Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

NEW

OMRON

AC Servomotors /Linear Motors /Servo Drives

G5 Series

The Preeminent Servo That Revolutionizes Motion Control

G5 Series

» EtherCAT

» High Speed and High Precision

» International Safety Standards

sysmac
always in control

Higher Throughput and Shorter Tact Time, Plus Improved Machine Safety

High Speed and High Precision

Fastest speed response frequency in industry at 2 kHz

Safety

Conforms to the latest international safety standards
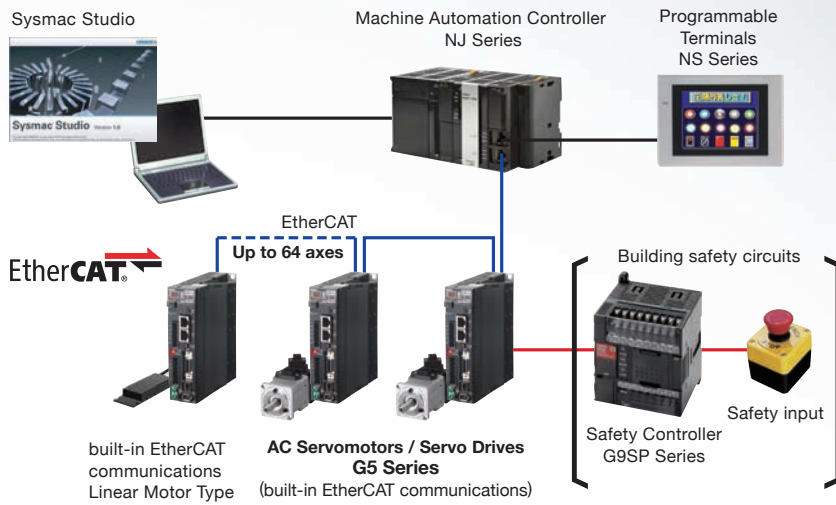
Reduced TCO

Advanced autotuning

Achieve the fastest position control in the industry by combining the G5 with an OMRON Controller.
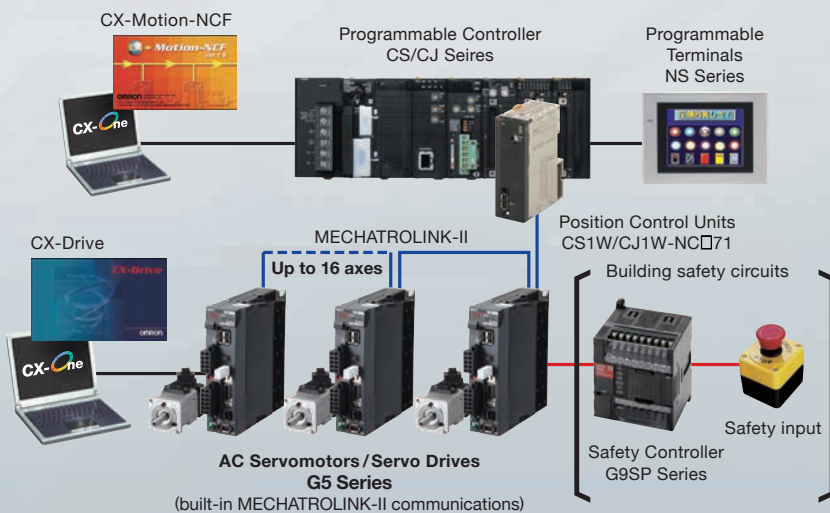
System Configuration Example

EtherCAT Communications

Sysmac Studio

Machine Automation Controller
NJ Series

Programmable Terminals
NS Series

EtherCAT

Up to 64 axes

EtherCAT®

Building safety circuits

Safety input

built-in EtherCAT communications
Linear Motor Type

**AC Servomotors / Servo Drives
G5 Series**
(built-in EtherCAT communications)

Safety Controller
G9SP Series

General-purpose Inputs

CX-Programmer

Programmable Controller
CJ2

Programmable Terminals
NS Series

CX-One

Position Control Units
CJ1W-NC□□4

CX-Drive

CX-One

Building safety circuits

**AC Servomotors / Servo Drives
G5 Series**

Safety Controller
G9SP Series

Safety input

MECHATROLINK-II Communications

CX-Motion-NCF

Programmable Controller
CS/CJ Seires

Programmable Terminals
NS Series

CX-One

Position Control Units
CS1W/CJ1W-NC□71

CX-Drive

MECHATROLINK-II

Up to 16 axes

Building safety circuits

CX-One

Safety input

**AC Servomotors / Servo Drives
G5 Series**
(built-in MECHATROLINK-II communications)

Safety Controller
G9SP Series

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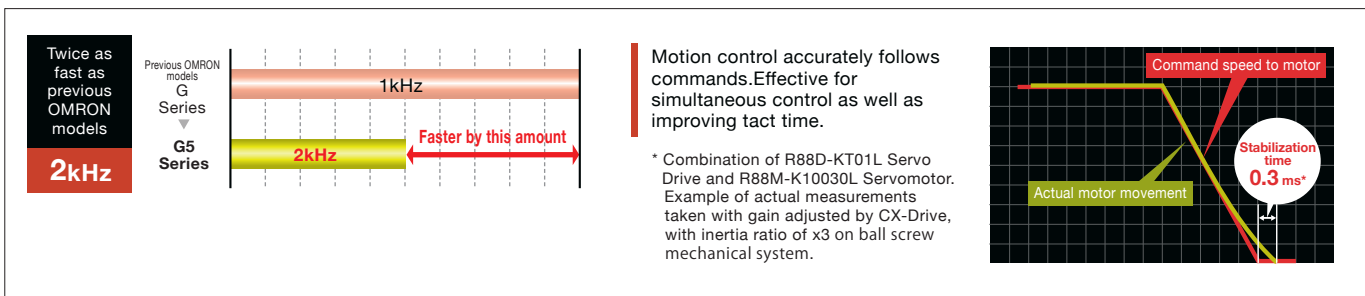
Provide Tact Time Improvement and Hig

Industry Top-class Tracking Performance

Industry
Top
class

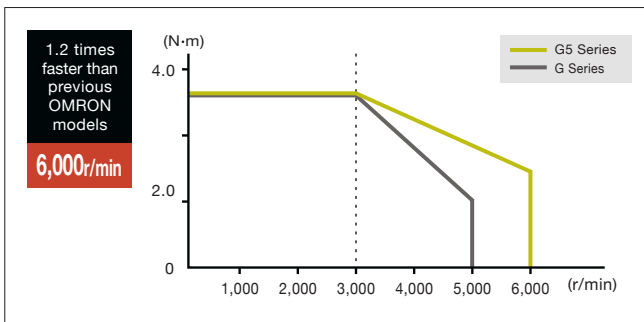### Speed Response Frequency of 2 kHz

Speed response is representative of servo system characteristics. In the G5, the industry's fastest response has been achieved at 2 kHz.
By improving the speed response by twice compared to previous OMRON models, the stabilization time has been shortened and this contributes
to tact time reduction.

Twice as fast as previous OMRON models

2kHz

Previous OMRON models
G Series
▼
G5 Series

1kHz

2kHz

Faster by this amount

Motion control accurately follows commands.Effective for simultaneous control as well as improving tact time.

* Combination of R88D-KT01L Servo Drive and R88M-K10030L Servomotor. Example of actual measurements taken with gain adjusted by CX-Drive, with inertia ratio of x3 on ball screw mechanical system.

Command speed to motor

Actual motor movement

Stabilization time
0.3 ms*

Reduced Tact Time with Higher Speed
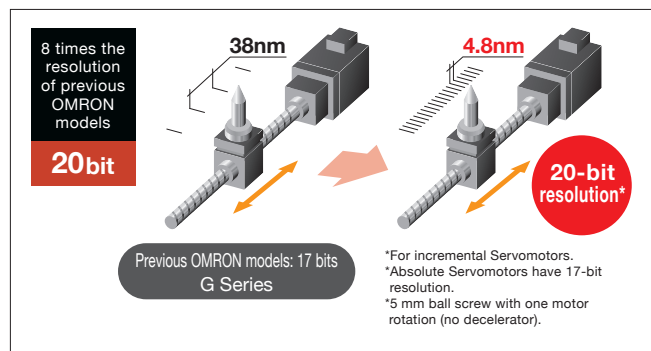
Maximum rotation speed : 6,000 r/min*

The maximum rotation speed of R88M-series Servomotors has increased to 6,000 r/min, resulting in high-speed positioning that can reduce tact time. *Applicable to 100 V/200 V models with 750 W or less.

