900	1	Doversol	stobing Area	-2,147,483,648	1 refer-	0	Δ.11	Immedi-	Cotus	*2		
Pn822	4	Heverse La	atching Area	to 2,147,483,647	ence unit	0	All	ately	Setup	*2		
		1			1		I .	Continue		·		

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Monitor 1 Selection	0000h to FFFFh	_	0000h	_	Immedi- ately	Setup	*2

Settin	g Monitor	Applicable Moto
High-Sp	eed Monitor Region	
0000h	Motor speed [1000000h/overspeed detection speed]	All
0001h	Speed reference [1000000h/overspeed detection speed]	All
0002h	Torque [1000000h/maximum torque]	All
0003h	Position deviation (lower 32 bits) [reference units]	All
0004h	Position deviation (upper 32 bits) [reference units]	All
000Ah	Encoder count (lower 32 bits) [reference units]	All
000Bh	Encoder count (upper 32 bits) [reference units]	All
000Ch	FPG count (lower 32 bits) [reference units]	All
000Dh	FPG count (upper 32 bits) [reference units]	All
Low-Sp	eed Monitor Region	
0010h	Un000: Motor speed [min ⁻¹]	All
0011h	Un001: Speed Reference [min ⁻¹]	All
0012h	Un002: Torque Reference [%]	All
0013h	Un003: Rotational Angle 1 [encoder pulses] Number of encoder pulses from origin within one encoder rotation displayed in decimal	All
0014h	Un004: Rotational Angle 2 [deg] Electrical angle from polarity origin	All
0015h	Un005: Input Signal Monitor	All
0016h	Un006: Output Signal Monitor	All
0017h	Un007: Input Reference Speed [min ⁻¹]	All
0018h	Un008: Position Deviation [reference units]	All
0019h	Un009: Accumulated Load Ratio [%]	All
001Ah	Un00A: Regenerative Load Ratio [%]	All
001Bh	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
001Ch	Un00C: Input Reference Pulse Counter [reference units]	All
001Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
001Eh	Un00E: Fully-closed Loop Feedback Pulse Counter [external encoder resolution]	Rotary
0023h	Initial multiturn data [Rev]	Rotary
0024h	Initial incremental data [pulses]	Rotary
0040h	Un025: SERVOPACK Installation Environment Monitor	All
0041h	Un026: Servomotor Installation Environment Monitor	All
0042h	Un027: Built-in Fan Remaining Life Ratio	All
0043h	Un028: Capacitor Remaining Life Ratio	All
0044h	Un029: Surge Prevention Circuit Remaining Life Ratio	All
0045h	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
0046h	Un032: Instantaneous Power	All
0047h	Un033: Power Consumption	All
0048h	Un034: Cumulative Power Consumption	All
	nications Module Only	
0080h	Previous value of latched feedback position (LPOS1) [encoder pulses]	All
0081h	Previous value of latched feedback position (LPOS2) [encoder pulses]	All
0084h	Continuous Latch Status (EX STATUS)	All
All Area		7 411
Other		
values	Reserved settings (Do not use.)	All

Continued from previous page.

									Continued from		
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Mo tion	nitor 2 S	Selec-	0000h to FFFFh	_	0000h	All	Immedi- ately	Setup	*2
Pn825											
		0000h to 0084h	The s	ettings	are the same	as those f	or the Opt	ion Monitor 1	Selection.		_
Pn827	2	Linear Dec Constant 1			1 to 65,535	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn829	2		SVOFF Waiting Time (for SVOFF at Deceleration to Stop) Option Field Allocations			10 ms	0	All	Immedi- ately *12	Setup	*2
	2	Option Fiel	d Alloca	tions	0000h to 1E1Eh	_	1813h	All	After restart	Setup	*14
			ACCFI	L Alloc	ation (Option)						
			0	Alloc	ate bits 0 and	1 to ACCF	īL.				_
			1	Alloc	ate bits 1 and 2	2 to ACCF	īL.				_
			2	Alloc	ate bits 2 and	3 to ACCF	īL.				_
			3	Alloc	ate bits 3 and	4 to ACCF	īL.				_
			4	Alloc	ate bits 4 and	5 to ACCF	īL.				
			5	Alloc	ate bits 5 and	6 to ACCF	īL.				_
		n.□□□X	6	Allocate bits 6 and 7 to ACCFIL.							_
			7	Allocate bits 7 and 8 to ACCFIL.							
			8	Allocate bits 8 and 9 to ACCFIL. Allocate bits 9 and 10 to ACCFIL.							
D=00A			9 A		ate bits 9 and ate bits 10 and						_
Pn82A			В		ate bits 11 and						_
M2 *15			C		ate bits 12 and						_
			D		ate bits 13 and						_
			Е		ate bits 14 and						_
			ACCFI	L Alloc	ation Enable/l	Disable Se	election				_
		n.□□X□	0	Disab	ole ACCFIL allo	cation.					_
			1	Enab	le ACCFIL allo	cation.					_
											_
		n.□X□□	G_SEL	1	ation (Option)						
			0 to E	The s	settings are the	same as	for the AC	CFIL allocatio	ns.		_
			G_SEL	. Alloca	ation Enable/D	isable Se	lection				
		n. X□□□	0	Disab	ole G_SEL alloc	cation.					_
			1	Enab	le G_SEL alloc	ation.					_

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Fie	ld Allocations	0000h to 1F1Fh	-	1D1Ch	All	After restart	Setup	*14
			V_PPI Alloca	tion (Option)						
				ate bit 0 to V_I	PPI.					_
				ate bit 1 to V_I						_
			2 Alloc	ate bit 2 to V_I	PPI.					_
			3 Alloc	ate bit 3 to V_I	PPI.					_
			4 Alloc	ate bit 4 to V_I	PPI.					_
			5 Alloc	ate bit 5 to V_I	PPI.					_
				ate bit 6 to V_I						_
		n.□□□X		ate bit 7 to V_I						_
				ate bit 8 to V_I						_
				ate bit 9 to V_I						_
Pn82B				ate bit 10 to V						_
*15				ate bit 12 to V						_
M2 *15				ate bit 13 to V						_
				ate bit 14 to V						_
				ate bit 15 to V						_
	V_PPI Allocation Enable/Disable Selection								_	
	n.□□X□ 0 Disable V_PPI allocation. 1 Enable V_PPI allocation.							_		
									_	
			P_PI_CLR AI	location (Option	on)					
		n.□X□□	0 to F The s	ettings are the	same as	for the V_F	PPI allocations	3.		_
										_
				location Enabl		Selection				
		n.X□□□		ole P_PI_CLR						_
			1 Enab	le P_PI_CLR a	llocation.					_
	2	Option Fie	ld Allocations	0000h to 1F1Fh	_	1F1Eh	All	After restart	Setup	*14
			P_CL Allocat	ion (Ontion)						
		n.□□□X		settings are the	e same as	for the V F	PPI allocations	S.		
			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					<u> </u>		_
			P_CL Allocat	ion Enable/Dis	sable Sele	ction				
Pn82C		n.□□X□	0 Disak	ole P_CL alloca	ation.					_
			1 Enab	le P_CL alloca	tion.					_
M2 *15			1							_
		n.□X□□	N_CL Allocat	, , ,		·	201 11 11			
			0 to F The s	settings are the	e same as	tor the V_F	PI allocations	S.		_
			N CL Allocat	ion Enable/Di	sahle Sele	ction				
		n.X□□□		ole N_CL alloca		Caon				
				le N_CL alloca						_
			. Lindo	.5 11_02 011000						_
								0		

Applicable

Motors

Default

Setting

Classi-

fication

Refer-

*14

When

Enabled

paç	ge.	=	

	2	Option Fiel 4	d Alloca	tions	0000h to 1F1Ch	-	0000h	All	After restart	Setup				
			BANK_SEL1 Allocation (Option)											
			_	0 Allocate bits 0 to 3 to BANK SEL1.										
			1		ate bits 1 to 4 t									
		n.□□□X	2		Allocate bits 2 to 5 to BANK_SEL1.									
			3		Allocate bits 3 to 6 to BANK_SEL1.									
			4	Allocate bits 4 to 7 to BANK_SEL1.										
	r		5	5 Allocate bits 5 to 8 to BANK_SEL1.										
			6	Alloca	ate bits 6 to 9 t	to BANK_S	SEL1.							
			7	Alloca	ate bits 7 to 10	to BANK	_SEL1.							
			8	Alloca	ate bits 8 to 11	to BANK	_SEL1.							
Pn82D			9	Alloca	ate bits 9 to 12	to BANK	_SEL1.							
			Α	Alloca	ate bits 10 to 1	3 to BAN	<_SEL1.							
M2 *15			В	Alloca	ate bits 11 to 1	4 to BAN	K_SEL1.							
			С	Alloca	ate bits 12 to 1	5 to BAN	K_SEL1.							
	_		ı											
			BANK_	SEL1	Allocation Ena	ble/Disab	le Selection	n						
	1	n.□□X□	0	Disab	ole BANK_SEL	1 allocation	n.							
			1	Enab	le BANK_SEL1	allocation	١.							
	_													
		n.□X□□			Allocation (Op	,								
			0 to F	The s	ettings are the	same as	for the V_P	PI allocations).					
	-		IT D:0	4015	A11 1: -	/5:								
				1	Allocation Ena			n						
		n.X□□□	0		le LT_DISABLE									
			1	Enab	le LT_DISABLE	allocation	١.							

Setting

Range

Setting

Unit

Size

Name

Parameter

No.

Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Option Fie	ld Allocations	0000h to 1D1Fh	-	0000h	All	After restart	Setup	*14		
		n.□□□X	Reserved par	rameter (Do no	ot change.	.)						
		n.□□X□	Reserved parameter (Do not change.)									
	Ī		OUT_SIGNAL	_ Allocation (O	ption)							
			0 Alloca	ate bits 0 to 2	to OUT_SI	GNAL.				_		
			1 Alloca	ate bits 1 to 3	to OUT_SI	GNAL.						
				ate bits 2 to 4						_		
Pn82E				4 Allocate bits 4 to 6 to OUT_SIGNAL.								
		~ UVUU		5 Allocate bits 5 to 7 to OUT_SIGNAL. 6 Allocate bits 6 to 8 to OUT_SIGNAL.								
M2 *15		n.□X□□								_		
				7 Allocate bits 7 to 9 to OUT_SIGNAL. 8 Allocate bits 8 to 10 to OUT_SIGNAL.								
				ate bits 9 to 11						_		
				ate bits 10 to 1						<u>—</u>		
			B Alloca	ate bits 11 to 1	3 to OUT_	SIGNAL.				_		
			C Alloca	ate bits 12 to 1	4 to OUT_	_SIGNAL.						
			D Allocate bits 13 to 15 to OUT_SIGNAL.									
			OUT_SIGNAL Allocation Enable/Disable Selection									
		n.X□□□	0 Disab	le OUT_SIGNA	AL allocation	on.				_		
			1 Enab	le OUT_SIGNA	L allocatio	n.				_		
	2	Motion Se	ttinge	0000h to	_	0000h	All	After	Setup	*2		
		WOUGH GC		0001h		000011	7411	restart	Octup	_		
			Linear Acceleration/Deceleration Constant Selection									
		n.□□□X	Lise Pn80A to Pn80E and Pn827. (The settings of Pn83/1 to Pn8/0 are							-		
			ignor	ignored.)								
Pn833				1 Use Pn834 to Pn840. (The settings of Pn80A to Pn80F and Pn827 are ignored.)								
	Ī	n.□□X□	1	rameter (Do no	ot change.	.)				- 		
	i	n.□X□□	Reserved par	rameter (Do no	ot change.)				-		
	-			,		,				_		
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)				L		
					10.000							
D=004	4	First Stage	e Linear Accel-	1 to	10,000 refer-	100	ΔII	Immedi-	Cotus	*2		
Pn834	4	eration Co	nstant 2	20,971,520	ence units/s ²	100	All	ately *12	Setup	*2		
					10,000							
Pn836	4		tage Linear	1 to	refer-	100	All	Immedi-	Setup	*2		
	•	Acceleration	on Constant 2	20,971,520	ence units/s ²		,	ately *12				
		Acceleration	on Constant	0 +0	1 refer-			Immedi-				
Pn838	4	Switching		0 to 2,097,152,000	ence unit/s	0	All	ately *12	Setup	*2		
					10,000							
Pn83A	4	First Stage	e Linear on Constant 2	1 to 20,971,520	refer- ence	100	All	Immedi-	Setup	*2		
		Decelerati	on Constant 2	20,911,020	units/s ²			ately *12	·			
		1		I.	1	1	1	Continue	ed on nex	t page.		

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83C	4	Second Stage Linear Deceleration Constant 2	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn83E	4	Deceleration Constant Switching Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *12	Setup	*2
Pn840	4	Linear Deceleration Constant 2 for Stopping	1 to 20,971,520	10,000 refer- ence units/s ²	100	All	Immedi- ately *12	Setup	*2
Pn842 *16	4	Second Origin Approach Speed 1	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *12	Setup	*2
Pn844 *17	4	Second Origin Approach Speed 2	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *12	Setup	*2
Pn846	2	POSING Command Scurve Acceleration/ Deceleration Rate	0 to 50	1%	0	All	Immedi- ately *12	Setup	_
Pn850	2	Number of Latch Sequences	0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Latch Sequence Count	0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence 1 to 4 Settings	0000h to 3333h	-	0000h	All	Immedi- ately	Setup	*2

		Latch S	Sequence 1 Signal Selection						
		0	Phase C						
	$n.\Box\Box\Box X$	1	EXT1 signal						
		2	EXT2 signal						
		3	EXT3 signal						
Pn852		Latch S	Sequence 2 Signal Selection						
	n.□□X□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.						
		Latch S	Latch Sequence 3 Signal Selection						
	n.□X□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.						
		Latch S	Sequence 4 Signal Selection						
	n.X□□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.						

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Latch Seq Settings	uence 5 to 8	0000h to 3333h	-	0000h	All	Immedi- ately	Setup	*2		
			Latch Seq	uence 5 Signal S	Selection							
			0 Ph	ase C						_		
		n.□□□X	1 EX	T1 signal						_		
				T2 signal						_		
			3 EXT3 signal									
D-050			Latch Seq	uence 6 Signal S	Selection					Ī		
Pn853		n.□□X□	0 to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.									
			Latch Seg	uence 7 Signal S	Selection					ī		
		n.□X□□	Latch Sequence 7 Signal Selection 0 to 3 The settings are the same as those for the Latch Sequence 5 Signal Selection.									
		Latch Sequence 8 Signal Selection										
		n.XDDD	 	-						l		
		11	0 to 3 tio	e settings are the า.	same as	those for t	ne Latch Seq	uence 5 Sigr	nal Selec-			
		SVCMD IO	O Input Signa	al 0000h to		00001-	A.II	Immedi-	0.1			
	2	Monitor Al	locations 1	1717h	_	0000h	All	ately	Setup	*2		
			Input Signal Monitor Allocation for CN1-13 (SVCMD_IO)									
			0 Allocate bit 24 (IO_STS1) to CN1-13 input signal monitor.									
				1 Allocate bit 25 (IO_STS2) to CN1-13 input signal monitor.								
				2 Allocate bit 26 (IO_STS3) to CN1-13 input signal monitor.								
		n.□□□X		ocate bit 27 (IO_						_		
				ocate bit 28 (IO_: ocate bit 29 (IO_:			- U			_		
Pn860				ocate bit 29 (IO_						_		
1 11000				ocate bit 30 (IO_			_			_		
M3 *10				· · · · · · · · · · · · · · · · · · ·	•	•				-		
		- 00/0		out Signal Monit								
		n.□□X□		able allocation for						_		
			1 En	able allocation fo	IT CIVIT-13	input signa	ai monitor.			_		
		n.□X□□	Input Sign	al Monitor Alloca	ation for C	N1-7 (SVC	CMD_IO)					
			0 to 7 Th	e settings are the	e same as	the CN1-1	3 allocations.			_		
				ut Signal Monito								
		n.X□□□		able allocation for						=		
			1 En	able allocation fo	r CN1-7 ir	put signal	monitor.			_		

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Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	SVCMD Monitor	_IO Input Signal Allocations 2	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2	
		n.□□□X	Input Signal	Monitor Alloca	tion for C	N1-8 (SVC	CMD_IO)				
		11.000	0 to 7 The	settings are the	same as	the CN1-1	3 allocations.			_	
			CN1-8 Input	CN1-8 Input Signal Monitor Enable/Disable Selection							
Pn861		n.□□X□	0 Disa	ble allocation fo	or CN1-8 ii	nput signal	l monitor.			=	
M3 *10			1 Enak	ole allocation fo	r CN1-8 ir	put signal	monitor.			_	
M3 *10			Input Signal	Input Signal Monitor Allocation for CN1-9 (SVCMD_IO)							
		n.□X□□		settings are the						1	
			0 to 7	oottingo aro tric	odino do	110 0111 1	o anocations.			- -	
				Signal Monito							
		n.X□□□		ble allocation fo						_	
			1 Enak	ole allocation fo	r CN1-9 ir	iput signal	monitor.			_	
					T	T	Ti-	1			
	2		_IO Input Signal Allocations 3	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2	
		Wierinter	7 1110000110110 0					atory			
			Input Signal	Input Signal Monitor Allocation for CN1-10 (SVCMD_IO)							
		n.□□□X								1	
										- -	
			CN1-10 Inpu	CN1-10 Input Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-10 input signal monitor.							
Pn862		n.□□X□								_	
M3 *10			1 Enat	ole allocation fo	r CN1-10	input signa	al monitor.			=	
IVIO			Input Signal	Input Signal Monitor Allocation for CN1-11 (SVCMD_IO)							
		n.□X□□	0 to 7 The	0 to 7 The settings are the same as the CN1-13 allocations.							
			CN1-11 Innu	ıt Signal Monit	or Enable	/Disable S	election			1	
		n.X□□□		ble allocation fo						1	
				ole allocation fo						_	
										=	
		SVCMD	_IO Input Signal	0000h to		00006	ΔII	Immedi-	Catura	*2	
	2		Allocations 4	1717h	_	0000h	All	ately	Setup	*2	
		n. 🗆 🗆 🗆 X	Input Signal	Monitor Alloca	tion for C	N1-12 (SV	CMD_IO)				
			0 to 7 The	settings are the	same as	the CN1-1	3 allocations.			_	
Pn863			CN1-12 Inpu	ıt Signal Monit	or Enable	/Disable S	election			1	
M3 *10		n. 🗆 🗆 X 🗆		ble allocation fo							
IVIO				ole allocation fo						_	
		n.□X□□	Reserved na	rameter (Do no	nt change)				- I	
				`						1	
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				ı	

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	SVCMD_IC nal Monito	Output Sig- r Allocations	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2		
			Output Signal Monitor Allocation for CN1-1 and CN1-2 (SVCMD_IO)									
			0 Alloc	ate bit 24 (IO_S	STS1) to C	N1-1/CN1	-2 output sig	nal monitor.		-		
			1 Alloc	ate bit 25 (IO_S	STS2) to C	N1-1/CN1	-2 output sig	nal monitor.		_		
			2 Alloc	ate bit 26 (IO_S	STS3) to C	N1-1/CN1	-2 output sig	nal monitor.		_		
		n.□□□X	3 Alloc	ate bit 27 (IO_S	STS4) to C	N1-1/CN1	-2 output sig	nal monitor.		_		
				, , , ,								
Pn868										_		
1 11000				ate bit 30 (IO_S						_		
M3 *10			7 Allocate bit 31 (IO_STS8) to CN1-1/CN1-2 output signal monitor.									
			CN1-1/CN1-	2 Output Signa	al Monitor	Enable/D	isable Select	ion		Ī		
		n.□□X□	Disable allocation for CN1-1/CN1-2 output signal monitor.									
			1 Enak	le allocation fo	r CN1-1/C	N1-2 outp	out signal mor	nitor.		_		
		Output Signal Monitor Allocation for CN1-23 and CN1-24 (SVCMD_IO)										
	n. □X□□ Output Signal Monitor Allocation for CN1-23 and CN1-24 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-1/CN1-2 allocations.									-		
	-											
		\\	CN1-23/CN1-24 Output Signal Monitor Enable/Disable Selection 0 Disable allocation for CN1-23/CN1-24 output signal monitor.									
		n.X□□□								_		
	1 Enable allocation for CN1-23/CN1-24 output signal monitor.									=		
	2	SVCMD_IC nal Monito 2	Output Sig- r Allocations	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2		
									1	<u> </u>		
										_		
		n.□□□X	Output Signal Monitor Allocation for CN1-25 and CN1-26 (SVCMD_IO) 0 to 7 The settings are the same as the CN1-1/CN1-2 allocations.									
Pn869			0 to 7 The	settings are the	same as	tne CN1-1	/CN1-2 alloca	ations.		_		
			CN1-25/CN1-26 Output Signal Monitor Enable/Disable Selection									
M3 *10		n.□□X□	0 Disa	ole allocation fo	or CN1-25,	/CN1-26 o	utput signal n	nonitor.		-		
			1 Enab	le allocation fo	r CN1-25/	CN1-26 o	utput signal m	nonitor.		_		
		n.□X□□	Reserved pa	rameter (Do no	t change.	.)						
		- VOOO	Decembed			\				_		
		n.X□□□	Reserved pa	rameter (Do no	ot cnange.	.)						
Pn880	2	Station Ad tor (for ma read only)	dress Moni- intenance,	03h to EFh	_	_	All	_	Setup	_		
Pn881	2	Count Mor	nission Byte nitor [bytes] nance, read	17, 32, 48	_	_	All	_	Setup	_		
Pn882	2	ting Monito	on Cycle Set- or [× 0.25 μs] nance, read	Oh to FFFFh	-	-	All	_	Setup	-		
Pn883	2	Setting Mo mission cy	cations Cycle onitor [trans- cles] (for ce, read only)	0 to 32	_	_	All	_	Setup	_		
		1		1	I	1	l .	Cantinus	ed on nex	+		

Continued from previous page.

									p			
Parameter No.	Size	ı	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Commun trols 2	ications Con-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	*2		
			MECHATROLINK Communications Error Holding Brake Signal Setting									
Pn884	n.□□□X			Maintain the status set by the BRK_ON or BRK_OFF command when a MECHA-TROLINK communications error occurs.								
M3 *10			1 Appl	1 Apply the holding brake when a MECHATROLINK communications error occurs.								
	n.	.DDXD	Reserved pa	rameter (Do not	change.)							
	n.		Reserved pa	rameter (Do not	change.)							
	n.	XDDD	Reserved parameter (Do not change.)									
Pn88A	2	Monitor	ROLINK Error Counter enance, read	0 to 65,535	_	0	All	Immedi- ately	Setup	_		
Pn890 to Pn8A6	4	tor during	d Data Moni- g Alarm/Warn- enance, read	Oh to FFFFFFFh	-	Oh	All	Immedi- ately	Setup	*2		
Pn8A8 to Pn8BE	4	during Ala	e Data Monitor arm/Warning enance, read	Oh to FFFFFFFh	-	Oh	All	Immedi- ately	Setup	*2		
Pn900	2	Number of Banks	of Parameter	0 to 16	-	0	All	After restart	Setup	*2		
Pn901	2	Number of Bank Mer	of Parameter mbers	0 to 15	_	0	All	After restart	Setup	*2		
Pn902 to Pn910	2	Paramete ber Defini	er Bank Mem- ition	0000h to 08FFh	_	0h	All	After restart	Setup	*2		
Pn920 to Pn95F	2		er Bank Data d in nonvolatile	0000h to FFFFh	-	0h	All	Immedi- ately	Setup	*2		

- *1. Refer to the following manual for details.
 - $\ \square$ Σ -7-Series Σ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
- *2. Refer to the following manual for details.
 - Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)
- *3. Set a percentage of the motor rated torque.
- *4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
 - C720829 06)
- *5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
 - uct Manual (Manual No.: SIEP S800001 73)
- *8. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- *9. Enabled only when Pn61A is set to n.□□□2 or n.□□□3.
- *10. This parameter is valid only when the MECHATROLINK-III standard servo profile is used.
- *11. The parameter setting is enabled after SENS_ON command execution is completed.
- *12. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- *13. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- *14.Refer to the following manual for details.
 - Σ-7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual (Manual No.: SIEP S800001 30)
- *15.This parameter is valid only when the MECHATROLINK-II-compatible profile is used.
- *16.The setting of Pn842 is valid while Pn817 is set to 0.
- *17. The setting of Pn844 is valid while Pn818 is set to 0.

