

YASKAWA

MACHINE CONTROL PRODUCTS

RETHINK WHAT'S POSSIBLE



YASKAWA MACHINE CONTROL

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YASKAWA EXPERIENCE: BY THE NUMBERS

Since 1915,
Yaskawa has produced...

25M
SERVO
MOTORS

35M
VARIABLE
FREQUENCY
DRIVES

600K
ROBOTS

Per year, that's...

> 40,000 ROBOTS

> 825,000 SERVO AMPLIFIERS

> 1.12 MILLION SERVO MOTORS

> 2.1 MILLION AC DRIVES

30

Countries with
Yaskawa sales, service
and manufacturing
locations

14,800+ EMPLOYEES
WORLD WIDE

\$4.5B

GLOBAL SALES

100+ YEARS
MANUFACTURING
EXCELLENCE



*Based on 2023 reported sales. For reference only.

Today's machine builders and equipment users face unique challenges, with limited resources and tight deadlines.

Your success depends on suppliers with the right products, the expertise in applying them and a commitment to supporting them in the field.

SOLVING PROBLEMS IS IN OUR DNA

We embrace the toughest challenges to solve the biggest problems.

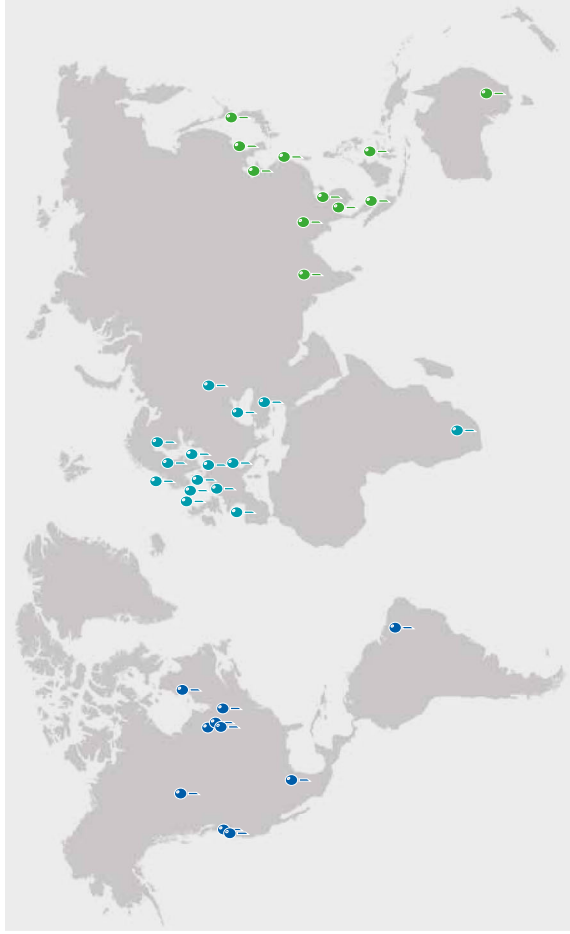
Dedication to engineering and innovation is what makes us different.



GLOBAL OVERVIEW

World leader in automation, drive technology and robotics

YASKAWA GLOBAL LOCATIONS



NORTH/SOUTH AMERICA

- United States
- Canada
- Brazil
- Mexico

EUROPE/AFRICA/MIDDLE EAST

- Germany
- Sweden
- U.K.
- Italy
- France
- Spain
- Norway
- Finland
- Netherlands
- Slovenia
- Czech Republic
- Poland
- Turkey
- Israel
- South Africa

ASIA/PACIFIC/OCEANIA

- Japan
- China
- Korea
- Taiwan
- Singapore
- Thailand
- Indonesia
- Vietnam
- Malaysia
- India
- Australia

PRODUCTS THAT PERFORM

You no longer need to settle for “good enough”.

SOFTWARE

iCUBE ENGINEER

A single software development environment for motion, logic, and safety. iCube Engineer gives developers the freedom to program in IEC61131-3 or other high-level languages.

HMI DESIGNER

HMI development environment that allows projects to run on smartPanel, PanelPC, PC, iC9200, and HTML5 web panel.

CONTROL

iC9200 CONTROLLER

A single EtherCAT-based machine controller for motion, logic, kinematics, safety, security, and more, the iC9200 is designed by Yaskawa specifically for demanding machine control applications.

SERVO

SIGMA SERIES SERVO SYSTEMS

Rotary, Linear and Direct Drive servos from 3 W to 55 kW offer advanced features, including Tuning-less Mode, vibration suppression, ripple and friction compensation and advanced functional safety

VFD

VARIABLE FREQUENCY DRIVES

Yaskawa drives offer simple motor setup with highly flexible network communications, embedded functional safety, no-power programming and mobile device connectivity with our DriveWizard mobile app

I/O

YASKAWA SLIO

The most effective, modern decentralized I/O systems available, providing exceptional usability in an extremely compact and functional design.

HMI

HMI PRODUCTS

Yaskawa smartPanel and Panel PC solutions monitor and interact with your machine easily and reliably.

ROBOTICS

ROBOTICS

Yaskawa offers articulated, delta, SCARA and collaborative packaging robot models compatible with simple-to-integrate robot controllers, as well as our MotionWorks IEC programming environment.



CONTROLLER HARDWARE/SOFTWARE

iC9200 / iCUBE ENGINEER

iCube Control: A Total System for Total Control

iCube Control is the open automation machine control technology solution that gives engineers, application developers, machine builders, and designers, total control over their systems. The iC9200 machine controller and iCube Engineer programming software form the foundation for iCube Control.



iC9200 MACHINE CONTROLLER

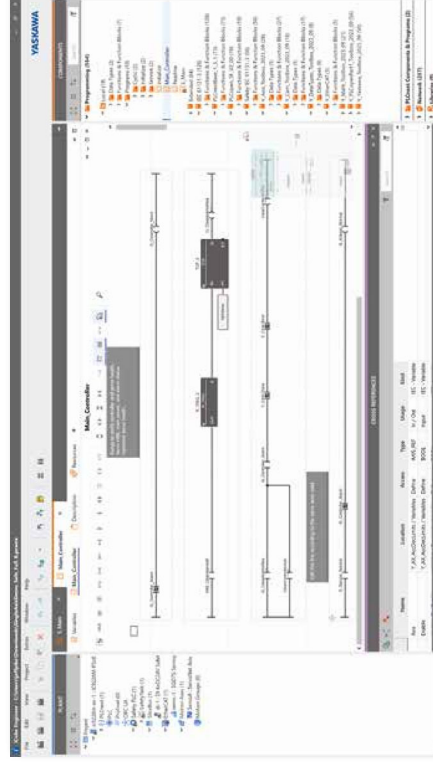
THE MACHINE CONTROLLER FOR ALL

A single machine controller for motion, logic, kinematics, safety, security and more. The iC9200 is ready for any challenge you face today and that you will face tomorrow.

iCUBE ENGINEER

ENGINEERED FOR YOUR OPPORTUNITIES

Open up your possibilities and develop more efficient solutions. Designed for collaborative working, iCube Engineer gives developers the freedom to program motion, logic, and safety in IEC61131-3 or other high-level languages.



YASKAWA TRITON PROCESSOR

- 3 core ARM Cortex-A17 126GHz processor for fast processing of synchronous motion tasks
- High-speed DDR4 memory and eMMC flash
- Integrated real-time Ethernet network support

SAFETY OVER ETHERCAT

- Integrated EtherCAT machine controller and EtherCAT safety master
- FSoE network safety profile meeting SIL3 requirements

CONTROL SYSTEM SECURITY

- Secure web-based management with multi-level password protection
- Secure OPC UA communications
- Designed for network security certification per ISA/IEC 62443

NETWORK COMMUNICATIONS

OPC UA, EtherNet/IP, Modbus TCP, Profinet, I/O Link

FLEXIBLE I/O

Expandable local I/O using standard S.I.O. Slice I/O



INTEGRATED ENVIRONMENT

- Motion, Robot, Logic, and VFD
- Fully integrated SIL 3 safety programming
- Network configuration, diagnostics and security

OPEN PROGRAMMING

- IEC61131-3 graphical, structured text or SFC programming
- Create libraries with C#, C++ and other high-level languages

CONTROL SYSTEM SECURITY

Device certificates and multi-user password protection

COLLABORATIVE

- Managed program access for multiple developers
- Online editing and version detection

SMARTPANEL

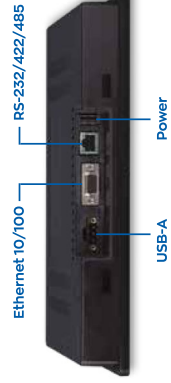
The smartest choice for usability, performance and connectivity to iC9200 and MPIec controllers



The slim design and rugged resistive touch screen of the smartPanel is perfect for the everyday industrial applications.

FEATURES

- ARM Cortex Processor
- Robust and durable- IP66 protection rating (front)
- Rugged resistive touchscreen
- Familiar Windows system environment
- Slim space saving profile
- OPC UA with iC9200 and PLCI communication with MP3300iec, MP2600iec, and Sigma-7Siec using native data types



MODELS AND SPECIFICATIONS

Model Number	H41-ATA41-0	H71-ATA41-0	HAT-ATA41-0
Display Size [in]	4.3	7	10
Resolution [Pixel]	480 x 272	800 x 480	1024 x 600
Touch Screen	Resistive	Resistive	Capacitive
Processor	ARM Cortex-A8	ARM Cortex-A8	Intel Celeron J1900
Interfaces	1x RS232/422/485; 1x USB-A; 512	1x USB-A; 1x Ethernet	2x Ethernet; 2x RS232/422/485 (SUB-D); 2x USB 2.0; 1x USB 3.0; 1x VGA; 1x Audio out
Work Memory [MB]	4	4	8
User Memory [GB]	4	4	64
Housing	Plastic	Plastic	C-Fast
Protection	Front: IP66 / Rear: IP20	Front: IP66 / Rear: IP20	Aluminum
Operating System	Linux	Linux	Front: IP65 / Rear: IP20
Runtime	HMI Designer	HMI Designer	Windows 10 IoT

PANEL PC

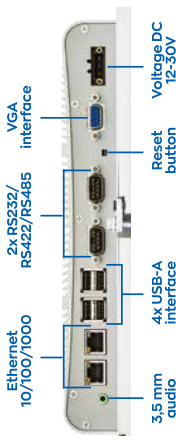
Intelligent control and monitoring with PC performance



The latest performance features and a precise, responsive capacitive touchscreen combine in Panel PC to deliver outstanding usability in a small space.

FEATURES

- Intel Celeron Processor
- Large integrated work memory
- High resolution responsive capacitive touchscreen
- Familiar Windows system environment
- Numerous interfaces for every application need
- Fanless construction
- High-quality metal housing
- OPC UA with iC9200 and PLCI communication with MP3300iec, MP2600iec, and Sigma-7Siec using native data types



MODELS AND SPECIFICATIONS

Model Number	67K-RTPO-KJ	67P-RTPO-KJ	67S-RRTPD-KJ
Display Size [in]	10.1	15.6	21.5
Resolution [Pixel]	1280 x 800	1366 x 768	1920 x 1080
Touch Screen	Capacitive	Capacitive	Capacitive
Processor	Intel Celeron J1900	Intel Celeron J1900	Intel Celeron J1900
Interfaces	2x Ethernet; 2x RS232/422/485 (SUB-D); 2x USB 2.0; 1x USB 3.0; 8	2x Ethernet; 2x RS232/422/485 (SUB-D); 2x USB 2.0; 1x USB 3.0; 1x VGA; 1x Audio out	2x Ethernet; 2x RS232/422/485 (SUB-D); 2x USB 2.0; 1x USB 3.0; 1x VGA; 1x Audio out
Work Memory [GB]	8	8	8
User Memory [GB]	8	64	64
Card Slot	C-Fast	C-Fast	C-Fast
Casing	Aluminum	Aluminum	Aluminum
Protection	Front: IP65 / Rear: IP20	Front: IP65 / Rear: IP20	Front: IP65 / Rear: IP20
Operating System	Windows 10 IoT	Windows 10 IoT	Windows 10 IoT
Runtime	HMI Designer	HMI Designer	HMI Designer

INPUT/OUTPUT PRODUCTS

YASKAWA SLIO

Compact. Intelligent. Flexible.



