G-series AC Servomotors/Servo Drives with General-purpose Pulse-string or Analog Inputs

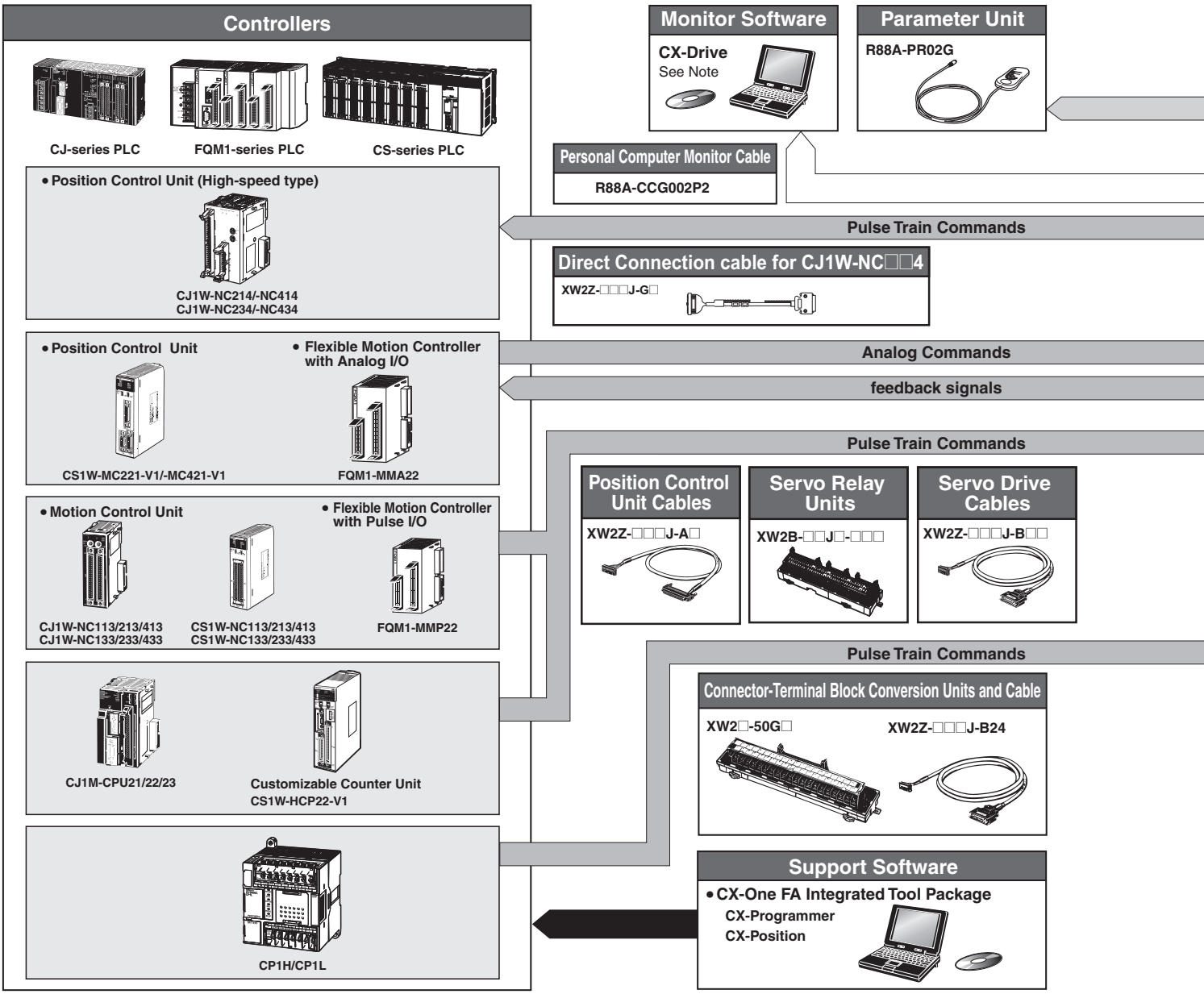
R88M-G/R88D-GT

Support for a Wide Range of Applications with Position Control, Speed Control, Torque Control.

- High-speed Response
  The G-series AC Servomotors and Servo Drives have achieved high-speed response capabilities, with a high-response frequency of 1 kHz.
- Suppressing Vibration of Low-rigidity Mechanisms during Acceleration/Deceleration
  The damping control function suppresses vibration of low-rigidity mechanisms or devices whose ends tend to vibrate. Two damping filters are provided to enable switching the vibration frequency automatically according to the direction of rotation and also via an external signal. In addition, the settings can be made easily merely by setting the vibration frequency and filter values, and you are assured of stable operation even if the settings are inappropriate.
- High-speed Positioning via Resonance Suppression Control
  The realtime autotuning function automatically estimates the load inertia of the machine in realtime and sets the optimal gain. The adaptive filter automatically suppresses vibration caused by resonance. Also, two independent notch filters make it possible to reduce vibration of a mechanism with multiple resonance frequencies.