4.3.2 List of MECHATROLINK-III Common Parameters

The following table lists the common MECHATROLINK-III parameters. These common parameters are used to make settings from the host controller via MECHATROLINK communications. Do not change the settings with the Digital Operator or any other device.

Parameter No.	Size	Nar	me	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication		
	4	Encoder Ty tion (read c	rpe Selec- only)	Oh or 1h	_	-	All	_			
01											
PnA02		0000h	Absolute	encoder							
		0001h	Increment	tal encoder							
	4	Motor Type (read only)	Selection	Oh or 1h	-	-	All	-			
02											
PnA04		0000h	Rotary Se	ervomotor							
		0001h	Linear Se	ervomotor							
			,								
	4	Semi-close closed Sele (read only)	ed/Fully- ection	Oh or 1h	-	-	All	-	lon		
03					I .		II.	1.	mat		
PnA06		0000h	Semi-clo	sed					nfori		
		0001h	Fully-clos	sed					90		
			1						Device information		
04 PnA08	4	Rated Moto (read only)	or Speed	Oh to FFFFFFFh	1 min ⁻¹	ı	All	_			
05 PnA0A	4	Maximum (Speed (rea	Output d only)	Oh to FFFFFFFh	1 min ⁻¹	-	All	_			
06 PnA0C	4	Speed Muli (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	_			
07 PnA0E	4	Rated Torq (read only)	ue	Oh to FFFFFFFh	1 N·m	-	All	_			
08 PnA10	4	Maximum (Torque (rea	Output ad only)	Oh to FFFFFFFh	1 N·m	ı	All	_			
09 PnA12	4	Torque Mul (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	_			
0A PnA14	4	Resolution (read only)		Oh to FFFFFFFh	1 pulse/rev	-	Rotary	-			

Parameter No.	Size	Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication	
21 PnA42	4	Electronic Gear (Numerator)	Ratio	1 to 1,073,741,824	-	16	All	After restart	neation	
22 PnA44	4	Electronic Gear (Denominator)	Ratio	1 to 1,073,741,824	_	1	All	After restart		
23 PnA46	4	Absolute Encod Origin Offset	der	-1,073,741,823 to 1,073,741,823	1 reference unit	0	All	Immedi- ately*1		
24 PnA48	4	Multiturn Limit Setting		0 to 65,535	1 Rev	65535	Rotary	After restart	-	
	4	Limit Setting		0h to 33h	_	0000h	All	After restart	-	
25 PnA4A		Bit 0 Bit 1 Bit 2 Bit 3	N-OT Rese	OT (0: Enabled, 1: Disabled) OT (0: Enabled, 1: Disabled) eserved.						
		Bit 4 Bit 5 Bits 6 to 31		OT (0: Disabled, 1: OT (0: Disabled, 1: rved.					Machine specifications	
26 PnA4C	4	Forward Software Limit		-1,073,741,823 to 1,073,741,823	1 reference unit	10737418 23	All	Immedi- ately		
27 PnA4E	4	Reserved parameter (Do not change.)		-	_	0	All	Immedi- ately	-	
28 PnA50	4	Reverse Software Limit		-1,073,741,823 to 1,073,741,823	1 reference unit	-1073741 823	All	Immedi- ately		
29 PnA52	4	Reserved parar (Do not change	neter .)	-	_	0	All	Immedi- ately		
	4	Speed Unit Selection*2		0h to 4h	-	0h	All	After restart		
41 PnA82		0001h Re 0002h Pe 0003h mii	Reference units/min Percentage (%) of rated speed*3 min ^{-1*3}						ttings	
42 PnA84	4	Speed Base Ur Selection*3,*4 (Set the value of from the following formula: Speed selection (41 Pr × 10 ⁿ)	f n ng unit	-3 to 3	-	0	All	After restart	Unit settings	
43	4	Position Unit Selection		Oh	-	Oh	All	After restart		
PnA86		0000h Re	ference	e units						

4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

_								from previo			
Parameter No.	Size	Nam	ne	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi		
44 PnA88	4	Position Ba Selection (Set the value from the folled formula: Posselection (4: × 10 ⁿ)	ue of n lowing sition unit	0	-	0	All	After restart	noution		
	4	Acceleration Selection	n Unit	Oh	_	0h	All	After restart			
45 PnA8A		0000h Reference units/s²									
46 PnA8C	4	Acceleration Unit Selection (Set the value from the following formula: Account selection PnA8A) × 10	on ue of n lowing celeration on (45	4 to 6	-	4	All	After restart			
	4	Torque Unit Selection		1h to 2h	-	1h	All	After restart			
47 Dr. A O E		0001h	Percentac	ne (%) of rated tord	ane						
PnA8E		0001h		ntage (%) of rated torque num torque/40000000h*5							
		000211	Waximam	101400400000	711						
48 PnA90	4	Torque Base Selection*5 (Set the value from the following formula: Tor selection (4' × 10")	ue of n lowing que unit	-5 to 0	-	0	All	After restart	Unit settings		
	4	Supported tems (read		_	-	0601011F h	All	_			
49 PnA92	4		Rein Units Rein Units Rein Units Rein Units Rein Units Rein Units	ference units/s (1: ference units/min (reentage (%) of rat reentage (%) Disabled ference units (1: Eserved (0: Disabled ference units/s² (1 (acceleration time served (0: Disabled reentage (%) of rat reintage (%) Disabled served (0: Disabled)	(1: Enabled) ed speed (1: E ed) ed/4000000h (d). : Enabled) e required to re d). ed torque (1: E	Enabled) 1: Enabled) ach rated sp					

Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi
61 PnAC2	4	Speed Loop Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	
62 PnAC4	4	Speed Loop Integral Time Constant	150 to 512,000	1 μs [0.01 ms]	20000	All	Immedi- ately	
63 PnAC6	4	Position Loop Gain	1,000 to 2,000,000	0.001/s [0.1/s]	40000	All	Immedi- ately	
64 PnAC8	4	Feedforward Compensation	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Loop Integral Time Constant	0 to 5,000,000	1 μs [0.1 ms]	0	All	Immedi- ately	
66 PnACC	4	Positioning Completed Width	0 to 1,073,741,824	1 reference unit	7	All	Immedi- ately	
67 PnACE	4	Near Signal Width	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponential Acceleration/Deceleration Time Constant	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately*6	
82 PnB04	4	Average Movement Time	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately ^{*6}	
83 PnB06	4	External Positioning Final Travel Distance	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
84 PnB08	4	Origin Approach Speed	0 to 1,073,741,823	10 ⁻³ min ⁻¹	× 5,000h reference units/s con- verted to 10 ⁻³ min ⁻¹	All	Immedi- ately	
85 PnB0A	4	Origin Return Creep Speed	0 to 1,073,741,823	10 ⁻³ min ⁻¹	× 500h reference units/s con- verted to 10 ⁻³ min ⁻¹	All	Immedi- ately	Tuning
86 PnB0C	4	Final Travel Distance for Origin Return	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
	4	Fixed Monitor Selection 1	0 to 15	-	1h	All	Immedi- ately	
87 PnB0E		11 Reserved 12 CMN1 (cc 13 CMN2 (cc 14 OMN1 (occ 14 OMN1 (occ 15 CMN2 (occ 16 CMN2 (occ 17 CMN2	(undefined value). (undefined value). Dommon monitor 1) Dommon monitor 2) ptional monitor 2)					

4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Parameter	C:			0.11: 5	Setting Unit	Default	Applicable	When	Classi-		
No.	Size	Nan	ne	Setting Range	[Resolution]	Setting	Motors	Enabled	fication		
	4	Fixed Monit tion 2	tor Selec-	0 to 15	_	0h	All	Immedi- ately			
88 PnB10		0 to 15	The setting	gs are the same	as those for Fixe	ed Monitor S	Selection 1.				
	4	SEL_MON Monitor Sel	(CMN1) lection 1	0 to 9	_	Oh	All	Immedi- ately			
		0	TPOS (ta	rget position in	reference coordir	nate system)					
		1	IPOS (ref	erence position	in reference coor	rdinate syste	em)				
		2	POS_OFFSET (offset set in POS_SET (Set Coordinate System) command)								
		3	TSPD (tai	rget speed)							
		4		(speed limit)							
		5		(torque limit)							
	Monitor Description Byte 1: Current communications phase 00h: Phase 0 01h: Phase 1 02h: Phase 2 03h: Phase 3 Byte 2: Current control mode 00h: Position control mode 01h: Speed control mode 02h: Torque control mode Byte 3: Reserved Byte 4: Expansion signal monitor										
			Bit	Name	Description	n Value	e Settin	g	ľаш		
		Bit 0	Rit O	LT_RDY1	Processing statulated detection	us for 0 for	Latch dete not yet pro- cessed.		Command-related parameters		
89 PnB12			LI_NDT1	LT_REQ1 in SV0 D_CTRL region	CM-	Processing detection i progress.		ımand-re			
FIID12			Bit 1	LT_RDY1 L	Processing status for latch detection for LT_REQ2 in SVCM- D_CTRL region	for	Latch dete not yet pro cessed.		Con		
						OM- 1	Processing detection i progress.				
						0	Phase C				
			Bits 2	LT OFLAD	Lately along	1	External in signal 1	·			
			and 3	LT_SEL1R	Latch signal	2	External in signal 2				
			_			3	External in signal 3	put 			
						0	Phase C				
			Bits 4			1	External in signal 1	put			
			and 5	LT_SEL2R	Latch signal	2	External in signal 2	put			
						3	External input signal 3				
			Bit 6	Reserved (0)).			<u>_</u>			
		7	Reserved								
		8	INIT_PGF	POS (Low)	Lower 32 bits of initial encoder position converted to 64-bit position reference data			n con- a			
							ncoder positio				

Default

Setting

0h

10

100

100

20000

10000

OFFF3F3F

h

Setting Unit

[Resolution]

The settings are the same as those for SEL_MON Monitor Selection 1.

1 reference

unit

1%

1%

10⁻³ min⁻¹

10⁻³ min⁻¹

Setting Range

0 to 9

0 to 250

0 to 800

0 to 800

1,000 to

10,000,000

0 to 100,000

Applicable

Motors

ΑII

ΑII

ΑII

ΑII

ΑII

ΑII

ΑII

Enabled

Immedi-

ately

Immedi-

ately

Immedi-

ately

Immedi-

ately

Immedi-

ately

Immedi-

ately

Classi-

fication

Bit 0	CMD_PAUSE (1: Enabled)
Bit 1	CMD_CANCEL (1: Enabled)
Bits 2 and 3	STOP_MODE (1: Enabled)
Bits 4 and 5	ACCFIL (1: Enabled)
Bits 6 and 7	Reserved (0: Disabled).
Bit 8	LT_REQ1 (1: Enabled)
Bit 9	LT_REQ2 (1: Enabled)
Bits 10 and 11	LT_SEL1 (1: Enabled)
Bits 12 and 13	LT_SEL2 (1: Enabled)
Bits 14 and 15	Reserved (0: Disabled).
Bits 16 to 19	SEL_MON1 (1: Enabled)
Bits 20 to 23	SEL_MON2 (1: Enabled)
Bits 24 to 27	SEL_MON3 (1: Enabled)
Bits 28 to 31	Reserved (0: Disabled).

Parameter

No.

8A

8B

8C

8D

8F

90 PnB20

PnB16

PnB18

PnB1A

PnB1C

PnB1E

PnB14

Size

4

4

4

4

4

4

4

Name

SEL_MON (CMN2)

Monitor Selection 2

Origin Detection Width

Forward Torque Limit

Reverse Torque Limit

Zero Speed Detection Range

Speed Coincidence Signal Detection Width

Servo Command Control Field Enable/

Disable Selections

(read only)

0 to 9

4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Donossata				Cotting at Line	Default		trom previo				
Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication			
	4	Servo Status Field Enable/Disable Selections (read only)	-	_	0FFF3F33 h	All	_				
		Bit 0	CMD_PAUSE_CMP	(1: Enabled)							
		Bit 1 CMD_CANCEL_CMP (1: Enabled)									
		Bit 2 and 3 Reserved (0: Disabled).									
		Bits 4 and 5 ACCFIL (1: Enabled)									
		Bits 6 and 7	6 and 7 Reserved (0: Disabled).								
		Bit 8	L_CMP1 (1: Enabled	(k							
91		Bit 9	L_CMP2 (1: Enabled								
PnB22		Bit 10	POS_RDY (1: Enable	ed)							
		Bit 11	PON (1: Enabled)								
			M_RDY (1: Enabled)								
			SV_ON (1: Enabled)								
		Bits 14 and 15	,								
		Bits 16 to 19	SEL_MON1 (1: Enab					met			
		Bits 20 to 23	SEL_MON2 (1: Enab					ara			
		Bits 24 to 27	SEL_MON3 (1: Enab					р О			
		Bits 28 to 31	Reserved (0: Disable	ed).				elate			
		,						Command-related parameters			
	4	Output Bit Enable/ Disable Selections (read only)	-	-	007F01F0 h	All	_	Comir			
		1				II.	I				
		Bits 0 to 3	Reserved (0: Disable	ed).							
		Bit 4	V_PPI (1: Enabled)								
		Bit 5	P_PPI (1: Enabled)								
		Bit 6	P_CL (1: Enabled)								
92		Bit 7	N_CL (1: Enabled)								
PnB24		Bit 8	G_SEL (1: Enabled)								
		Bits 9 to 11	G_SEL (0: Disabled)								
		Bits 12 to 15	Reserved (0: Disable	ed).							
		Bits 16 to 19 BANK_SEL (1: Enabled)									
		Bits 20 to 22 SO1 to SO3 (1: Enabled)									
		Bit 23	Reserved (0: Disabled).								
		Bits 24 to 31	Reserved (0: Disable	ed).							
								<u> </u>			

Default

Setting Unit

Applicable

Classi-

- *1. The parameter setting is enabled after SENS_ON command execution is completed.
- *2. When using fully-closed loop control, set the reference units/s.

Parameter

- *3. If you set the Speed Unit Selection (parameter 41) to either 0002h or 0003h, set the Speed Base Unit Selection (parameter 42) to a number between -3 and 0.
- *4. If you set the Speed Unit Selection (parameter 41) to 0004h, set the Speed Base Unit Selection (parameter 42) to 0.
- *5. If you set the Torque Unit Selection (parameter 47) to 0002h, set the Torque Base Unit Selection (parameter 48)
- *6. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
 Parameters that are not valid for the Servomotor that you are using, as given in the parameter table



- The following parameters will be set automatically when the INDEXER Module is mounted. Do not change the settings of these parameters.
 - Pn002 = n. □□□X, Pn205, Pn207 = n. X□□□, Pn50A to Pn512, Pn517, and Pn522
- Parameters that are unique to the INDEXER Module will be set automatically the first time the power supply is turned on after the INDEXER Module is mounted. Up to 10 s may be required for the SERVOPACK to start.

Parameter	a)			Cotting	Cotting	Default	Applicable	Whon	Classi-	Refer-		
No.	Size	N	lame	Range Unit Setting Motors Enabled on Selec- 0000h to 10B1h - 0000h All After restart 1000h Use CCW as the forward direction. 1 Use CW as the forward direction. (Reverse Rotation Mode) 1 Use CW as the forward direction. (Reverse Rotation Mode) 1 Use CW as the forward direction. 1 Use CW as the forward direction. (All After restart of the served parameter (Do not change.) 1 Use Served parameter (Do not change.) 1 Use Served parameter (Do not change.) 1 Use Stopping Method for Servo OFF and Group 1 Alarms 0 Stop the motor by applying the dynamic brake. 1 Stop the motor by the applying dynamic brake and then release the dynamic brake. 2 Coast the motor to a stop without the dynamic brake. 2 Coast the motor to a stop without the dynamic brake. 1 Input DC power as the main circuit power supply using the L1, L2, and L3 terminals (do not use shared converter). 1 Input DC power as the main circuit power supply using the B1/⊕ and ⊕ 2 terminals (use an external								
	2	Basic Fund tions 0	ction Selec-		_	0000h	All		Setup	_		
									- C			
									Refere	nce		
		n.□□□X							*1			
Pn000	i Ose Cvv as the forward direction, (Reverse Rotation Mode)											
		n.□□X□	Reserved p	arameter (Do no	ot change.)						
	n.□X□□ Reserved parameter (Do not change.)											
		n.X□□□	Reserved p	Reserved parameter (Do not change.)								
	2	Application Selections			_	0000h	All		Setup	_		
-												
	Motor Stopping Method for Servo OFF and Group 1 Alarms									nce		
					otor by applying the dynamic brake.							
		n.□□□X										
			2 Co	Coast the motor to a stop without the dynamic brake.								
		n.□□X□	Reserved p	arameter (Do no	ot change.)						
Pn001			Main Circuit	t Power Supply	AC/DC In	put Select	ion		Refere	nce		
		n. 🗆 X 🗆 🗆						ng the L1, L2	,			
		11.0.4.0.0					117	0	*1			
				onverter or the s								
			Warning Co	de Output Sele	ction				Refere	nce		
		n.XDDD	0 0	utput only alarm	codes on	the /ALO1	to /ALO3 ter	minals.	*1			
				Output both warning codes and alarm codes on the /ALO1 to /ALO3 terminals. If there is an alarm, the alarm code is output.								
	//Leo terminas. Il trefe is an alarm, the alarm code is output.											

