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Omron Automation & Safety
R7A-CLB002RG

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Distributor of Omron Automation & Safety: Excellent Integrated System Limited
Datasheet of R7A-CLB002RG - CABLE SERVOMOTOR FOR CNA 2M
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OMRON
INDUSTRIAL AUTOMATION

# R7 Series Servos

## Advanced functionality in an ultra compact design

» Solve equipment problems

» Maximize performance

» Improve accuracy and increase productivity

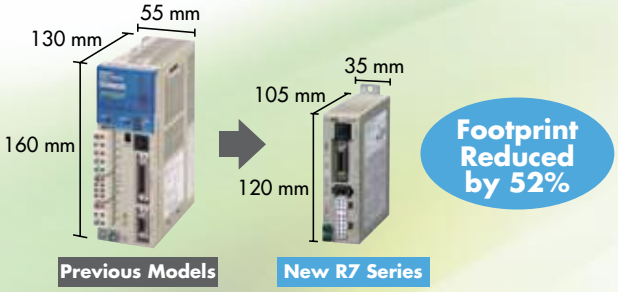
# Ideal for a Wide Range of Applications: Ball Screws, Conveyor belts, X-Y Tables and more...

## Compact!

A super-compact, high-performance servo system that's easy to use.

### Smaller servo drives for multi-axis applications

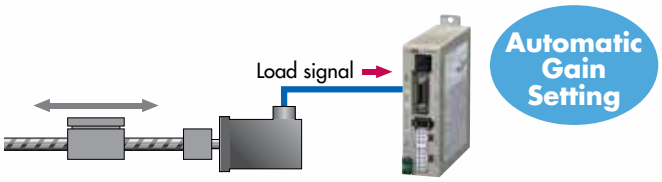
The super-compact R7-Series is now even smaller. The footprint has been reduced by 52% from previous models minimizing control panel size.




## Easy!

### Real time autotuning sets the optimum gain.

An auto-tuning function calculates the device load in real time and automatically sets the optimum gain to simplify the adjustment procedure.




### Installation

The Servo Drive can be mounted onto a DIN Rail by using the DIN Rail Mounting Unit (sold separately) for easier assembly and easier maintenance.

### Integrated development environment reduces your total cost of ownership.

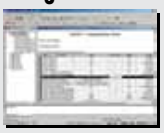
The Servo system can be managed from design to maintenance with the CX-One Automation Suite.

**Setting & Programming**

Easy programming with the Smart FB Library

**Parameter Editing & Monitoring**

The Servomotor parameters can be edited, monitored, and saved with the CX-Drive.



**Alarm & Maintenance**

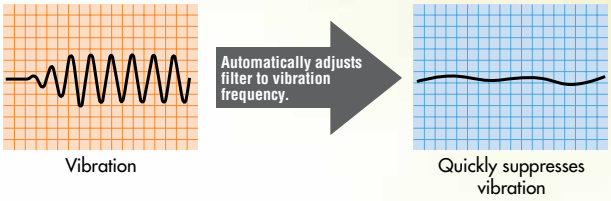
Easy monitoring of the Drive errors

Contact us: sales@integrated-circuit.com

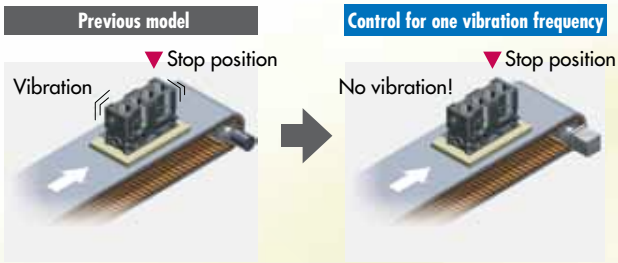
# Advanced functionality!

## Adaptive vibration suppression

The resonant frequency is automatically monitored to remove vibration using the adaptive filter. Even if the resonant frequency changes due to low mechanical rigidity, real time evaluation automatically follows the changes to reduce the effect of vibration.

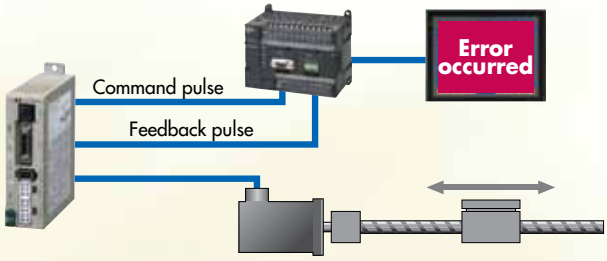



Reducing the amount of vibration improves positioning time and accuracy.