1.2 times faster than previous OMRON models

6,000r/min

(N·m)

— G5 Series
— G Series

4.0

2.0

0

1,000 2,000 3,000 4,000 5,000 6,000 (r/min)

Best Positioning Accuracy

Featuring a 20-bit high-resolution incremental encoder
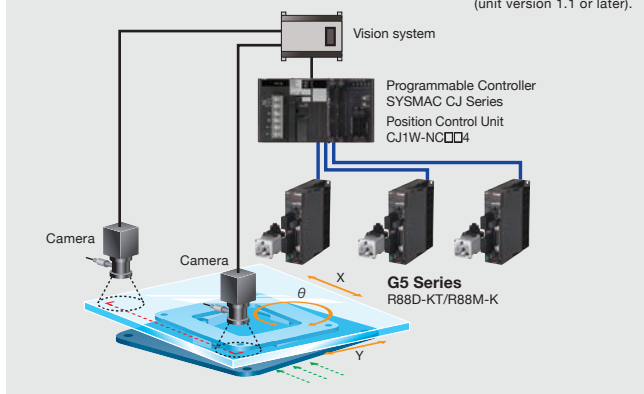
High-precision positioning can be achieved with the built-in encoder, 8 times the resolution of previous OMRON models at 20 bits.

8 times the resolution of previous OMRON models

20bit

38nm

4.8nm

20-bit resolution*

Previous OMRON models: 17 bits
G Series

*For incremental Servomotors.
*Absolute Servomotors have 17-bit resolution.
*5 mm ball screw with one motor rotation (no decelerator).

Example of High-speed/High-precision Application

· High-Speed and, High-Precision Position Control Using Camera Compensation
· The pulse output startup time of 0.1 ms enables High-Speed camera compensation.

Note: Using a CJ2 CPU Unit (unit version 1.1 or later).

Vision system

Programmable Controller
SYSMAC CJ Series
Position Control Unit
CJ1W-NC□□4

Camera

Camera

θ

X

Y

G5 Series
R88D-KT/R88M-K

High-precision Positioning

Fully Closed Loop Control Is a Standard Feature

High-precision and high-response positioning can be realized without being affected by temperature changes by determining the position using direct feedback of the control position from the external scale, to enable using fully closed loop control without options.
(The external scale connector terminal is a standard feature.)

External scale signal Head

External scale connector

Encoder signal

Table

Servomotor

h Accuracy
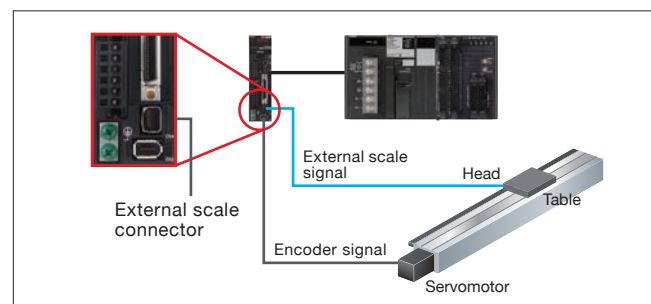
Safety Motion Control That Provides Safety and Reliability

High-speed and High-precision Positioning
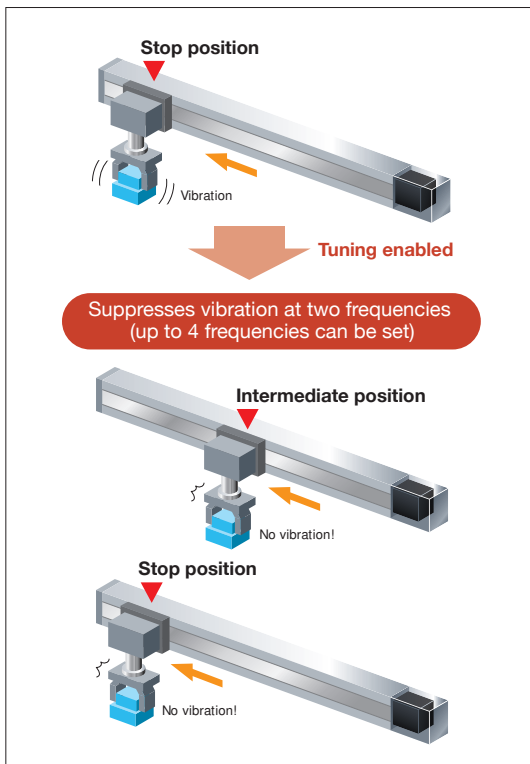
Pulse input response frequency: 4 Mpps

The Servo Drive response to command pulses is 4 Mpps, twice that of previous OMRON models. Response delays are thus reduced enabling high-speed and high-precision positioning.

2 times faster than previous OMRON models

4Mpps

Previous OMRON models

G
▼
G5

2Mpps

4Mpps

Faster by this amount
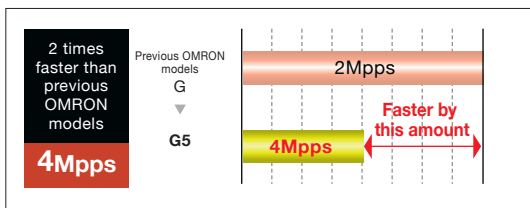
Ideal for Applications That Require High Accuracy
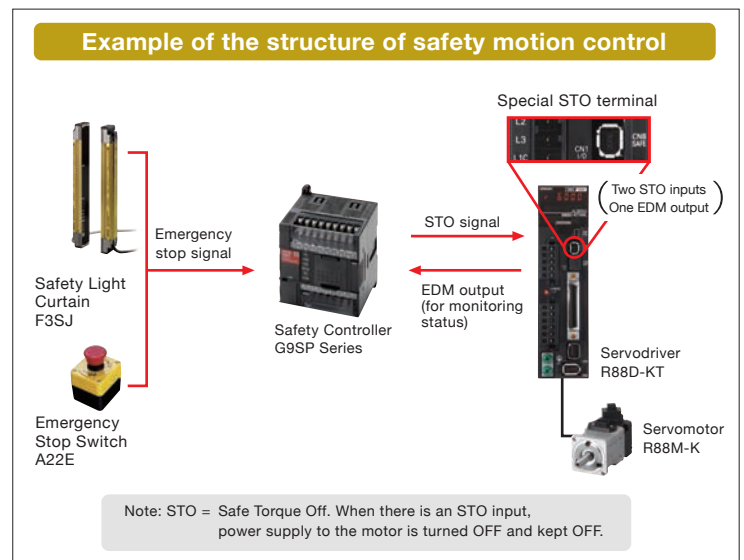
Improved vibration control function

With the vibration control function, if the tip of the device is vibrating, the vibration frequency can be set to remove the vibration. It can also be used to suppress vibration resulting from starting and stopping the device, allowing precise movement.

Stop position

Vibration

Tuning enabled

Suppresses vibration at two frequencies (up to 4 frequencies can be set)

Intermediate position

No vibration!

Stop position

No vibration!

Conforms to the Latest International Standards
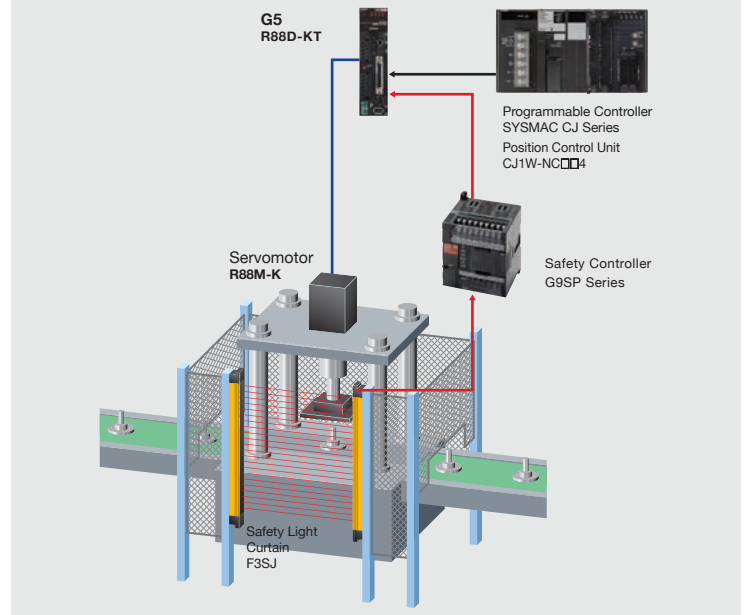
Safety and Productivity

The G5 was the first to acquire international standard IEC 61800-5-2 (STO) for motion control in the industry within Japan. It also conforms to the European Directives ISO 13849-1(PLc,d) ∗ and EN 61508 (SIL2). Safety control circuits can be constructed with the Servo Drive, delivering both safety and productivity.