The most effective decentralized I/O system available, SLIO is designed to help you modernize and standardize while retaining a sense of flexibility. SLIO can help reduce setup time and minimize user errors.

EASY WEB INTERFACE

SLIO diagnostic and status information is accessible through a web interface, linking a standard browser to any fieldbus module.



SERVOPACKS

SIGMA SERIES SERVOPACKS

A smarter SERVOPACK to enhance productivity

The Yaskawa Servo Tuning Suite

We've packed 25 years of innovation and five generations of servo expertise into our Sigma Series tuning features.

Yaskawa equips each SERVOPACK with a suite of software commissioning and tuning tools, designed to achieve full functioning right out of the box.

This superior performance continues in spite of the vibration, resonance, friction and noise that a modern automated machine can dish out.



Eliminate effects that steal away performance

Unwanted mechanical effects rob a servo system of the quick, smooth and precise movement you need. Yaskawa SERVOPACKs are equipped with suppression features that automatically eliminate harmful artifacts.

VIBRATION

Machine vibrations are eliminated by Yaskawa Vibration Suppression, which samples your equipment's natural oscillations and uses compensating frequencies to cancel them out.



RESONANCE

Sigma-7 SERVOPACKS have twice as many anti-resonance filters to more effectively repress a servo system's natural medium-frequency resonances.

FRICITION

Coulomb friction and viscosity-related variables are effectively addressed by Friction Model Compensation, which effectively elicits smooth start-up action in low speed or high rigidity machines.

TUNING-LESS FUNCTION

Get Up and Running Immediately

The tuning-less function is automatically enabled from the moment you pull the amp out of the box. No tuning is required.

From Day One, this function automatically compensates for mismatches in load to rotor inertia up to 100%.

ADVANCED AUTOTUNING

Minimize Settling Time. Maximize Smooth Motion

Advanced auto tuning automatically adjusts nearly 20 gain and filter parameters to cancel vibration, rippling, friction and resonance.

ONE PARAMETER TUNING

Precise User-Driven Adjustment

Improve your machine's performance even further with easy fine tuning adjustments that won't throw off your existing operating parameters.

SETTLING TIME

40 ms RANGE

SETTLING TIME

4 ms RANGE

SETTLING TIME

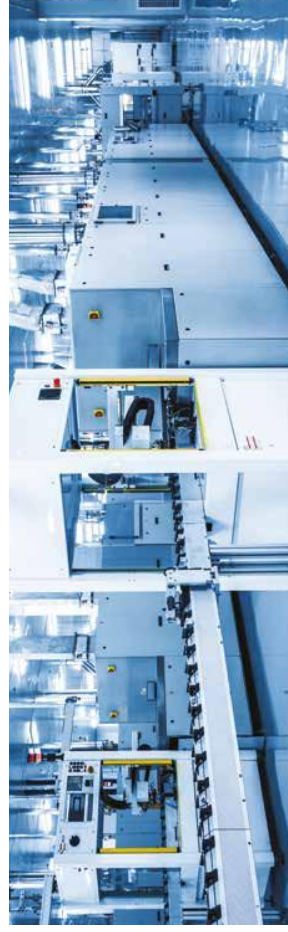
0-4 ms RANGE

COGGING

Motor cogging effects are removed by Ripple Compensation, an especially important effect for systems that require minimum settling time and exceptionally precise positioning.

ELECTROMAGNETIC INTERFERENCE

The number of interference filters has been increased by 225% to counteract losses caused by data dropouts, EMI interference and artifacts from long cable runs.



SERVOPACKS

SIGMA SERIES SERVOPACKS

Feature-packed for your machine

Sigma-X SERVOPACKS

With real-time data collection, speeds up to 7000 RPM, frequency response of 3.5 kHz, and multi-axis amplifiers with expanded functions to improve precision, Sigma-X takes servo response to a higher level to maximize your machine performance.

Sigma-X SERVOPACKS are EtherCAT-compatible to communicate seamlessly with our iCube Control platform.

Available 200 V models range from 50 W up to 15 kW.



SGDXS
Single-Axis

SGDXW
Dual-Axis

SGDXT
Three-Axis

INTEGRATED DATA COLLECTION AND VISUALIZATION

- Servo motor acts as a sensor to collect data to be used for preventive maintenance
- Operation optimization monitor ensures efficient equipment operation
- Detects equipment errors by comparing data stored in servo amplifier with operational data

EXPANDED FUNCTIONS TO IMPROVE PRECISION & QUALITY

- Speed ripple compensation
- Output torque compensation
- High resolution 26-bit absolute encoder feedback

SHORTENS CYCLE TIMES TO IMPROVE PERFORMANCE

- Maximum motor speed increased to 7000 RPM
- Speed frequency response increased to 3.5 kHz.

FASTER SERVO TUNING

- Expanded tuning-less function to 100 times the load
- Advanced auto-tuning with improved vibration detection and moment of inertia estimation algorithms
- One parameter tuning with load fluctuation compensation control

MULTI-AXIS SERVO AMPLIFIERS

- Reduces control panel size
- Reduces wiring time
- Two- and three-axis servo amplifiers available

: Bring iCube Control to Life!

Variety of Sigma-7 SERVOPACK products to fit your application

SGD7S



Single-Axis SERVOPACK

- 100 V, 200 V and 400 V operation
- 50 W - 15 kW operating range
- Control interface options:
 - EtherCAT
 - MECHATROLINK
 - Analog

SGD7W



Dual-Axis SERVOPACK

- Control two servo axes with one SERVOPACK
- Lower cost, component count, less cabinet space
- 200 V or 400 V operation
- Regenerative power feature conserves energy

SIGMA-7SIEC



Single-Axis Controller

- Controller and SERVOPACK in one device
- IEC 61131-3 compatibility for predictable behavior
- Ethernet/IP, Modbus TCP/IP and OPC server connectivity
- Built-in web server

MP2600IEC



1.5-Axis Controller

- Controller and SERVOPACK in one device
- IEC 61131-3 compatibility for predictable behavior
- Scalability between single and multi-axis control
- EtherNet/IP, Modbus TCP connectivity
- Built-in web server

SIGNALOGIC7



PLC-Ready SERVOPACK

- Add On Instructions (AOIs) for use with Rockwell PLCs
- Dual EtherNet/IP ports onboard
- Perform functions without learning new software
- Basic point to point moves, blended speed moves, homing, jogging, electronic gearing

ADVANCED NETWORK SAFETY

FSoE SERVOPACK

- Functional Safety over EtherCAT (FSoE)
- System certification to Safety Integrity Level 3 (PLe)
- Lower cost, component count, less cabinet space
- 16 supported safety functions



SERVOPACKS

SIGNALLOGIC7

Improve machine performance for PLC-based control



SigmaLogic7 SERVOPACKS add the superior performance and reliability of a Yaskawa servo system to your PLC-based machine without leaving the familiar programming environment of your existing PLC.

Utilize Yaskawa-written, Yaskawa-tested add-on instructions (AOIs) in RSLogix5000 software, with a ControlLogix or CompactLogix PLC.

MOTION SEQUENCING WITH AOIS

Perform functions including point-to-point and blended moves, jogging and homing

- Use direct commands or 200-point configurable sequence table
- Utilize extra 7 inputs and 3 outputs on SigmaLogic7 SERVOPACK
- Use LogicWorks software to download sequence and configuration data

YASKAWA AOIS

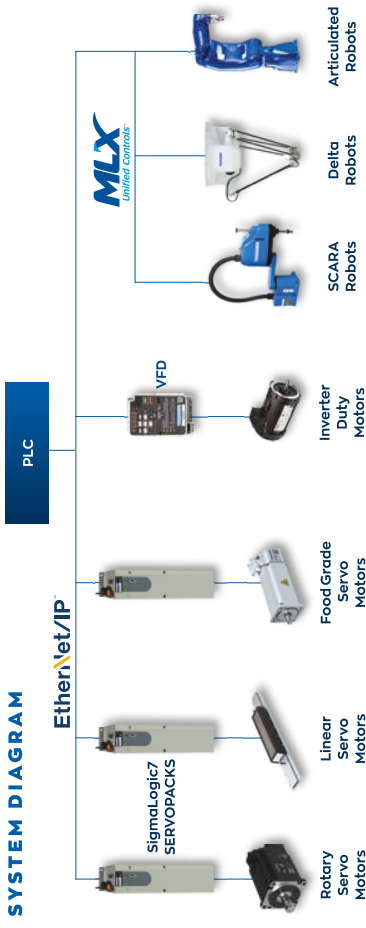
- Created for full compatibility with all CompactLogix and ControlLogix PLCs using RSLogix5000 software V17 and above
- Named to be familiar to Rockwell users
- Right-click instruction help available for all instructions in the PLC programming environment
- Sample program available in RSLogix5000



- Software utility to create individual move profiles and sequencing for the application
- Upload/download sequence table and configuration data to/from LogicWorks™
- Embedded monitoring and test functions

We've done the heavy lifting to make integration of Yaskawa servo, robotic and variable frequency drive components simple and effortless for your PLC programming environment.

SIGNALLOGIC7 SYSTEM DIAGRAM



Extend system performance and reliability with additional Yaskawa PLC tools

ROBOTICS

Yaskawa's **MLX Unified Controls™** software option:

- Enables robot programming in a standard PLC environment
- Provides control without a separate piece of hardware

VARIABLE FREQUENCY DRIVES

- **Tag Generator:** Easily create a tag file that can be imported into Logix Designer/RSLogix 5000
- **Faceplates:** Import faceplates to access commonly used parameters and monitors
- **AOIs:** Import our library of AOI using Yaskawa EtherNet/IP option

SERVOPACKS

BUILT-IN SINGLE AXIS CONTROL

Single and 1.5 axis controller options



SIGMA-7SIEC SINGLE-AXIS CONTROL OPTION

I/O FEATURES

- 7 digital inputs
- 4 digital outputs

You wouldn't guess from their trim size that Yaskawa has packed a single-axis motion controller and a world class SERVOPACK into a space slimmer than most normal servo amps occupy.

That means less crowding in control cabinets, plus the easy familiarity of IEC 61131-3 programming.

Both of these SERVOPACKS provide a compact, all-in-one servo/controller package with the following features:

- IEC 61131-3 standard programming environment with PLCopen function blocks for motion control
- Self-tuning, anti-vibration and other high performance, easy-to-implement servo control features
- Ethernet/IP, Modbus TCP/IP and OPC server provide connectivity to PLCs, HMIs, SCADA, MES and ERP
- Scalability with the multi-axis MP3300iec controller via common MotionWorks IEC programming environment
- Web server that allows for maintenance diagnostics and troubleshooting



MP2600IEC 1.5-AXIS CONTROL OPTION

I/O FEATURES

- 15 digital inputs
- 11 digital outputs
- 1 analog input
- 1 analog output
- 1 external encoder input
- 1 external encoder latch

SAFETY

INTEGRATED NETWORK SAFETY

Failsafe over EtherCAT (FSoE)

iCube Control combines automation technology with the certainty of machine safety you need to operate successfully, all in one fully integrated platform.