## Closed loop system

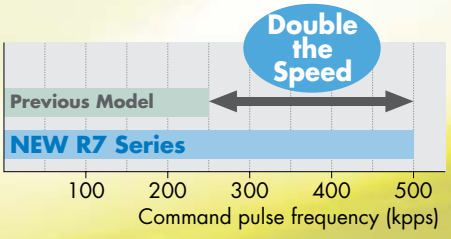
The present position can be checked using the feedback pulse sent from the Servo Drive to the Controller, allowing positioning errors due to mechanical problems to be monitored and eliminated in the Controller.




Simplified Synchronization: It is also possible to input encoder output signals directly into the servo drive.

## Reduced process cycle time

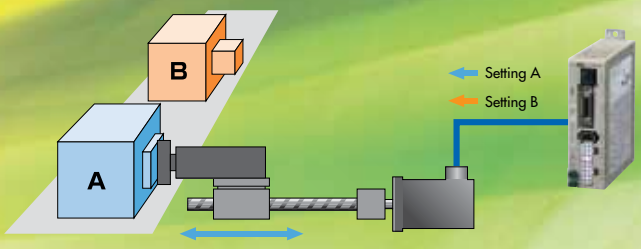
The R7- Series accepts command pulse frequencies up to 500 kpps enabling high-speed positioning and high-precision control.




## Torque limiting function

Set two torque limits, and switch between them. Great for application, such as pressing or part insertion.

Torque limiting reduces machine or work piece breakdown occurrence.



# 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.

**R7D-BP01H**

R7-Series Servo Drive

Drive Type
- P: Pulse-train input

Applicable Servomotor Capacity
- A5: 50 W
- 01: 100 W
- 02: 200 W
- 04: 400 W

Power Supply Voltage
- L: 120 VAC
- H: Single-phase/Three-phase 240 VAC
- HH: Single-phase 240 VAC

## Servomotor Model Numbers

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

**R88M-GP10030H-BOS2**

G-series Servomotor

Motor Type
- None: Cylinder type
- P: Flat type

Servomotor Capacity
- 050: 50 W
- 100: 100 W
- 200: 200 W
- 400: 400 W

Rated Rotation Speed
- 30: 3,000 r/min

Applied Voltage
- H: 240 VAC
- L: 120 VAC

Others
- None: Straight shaft
- B: Brake
- O: With oil seal
- S2: With key tap

# Servo Drive-Servomotor Combinations

Only the Servomotor and Servo Drive combinations listed here can be used. Do not use other combinations.

## Cylindrical Servomotor

### Servomotors Combinations

| Voltage | Servo Drive | Servomotor | | |
|---|---|---|---|---|
| | Pulse-train input | Rated output | Without brake | With brake |
| Single-phase 120VAC | R7D-BPA5L | 50 W | R88M-G05030H-S2 | R88M-G05030H-BS2 |
| | R7D-BP01L | 100 W | R88M-G10030L-S2 | R88M-G10030L-BS2 |
| | R7D-BP02L | 200 W | R88M-G20030L-S2 | R88M-G20030L-BS2 |
| Single-phase 240 VAC | R7D-BP01H | 50 W | R88M-G05030H-S2 | R88M-G05030H-BS2 |
| | | 100 W | R88M-G10030H-S2 | R88M-G10030H-BS2 |
| | R7D-BP02HH | 200 W | R88M-G20030H-S2 | R88M-G20030H-BS2 |
| | R7D-BP04H | 400 W | R88M-G40030H-S2 | R88M-G40030H-BS2 |
| Three-phase 240 VAC | R7D-BP01H | 50 W | R88M-G05030H-S2 | R88M-G05030H-BS2 |
| | | 100 W | R88M-G10030H-S2 | R88M-G10030H-BS2 |
| | R7D-BP02H | 200 W | R88M-G20030H-S2 | R88M-G20030H-BS2 |
| | R7D-BP04H | 400 W | R88M-G40030H-S2 | R88M-G40030H-BS2 |