Example of the structure of safety motion control

Special STO terminal

Two STO inputs
One EDM output

Emergency stop signal

STO signal

Safety Light Curtain F3SJ

Safety Controller G9SP Series

EDM output (for monitoring status)

Servodriver R88D-KT

Emergency Stop Switch A22E

Servomotor R88M-K

Note: STO = Safe Torque Off. When there is an STO input, power supply to the motor is turned OFF and kept OFF.

∗ Refer to General Specification of Servo Drive for the compliance of international standards.

Safety Motion Application Example

・ Safety interlocks can be controlled by combining a Safety Light Curtain and Safety Motion Control.

G5 R88D-KT

Programmable Controller SYSMAC CJ Series
Position Control Unit CJ1W-NC□□4

Servomotor **R88M-K**

Safety Controller G9SP Series

Safety Light Curtain F3SJ

Easy Adjustment and Reduce works to

Complete Support from Setup to Maintenance

Software

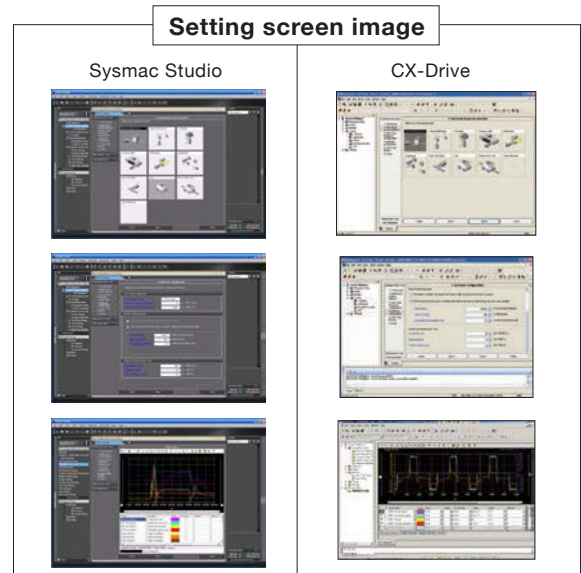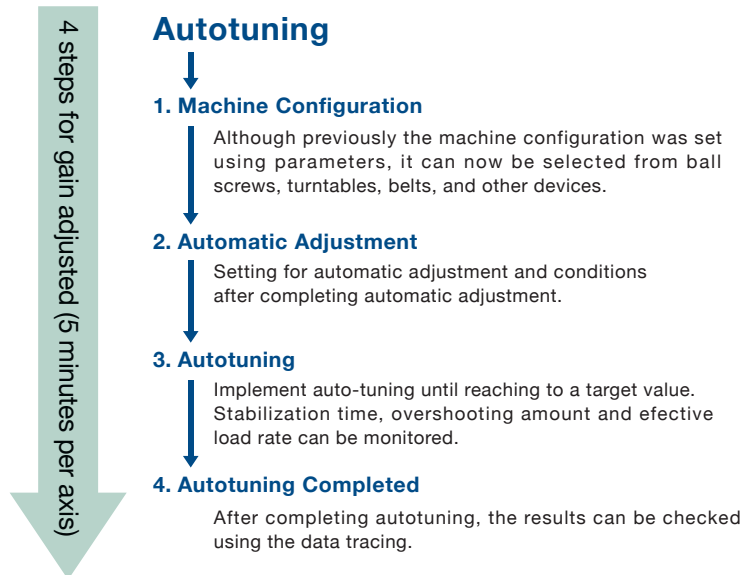**How to Select Required Support Software for Your Controller**

The required Support Software depends on the Controller to connect. Please check the following table when purchasing the Support Software.

| Item	Omron Machine Automation Controller System	Omron PLC System
Controller	NJ-series	CS, CJ, CP, and other series
AC Servomotor/Drives	G5-series • EtherCAT Communications (Unit version 2.1 or later reccomended) • EtherCAT Communications Linear Motor	G5-series • EtherCAT Communications • EtherCAT Communications Linear Motor • General-purpose input type(PulseTrain or Analog inputs) • MECHATROLINK-II Communications
Software	**Automation Software Sysmac Studio** The Sysmac Studio provides an integrated development environment to set up, program, debug, and maintain NJ-series Controllers and other Machine Automation Controllers, as well as EtherCAT slaves. Setting, adjustment, monitoring/tracing with the Servo Drive can be done via an EtherCAT network. <Connecting method with the Servo Drive> - Connection via the NJ	**FA Integrated Tool Package CX-One** The CX-Drive software allows you to set, transfer, and compare Servo Drive parameters, to perform trial operation and adjustments,and to monitor and trace operation. CX-Drive is bundled in CX-One. <Connecting method with the Servo Drive> - Direct connection with the Servo Drive. - Connection via a PLC (possible with the Servo Drive with built-in EtherCAT communications function)

Simple Gain Adjustment

Quickly adjust the gain using a wizard.

The autotuning feature provided with the CX-Drive makes it easy to adjust the Servo Drive gain. You can use a wizard to complete gain adjustment in approximately five minutes or less per axis simply by selecting the machine configuration and entering the target set time.

4 steps for gain adjusted (5 minutes per axis)

Autotuning

1. Machine Configuration

Although previously the machine configuration was set using parameters, it can now be selected from ball screws, turntables, belts, and other devices.

2. Automatic Adjustment

Setting for automatic adjustment and conditions after completing automatic adjustment.

3. Autotuning

Implement auto-tuning until reaching to a target value. Stabilization time, overshooting amount and efective load rate can be monitored.

4. Autotuning Completed

After completing autotuning, the results can be checked using the data tracing.

Setting screen image

Sysmac Studio   CX-Drive

Editing Parameters

• Operation is as easy as with a digital operator.
• Easily set parameters for Inverters and Servo Drives.

Sysmac Studio   CX-Drive
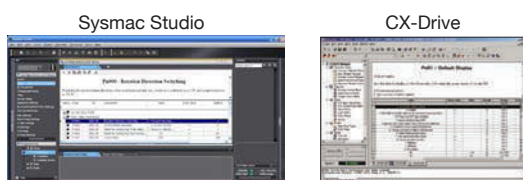
Simple FFT

• Device frequency characteristics can be easily measured to analyze resonant frequencies.
• Use notch filters for resonance frequencies to improve response.

Sysmac Studio   CX-Drive
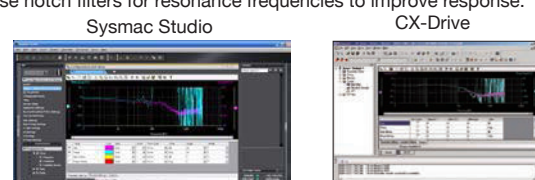
System Start-up

Automatic damping control setting

Settings for damping control for the axis at the tip of the machine in a short time

Automatic damping control setting function is useful to execute damping control for Servo Drives. Manual settings will not be necessary. JOG operation, measuring vibration and parameter settings can be made on one screen.

2 steps for damping filter settings (5 minutes per axis).

Starting automatic damping control setting

1. Measuring machine vibration

Automatically measures vibration frequency by starting JOG operation from the software or operation executed by the Controller.

2. Damping filter setting

Apply the damping filter 1 to 4 for the measured vibration frequency. Vibration can be suppressed by setting the filters.

Damping control filter setting completed

Setting screen image	
Sysmac Studio	CX-Drive

Sysmac Studio
- Starting automatic setting function
- JOG operation
- Measuring vibration/ Settings

CX-Drive
- Starting automatic setting function
- JOG operation
- Measuring vibration/ Settings

Machine Automation Controller NJ-series and AC Servomotor/Drives G5-series with built-in EtherCAT Communications