SAFETY SIMPLIFIED

iC9200 machine controllers are available with an integrated EtherCAT (FSoE) safety master, eliminating the need for an external safety PLC and allowing all safety and non-safety EtherCAT devices to be integrated onto a single network.

Safety applications are programmed using certified safety function blocks in iCube Engineer, allowing you to use a single software engineering tool for programming safety and non-safety logic and motion.

BENEFITS

- Cut down your engineering hours with simplified electrical designs
- Slash your commissioning time with fewer cables to wire and test during your assembly process
- Shorten your BOM and reduce machine cost by eliminating safety relays and using fewer cables
- Condense your electrical cabinet footprint with fewer components to install
- Simplify your safety logic with user-friendly software
- System certification to SIL 3, PL e

SAFETY FUNCTIONS SUPPORTED

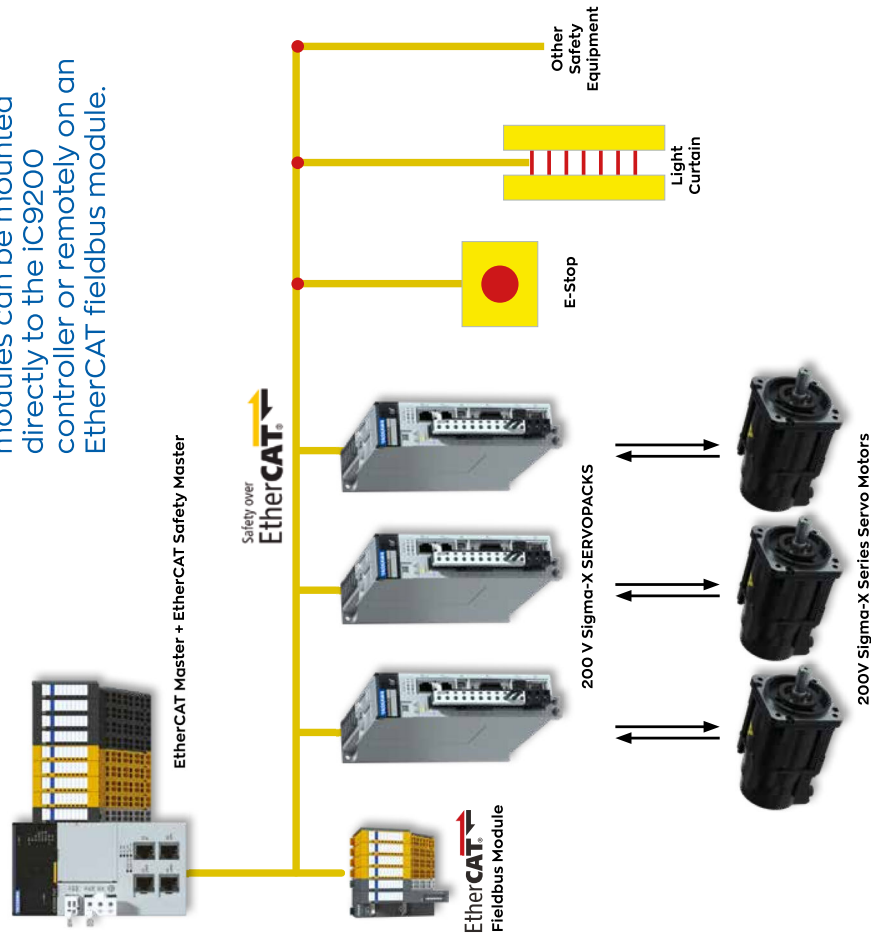
- Safe Torque Off (STO)
- Safe Stop 1-r (SST1-r)
- Safe Stop 2-r (SS2-r)
- Safe Limited Speed (SLS)
- Safe Speed Range (SLR)
- Safely Limited Position (SLP)
- Safely Limited Torque (SLT)
- Safe CAM (SCA)
- Safe Operating Stop (SOS)
- Safe Stop 1-t (SST1-t)
- Safe Stop 2-t (SS2-t)
- Safely Limited Acceleration (SLA)
- Safe Direction (SDA)
- Safely Limited Increment (SLI)
- Safe Motor Temperature (SMT)
- Safe Speed Monitor (SSM)

Up to 10 Safety Functions per SERVOPACK can be configured simultaneously



THE NEW SOLUTION: NETWORKED SAFETY

SLIO safety input and output modules can be mounted directly to the iC9200 controller or remotely on an EtherCAT fieldbus module.



SIGMA SERIES SERVO MOTORS

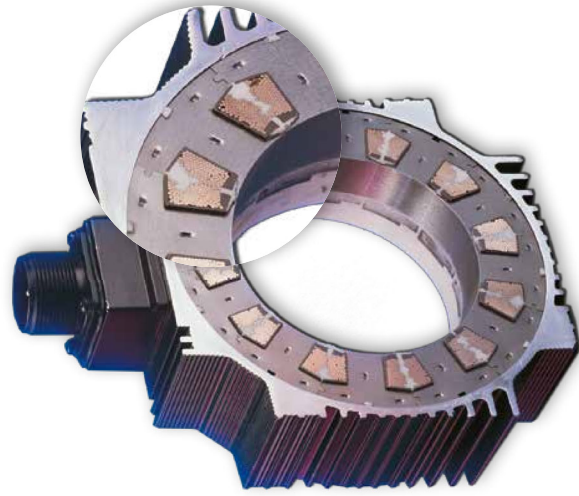
Packed with performance

Σ ENHANCEMENTS

For improved equipment performance

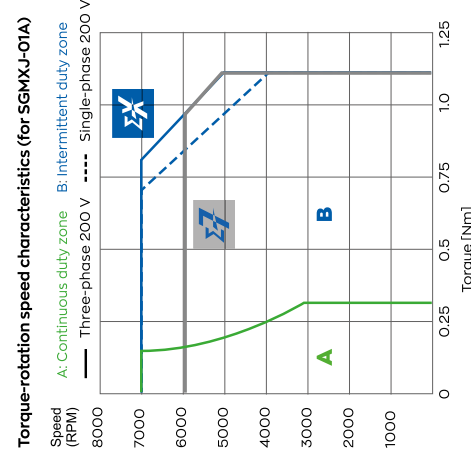
MORE TORQUE IN LESS SPACE

- Yaskawa's segmented stator core design and automated winding techniques pack nearly twice the copper into the stator gap, for much more torque output from every square millimeter of space
- Encapsulated windings prevent shorts between windings, improving heat dissipation
- Precise machining is used to minimize the air gap between rotor magnets and stator windings, for higher running torque and reduced cogging torque
- By reducing the space taken up by the end turns of the winding, overall motor length is significantly reduced
- Neodymium-Iron-Boron rotor magnets optimize flux density in the motor



INCREASED SPEEDS

The maximum rotation speed of the motor has increased from the earlier value of 6,000 RPM to 7,000 RPM.



Torque-rotation speed characteristics (for SGMX-J-01A)

Speed (RPM) — A: Continuous duty zone B: Intermittent duty zone
— Three-phase 200 V - - - Single-phase 200 V

7000 RPM

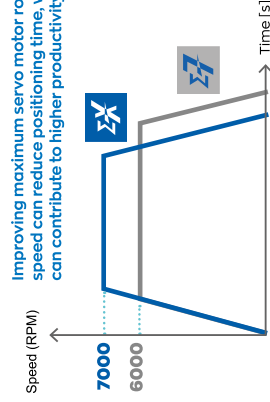
6000 RPM



Applicable models: All SGMXJ, SGMXA, and SGMXP models. SGMXG models increased to 4000 RPM

Positioning time

Improving maximum servo motor rotation speed can reduce positioning time, which can contribute to higher productivity.



BATTERYLESS ABSOLUTE ENCODER

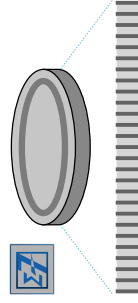
- Simplifies wiring in control panels
- No concerns about losing rotational data if battery runs out.
- No need to stock batteries



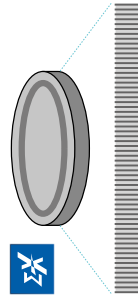
HIGH RESOLUTION 26-BIT ENCODER

The resolution of the encoder has been increased to 26 bits, four times that of Sigma-7.

Encoder resolution 24 bits = 16 million pulses/rev



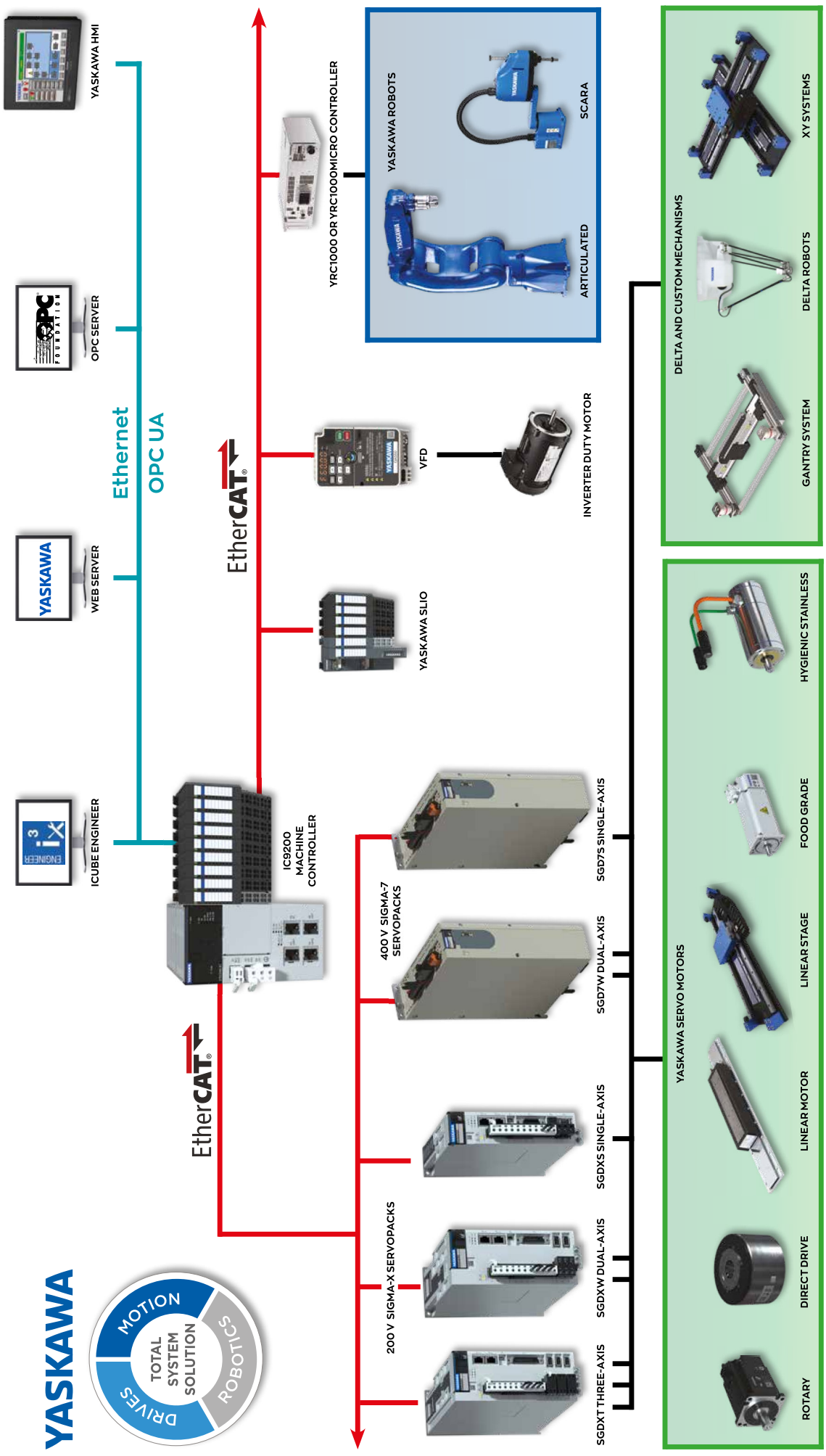
Encoder resolution 26 bits = 67 million pulses/rev



4 times that of Sigma-7

- Increased positioning resolution/stop precision ----> Precise stops
- Decrease in speed ripples ----> Smooth movement and improved machining precision

SYSTEM CONFIGURATION



DIRECT DRIVE MOTORS

Boost the quality of your design

Direct drive motor technology provides a host of improvements in the quality of a machine's design.