Continued	from	previous	nage
Continued	110111	previous	page

Parameter No.	Size	1	Name	Setting Range	Applicable Motors Per (Do not change.) Per									
	2	Applications Selections	n Function s 2	Range Unit Setting Motors Enabled fication ence										
					1			<u> </u>						
	Ī	n.□□□X	Reserved pa	rameter (Do no	ot change.)								
	Ī	n.□□X□	Reserved pa	rameter (Do no	ot change.)								
	Ī		Encodor Usa	900				Applicable	Poforo	nco				
			He		according:	to encoder	specifica-	Motors						
		n.□X□□			according	to cricoder	эрсства	All						
D=000							*1							
Pn002					as a single	-turn absol	ute	Rotary						
			External End	oder Usage					Refere	ence				
		n.X□□□					vard direc-							
			2 Re	Reserved setting (Do not use.)				Rotary	*1					
							erse direc-							
			4 Re	served setting (Do not us	e.)								
:	2	Applications Selections	n Function s 6		_	0002h	All		Setup	*1				
	Ī		Analog Moni											
		- -	00 /	Notor speed (1										
			01 8	Speed reference	e (1 V/1,00	00 min ⁻¹)								
			02 T	orque reference	e (1 V/100	% rated to	rque)							
			03 F	osition deviation	n (0.05 V/	reference ι	unit)							
			04 F	osition amplifie	er deviation	n (after elec	tronic gear) (0.05 V/enco	der pulse	unit)				
			05 F	osition reference	ce speed (1 V/1,000	min ⁻¹)							
				Reserved setting										
				oad-motor pos										
Pn006		n.□□XX		ositioning com leted: 0 V)	pletion (po	sitioning c	ompleted: 5 \	/, positioning	not com-	· 				
			09 5	Speed feedforw	ard (1 V/1	,000 min ⁻¹)								
				orque feedforw	<u> </u>									
				ctive gain (1st										
				Completion of poleted: 0 V)	osition ref	erence dist	ribution (com	pleted: 5 V, r	not com-					
			OD E	xternal encode	er speed (1	V/1,000 n	nin ⁻¹ : value at	the motor s	naft)					
			OE F	Reserved setting	g (Do not ı	use.)								
				Reserved setting		use.)								
				Main circuit DC										
			11 to 5F F	Reserved setting	gs (Do not	use.)								
		n.□X□□	Reserved pa	rameter (Do no	ot change.)								
	Ī	n.X□□□	Reserved pa	rameter (Do no	ot change.)								
	_							<u> </u>						

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	Function 7	0000h to 105Fh	_	0000h	All	Immedi- ately	Setup	*1		
			Analog Mon	Analog Monitor 2 Signal Selection								
			00	Motor speed (1	V/1,000 m	nin ⁻¹)						
			01	Speed reference	e (1 V/1,00	00 min ⁻¹)						
			02	Torque referenc	e (1 V/100	% rated to	rque)					
			03	Position deviation	on (0.05 V/	reference i	unit)					
			04	Position amplifie	er deviation	n (after elec	ctronic gear) (0	0.05 V/enco	der pulse	unit)		
			05	Position referen	ce speed (1 V/1,000	min ⁻¹)					
				Reserved setting	•							
				Load-motor pos								
Pn007		n.□□XX		Positioning com pleted: 0 V)	pletion (po	ositioning c	ompleted: 5 \	/, positioning	g not com-	· 		
				Speed feedforw		,						
			\vdash	Torque feedforw								
				Active gain (1st	<u> </u>							
				Completion of poleted: 0 V)	osition ref	erence dist	not com-					
			0D	External encode	er speed (1	V/1,000 r	nin ⁻¹ : value at	the motor s	haft)			
			0E	Reserved setting	g (Do not ı	use.)						
			0F	Reserved setting	g (Do not ı	use.)						
				Main circuit DC								
			11 to 5F	Reserved setting								
		n.□X□□ Reserved parameter (Do not change.)										
	n.X□□□ Reserved parameter (Do not change.)											
		1.3561764 parameter (25 not shange.)										
	2	Application Selections		0000h to 7121h	_	4000h	Rotary	After restart	Setup	_		
				1	1	1			11			
			Low Dotton	· Valtaga Alawa	Marrina	Colootion			Defere	200		
		n.□□□X		Voltage Alarm, utput alarm (A.8			oltage		Refere	ence		
		11.LLLX		utput warning (A					*1			
						on baccory	- Tortagor					
			l	lection for Und					Refere	ence		
Pn008		n.□□X□		not detect und			torque et boo	t controller				
			D	etect undervolta etect undervolta	•		•		*1			
				1425 (i.e., only in			torque with the	11424 8110				
			Warning De	tection Selection	n				Refere	ence		
		n.□X□□	0 De	etect warnings.					*1			
			1 Do	not detect war	nings exce	ept for A.9	71.		1			
		n.X□□□	Reserved pa	arameter (Do no	ot change.)						
					2290	,						
								0 "	1			

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	n Function	0000h to 0121h	_	0010h	All	After restart	Tuning	_
				1						
		n.□□□X	Reserved pa	rameter (Do no	ot change.)				
			Current Con	trol Mode Sele	ction				Refere	nce
				lse current control mode 1.						
Pn009		n.□□X□	1 -3	ERVOPACK Mo BR8A, -5R5A, a ERVOPACK Mo 170A, -550A, -{	and -7R6A odels SGD	: Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A,	*1	
			2 Us	e current contro	ol mode 2.					
			Speed Detection Method Selection							nce
		n.□X□□		Use speed detection 1.						
			1 Us	e speed detect						
		n.X□□□	Reserved pa	rameter (Do no	ot change.)				
						 				
	2	Application Selections	n Function A	0000h to 0044h	_	0001h	All	After restart	Setup	_
			Motor Stopp	ing Method fo	r Group 2	Alarms			Refere	ence
				ply the dynami opping method				op (use the		
			1 the	ecelerate the me e maximum tord atus after stopp	que. Use th					
Pn00A		n.□□□X		celerate the me e maximum tore				in Pn406 as	*1	
FIIOOA			3 Pr	celerate the most 30A. Use the sopping.						
				celerate the mo 30A and then I			he deceleration	on time set in	1	
		n.□□X□	Reserved pa	arameter (Do n	ot change	.)				
		n.□X□□	Reserved pa	arameter (Do n	ot change	.)				
		n.XDDD	Reserved pa	arameter (Do n	ot change	.)				

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections	n Function B	0000h to 1121h	-	0000h	All	After restart	Setup	-	
			Operator Pa	rameter Display	Selection	1			Referer	nce	
		n.□□□X		splay only setup	parameter	rs.			*1		
			1 Dis	splay all paramet	ers.						
			Motor Stopp	oing Method for	Group 2 A	Alarms			Referer	nce	
			0 St	Stop the motor by setting the speed reference to 0.							
Pn00B		n.□□X□		oply the dynamic opping method s				p (use the	*1		
			2 Se	et the stopping n	nethod wit						
			Power Input	Selection for T	nree-phas	e SERVOF	PACK		Referer	nce	
		n.□X□□	0 Us	e a three-phase	power su	oply input.					
				e a three-phase wer supply inpu		pply input	and as a singl	e-phase	*1		
		n.X000	Reserved no	arameter (Do no	t change)						
	2	Application Selections	n Function	0000h to 0131h	_	0000h	-	After restart	Setup	*1	
		00.001.01.0		0.0							
			Function Se	election for Test	without a	Motor			Applicat Motors	ole s	
		n.□□□X	0 D	isable tests with	out a moto	or.			All		
			1 E	nable tests withou	ut a moto	r.			,		
	Ī		Encoder Re	solution for Tes	ts without	a Motor			Applicat Motors		
Pn00C			0 U	se 13 bits.							
111000		n.□□X□	1 U	se 20 bits.					Rotary	,	
				se 22 bits.					riotary	1	
			3 U	se 24 bits.							
	Ī		Encoder Ty	pe Selection for	Tests with	hout a Mo	tor		Applicat Motors		
		n.□X□□	0 U	se an incrementa	al encoder				All		
			4 11	1 Use an absolute encoder.					All		
			1 0	se an absolute e							
		n.X000		arameter (Do no)					

Δ

							Con	tinued from	n previous	s nage		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	Function D	0000h to 1001h	-	0000h	All	After restart	Setup	*1		
				1			l					
			Stand-alone	Stand-alone Mode (Test Operation) Selection								
		n.□□□X										
Pn00D				Disable connection with the Command Option Module. eserved parameter (Do not change.)								
THOOD		n.□□X□		•								
		n.□X□□		rameter (Do no		,						
		n.X000		not detect ove								
		11.7000		tect overtravel		mings.						
Pn00E	2	Reserved p (Do not cha		_	-	0000	All	_	-	-		
	2	Application Selections		0000h to 2011h	-	0000h	All	After restart	Setup	_		
				•	•	•			•			
			Preventative	Reference								
D 005	n.□□□X		Do not detect preventative maintenance warnings.Detect preventative maintenance warnings.									
Pn00F		~ DDVD		rved parameter (Do not change.)								
	n.□X□□ Reserved parameter (Do not change.)											
	n.X□□□ Reserved parameter (Do not change.)											
Pn010	2		ess Selection /USB com- ns)	0000h to 007Fh	_	0001h	All	After restart	Setup	_		
Pn021	2	Reserved p	parameter (Do e.)	_	-	0000h	All	-	-	-		
Pn022	2	Reserved p	parameter (Do e.)	_	_	0000h	All	-	_	_		
Pn040	2	Reserved p	parameter (Do e.)	-	_	0000h	_	-	_	_		
	2	Application Selections	Function 81	0000h to 1111h	_	0000h	All	After restart	Setup	*1		
					•							
				se Output Sele		to the feet	and discouling					
D . 004		n.□□□X		tput phase-C p tput phase-C p					าร.			
Pn081		n. 🗆 🗆 X 🗆	Reserved pa	rameter (Do no	ot change.)						
		n. 🗆 X 🗆 🗆	,	rameter (Do no		,						
		n.X000		rameter (Do no		<u></u>						
		11.XLLL	rieserved pa	rameter (Do ne	or change.	·)						
Pn100	2	Speed Loc	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1		
Pn101	2	Speed Loc Time Cons	p Integral	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1		
Pn102	2	Position Lo		10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1		
		1		1	l .	l	1	2.0.3	1	1		

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn103	2	Moment of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Speed Loop Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	Second Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Position Loop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforward	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforward Filter Time Constant	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1
	2	Gain Application Selections	0000h to 5334h	_	0000h	All	-	Setup	_
		I .	1			I .		1	

Pn10B

n.□□□X	Mode Sv	vitching Selection	When Enabled	Reference
	0	Use the internal torque reference as the condition (level setting: Pn10C).		
	4	Use the speed reference as the condition (level setting: Pn10D).		
	'	Use the speed reference as the condition (level setting: Pn181).		
	2	Use the acceleration reference as the condition (level setting: Pn10E).	Immedi- ately	*1
	2	Use the acceleration reference as the condition (level setting: Pn182).		
	3	Use the position deviation as the condition (level setting: Pn10F).		
	4	Do not use mode switching.		

n.□□X□	Speed L	oop Control Method	When Enabled	Reference	
	0	PI control		*1	
	1	I-P control	After restart		
	2 to 3	Reserved settings (Do not use.)	rootart		

n.□X□□	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn10C	2	Mode Switching Level for Torque Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switching Level for Speed Reference	0 to 10,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Switching Level for Acceleration	0 to 30,000	1 min ⁻¹ /	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switching Level for Position Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Integral Time Constant	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Compensation Coefficient	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Compensation Frequency Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Compensation Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1

Setting Default Applicable

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Classi- Refer-

When

No.	Siz	N	Name		Range	Unit	Setting	Motors	Enabled	fication	ence
Pn131	2	Gain Swite	Gain Switching Time 1			1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Swite	Gain Switching Time 2			1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switch Time 1	ching Waiti	ng	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switch Time 2	ching Waiti	ng	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
	2	Automatic ing Selecti		ch-	0000h to 0052h	ı	0000h	All	Immedi- ately	Tuning	*1
Pn139	n.□□□X n.□□□X□ n.□□X□		0 1 2 Gain Swi 0 1 2 3 4 5	Disa Res Ena /CC /CC /NE Pos Pos	ng Selection able automatic served setting (I able automatic setting (I able aut	Completi Completi Ut) signal ut) signal filter outp input is O t change.	e.) hing. on Output) on Output) turns ON. turns OFF. ut is 0 and N.	signal turns	OFF.	s OFF.	
		n.XDDD	1				,				
Pn13D	2	Current Ga	ain Level		100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1
	2	Model Foll trol-Relate			0000h to 1121h	_	0100h	All	Immedi- ately	Tuning	_
			Model Fo	llow	ing Control Sel	lection				Referen	ice
		n.□□□X	0	Do r	not use model f	ollowing o	control.			*1	
			1	Use	model followin	g control.		-		- 1	

Setting

Pn140	

Parameter _N

		•					
n.□□X□	Vibration Suppression Selection						
	0	Do not perform vibration suppression.					
	1	Perform vibration suppression for a specific frequency.	*1				
	2	Perform vibration suppression for two specific frequencies.					

n.□X□□	Vibration Suppression Adjustment Selection								
	Do not adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
	1	Adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.	*1						

Pn141	2	Model Following Con- trol Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn142	2	Model Following Control Gain Correction	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1

							COIT	tinued from	previous	s page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn143	2	Model Follo trol Bias in Direction	owing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration S Frequency	uppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration S Frequency	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2	Model Follo trol Speed Compensa	owing Con- Feedforward tion	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Moing Control	odel Follow- Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2				0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration S Frequency	uppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration S Correction	uppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Re tions	lated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	_
Pn14F]	n.□□X□ Tuning-less Type Selection 0							Refere	nce
	2	Anti-Reson trol-Related	ance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	-
		n.□□□X	0 Do 1 Use	nce Control Se not use anti-re anti-resonance	sonance de control.				Refere	
Pn160		n.🗆 🗆 X 🗆	0 tion reference Adjust	nce Control Adnot adjust anti- n of autotuning erence, and cus- ust anti-resona otuning withou be, and custom	resonanc without a stom tunin nce contr t a host re	e control a host refere g. ol automati	nce, autotunir ically during e	ng with a hos	*1	псе
		n.□X□□	Reserved par	rameter (Do no	ot change.)				
		n.X□□□	Reserved par	rameter (Do no	ot change.)				
Pn161	2	Anti-Reson quency	ance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Reson Correction	ance Gain	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
		Correction 16 7,500 17 100 7 ately 101 ately Continued on next page								

Default

Con	tinued from	previous	s page.
Applicable Motors	When Enabled	Classi- fication	Refer- ence
MOLOIS	Lilabica	ilcation	CITCC
All	Immedi- ately	Tuning	*1
All	Immedi- ately	Tuning	*1

	No.	S		Range	Unit	Setting	Motors	Enabled	fication	ence
Pn	163	2	Anti-Resonance Damping Gain	0 to 300	1%	0	All	Immedi- ately	Tuning	*1
Pn	164	2	Anti-Resonance Filter Time Constant 1 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn	165	2	Anti-Resonance Filter Time Constant 2 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn	166	2	Anti-Resonance Damping Gain 2	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
		2	Tuning-less Function- Related Selections	0000h to 2711h	_	1401h	All	_	Setup	*1

Setting

Setting

	Tuning-	Tuning-less Selection							
n.□□□X	0	Disable tuning-less function.	After						
	1	Enable tuning-less function.	restart						
n.□□X□	n.□□X□ Reserved parameter (Do not change.)								
	Rigidity	Level	When						
			Enabled						

Pn170

Parameter

ize

Name

n.□X□□	Rigidity Level				
11.0000	0 to 7	Set the rigidity level.	Immedi- ately		
n.X000	Tuning-le	ess Load Level	When Enabled		
11.7000	0 to 2	Set the load level for the tuning-less function.	Immedi- ately		

Pn205	2	Multiturn Limit	0 to 65,535	1 rev	65535*3	Rotary	After restart	Setup	*1
Pn207	2	Reserved parameter (Do not change.)	_	-	0010h*2	All	-	_	_
Pn20A	2	Number of External Encoder Scale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	2	Electronic Gear Ratio (Numerator)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	2	Electronic Gear Ratio (Denominator)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	2	Number of Encoder Output Pulses	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn217	2	Average Movement Time of Position Reference	0 to 10,000	0.1 ms	0	All	After the change and also after the motor has stopped	Setup	_
	2	Fully-closed Control Selections	0000h to 1003h	-	0000h	Rotary	After restart	Setup	*1

Pn22A

n.□□□X	Reserved parameter (Do not change.)						
n.□□X□	n.□□X□ Reserved parameter (Do not change.)						
n.□X□□	Reserved parameter (Do not change.)						
	Fully-closed Control Speed Feedback Selection						
n.X□□□	0	Use motor encoder speed.					
	1	Use external encoder speed.					

							00	tinued from	1	1 0 -
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn230	2	Reserved p (Do not ch		-	-	0000h	All	-	_	_
Pn231	2	Reserved p (Do not ch		_	-	0	All	-	_	_
Pn233	2	Reserved p (Do not ch		_	_	0	All	-	_	_
Pn281	2	Encoder O tion	utput Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn304	2	Jogging Sp	peed	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start / Time	Acceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start I Time	Deceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn308	2	Speed Fee Time Cons	dback Filter stant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2		Deceleration Time for Servo OFF and Forced Stops		1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2		Reserved parameter (Do not change.)		-	0	All	-	-	_
	2	Vibration D Selections	etection	0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1
Pn310		n.00X	1 Out 2 Out Reserved par	1 Output a warning (A.911) if vibration is detected.						
	n.X□□□ Reserved parameter (Do not change.)									
D 044		Vibration Γ	etection Sen-	50 / 500	10/	400	A.II	Immedi-		
Pn311	2	sitivity Vibration D		50 to 500	1%	100	All	ately	T	
Pn312	2	Level		0 to 5,000	1 min ⁻¹		Б.		Tuning	*1
Pn316	2		Maximum Motor Speed		1	50	Rotary	Immedi- ately	Tuning	*1
Pn324	2			0 to 65,535	1 min ⁻¹	10000	Rotary	Immedi-	Tuning Setup	*1
D 404		First Stage	Inertia Calarting Level	0 to 65,535 0 to 20,000	1 min ⁻¹		,	Immediately After restart Immediately	Tuning	*1
Pn401	2	First Stage Reference Constant	Inertia Calarting Level			10000	Rotary	Immedi- ately After restart Immedi-	Tuning Setup	*1
Pn401 Pn402	2	Reference	Inertia Cal- arting Level First Torque Filter Time	0 to 20,000	1%	10000	Rotary	Immediately After restart Immediately Immediately	Tuning Setup Setup	*1
		Reference Constant Forward To Reverse To	Inertia Calarting Level First Torque Filter Time prque Limit prque Limit	0 to 20,000 0 to 65,535	1% 0.01 ms	10000 300 100	Rotary All	Immediately After restart Immediately Immediately Immediately	Tuning Setup Setup Tuning	*1 *1 *1 *1
Pn402	2	Reference Constant Forward To Reverse To Reserved prot change	Inertia Calarting Level First Torque Filter Time orque Limit orque Limit orque Limit orque Limit orque Limit	0 to 20,000 0 to 65,535 0 to 800	1% 0.01 ms 1%*4	10000 300 100 800	Rotary All All Rotary	Immediately After restart Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Tuning Setup	*1 *1 *1 *1 *1
Pn402 Pn403	2 2	Reference Constant Forward To Reverse To Reserved prot change	Inertia Calarting Level First Torque Filter Time orque Limit	0 to 20,000 0 to 65,535 0 to 800	1% 0.01 ms 1%*4 1%*4	10000 300 100 800 800	Rotary All All Rotary Rotary	Immediately After restart Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Tuning Setup Setup	*1 *1 *1 *1 *1 *1
Pn402 Pn403 Pn404	2 2 2	Reference Constant Forward To Reverse To Reserved prot change Reserved prot change Emergency	Inertia Calarting Level First Torque Filter Time orque Limit	0 to 20,000 0 to 65,535 0 to 800 -	1% 0.01 ms 1%*4 1%*4	10000 300 100 800 800	Rotary All All Rotary Rotary All	Immediately After restart Immediately Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Tuning Setup Setup	*1 *1 *1 *1 -

Δ

tinued			

Parameter	Size	N	ame	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	ග		lated Func-	Range 0000h to	Unit _	Setting 0000h	Motors All	Enabled	fication	ence
		tion Select		1111h	_	000011	All	_	Setup	_
			Notch Filter	Selection 1				When Enabled	Refere	nce
		n.□□□X		able first stage able first stage				Immedi- ately		
		n.□□X□	Reserved pa	rameter (Do no	t change.)				
Pn408			Notch Filter	Selection 2				When Enabled	Refere	nce
		n.□X□□	0 Disable second stage notch filter.1 Enable second stage notch filter.					Immedi- ately	*1	
		V===	Friction Com	pensation Fun	ction Sele	ection		When Enabled	Refere	nce
		n.X□□□		·					*1	
Pn409	2	First Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second Stater Frequen	age Notch Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second State Q Value	age Notch Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stater Depth	age Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2		age Second ference Filter	100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second St Torque Ref Q Value	age Second ference Filter	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ref Time Cons	erence Filter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
	2	Torque-Rel tion Select	lated Func- ions 2	0000h to 1111h	_	0000h	All	Immedi- ately	Setup	*1
			Notch Filter S	Selection 3						
		n.□□□X		able third stage						
			1 Ena	able third stage	notch filte	er.				
Pn416		n.□□X□		able fourth stag	ge notch fi	Iter.				
			1 Ena	able fourth stag	e notch fil	ter.				
		n.□X□□	Notch Filter S	Selection 5 able fifth stage	notch filte	r.				
		\ <u></u>		able fifth stage						
		n.X□□□	Reserved pa	rameter (Do no	ot change.)				
Pn417	2	Third Stage Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn418	2	Third Stage Q Value	e Notch Fi	lter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn419	2	Third Stage Depth	e Notch Fi	lter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn41A	2	Fourth Stagter Frequer		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn41B	2	Fourth Stagter Q Value		Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn41C	2	Fourth Starter Depth	ge Notch	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn41D	2	Fifth Stage Frequency	Notch Filt	er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn41E	2	Fifth Stage Q Value	Notch Filt	er	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn41F	2	Fifth Stage Depth	Notch Filt	er	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
	2	Speed Ripp sation Sele		en-	0000h to 1111h	-	0000h	Rotary	-	Setup	*1	
			Speed R	Speed Ripple Compensation Function Selection								
	n. Disa		able speed ripp	ole compe	nsation.			Imme				
			1	Ena	able speed ripp	le comper	nsation.			atel	У	
Dn/122			Speed R tion Sele		e Compensation	n Informa	ation Disag	reement War	ning Detec-	Whe Enab		
F11423		n.□□X□	0	Det	ect A.942 alarms.						After restart	
			1	Do	not detect A.9	not detect A.942 alarms.						
Pn418 Pn419 Pn41A Pn41B Pn41C Pn41D Pn41E			Speed R	ipple	e Compensatio	When Enabled						
		n.□X□□	0	Spe	eed reference					Afte		
			1	Mo	tor speed					resta	rt ——	
		n.X□□□	Reserved	d pai	rameter (Do no	ot change.	.)					
Pn424	2	Torque Lim cuit Voltage	iit at Main e Drop	Cir-	0 to 100	1%*4	50	All	Immedi- ately	Setup	*1	
Pn425	2	Release Tir Limit at Ma Voltage Dro	in Circuit	que	0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1	
Pn426	2	Reserved p		(Do	-	-	0	All	_	_	-	
Pn427	2	Speed Ripp sation Ena	ple Compe ble Speed	en-	0 to 10,000	1 min ⁻¹	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1	
Pn456	2	Sweep Tor- ence Ampl		-	1 to 800	1%	15	All	Immedi- ately	Tuning	*1	
		•			•	•			Continue	d on nov	t nago	

tuning without a host reference, autotuning with a host reference, and custom

Parameter Lists

	Continued from previous page.										
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Notch Filter Adjustment Selections 1	0000h to 0101h	_	0101h	All	Immedi- ately	Tuning	*1		
	Notch Filter Adjustment Selection 1										
		Do not adjust the first stage notch filter automatically during execution of auto-									

		1	Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.				
Pn460	n.□□X□	Reserved parameter (Do not change.)					

