

AC Servomotors and SMARTSTEP 2-series Servo Drives with Pulse String Inputs

R88M-G/R7D-BP

Advanced Functionality in a Super Compact Design.

- Compact AC Servo Drives

The footprint of the compact AC Servo Drives is only 48% that of the SMARTSTEP A Series, and the volume is only 39%. The AC Servo Drives of the SMARTSTEP 2 Series are also equipped with new functions and higher performance for more accurate positioning.

- Vibration Suppressed during Acceleration/Deceleration of Low-rigidity Mechanisms

Damping control suppresses vibration when using the SMARTSTEP 2 for low-rigidity mechanisms or devices in which the end vibrates.

- Resonance Control for High-speed Positioning

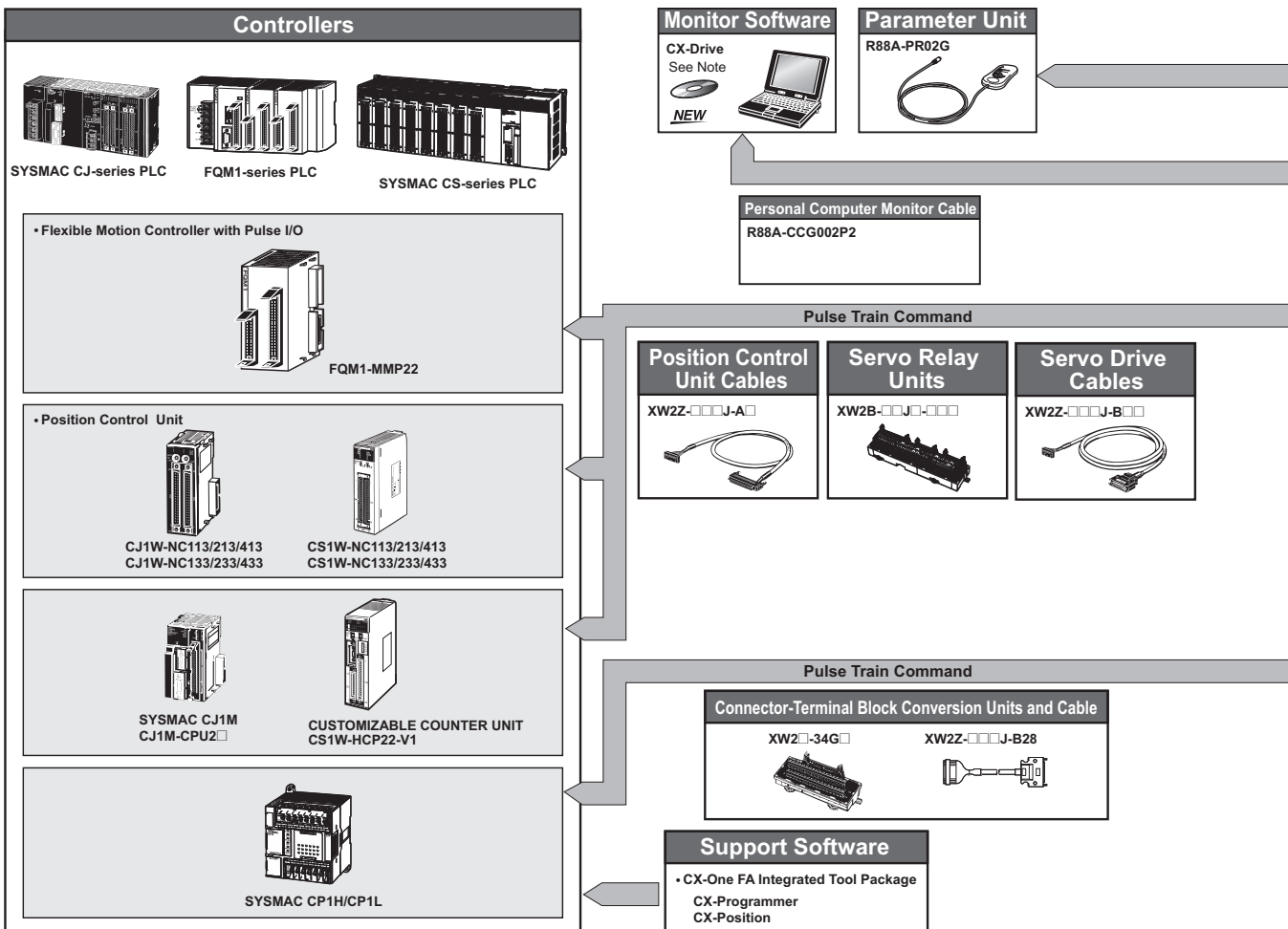
Realtime autotuning estimates the load inertia of the machine in realtime and automatically and constantly sets the optimal gain. The adaptive filter automatically suppresses vibration caused by resonance.