- Less audible noise
- Reduced maintenance of mechanical transmissions
- Overall efficiency and performance increased, leading to lower long-term cost

LINEAR MOTORS

Eliminate the effects of mechanical linkages

Yaskawa offers a full range of linear servo motors designed to handle the most demanding applications.

Yaskawa linear servo motors replace the backlash, friction, inertia and wear of mechanical linkages with smooth, precise, high performance linear motion in a compact footprint. All Yaskawa linear motors offer plug-and-play connection with Sigma-7 and Sigma-5 series SERVOPACK amplifiers, using automatic motor recognition and serial encoder technology to make implementation trouble free.



SGM7E
(Coreless, Inner Rotor)

Ideal for smooth movement without speed fluctuations.

- Built-in 24-bit encoder
- Low cogging with a coreless system provides smooth operation free from speed variations.



SGM7F
(With Core, Inner Rotor)

Ideal for applications that require downsizing and shorter cycle time.

- Built-in 24-, 22- & 20-bit encoder
- Compact design with small rotor diameter
- High-speed, high frequency positioning
- Low inertia / low heat generation



SGM7D
(With Core, Outer Rotor)

Ideal for high torque, high precision and high rigidity.

- Built-in 24-bit encoder
- High allowable load moment of inertia ratio for large loads
- Large center aperture provides more space for wiring
- High rigidity



SGLG
(Coreless)

Smooth linear motion with an ironless design that eliminates motor cogging.

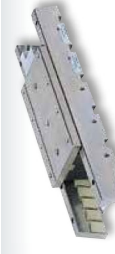
- 200 V windings
- 40 to 3000 N of peak force
- Standard and high force magnetic ways
- Zero cogging reduces force ripple



SGLF2
(Iron-Core)

Second generation iron core design that delivers high force and speed in a compact form.

- 200 V or 400 V windings
- 135 to 7560 N of peak force
- 5 m/s peak speed



SGLT
(Dual Magnet Iron-Core)

An iron core design featuring dual magnets, producing high output in a compact footprint.

- 200 V or 400 V windings
- 380 to 7500 N of peak force
- 5 m/s peak speed
- Very little cogging

REDUCE DOWNTIME

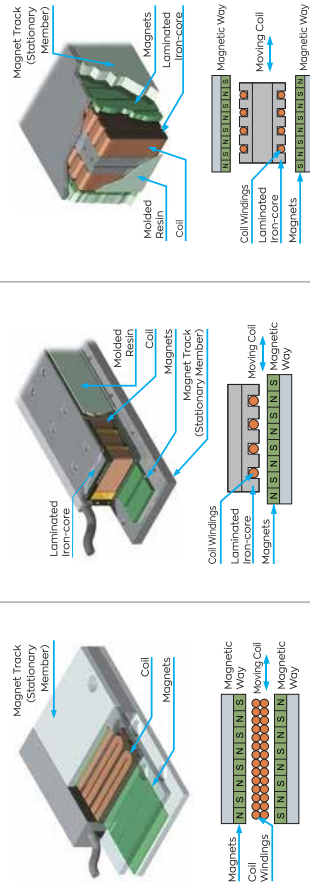
By eliminating gear reduction and creating a direct coupling to the machine load, direct drive motors simplify your machine's design. Eliminating transmission components leads to fewer breakdowns and long-term reliability you can trust.

REDUCE SIZE AND COST

Directly coupling a compact direct drive servo motor to your machine load will save physical space, which can lead to a more compact machine. When precision gearheads and other transmission components are gone, the cost of your machine will go down as well.

INCREASE PERFORMANCE

Direct drive motors get rid of the inefficiencies caused by mechanical transmission components that wear over time. Say goodbye to mechanical backlash as well. As compliance is reduced, the responsiveness of the servo system can be dramatically improved.



SERVO MOTORS

SIGMA TRAC II

Ready to run, turnkey linear stages

Built-to-order and fully tested. Bolt it down, connect it up and enjoy world class linear motion immediately.

FASTER MOTION, FASTER TIME TO MARKET

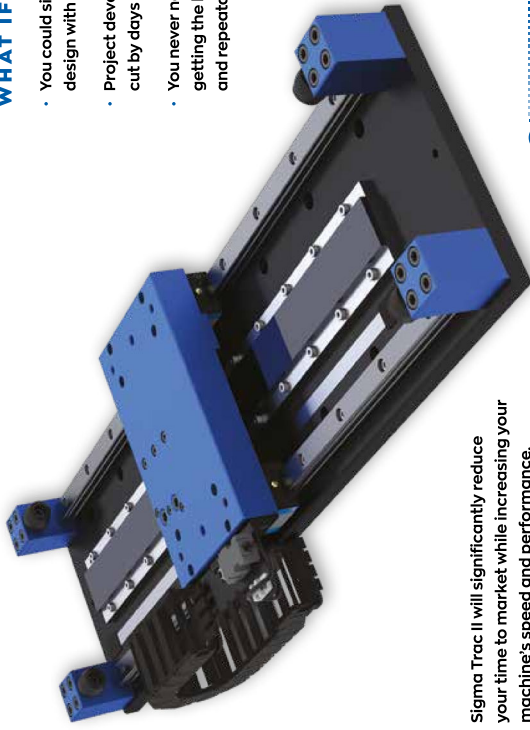
Need precise, high speed and repeatable linear motion, without the time-consuming process of designing your own linear stages?

Use Yaskawa's motion engineering expertise to spare your overworked engineers the effort of specifying, designing and sourcing components, assembly jigs and test equipment.

Our expertly designed, manufactured and tested mechatronic solutions give your machine a faster time to market and your engineering team more time to innovate.

WHAT IF...

- You could simplify your machine's design with a bolt-in linear solution?
- Project development time could be cut by days or weeks?
- You never needed to worry about getting the best in speed, reliability and repeatability?



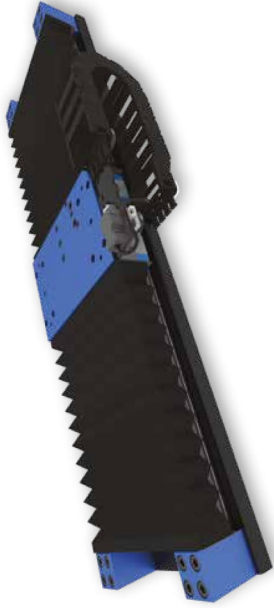
Sigma Trac II will significantly reduce your time to market while increasing your machine's speed and performance.

SigmaTRAC II

COMPLETE LINEAR MOTION SOLUTION

Each component in Sigma Trac II is fully assembled and tested:

- Coil and magnets
- Bearings
- Encoder
- Cables
- Cable management
- Optional bellows
- Optional X-Y mounting kit



Simply provide a flat mounting surface and bolt on your payload!

IMPROVE MACHINE PERFORMANCE

Minimize cycle times and maximize productivity with speeds up to 5m/s and peak force output up to 5040 N.

REPEATABILITY

Coupling the load directly to the motor and encoder yields positioning repeatability of $\pm 2 \mu\text{m}$.

WIDE RANGE OF SIZES

With six motor sizes and 24 base lengths, there is a linear stage for nearly any application. Stages are available for use with 100 V, 200 V, or 400 V power.

RELIABILITY

We've eliminate gears, belts and screws, resulting in a 10 million double-stroke design life

ABSOLUTE ENCODER FEEDBACK

Simplifies wiring and requires no homing routines, even after removing power from the equipment

ZERO MAINTENANCE

Integrated bearing lubrication technology for long-term maintenance-free operation.

CABLE MANAGEMENT

Carefully controlling cable flex maximizes cable life. Use additional space in the cable carrier for cables and hoses to your payload

BELLOWS

Optional bellows protect magnets and encoder scale from dust, loose debris and the occasional dropped tool

SERVO MOTORS

SERVO MOTOR PORTFOLIO

Rotary, Direct Drive, and Linear Motors

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 MPipec controller to create a complete motion automation system.

100/200 V Servo Motors	
Low Inertia	Medium Inertia
SGMVV 3 W - 30 W	SGMXP 100 W - 15 kW
SGMVA 50 W - 7 kW	SGMKJ 50 W - 750 W
	SGMXG 300 W - 15 kW

400 V Servo Motors	
Low Inertia	Medium Inertia
SGM7A 200W - 7 kW	SGM7J 200 W - 15 kW
	SGM7G 450 W - 15 kW
	SGMVV* 22 kW - 55 kW

* SGMVV large capacity servo motors are compatible only with large capacity Sigma-5 SERVOPACKS.

SERVOPACKS		
1 Axis	2 Axis	3 Axis
SGDXS 50W - 15 kW	SGDXW 50 W-1kW per axis	SGDXT 50 W-400 W per axis

Control Interface: EtherCAT

SERVOPACKS		
1 Axis	2 Axis	
SGD7S 500 W - 15 kW	SGD7W 750 W - 15 kW per axis	

Control Interface: EtherCAT, MECHATROLINK

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	SGM7E
(Iron Core) 2.0-200 Nm rated torque, 400-600 rpm max speed	(Coreless) 2.0-35 Nm rated torque, 250-500 rpm max speed
SGM7D	(Iron Core) 1.30-240 Nm rated torque, 30-240 rpm

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 and 400 V	
SGLG	SGLF2
(Coreless) 40-3000 N peak force, 5 m/s max speed	(Iron Core) 135-7500 N peak force, 5 m/s max speed
SGLT	Sigma Trac II
(Double Trac) 380-7500 N peak force, 5 m/s max speed	(Complete Linear Stage) 5040 N peak force, 5 m/s max speed

SERVOPACKS		
1 Axis	2 Axis	3 Axis
SGDXS 50W - 15 kW	SGDXW 50 W-1kW per axis	SGDXT 50 W-400 W per axis

Control Interface: EtherCAT

SERVOPACKS		
1 Axis	2 Axis	3 Axis
SGDXS 50W - 15 kW	SGDXW 50 W-1kW per axis	SGDXT 50 W-400 W per axis

Control Interface: EtherCAT

SERVO MOTORS

FOOD GRADE MOTORS

High-performance FDA approved motors

Yaskawa now offers food grade servo motors that integrate seamlessly with the Sigma-7 line of SERVOPACKS.