0

n.□□□X

	Notch Filter Adjustment Selection 2							
n.□X□□	0	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.						
	1	Adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.						

n.X□□□ Reserved parameter (Do not change.)

tuning.

2	/	Gravity Compensation- Related Selections	0000h to 0001h	-	0000h	All	After restart	Setup	*1	
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Pn475

n.□□□X	Gravity C	Compensation Selection
	0	Disable gravity compensation.
	1	Enable gravity compensation.
n.□□X□	Reserved	d parameter (Do not change.)
	•	
n.□X□□	Reserved	d parameter (Do not change.)

n.X□□□ Reserved parameter (Do not change.)

Pn476	2	Gravity Compensation Torque	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1
Pn502	2	Rotation Detection Level	0 to 10,000	1 min ⁻¹	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Reserved parameter (Do not change.)	_	_	10	Rotary	ı	-	-
Pn506	2	Brake Reference-Servo OFF Delay Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1
Pn507	2	Brake Reference Output Speed Level	0 to 10,000	1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1
Pn508	2	Servo OFF-Brake Com- mand Waiting Time	10 to 100	10 ms	50	All	Immedi- ately	Setup	*1
Pn509	2	Momentary Power Inter- ruption Hold Time	20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1
Pn50A	2	Reserved parameter (Do not change.)	-	_	1881h*2	All	-	-	-
Pn50B	2	Reserved parameter (Do not change.)	_	_	8882h*2	All	-	-	-
Pn50E	2	Reserved parameter (Do not change.)	-	_	0000h*5	All	-	-	-
Pn50F	2	Reserved parameter (Do not change.)	_	_	0100h*6	All	-	_	-
Pn510	2	Reserved parameter (Do not change.)	_	_	0000h*1	All	-	_	-
Pn511	2	Reserved parameter (Do not change.)	_	_	6543h*7	All	_	_	-

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn512	2	Reserved parameter (Do not change.)	-	-	0000h*8	All	-	-	-
Pn514	2	Reserved parameter (Do not change.)	-	-	0000h	All	-	-	_
Pn516	2	Reserved parameter (Do not change.)	_	_	8888h	All	-	-	_
Pn517	2	Reserved parameter (Do not change.)	_	-	0000h*9	All	-	-	-
Pn518	2	Safety Module-Related Parameters	_	-	_	All	ı	-	-
Pn51B	2	Motor-Load Position Deviation Overflow Detection Level	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position Deviation Over- flow Warning Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	2	Position Deviation Over- flow Alarm Level	1 to 1,073,741,823	1 refer- ence unit	5242880	All	Immedi- ately	Setup	*1
Pn522	2	Reserved parameter (Do not change.)	-	-	7*10	All	_	-	_
Pn524	2	Reserved parameter (Do not change.)	-	-	1073741824	All	-	-	-
Pn526	2	Position Deviation Over- flow Alarm Level at Servo ON	1 to 1,073,741,823	1 refer- ence unit	5242880	All	Immedi- ately	Setup	*1
Pn528	2	Position Deviation Over- flow Warning Level at Servo ON	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Limit Level at Servo ON	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier per Fully- closed Rotation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1
Pn52C	2	Base Current Derating at Motor Overload Detection	10 to 100	1%	100	All	After restart	Setup	*1
	2	Program Jogging- Related Selections	0000h to 0005h	_	0000h	All	Immedi- ately	Setup	*1

		1	(Waiting time in Pn535 \rightarrow Reverse by travel distance in Pn531) \times Number of movements in Pn536
		2	(Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536
530	n.□□□X	3	(Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536
		4	(Waiting time in Pn535 \rightarrow Forward by travel distance in Pn531 \rightarrow Waiting time in Pn535 \rightarrow Reverse by travel distance in Pn531) \times Number of movements in Pn536
		5	(Waiting time in Pn535 \rightarrow Reverse by travel distance in Pn531 \rightarrow Waiting time in Pn535 \rightarrow Forward by travel distance in Pn531) \times Number of movements in Pn536

Program Jogging Operation Pattern

movements in Pn536

0

Pn5

n.□□X□	Reserved parameter (Do not change.)
n.□X□□	Decembed parameter (De not change)
ח.טאטט	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

(Waiting time in Pn535 \rightarrow Forward by travel distance in Pn531) \times Number of

Applicable

Default

Continued from previous page.

Classi- Refer-

When

No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn531	2	Program J Distance	ogging Tra	vel 1 to 1,073,741,824	1 reference unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Joment Spee	ogging Mo ed	ve- 1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jeration/DeTime	ogging Acc celeration	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jing Time	ogging Wa	it- 0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jober of Mov		m- 0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Mo Voltage	Analog Monitor 1 Offset Voltage		0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Mo Voltage	nitor 2 Offs	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monification	onitor 1 Mag	g10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monification	onitor 2 Mag	g10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Cor Monitor Ur	Power Consumption Monitor Unit Time		1 min	1	All	Immedi- ately	Setup	_
Pn560	2		Residual Vibration Detection Width		0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Level	Overshoot Detection Level		1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerati Capacity*1		r Depends on model.*12	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	Dynamic B tor Allowak Consumpt	ole Energy	0 to 65,535	10 J	0	All	After restart	Setup	*13
Pn603	2	Regenerati tance	ive Resis-	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic B tance	Brake Resis	0 to 65,535	10 mΩ	0	All	After restart	Setup	*13
	2	Overheat F Selections		0000h to 0003h	_	0000h	Linear	After restart	Setup	*1
		n.□□□X		Protection Selecti						
			0	Disable overheat				*14		
			1	Use overheat pro					1-1	1
Pn61A			2	Monitor a negativuse overheat pro	tection.					
			3	Monitor a positive use overheat pro		put from a	sensor attach	ned to the m	achine an	d
		n.□□X□	Reserved	parameter (Do no	t change.)					
		n.□X□□	Reserved	parameter (Do no	t change.)					
		n.X□□□	Reserved	parameter (Do no	t change.)					

Setting

Setting

Parameter

Pn61B

Pn61C

Pn61D *15

*15

*15

2

2

2

Overheat Alarm Level

Overheat Warning Level

Overheat Alarm Filter Time

0 to 500

0 to 100

0 to 65,535

0.01 V

1%

1 s

250

100

0

All

ΑII

All

Continued on next page.

Setup

Setup

Setup

*1

*1

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Immedi-

Parameter	(h)		Sotting	Satting	Default	I	When	Classi-	Refer-			
No.	Size	Name	Setting Range	Setting Unit	Setting	Applicable Motors	Enabled	fication	ence			
	2	Serial Communication Protocol	on 0 to 9	_	1	All	After restart	Setup	*1			
		0 Full-dup	lex wiring is used for	r commur	nications m	ethod.						
			lex wiring is used for				ack is perfor	med for e	ach			
		2 Half-dup	olex wiring is used for	or commu	nications m	nethod. CR is	used as deli	miter.				
			olex wiring is used for med for each chara		nications m	nethod. CR is	used as deli	miter. Ech	oback			
PnB00			plex wiring is used for med for each comm		nications m	ethod. CR is	used as deli	miter. Ech	oback			
			olex wiring is used for									
		back is	If-duplex wiring is used for communications method. CRLF is used as delimiter. Ecck is performed for each character.									
		Half-duplex wiring is used for communications method. CRLF is used as delimback is performed for each command.										
	8, 9 Reserved parameter											
	2	Bit rate	0 to 2	_	0	All	After restart	Setup	*1			
		0 Sets bit	rate at 9600 bps.									
PnB01		1 Sets bit	ets bit rate at 19200 bps.									
		2 Sets bit	ets bit rate at 38400 bps.									
	2	Response "OK"	0, 1	_	1	All	Immedi- ately	Setup	*1			
D - D00		0 Does no	t return OK respons	Se								
PnB02		0 Does not return OK response. 1 Returns OK response.										
	2	/MODE 0/1	0 to 3	_	0	All	After restart	Setup	*1			
		0 When inp	out signal is ON (clo	sed). mod	e is set to l	Mode 0.						
PnB03			out signal is OFF (op									
		2 Always M	1ode 0									
		3 Always M	1ode 1									
	2	/START-STOP; /HON	ME 0 to 3	-	0	All	After restart	Setup	*1			
D=004		When /MODE signal is ON (closed) (mode 0): Start program table operation when the /START-STOP signal turns ON (closes). Stop program table operation when the /STOP signal turns OFF (opens). When /MODE signal is OFF (open) (mode 1): Turn ON (close) the /HOME signal to st origin return.							TART-			
PnB04		/STAR ⁻¹ STOP s • When /	MODE signal is ON F-STOP signal turns signal turns ON (clo MODE signal is OFI in return.	OFF (ope ses).	ns). Stop p	rogram table	operation wh	en the /S	TART-			
		 an origin return. When /MODE signal is ON (closed) (mode 0): Do not use the /START-STOP signal. When /MODE signal is OFF (open) (mode 1): Do not use the /HOME signal. 										

Parameter	Ф		I	Setting	Setting	Default	Applicable	When	Classi-	Refer-			
No.	Size	N	lame	Range	Unit	Setting	Motors	Enabled	fication	ence			
	2	/PGMRES	; /JOGP	0 to 3	_	0	All	After restart	Setup	*1			
PnB05		0	reset and ca	DE signal is ON ancel program DE signal is OF	table oper	ation.	,	,	Ü				
FIIBUS		1	reset and ca	DE signal is ON ancel program DE signal is OF	table oper	ation.							
		2, 3		DE signal is ON DE signal is OF					operation				
	2	/SEL0; /J0	OGN	0 to 3	-	0	All	After restart	Setup	*1			
		0		E signal is ON E signal is OFf									
PnB06		1		<u> </u>									
		2		E signal is ON E signal is OFI					active.				
		3		E signal is ON E signal is OFI					inactive.				
	2	/SEL1; /JOG0		0 to 3	_	0	All	After restart	Setup	*1			
		0	When /MODE signal is ON (closed) (mode 0): /SEL1 signal is active when ON (closed when /MODE signal is OFF (open) (mode 1): /JOG0 signal is active when ON (closed open) (m										
PnB07		1	When /MOD	When /MODE signal is ON (closed) (mode 0): The /SEL1 signal is active when OFF (open). When /MODE signal is OFF (open) (mode 1): The /JOG0 signal is active when OFF (open).									
		2	When /MOD	When /MODE signal is ON (closed) (mode 0): The /SEL1 signal is always active. When /MODE signal is OFF (open) (mode 1): The /JOG0 signal is always active.									
		3		E signal is ON E signal is OFI			-	-					
	2	/SEL2; /J0	DG1	0 to 3	-	0	All	After restart	Setup	*1			
		0		When /MODE signal is ON (closed) (mode 0): /SEL2 signal is active when ON (closed). When /MODE signal is OFF (open) (mode 1): /JOG1 signal is active when ON (closed).									
PnB08		1	 When /MODE signal is ON (closed) (mode 0): The /SEL2 signal is active when OFF (open). When /MODE signal is OFF (open) (mode 1): The /JOG1 signal is active when OFF (open). 										
		2		When /MODE signal is ON (closed) (mode 0): The /SEL2 signal is always active. When /MODE signal is OFF (open) (mode 1): The /JOG1 signal is always active.									
		3		E signal is ON E signal is OFI									
	• When /MODE signal is OFF (open) (mode 1): The /JOG1 signal is always inactive.												

Parameter Sc			Continued from previous page.									
PhB09		Size	N	lame	_	_						
PhB09		2	/SEL3; /J0	OG2	0 to 3	_	0	All		Setup	*1	
PhB09			0	When /MOD	E signal is OFF	(open) (n	node 1): /J	OG2 signal is	active when	ON (close	ed).	
When /MODE signal is OFF (open) (mode 0): The /SEL3 signal is always active.	PnB09		1	When /MOD	E signal is OFF	(open) (n	node 1): Th	e /JOG2 sign	al is active w	hen OFF		
PhB0A PhB0			2									
PhB0A			3									
PhB0A						T		T	T	T		
PnB0A		2	/SEL4; /J0	DG3	0 to 3	-	0	All		Setup	*1	
- When /MODE signal is OFF (open) (mode 1): The /JOG3 signal is active when OFF (open).			0		-			-				
Phbob When /MODE signal is OFF (open) (mode 1): The /JOG3 signal is always active.	PnB0A		1									
PnBOB 2			2									
Para			3									
Para												
PnB0B 1 The /SEL5 signal is active when OFF (open). 2 The /SEL5 signal is always active. 3 The /SEL5 signal is always inactive. 2 /SEL6 0 to 3 - 0 All After restart Setup *1 0 The /SEL6 signal is active when ON (closed). 1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive. 2 /SEL7 0 to 3 - 0 All After restart Setup *1 0 The /SEL6 signal is always inactive. 2 /SEL7 0 to 3 - 0 All After restart Setup *1 0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when ON (closed). 2 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is active when OFF (open). 3 The /SEL7 signal is always inactive. 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL5		0 to 3	_	0	All		Setup	*1	
PnB0B 1 The /SEL5 signal is active when OFF (open). 2 The /SEL5 signal is always active. 3 The /SEL5 signal is always inactive. 2 /SEL6 0 to 3 - 0 All After restart Setup *1 0 The /SEL6 signal is active when ON (closed). 1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive. 2 /SEL7 0 to 3 - 0 All After restart Setup *1 0 The /SEL6 signal is always inactive. 2 /SEL7 0 to 3 - 0 All After restart Setup *1 0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when ON (closed). 2 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is active when OFF (open). 3 The /SEL7 signal is always inactive. 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.				The /SFL5 sig	ınal is active w	hen ON (c	losed)					
PnBOC The /SEL5 signal is always active. 2 /SEL6	PnB0B			_								
PRBOC 2 /SEL6				-			opo,.					
PRBOC The /SEL6 signal is active when ON (closed).												
PnBOC The /SEL6 signal is active when ON (closed).												
PnBOC 1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive. 2 /SEL7 0 to 3 - 0 All After restart Setup *1 0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive. 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL6		0 to 3	_	0	All		Setup	*1	
PnB0D 2			0	The /SEL6 sig	ınal is active w	hen ON (c	losed).					
PnB0D 2 /SEL7	PnB0C		1	The /SEL6 sig	nal is active w	hen OFF (open).					
PnB0D 2 /SEL7			2	The /SEL6 sig	nal is always a	ictive.						
PnB0D The /SEL7 signal is active when ON (closed).			3	The /SEL6 sig	ınal is always ir	nactive.						
PnB0D 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive. 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL7		0 to 3	-	0	All		Setup	*1	
PnB0D 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive. 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.				The /SEL 7 sig	upal ic active w	hon ON (a	locod)					
PnB0E 2 The /SEL7 signal is always active. 2 /S-ON	PnB0D		-	Ŭ								
PnB0E 2 /S-ON				_			эрсп).					
PnB0E 2 /S-ON 0 to 3 - 0 All After restart Setup *1 0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes). 1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.					· · · · · · · · · · · · · · · · · · ·							
PnB0E The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes). The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). The system is always in the SERVO ON state.					, , .							
PnB0E when the /S-ON signal turns ON (closes). The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). The system is always in the SERVO ON state.		2	/S-ON		0 to 3	-	0	All		Setup	*1	
The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). The system is always in the SERVO ON state.	DnPOE		0	The system ch when the /S-C	nanges to the S ON signal turns	SERVO ON	N state (poves).	wer is supplie	d) and opera	ntion is ena	abled	
	PIIBUE		1					wer is supplie	d) and opera	ntion is ena	abled	
The system is always in the SERVO OFF state.												
			3	The system is	always in the S	SERVO OI	F state.					

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							tinued from	provious	pago.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	P-OT	0 to 3	-	0	All	After restart	Setup	*1
PnB0F		1 When input 2 Forward re	ut signal is OFF (op ut signal is ON (clo un is always prohit un is always enabl	sed), forwa	ard run is p ard overtra	orohibited (for vel).			
	2	N-OT	0 to 3	_	0	All	After restart	Setup	*1
PnB10		1 When input 2 Reverse ru	ut signal is OFF (op ut signal is ON (clo un is always prohib un is always enable	sed), rever	se run is p	rohibited (rev			
	2	/DEC	0 to 3	_	0	All	After restart	Setup	*1
PnB11		1 Starts dec 2 Sets the c	celeration in an orig celeration in an orig origin return limit sv origin return limit sv	gin return v vitch alway	vhen input ys ON.				
	2	/RGRT	0 to 3	-	0	All	After restart	Setup	*1
PnB12		1 Starts reg	gistration by switch gistration by switch start registration.	<u> </u>			•	<u> </u>	
	2	/INPOSITION	0 to 3	-	0	All	After restart	Setup	*1
PnB13		-	sitioning has been sitioning has been I.						
	2	/POUT0	0, 1	-	0	All	After restart	Setup	*1
PnB14			T0 signal turns ON T0 signal turns OF	(1 /	1 0				
	2	/POUT1	0, 1	_	0	All	After restart	Setup	*1
PnB15			T1 signal turns ON T1 signal turns OF						
	2	/POUT2	0, 1	_	0	All	After restart	Setup	*1
PnB16			T2 signal turns ON T2 signal turns OF			<u>_</u>			

		Continued from previous page.								
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	/POUT3		0, 1	_	0	All	After restart	Setup	*1
PnB17		0	The /POUT3 s	signal turns ON	I (opens) v	hen progra	ammable outr	out 3 is activ	e.	
		1		signal turns OF			·			
		-								
	2	/POUT4		0, 1	-	0	All	After restart	Setup	*1
PnB18		0	The /POLITA's	signal turns ON	I (onene) w	hen progr	ammahla outr	out A is activ	Δ	
		1		signal turns OF						
		<u> </u>	111071 00110	ngriai tarrio er	. (0.0000)	mion prog		tpat 1 lo dot		
	2	/POUT5		0, 1	_	0	All	After restart	Setup	*1
PnB19		0	The /POLITE of	signal turns ON	I (opone) v	thon progre	ammable outr	out 5 is activ	^	
THETO			 The /POUT5 signal turns ON (opens) when programmable output 5 is active. The /POUT5 signal turns OFF (closes) when programmable output 5 is active. 							
			111671 0013 3	signal turns Of	(00363)	wrien prog	rammable ou	ipui o is acii	ve.	
	2	/POUT6		0, 1	-	0	All	After restart	Setup	*1
PnB1A			The /DOLLTS	AO acres to la considera	I (anana)	han nraar	ammahla autr	out Cio octiv		
FIIDIA		1		signal turns ON			•			
			The /P0016 s	signal turns OF	F (Closes)	wnen prog	rammable ou	iput 6 is acti	ve.	
								۸ (۲۰۰۰		
	2	/POUT7		0, 1	_	0	All	After restart	Setup	*1
PnB1B		0		ignal turns ON			·			
		1	The /POUT7 s	signal turns OF	F (closes)	when prog	rammable ou	tput 7 is acti	ve.	
	2	/WARN		0, 1	_	0	All	After restart	Setup	*1
PnB1C		0	The /WARN si (error/warning	gnal turns ON status).	(closes) w	hen the ou	tput when an	error or war	ning occu	rs
		1	The /WARN si (error/warning	gnal turns OFF status).	(opens) v	vhen the o	utput when ar	n error or wa	rning occi	ırs
	2	/BK		0, 1	-	0	All	After restart	Setup	*1
PnB1D		0	When braking	signal /BK is 0	ON (closed	l), brake is	released.			
		1	When braking	signal /BK is (OFF (open), brake is r	released.			
	2	/S-RDY		0, 1	-	0	All	After restart	Setup	*1
PnB1E		0	Turn ON (close	e) the /S-RDY	eianal whe	n the serv	n ie ready			
THETE		1		en) the /S-RDY						
			Turri Orr (ope		Signal Wil	en the serv	o is ready.			
	2	Overtravel Method	(OT) Stop	0 to 2	_	0	All	After restart	Setup	*1
PnB1F		0	Stops the moting of Pn001	tor with the sar = n.□□□X).	me metho	d as when	the servo is to	urned OFF (a	ccording	to set-
		1	Stops motor in	mmediately, an	d then ch	anges mot	or state to ser	vo lock.		
		2	Decelerates m state to servo	notor to a stop lock.	at deceler	ation rate :	set with PnB2	B, and then	changes i	notor

	Continued from previous page.										
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Moving Mode	0 to 3	-	0	All	After restart	Setup	*1		
		0 Sets coordina	ites to linear typ	ne							
PnB20			ites to infear ty		a mode is s	set as shortes	st path.				
			ites to rotary ty	•	<u> </u>		<u> </u>				
		3 Sets coordina	ites to rotary ty	pe. Movin	g mode is a	always set as	reverse.				
PnB21	4	Linear coordinates (PnB20 = 0000h): For- ward Software Limit (P- LS) Rotational coordinates (PnB20 ≠ 0000h): Last Rotational Coordinate	-9999999 to +99999999	1 refer- ence unit	+99999999	All	After restart	Setup	*1		
PnB23	4	Linear coordinates (PnB20 = 0000h): Reverse Software Limit (N-LS) Rotational coordinates (PnB20 ≠ 0000h): First Rotational Coordinate	-9999999 to +99999999	1 refer- ence unit	-99999999	All	After restart	Setup	*1		
PnB25	4	When using an incremental encoder: Origin When using an absolute encoder: Absolute Encoder Offset	-99999999 to +99999999	1 refer- ence unit	0	All	After restart	Setup	*1		
PnB27	4	Positioning/Registration Speed	1 to 99999999* ¹⁶	1000 Refer- ence units/ min	1000	All	After restart	Setup	*1		
PnB29	4	Acceleration rate	1 to 99999999* ¹⁶	1000 (Refer- ence units/ min) /ms	1000	All	Immedi- ately	Setup	*1		
PnB2B	4	Deceleration rate	1 to 99999999*16	1000 (Reference units/ min) /ms	1000	All	Immedi- ately	Setup	*1		
PnB2D	4	/INPOSITION Width	1 to 99999	1 refer- ence unit	1	All	Immedi- ately	Setup	*1		
PnB2F	4	/NEAR Width	1 to 99999	1 refer- ence unit	1	All	Immedi- ately	Setup	*1		
	2	Origin Return Method	0 to 3	-	0	All	After restart	Setup	*1		
		0 Origin returns	s are not execu	ited.							
PnB31			ase C are used		igin return.						
		2 Only /DEC is	used for an or	igin return							
		3 Only phase 0	is used for an	origin ret	urn.						
	2	Origin Return Direction	0, 1	_	0	All	Immedi- ately	Setup	*1		
PnB32	/HOME or ZRN command is used for an origin return in forward direction. /HOME or ZRN command is used for an origin return in reverse direction.										