Sysmac Studio Version 1.0

Tool

Machine Automation Controller NJ Series

EtherCAT

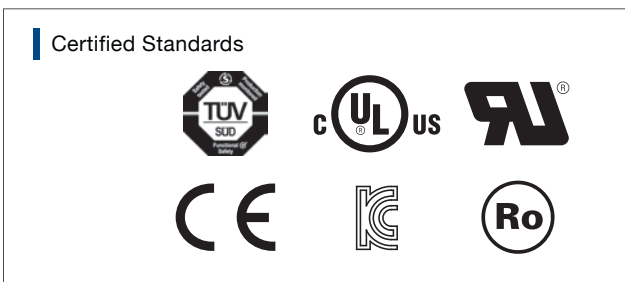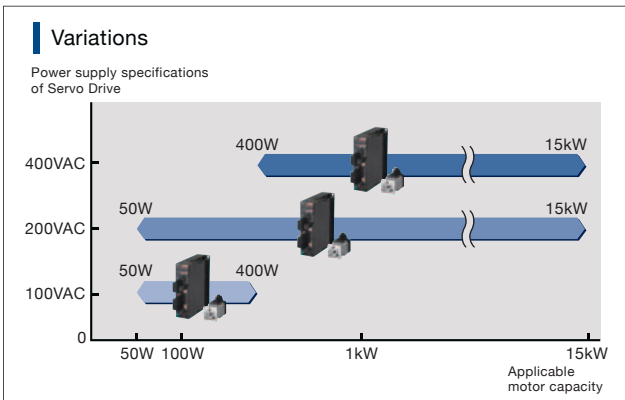G5 Series Servo Drives with built-in EtherCAT communications
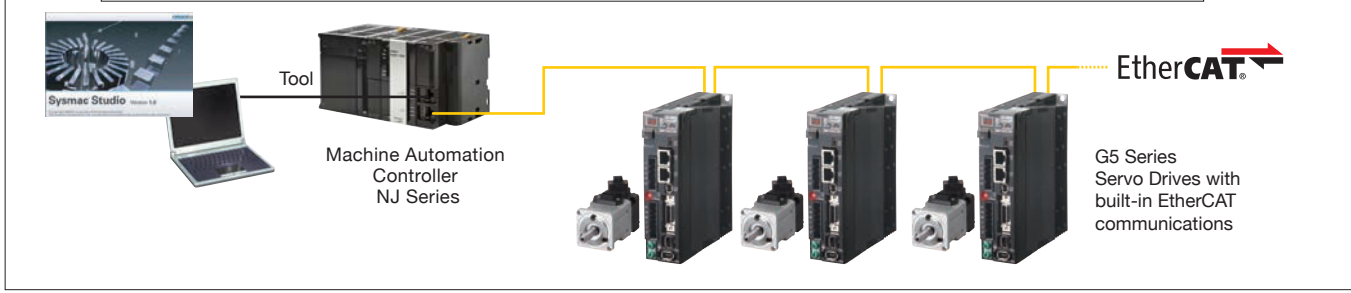
Easy Adjustment and Reduce works to System Start-up

Globalization

Lineup of 400VAC Servomotors

Servomotors are available for 100VAC, 200VAC, and 400VAC. And they conform to international safety standards for easy application anywhere worldwide.

Variations

Power supply specifications of Servo Drive

	400W	15kW
400VAC		
	50W	15kW
200VAC		
	50W	400W
100VAC		

0 — 50W 100W — 1kW — 15kW
Applicable motor capacity

Certified Standards

Reduced Work with Increased Monitor Functions

Monitoring for preventive maintenance have been improved.

Example of easier operation with improved monitoring.

Monitoring the Total Run Time When the Main Circuit Is ON

Total Run Time Monitor

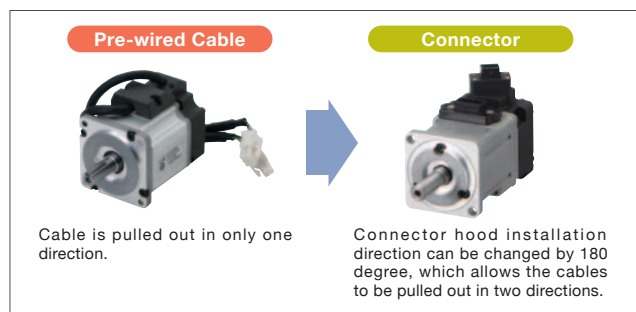Monitoring the Causes of why the servo motor does not rotate*

A function has been provided that monitors the causes of why the Servo motor does not move even though a rotation command has been sent.

∗ Supported by the Servo Drive Analog/Pulse train type only.

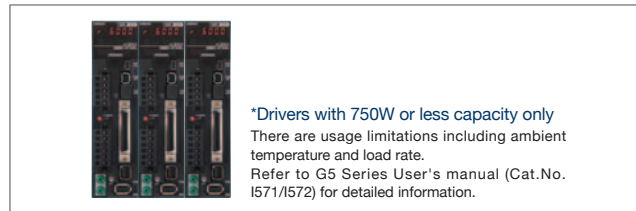## Flexible cable pull-out direction

Direct conenctors for power cable, encoder cable, and brake cable connection.

In case that user creates motor cables, cable pull-out direction can be changed by 180 degree. (Refer to G5 Series User's manual（Cat,No. I571/I572）for the information about applicable motor capacity and connection method).
If you use cables provided by Omron, cable pull-out direction is limited to only one direction.

Pre-wired Cable	Connector
Cable is pulled out in only one direction.	Connector hood installation direction can be changed by 180 degree, which allows the cables to be pulled out in two directions.

Side by side installation to save space

Possible to install multiple drivers side by side.

*Drivers with 750W or less capacity only
There are usage limitations including ambient temperature and load rate.
Refer to G5 Series User's manual (Cat.No. I571/I572) for detailed information.

Servomotors Conform to IP67

(Excluding through-shaft parts, connector pins of Servomotor Connector and connector pins of Encoder Connector)

The power cable and encoder cable also conform to IP67

*Applicable to 3 to 20m cables of 100V/200V models with 750W or less.

The Servomotor provides IP67 protection, enhancing resistance to the environment.

Reduced Stabilization Time by Suppressing Vibration

60% cogging torque reduction
(compared to previous G models)

Motor torque variation is reduced due to a 60% reduction in the cogging torque, resulting in high-precision positioning. This enables smooth operation at low speeds.

Lineup of Linear Motors to Achieve Higher Speed and Higher Precision

Inherited functions and performance of G5 series with EtherCAT communications

EtherCAT

Linear motors joined the lineup and the following functions of G5 series achieve higher speed and higher precision.
* High-speed communication via EtherCAT communications at 100 Mbps
* Autotuning for simple adjustment
* Useful damping control function to improve device quality
* Safety function STO (Safe Torque Off)

Tool

EtherCAT

Machine Automation Controller NJ Series

G5 Series Linear Motor with built-in EtherCAT communications

Selectable motors suitable for device

Iron-core motor type and ironless motor type

You can choose between compact and high-thrust iron-core motor type and cogging-free ironless motor type with excellent speed stability

Lineup of Coil Unit

		[N]0	500	1000	1500	2000	2500
Iron-core motor type	Continuous force	48 to 760 N					
	Momentary maximum force		105 to 2000 N				
Ironless motor type	Continuous force	26.5 to 348 N					
	Momentary maximum force		96 to 1730 N				

Power supply voltage sharing iron-core motor

Using the same Iron-core motor for 200VAC/400VAC

Iron-core motor type   The same motor can be used for 200VAC and 400VAC. The same maintenance parts for motors can be used regardless of device and user.

200VAC

Common use

400VAC

Common use

Common Motor

Reduced tact time with higher speed

Higher speed by direct drive

Significantly higher speed than ball screws contributes to make G5 series suitable for faster device application and reduce tact time. Maximum speed 16 m/s*
* This value is for R88L-EC-GW0309 200VAC motor. It is limited by power supply voltage, model, linear guide, linear scale, and load.

High-precision positioning

Available with various linear scales

High-precision and high-speed positioning Maximum speed at 0.01 μm of scale resolution for serial communications: 4 m/s*
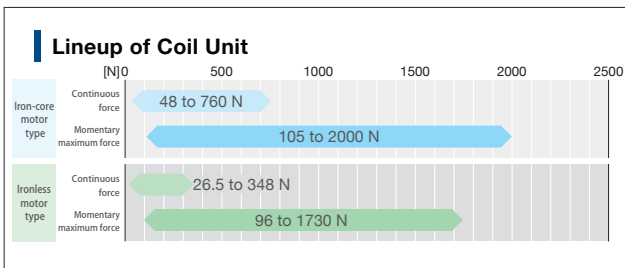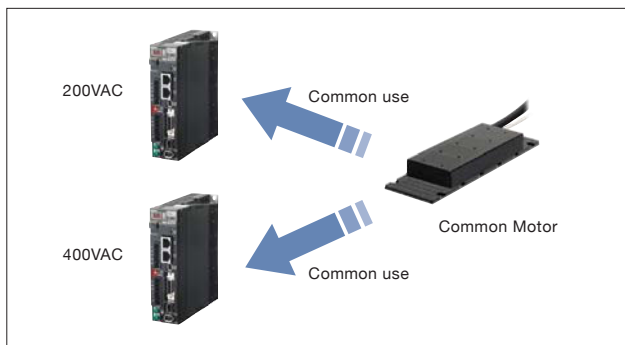* This value is for Servo Drive. It is limited by the scale specifications.
Available linear scale
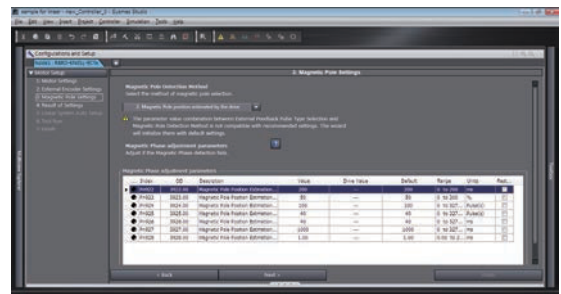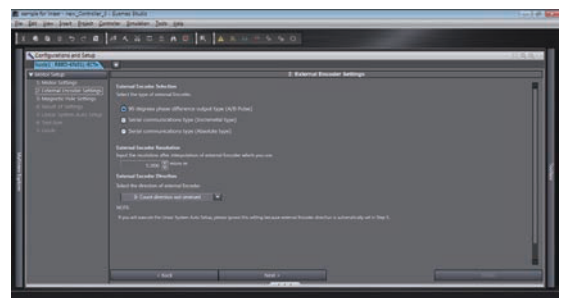Serial communications (incremental/absolute), phase A/B/Z pulse type

Quick setup

Automatic setup

Automatic setup for motor parameters by selecting the motor. A wizard helps set the scale direction, magnetic pole, or current gain automatically.

