

**YASKAWA**

# Sigma-7 Servo Systems

The Next Revolution in Motion Automation



# More From Your Machine

## Seven advances that give Sigma-7 greater automation effectiveness

Sigma-7 is engineered to bring new responsiveness, reliability and effectiveness to the automation that powers your productivity. The Sigma-7 family of rotary, direct drive and linear servo products continue the legacy of the Sigma series, which has set the standard in innovation and reliability for a quarter century.

### Improved performance

Nearly double the servo bandwidth of the Sigma-5 series, with increased feedback resolution and improved vibration suppression functions that maximize your machine's speed and accuracy.

### Easier application

Automatic servo tuning right out of the box, plus software that makes automation commissioning faster and easier.

### More choices

A full range of standard, direct drive and linear servos from 50W to 15kW, ready to interface with the most in-demand motion networks.



### Environmentally friendly

Able to withstand more rigorous environmental conditions, with features that conserve energy without compromising performance.

### Smaller size

Dual-axis SERVOPACKs and smaller motor sizes to meet end-user demands for a more compact machine footprint.

### Safety and security

New designs which improve machine safety, temperature performance and servo motor life, simplifying machine design and maintenance.

### Easy compatibility

Sigma-7 directly replaces Sigma-5, offering a performance boost without the need to change any element of your system design.

# Sigma-7 Performance Facts



- **3.1kHz Frequency Response**, nearly double the servo bandwidth of the Sigma-5 systems that set the industry standard in performance
- **New Tuning Functions:** vibration suppression, anti-resonance compensation, friction model compensation and ripple compensation improve machine speed, accuracy and smoothness
- **Improved Tuning-less Mode** delivers reliable stability with inertia ratios up to 30:1. Tuning gains adjust automatically and continually to provide consistent motion despite load changes
- **24-bit absolute encoder feedback** for 16x better resolution than the industry-leading Sigma-5





- **New Dual-axis SERVOPACKs** save space, reduce enclosure size
- **20% Reduction** in motor size and motor heating, for better efficiency and easier implementation
- **Companion gearmotors** in five different sizes and six gear ratios, all factory tested for guaranteed performance.
- **Complete Sigma-5 compatibility.** Interchangeable mounting dimensions, parameters convert to Sigma-7 with SigmaWin+ software (included at no charge)
- **Network compatibility** with built-in MECHATROLINK-III, EtherCAT and analog interfaces
- **Built-in safety** features with IEC 61508, SIL 3 Safe Torque Off in Sigma-7 SERVOPACKs
- **New thermal sensors** on servo motors and SERVOPACKs directly monitor machine temperatures
- **Better ratings** in higher temperature environments (60°C ambient), at higher altitudes (>2,000 meters) or in harsh motor environments (IP67 rated)
- **Regenerative Power Sharing** with Dual-axis SERVOPACKs or DC-Bus connections with single-axis SERVOPACKs
- **Service Life Monitoring** offers preventive maintenance data on key SERVOPACK components



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# Standard Rotary

The world's largest manufacturer of servo motors brings 25 years of design innovation into each Sigma-7 rotary servo. Choose from a wide range of sizes, speeds and torque ratings, then add an amplifier and an MPieC controller to create a complete motion automation system.

100/200 V		400 V	
Low Inertia ▼	Medium Inertia ▼	Low Inertia ▼	Medium Inertia ▼
			
<b>SGMMV</b> 3W-30W	<b>SGM7P</b> 100W-1.5kW	<b>SGM7A</b> 200W-5kW	<b>SGM7J</b> 200W-1.5kW
			
<b>SGM7A</b> 50W-7kW	<b>SGM7J</b> 50W-750W	<b>SGM7G</b> 300W-15kW	
			
	<b>SGM7G</b> 300W-15kW	<b>SGMVV</b> 22kW-55kW	

SERVOPACKs		SERVOPACKs	
1 Axis ▼	2 Axis ▼	1 Axis ▼	2 Axis ▼
			
<b>SGD7S</b> 50W-15kW	<b>SGD7W</b> 200W-1kW/axis	<b>SGD7S</b> 500W-15kW	<b>SGD7W</b> 750W-1.5kW/axis

**Control Interface Options:** EtherCAT, MECHATROLINK  
(Analog 100 V SERVOPACKs available from 50-400W)





**Control Interface Options:** EtherCAT, MECHATROLINK

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# Direct Drive Rotary

Direct drive products save space, eliminate backlash and cut component costs, adding extra mechanical strength to stiffen dynamic applications.

200 V	
	(Iron Core) 4.0-25 Nm rated torque, 600 rpm max speed
	(Coreless) 2.0-200 Nm rated torque, 500 rpm max speed
	(Iron Core) 1.30-240 Nm rated torque, 30-240 rpm max speed




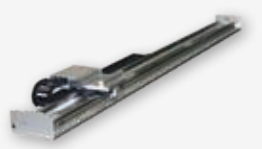
SERVOPACKs		SERVOPACKs	
1 Axis ▼	2 Axis ▼	1 Axis ▼	2 Axis ▼
			
<b>SGD7S</b> 50W-15kW	<b>SGD7W</b> 200W-1kW/axis	<b>SGD7S</b> 50W-15kW	<b>SGD7W</b> 200W-1kW/axis

**Control Interface Options:** EtherCAT, MECHATROLINK

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# Direct Drive Linear

Maximum speed and acceleration for linear motion. Choose from four designs to reduce compliance, replace mechanical linkages and create a better fit for your application.

200 V		400 V Options Also Available	
	(Coreless) 40-3000 N peak force, 5 m/s max speed		(Iron Core) 86-2400 N peak force, 5 m/s max speed
	(DoubleTrac) 380-7500 N peak force, 5 m/s max speed		Assembly 1200 N peak force, 5 m/s max speed

**Control Interface Options:** EtherCAT, MECHATROLINK



Yaskawa is the leading global manufacturer of low and medium voltage variable frequency drives, servo systems, machine controllers and industrial robots. Our standard products, as well as tailor-made solutions, are well known and have a high reputation for outstanding quality and reliability.