These FDA approved white epoxy painted high performance motors are ideal for food packaging equipment. They are capable of withstanding repeated high pressure wash down and they have a smooth housing to minimize entrapment areas.



FEATURES

- FDA approved white epoxy coating
- Finless extruded aluminum housing
- IP66 sealing (high pressure wash down)
- UL (GRUus), CE, RoHS
- Stainless steel shaft

- Four frame sizes
- 200 V / 400 V windings
- 24 V holding brake option
- 1.3 to 24 Nm of continuous torque
- Hiperface multi-turn absolute encoder



HYGIENIC STAINLESS MOTORS

For demanding washdown environments

Yaskawa now offers a wide range of hygienic stainless servo motors for use with the Sigma-7 line of SERVOPACKS.

These stainless steel motors are designed for demanding wash down environments and are ideal for applications in food and beverage processing equipment. They adhere to the EHEDG hygienic standard.



FEATURES

- 316/316L stainless steel housing, max corrosion resistance
- Smooth finish with no sharp inside corners
- IP66 for continuous flood while in operation and complete protection from dust
- IP69/IP69K for high pressure, high temperature while not in operation

- EHEDG, UL (GRUus), CE, RoHS
- Stainless steel shaft
- Two frame sizes
- 200 V / 400 V windings
- 24 V holding brake option
- 2.4 to 3.2 Nm of continuous torque
- Hiperface multi-turn absolute encoder



SINGULAR CONTROL™

Simplify engineering design, maintenance and training, while reducing your development and machine commissioning time

A Better Way to Control Automated Motion

Tired of hiring expensive programming experts to implement a robot, or of rewriting machine code every time you integrate a new mechanism?

Then you're ready for Singular Control™, one hardware platform, one software tool, one programming standard and one vendor for everything in motion automation. Yaskawa understands.

That's why we created Singular Control, and why we're putting it to work to make your job easier.



Delivering integrated control for Delta, SCARA, 6-axis, Gantry and customer-specific mechanisms.

A COMPLETE MECHATRONIC CONTINUUM

Motion axes, standard mechanisms, robots, and custom mechanisms running interchangeably under the same controller and application code

FAMILIAR PROGRAMMING

- Program robots with ladder logic and function blocks
- No proprietary robot programming language

INTEGRATED CONTROL

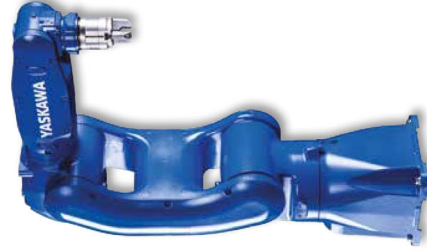
Control all types of mechanisms with one software engineering tool using the same function blocks

MACHINE FLEXIBILITY

Swap mechanism type with minimal changes to application code

FUTURE ENABLED

- Easily upgrade to new mechanisms
- Migrate your machine IP as your technology progresses



ROBOTICS PORTFOLIO

FAST. FLEXIBLE. RELIABLE.

Our full suite of material handling robots make it easy to integrate the ideal solution for your most challenging applications

Designed to optimize material handling operations from beginning to end, Yaskawa robots deliver exceptional speed and precision.

Whether your focus is food/beverage, pharmaceutical, consumer products or specialty items, our full suite of products and technologies make it easy to configure, program and integrate an ideal solution to meet your production goals.

HIGH SPEED PICKING

Perfect your primary operations with our extremely accurate and nimble picking robots.

MotoMini

- 0.5 kg payload
- 350 mm horizontal reach
- 495 mm vertical reach



MPP3 Series (Delta)

- 3 kg payload, 150 cpm
- 800 - 1,300 mm horizontal reach
- 300 mm - 601 mm z-stroke
- IP67-rated body, NSF-H1 certified food-grade lubricants



SG Series (SCARA)

- 3 - 6 kg payload
- 400 - 650 mm radial reach
- 200 - 210 mm z-stroke



COLLABORATIVE

Highly versatile and portable, HC-series robots are ideal for a variety of tasks including machine tending, material handling, packaging and light assembly.

HC10XP / HC20XP

- 10 kg / 20 kg payload
- 1,200 mm / 1,700 mm max. reach
- IP67-rated body, NSF-H1 certified food-grade lubricants



PART HANDLING AND TRANSFER

Automate your secondary operations with our versatile, high-speed handling robots

GP Series

- 4.0 - 600 kg payloads
- 550 - 3518 mm horizontal reach
- 1008 - 5622 mm vertical reach



MH Series

- 2.0 - 900 kg payloads
- 532 - 4683 mm horizontal reach
- 804 - 6209 mm vertical reach



PALLETIZING

Move boxes and load pallets with greater consistency and ease using our efficient palletizing robots.

MPK/MPL Series

- 2.0 - 800 kg payloads
- 900 - 3159 mm horizontal reach
- 1551 - 3291 mm vertical reach
- IP67-rated body, NSF-H1 certified food-grade lubricants



PL Series

- 80 - 500 kg payloads
- 2061 - 3159 mm horizontal reach
- 3024 - 3291 mm vertical reach



CUSTOM SOLUTIONS FOR CUSTOMER NEEDS

ENGINEERED SERVICES GROUP

Our experts in automation and machine control are ready to design and build whatever is necessary to make new automation ideas possible.

Yaskawa is known for creating exceptional motion automation components. It is only natural to back up this reputation with an exceptional ability to help customers put them to use. Our capabilities range from custom enclosures, panels and cables to complete retrofits and electromechanical assemblies.

CONTROL SYSTEMS

Equipped to Handle Every Facet of Automated Systems

Our A-to-Z capability includes development of mechanical systems and control architecture, panel design, wiring, mechanical design and assembly ...all the way to shipping, stocking and fulfillment.

Whether you are looking to outsource some or all of the control system manufacturing for a new machine design or seeking a turnkey retrofit of existing equipment, Yaskawa Engineered Systems Group is your one stop for integration of the best automation products in the industry.



CUSTOM CABLES



Plug and Play Cables for any Equipment!

Yaskawa Engineered Systems Group can provide everything from connectors and raw wire to complete wiring harness.

- Custom lengths
- Complete harnesses
- Connector installations
- Armored and special specification cables
- Conduit
- JIT / Stocking program

CUSTOM ENCLOSURES AND PANELS

Custom without Complexity

Every aspect of control enclosure manufacturing is covered by Engineered Systems, from design and component selection to cabinet manufacturing, wiring and preparation for final installation.

Combine top quality Yaskawa control components, with hardware, cabinetry and connectors to match. Enjoy Yaskawa performance without the complexity of panel design.



SLIO Modules: Distributed IO or Slice IO (for iC9200)

ANALOG OUTPUT MODULES

Material Number	Description	E/IP	ECAT	M-III
032-1BB30	2 outputs 12-Bit; Voltage 0-10 V	Y	Y	Y
032-1BB40	2 outputs 12-Bit; Current 0(4)>20 mA	Y	Y	Y
032-1BB70	4 outputs 12-Bit; Voltage -10 V to +10 V	Y	Y	Y
032-1BD30	4 outputs 12-Bit; Voltage 0-10 V	Y	Y	Y
032-1BD40	4 outputs 12-Bit; Current 0(4)>20mA	Y	N	Y
032-1BD70	4 outputs 12-Bit; Voltage -10 V to +10 V	Y	Y	Y
032-1CB30	2 outputs 12-Bit; Voltage 0-10 V	Y	N	Y
032-1CB40	2 outputs 16-Bit; Current 0(4)>20 mA	Y	N	Y
032-1CB70	2 outputs 16-Bit; Voltage -10 V to +10 V	Y	N	Y
032-1CD30	4 outputs 16-Bit; Voltage 0-10 V	Y	Y	Y
032-1CD40	4 outputs 16-Bit; Current 0(4)>20mA	Y	Y	Y
032-1CD70	4 outputs 16-Bit; Voltage -10 V to +10 V	Y	Y	Y

POTENTIAL DISTRIBUTOR MODULES

Material Number	Description	E/IP	ECAT	M-III
001-1BA00	8 x DC 24 V clamps	Y	Y	Y
001-1BA10	8 x DC 0 V clamps	Y	Y	Y
001-1BA20	4 x DC 24 V; 4 x DC 0 V clamps	Y	Y	Y

POWER MODULES

Material Number	Description	E/IP	ECAT	M-III
007-0AA00	Power supply DC 24 V, 10 A; (Only electronic modules as spare part for I/O and interface modules)	Y	Y	Y
007-1AB00	Power supply DC 24 V, 10 A; Reverse polarity protection; Overvoltage protection	Y	Y	Y
007-1AB10	Power supply DC 24 V, 4 A; Power supply DC 24 V for bus supply 5 V, 2 A; Reverse polarity protection; Overvoltage protection	Y	Y	Y

INTERFACE MODULES

Material Number	Description	MWlec Support	ICube Support
053-1IP01	EtherNet/IP-Slave; 2-Port Switch RJ45 100BaseTX full duplex; IO configuration via fieldbus; Up to 64 peripheral modules	Y	Y
053-1EC01	EtherCAT Slave module; Up to 64 peripheral modules	N	Y
053-1ML00	MECHATROLINK-III slave; Transfer rate 100 Mbit/s; Up to 64 peripheral modules	Y	N

FUNCTION MODULES

Material Number	Description	E/IP	ECAT	M-III
050-1BA00	Counter Module; 1 Counter 32-Bit (AB), DC 24V	Y	Y	Y
050-1BA10	Counter Module; 2 Counter 32-Bit (AB); DC 5V (difference signal)	Y	Y	Y
050-1BB00	Counter Module; 2 Counter 32-Bit (AB); DC 24V	Y	Y	Y
050-1BB30	Counter Module Eco; 2 Counter 32-Bit (AB); DC 24V	Y	Y	Y
050-1BB40	Frequency Measurement; 2 Channels 24-Bit; DC 24V	Y	N	Y
050-1BS00	SSI-Encoder; Master or Slave Mode; Encoder Frequency 125 kHz - 2 MHz; μ s time stamp for encoder value	N	Y	Y
054-1BA00	Stepper Module; 1-channel with feedback; 4 inputs/outputs DC 24V	Y	Y	N
054-1CB00	DC Motor Module; 2-channel with feedback; 4 inputs/outputs DC 24V	Y	Y	N
054-1DA00	Pulse Train Output Module; 1-channel RS422 w/ feedback; 4 configurable inputs/ outputs	Y	Y	N