- Compatible with 90° Phase Difference Input Command Pulses

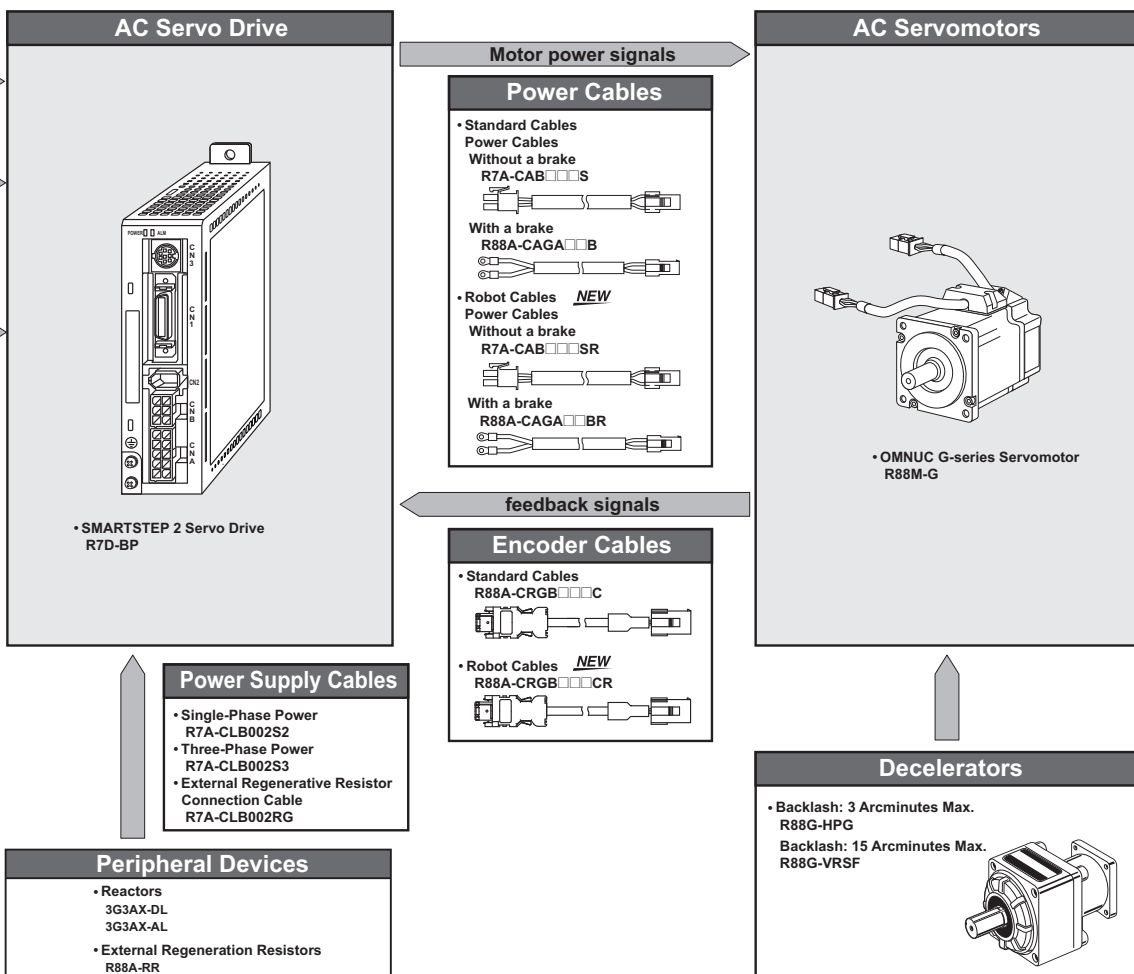
In addition to conventional CW/CCW inputs (2 pulses) and SIGN/PULS inputs (1 pulse), the SMARTSTEP 2 supports 90° phase difference inputs. This makes it possible to input encoder output signals directly into the Servo Drive for simplified synchronization control.