System Configuration

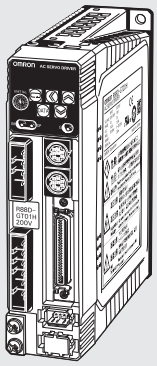
Note: CX-Drive (version 1.61) support for G-series Servo Drives can be obtained by using the CX-One V2 auto-update function from May 30, 2008.



- Command Control Mode Switching
  Operation can be performed by switching between two of the following control modes: Position control, speed control (including internal speed) and torque control. Therefore, a variety of applications can be supported by one Servo Drive.
- Simplified Speed Control with Internal Speed Settings
  Eight internal speed settings allow you to change the speed easily by using external signals.

AC Servo Drives

- **G-series**
  AC Servo Drive
  R88D-GT



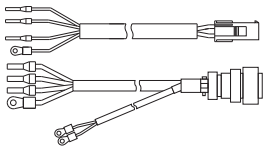
Peripheral Devices

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

Motor power signals

Power Cables

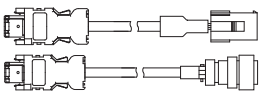
- **Standard Cables**
  Without Brake
  R88A-CAG□□□□S
  With Brake
  R88A-CAG□□□□B
- **Robot Cable**
  Without Brakes
  R88A-CAG□□□□SR
  With Brake
  R88A-CAG□□□□BR



feedback signals

Encoder Cables

- **Standard Cables**
  50 W to 750 W
  R88A-CRG□□□□C
  900 W to 7.5 kW
  R88A-CRGC□□□N
- **Robot Cables**
  50 W to 750 W
  R88A-CRG□□□□CR
  900 W to 7.5 kW
  R88A-CRGC□□□NR



Absolute Encoder Battery Cable

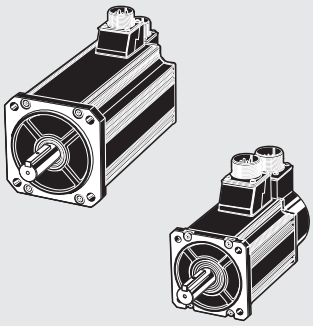
R88A-CRGD0R3C (-BS)

(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).

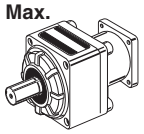
AC Servomotors

- **Model without Decelerators**
  R88M-G



Decelerators

- **Backlash: 3 Arcminutes Max.**
  R88G-HPG
  Backlash: 15 Arcminutes Max.
  R88G-VRXF



Interpreting Model Numbers

● Servo Drive Model Numbers

The model number provides information such as the Servo Drive type, the applicable Servomotor capacity, and the power supply voltage.

R88D-GT01H

G-series Servo Drive

Drive Type
- T: Three-mode type

Applicable Servomotor Capacity
- A5: 50 W
- 01: 100 W
- 02: 200 W
- 04: 400 W
- 08: 750 W
- 10: 1 kW
- 15: 1.5 kW
- 20: 2 kW
- 30: 3 kW
- 50: 5 kW
- 75: 7.5 kW

Power Supply Voltage
- L: 100 VAC
- H: 200 VAC

● Servomotor Model Numbers

R88M-GP10030H-BOS2

G-series Servomotor

Motor Type
- Blank: Cylinder type
- P: Flat type

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
- 6K0: 6 kW
- 7K5: 7.5 kW

Rated Rotation Speed
- 10: 1,000 r/min
- 15: 1,500 r/min
- 20: 2,000 r/min
- 30: 3,000 r/min

Applied Voltage
- H: 200 VAC with incremental encoder specifications
- L: 100 VAC with incremental encoder specifications
- T: 200 VAC with absolute encoder specifications
- S: 100 VAC with absolute encoder specifications

Option
- Blank: Straight shaft
- B: With brake
- O: With oil seal
- S2: With key and tap

Ordering Information

● Servo Drives

Specifications		Model
Single-phase 100 VAC	50 W	**R88D-GTA5L**
	100 W	**R88D-GT01L**
	200 W	**R88D-GT02L**
	400 W	**R88D-GT04L**
Single-phase 200 VAC	50 W	**R88D-GT01H**
	100 W	
	200 W	**R88D-GT02H**
	400 W	**R88D-GT04H**
Single-phase/three-phase 200 VAC	750 W	**R88D-GT08H**
	1 kW	**R88D-GT10H**
	900 W	**R88D-GT15H**
	1 kW	
	1.5 kW	
Three-phase 200 VAC	2 kW	**R88D-GT20H**
	2 kW	**R88D-GT30H**
	3 kW	
	3 kW	**R88D-GT50H**
	4 kW	
	4.5 kW	
	5 kW	
	6 kW	**R88D-GT75H**
	7.5 kW	

