

**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



Sigma-7

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

Low Inertia ▼

Medium Inertia ▼



SGMMV3W–30W



SGM7P100W–1.5kW



SGM7A50W–7kW



SGM7J50W–750W



SGM7G300W–15kW

400 V

Low Inertia ▼

Medium Inertia ▼



SGM7A200W–5kW



SGM7J200W–1.5kW



SGM7G300W–15kW



SGMVV22kW–55kW


SERVOPACKs

1 Axis ▼

2 Axis ▼



SGD7S50W–15kW



SGD7W200W–1kW/axis


SERVOPACKs

1 Axis ▼

2 Axis ▼



SGD7S500W–15kW



SGD7W750W–1.5kW/axis

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

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Sigma-7

Direct Drive Rotary

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

200 V

SGM7F



(Iron Core)  
4.0–25 Nm  
rated torque,  
600 rpm  
max speed

SGMCS



(Coreless)  
2.0–200 Nm  
rated torque,  
500 rpm  
max speed

SGM7D



(Iron Core)  
1.30–240 Nm  
rated torque,  
30–240 rpm  
max speed

SERVOPACKs

1 Axis ▼

2 Axis ▼



SGD7S50W–15kW



SGD7W200W–1kW/axis

Control Interface Options: EtherCAT, MECHATROLINK

Control Interface Options: EtherCAT, MECHATROLINK

Sigma-7

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

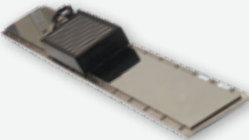
400 V Options Also Available

SGLG



(Coreless)  
40–3000 N  
peak force,  
5 m/s  
max speed

SGLF



(Iron Core)  
86–2400 N  
peak force,  
5 m/s  
max speed

SGLT



(DoubleTrac)  
380–7500 N  
peak force,  
5 m/s  
max speed

Sigma Trac



(Complete  
Linear Stage)  
540 N  
peak force,  
5 m/s  
max speed





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.