<Sysmac Studio> Setting screen image

The optimum combination can be found from a v model variations to handle various applications.

● Servo Drive Variations

		G5 Series			
		EtherCAT Compatible Servo Drives	EtherCAT Compatible Servo Drives Linear Motor Type	Servo Drives Pulse/analog inputs	MECHATROLINK-II Compatible Servo Drives
		R88D-KN□-ECT	R88D-KN□-ECT-L	R88D-KT	R88D-KN□-ML2

Power supply

	EtherCAT (ECT)	ECT-L	Pulse/analog (KT)	ML2
100VAC	Single-phase	Single-phase	Single-phase	Single-phase
200VAC	Single/Three-phase — Three-phase	Single/Three-phase — Three-phase	Single/Three-phase — Three-phase	Single/Three-phase — Three-phase
400VAC	Three-phase	Three-phase	Three-phase	Three-phase

Motor Capacity/Force

		ECT	ECT-L	KT	ML2
100VAC		50 W, 100 W, 200 W, 400 W	26.5 N, 48 N, 53 N, 58 N, 96 N, 117 N, 160 N, 175 N, 232 N	50 W, 100 W, 200 W, 400 W	50 W, 100 W, 200 W, 400 W
200VAC	Single-phase	—	26.5 N, 48 N, 53 N	—	—
	Single/Three-phase	50 W, 100 W, 200 W, 400 W, 750 W, 900 W, 1 kW, 1.5 kW	58 N, 80 N, 96 N, 117 N, 160 N, 175 N	50 W, 100 W, 200 W, 400 W, 750 W, 900 W, 1 kW, 1.5 kW	50 W, 100 W, 200 W, 400 W, 750 W, 900 W, 1 kW, 1.5 kW
	Three-phase	2 kW, 3 kW, 4 kW, 4.5 kW, 5 kW, 6 kW, 7.5 kW, 11 kW, 15 kW	232 N, 240 N, 320 N, 348 N, 608 N, 760 N	2 kW, 3 kW, 4 kW, 4.5 kW, 5 kW, 6 kW, 7.5 kW, 11 kW, 15 kW	2 kW, 3 kW, 4 kW, 5 kW
400VAC	Three-phase	400 W, 600 W, 750 W, 900 W, 1 kW, 1.5 kW; 2 kW, 3 kW, 4 kW, 4.5 kW, 5 kW, 6 kW, 7.5 kW, 11 kW, 15 kW	48 N, 96 N, 160 N, 240 N, 320 N, 608 N, 760 N	400 W, 600 W, 750 W, 900 W, 1 kW, 1.5 kW; 2 kW, 3 kW, 4 kW, 4.5 kW, 5 kW, 6 kW, 7.5 kW, 11 kW, 15 kW	400 W, 600 W, 750 W, 900 W, 1 kW; 1.5 kW, 2 kW, 3 kW, 4 kW, 5 kW

Interface

	ECT	ECT-L	KT	ML2
Command type	ECT	ECT	Pulse train / Analog	ML2

Control modes

	ECT	ECT-L	KT	ML2
Control modes	Position control / Speed control / Torque control	Position control / Speed control / Torque control	Position control / Speed control / Torque control	Position control / Speed control / Torque control
Control mode switching	Mode switching	Mode switching	Mode switching	Mode switching

Tuning functions

	ECT	ECT-L	KT	ML2
Vibration control	Vibration control *1	Vibration control *1	Vibration control *1	Vibration control *1
Autotuning	AUTO 32	AUTO 32	AUTO 32	AUTO 32
Realtime autotuning	Adaptive filter *2	Adaptive filter *2	Adaptive filter *2	Adaptive filter *2

Safety

	ECT	ECT-L	KT	ML2
Conforms to international safety standards	Safety	Safety	Safety	Safety

Servo Drive functions

	ECT	ECT-L	KT	ML2
Fully closed	Fully closed	Fully closed	Fully closed	Fully closed
Torque limits	Torque limit *1	Torque limit *1	Torque limit *1	Torque limit *1
Encoder output	ABS / INC 20	—	ABS / INC 20	ABS / INC 20
Internal set speeds	—	—	8 speeds	—

◎ Refer to Ordering Information for details on combining Drives and Servomotors. *1. Two limits. *2. Two adaptive filters and two notch filters.

● Functions

ECT: EtherCAT high-speed Servo communications motion network.

Position control: Control is applied to move to the target position and then stop at the target position.

Vibration control function: Vibration is suppressed by automatically setting a filter for the vibration frequency.

Adaptive filter: The machine load inertia is calculated in realtime and the result is used to automatically set the optimum gain.

Internal set speeds: Speed control according to the internal set speed that is set for the parameter. Up to 8 internal set speeds can be selected.

Pulse train: The speed and travel distance are input to the Servo as pulse trains.

Speed control: Control is applied to change the linear or rotational speed. For example, speed control is used for applications such as turning grindstones, controlling welding speeds, and controlling feeding speeds.

Autotuning: This function automatically sets an appropriate gain based on the rigidity setting of the machine load; 32 levels of rigidity settings are possible.

Safety function: Conforms to IEC 61800-5-2 (STO), EN ISO 13849-1: 2008 (PLc,d), ISO13849-1: 2006(PLc,d) and EN 61508 (SIL2).

Analog: The speed and torque are input to the Servo as analog signals.

Torque control: Control is applied to adjust the rotational force. Torque control is suitable for applications such as parts insertion, pressing, and screw tightening.

Absolute output: When the Controller power supply is turned ON, the Controller reads the Servo absolute position data to restore the absolute position.

Fully closed (fully closed loop control): Positioning using direct feedback of the current position from the external scale.

ML2: MECHATROLINK-II high-speed Servo communications motion network. (See note.)

Command control mode switching: Switching is possible between any two of the three control modes: position control, speed control, and torque control.

Incremental output: When the controller power supply is turned ON, operation is always started from the origin. A 20-bit resolution is provided on models with incremental outputs.

Torque limit: Switching is possible between the first torque limit and the second torque limit to limit the Servomotor output torque.

ariety of functions and

● Motor Variations

G5 Series AC Servomotor

Servomotors with EtherCAT Compatible, General-purpose inputs and MECHATROLINK-II Compatible Servomotors

R88M-K

Motor type	Cylinder type					
Rated speed	1000r/min		2000r/min		3000r/min	
50W					ABS/INC	INC 20
100W					ABS/INC	INC 20
200W					ABS/INC	INC 20
400W			ABS/INC	INC 20	ABS/INC	INC 20
600W			ABS/INC	INC 20		
750W					ABS/INC	INC 20
900W	ABS/INC	INC 20				
1kW			ABS/INC	INC 20	ABS/INC	INC 20
1.5kW			ABS/INC	INC 20	ABS/INC	INC 20
2kW	ABS/INC	INC 20	ABS/INC	INC 20	ABS/INC	INC 20
3kW	ABS/INC	INC 20	ABS/INC	INC 20	ABS/INC	INC 20
4kW			ABS/INC	INC 20	ABS/INC	INC 20
4.5kW	ABS/INC					
5kW			ABS/INC	INC 20	ABS/INC	INC 20
6kW	ABS/INC					
7.5kW			ABS/INC *			
11kW			ABS/INC *			
15kW			ABS/INC *			

(Servomotor capacity)

* The rated speed is 1,500 r/min

G5 Series Linear Motor

Servomotors with EtherCAT Compatible Linear motor Type

R88L-EC-FW-□   R88L-EC-GW-□

Motor type	Iron-core	Ironless
26.5N		Iron less
48N	Iron core	
53N		Iron less
58N		Iron less
80N		Iron less
96N	Iron core	
117N		Iron less
160N	Iron core	
175N		Iron less
232N		Iron less
240N	Iron core	
320N	Iron core	
348N		Iron less
608N	Iron core	
760N	Iron core	

(Lenear Motor Force)

● Functions

ABS/INC absolute/Incremental output: The Servomotor can be switched between an absolute output and an Incremental output. When an absolute output is selected and the Controller power supply is turned ON, the Controller reads the Servo absolute position data to restore the absolute position. A-17bit resolution is provided on model with an absolute output and an incremental output.