● Servomotors

INC 3,000-r/min Cylindrical Servomotors

Specifications			Model	
			Straight shaft	Straight shaft with key and tap
Without brake	100 V	50 W	**R88M-G05030H**	**R88M-G05030H-S2**
		100 W	**R88M-G10030L**	**R88M-G10030L-S2**
		200 W	**R88M-G20030L**	**R88M-G20030L-S2**
		400 W	**R88M-G40030L**	**R88M-G40030L-S2**
	200 V	50 W	**R88M-G05030H**	**R88M-G05030H-S2**
		100 W	**R88M-G10030H**	**R88M-G10030H-S2**
		200 W	**R88M-G20030H**	**R88M-G20030H-S2**
		400 W	**R88M-G40030H**	**R88M-G40030H-S2**
		750 W	**R88M-G75030H**	**R88M-G75030H-S2**
With brake	100 V	50 W	**R88M-G05030H-B**	**R88M-G05030H-BS2**
		100 W	**R88M-G10030L-B**	**R88M-G10030L-BS2**
		200 W	**R88M-G20030L-B**	**R88M-G20030L-BS2**
		400 W	**R88M-G40030L-B**	**R88M-G40030L-BS2**
	200 V	50 W	**R88M-G05030H-B**	**R88M-G05030H-BS2**
		100 W	**R88M-G10030H-B**	**R88M-G10030H-BS2**
		200 W	**R88M-G20030H-B**	**R88M-G20030H-BS2**
		400 W	**R88M-G40030H-B**	**R88M-G40030H-BS2**
		750 W	**R88M-G75030H-B**	**R88M-G75030H-BS2**

Note: Models with oil seals are also available.

Servo Drives with Single-phase 200-VAC Input Power

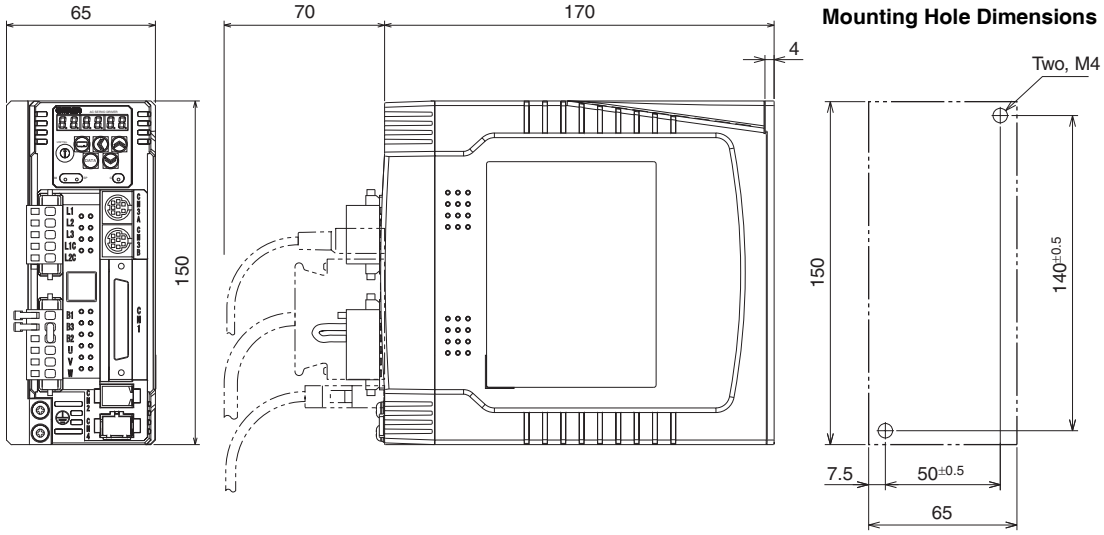
Item				R88D-GT01H	R88D-GT02H	R88D-GT04H	R88D-GT08H	R88D-GT10H	R88D-GT15H
Continuous output current (rms)				1.16 A	1.6 A	2.7 A	4.0 A	5.9 A	9.8 A
Momentary maximum output current (rms)				3.5 A	5.3 A	7.1 A	14.1 A	21.2 A	28.3 A
Input power supply	Main circuit	Power supply capacity		0.5 KVA	0.5 KVA	0.9 KVA	1.3 KVA	1.8 KVA	2.3 KVA
		Power supply voltage		Single-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz			Single-phase or three-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz		
		Rated current		1.3 A	2.0 A	3.7 A	5.0/3.3 *1 A	7.5/4.1 *1 A	11/8.0 *1 A
	Control circuit	Power supply voltage		Single-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz					
		Rated current		0.05 A	0.05 A	0.05 A	0.05 A	0.07 A	0.07 A
Heat generated	Main circuit			14.3 W	14.8 W	23.6 W	38.7 W	52.9 W	105.9 W
	Control circuit			4.5 W	4.5 W	4.5 W	4.3 W	6.1 W	6.1 W
PWM frequency				12.0 kHz		6.0 kHz			
Weight				Approx. 0.8 kg	Approx. 0.8 kg	Approx. 1.1 kg	Approx. 1.5 kg	Approx. 1.7 kg	Approx. 1.7 kg
Maximum applicable motor capacity				100 W	200 W	400 W	750 W	1 k W	1.5 kW
Applicable Servomotors (R88M-)	3,000-r/min Servomotors		INC	G05030H G10030H	G20030H	G40030H	G75030H	–	–
			ABS	G05030T G10030T	G20030T	G40030T	G75030T	–	G1K030T G1K530T
	3,000-r/min Flat Servomotors		INC	GP10030H	GP20030H	GP40030H	–	–	–
			ABS	GP10030T	GP20030T	GP40030T	–	–	–
	2,000-r/min Servomotors		ABS	–	–	–	–	G1K020T	G1K520T
	1,000-r/min Servomotors		ABS	–	–	–	–	–	G90010T
Control method				All-digital servo					
Inverter method				IGBT-driven PWM method					
Performance	Speed control range			1:5000					
	Speed variability: Load characteristic			0.01% or less at 0% to 100% (at rated speed)					
	Speed variability: Voltage characteristic			0% at ±10% of rated voltage (at rated speed)					
	Speed variability: Temperature characteristic			±0.1% or less at 0 to 50°C (at rated speed)					
	Torque control reproducibility			±3%					