## Flat Servomotor

### Servomotors Combinations

| Voltage | Servo Drive | Servomotor | | |
|---|---|---|---|---|
| | Pulse-train input | Rated output | Without brake | With brake |
| Single-phase 120VAC | R7D-BP01L | 100 W | R88M-GP10030L-S2 | R88M-GP10030L-BS2 |
| | R7D-BP02L | 200 W | R88M-GP20030L-S2 | R88M-GP20030L-BS2 |
| Single-phase 240 VAC | R7D-BP01H | 100 W | R88M-GP10030H-S2 | R88M-GP10030H-BS2 |
| | R7D-BP02HH | 200 W | R88M-GP20030H–S2 | R88M-GP20030H-BS2 |
| | R7D-BP04H | 400 W | R88M-GP40030H-S2 | R88M-GP40030H-BS2 |
| Three-phase 240 VAC | R7D-BP01H | 100 W | R88M-GP10030H-S2 | R88M-GP10030H-BS2 |
| | R7D-BP02H | 200 W | R88M-GP20030H-S2 | R88M-GP20030H-BS2 |
| | R7D-BP04H | 400 W | R88M-GP40030H-S2 | R88M-GP40030H-BS2 |

# Ordering Information

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## Accessories and Cables

### CN1 Control Cables for CP1H/CP1L or general purpose controllers

| Specifications | | Model |
|---|---|---|
| Connector-Terminal Block Cables | 1 m | XW2Z-100J-B28 |
| | 2 m | XW2Z-200J-B28 |
| General-purpose Control Cables | 1 m | R7A-CPB001S |
| | 2 m | R7A-CPB002S |

### Encoder Cables (for CN2) *1

| Specifications | | Model |
|---|---|---|
| Standard Cables (connectors attached) | 3 m | R88A-CRGB003C |
| | 5 m | R88A-CRGB005C |
| | 10 m | R88A-CRGB010C |
| | 15 m | R88A-CRGB015C |
| | 20 m | R88A-CRGB020C |

### Servomotor Power Cables (for CNB) *1

| Specifications | | Model |
|---|---|---|
| Standard Cables (connectors attached) | 3 m | R7A-CAB003S |
| | 5 m | R7A-CAB005S |
| | 10 m | R7A-CAB010S |
| | 15 m | R7A-CAB015S |
| | 20 m | R7A-CAB020S |

### Brake Cables

| Specifications | | Model |
|---|---|---|
| Standard Cables | 3 m | R88A-CAGA003B |
| | 5 m | R88A-CAGA005B |
| | 10 m | R88A-CAGA010B |
| | 15 m | R88A-CAGA015B |
| | 20 m | R88A-CAGA020B |

### Connectors

| Specifications | Model |
|---|---|
| Main Circuit Connector (CNA) | R7A-CNB01P |
| Servomotor Connector (CNB) | R7A-CNB01A |
| Control Input Connector (CN1) | R88A-CNW01C |
| Encoder Input Connector (CN2) | R88A-CNW01R |
| Servomotor Connector for Encoder Cable | R88A-CNG02R |
| Servomotor Connector for Servomotor Power Cable | R88A-CNG01A |

### Power Supply Cables (For CNA)

| Specifications | | Model |
|---|---|---|
| Power Supply Input Cable for Single-Phase Power (connectors attached) | 2 m | R7A-CLB002S2 |
| Power Supply Input Cable for Three-Phase Power (connectors attached) | 2 m | R7A-CLB002S3 |
| External Regenerative Resistor Connection Cable | 2 m | R7A-CLB002RG |

### Personal Computer Monitor Cable

| Specifications | | Model |
|---|---|---|
| Personal Computer Monitor Cable | 2 m | R88A-CCG002P2 |

*1: For high flex cables add an "R" at the end of the part number.

### Terminal Blocks for CP1H/CP1L or general purpose controllers

| Specifications | Model |
|---|---|
| With M3 screws | XW2B-34G4 |
| With M3.5 screws | XW2B-34G5 |
| With M3 screws | XW2D-34G6 |

### External Regeneration Resistors

| Specifications | Model |
|---|---|
| 220 W, 47 Ω | R88A-RR22047S |
| 80 W, 100 Ω | R88A-RR080100S |
| 80 W, 50 Ω | R88A-RR08050S |

### Reactors

| Specifications | Applicable Servo Drive | Model |
|---|---|---|
| Single-phase 120 V | R7D-BPA5L | 3G3AX-DL2002 |
| | R7D-BP01L | 3G3AX-DL2004 |
| | R7D-BP02L | 3G3AX-DL2007 |
| Single-phase 240 V | R7D-BP01H | 3G3AX-DL2004 |
| | R7D-BP02HH | 3G3AX-DL2004 |
| | R7D-BP04H | 3G3AX-DL2007 |
| Three-phase 240 V | R7D-BP01H | 3G3AX-AL2025 |
| | R7D-BP02H | 3G3AX-AL2025 |
| | R7D-BP04H | 3G3AX-AL2025 |