INC 20 Incremental output: When the controller power supply is turned ON, operation is always started from the origin. A 20-bit resolution is provided on models with incremental outputs.

Iron-core: Coil units consist of cores and coils. Compact and high-thrust type.

Ironless: Coil units do not include a core. Cogging-free type with excellent speed stability.

R88M-K/R88D-KN□-ECT

System Configuration

Controllers

Machine Automation Controller
NJ Series

Automation Software

● Sysmac Studio

Programmable Controller
CJ2/CJ1

+

Position Control Unit with
EtherCAT interface
CJ1W-NC□81/NC□82

EtherCAT Cables

Use a category 5 or higher cable
with double, aluminium tape and
braided shielding.

Support Software

● CX-One FA Integrated
Tool Package
(Including CX-Programmer)

Support Software

● CX-One FA Integrated
Tool Package
(Including CX-Drive)

OMRON

High-Speed and High-Precision G5 Series EtherCAT Communications with the Controller

- High-accuracy positioning with fully-closed control.
- Servo Drives for 400VAC globally widens applicable systems and environment, including large-scale equipment.
- Safe design and Safe Torque Off (STO) function.
- Vibration can be suppressed in acceleration/deceleration even in low-rigidity mechanical systems.

TÜV SÜD   c(UL)us LISTED   c**RU**us   CE   IC

Ro

Servo Drive

EtherCAT Communications

USB Communications

- **G5 Series Drives with Built-in EtherCAT Communications R88D-KN☐☐-ECT**

I/O signals

Power Cables

- Non-Flexible Cables
  - Without Brake
    R88A-CA☐☐☐☐S
  - With Brake
    R88A-CA☐☐☐☐B
- Flexible Cables
  - Without Brake
    R88A-CA☐☐☐☐SR
  - With Brake
    R88A-CA☐☐☐☐BR

Brake Cables (50 to 750 W or less)

- Non-Flexible Cables
  R88A-CAKA☐☐☐B
- Flexible Cables
  R88A-CAKA☐☐☐BR

Motor power signals

Feedback Signals

Encoder Cables

- Non-Flexible Cables
  - 750W or less
    R88A-CRK☐☐☐☐C
  - 1.0kW or more
    R88A-CRKC☐☐☐N
- Flexible Cables
  - 750W or less
    R88A-CRK☐☐☐☐CR
  - 1.0kW or more
    R88A-CRK☐☐☐NR

Connector-Terminal Block Conversion Units and Cable

- **Connector-Terminal Block Conversion Unit XW2☐-20G☐**

- **Cable XW2Z-☐☐☐J-B34**

AC Servomotors

- **G5 Series motor R88M-K**

  3000r/min
  2000r/min
  1500r/min
  1000r/min

INC   ABS INC

Peripheral Devices

External scale

- Reactors
  3G3AX-DL
  3G3AX-AL
- External Regeneration Resistors
  R88A-RR

Absolute Encoder Battery Cable

R88A-CRGD0R3C (-BS)

(One Battery is included with model numbers ending in "BS")

Note: Not required if a battery is connected to the control connector (CN1).

Decelerators

R88L-EC/R88D-KN□-ECT-L

System Configuration

Controllers

Machine Automation Controller
NJ Series

Automation Software

● Sysmac Studio

EtherCAT Cables

Use a category 5 or higher cable with double, aluminium tape and braided shielding.

Programmable Controller
CJ2/CJ1

+

Position Control Unit with EtherCAT interface
CJ1W-NC□81/NC□82

Support Software

● CX-One FA Integrated
Tool Package
(Including CX-Programmer)

Support Software

● CX-One FA Integrated
Tool Package
(Including CX-Drive)

OMRON

Linear Motor for Higher-speed and Higher-precision

- Inherited functions and performance of G5 series and EtherCAT communications achieve high-speed and high-precision positioning.
- Lineup of compact and high-thrust iron-core motor type and cogging-free ironless motor type with excellent speed stability.
- Same Iron-core motor type for 200V AC and 400V AC.
- Quick setup by automatic setup function.

Servo Drive		Connector-Terminal Block Conversion Units and Cable

Connector-Terminal Block Conversion Units and Cable

- Connector-Terminal Block Conversion Unit **XW2☐-20G☐**

- Cable **XW2Z-☐☐☐J-B34**

I/O signals

EtherCAT Communications

- G5 Series Drives with Built-in EtherCAT Communications Linear Motor type **R88D-KN☐☐-ECT-L**

Motor power signals

Power Cables

- Power Cable
  Supplied by the user.

Linear Moter

- Iron-core Type

  Motor Coil Unit : R88L-EC-FW-☐
  Magnet Trac : R88L-EC-FM-☐

- Ironless Type

  Motor Coil Unit : R88L-EC-GW-☐
  Magnet Trac : R88L-EC-GM-☐

USB Communications

Feedback Signals

External encoder

- Commercial Product
  Supplied by the user.

External encoder Cables

- Serial Communications Cable **R88A-CRKE010SR**

- 90° Phase Difference Input Cable
  Supplied by the user

Peripheral Devices

- Reactors
  3G3AX-DL
  3G3AX-AL
- External Regeneration Resistors
  R88A-RR

R88M-K/R88D-KT

System Configuration

Controller

Pulse Train Commands

Position Control Unit

High-speed type

Programmable Controller CJ2

Position Control Unit (NC)
CJ1W-NC214/414
CJ1W-NC234/434 **ABS**

Standard type

Programmable Controller CJ1/CS1

Position Control Unit (NC)
CJ1W-NC□□3 CS1W-NC□□3
C200HW-NC□□3

Pulse I/O Module

Programmable Controller CJ2

Pulse I/O Module
CJ2M-MD21□ *

*CJ2M CPU Unit Ver.2.0 or later

CPU Unit

Built-in pulse I/O function type

CP1H/CP1L/CP1E

Flexible Motion Controller

FQM1-MMA22
(Analog output)
FQM1-MMP22
(Pulse train output) **ABS**

Programmable Controller + Controller (Analog output type)

Analog Commands

Programmable Controller CS1

Motion Control Unit (MC)
CS1W-MC221/421 (-V1) **ABS**

ABS Available to build the Absolute System.

Support Software
● CX-One FA Integrated Tool Package (Including CX-Programmer and CX-Position and CX-Motion)

Support Software
● CX-One FA Integrated Tool Package (Including CX-Drive)

Direct connection cable for CJ1W-NC□□4
XW2Z-□□□J-G□

Pulse Train Commands/Feedback Signals

Position Control Unit Cable
XW2Z-□X

Connector Terminal Block Conversion Unit
XW2□-20G□

External Signal

Position Control Unit Cable (NC)
XW2Z-□-A□

Servo Relay Unit
XW2B-□

Servo Drive Cable
XW2Z-□-B□

External Signal

Connector-Terminal Block Conversion Units and Cable
XW2□-50G□   XW2Z-□□□J-B24

Pulse Train Commands

Position Control Unit Cable (NC)
XW2Z-□-A□

Servo Relay Units (for FQM1)
XW2B-80J7-12A

Servo Drive Cable
XW2Z-□-B□

Control Cables (for Motion Control Unit)
R88A-CPG

Analog Commands/Feedback Signals

OMRON

The Preeminent Servo That Revolutionizes Motion Controll

- Industry Top-class Tracking Performance.
  Speed Response Frequency of 2 kHz.
- Best Positioning Accuracy*.
  Featuring a 20-bit high-resolution incremental encoder.
  ✳ 8 times the resolution of previous OMRON models
- High-precision Positioning.
  Fully Closed Loop Control Is a Standard Feature.
- Conforms to the Latest International Standards.
  Safety and Productivity.
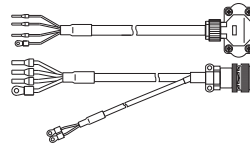- Globalization. Lineup of 400 VAC Servomotors.