*1. The left value is for single-phase input power and the right value is for three-phase input power.

Servo Drives with Three-phase 200-VAC Input Power

Item				R88D-GT20H	R88D-GT30H	R88D-GT50H	R88D-GT75H
Continuous output current (rms)				14.3 A	17.4 A	31.0 A	45.4 A
Momentary maximum output current (rms)				45.3 A	63.6 A	84.8 A	170.0 A
Input power supply	Main circuit	Power supply capacity		3.3 KVA	4.5 KVA	7.5 KVA	11 KVA
		Power supply voltage		Three-phase 200 to 230 VAC (170 to 253 V), 50/60 Hz			
		Rated current		10.2 A	15.2 A	23.7 A	35.0 A
	Control circuit	Power supply voltage		Single-phase 200 to 230 VAC (170 to 253 V), 50/60 Hz			
		Rated current		0.1 A	0.12 A	0.12 A	0.14 A
Heat generated	Main circuit			112.3 W	219.6 W	391.7 W	376.2 W
	Control circuit			10.7 W	13.3 W	13.3 W	13.8 W
PWM frequency				6.0 kHz			
Weight				Approx. 3.2 kg	Approx. 6.0 kg	Approx. 6.0 kg	Approx. 16.4 kg
Maximum applicable motor capacity				2 kW	3 kW	5 kW	7.5 kW
Applicable Servomotors (R88M-)	3,000-r/min Servomotors		INC	–	–	–	–
			ABS	G2K030T	G3K030T	G4K030T G5K030T	–
	3,000-r/min Flat Servomotors		INC	–	–	–	–
			ABS	–	–	–	–
	2,000-r/min Servomotors		ABS	G2K020T	G3K020T	G4K020T G5K020T	G7K515T
	1,000-r/min Servomotors		ABS	–	G2K010T	G3K010T G4K510T	G6K010T
Control method				All-digital servo			
Inverter method				IGBT-driven PWM method			
Performance	Speed control range			1:5000			
	Speed variability: Load characteristic			0.01% or less at 0% to 100% (at rated speed)			
	Speed variability: Voltage characteristic			0% at ±10% of rated voltage (at rated speed)			
	Speed variability: Temperature characteristic			±0.1% or less at 0 to 50°C (at rated speed)			
	Torque control reproducibility			±3%			

- **Single-phase 100 VAC (400 W)**
  R88D-GT04L
- **Single-phase/Three-phase 200 VAC (750 W)**
  R88D-GT08H



- **Single-phase/Three-phase 200 VAC (900 W to 1.5 kW)**
  R88D-GT10H
  R88D-GT15H