	Continued from previous page.											
Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
PnB33	4	Origin Ret	turn Moving	1 to 99999999*16	1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1		
PnB35	4	Origin Rei Speed	turn Approach	1 to 99999999* ¹⁶	1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1		
PnB37	4	Origin Rei Speed	turn Creep	1 to 99999999* ¹⁶	1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1		
PnB39	4	Origin Rei Move Dist		-99999999 to +99999999	1 refer- ence unit	0	All	Immedi- ately	Setup	*1		
PnB3B to PnB4D	4	Reserved (Do not ch	parameters nange.)	-	_	0	All	-	Setup	-		
	2	ZONE Sig	ınal Setting	0000h, 0001h	-	0000h	All	After restart	Setup	*1		
PnB4F		0000h		trol power sup s are disabled.	ply is turn	ed ON or th	ne SERVOPA	CK is reset, t	he /POUT	0 to /		
		0001h	When control are the ZONE	power is turne signals.	d ON or S	ERVOPACI	K is reset, the	POUT0 to	/POUT7 s	ignals		
PnB50	2	Backlash Compensation		-1000 to +1000	1 refer- ence unit	0	All	Immedi- ately	Setup	*1		
	2	/ALO Out	put Selection	0 to 1	-	0	All	After restart	Setup	*1		
PnB51		0	-	out /ALO1 to /A					•	·		
		1	Outputs /ALO	1 to /ALO3. (/V	VARN, /BI	K, and /S-F	RDY are not o	utput.)				
	2	/ALM-RS	Γ	0 to 3	-	0	All	After restart	Setup	*1		
PnB52		0		ets alarms by switching input signal from OFF (open) to ON (closed).								
		1	-	ets alarms by switching input signal from ON (closed) to OFF (open). s not reset alarms. (Signal is ignored.)								
		2, 3		t alarms. (Signi	ai is ignore	ea.)	I	I	ı			
	2	Input Sigr Polarity S	nal Monitor IN1 election	0000h to 00FFh	-	0050h	All	After restart	Setup	-		
		Bit 0	Input Signal M the data.)	Monitor IN1 Bit	0 (/SVON)	(0: Do not	invert the dat	ta (default se	tting), 1: I	nvert		
		Bit 1	Input Signal M Invert the data	Ionitor IN1 Bit a.)	1 (/ALM-R	ST) (0: Do	not invert the	data (defaul	t setting),	1:		
		Bit 2	Input Signal M data.)	Ionitor IN1 Bit 2	2 (/P-OT) (0: Do not ir	overt the data	(default setti	ng), 1: Inv	ert the		
PnB53		Bit 3	Input Signal M data.)	Ionitor IN1 Bit 3	3 (/N-OT) (0: Do not ir	overt the data	(default setti	ng), 1: Inv	ert the		
		Bit 4	Input Signal M setting).)	Ionitor IN1 Bit	4 (/DEC) (Do not ir	overt the data	, 1: Invert the	e data (de	fault		
		Bit 5	Input Signal M the data.)	onitor IN1 Bit (5 (not use	d) (0: Do no	ot invert the d	lata (default s	setting), 1:	Invert		
		Bit 6	Input Signal M setting).)	onitor IN1 Bit	6 (/RGRT)	(0: Do not	invert the dat	ta, 1: Invert t	he data (d	lefault		
		Bit 7	Input Signal M the data.)	Ionitor IN1 Bit	7 (not use	d) (0: Do no	ot invert the d	ata (default s	setting), 1:	Invert		
PnB54	2		sition Expan- tion Selection	0 or 1	-	0	All	After restart	Setup	_		
			1.6 1.1	l .	<u> </u>	1	I .	1	<u> </u>	1		

^{*}I. Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

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- *2. The following parameters are automatically set when the INDEXER Module is mounted to the SERVOPACK. Do not change the setting.
 - Pn002 = n.□□□0
 - Pn207 = n.1□□□
 - Pn50A = 8881h
 - Pn50B = 8888h
 - Pn510 = 0000h
- *3. This parameter is automatically set to 0 if a single-turn absolute encoder is used and Pn002 is set to n.□0□□.
- *4. Set a percentage of the motor rated torque.
- *5. When the INDEXER Module is mounted to the SERVOPACK, Pn50E is set to 0000h or 3000h according to the setting of PnB51. Do not change the setting.
- *6. When the INDEXER Module is mounted to the SERVOPACK, Pn50F is set to 0000h or 1200h according to the setting of PnB51. Do not change the setting.
- *7. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set according to the settings of PnB11 and PnB12. (Pn511 = n.8□■8, where □ = 4, 8, or D and = 6, 8, or F) Do not change the setting.
- *8. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set according to the settings of PnB1C, PnB1D, PnB1E, and PnB51. (Pn512 = n.0□□□, where □ = 0 or 1) Do not change the setting.
- *9. When the INDEXER Module is mounted to the SERVOPACK, Pn517 is set to 0000h or 0321h according to the setting of PnB51. Do not change the setting.
- *10. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set to between 0 and 99,999 according to the setting of PnB2D. Do not change the setting.
- *11.Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *12. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *13. These parameters are for SERVOPACKs with the Dynamic Brake Hardware Option. Refer to the following manual for details.
 - Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- *14.The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- *15.Enabled only when Pn61A is set to n. \$\square\$0 or n. \$\square\$15.
- *16.If you set PnB54 to 1 (Enable Expansion Mode), the following setting ranges will change.

Parameter No.	Name	Setting Range
PnB21	 Linear coordinates (PnB20 = 0000h): Forward Software Limit (P-LS) Rotational coordinates (PnB20 ≠ 0000h): Last Rotational Coordinate 	-536,870,911 to +536,870,911
PnB23	 Linear coordinates (PnB20 = 0000h): Reverse Software Limit (N-LS) Rotational coordinates (PnB20 ≠ 0000h): First Rotational Coordinate 	-536,870,911 to +536,870,911
PnB25	When using an incremental encoder: Origin When using an absolute encoder: Absolute Encoder Offset	-1,073,741,823 to +1,073,741,823
PnB27	Positioning/Registration Speed	1 to 99,999,999
PnB29	Acceleration Rate	1 to 99,999,999
PnB2B	Deceleration Rate	1 to 99,999,999
PnB33	Origin Return Movement Speed	1 to 99,999,999
PnB35	Origin Approach Speed	1 to 99,999,999
PnB37	Origin Return Creep Speed	1 to 99,999,999
PnB39	Origin Return Final Travel Distance	-1,073,741,823 to +1,073,741,823

FT83 SERVOPACKs with Analog Voltage/Pulse Train References

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
 Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer
	2	Basic Fund tions 0	ction Selec-	0000h to 10B1h	_	0010h	All	After restart	Setup	_
				irection Selectio					Refere	ence
		n.□□□X		Jse CCW as the t					*1	
			1	Jse CW as the fo						
			Control Mo	ethod Selection					Refere	ence
				Switching betwee gram table operat		ontrol with	analog refere	ences and pro	D-	
				Switching betwee program table ope		control wit	h pulse train r	eferences an	d	
				Switching betwee gram table operat		ontrol with	O-			
			3 I	nternal set speed	control w	ith contact	commands			
Pn000		n.□□X□ .		Switching betwee ences and speed				ontact refer-		
				Switching betwee ences and positio						
				Switching betwee ences and torque				ontact refer-	*1	
				Switching betwee speed control with			h pulse train r	eferences an	d	
				Switching betwee orque control wit			h pulse train r	eferences an	d	
				Switching betwee speed control with			analog refere	ences and		
		_		Switching betwee speed control with			analog refere	ences and		
			В	Switching betwee position control w	n position ith referen	control wit ce pulse ir	h pulse train r hibition	eferences an	d	
		n.□X□□	Reserved	parameter (Do no	ot change	.)				

Continued from previous page.

Setting Setting Default Applicable When Classi- Refer-

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 1142h	_	0000h	All	After restart	Setup	_
			Motor Stor	pping Method for	r Servo Ol	FF and Gro	oup 1 Alarms		Refere	ence
				top the motor by			•		Tiororo	21100
		n.□□□X	1 S	top the motor by ne dynamic brake	the apply			then release	*1	
			2 C	coast the motor to	o a stop w	ithout the	dynamic brak	æ.		
			Overtravel	Stopping Metho	d				Refere	ence
				pply the dynamic topping method				op (use the		
		~ DDVD		ecelerate the mone maximum torq						
		n.□□X□		ecelerate the mone maximum torq				in Pn406 as	*1	
Pn001				ecelerate the mo n30A and then s				on time set in		
				ecelerate the mo n30A and then le			he deceleration	on time set in		
		n. 🗆 X 🗆 🖯	Main Circuit Power Supply AC/DC Input Selection							ence
				Input AC power as the main circuit power supply using the L1, L2, and L3 terminals (do not use shared converter).						
			Input DC power as the main circuit power supply usin and ⊕ 2 terminals or the B1 and ⊕ 2 terminals (use converter or the shared converter).					-	*1	
			Warning Co	ode Output Sele	ction				Refere	ence
		V		output only alarm als.	codes on	the ALO1,	ALO2, and A	ALO3 termi-		
		n.X□□□	1 a	Output both warni nd ALO3 termina utput, the ALM (S nal state).	ls. Howev	er, while a	n warning cod	de is being	*1	
										_

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer
	2	Application Selections		0000h to 4213h	_	0000h	-	After restart	Setup	_
			Speed/Posi	tion Control Op	ation (T-RF	E Input Al	location)	Applicable	Refere	ance
			-		<u> </u>	r IIIput Ai	iocationj	Motors	neiere	ence
				not use T-REF						
		n.□□□X		se T-REF as an			•	All	*1	
				se T-REF as a to	-	•		All	*1	
				se T-REF as an e -CL or /N-CL is		rque ilmit i	nput when		*1	
			Torque Con	Torque Control Option (V-REF Input Allocation)						ence
		n.□□X□	0 Do	not use V-REF				All	*1	
			1 Us	se V-REF as an	external sp	oeed limit i	nput.	All		
Pn002			Encoder Us	age				Applicable Motors	Refere	ence
		n.□X□□		se the encoder a	r specifica-	All				
			1 Us	se the encoder a	coder.		*1			
				Use the encoder as a single-turn absolute encoder.						
			External En	coder Usage				Applicable Motors	Refere	ence
			0 Do	o not use an ext	ernal enco	oder.				
		n.X000	1 Th	ne external enco on for CCW mot	der moves or rotation	s in the for	ward direc-			
			2 R	eserved setting	(Do not us	e.)		Rotary	*1	
				ne external enco on for CCW mot			erse direc-			
			4 Re	eserved setting	(Do not us	e.)				

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	Function 6	0000h to 105Fh	-	0002h	All	Immedi- ately	Setup	*1		
	Ī		Analog Mo	nitor 1 Signal Se	election							
			00	Motor speed (1	V/1,000 m	nin ⁻¹)						
			01	Speed reference	e (1 V/1,00	00 min ⁻¹)				 -		
			02	Torque reference (1 V/100% rated torque)								
			03	Position deviation	n (0.05 V/	reference	unit)					
			04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)								
			05	Position reference	ce speed (1 V/1,000	min ⁻¹)					
			06	Reserved setting	g (Do not ı	use.)						
			07	Load-motor pos	ition devia	ition (0.01	V/reference u	nit)				
Pn006		n.□□XX	08	Positioning com pleted: 0 V)	pletion (po	ositioning c	completed: 5 \	V, positionino	g not com	-		
1 11000			09	Speed feedforw	ard (1 V/1	,000 min ⁻¹))					
			0A	Torque feedforward (1 V/100% rated torque)								
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)								
			0C	Completion of p pleted: 0 V)	osition ref	erence dis	tribution (com	pleted: 5 V,	not com-			
			0D	External encode	r speed (1	V/1,000 r	nin ⁻¹ : value at	the motor s	haft)			
			0E	Reserved setting	g (Do not ı	use.)						
			0F	Reserved setting	g (Do not ı	use.)						
			10	Main circuit DC	voltage							
			11 to 5F	Reserved setting	gs (Do not	use.)						
	Ī	n.□X□□ Reserved parameter (Do not change.)										
	Ī	n.X□□□	Reserved p	parameter (Do no	t change.	.)						

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn007	2	Application Function Selections 7		0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1	
			00 01	Speed reference (1 V/1,000 min ⁻¹)							
		n.□□XX	03 04	Position deviation (0.05 V/reference unit) Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit) Position reference speed (1 V/1,000 min ⁻¹)							
				Reserved setting (Do not use.)							
				Load-motor position deviation (0.01 V/reference unit)							
				Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)							
				Speed feedforward (1 V/1,000 min ⁻¹)							
			00	Active gain (1st gain: 1 V, 2nd gain: 2 V) Completion of position reference distribution (completed: 5 V, not completed: 0 V)							
			0D								
			0E	0E Reserved setting (Do not use.)							
			0F	Reserved setting (Do not use.)							
			11 to 5F Reserved settings (Do not use.)								
		n.□X□□ Reserved parameter (Do not change.)									
		n.X□□□ Reserved parameter (Do not change.)									
Pn008	2	Application Selections		0000h to 7121h	_	0000h	Rotary	After restart	Setup	_	
									_		
			Low Battery Voltage Alarm/Warning Selection						Refere	Reference	
		n.□□□X	0 Output alarm (A.830) for low battery voltage. 1 Output warning (A.930) for low battery voltage.								
		n.□□X□	Function Selection for Undervoltage						Refere	Reference	
			0 Do not detect undervoltage.								
			Detect undervoltage warning and limit torque at host controller. Detect undervoltage warning and limit torque at host controller.						*1	*1	
			Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).								
		n.□X□□	Warning Detection Selection						Refere	Reference	
			0 Detect warnings.						*1		
			1 D	1 Do not detect warnings except for A.971.							
		n.X□□□ Reserved parameter (Do not change.)									
								Cantinus	nd on nov	4	

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections	Function 9	0000h to 0121h	-	0010h	All	After restart	Tuning	-			
		n.□□□X	Reserved n	arameter (Do no	ot change)							
		11.0000	•	`)			D. (
				ntrol Mode Sele					Refere	nce			
Pn009		n.□□X□	1 • ;	SERVOPACK Me -3R8A, -5R5A, a SERVOPACK Me -470A, -550A, -	odels SGD and -7R6A odels SGD	: Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A,	*1				
			2 U:	se current contro	ol mode 2.								
			Speed Dete	peed Detection Method Selection									
		n.□X□□		Use speed detection 1. Use speed detection 2.									
										_			
		n.XDDD Reserved parameter (Do not change.)											
	2	Application Selections		0000h to 0044h	_	0001h	All	After restart	Setup	_			
			Motor Stor	pping Method fo	r Croup 2	Alarma			Refer	ongo			
				pply the dynam	•		motor to a st	op (use the	neiei	ence			
			U s	topping method	set in Pn0	001 = n. □ [□□X).)6 as				
			1 tl	ecelerate the mode maximum tore tatus after stopp	que. Use tl								
		n.□□□X	2 t	ecelerate the m	otor to a s que and th	top using the	the torque set motor coast.	t in Pn406 as	* 1	ļ.			
			3 F	ecelerate the manager than the state of the									
				Decelerate the motor to a stop using the deceleration time set in									
Pn00A			Stopping N	Method for Forc	ed Stops				Refer	ence			
				pply the dynam topping method				op (use the					
			1 th	Decelerate the maximum tortatus after stopp	que. Use tl	top using the setting of	the torque set of Pn001 = n.	t in Pn406 as □□□X for th	ne				
		n.□□X□		ecelerate the m				t in Pn406 as	* 1	Į.			
			3 F	the maximum torque and then let the motor coast. Decelerate the motor to a stop using the deceleration time set in Pn30A. Use the setting of Pn001 = n.□□□X for the status after stopping.									
			Decelerate the motor to a stop using the deceleration time set in Pn30A and then let the motor coast.										
		n.□X□□	Reserved parameter (Do not change.)										
		n.X000	Reserved parameter (Do not change.)										
						,							

								Continued fro	om previou	ıs page.		
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	n Function B	0000h to 1121h	_	0000h	All	After restart	Setup	_		
			Operator Para	ameter Display	/ Selection	า			Refere	nce		
		n.□□□X	0 Disp	olay only setup	paramete	rs.			*1			
			1 Disp	olay all parame	ters.				1			
				ng Method for p the motor by	•		eference to 0.		Refere	nce		
Pn00B		n.□□X□	4 App	bly the dynamic	brake or	coast the i	motor to a sto	op (use the	*1			
				the stopping r								
	l		Power Input S	Selection for T	hree-phas	e SERVO	PACK		Refere	nce		
		n. 🗆 X 🗆 🗆		a three-phase						_		
		11.UAUU		a three-phase ply input.	power su	pply input	as a single-pl	hase power	*1			
		n.X□□□	Reserved par	ameter (Do no	t change.)							
			•	1		1	1		1			
	2	Application Selections	n Function C	0000h to 0131h	_	0000h	_	After restart	Setup	*1		
			Function Sel	ection for Test	without a	Motor			Applical Motor	ble s		
		n.□□□X										
			1 Ena	1 Enable tests without a motor.								
			Encoder Res	Applicable Motors								
Pn00C			0 Use 13 bits.									
		n.□□X□	1 Use	1 Use 20 bits.								
				e 22 bits.					Rotary	r		
			3 Use	e 24 bits.								
			Encoder Type	e Selection for	Tests wit	hout a Mo	tor		Applical Motor			
		n.□X□□	0 Use	e an increment	al encoder				All			
			1 Use	e an absolute e	encoder.				All			
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)						
	2	Application Selections	n Function : D	0000h to 1001h	-	0000h	All	After restart	Setup	*1		
		n.□□□X	.□□□X Reserved parameter (Do not change.)									
D. 625		n.□□X□	Reserved parameter (Do not change.)									
Pn00D		n.□X□□	Reserved parameter (Do not change.)									
			Overtravel W	arning Detect	ion Select	ion						
		n.X□□□		not detect ove								
			Detect overtravel warnings.									