USB communications	**Servo Drive**	**AC Servomotors**

Motor power signals

Power Cables

- Non-flexible Cables
  · Without Brake
    R88A-CA□□□□□S
  · With Brake
    R88A-CA□□□□□B
- Flexible Cables
  · Without Brake
    R88A-CA□□□□□SR
  · With Brake
    R88A-CA□□□□□BR

Brake Cables (50 to 750 W or less)

- Non-flexible Cables
  R88A-CAKA□□□B
- Flexible Cables
  R88A-CAKA□□□BR

Feedback Signals

Encoder Cables

- Non-Flexible Cables
  · 750W or less
    R88A-CRK□□□□C
  · 1.0kW or more
    R88A-CRKC□□□N
- Flexible Cables
  · 750W or less
    R88A-CRK□□□□CR
  · 1.0kW or more
    R88A-CRK□□□NR

- G5 Series driver
  R88D-KT

  100 VAC
  200 VAC
  400 VAC

- G5 Series motor
  R88M-K

  3,000 r/min
  2,000 r/min
  1,500 r/min
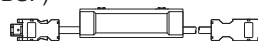 1,000 r/min

INC	ABS INC

Peripheral Devices

External scale

- Reactors
  3G3AX-DL
  3G3AX-AL
- External Regeneration Resistors
  R88A-RR

Absolute Encoder Battery Cable

R88A-CRGD0R3C (-BS)

(One Battery is included with Servo Drivers with model numbers ending in "BS.")

* Not required if a battery is connected to the control connector (CN1).

Decelerators

R88M-K/R88D-KN☐-ML2

System Configuration

Controllers (MECHATROLINK-II type)
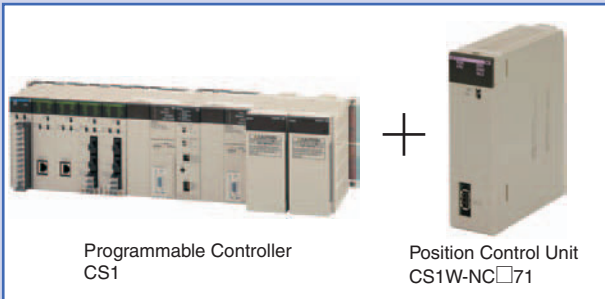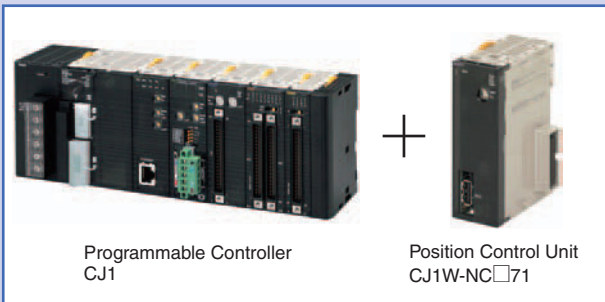
Support Software
- CX-One FA Integrated Tool Package (Including CX-Programmer and CX-Position and CX-Motion)

Support Software
- CX-One FA Integrated Tool Package (Including CX-Drive)

Programmable Controller
CJ1

Position Control Unit
CJ1W-NC☐71

MECHATROLINK-II

Programmable Controller
CS1

Position Control Unit
CS1W-NC☐71

MECHATROLINK-II Cables

(With ring core and USB connector on both ends)
FNY-W6003-☐☐ (OMRON model number)

(Without ring core USB connector on both ends)
FNY-W6002-☐☐ (OMRON model number)

MECHATROLINK-II Repeater

		Maximum transmission distance	
		0 to 30 m	30 to 50 m
Number of connected devices	1 to 15	Repeater not required.	Repeater not required.
	16	Repeater not required.	Repeater required.

OMRON

High-Speed and High-Precision G5 Series MECHATROLINK-II Communications with the Controller

- Data transfer using MECHATROLINK-II Communications:
  All control data that can be interfaced between the Servo Driver and the Controller is transmitted using data communications. This enables maximizing the Servomotor performance without restricting the transmission performance of the control signals.
- Having a communications module built into the Servo Driver significantly saves space in the control panel.

USB communications

Servo Drive

- **G5 Series driver R88D-KN□□-ML2**

External scale

Peripheral Devices
- Reactors
  3G3AX-DL
  3G3AX-AL
- External Regeneration Resistors
  R88A-RR

I/O signals

Power Cables
- Non-flexible Cables
  ・Without Brake
    R88A-CA□□□□S
  ・With Brake
    R88A-CA□□□□B
- Flexible Cables
  ・Without Brake
    R88A-CA□□□□SR
  ・With Brake
    R88A-CA□□□□BR

Brake Cables (50 to 750 W or less)
- Non-flexible Cables
  R88A-CAKA□□□B
- Flexible Cables
  R88A-CAKA□□□BR

Motor power signals

Feedback Signals

Encoder Cables
- Non-Flexible Cables
  ・750W or less
    R88A-CRK□□□□C
  ・1.0kW or more
    R88A-CRKC□□□N
- Flexible Cables
  ・750W or less
    R88A-CRK□□□□CR
  ・1.0kW or more
    R88A-CRK□□□NR

Absolute Encoder Battery Cable
R88A-CRGD0R3C (-BS)
(One Battery is included with Servo Drivers with model numbers ending in "BS.")

* Not required if a battery is connected to the control connector (CN1).

Connector-Terminal Block Conversion Units and Cable
- **Connector-Terminal Block Conversion Unit XW2□-20G□**
- **Cable XW2Z-□□□J-B34**

AC Servomotors
- **G5 Series motor R88M-K**

  3000r/min
  2000r/min
  1000r/min

INC | ABS INC

Decelerators

MEMO

OMRON

Ordering Information

Product name
AC Servomotors / Linear Motors / Servo Drives
G5-series

As a Sysmac Device, the G5-series AC Servomotor/Servo Drive with Built-in EtherCAT Communications
is designed to provide optimal functionality and enhanced operability when used in conjunction with a
Machine Automation Controller such as NJ series and the automation software Sysmac Studio.
Sysmac Device is a generic term for OMRON control devices such as an EtherCAT Slave, designed with
unified communications specifications and user interface specifications.

When connecting a Servo Drive to the NJ5 series Machine Automation Controller, it is recommended that
you use the Servo Drive with Built-in EtherCAT Communications, R88D-KN□□-ECT, with unit version
2.1 or later.

Interpreting Model Numbers

AC Servo Drive Rotary Motor Type Model Numbers

R88D-K N 01 H -ECT
(1) (2) (3) (4) (5)

No	Item	Symbol	Specifications
(1)	G5-series Servo Drive		
(2)	Drive Type	T	Analog input/Pulse train input type
		N	Communication type
(3)	Maximum Applicable Servomotor Capacity	A5	50 W
		01	100 W
		02	200 W
		04	400 W
		06	600 W
		08	750 W
		10	1 kW
		15	1.5 kW
		20	2 kW
		30	3 kW
		40	4 kW
		50	5 kW
		75	7.5 kW
		150	15 kW
(4)	Power Supply Voltage	L	100 VAC
		H	200 VAC
		F	400 VAC
(5)	Network type	Blank	General-purpose Inputs
		-ML2	MECHATROLINK-II Communications
		-ECT	EtherCAT Communications

AC Servo Drive Linear Motor Type Model Numbers

R88D-K N 01 H -ECT -L
(1) (2) (3) (4) (5) (6)

No	Item	Symbol	Specifications
(1)	G5-series Servo Drive		
(2)	Drive Type	N	Communication type
(3)	Maximum Applicable Linear Motor Capacity	01	100 W
		02	200 W
		04	400 W
		06	600 W
		08	750 W
		10	1 kW
		15	1.5 kW
		20	2 kW
		30	3 kW
(4)	Power Supply Voltage	L	100 VAC
		H	200 VAC
		F	400 VAC
(5)	Network type	-ECT	EtherCAT Communications
(6)	Motor type	-L	Linear Motor

AC Servomotor Model Numbers

R88M-K ☐ 750 30 H -BO S2
(1) (2) (3) (4) (5) (6)

No	Item	Symbol	Specifications
(1)	G5-series Servomotor		
(2)	Motor Type	Blank	Cylinder type
		–	–
(3)	Servomotor Capacity	050	50 W
		100	100 W
		200	200 W
		400	400 W
		600	600 W
		750	750 W
		900	900 W
		1K0	1 kW
		1K5	1.5 kW
		2K0	2 kW
		3K0	3 kW
		4K0	4 kW
		4K5	4.5 kW
		5K0	5 kW
		6K0	6 kW
		7K5	7.5 kW
		11K0	11 kW
		15K0	15 kW
(4)	Rated Rotation Speed	10	1,000 r/min
		15	1,500 r/min
		20	2,000 r/min
		30	3,000 r/min
(5)	Applied Voltage	F	400 VAC (with incremental encoder specifications) **INC**
		H	200 VAC (with incremental encoder specifications) **INC**
		L	100 VAC (with incremental encoder specifications) **INC**
		C	400 VAC (with absolute encoder specifications) **ABS/INC**
		T	200VAC (with absolute encoder specifications) **ABS/INC**
		S	100 VAC (with absolute encoder specifications) **ABS/INC**
(6)	Option	Blank	Straight shaft
		B	With brake
		O	With oil seal
		S2	With key and tap