Note: CX-Drive (version 1.61) support for SMARTSTEP2 series Servo Drives can be obtained by using the CX-One V2 auto-update function from May 30, 2008.

System Configuration



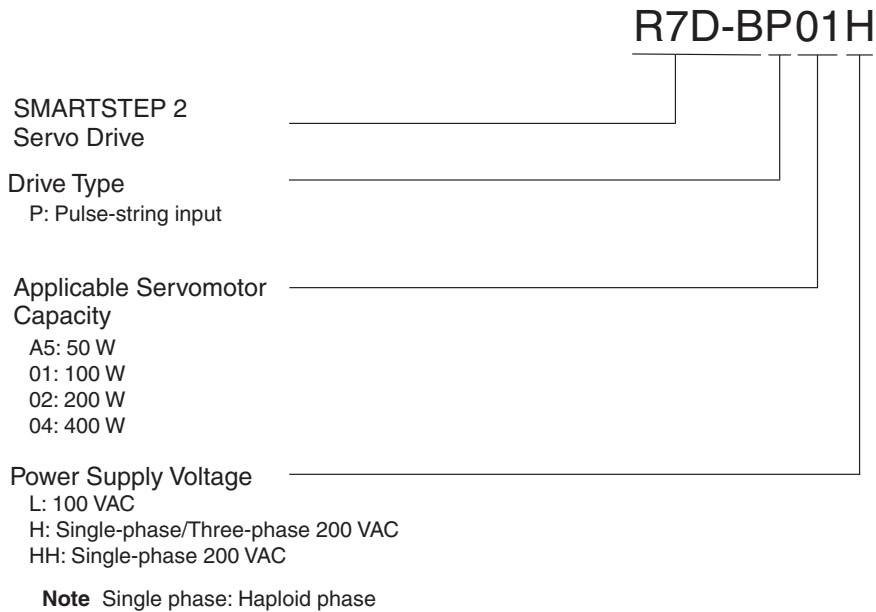
- **A Wide Range of Pulse Settings**
A wide range of pulse settings, such as the command pulse factor, electronic gear, and encoder dividing rate, enable optimal pulse settings for your device or system.
- **Simplified Speed Control with Internal Speed Settings**
Four internal speed settings allow the speed to be easily switched by using external signals.
- **Encoder Output Dividing**
The number of motor encoder pulses output by the Servo Drive can be freely set between 1 and 2,500 pulses per rotation. A parameter can also be set to change the phase.