Sigma Series Servo Products

SIGMA-X ROTARY SERVO MOTOR / SIGMA-X SERVOPACK COMBINATIONS

Rotary Servomotor Model	Rated Output Nm	Rated Torque Nm	Peak Torque Nm	Rated (Max) Speed rpm	Rotary Inertia $\times 10^{-4} \text{kg} \cdot \text{m}^2$		Sigma-X SERVOPACK Model	
					w/o holding brake	w/holding brake	SGDXW-□□□□	SGDXT-□□□□
SGMKJ (Medium inertia, small capacity)	SGMKJ-A5A	50 W	0.159	0.557	0.0458	0.0538	R70A	200V
	SGMKJ-01A	100 W	0.318	1.11	0.0706	0.0786	R90A	1R6A, 2R8A
	SGMKJ-C2A	150 W	0.477	1.67	0.0983	0.107	1R6A	1R6A, 2R8A
	SGMKJ-02A	200 W	0.637	2.23	0.267	0.327	2R8A	2R8A, 5R5A, 7R6A
	SGMKJ-04A	400 W	1.27	4.46	0.490	0.550	2R8A	2R8A, 5R5A, 7R6A
	SGMKJ-06A	600 W	1.91	6.69	0.804	0.864	5R5A	5R5A, 7R6A
	SGMKJ-08A	750 W	2.39	8.36	1.59	1.76	5R5A	5R5A, 7R6A
	SGMKJ-A5A	50 W	0.159	0.557	0.0257	0.0337	R70A	
	SGMKJ-01A	100 W	0.318	1.11	0.0377	0.0457	R90A	1R6A, 2R8A
	SGMKJ-C2A	150 W	0.477	1.67	0.0498	0.0578	1R6A	1R6A, 2R8A
SGMXA (Low inertia, small capacity)	SGMXA-02A	200 W	0.637	2.23	0.143	0.203	1R6A	
	SGMXA-04A	400 W	1.27	4.46	0.220	0.280	2R8A	2R8A, 5R5A, 7R6A
	SGMXA-06A	600 W	1.91	6.69	0.319	0.379	5R5A	5R5A, 7R6A
	SGMXA-08A	750 W	2.39	8.36	0.777	0.947	5R5A	5R5A, 7R6A
	SGMXA-10A	1.0 kW	3.18	11.1	0.973	1.14	120A	
	SGMXA-15A	1.5 kW	4.90	14.7	2.00	2.25	180A	
	SGMXA-20A	2.0 kW	6.36	19.1	2.47	2.72	200A	
	SGMXA-25A	2.5 kW	7.96	23.9	3.19	3.44	300A	
	SGMXA-30A	3.0 kW	9.80	29.4	7.00	9.20	350A	
	SGMXA-40A	4.0 kW	12.6	37.8	9.60	11.8	450A	
SGMXP (Medium inertia, flat type)	SGMXP-01A	100 W	0.318	1.11	0.0631	0.0959	R90A	1R6A, 2R8A
	SGMXP-02A	200 W	0.637	2.23	0.267	0.427	2R8A	2R8A, 5R5A, 7R6A
	SGMXP-04A	400 W	1.27	4.46	0.413	0.573	5R5A	5R5A, 7R6A
	SGMXP-08A	750 W	2.39	7.16	2.10	2.98	120A	
	SGMXP-15A	1.5 kW	4.77	14.3	4.02	4.90	120A	
	SGMXP-30A	3.0 kW	9.54	28.6	12.3	14.5	300A	
	SGMXP-40A	4.0 kW	12.6	37.8	12.3	14.5	350A	
	SGMXP-50A	5.0 kW	15.8	47.6	12.3	14.5	450A	
	SGMXP-70A	7.0 kW	22.3	54.0	12.3	14.5	550A	
	SGMXP-01A	100 W	0.318	1.11	0.0631	0.0959	R90A	1R6A, 2R8A
SGMXG (Medium inertia, medium capacity)	SGMXG-03A	300 W	1.96	5.88	2.48	2.73	3R8A	5R5A, 7R6A
	SGMXG-05A	450 W	2.86	8.92	3.33	3.58	3R8A	5R5A, 7R6A
	SGMXG-08A	650 W	5.39	14.2	13.9	16.0	7R6A	
	SGMXG-13A	1.3 kW	8.34	23.3	19.9	22.0	120A	
	SGMXG-20A	1.8 kW	11.5	28.7	26.0	28.1	180A	
	SGMXG-30A	2.9 kW	18.6	54.0	46.0	53.9	350A	
	SGMXG-44A	4.4 kW	28.4	71.6	67.5	75.4	470A	
	SGMXG-55A	5.5 kW	35.0	102	89.0	96.9	550A	
	SGMXG-75A	7.5 kW	48.0	119	125	133	590A	
	SGMXG-11A	11 kW	70.0	175	242	261	590A	
SGMXG-15A	15 kW	95.4	224	303	341	780A		

Sigma Series Servo Products

DIRECT DRIVE SERVO MOTOR / SIGMA-X SERVOPACK COMBINATIONS

Direct Drive Servomotor Model	Outer Diameter mm	Rated Output W	Rated Torque Nm	Peak Torque Nm	Rated Speed rpm	Rotary Inertia $\times 10^{-4}$ kg·m ²	Sigma-X SERVOPACK Model		
							SGDXS- □□□□	SGDXW- □□□□	SGDXT- □□□□
SGM7D-30F	188	30.0	50.0	960	1190				
SGM7D-58F	364	58.0	100	60 (72)	1420	120A			
SGM7D-90F	565	90.0	150	1670					
SGM7D-14F	691	110	200						
SGM7D-01G	16	1.30	4.00	120 (150)	55.0	2R8A			
SGM7D-05G	63	5.00	6.00	75.0	75.0				
SGM7D-08G	101	8.00	15.0	120	120				
SGM7D-18G	226	18.0	30.0	120 (144)	150				
SGM7D-24G	302	24.0	45.0	190	190	120A			
SGM7D-34G	320	34.0	60.0	90 (144)	230				
SGM7D-45G	565	45.0	75.0	120 (144)	270				
SGM7D-03H	36	3.00	4.00	120 (150)	25.0	2R8A			
SGM7D-28I	264	28.0	50.0	90 (108)	1800				
SGM7D-70I	440	70.0	100	60 (72)	2000				
SGM7D-12I	628	100	150	2300	2300	120A			
SGM7D-1CI	817	130	200	2850	3400				
SGM7D-2BI	691	220	300	30 (60)	4000				
SGM7D-2DI	754	240	400	30 (48)					
SGM7D-06J	75	6.00	8.00	150	150				
SGM7D-09J	115	9.00	15.0	210	210				
SGM7D-18J	226	18.0	30.0	240	240	120A			
SGM7D-30J	251	20.0	45.0	260	260				
SGM7D-38J	358	38.0	60.0	330	330				
SGM7D-02K	52	2.06	5.00	60.0	60.0				
SGM7D-06K	151	6.00	10.0	240 (360)	70.0	2R8A			
SGM7D-08K	201	8.00	15.0	80.0	80.0				
SGM7D-06L	113	6.00	10.0	220	220	2R8A			
SGM7D-12L	224	12.0	20.0	180 (216)	220				
SGM7D-30L	565	30.0	40.0	370	370	120A			
SGM7F-02A	63	2	6	6.04					
SGM7F-05A	157	5	15	300 (600)	14.5	2R8A	2R8A	2R8A	
SGM7F-07A	220	7	21	19.3					
SGM7F-04B	126	4	12	16.2					
SGM7F-10B	314	10	30	300 (600)	25.2	2R8A	2R8A	2R8A	
SGM7F-14B	440	14	42	36.9					
SGM7F-08C	251	8	24	300 (600)	56.5	2R8A	2R8A	2R8A	
SGM7F-17C	534	17	51	300 (600)	78.5	5R5A	5R5A	5R5A	
SGM7F-25C	785	25	75	300 (600)	111	7R6A	7R6A	7R6A	
SGM7F-16D	503	16	48	300 / 270 (400)	178	5R5A	5R5A	5R5A	
SGM7F-55D	1100 / 1000	35	105	276	276	7R6A, 120A	7R6A	7R6A	
SGM7F-45M	707	45	135	388	388	7R6A	7R6A	7R6A	
SGM7F-80M	1260	80	240	150 (300)	627	120A			
SGM7F-1AM	1730	110	330	865	865	180A			
SGM7F-80N	1260	80	240	150 (300)	1360	120A			
SGM7F-1EN	2360	150	450	150 (250)	2470	200A			
SGM7F-2ZN	3140	200	600	3060	3060				
SGM7E-02B	42	2.0	6.0	28	28				
SGM7E-05B	105	5.0	15	200 (500)	51	2R8A	2R8A	2R8A	
SGM7E-07B	147	7	21	200 (500)	77				
SGM7E-04C	84	4.0	12	200 (500)	77				
SGM7E-10C	209	10	30	200 (400)	140				
SGM7E-14C	293	14	42	200 (300)	220	2R8A	2R8A	2R8A	
SGM7E-08D	168	8.0	24	200 (500)	285				
SGM7E-17D	356	17	51	200 (350)	510	2R8A	2R8A	2R8A	
SGM7E-25D	393	25	75	150 (250)	750				
SGM7E-16E	335	16	48	200 (500)	930	5R5A	5R5A	5R5A	
SGM7E-35E	550	35	105	150 (250)	1430				

LINEAR SERVO MOTOR / SIGMA-X SERVOPACK COMBINATIONS

Linear Servomotor Model	Rated Force N	Peak Force N	Rated Speed m/s	Moving Coll. Mass kg	Sigma-X SERVOPACK Model	
					SGDXS- □□□□	SGDXW- □□□□
SGLGW-30A050C	12.5	40	1.5 (5.0)	0.10	R70A	
SGLGW-30A080C	25	80	0.15	0.15	R90A	1R6A
SGLGW-40A140C	47	140	0.34	0.34		
SGLGW-40A253C	93	280	2.0 (5.0)	0.60	1R6A	2R8A
SGLGW-40A365C	140	420	0.87	0.87	2R8A	2R8A
SGLGW-60A140C	70	220	0.42	0.42	1R6A	1R6A
SGLGW-60A253C	140	440	2.3 (4.8)	0.76	2R8A	2R8A
SGLGW-60A365C	210	660	1.1	1.1	5R5A	5R5A
SGLGW-90A200C	325	1300	1.8 (4.0)	2.2	120A	
SGLGW-90A370C	550	2200	1.5 (4.0)	3.6	180A	
SGLGW-90A535C	750	3000		4.9	200A	
SGLGW-40A140C	57	230	0.34	0.34	1R6A	1R6A
SGLGW-40A253C	114	460	0.60	0.60	2R8A	2R8A
SGLGW-40A365C	171	690	0.87	0.87	3R8A	5R5A
SGLGW-60A140C	85	360	1.0 (4.2)	0.42	1R6A	1R6A
SGLGW-60A253C	170	720	0.76	0.76	3R8A	5R5A
SGLGW-60A365C	255	1080	1.1	1.1	7R6A	7R6A
SGLFW2-30A070A	45	135	4.0 (5.0)	0.50	1R6A	1R6A
SGLFW2-30A120A	90	270		0.90		
SGLFW2-30A230A	180	540		1.7	3R8A	2R8A
SGLFW2-45A200A	280	840	4.0 (4.5)	2.9	5R5A	5R5A
SGLFW2-45A380A	560	1680		5.5	180A	
SGLFW2-90A200A	560	1680	4.0 (4.0)	5.3	120A	
SGLFW2-90A380A	1120	3360		10.1	200A	
SGLFW2-90A560A	1680	5040		14.9	330A	
SGLFW2-1DA560A	1680	5040	2.0 (2.5)	14.8	200A	
SGLTW-20A170A	130	380	3.0 (5.0)	2.5	3R8A	5R5A
SGLTW-20A320A	250	760		4.6	7R6A	7R6A
SGLTW-20A460A	380	1140	2.5 (5.0)	6.7	120A	
SGLTW-35A170A	220	660		3.7	5R5A	5R5A
SGLTW-35A320A	440	1320		6.8	120A	
SGLTW-35A460A	670	2000	1.5 (3.1)	10	180A	
SGLTW-40A400B	1000	4000	2.0 (3.1)	15	330A	
SGLTW-40A600B	1300	5000	2.0 (2.5)	24	330A	
SGLTW-80A600B	2000	7500	2.5 (4.8)	35	550A	
SGLTW-35A170H	300	600	2.0 (4.8)	4.9	5R5A	5R5A
SGLTW-35A320H	600	1200	2.0 (4.8)	8.8	120A	
SGLTW-50A170H	450	900	2.0 (3.2)	6.0	5R5A	5R5A
SGLTW-50A320H	900	1800	2.0 (3.1)	11	120A	