Note: **INC** incremental encoder: 20bit
ABS/INC incremental encoder: 17bit, absolute encoder: 17bit

Linear Motor
● Iron-core linear motor
Motor Coil Unit

R88L-EC -FW -03 03 -A NP C
(1)   (2) (3) (4) (5) (6) (7)

No	Item	Symbol	Specifications
(1)			G5-series Linear Motor
(2)	Part Type	FW	Iron-core type Motor Coil Unit
(3)	Effective Magnet Width	03	30mm
		06	60mm
		11	110mm
(4)	Coil Model	03	3-coil
		06	6-coil
		09	9-coil
		12	12-coil
		15	15-coil
(5)	Version	A	Ver.A
(6)	Connector	NP	Not Provided
(7)	Type	C	Compact type

Magnet Trac

R88L-EC -FM -03 096 -A
(1)   (2) (3) (4) (5)

No	Item	Symbol	Specifications
(1)			G5-series Linear Motor
(2)	Part Type	FM	Iron-core type Magnet Trac
(3)	Effective Magnet Width	03	30mm
		06	60mm
		11	110mm
(4)	Magnet Trac Unit Length	096	96mm
		144	144mm
		192	192mm
		288	288mm
		384	384mm
(5)	Version	A	Ver.A

● Ironless linear motor
Motor Coil Unit

R88L-EC -GW -03 03 -A NP S
(1)   (2) (3) (4) (5) (6) (7)

No	Item	Symbol	Specifications
(1)			G5-series Linear Motor
(2)	Part Type	GW	Ironless type Motor Coil Unit
(3)	Effective Magnet Width	03	30mm
		05	50mm
		07	70mm
(4)	Coil Model	03	3-coil
		06	6-coil
		09	9-coil
(5)	Version	A	Ver.A
(6)	Connector	NP	Not Provided
(7)	Type	S	Standard type

Magnet Trac

R88L-EC -GM -03 090 -A
(1)   ② ③ ④ ⑤

No	Item	Symbol	Specifications
(1)			G5-series Linear Motor
(2)	Part Type	GM	Ironless type Magnet Trac
(3)	Effective Magnet Width	03	30mm
		05	50mm
		07	70mm
(4)	Magnet Trac Unit Length	090	90mm
		114	114mm
		120	120mm
		126	126mm
		168	168mm
		171	171mm
		210	210mm
		390	390mm
		456	456mm
		546	546mm
(5)	Version	A	Ver.A

Understanding Decelerator Model Numbers (Backlash = 3' Max./Backlash = 15' Max.)

Backlash = 3' Max.

R88G-HPG 14A 05 100 S B J
(1) (2) (3) (4) (5) (6) (7)

No	Item	Symbol	Specifications
(1)			Decelerator for G□-Series Servomotors Backlash = 3' Max.
(2)	Flange Size Number	11B	□40
		14A	□60
		20A	□90
		32A	□120
		50A	□170
		65A	□230
(3)	Gear Ratio	05	1/5
		09	1/9 (only frame number 11B)
		11	1/11 (except frame number 65A)
		12	1/12 (only frame number 65A)
		20	1/20 (only frame number 65A)
		21	1/21 (except frame number 65A)
		25	1/25 (only frame number 65A)
		33	1/33
		45	1/45
(4)	Applicable Servomotor Capacity	050	50 W
		100	100 W
		200	200 W
		400	400 W
		750	750 W
		900	900 W
		1K0	1 kW
		1K5	1.5 kW
		2K0	2 kW
		3K0	3 kW
		4K0	4 kW
		4K5	4.5 kW
		5K0	5 kW
(5)	Motor Type	Blank	3,000-r/min cylindrical servomotors
		–	–
		S	2,000-r/min cylindrical servomotors
		T	1,000-r/min cylindrical servomotors
(6)	Backlash	B	Backlash = 3' Max
(7)	Option	Blank	Straight shaft
		J	With key and tap

Backlash = 15' Max.

R88G-VRSF 09 B 100   C J
(1) (2) (3) (4) (5) (6) (7)

No	Item	Symbol	Specifications
(1)			Decelerator for G□-Series Servomotors Backlash = 15' Max.
(2)	Gear Ratio	05	1/5
		09	1/9
		15	1/15
		25	1/25
(3)	Flange Size Number	B	□52
		C	□78
		D	□98
(4)	Applicable Servomotor Capacity	050	50 W
		100	100 W
		200	200 W
		400	400 W
		750	750 W
(5)	Motor Type	Blank	3,000-r/min cylindrical servomotors
		–	–
(6)	Backlash	C	Backlash = 15' Max
(7)	Option	J	With key (without tap)

Table of AC Servomotor Variations

$$R88M-K\square\square\square\square\square\square\square-\square\square\square\square$$

(3)　(4)　(5)　(6)　(7)　(8)　(9)

(3) Type	(4) Applicable Servomotor Capacity	(5) Rotation speed	Model	(6) Applied Voltage						(7) With brake / Without brake		(8) Models with oil seals		(9) Shaft type	
				INC 400	INC 200	INC 100	ABS 400	ABS 200	ABS 100	–	B				
				F	H	L	C	T	S	Blank	With brake	Blank	O	Blank	S2
Cylinder	50 W	3,000 r/min	R88M-K05030 *1		√		√			√	√	√	√	√	√
	100 W		R88M-K10030		√	√	√	√	√	√	√	√	√	√	√
	200 W		R88M-K20030		√	√	√	√	√	√	√	√	√	√	√
	400 W		R88M-K40030		√	√	√	√	√	√	√	√	√	√	√
	750 W		R88M-K75030	√	√		√	√		√	√	√	√	√	√
	1 kW		R88M-K1K030	√	√		√	√		√	√	√	√	√	√
	1.5 kW		R88M-K1K530	√	√		√	√		√	√	√	√	√	√
	2 kW		R88M-K2K030	√	√		√	√		√	√	√	√	√	√
	3 kW		R88M-K3K030	√	√		√	√		√	√	√	√	√	√
	4 kW		R88M-K4K030	√	√		√	√		√	√	√	√	√	√
	5 kW		R88M-K5K030	√	√		√	√		√	√	√	√	√	√
	400 W	2,000 r/min	R88M-K40020	√			√			√	√	√	√	√	√
	600 W		R88M-K60020	√			√			√	√	√	√	√	√
	1 kW		R88M-K1K020	√	√		√	√		√	√	√	√	√	√
	1.5 kW		R88M-K1K520	√	√		√	√		√	√	√	√	√	√
	2 kW		R88M-K2K020	√	√		√	√		√	√	√	√	√	√
	3 kW		R88M-K3K020	√	√		√	√		√	√	√	√	√	√
	4 kW		R88M-K4K020	√	√		√	√		√	√	√	√	√	√
	5 kW		R88M-K5K020	√	√		√	√		√	√	√	√	√	√
	7.5 kW		R88M-K7K515 *2				√	√		√	√	√	√	√	√
	11 kW		R88M-K11K015 *2				√	√		√	√	√	√	√	√
	15 kW		R88M-K15K015 *2				√	√		√	√	√	√	√	√
	900 W	1,000 r/min	R88M-K90010	√	√		√	√		√	√	√	√	√	√
	2 kW		R88M-K2K010	√	√		√	√		√	√	√	√	√	√
	3 kW		R88M-K3K010	√	√		√	√		√	√	√	√	√	√
	4.5 kW		R88M-K4K510				√	√		√	√	√	√	√	√
	6 kW		R88M-K6K010				√	√		√	√	√	√	√	√
Blank: Cylinder type	example 030: 30 W 100: 100 W 1K0: 1 kW	10: 1,000 r/min 20: 2,000 r/min 30: 3,000 r/min		F: 400 VAC (with incremental encoder) INC H: 200 VAC (with incremental encoder) INC L: 100 VAC (with incremental encoder) INC C: 400 VAC (with absolute encoder) ABS/INC T: 200 VAC (with absolute encoder) ABS/INC S: 100 VAC (with absolute encoder) ABS/INC						Blank: Without brake B: 24 VDC With brake		Blank: Without oil seals O: With oil seals		Blank: Straight shaft S2: With key and tap	

*1. R88M-K05030H-□, R88M-K05030T-□, can be used for Power Supply Voltage of 100/200VAC.
*2. The rated speed is 1,500 r/min.