Interpreting Model Numbers

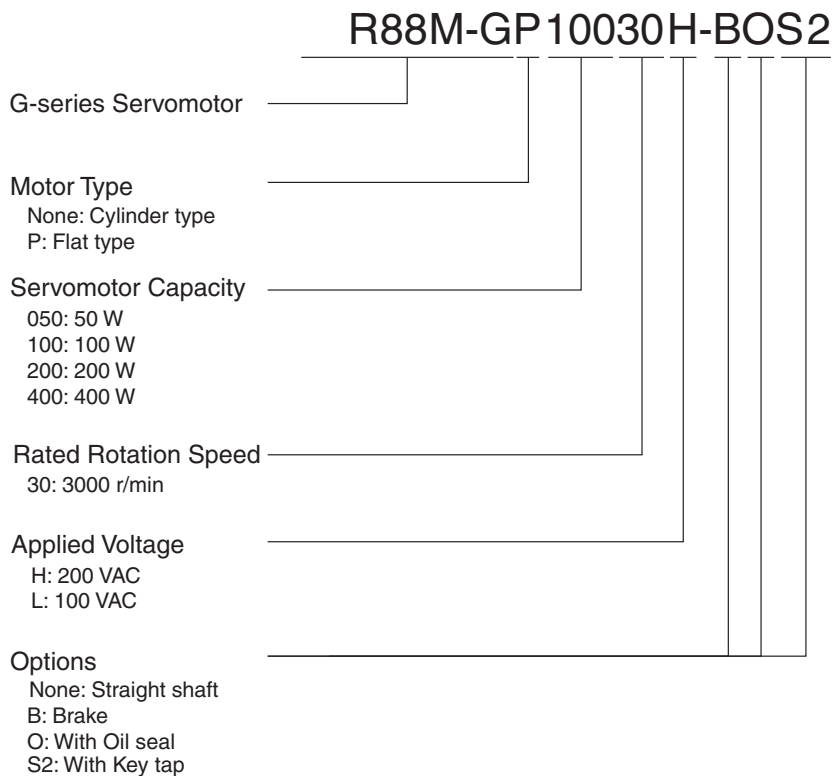
● Servo Drive Model Numbers

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



● Servomotor Model Numbers

The model number provides information such as the Servomotor type, Servomotor capacity, rated speed, and options.



Servo Drive Specifications (R7D-BP)

● General Specifications

Item		Specifications
Ambient operating temperature Ambient operating humidity		0 to 55°C, 90% max. (with no condensation)
Ambient storage temperature Ambient storage humidity		-20 to 65°C, 90% max. (with no condensation)
Storage and operating atmosphere		No corrosive gasses, no dust, no iron dust, no exposure to moisture or cutting oil
Vibration resistance		10 to 60 Hz; acceleration: 5.9 m/s ² (0.6 G) max.
Impact resistance		Acceleration of 19.6 m/s ² max. 3 times each in X, Y, and Z directions.
Insulation resistance		Between power supply/power line terminals and frame ground: 0.5 MΩ min. (at 500 VDC)
Dielectric strength		Between power supply/power line terminals and frame ground: 1,500 VAC for 1 min at 50/60 Hz Between each control signal and frame ground: 500 VAC for 1 min
Altitude		1,000 m above sea level max. (860 hp min.)
Degree of protection		Built into panel (IP10).
International standards	EC Directives	EMC Directive EN 55011 class A group 1 EN 61000-6-2
		Low Voltage Directive EN 50178
	UL standards	UL 508C
	cUL standards	cUL C22.2 No.14

Note: 1. The above items reflect individual evaluation testing. The results may differ under compound conditions.

Note: 2. Depending on the operating conditions, some Servo Drive parts will require maintenance.

Note: 3. The service life of the Servo Drive is 50,000 hours at an average ambient temperature of 40°C at 80% of the rated torque (excluding axial-flow fan).

● Characteristics

100 VAC specification

Item	Servo Drive model		
	R7D-BPA5L	R7D-BP01L	R7D-BP02L
Continuous output current (rms)	1.0 A	1.6 A	2.5 A
Momentary maximum output current (rms)	3.3 A	5.1 A	7.5 A
Power supply capacity	0.16 KVA	0.25 KVA	0.42 KVA
Input power supply voltage (main circuit)	Single-phase 100 to 115 VAC (85 to 127 V), 50/60 Hz		
Input power supply current (rms) (main circuit)	1.4 A	2.2 A	3.7 A
Heat generated (main circuit)	12 W	16 W	22 W
Control method	All-digital servo		
Inverter method	IGBT-driven PWM method		
PWM frequency	12 kHz		6 kHz
Maximum response frequency (command pulses)	Line drive: 500 kpps, Open collector: 200 kpps		
Weight	0.35 kg		0.42 kg
Applicable motor capacity	50 W	100 W	200 W

200 VAC specification

Item	Servo Drive model			
	R7D-BP01H	R7D-BP02HH	R7D-BP02H	R7D-BP04H
Continuous output current (rms)	1.0 A	1.6 A	1.6 A	2.5 A
Momentary maximum output current (rms)	3.3 A	4.9 A	4.9 A	7.8 A
Power supply capacity	0.27 KVA (0.30 KVA) See note	0.35 KVA	0.42 KVA	0.69 KVA (0.77 KVA) See note
Input power supply voltage (main circuit)	Both single-phase and three-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz			
Input power supply current (rms) (main circuit)	0.7 A (1.5 A) See note	1.6 A	1.1 A	1.8 A (3.5 A) See note
Heat generated (main circuit)	14 W	16 W	20 W	26W
Control method	All-digital servo			
Inverter method	IGBT-driven PWM method			
PWM frequency	12 kHz			6 kHz
Maximum response frequency (command pulses)	Line drive: 500 kpps, Open collector: 200 kpps			
Weight	0.35 kg	0.42 kg	0.35 kg	0.42 kg
Applicable motor capacity	100 W	200 W	200 W	400 W

Note: Values inside parentheses () are for single-phase 200-V use.