							(Continued fr	om previou	us page.			
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000h to 2011h	-	0000h	All	After restart	Setup	_			
			Preventative	Maintenance \	Warning S	election			Reference	се			
		n.□□□X		ot detect preve					*1				
Pn00F			1	ct preventative			igs.						
		n.□□X□	Reserved par	rameter (Do no	ot change.)							
		n.□X□□	Reserved par	Reserved parameter (Do not change.)									
		n.X□□□ Reserved parameter (Do not change.)											
Pn010	2		ess Selection JSB Commu-	0000h to 007Fh	-	0001h	All	After restart	Setup	-			
Pn021	2	Reserved p	parameter (Do e.)	-	-	0000h	All	-	-	_			
Pn022	2	Reserved parameter (Do not change.)		-	-	0000h	All	_	-	_			
Pn040	2	Reserved p	parameter (Do e.)	-	-	0000h	-	-	-	_			
	2 Application Function 0000h to Selections 81 1111h - 0000h All Afteresta								Setup	*1			
Pn081		n.000X n.00X0	0 Out	se Output Seletput phase-C ptput phase-C ptput phase-C prameter (Do no	ulses only ulses in bo	oth the for			ns.				
	i	n. 🗆 X 🗆 🗆	Reserved par	Reserved parameter (Do not change.)									
		n.X□□□	Reserved par	rameter (Do no	ot change.)							
Pn100	2	Speed Loc	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn101	2	Speed Loc Time Cons		15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn103	2	Moment of	Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1			
Pn104	2	Second Sp Gain	eed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn105	2	- u	ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn106	2	Second Po Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn109	2	Feedforward		0 to 100	1%	0	All	Immedi- ately	Tuning	*1			
		+											

Parameter No.	Size	N	Name		ng ge	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applications	cation Sele	c- 0000h 5334		-	0000h	All	-	Setup	-
	_			,		ı				'	
			Mode Sw	tching Selec	ction				When Enabled	Refere	ence
			0	Use the inter (level setting			ence as th	e condition			
			4	Use the specting: Pn10D)		erence as	the condit	ion (level set-			
		n.□□□X		Use the specting: Pn181)		erence as	the condit	ion (level set-			
				Use the accessetting: Pn10		on referen	ce as the	condition (leve	Immedi ately	*1	
Pn10B				Use the accessetting: Pn18		on referen	condition (leve	!			
				Use the posi ting: Pn10F)		leviation a	s the cond	lition (level set	-		
			4	Do not use mode switching.							
			Speed Lo	pop Control Method						Refere	ence
		n.□□X□		PI control					After		
				I-P control Reserved se	restart	*1					
		n.□X□□		parameter (
		n.X000		parameter (,				
		11.7000	TICOCI VCC	parameter (DO IIIC	oriange.	<i>)</i>				
Pn10C	2	Mode Swite for Torque		0 to 8	00	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switt for Speed I		0 to 10,	,000	1 min ⁻¹	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Swite for Acceler		0 to 30,	,000	1 min ⁻¹ /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switt for Position	ching Leve Deviation	0 to 10,	,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Int Constant	egral Time	0 to 50,	,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain	,	10 10 1,	,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fri pensation (Gain	10 to 1,	,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient		0 10 1	00	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	Correction	10,00		0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Co Gain Corre	mpensation ction	1 to 1,0	000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switc	hing Time	0 to 65,	,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switc			,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switc Time 1		0 10 05,	,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switc Time 2	hıng Waitin	9 0 to 65,	,535	1 ms	0	All	Immedi- ately Continue	Tuning	*1

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	Continued from When Enabled	Classi- fication	Refer- ence			
	2	Automatic ing Selection		ch-	0000h to 0052h	_	0000h	All	Immedi- ately	Tuning	*1			
		7 3 2 2 2 2 2							,					
			Gain Swi	itchi	ng Selection									
			0		e manual gain s e gain is switch		ılly with the	/G-SEL (Gai	n Selection)	signal.				
		n.□□□X	1		served setting (-				
			2	The	e automatic gai gain is switch tching conditio cond gain to the	ed automan A is sati	atically fron	n the first gair gain is switch	ned automati	cally from	hen the			
Pn139			Gain Swi	itchi	ng Condition A	\								
			0		DIN (Positioning		ion Output) signal turns	ON.					
			1		OIN (Positioning	· ·	•) signal turns	OFF.					
		n.□□X□	3		EAR (Near Outp EAR (Near Outp	<i>.</i>								
			4		sition reference	, 0			ulse input is (OFF.				
			5	Pos	sition reference	pulse inp	ut is ON.							
		n.□X□□	Reserved	d pa	rameter (Do no	t change	.)							
		n.X□□□	Reserved	d pa	rameter (Do no	t change	.)							
			•											
Pn13D	2	Current Ga	in Level	evel 100 to 2,000 1% 2000 All Immediately Tuning										
	2	Model Folk trol-Related			0000h to 1121h	_	0100h	All	Immedi- ately	Tuning	_			
	li		Model Fo	Model Following Control Selection						Referer	nce			
		n.□□□X	0 0	Do not use model following control.										
			1 l	Jse	model following	g control.				*1				
					pression Sele					Referer	nce			
		n.□□X□			ot perform vibrorm vibrorm vibration su			nific frequenc	V	*1				
					orm vibration su				•					
Pn140	Ī		Vibration	Sup	pression Adju	stment S	election			Referer	ice			
			0	Do	not adjust vibra	ation supp	pression au	tomatically d	uring execu-					
		n.□X□□	0	hos	t reference, an	d custom	tuning.			*1				
			1	aut	ust vibration su otuning withou nce, and custo	t a host re								
			Speed Fo	eedf	orward (VFF)/T	orque Fe	edforward	(TFF) Selecti	ion	Referen	ice			
		n.X□□□	0		not use model rd together.	following	control and	d speed/torqu	ue feedfor-					
			1		e model followii ether.	ng control	and speed	d/torque feed	forward	*1				
Pn141	2	Model Follo	lowing Con- 10 to 20,000 0.1/s 500 All Immediately						Tuning	*1				
Pn142	2	Model Follo	owing Cor	1-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn143	2	Model Follo	owing Cor	rrection						Tuning	*1			

Continued on next page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn145	2	Vibration S Frequency	uppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1			
Pn146	2	Vibration S Frequency	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1			
Pn147	2		owing Con- Feedforward tion	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn148	2	Second Moing Contro	odel Follow- I Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1			
Pn149	2		odel Follow- Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn14A	2	Vibration S Frequency	uppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1			
Pn14B	2	Vibration S Correction	uppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1			
	2	Control-Retions	lated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	_			
		n.□□□X	0 Use	ving Control Ty e model following e model following	ng control	type 1.			Refere	ence			
Pn14F				Tuning-less Type Selection Reference 0 Use tuning-less type 1.									
		n.□□X□	1 Use	e tuning-less ty e tuning-less ty e tuning-less ty	pe 2.				*1				
		n.□X□□		rameter (Do no	')							
		n.XDDD	Reserved parameter (Do not change.)										
			-		_								
	2		ance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	_			
			Anti Deceme	nce Control Se	lastica				Defease				
		n.□□□X		not use anti-re		control.			Refere				
			1 Use	e anti-resonanc	e control.				*1				
			Anti-Resonar	nce Control Ad	justment	Selection			Refere	ence			
Pn160		n.□□X□	0 tion	not adjust anti- n of autotuning erence, and cus	without a	host refere	utomatically once, autotunii	during execu ng with a hos	- st *1				
			1 aut	ust anti-resona otuning withou ce, and custom	t a host re								
		n.□X□□	Reserved pa	rameter (Do no	t change.	.)							
		n.X000	Reserved pa	rameter (Do no	t change.	.)							
	_												
Pn161	2	Anti-Resor quency		10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1			
Pn162	2	Anti-Resor Correction		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1			
Pn163	2	Anti-Resoring Gain	ance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1			

Parameter	Ф			Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn164	2		nance Filter stant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2		nance Filter stant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resoring Gain 2	nance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Related Se	s Function- elections	0000h to 2711h	-	1401h	All	-	Setup	*1
Pn170		n.000X	Speed Con	sable tuning-less nable tuning-less trol Method se for speed con se for speed con	s function.		entroller for po	sition contro	Whe	er art en eled er art
		n.□X□□		et the rigidity lev	el.				Enab Imme ate	edi-
		n.XDDD	Tuning-less	Load Level					Whe Enab	
		,	0 to 2 Se	et the load level	for the tun	ing-less fu	inction.		Imme ate	

								Continued fro	m previo	us page		
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Position C ence For S	Control Refer- Selections	0000h to 2236h	-	0000h	All	After restart	Setup	-		
				Pulse Form					Refere	ence		
			_	Sign and pulse tra			aio					
			-	Two-phase pulse				ohase A and				
		n.□□□X	<u> </u>	phase B) ×1, pos		. 000	1:661:-1 /-	- l A l				
		II.LLLX	3 k	wo-phase pulse phase B) ×2, pos	tive logic				*1			
				īwo-phase pulse phase B) ×4, pos		90° phase	e differential (p	ohase A and				
				Sign and pulse tra	· •							
			6 (CW and CCW pu	lse trains,	negative Ic	gic					
			Clear Sign	al Form					Refere	ence		
Pn200			_									
		n.□□X□	_	Clear position dev Clear position dev	*1							
				· · · · · · · · · · · · · · · · · · ·								
		3 Clear position deviation on the falling edge of the signal. Clear Operation										
				Clear position de	/iation at a	base bloc	k (at servo Ol	F or when	Refere	Silve		
		n.□X□□	_	alarm occurs).			· · · · · · · · · · · · · · · · · · ·	N D '''				
				Do not clear posi [.] Deviation) signal).	tion error (cleared on	ly with CLR (C	Diear Position	*1			
			2 (Clear position dev	iation whe	en an alarm	occurs.					
			Filter Sele	ction					Refere	ence		
		V	Use the reference input filter for a line-driver signal. (1 Mpps max.) Use the reference input filter for an open-collector signal. (200									
		n.X□□□		Jse the reference (pps max.)	input filte	r for an op	en-collector s	ignal. (200	*1			
			2 l	Jse reference inp	ut filter 2 f	or a line-di	river signal. (1	to 4 Mpps)				
Pn205	2	Multiturn l	_imit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1		
	2	Position C tion Selec	Control Func- tions	0000h to 2210h	_	2000h	All	After restart	Setup	-		
		n.□□□X	Reserved	parameter (Do n	ot change	.)						
			Position C	ontrol Option					Refere	ence		
		n.□□X□		Do not use V-REF	•	la a a la dia a a di			*1			
			1 1	Jse V-REF as a s	рееа тееа	back input						
		n.□X□□	Reserved	parameter (Do n	ot change	.)						
Pn207			/COIN (Po	sitioning Comple	etion Outp	ut) Signal	Output Timin	g	Refe			
			0 8	Dutput when the same or less thar Vidth).								
		n.X□□□	1 (Output when the absolute value of the position error is the san or less than the setting of Pn522 (Positioning Completed Width and the reference after the position reference filter is 0.								
			2 0	Output when the absolute value of the position error is the same								
			1									

4

							(Continued fro	om previou	us page.
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn20A	4	Number of Encoder So	External cale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic ((Numerator		1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	4	Electronic (Denomination		1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Output Puls		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn216	2	Position Reference Acceleration/Decelera- tion Time Constant		0 to 65,535	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn217	2	Average Po	osition Refer- ment Time	0 to 10,000	0.1 ms	0	All	Immediately after the motor stops	Setup	*1
Pn218	2	Reference Multiplier	Pulse Input	1 to 100	× 1	1	All	Immedi- ately	Setup	*1
	2	Fully-closed Selections	d Control	0000h to 1003h	-	0000h	Rotary	After restart	Setup	*1
		n.□□□X	Reserved par	rameter (Do no	ot change.)				
D=00A	n.□□X□ Reserved parameter (Do not change.)									

Pn22A

n.□□□X	Reserve	Reserved parameter (Do not change.)										
	1											
n.□□X□	Reserve	Reserved parameter (Do not change.)										
n.□X□□	Reserved parameter (Do not change.)											
	Fully-clo	sed Control Speed Feedback Selection										
n.X□□□	0	Use motor encoder speed.										
	1	Use external encoder speed.										

Pn281	2	Encoder Output Resolution	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn300	2	Speed Reference Input Gain	150 to 3,000	0.01 V/ Rated motor speed	600	All	Immedi- ately	Setup	*1
Pn301	2	Internal Set Speed 1	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1
Pn302	2	Internal Set Speed 2	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	200	Rotary	Immedi- ately	Setup	*1
Pn303	2	Internal Set Speed 3	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	300	Rotary	Immedi- ately	Setup	*1
Pn304	2	Jogging Speed	0 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start Acceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start Deceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn307	2	Speed Reference Filter Time Constant	0 to 65,535	0.01 ms	40	All	Immedi- ately	Setup	*1
Pn308	2	Speed Feedback Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Deceleration Time for Servo OFF and Forced Stops	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2	Speed Feedforward Average Movement Time	0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
	2	Vibration Detection Selections	0000h to 0002h	_	0000h	All	Immedi- ately	Setup	*1
		•							

Pn310

	Vibration	n Detection Selection
n.□□□X	0	Do not detect vibration.
11.000	1	Output a warning (A.911) if vibration is detected.
	2	Output an alarm (A.520) if vibration is detected.
n.□□X□	Reserve	d parameter (Do not change.)
n.□X□□	Reserve	d parameter (Do not change.)
	•	
~ VDDD	D	d a susua stan (Da mat alamana)

n.XDDD Reserved parameter (Do not change.)

Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration Detection Level	0 to 5,000	1 min ⁻¹	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min ⁻¹	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn400	2	Torque Reference Input Gain	10 to 100	0.1 V/ rated torque	30	All	Immedi- ately	Setup	*1
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*2	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1

_									Jontinued tro			
Parameter No.	Size		ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Torque-Rel tion Select			0000h to 1111h	-	0000h	All	-	Setup	-	
			Notch Filt	er S	Selection 1				When Enabled	Refere	nce	
		n.□□□X			able first stage				Immedi- ately	*1		
				EHA	ble first stage	noten iiitei	1.		atory			
			Speed Lir						When Enabled	Refere	Reference	
			0	sett	the smaller of ing of Pn407 a	s the spe	ed limit.					
Pn408		n.□□X□		sett	the smaller of ing of Pn480 a	s the spe	ed limit.		After	*1		
F11400			1	spe	the smaller of ed and the set	ting of Pn	407 as the	speed limit.	restart			
					the smaller of ed and the set							
			Notch Filt	er S	Selection 2			When Enabled	Refere	nce		
		n.□X□□	-		able second st				Immedi	*1		
			1	Ena	ble second sta	age notch	filter.		ately			
			Friction C	om	pensation Fun	ction Sele	ection		When Enabled	Refere	nce	
		n.X□□□	0	Disa	able friction co	mpensatic	n.		Immedi- ately	- *1		
			1	Ena	Enable friction compensation.							
Pn409	2	First Stage Frequency	Notch Filte	er	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn40A	2	First Stage Q Value	Notch Filte	er	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn40B	2	First Stage Depth	Notch Filte	er	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn40C	2	Second Stater Frequen		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn40D	2	Second Stater Q Value	age Notch I	Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn40E	2	Second Stater Depth	age Notch I	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn40F	2	Second St Torque Ref Frequency	age Second erence Filte		100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1	
Pn410	2	Second St Torque Ref Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	*1	
Pn412	2	First Stage Torque Ref Time Cons	erence Filte	er	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1	
Pn415	2	T-REF Filte stant	r Time Con	-	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1	

								Continued fro	om previou	us page.
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Selecti		0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1
								-		I.
	l		Notch Filter S	Selection 3						
		n.□□□X	1	able third stage	e notch filt	er.				
			1 Ena	ble third stage	notch filte	er.				
	Ī		Notch Filter S	Selection 4						
Pn416		n.□□X□		able fourth stag						
					Je Hotomin	161.				_
		n.□X□□	Notch Filter S	selection 5 able fifth stage	notch filte	er				
		^		ble fifth stage						
		n.XDDD	Reserved par	ameter (Do no	ot change.	.)				
	-	invalue incorved parameter (55 not change.)								
Pn417	2	Third Stage Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stage Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Stag ter Frequer	ge Notch Fil- ncy	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Stag ter Q Value	ge Notch Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	ter Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Ripp sation Sele	ole Compen- ctions	0000h to 1111h	_	0000h	Rotary	_	Setup	*1
			Speed Ripple	Compensation	n Functio	n Selectio	n		Whe Enab	
		n.□□□X	0 Dis	able speed ripp	ole compe	nsation.			Imme	
			1 Ena	ıble speed ripp	le compe	nsation.			ate	ly
Pn423			Speed Ripple tion Selection	Compensation	on Informa	tion Disag	reement Wa	rning Detec-	- Whe	
20		n.□□X□		ect A.942 alarr					Afte	
			1 Do	not detect A.9	42 alarms	r			1631	
			Speed Ripple	Compensation	on Enable	Condition	Selection		Whe Enab	
		n.□X□□		ed reference					Afte	
			1 Mo	tor speed					resta	ırt ——
		n.X□□□	Reserved par	rameter (Do no	ot change)				
		1_			1		<u> </u>	· .		1
Pn424	2	Torque Lim cuit Voltage	it at Main Cir- e Drop	0 to 100	1%*1	50	All	Immedi- ately	Setup	*1
					1	1.	1	Continue	ed on nex	t page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn425	2	Release Til Limit at Ma Voltage Dr		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1		
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1		
Pn427	2	Speed Rip sation Ena	ple Compen- ble Speed	0 to 10,000	1 min ⁻¹	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1		
Pn456	2	Sweep Tor ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1		
	2	Notch Filte Selections	er Adjustment 1	0000h to 0101h	_	0101h	All	Immedi- ately	Tuning	*1		
	Ī		Notch Filter	Adjustment Se	lection 1							
		n.□□□X	0 tun	not adjust the iing without a hiing.								
			1 Adj	ust the first sta nout a host refe	ge notch terence, au	filter autom totuning w	natically durinq ith a host refe	g execution or rence, and c	of autotun custom tur	ing ning.		
Pn460		n.□□X□	Reserved pa	rameter (Do no	t change.	.)						
	Notch Filter Adjustment Selection 2											
	Do not adjust the second stage notch filter automatically 0 function is enabled or during execution of autotuning with											
		n. 🗆 X 🗆 🗆		ction is enabled otuning with a					ost referer	ice,		
			1 tion	ust the second is enabled or otuning with a	during exe	ecution of a	autotuning wit	hout a host				
		n.X□□□	Reserved pa	rameter (Do no	t change.	.)						
	n.XDDD Reserved parameter (Do not change.)											
	2	Gravity Co Related Se	mpensation- elections	0000h to 0001h	_	0000h	All	After restart	Setup	*1		
	Ī	n.□□□X	Gravity Comp	ensation Selec	tion							
			0 Dis	able gravity co	mpensatio	n.						
Pn475			1 Ena	able gravity cor	npensatio	n						
		n.□□X□	Reserved par	ameter (Do not	change.)							
		n.□X□□	Reserved par	ameter (Do not	change.)							
		n.XDDD	Reserved par	ameter (Do not	change.)							
	_											
Pn476	2	Gravity Co Torque	mpensation	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1		
Pn501	2	Zero Clam	ping Level	0 to 10,000	1 min ⁻¹	10	Rotary	Immedi- ately	Setup	*1		
Pn502	2		etection Level	1 to 10,000	1 min ⁻¹	20	Rotary	Immedi- ately	Setup	*1		
Pn503	2	Speed Coi Detection S Width	ncidence Signal Output	0 to 100	1 min ⁻¹	10	Rotary	Immedi- ately	Setup	*1		
Pn506	2	Brake Refe OFF Delay	erence-Servo Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1		
Pn507	2	Brake Refe put Speed	erence Out- Level	0 to 10,000	1 min ⁻¹	100	Rotary	Immedi- ately	Setup	*1		
Pn508	2	mand Wait		10 to 100	10 ms	50	All	Immedi- ately	Setup	*1		
Pn509	2	Momentary ruption Ho	y Power Inter- ld Time	20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1		
								Continue	ed on nex	t page.		

				Continued						us pag			
Parameter No.	Size	N	ame	Settir Rang		Default Setting	Applicable Motors	When Enabled	Classi- fication	Reference			
	2	Input Signa	al Selectio	ns 0000h FFF2		8801h	All	After restart	Setup	-			
				·									
			Input Sig	nal Allocation					Refere	ence			
		n.□□□X	0	Use the sequentions.	ience input sig	nal termina	ls with the de	fault alloca-					
			1	Change the	sequence input	signal allo	cations.		*1				
			2	Reserved set	ting (Do not us	e.)							
			/S-ON (S	Servo ON) Sig	nal Allocation				Refere	ence			
			0		CN1-40 input								
			1		CN1-41 input								
			2		CN1-42 input		. ,						
			3		CN1-43 input		. ,						
			4	Active when									
			5		CN1-45 input								
				6 Active when CN1-46 input signal is ON (closed).									
		n.□□X□		7 The signal is always active.									
			8	Ü	always inactive		/						
			9		CN1-40 input		,						
			A	Active when									
			В		CN1-42 input		,						
			С		CN1-43 input		,						
Pn50A			D		CN1-44 input		,						
110071			E F		CN1-45 input s CN1-46 input s		,						
				Refere	2000								
		n.□X□□		r	Control) Signans are the sam			N) signal allo	_				
			0 to F	cations.					*1				
			P-OT (Fo	rward Drive F	Prohibit) Signal	Allocation	ļ		Refere	ence			
			0	Enable forwa	rd drive when	CN1-40 inp	out signal is C	N (closed).					
			1	Enable forwa	rd drive when	CN1-41 inp	out signal is C	N (closed).					
			2	Enable forwa	rd drive when	CN1-42 inp	out signal is C	N (closed).					
			3	Enable forwa	rd drive when	CN1-43 inp	out signal is C	N (closed).					
			4	Enable forwa	rd drive when	CN1-44 inp	out signal is C	N (closed).					
			5		rd drive when	•							
			6		rd drive when	•		N (closed).					
		n.X□□□	7		ll to always pro				*1				
			8		ıl to always ena								
			9		rd drive when	•	ŭ	,	_				
			Α		rd drive when	· · · · · · · · · · · · · · · · · · ·			_				
			В		rd drive when								
					rd drive when	CN1-43 inp	out signal is C	FF (open).					
			С					/					
			D	Enable forwa	rd drive when	•							
			-	Enable forwa		CN1-45 inp	out signal is C	FF (open).					