Sigma Series Servo Products

SIGMA TRAC II LINEAR STAGE / SIGMA-X SERVOPACK COMBINATIONS

Linear Stage Model	Rated Force		Rated (Max) Speed	Maximum Payload		Moving Mass		SERVOPACK Model		
	N	N		w/o brake	with brake	w/o brake	with brake	SGDXS-□□□□	SGDXW-□□□□	SGDXT-□□□□
			kg	kg	kg	kg	kg			
ST2F	ST2F-A1A	45	135	3.3	2.5	2.3	3.1	1R6A	1R6A	1R6A
	ST2F-A2A	90	270	5.8	5.0	3.6	4.4	3R8A	-	-
	ST2F-A3A	180	540	28.7	28.7	5.3	5.3	2R8A	2R8A	2R8A
Sigma Trac II Linear Stages	ST2F-C1A	560	1680	116.5	114.5	15.5	15.5	120A	-	-
	ST2F-C2A	1120	3360	137.2	135.7	22.8	24.3	200A	-	-
	ST2F-C3A	1680	5040	327.0	324.4	33.0	35.6	330A	-	-

Sigma Series Servo Products

SIGMA-7 ROTARY SERVO MOTOR / SIGMA-7 SERVOPACK COMBINATIONS

Rotary Servomotor Model	Rated Output	Peak Torque	Rated Torque	Peak Torque	Rated (Max) Speed	Rotary Inertia		Sigma-7 SERVOPACK Model			
						abs. enic. w/ battery	battery-less abs. enic.	100%/200V	200V	400V	
						Nm	Nm	SGD7S-□□□□	SGD7W-□□□□	SGD7S-□□□□	SGD7W-□□□□
SGMMV (Low inertia, ultra-low capacity)	SGMMV-A1A	10 W	0.0318	0.0955	3000 (6000)	0.00272	-	R90A, R90F	1R6A, 2R8A	2R8E	-
	SGMMV-A2A	20 W	0.0637	0.191	3000 (6000)	0.00466	-	1R6A, 2R1F	-	-	-
	SGMMV-A3A	30 W	0.0955	0.288	3000 (6000)	0.00668	-	R70A, R70F	-	-	-
	SGM7J-A5A	50 W	0.159	0.557	3000 (6000)	0.0395	0.0410	R90A, R90F	1R6A, 2R8A	-	-
	SGM7J-01A*	100 W	0.318	1.11	3000 (6000)	0.0659	0.0674	R90A, R90F	1R6A, 2R8A	-	-
	SGM7J-C2A	150 W	0.477	1.67	3000 (6000)	0.0915	0.0930	1R6A, 2R1F	-	-	-
	SGM7J-02□*	200 W	0.637	2.23	3000 (6000)	0.263	0.264	2R8A, 2R8F	2R8A, 5R5A, 7R6A	1R9D	2R6D
	SGM7J-04□*	400 W	1.27	4.46	3000 (6000)	0.486	0.487	5R5A	5R5A, 7R6A	3R5D	2R6D, 5R4D
	SGM7J-08□*	600 W	1.91	6.69	3000 (6000)	0.800	0.801	N/A	N/A	5R5D	2R6D, 5R4D
	SGM7J-15□*	750 W	2.39	8.36	3000 (6000)	1.59	1.59	N/A	N/A	5R5D	2R6D, 5R4D
SGM7A* (Low inertia, high speed)	SGM7A-15□*	150 W	0.477	1.67	3000 (6000)	0.0217	0.0232	R70A, R70F	1R6A, 2R8A	-	-
	SGM7A-01A*	100 W	0.318	1.11	3000 (6000)	0.0337	0.0352	R90A, R90F	-	-	-
	SGM7A-C2A	150 W	0.477	1.67	3000 (6000)	0.0458	0.0473	1R6A, 2R1F	1R6A, 2R8A	1R9D	2R6D
	SGM7A-02□*	200 W	0.637	2.23	3000 (6000)	0.139	0.140	2R8A, 2R8F	2R8A, 5R5A, 7R6A	1R9D	2R6D, 5R4D
	SGM7A-04□*	400 W	1.27	4.46	3000 (6000)	0.216	0.217	5R5A	5R5A, 7R6A	3R5D	2R6D, 5R4D
	SGM7A-06A	600 W	1.91	6.69	3000 (6000)	0.315	0.316	5R5A	5R5A, 7R6A	3R5D	2R6D, 5R4D
	SGM7A-08□*	750 W	2.39	8.36	3000 (6000)	0.775	0.776	120A	-	-	-
	SGM7A-10□*	1.0 kW	3.18	11.1	3000 (6000)	0.971	0.972	180A	-	-	-
	SGM7A-15□*	1.5 kW	4.90	14.7	3000 (6000)	2.00	2.00	200A	-	-	-
	SGM7A-20□*	2.0 kW	6.36	19.1	3000 (6000)	2.47	2.47	330A	-	-	-
SGM7P (Medium inertia, flat type)	SGM7P-01A	100 W	0.318	1.11	3000 (6000)	0.0592	0.0607	R90A, R90F	1R6A, 2R8A	-	-
	SGM7P-02A	200 W	0.637	2.23	3000 (6000)	0.263	0.264	2R8A, 2R8F	2R8A, 5R5A, 7R6A	1R9D	2R6D, 5R4D
	SGM7P-08A	750 W	2.39	8.36	3000 (6000)	2.10	2.10	120A	-	-	-
	SGM7P-15A	1.5 kW	4.77	14.3	3000 (6000)	4.02	4.02	120A	-	-	-
	SGM7G-03A	300 W	1.96	6.69	3000 (6000)	2.48	2.48	3R8A	5R5A, 7R6A	3R5D	2R6D, 5R4D
	SGM7G-05□*	450 W	2.86	9.82	3000 (6000)	3.33	3.33	7R6A	7R6A	3R5D	2R6D, 5R4D
	SGM7G-09□*	850 W	5.39	14.2	3000 (6000)	13.9	13.9	120A	-	-	-
	SGM7G-13□*	1.3 kW	8.34	23.3	3000 (6000)	19.9	19.9	180A	-	-	-
	SGM7G-20□*	1.8 kW	11.5	28.7	3000 (6000)	26.0	26.0	330A	-	-	-
	SGM7G-30□*	2.9 kW	18.6	45.1	3000 (6000)	46.0	46.0	470A	-	-	-
SGM7E* (Medium inertia, large torque)	SGM7E-44□*	4.4 kW	28.4	71.6	3000 (6000)	67.5	67.5	550A	-	-	-
	SGM7E-55□*	5.5 kW	35.0	87.6	3000 (6000)	89.0	89.0	550A	-	-	-
	SGM7E-75□*	7.5 kW	48.0	119	3000 (6000)	125	125	590A	-	-	-
	SGM7E-11□*	11 kW	70.0	175	3000 (6000)	242	242	590A	-	-	-
	SGM7E-15□*	15 kW	95.4	224	3000 (6000)	303	303	780A	-	-	-
	SGM7E-22□*	22 kW	138	320	3000 (6000)	400	400	780A	-	-	-
Food Grade	M431-MN0□	1.4 Nm	3.72	10.75	5000 (6000)	0.7	0.7	120A	120A	5R4D	-
	M433-MN0□	3.7 Nm	5.50	15.50	5000 (6000)	1.7	1.7	180A	180A	5R4D	-
	M443-KN0□	5.5 Nm	5.50	15.50	5000 (6000)	5.1	5.1	330A	330A	170D	-
	M465-GN0□	24.8 Nm	24.85	70.00	2500 (3750)	44.0	44.0	470A	470A	210D	-
Hygienic Stainless	M532-GK07□	2.4 Nm	2.4	7.2	5500 (6000)	1.16	1.16	5R5A	5R5A	5R4D	-
	M542-GK07□	3.2 Nm	3.2	8.8	3000 (4000)	2.62	2.62	7R6A	7R6A	3R5D	-

* These motors also available as gear motors with gear ratios of 3:1, 5:1, 10:1, 25:1 or 50:1 gear ratios

Sigma Series Servo Products

SIGMA-5 ROTARY SERVO MOTOR / SIGMA-5 SERVOPACK COMBINATIONS

The following series motors include models that are only compatible with Sigma-5 SERVOPACKS.

Rotary Servomotor Model	Rated Output	Peak Torque		Rated Speed	Rated Torque	Rotary Inertia *	Sigma-5 SERVOPACK Model	
		Nm	rpm				24 VDC / 48 VDC	400V
SGMMV Sigma-Mini (Low Inertia, ultra-low capacity)	SGMMV-B3E	3.3 W	0.0105	0.0263	0.000441		SGDV-□□□□	SGDV-□□□□
	SGMMV-B5E	5.5 W	0.0175	0.0438	0.000796	1P7E	-	-
	SGMMV-B9E	11 W	0.0350	0.0875	0.00221			
	SGMMV-A1□	10 W	0.0318	0.0955	0.00272		R90F, R80A	-
	SGMMV-A2□	20 W	0.0637	0.191	0.00466		2R8E	-
	SGMMV-A3□	30 W	0.0955	0.286	0.00668		2R1F, 1R8A	-
	SGMMV-22BA□□	22 kW	140	350	1500 (2000)	366 (451)	-	750J
	SGMMV-22BA□□						121H	-
	SGMMV-22BD□□						121H	-
	SGMMV-22BD□□						161H	-
SGMMV (Large Capacity, Medium Inertia)	SGMMV-32BA□□		191	478	1500 (2000)	498 (653)		750J
	SGMMV-32BD□□	30 kW						
	SGMMV-32BA□□		358	752	800 (1300)	1290 (1448)		750J
	SGMMV-32BD□□							
	SGMMV-3GBA□□		236	589	1500 (2000)	595 (665)	201H	-
	SGMMV-3GBD□□	37 kW						101J
	SGMMV-3GBA□□		442	930	800 (1300)	1564 (1722)	201H	-
	SGMMV-3GBD□□							
	SGMMV-4EBD□□	45 kW	286	715	1500 (2000)	1071 (1229)	-	101J
	SGMMV-4EBD□□		537	1182	800 (1300)	1804	-	131J
SGMMV-5EBD□□	55 kW	55 kW	875	1500 (2000)	1290 (1448)	-	131J	

*: Rotary inertia values in parentheses indicate models with holding brakes.