Servomotor Specifications (R88M-G)

● General Specifications

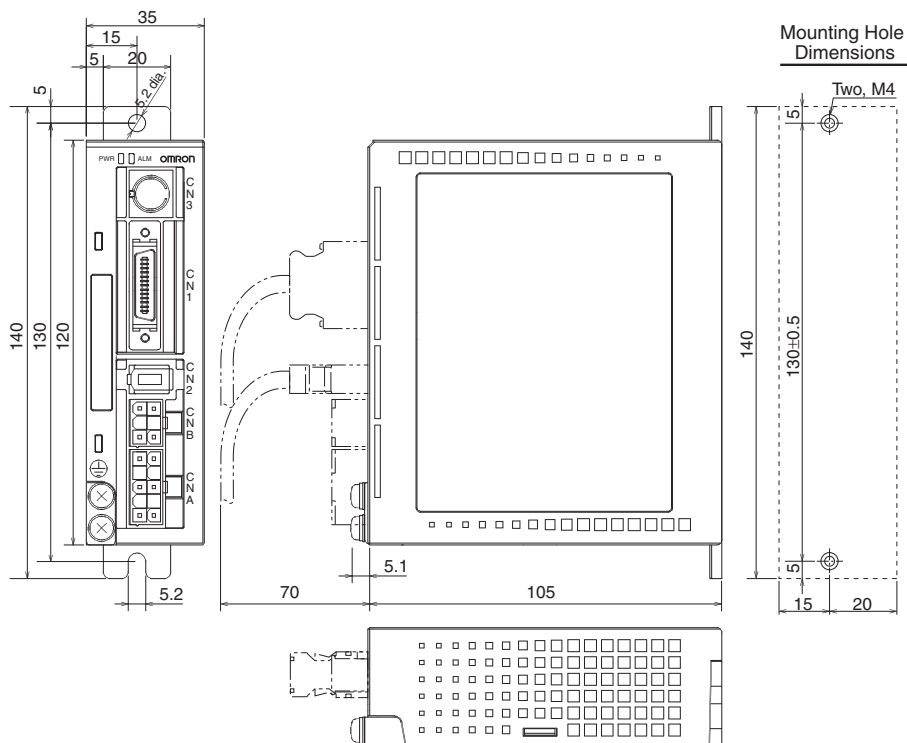
Item		Specifications	
Ambient operating temperature Ambient operating humidity		0 to 40°C, 85% max. (with no condensation)	
Ambient storage temperature Ambient storage humidity		-20 to 65°C, 85% max. (with no condensation)	
Storage and operating atmosphere		No corrosive gases	
Vibration resistance		49 m/s ² max. in the X, Y, and Z directions	
Impact resistance		Acceleration of 98 m/s ² max. 3 times each in the X, Y, and Z directions	
Insulation resistance		20 MΩ min. at 500 VDC between the power terminals and FG terminal	
Dielectric strength		1,500 VAC (50 or 60 Hz) for 1 minute between the power terminals and FG terminal	
Operating position		Any direction	
Insulation class		Type B	
Construction		Totally-enclosed, self-cooling	
Degree of protection		IP65 (excluding the through-shaft portion)	
Vibration class		V-15	
Mounting method		Flange-mounting	
International standards	EC Directives	EMC Directive	EN 60034-1:2004
		Low Voltage Directive	IEC 60034-5:2001
	UL standards		UL 1004 File No. E179189
	cUL standards		cUL 22.2, No.100

Dimensions

● Servo Drives

• 50 W/100 W/200 W

- R7D-BPA5L
- R7D-BP01L
- R7D-BP01H
- R7D-BP02H



• 200 W/400 W

- R7D-BP02L
- R7D-BP02HH
- R7D-BP04H