Applicable

Continued	from	provious	2000

Classi-

Refer-

When

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Input Signa	al Selectio	ns	0000h to FFFFh	-	8868h	All	After restart	Setup	-		
			N-OT (Re	evers	e Drive Prohib	oit) Signal	Allocation	l		Refere	ence		
			0	Ena	ble reverse dri	ve when C	N1-40 inp	ut signal is Ol	V (closed).				
			1		ble reverse dri		<u>.</u>						
			2		ble reverse dri								
			3		ble reverse dri		<u>.</u>						
			5		ble reverse dri ble reverse dri		<u>.</u>						
			6		ble reverse dri				. ,				
		n.□□□X	7		the signal to a				. (0.000)				
			8	Set	the signal to a	llways ena	ble reverse	e drive.		*1			
			9	Ena	ble reverse dri	ve when C	N1-40 inp	ut signal is Ol	F (open).				
			Α	Ena	ble reverse dri								
			В		ble reverse dri			-	\ I /				
			С		ble reverse dri								
			D		ble reverse dri				· · · ·				
			E F		ble reverse dri ble reverse dri		<u>'</u>	-	· · · /				
				EHS	-r (open).								
			/ALM-RS	_ `	larm Reset) Si	•				Refere	ence		
					ve on signal ed (open) to ON	anges from							
			1		Active on signal edge when CN1-41 input signal changes from OFF (open) to ON (closed).								
D - 50D			2		ve on signal ed (open) to ON		CN1-42 in	put signal cha	anges from				
Pn50B					3		ve on signal ed (open) to ON		CN1-43 in	put signal cha	anges from		
			4		Active on signal edge when CN1-44 input signal changes from OFF (open) to ON (closed).								
			5		ve on signal ed (open) to ON		CN1-45 in	put signal cha	anges from				
			6		ve on signal ed (open) to ON		CN1-46 in	put signal cha	anges from				
		n.□□X□	7		erved setting (*1			
			8		signal is alway	,							
			9	(clo	ve on signal ed sed) to OFF (o	pen).							
			А	(clo	ve on signal ed sed) to OFF (o	pen).							
			В	(clo	ve on signal ed sed) to OFF (o	pen).							
			С	(clo	ve on signal ed sed) to OFF (o	pen).							
			D	(clo	ve on signal ed sed) to OFF (o	pen).							
			E	(clo	ve on signal ed sed) to OFF (o	pen).							
			F		ve on signal ed sed) to OFF (o		JN 1-46 IN	out signai chai	iges from Or	N			
		n.□X□□	/P-CL (F	P-CL (Forward External Torque Limit Input) Signal Allocation							ence		
			0 to F	The	allocations are t	the same as	s the /S-ON	I (Servo ON) sig	ınal allocation:	s. *1			
		n.XDDD	/N-CL (R	ever	se External To	rque Limi	t Input) Si	gnal Allocatio	n	Refere	ence		
			0 to F	The	allocations are t	the same as	s the /S-ON	l (Servo ON) sig	nal allocation	s. *1			

Setting

Setting

Default

Parameter

Name

Parameter

Continued from previous page.

When

Classi- Refer-

No.	Size	N	ame		Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Input Signa	al Selection	ns	0000h to FFFFh	-	8888h	All	After restart	Setup	-
			/SBD D (I	Moto	or Direction) S	ianal Allo	action			Refere	onco
			0		ve when CN1-			J (closed)		neiere	ence
			1		ve when CN1-	· ·					
			2		ve when CN1-	•		,			
			3		ve when CN1-		0	,			
			4		ve when CN1-						
			5		ve when CN1-						
			6		ve when CN1-	•		,			
		n.□□□X	7	The signal is always active.							
			8	The signal is always inactive.							
			9	Acti	ve when CN1-						
			Α	Acti	ve when CN1-	41 input s	signal is OF	F (open).			
Pn50C			В								
			С	Acti	ve when CN1-	43 input s	ignal is OF	F (open).			
			D	Acti	ve when CN1-	44 input s	ignal is OF	F (open).			
			Е	Acti	ve when CN1-	45 input s	signal is OF	F (open).			
			F	Acti	ve when CN1-	46 input s	ignal is OF	F (open).			
			/SPD-A (I	nter	nal Set Speed	Selection	n Input) Si	gnal Allocatio	n	Refere	ence
		n.□□X□	0 to F		allocations are allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	*1	
	li		/SPD-B (I	Inter	nal Set Speed	Selection	n Input) Si	gnal Allocatio	n	Refere	ence
		n.□X□□	0 to F		allocations are allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	*1	
			/C-SEL (C	Cont	rol Selection I	nput) Sigr	nal Allocat	ion		Refere	ence
		n.X000	0 to F		allocations are	e the same	e as the /S	PD-D (Motor	Direction) sig	· *1	

Setting

Setting

Default

Applicable

_/

Continued from previous page.

Parameter No.	Size		N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
140.	2		nput Signa	al Selection	ns	0000h to	Offic	0888h	WOLOIS	After		_
		4	4			FFFFh	_	000011	_	restart	Setup	_
		_										
				/ZCLAMI	P (Ze	ero Clamping I	Input) Sigr	nal Allocat	ion	Applicable Motors	Refere	ence
				0	Acti	ive when CN1	-40 input s	ignal is ON	V (closed).			
				1		ive when CN1	•		,			
				2		ive when CN1	•		,			
				3		ive when CN1						
				4		ive when CN1	<u> </u>					
				5		ive when CN1						
		n.	пппх	6		ive when CN1		ignal is ON	N (closed).			
			^	7		signal is alwa				All	*1	
				8		signal is alwa	,		T ()			
				9 A	Active when CN1-40 input signal is OFF (open). Active when CN1-41 input signal is OFF (open).							
Pn50D				В			- '		· · · /			
				С	Active when CN1-42 input signal is OFF (open). Active when CN1-43 input signal is OFF (open).							
				D		ive when CN1-						
				E		ive when CN1-						
				F		ive when CN1-	•	•				
		n		/INHIBIT	(Ref	erence Pulse	Inhibit Inp	ut) Signal	Allocation	Applicable Motors	Refere	ence
		11.		0 to F		allocations ar o Clamping In				All	*1	
				/G-SEL (Gain Selection Input) Signal Allocation						Applicable Motors	Refere	ence
		n.		0 to F		allocations ar o Clamping In				All	*1	
		n.	XDDD	Reserved	d par	rameter (Do no	ot change.	.)				
	2		Output Sig	nal Selec-		0000h to 6666h	_	2011h	All	After	Setup	_
		'	110115 1			000011				restart	·	
				(001) (5	10-11	oning Or	tion C !	t\ C:	Allogativ		Def	
				0 (P		oning Comple abled (the abo		, 0			Refere	ence
				1		put the signal				ut terminal		
		n	пппх	2		put the signal			·			
		11.		3		put the signal			· · · · · · · · · · · · · · · · · · ·		*1	
				4		put the signal			· · · · · · · · · · · · · · · · · · ·			
				5	Out	put the signal	from the C	N1-38 out	tput terminal.			
Pn50E				6	Out	put the signal	from the C	N1-39 out	tput terminal.			
FIISUE				A/ CMD	(050	ad Cainaidan	as Datasti	on Outnot	Cianal Allaa	ation	Defere	
		n.		/V-CIVIP	•	ed Coincidend allocations ar		•	, 0		Refere	ence
				0 to 6) signal allocat		as the /C	OIN (FOSITION	iirig Comple-	*1	
				/TGON (F	Rota	tion Detection	Output) S	Signal Allo	cation		Refere	ence
		n.		0 to 6		allocations ar		e as the /C	OIN (Position	ing Comple-	*1	
				/S-RDY (o Ready) Sigr		ion			Refere	ence
		n.	XDDD			allocations ar			OIN (Position	ing Comple-		
				0 to 6) signal allocat				J 1	*1	

n.X□□□

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Output Sig tions 2	nal Selec-	0000h to 6666h	-	0300h	All	After restart	Setup	-	
			L	e Limit Detection		•			Refere	ence	
			-	sabled (the above							
				tput the signal			· · · · · · · · · · · · · · · · · · ·				
		n.□□□X		tput the signal							
				Itput the signal			•	ut terminai.	*1		
			-	Itput the signal			•				
				Itput the signal			<u> </u>				
Pn50F							tput terriiriai.				
			+	Limit Detection					Refere	ence	
		n.□□X□		e allocations are itput) signal allo		e as the /C	LT (Torque Li	mit Detection	*1		
			/BK (Brake	Output) Signal /	Allocation				Refere	ence	
		n.□X□□		The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.							
		V	<u> </u>	WARN (Warning Output) Signal Allocation Onto 6 The allocations are the same as the /CLT (Torque Limit Detection						ence	
		n.X□□□	0 to 6 Th	*1							
	ı	1		1	ı	İ	İ	Continue	d on nex	t page.	
	2	Output Sig tions 3	nal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_	
			/NEAR (Nea	r Output) Signa	l Allocatio	n			Refere	ence	
			0 Di	sabled (the abov	ve signal c	utput is no	ot used).				
			1 Ou	tput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.			
		n.□□□X	2 Ot	tput the signal	from the C	N1-27 or	CN1-28 outp	ut terminal.			
		11.000	3 Ot	tput the signal	from the C	N1-29 or	CN1-30 outp	ut terminal.	*1		
			4 Ot	tput the signal	from the C	N1-37 ou	tput terminal.				
Pn510				tput the signal			•				
			6 Ot	itput the signal	from the C	N1-39 ou	tput terminal.				
		n.□□X□	Reserved pa	arameter (Do no	ot change.)					
		ה חערה	/PSELA (ReAllocation	ference Pulse II	nput Multi	plication S	Switching Out	put) Signal	Refere	ence	
	n.□X□□								*1		

Reserved parameter (Do not change.)

						ı		Continued fro		<u> </u>		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Output Sig Settings	ınal Inverse	0000h to 1111h	_	0000h	All	After restart	Setup	-		
					1				I.			
			Output Signal Inversion for CN1-25 and CN1-26 Terminals									
		n.□□□X		ne signal is not i								
			1 T	ne signal is inver	ted.							
			Output Signal Inversion for CN1-27 and CN1-28 Terminals									
		n.□□X□	0 T	ne signal is not i	nverted.							
Pn512			1 T	ne signal is inver	ted.					-		
			Output Sign	nal Inversion for	· CN1-29 a	and CN1-3	0 Terminals					
		n.□X□□		ne signal is not i								
				ne signal is inver								
			Output Sign	nal Inversion for	· CN1 27	Forminal						
		n.X□□□		ne signal is not i		i C i i i i i i i i i i i i i i i i i i i						
		11.7000		ne signal is inver								
			' '	To digital to invol	100.							
	2		nal Inverse	0000h to	_	0000h	All	After	Setup	_		
	_	Settings 2		0011h		000011	7 111	restart	Оотар			
			Output Sign	nal Inversion for	· CN1-38 ⁻	Terminal						
		n.□□□X		ne signal is not i								
				ne signal is inver								
Pn513			Output Cia	nal lavaraian far	- CN1 20 T	Forminal						
FIIDIO		n.□□X□		nal Inversion for ne signal is not i		reminai						
		п.шихш		ne signal is not i								
			' '	le signal is inver	ieu.							
	n.□X□□ Reserved parameter (Do not change.)											
	n.X□□□ Reserved parameter (Do not change.)											
	neserved parameter (DO not change.)											
	2	Output Sig	ınal Selec-	0000h to	_	0000h	All	After	Setup	_		
		tions 4		0666h				restart				
		n.□□□X	Reserved p	arameter (Do n	ot change	.)						
		n.□□X□	Reserved n	arameter (Do n	nt change)						
		11.00/0	ricaci ved p	arameter (DO III	or change	•)						
			,	ntative Mainten	<u>.</u>				Refere	ence		
				isabled (the abo								
Pn514				utput the signal								
		n.□X□□		utput the signal								
				utput the signal					*1			
				utput the signal								
				utput the signal			•					
			6 0	utput the signal	trom the C	יאס 39 ou	tput terminal.					
		n.X□□□	Reserved p	arameter (Do n	ot change	.)						

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Input Signa 6	al Selections	0000h to FFFFh	_	8888h	All	After restart	Setup	-		
									1 5 (_		
				ute Data Reque					Refere	ence		
			0 Active when CN1-40 input signal is ON (closed).									
			1 Active when CN1-41 input signal is ON (closed).									
			2 Active when CN1-42 input signal is ON (closed).									
				 Active when CN1-43 input signal is ON (closed). Active when CN1-44 input signal is ON (closed). 								
						-	, ,					
				ctive when CN1			, ,					
		- DDDV		6 Active when CN1-46 input signal is ON (closed).								
		n.□□□X		7 The signal is always active.8 Enable when 5 V is input to CN1-4.								
							T ()					
				ctive when CN1			,					
			-	ctive when CN1								
				ctive when CN1			,					
				ctive when CN1								
				ctive when CN1								
				ctive when CN1								
			F A	ctive when CN1-	·46 input s	signal is OF	r (open).					
n515			/PSEL (Ref	erence Pulse Inp	out Multip	lication Sv	vitching Inpu	t) Signal Allo	Refere	ence		
			0 A	ctive when CN1	-40 input s	signal is ON	l (closed).					
			1 A	ctive when CN1	-41 input s	signal is ON	V (closed).					
			2 A	ctive when CN1	-42 input s	signal is ON	V (closed).					
			3 A	ctive when CN1	-43 input s	signal is ON	l (closed).					
			4 A	ctive when CN1	-44 input s	signal is ON	V (closed).					
			5 A	ctive when CN1	45 input s	signal is ON	l (closed).					
			6 A	ctive when CN1	-46 input s	signal is ON	l (closed).					
		n.□□X□	7 T	he signal is alwa	ys enabled	d.			*1			
			8 T	he signal is alwa	ys inactive	٠.			1			
			9 A	ctive when CN1-	40 input s	signal is OF	F (open).					
			A A	ctive when CN1-	41 input s	signal is OF	F (open).					
			ВА	ctive when CN1-	42 input s	signal is OF	F (open).					
			C A	ctive when CN1-	43 input s	signal is OF	F (open).					
			D A	ctive when CN1-	44 input s	signal is OF	F (open).					
			E A	ctive when CN1-	45 input s	ignal is OF	F (open).					
			F A	ctive when CN1-	46 input s	signal is OF	F (open).					
		n.□X□□	Reserved p	arameter (Do no	ot change	.)						
		n.X□□□	Reserved p	arameter (Do no	ot change	.)						
	Continued of											

Applicable

Motors

Continued from previous page. When Classi- Refer-Enabled fication ence

NO.	0)			Hange	Unit	Setting	MOTORS	Enabled	ncation	ence		
	2	Input Sigr 7	nal Selections	0000h to FFFFh	_	8888h	All	After restart	Setup			
			FSTP (Forced	d Stop Input) Si	gnal Alloc	ation			Refere	ence		
				nable drive wher			al is ON (close	ed).				
				nable drive wher			•					
				nable drive wher			•					
				nable drive wher			•	· · · · · · · · · · · · · · · · · · ·				
				nable drive wher		· ·	•					
				nable drive wher		<u> </u>	,	,				
				nable drive wher								
			9	et the signal to a		<u> </u>	,	,	_			
	n	1.000X	' st	op).					*1			
Pn516				Set the signal to always enable drive (always disable forcing the motor to stop).								
			9 Ei	nable drive wher	n CN1-40	input signa	al is OFF (ope	n).				
			A E	nable drive wher	n CN1-41	input signa	al is OFF (ope	n).				
			B Ei	nable drive wher	n CN1-42	input signa	al is OFF (ope	n).				
			C E	nable drive wher	n CN1-43	input signa	al is OFF (ope	n).				
			D E	nable drive wher	n CN1-44	input signa	al is OFF (ope	n).				
			E E	nable drive wher	n CN1-45	input signa	al is OFF (ope	n).				
			F E	nable drive wher	n CN1-46	input signa	al is OFF (ope	n).				
	n	F Enable drive when CN1-46 input signal is OFF (open).										
	n	n.□X□□	Reserved pa	rameter (Do not	t change.)							
	n.X□□□ Reserved parameter (Do not change.)											
			rieserved pa	Tameter (Bo not	criarige.)							
	2		gnal Selec-	0000h to	_	0000h	All	After	Setup	*1		
		tions 5		0666h				restart				
			Al O1 (Alarn	ALO1 (Alarm Code Output) Signal Allocation								
			O Disabled (the above signal output is not used).									
				utput the signal		<u> </u>	· · · · · · · · · · · · · · · · · · ·	ut terminal.				
				utput the signal								
		n.□□□X		utput the signal								
				utput the signal								
				utput the signal			•					
Pn517				utput the signal								
			0 0	arpar ino oignai			partornian					
			ALO2 (Alarm Code Output) Signal Allocation									
		n.□□X□	1 1110 0 1 .	ie allocations are ins.	e the same	e as the AL	.O1 (Alarm Co	ode Output) s	signal allo	ca-		
	-		ALO2 (Alorn	a Cada Output)	Cianal All	acation						
		n.□X□□		n Code Output) le allocations are			O1 (Alarm C	ada Output) (signal allo	00		
		/\	1 0 10 0 1 .	ins.	e lile Saille	as lile AL	OT (Alaitii O	ode Odipai) s	signal allo	<u></u>		
	- 1	n.XDDD	Reserved pa	arameter (Do no	ot change)						
	-		7.000.700 p.	2.4	71 01.ago	.,						
		T			T	Г		Г				
Pn518*3	-	Safety Mo	dule-Related	_	-	_	All	-	_	_		
		1 drainole										
		1		1	1	l		l				
		•		•	•	,		Continue	d on nev	t nage		

Setting

Range

Name

Setting

Unit

Default

Setting

Parameter

No.

		Continued from previous page.									
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn51B	4	Motor-Load Deviation C Detection L	Overflow	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1	
Pn51E	2	Position De flow Warnin	eviation Over- ng Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1	
Pn520	4	Position De flow Alarm	eviation Over- Level	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1	
Pn522	4	Positioning Width	Completed	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1	
Pn524	4	Near Signa	l Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1	
Pn526	4	Position De flow Alarm Servo ON	eviation Over- Level at	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1	
Pn528	2	Position De flow Warnin Servo ON	eviation Over- ng Level at	10 to 100	1%	100	All	Immedi- ately	Setup	*1	
Pn529	2	Speed Lim Servo ON	it Level at	0 to 10,000	1 min ⁻¹	10000	Rotary	Immedi- ately	Setup	*1	
Pn52A	2	Multiplier p closed Rot	Multiplier per Fully- losed Rotation		1%	20	Rotary	Immedi- ately	Tuning	*1	
Pn52B	2	Overload V	Overload Warning Level		1%	20	All	Immedi- ately	Setup	*1	
Pn52C	2		Base Current Derating at Motor Overload Detection		1%	100	All	After restart	Setup	*1	
Pn52F	2	Monitor Dis Startup	splay at	0000h to 0FFFh	-	0FFFh	All	Immedi- ately	Setup	*1	
	2	Program Jo Related Se		0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1	
Pn530		n.00X0 n.0X0 n.0X00	0 (Mm 1 (Mm 2 (Mm 3 (Mm 4 in Pr 5 in Pr Reserved par	gging Operation daiting time in Provements	$1535 \rightarrow Fc$ $1536 \rightarrow Fc$ $1535 \rightarrow Fc$ 1535	everse by the ev	travel distance travel distance travel distance travel distance travel distance in Pn531) ×	e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531 — Number of n e in Pn531 —	Number Number Number Number Number Number Number Number Number Number Number Waiting to the proventing to the pr	of of of of of ime s in	
					onungo						
Pn531	4	Program Jo Distance	ogging Travel	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1	

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn533	2	Program Jogging Move- ment Speed	1 to 10,000	Rotary: 1 min ⁻¹ Direct Drive: 0.1 min ⁻¹	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jogging Acceleration/Deceleration Time	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jogging Wait- ing Time	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jogging Number of Movements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Monitor 1 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Monitor 2 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monitor 1 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vibration Detection Width	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	-
Pn561	2	Overshoot Detection Level	0 to 100	1%	100	All	Immedi- ately	Setup	_
Pn600	2	Regenerative Resistor Capacity*4	Depends on model.*5	10 W	0	All	Immedi- ately	Setup	-
Pn601	2	Dynamic Brake Resistor Allowable Energy Consumption	0 to 65,535	10 J	0	All	After restart	Setup	*6
Pn603	2	Regenerative Resistance	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	-
Pn604	2	Dynamic Brake Resistance	0 to 65,535	10 mΩ	0	All	After restart	Setup	*6
	2	Overheat Protection Selections	0000h to 0003h	-	0000h	Linear	After restart	Setup	*1

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n.□□□X	Overhea	t Protection Selection						
	0	Disable overheat protection.						
	1	Use overheat protection in the Yaskawa Linear Servomotor.*7						
	2	Monitor a negative voltage input from a sensor attached to the machine and use overheat protection.						
	3	Monitor a positive voltage input from a sensor attached to the machine and use overheat protection.						

n.⊔⊔X⊔	Reserved parameter (Do not change.)
n ПХПП	Reserved parameter (Do not change)

n.XDDD	Reserved paramete	r (Do not change)

Pn61B *8	2	Overheat Alarm Level	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *8	2	Overheat Warning Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *8	2	Overheat Alarm Filter Time	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*3	-	Safety Module-Related Parameters	-	_	ı	All	-	ı	_

Continued from previous page.