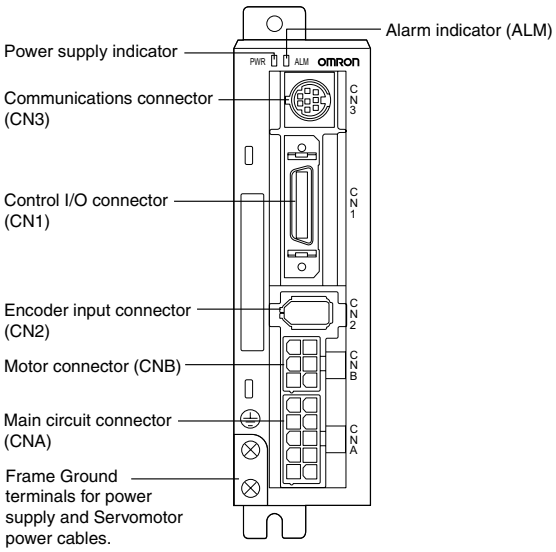
### DIN Rail Mounting Unit

| Specifications | Model |
|---|---|
| DIN Rail Mounting Unit | R7A-DIN01B |

### Parameter Unit

| Specifications | Model |
|---|---|
| Parameter Unit | R88A-PR02G |

### Servo Drive Nomenclature



# Servo Terminal block (Relay Units) and Cables

Select the Servo Terminal block and Cable according to the model number of the Position Control Unit being used.

| Position Control Unit | Position Control Unit Cable | Servo Terminal block (Relay Unit) | Servo Drive Cable*1 |
|---|---|---|---|
| CJ1W-NC133 | XW2Z-050J-A18<br>XW2Z-100J-A18 | XW2B-20J6-1B | XW2Z-100J-B29<br>XW2Z-200J-B29 |
| CJ1W-NC233 | XW2Z-050J-A19<br>XW2Z-100J-A19 | XW2B-40J6-2B | |
| CJ1W-NC433 | | | |
| CS1W-NC133 | XW2Z-050J-A10<br>XW2Z-100J-A10 | XW2B-20J6-1B | |
| CS1W-NC233 | XW2Z-050J-A11<br>XW2Z-100J-A11 | XW2B-40J6-2B | |
| CS1W-NC433 | | | |
| CJ1W-NC113 | XW2Z-050J-A14<br>XW2Z-100J-A14 | XW2B-20J6-1B | |
| CJ1W-NC213 | XW2Z-050J-A15<br>XW2Z-100J-A15 | XW2B-40J6-2B | |
| CJ1W-NC413 | | | |
| CS1W-NC113 | XW2Z-050J-A6<br>XW2Z-100J-A6 | XW2B-20J6-1B | |
| C200HW-NC113 | | | |
| CS1W-NC213 | XW2Z-050J-A7<br>XW2Z-100J-A7 | XW2B-40J6-2B | |
| CS1W-NC413 | | | |
| C200HW-NC213 | | | |
| C200HW-NC413 | | | |
| CJ1M-CPU21 | XW2Z-050J-A33<br>XW2Z-100J-A33 | XW2B-20J6-8A<br>XW2B-40J6-9A (for 2 axes) | XW2Z-100J-B32<br>XW2Z-200J-B32 |
| CJ1M-CPU22 | | | |
| CJ1M-CPU23 | | | |
| CQM1H-PLB21 | XW2Z-050J-A3<br>XW2Z-100J-A3 | XW2B-20J6-3B | XW2Z-100J-B29<br>XW2Z-200J-B29 |

**Note: 1.** Two Servo Drive Cables are required if 2-axis control is performed.

**Note: Cable Length**

050 = 0.5 m
100 = 1 m
200 = 2 m

## Characteristics

### 120 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 120 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 |

### 240 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<br>(0.30 KVA) See note | (0.35 KVA) See note | 0.42 KVA | 0.69 KVA<br>(0.77 KVA) See note |
| Input power supply voltage (main circuit) | Both single-phase and three-phase<br>200 to 240 VAC (170 to 264 V), 50/60 Hz | | | |
| Input power supply current (rms) (main circuit) | 0.7 A<br>(1.5 A) See note | (1.6 A) See note | 1.1 A | 1.8 A<br>(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 | |
| Applicable motor capacity | 100 W | 200 W | 200 W | 400 W |