DIRECT DRIVE SERVO MOTOR / SIGMA-7 SERVOPACK COMBINATIONS

Direct Drive Servomotor Model	Outer Diameter	Rated Output	Peak Torque		Rated Speed	Rotary Inertia	Sigma-7 SERVOPACK Model	
			Nm	rpm			SGDV-□□□□	SGDV-□□□□
SGM7D (With core, outer rotor)	SGM7D-30F	188	30.0	50.0	60 (72)	960		
	SGM7D-58F	264	364	58.0	100	1190		
	SGM7D-90F		565	90.0	150	1420	120A	-
	SGM7D-1AF		691	110	200	1670		
	SGM7D-01G	160	16	1.30	4.00	55.0		2R8A, 2R8F
	SGM7D-05G		63	5.00	6.00	75.0		
	SGM7D-08G		101	8.00	15.0	120		
	SGM7D-18G		226	18.0	30.0	120 (144)		
	SGM7D-24G		302	24.0	45.0	190		120A
	SGM7D-34G		320	34.0	60.0	230		
SGM7D (Coreless, inner rotor)	SGM7D-45G	116	565	45.0	75.0	270		
	SGM7D-03H		38	3.00	4.00	120 (150)		2R8A, 2R8F

*: Note: Use SGM7D servo motor in combination with FT-Specification SERVOPACK. The following SERVOPACK models can be used:

- SGM7S-□□□□□□□□□□F82□
- SGM7S-□□□□□□□□□□F83□

DIRECT DRIVE SERVO MOTOR / SERVOPACK COMBINATIONS (CONT.)

Direct Drive Servomotor Model	Outer Diameter	Rated Output	Peak Torque		Rated Speed	Rotary Inertia	Sigma-7 SERVOPACK Model	
			Nm	rpm			SGDV-□□□□	SGDV-□□□□
SGM7D (With core, outer rotor)	SGM7D-281	264	28.0	50.0	90 (108)	1800		
	SGM7D-701	440	70.0	100	2000			
	SGM7D-1Z1	628	100	150	60 (72)	2300	120A	-
	SGM7D-1C1	817	130	200	2850			
	SGM7D-2B1	691	220	300	30 (60)	3400		
	SGM7D-2D1	754	240	400	30 (48)	4000		
	SGM7D-06J	75	6.00	8.00	150			
	SGM7D-09J	113	9.00	15.0	120 (144)	210		
	SGM7D-18J	226	18.0	30.0	240	240	120A	-
	SGM7D-20J	251	20.0	45.0	260			
SGM7F Small- capacity (With core, inner rotor)	SGM7D-38J	358	38.0	60.0	330			
	SGM7D-02K	52	2.06	5.00	60.0			
	SGM7D-06K	151	6.00	10.0	240 (560)		2R8A, 2R8F	
	SGM7D-08K	201	8.00	15.0	80.0			
	SGM7D-06L	113	6.00	10.0	220		2R8A, 2R8F	
	SGM7D-12L	226	12.0	20.0	180 (216)			
	SGM7D-30L	565	30.0	40.0	370	120A	-	
	SGM7F-02A	63	2	6	8.04		2R8A, 2R1F	
	SGM7F-05A	157	5	15	300 (600)	14.5	2R8A, 2R8F	
	SGM7F-07A	220	7	21	19.3			
SGM7F Medium- capacity (With core, inner rotor)	SGM7F-10B	126	4	12	16.2		2R8A, 2R8F	
	SGM7F-14B	314	10	30	300 (600)	25.2		
	SGM7F-14B	440	14	42	36.9		5R8A	
	SGM7F-08C	251	8	24	300 (600)	56.5	2R8A, 2R8F	
	SGM7F-17C	534	17	51	78.5		5R8A	
	SGM7F-25C	785	25	75	300 (500)	111	7R8A	
	SGM7F-18D	503	16	48	300 (600)	178	5R8A	
	SGM7F-35D	1100 / 1000	35	105	300 / 270 (400)	276	7R6A, 120A	
	SGM7F-45M	707	45	135	388		7R6A	
	SGM7E Coreless, inner rotor)	SGM7F-80M	1260	80	240	150 (300)	627	120A
SGM7F-1AM		1730	110	330	865		180A	
SGM7E-80N		1260	80	240	150 (300)	1360	120A	
SGM7E-22N		2360	150	450	150 (250)	2470	200A	
SGM7E-02B		3140	200	600	3060			
SGM7E-05B		42	2.0	6.0	28			
SGM7E-05B		105	5.0	15	200 (500)	51	2R8A, 2R1F	
SGM7E-07B		147	7	21	77			
SGM7E-04C		84	4.0	12	200 (500)	77		
SGM7E-10C		209	10	30	200 (400)	140	2R8A, 2R8F	
SGM7E (Coreless, inner rotor)	SGM7E-14C	293	14	42	200 (300)	220		
	SGM7E-08D	168	8.0	24	200 (500)	285		
	SGM7E-17D	356	17	51	200 (350)	510	2R8A	
	SGM7E-25D	393	25	75	150 (250)	750		
	SGM7E-19E	535	16	48	200 (500)	930		
	SGM7E-35E	550	35	105	150 (250)	1430	5R8A	

*: Note: Use SGM7D servo motor in combination with FT-Specification SERVOPACK. The following SERVOPACK models can be used:

- SGM7S-□□□□□□□□□□F82□
- SGM7S-□□□□□□□□□□F83□

Sigma Series Servo Products

LINEAR SERVO MOTOR / SIGMA-7 SERVOPACK COMBINATIONS

Linear Servomotor Model		Rated Force		Peak Force		Rated (Max) Speed		Moving Coil Mass		Sigma-7 SERVOPACK Model	
		N	N	N	N	m/s	m/s	kg	kg	SGD7S-□□□□	SGD7W-□□□□
SGLG (Coreless, with standard magnetic way)	SGLGW-30A050C	12.5	40			1.5 (5.0)		0.10		R70A, R70F	
	SGLGW-30A080C	25	80					0.15		R90A, R90F	1R6A
	SGLGW-40A140C	47	140			2.0 (5.0)		0.34			
	SGLGW-40A253C	93	280					0.60		1R6A, 2R1F	
	SGLGW-40A365C	140	420					0.87		2R8A, 2R8F	2R8A
	SGLGW-60A140C	70	220			2.3 (4.8)		0.42		1R6A, 2R1F	1R6A
	SGLGW-60A253C	140	440					0.76		2R8A, 2R8F	2R8A
	SGLGW-60A365C	210	660					1.1			5R5A
	SGLGW-90A200C	325	1300			1.8 (4.0)		2.2		120A	
	SGLGW-90A370C	550	2200			1.5 (4.0)		3.6		180A	
	SGLGW-90A535C	750	3000					4.9		200A	
	SGLGW-40A140C	57	230					0.34		1R6A, 2R1F	1R6A
	SGLGW-40A253C	114	480					0.60		2R8A, 2R8F	2R8A
SGLGW-40A365C	171	690			1.0 (4.2)		0.87		3R8A	5R5A	
SGLGW-60A140C	85	360					0.42		1R6A, 2R1F	1R6A	
SGLGW-60A253C	170	720					0.76		3R8A	5R5A	
SGLGW-60A365C	255	1080					1.1			7R6A	
SGLFW2-30□070A	45	135					0.50		1R6A, 2R1F, 1R9D	1R6A, 2R6D	
SGLFW2-30□120A	90	270			4.0 (5.0)		0.90				
SGLFW2-30□250A	180	540					1.7		3R8A, 1R9D	2R6D	
SGLFW2-45□200A	170	500					2.9		2R8A, 2R8F	2R8A	
SGLFW2-45□380A	280	840			4.0 (4.5)		5.5		5R5A, 3R5D	5R5A, 2R6D	
SGLFW2-90□200A	560	1500					5.3		180A, 8R4D		
SGLFW2-90□380A	560	1500					5.3		120A, 5R4D		
SGLFW2-90□560A	1120	3360			4.0 (4.0)		10.1		200A		
SGLFW2-90□560A	1680	5040					14.9		330A		
SGLFW2-10□560A	1680	5040			2.0 (2.5)		14.6		200A		
SGLFW2-10□560A	2520	7560					21.5		330A		
SGLFW-20A090A	25	86			5.0 (5.0)		0.70				
SGLFW-20A120A	40	125			3.5 (5.0)		0.90		1R6A, 2R1F	1R6A	
SGLFW-35A120A	80	220			2.5 (5.0)		1.3				
SGLFW-35A230A	160	440			3.0 (5.0)		2.3		3R8A	5R5A	
SGLFW-50A200B	280	600			1.5 (5.0)		3.5			5R5A	
SGLFW-50A380B	560	1200			1.5 (4.9)		6.9		120A		
SGLFW-12A200B	1120	2400					12		200A		

* The SGLFW model is an erillier model when newly installing a linear servomotor to a machine.

LINEAR SERVO MOTOR / SIGMA-7 SERVOPACK COMBINATIONS (CONT.)

Linear Servomotor Model		Rated Force		Peak Force		Rated (Max) Speed		Moving Coil Mass		Sigma-7 SERVOPACK Model	
		N	N	N	N	m/s	m/s	kg	kg	SGD7S-□□□□	SGD7W-□□□□
SGLT (with T-type iron core) Standard models	SGLTW-20A170A	130	380			3.0 (5.0)		2.5		3R8A	5R5A
	SGLTW-20A320A	250	760					4.6			7R6A
	SGLTW-20A460A	380	1140					6.7		120A	
	SGLTW-35A170A	220	660			2.5 (5.0)		3.7			5R5A
	SGLTW-35A320A	440	1320					6.8		120A	
	SGLTW-35A460A	670	2000			1.5 (3.1)		10			
	SGLTW-40A400B	670	2600			2.0 (3.1)		15		180A	
	SGLTW-40A600B	1000	4000					23		330A	
	SGLTW-80A400B	1300	5000			2.0 (2.5)		24		330A	
	SGLTW-80A600B	2000	7500					35		550A	
	SGLTW-35A170H	300	600			2.5 (4.8)		4.9			5R5A
	SGLTW-35A320H	600	1200			2.0 (4.8)		8.8		120A	
	SGLTW-50A170H	450	900			2.0 (3.2)		6.0			5R5A
SGLTW-50A320H	900	1800			2.0 (3.1)		11		120A		

SIGMA TRAC II LINEAR STAGE / SIGMA-7 SERVOPACK COMBINATIONS

Linear Stage Model		Rated Force		Peak Force		Rated (Max) Speed		Maximum Payload		Moving Mass		SERVOPACK Model	
		N	N	N	N	m/s	m/s	w/o brake	with brake	w/o brake	with brake	kg	kg
Sigma Trac II Linear Stages	ST2F-A1A	45	135					3.3	2.5	2.3	3.1		
	ST2F-A2A	90	270					5.8	5.0	3.6	4.4		1R6A
	ST2F-A3A	180	540					28.7	28.7	5.3	5.3		3R8A
Sigma Trac II Linear Stages	ST2F-A1D	170	500			4.0 (5.0)		4.7	4.7	5.3	5.3		2R8A, 2R8F
	ST2F-A2D	45	135					3.3	2.5	2.3	3.1		
	ST2F-A3D	90	270					5.8	5.0	3.6	4.4		2R6D
	ST2F-C1A	180	540					28.7	28.7	5.3	5.3		
	ST2F-C2A	560	1680					116.5	114.5	15.5	15.5		120A
	ST2F-C3A	1120	3360					137.2	135.7	22.8	24.3		200A
	ST2F-C1D	1680	5040			4.0 (4.0)		327.0	324.4	33.0	35.6		330A
	ST2F-C2D	560	1680					116.5	114.5	13.5	15.5		5R4D
	ST2F-C3D	1120	3360					137.2	135.7	22.8	24.3		120D
	ST2F-C3D	1680	5040					327.0	324.4	33.0	35.6		170D

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Yaskawa America, Inc. | Drives & Motion Division

1-800-YASKAWA | Email: info@yaskawa.com | yaskawa.com

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