When Classi- Refer-

Parameter	Size	N	ame		Setting	Setting	Default	Applicable	When	Classi-	Refe	
No.	2	Input Signa	al Selecti	ons	Range 0000h to	Unit _	Setting 6221h	Motors All	Enabled After	fication Setup	enc	
	_	10 FFFFh - 022111 All restart								Остар		
	/MODE 0/1 (Mode Switch Input) Signal Allocation									Diffi		
				· `		. , .			20d)	Refere	ence	
			1		e 0 is used wh e 0 is used wh			•	,			
			-				· ·	•	•			
			3	Mode 0 is used when CN1-42 input signal is ON (closed).Mode 0 is used when CN1-43 input signal is ON (closed).								
			4		e 0 is used wh		· ·	•				
			5		e 0 is used wh							
			6	Mod	e 0 is used wh	en CN1-4	6 input sig	nal is ON (clos	sed).			
		n.□□□X	7	The	signal always s	pecifies m	ode 0.			*9		
			8	The	signal always s	pecifies m	ode 1.			*9		
			9	Mod	e 0 is used wh	en CN1-40	0 input sig	nal is OFF (op	en).			
			А	Mod	e 0 is used wh	en CN1-4	1 input sig	nal is OFF (op	en).			
			В	Mod	e 0 is used wh	en CN1-4	2 input sig	nal is OFF (op	en).			
			С	Mod	e 0 is used wh	en CN1-4	3 input sig	nal is OFF (op	en).			
			D		e 0 is used wh		. 0					
				E Mode 0 is used when CN1-45 input signal is OFF (open).F Mode 0 is used when CN1-46 input signal is OFF (open).								
			F	Mod	e 0 is used wh	en CN1-4	6 input sig	nal is OFF (op	en).			
			/START tion	-STOI	P (Program Ta	ble Opera	tion Start-	Stop Input) S	ignal Alloca	Refere	ence	
Pn630			0	Activ	e when CN1-4	10 input siç	gnal is ON	(closed).				
			1 Active when CN1-41 input signal is ON (closed).									
			2									
			3	,								
			4	Active when CN1-44 input signal is ON (closed).								
			5		e when CN1-4			· · · · · · · · · · · · · · · · · · ·				
		n.□□X□	6		e when CN1-4	<u> </u>	gnal is ON	(closed).				
			7	ļ	signal is always					*9		
			8		signal is alway		anal ia OE	(opon)				
			A	ļ	e when CN1-4 e when CN1-4			,				
			В		e when CN1-4							
			C		e when CN1-4		-					
			D		e when CN1-4							
			E		e when CN1-4			,				
			F	Activ	e when CN1-4	l6 input siç	gnal is OFF	(open).				
			/HOME	(Orig	in Return Inpu	t) Signal <i>F</i>	Allocation			Refere	ence	
		n.□X□□	0 to F		settings are the ration Start-Sto				ram Table	*9		
	li		/PGMR	ES (P	rogram Table	Operation	Reset Inn	ut) Signal Allo	ocation	Refere	ence	
				- 1-				,				

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OUL	uiiueu	110111	previous	page.

Parameter No.	Size	1	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sign	Input Signal Selections 11		_	8543h	All	After restart	Setup	_
Pn631		/SEL0 (P 0 1 2 3 4 5 6 7 8 9 A B C		ram Step Selective when CN1-ctive wh	40 input si 41 input si 42 input si 43 input si 44 input si 45 input si 46 input si 78 active. 79 inactive. 40 input si 41 input si 42 input si	gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON gnal is ON	(closed). (closed). (closed). (closed). (closed). (closed). (closed). (closed). F (open). (open). F (open). F (open).	restart	Refere	
			E A	ctive when CN1-	45 input si	gnal is OF	F (open).			
			/SEL1 /Drog	ram Stan Salaa	tion Innut	1) Cianal	Allocation		Refere	2222
	1	n.□□X□	O to E	(Program Step Selection Input 1) Signal Allocation The settings are the same as for /SEL0 (Program Step Selection Input 0) Signal Allocation.						ence
			/SEL2 (Prog	ram Step Selec	tion Input	2) Signal A	Allocation		Refere	ence
	1	n.□X□□		ogram Step Selection Input 2) Signal Allocation The settings are the same as for /SEL0 (Program Step Selection Input 0) Signal Allocation.					*9	
			/SEL3 (Prog	ram Step Selec	tion Input	3) Signal A	Allocation		Refere	ence
	ı	n.X□□□		ne settings are th out 0) Signal Allo		for /SEL0	(Program Ste	ep Selection	*9	
			·							

Parameter No.	Size	1	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sign 12	Input Signal Selections 12			_	5438h	All	After restart	Setup	_
			/SEL4 (P	rogra	ogram Step Selection Input 4) Signal Allocation						ence
			0	Activ	Active when CN1-40 input signal is ON (closed).						
			1 A		ve when CN1-4						
			2	Activ	ve when CN1-4	42 input si	gnal is ON	(closed).			
			3	Activ	ve when CN1-4	43 input si	gnal is ON	(closed).			
			4	Activ	ve when CN1-4	44 input si	gnal is ON	(closed).			
			5	Activ	ve when CN1-4	45 input si	gnal is ON	(closed).			
			6	Activ	ve when CN1-4	46 input si	gnal is ON	(closed).			
	n	ı.□□□X	7	The	The signal is always active.						
			8	The	signal is alway	s inactive.				*9	
			9	Active when CN1-40 input signal is OFF (open).							
			Α	Activ	Active when CN1-41 input signal is OFF (open).						
Pn632			В	Activ	ve when CN1-4	42 input si	gnal is OF	F (open).			
			С	Active when CN1-43 input signal is OFF (open).							
			D	Activ	ve when CN1-4	44 input si	gnal is OF	F (open).			
			Е	Activ	ve when CN1-4	45 input si	gnal is OF	F (open).			
			F	Activ	e when CN1-4	46 input si	gnal is OF	F (open).			
			/JOGP (I	Forwa	rd Jog Input)	Signal Allo	ocation			Refere	ence
	n	n.00X0	0 to F		settings are th t 4) Signal Allo		for /SEL4	(Program Ste	p Selection	*9	
			/JOGN (I	Rever	se Jog Input)	Signal Alle	ocation			Refere	ence
	n	1.0X00	0 to F		settings are th t 4) Signal Allo		for /SEL4	(Program Ste	p Selection	*9	
			/JOG0 (J	Jog S _l	peed Table Se	lection In	put 0) Sigr	nal Allocation		Refere	ence
	n	n.X000	0 to F		settings are th t 4) Signal Allo		for /SEL4	(Program Ste	p Selection	*9	
			•	•						d on nov	

							(Continued fro	m previou	is page		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Input Signa 13	al Selections	0000h to FFFFh	_	8888h	All	After restart	Setup	_		
			/JOG1 (Jog	Speed Table S	election In	put 1) Sig	nal Allocatior	1	Refere	nce		
				ctive when CN1-			. ,					
				ctive when CN1-			. ,					
				2 Active when CN1-42 input signal is ON (closed).3 Active when CN1-43 input signal is ON (closed).								
				Active when CN1-43 input signal is ON (closed). 4 Active when CN1-44 input signal is ON (closed).								
				ctive when CN1-		-			-			
				ctive when CN1-	· · · · · · · · · · · · · · · · · · ·		· ,					
		n.□□□X		ne signal is alwa	<u> </u>		,					
			8 T	ne signal is alwa	ys inactive				*9			
Pn633			9 A	ctive when CN1-	40 input s	ignal is OF	F (open).					
711033			A A	ctive when CN1-	-41 input s	ignal is OF	F (open).					
				ctive when CN1-		-						
				ctive when CN1-		-						
				ctive when CN1-		-						
				ctive when CN1-	· ·	•						
			F A	ctive when CN1-	-46 input s	ignal is OF	r (open).					
			/JOG2 (Jog	Speed Table S	election In	put 2) Sig	nal Allocatior	١	Refere	nce		
		n.□□X□	0 to F T	ne settings are th on Input 1) Signa	ne same a	s for /JOG	1 (Jog Speed	Table Selec-	*9			
				Reserved parameter (Do not change.)								
		n.□X□□										
		n. 🗆 X 🗆 🗆	Reserved p		ot change.)						
			Reserved p	arameter (Do no	ot change.)						
	2	n.X□□□	Reserved p	arameter (Do no	ot change.)	All	After restart	Setup	_		
	2	n.X□□□	Reserved p	arameter (Do not arameter (Do not not not not not not not not not no	ot change.)	All		Setup	- nce		
	2	n.X□□□	Reserved particular Reserved particular Selections	arameter (Do not arameter (Do not not not not not not not not not no	ot change.)) 0002h		restart		nce		
	2	n.XDDD	Reserved particular Reserv	arameter (Do no occurrence of the control of the co	ot change.) 0002h	-14 and CN1	restart -15.		- nce		
	2	n.X□□□	Reserved paral Selections SI8 Signal 0 D 1 A 1	arameter (Do not arameter (Do not 0000h to 0013h) Selection o not allocate ar llocate the CLR	ot change. ot change. - n input signal as the	0002h nal to CN1 ne input sig	-14 and CN1-	restart 15. 4 and CN1-	Refere	nce		
Pn634	2	n.XDDD	Reserved parallel Reserved par	arameter (Do no 0000h to 0013h Selection o not allocate ar llocate the CLR 5. llocate the /DEC	ot change. - n input signal as ti	0002h nal to CN1 ne input sig	-14 and CN1- gnal to CN1-	restart 15. 4 and CN1- 14 and CN1-	Refere	nce		
Pn634	2	n.XDDD	Reserved parallel Selections SI8 Signal 0 D 1 A 1 A 2 A 3 A	arameter (Do not arameter (Do not 0000h to 0013h) Selection o not allocate ar llocate the CLR st. llocate the /DEC 5.	ot change. - n input signal as ti	0002h nal to CN1 ne input sig	-14 and CN1- gnal to CN1-	restart 15. 4 and CN1- 14 and CN1-	Refere			
Pn634	2	n.XDDD	Reserved parallel SI8 Signal 2	arameter (Do not arameter (Do not 0000h to 0013h) Selection o not allocate ar llocate the CLR : 5. Illocate the /DEC 5. Illocate the /RGR N1-15.	ot change. ot change. in input signal as the signal as t	0002h nal to CN1 ne input significant sig	-14 and CN1- gnal to CN1- ignal to CN1- signal to CN	restart -15. 4 and CN1- 14 and CN1- 1-14 and	Refere			
^{>} n634	2	n.X□□□ Input Signa 14 n.□□□X	Reserved parallel Reserved par	arameter (Do not arameter (Do not 0000h to 0013h) Selection o not allocate ar llocate the CLR st. llocate the /DEC st. llocate the /RGR N1-15.	t change. t change. in input sign signal as the signal a) O002h nal to CN1 ne input significant the input significant t	-14 and CN1- gnal to CN1- ignal to CN1- signal to CN	restart 15. 4 and CN1- 14 and CN1- 1-14 and	Refere			
Pn634	2	n.X□□□ Input Signa 14 n.□□□X	Reserved parallel Reserved par	arameter (Do not arameter (Do not one) O000h to 0013h Selection o not allocate ar llocate the CLR st. Illocate the /DEC st. Illocate the /RGR N1-15. Selection Logic ctive when CN1-	ot change. ot change. in input signal as the signal as as as a signal as a s) 0002h nal to CN1 ne input significant	-14 and CN1- gnal to CN1- ignal to CN1- signal to CN	restart 15. 4 and CN1- 14 and CN1- 1-14 and	Refere			

								Continued fro				
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Output Sig tions 10	ınal Selec-	0000h to 6666h	_	0654h	All	After restart	Setup	_		
			/POUT0 (F	Programmable O	utput 0) Si	gnal Alloc	ation		Refere	nce		
			<u> </u>	Disabled (the abo								
			1	Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.				
		n.□□□X	2	Output the signal	from the C	CN1-27 or	CN1-28 outp	ut terminal.				
		II.DDDX		Output the signal			· · · · · · · · · · · · · · · · · · ·	ut terminal.	minal. *9			
				<u> </u>	utput the signal from the CN1-37 output terminal. utput the signal from the CN1-38 output terminal.							
				1 0								
D - 005			6	Output the signal	from the C	JN 1-39 OU	tput terminai.					
Pn635			/POUT1 (F	rogrammable O	utput 1) Si	gnal Alloc	ation		Refere	nce		
	n.□□XE	n.□□X□		The settings are t 0) Signal Allocatio		s for /POU	T0 (Programn	nable Output	*9			
			/POUT2 (F	Programmable O	utput 2) Si	gnal Alloc	ation		Refere	nce		
		n.□X□□		Γhe settings are t Ͻ) Signal Allocatio		s for /POU	T0 (Programn	nable Output	*9			
			/POUT3 (F	Programmable O	utput 3) Si	gnal Alloc	ation		Reference			
		n.X□□□		The settings are t 3) Signal Allocation		s for /POU	T0 (Programn	nable Output	*9			
				-,g								
	2	Output Sig	nal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	-		
			/POUT4 (F	Programmable O	utput 4) Si	gnal Alloc	ation		Refere	nce		
			0	Disabled (the abo	ve signal d	output is no	ot used).					
			1	Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.				
		n.□□□X	2	Output the signal	from the C	CN1-27 or	CN1-28 outp	ut terminal.				
				Output the signal				ut terminal.	*9			
			+	Output the signal			*					
Pn636				Output the signal			•					
			6	Output the signal	from the C	JN 1-39 OU	tput terminai.					
			/POSRDY	(Origin Return C	ompleted	Output) S	ignal Allocatio	on	Refere	nce		
		n.□□X□		The settings are t 4) Signal Allocation		s for /POU	T4 (Programn	nable Output	*9			
			/DEN (Pos	itioning Referen	ce Distribu	ition Outp	ut) Signal Allo	cation	Refere	nce		
		n.□X□□		The settings are the same as for /POLITA (Programmable Output					*9			
		n.X□□□	Reserved	parameter (Do n	ot change	.)						
	1											

Name								(Continued fr	om previou	us page	
Moving Mode		Size	N	ame	_				_		Refer- ence	
Pn637		2	Moving Mo	ode		-	0000h	All		Setup	-	
Pn637		Ī		Moving Mode)					Refere	nce	
Pn637			0		0 Use linear coordinates.							
2 Use rotational coordinates. Always move forward. 3 Use rotational coordinates. Always move in reverse.		n.□□□X		1 Use							***	
N_□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	Dn637			2 Use								
Pn638	1 11007			3 Use rotational coordinates. Always move in reverse.								
Pn638		n.□□X□		Reserved pa	rameter (Do no	ot change	.)					
Pn638 4 Forward Software Limit Pr-Ls/Find Point of Rotational Coordinates +536,870,911 units units Reference ence +536,870,911 units +536,870,911 units All After restart Setup *9 Pn63A 4 Reverse Software Limit Reverse Software Limit Ro-Ls/Starting Point of Rotational Coordinates +536,870,911 units units units Reference ence ence ence ence ence ence on All After restart Setup *9 Pn63C 4 Origin Position/Absolute Encoder Offset 1,073,741,823 to 199,999,999 Reference ence ence ence units / min) 0 All Immediately Setup *9 Pn63E 4 Acceleration Rate 1 to 199,999,999 1,000/ms (reference units/min) 1,000/ms (reference units/min)<			n.□X□□ Reserved pa		rameter (Do not change.)							
Pn638 4 (P-LS)/End Point of Rotational Coordinates +536,870,911 ence +536,870,911 All restart Setup *9		l	n.X□□□	Reserved pa	rameter (Do no	ot change	.)					
Pn638 4 (P-LS)/End Point of Rotational Coordinates +536,870,911 ence +536,870,911 All restart Setup *9												
Pn63A 4 (N-LS)/Starting Point of Rotational Coordinates +536,870,911 units to +536,870,911 units ence +536,870,911 units 4 All restart Setup restart *9 Pn63C 4 Origin Position/Absolute Encoder Offset -1,073,741,823 to +1,073,741,823 units Reference ence units/ ms (reference units/ min) 0 All After restart Setup *9 Pn63E 4 Acceleration Rate 1 to 199,999,999 units/ ms (reference units/ min) 1000 all Immediately Setup *9 Pn640 4 Deceleration Rate 1 to 199,999,999 units/ min) 1 000 all Immediately Setup *9 2 Origin Return Method 0000h to 0004h - 0000h All After restart 2 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. *9 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 Reference	Pn638	4	(P-LS)/End	Point of	to	ence	+536,870,911	All		Setup	*9	
Pn63C 4 Origin Position/Absolute Encoder Offset to +1,073,741,823 ence units 0 All Atter restart Setup *9 Pn63E 4 Acceleration Rate 1 to 199,999,999 1,000/ms (reference units/min) 1000 All Immediately Setup *9 Pn640 4 Deceleration Rate 1 to 199,999,999 1,000/ms (reference units/min) 1000 All Immediately Setup *9 2 Origin Return Method 0000h to 0004h - 0000h All After restart - - N.□□X Origin Return Method 0004h - 0000h All After restart - - N.□□X Origin returns are not executed. 1 Use the /DEC signal and phase C for origin returns. *9 2 Use the /DEC signal for origin returns. 4 Pressing homing is performed.*10 N.□□X Reserved parameter (Do not change.)	Pn63A	4	(N-LS)/Stai	rting Point of	to	ence	-536,870,911	All		Setup	*9	
Pn63E 4 Acceleration Rate 1 to 199,999,999 units/min) ms (reference units/min) 1000 All Immediately Immediately Setup *9 Pn640 4 Deceleration Rate 1 to 199,999,999 units/min) 1,000/ms (reference units/min) 1000 All Immediately Setup *9 2 Origin Return Method 0000h to 0004h - 0000h All After restart - <td< td=""><td>Pn63C</td><td>4</td><td colspan="2"></td><td>to</td><td>ence</td><td>0</td><td>All</td><td></td><td>Setup</td><td>*9</td></td<>	Pn63C	4			to	ence	0	All		Setup	*9	
Pn640 4 Deceleration Rate 1 to 199,999,999 mis (reference units/min) 2 Origin Return Method O000h to 0004h - O000h All After restart Origin Return Method Origin returns are not executed. 1 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)	Pn63E	4	Acceleration	on Rate		ms (ref- erence units/	1000	All		Setup	*9	
Pn642 Origin Return Method Ooodh Origin Return Method Origin returns are not executed. 1 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)	Pn640	4	Deceleration	on Rate	1 to 199,999,999	ms (ref- erence units/	1000	All		Setup	*9	
Pn642 n.□□□X O Origin returns are not executed. 1 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)		2	Origin Retu	ırn Method		-	0000h	All		-	-	
Pn642 n.□□□X O Origin returns are not executed. 1 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)												
Pn642 1 Use the /DEC signal and phase C for origin returns. 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)				Origin Return	Method					Refere	nce	
Pn642 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)				,	,							
Pn642 2 Use the /DEC signal for origin returns. 3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)			п ПППХ					origin returns.				
3 Use phase C for origin returns. 4 Pressing homing is performed.*10 n.□□X□ Reserved parameter (Do not change.)	Pn642									*9		
n.□□X□ Reserved parameter (Do not change.)					-							
				4 Pre	ssing homing is	s perform	ed.*10					
n.□X□□ Reserved parameter (Do not change.)			n.□□X□	Reserved pa	rameter (Do no	ot change	.)					
			n.□X□□	Reserved pa	rameter (Do no	ot change	.)					

								Continued fro	om previou	us page.	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Origin Retu	urn Direction	0000h to 0001h	-	0000h	All	Immedi- ately	_	_	
	Oriç		Origin Return	Origin Return Direction Reference							
		n.□□□X		en the /HOME signal turns ON, an origin return is performed he forward direction.							
Pn643		11.000	\//h	When the /HOME signal turns ON, an origin return is performed							
P11043			in t	he reverse dire	ction.		-				
		n.□□X□	Reserved pa	rameter (Do no	t change.	.)					
		n.□X□□	Reserved pa	ved parameter (Do not change.)							
		n.X□□□	Reserved pa	rameter (Do no	t change.)					
					1,000						
Pn644	4	Origin Retu Speed	ırn Movement	1 to 199,999,999	refer- ence units/ min	1000	All	Immedi- ately	Setup	*9	
D=040		Out of a A	manala Caracal	1 to	1,000 refer-	1000	Δ.	Immedi-	Col	**	
Pn646	4	Origin App	Origin Approach Speed		ence units/ min	1000	All	ately	Setup	*9	
		Origin Date	un Croon	1 to	1,000 refer-			lan an a di			
Pn648	4	Origin Return Creep Speed		1 to 199,999,999	ence units/ min	1000	All	Immedi- ately	Setup	*9	
Pn64A	4		Origin Return Final Travel Distance		Refer- ence units	0	All	Immedi- ately	Setup	*9	
	2	Zone Signa	al Setting	0000h to 0001h	-	0000h	All	After restart	Setup	-	
			Zone Signal	al Setting						nce	
		n.□□□X	When the control power supply is turned ON or the SERVOPACK is reset, the /POUT0 to /POUT2 signals are inactive.						(
Pn64C		11.000	When the control power supply is turned ON or the SERVOPACK								
111040			is re	is reset, the /POUT0 to /POUT2 signals are used as zone signals.							
		n.□□X□	Reserved pa	rameter (Do no	t change.	.)					
		n.□X□□	Reserved pa	rameter (Do no	t change.	.)					
		n.X□□□	Reserved pa	rameter (Do no	t change.)					
Pn64D	2	Reserved p	parameter (Do e.)	-	ı	0000h	_	_	_	-	
Pn650	2	Pressing To Pressing H		0 to 100	%	25	All	Immedi- ately	Setup	*9	
Pn651	2	Ü	etection Time	0 to 10,000	ms	250	All	Immedi- ately	Setup	*9	
Pn652	2	Pressing Ting Homing	ime for Press-	0 to 10,000	ms	250	All	Immedi- ately	Setup	*9	
Pn653	2	Overspeed Level for P ing	Detection ressing Hom-	1 to 199,999,999	1,000 refer- ence units/ min	2,000	All	Immedi- ately	Setup	*9	
Pn655	2	Absolute E	ncoder Origin	-1,073,741,823 to +1,073,741,823	Refer- ence units	0	All	After restart	Setup	*9	

^{*1.} Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

^{*2.} Set a percentage of the rated motor torque.

- *3. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details. Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module
 - (Manual No.: SIEP C720829 06)
- *4. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- *5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- *6. These parameters are for SERVOPACKs with the Dynamic Brake Option. Refer to the following manual for details.
 - Σ-7-Series AC Servo Drive Σ-7S/S-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- *7. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- *8. Enabled only when Pn61A is set to n. \$\square\$000 or n. \$\square\$000 3.
- *9. Refer to the following manual for details.

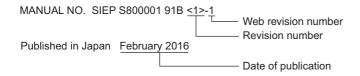
 Σ-7-Series Σ-7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual (Manual No.: SIEP S800001 84)
- *10.Pressing homing (Pn642 = n.□□□4) can be used with SERVOPACK software versions 0028F794 and higher.

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