**Note:** Values inside parentheses ( ) are for single-phase 240-V use.

# Servomotor Specifications (R88M-G)

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### 3,000-r/min Cylindrical Servomotors
### 120 VAC specification

| Item | Unit | R88M-G05030H-S2 | R88M-G10030L-S2 | R88M-G20030L-S2 |
|---|---|---|---|---|
| Rated output *1 | W | 50 | 100 | 200 |
| Rated torque *1 | N·m | 0.16 | 0.32 | 0.64 |
| Rated rotation speed | r/min | 3000 | | |
| Max. rotation speed | r/min | 5000 | | |
| Max. momentary torque *1 | N·m | 0.48 | 0.95 | 1.78 |
| Rated current *1 | A (rms) | 1.1 | 1.7 | 2.5 |
| Max. momentary current *1 | A (rms) | 3.4 | 5.1 | 7.6 |
| Rotor inertia | kg·m² | $2.5 \times 10^{-6}$ | $5.1 \times 10^{-6}$ | $1.4 \times 10^{-5}$ |
| Applicable load inertia | --- | 30 times rotor inertia max. | | |

*1. These are the values when the Servomotor is combined with a Servo Drive at room temperature.
The momentary maximum torque shown above indicates the standard value.

### 3,000-r/min Cylindrical Servomotors
### 240 VAC specification

| Item | Unit | R88M-G05030H-S2 | R88M-G10030H-S2 | R88M-G20030H-S2 | R88M-G40030H-S2 |
|---|---|---|---|---|---|
| Rated output *1 | W | 50 | 100 | 200 | 400 |
| Rated torque *1 | N·m | 0.16 | 0.32 | 0.64 | 1.3 |
| Rated rotation speed | r/min | 3000 | | | |
| Max. rotation speed | r/min | 5000 | | | |
| Max. momentary torque *1 | N·m | 0.48 | 0.95 | 1.78 | 3.60 |
| Rated current *1 | A (rms) | 1.1 | 1.1 | 1.6 | 2.6 |
| Max. momentary current *1 | A (rms) | 3.4 | 3.4 | 4.9 | 7.9 |
| Rotor inertia | kg·m² | $2.5 \times 10^{-6}$ | $5.1 \times 10^{-6}$ | $1.4 \times 10^{-5}$ | $2.6 \times 10^{-5}$ |
| Applicable load inertia | --- | 30 times rotor inertia max. | | | |

* 1. These are the values when the Servomotor is combined with a Servo Drive at room temperature.
The momentary maximum torque shown above indicates the standard value.

### 3,000-r/min Flat Servomotors
### 120 VAC specification

| Item | Unit | R88M-GP10030L-S2 | R88M-GP20030L-S2 |
|---|---|---|---|
| Rated output *1 | W | 100 | 200 |
| Rated torque *1 | N·m | 0.32 | 0.64 |
| Rated rotation speed | r/min | 3000 | |
| Max. rotation speed | r/min | 5000 | |
| Max. momentary torque *1 | N·m | 0.85 | 1.86 |
| Rated current *1 | A (rms) | 1.6 | 2.5 |
| Max. momentary current *1 | A (0-p) | 6.9 | 10.5 |
| Rotor inertia | kg·m² | $9.0 \times 10^{-6}$ | $3.4 \times 10^{-5}$ |
| Applicable load inertia | --- | 20 times rotor inertia max. | |

*1. These are the values when the Servomotor is combined with a Servo Drive at room temperature.
The momentary maximum torque shown above indicates the standard value.

### 3,000-r/min Flat Servomotors
### 240 VAC specification

| Item | Unit | R88M-GP10030H-S2 | R88M-GP20030H-S2 | R88M-GP40030H-S2 |
|---|---|---|---|---|
| Rated output *1 | W | 100 | 200 | 400 |
| Rated torque *1 | N·m | 0.32 | 0.64 | 1.3 |
| Rated rotation speed | r/min | 3000 | | |
| Max. rotation speed | r/min | 5000 | | |
| Max. momentary torque *1 | N·m | 0.90 | 1.82 | 3.60 |
| Rated current *1 | A (rms) | 1.0 | 1.6 | 4.4 |
| Max. momentary current *1 | A (0-p) | 4.3 | 6.8 | 18.6 |
| Rotor inertia | kg·m² | $9.0 \times 10^{-6}$ | $3.4 \times 10^{-5}$ | $6.4 \times 10^{-5}$ |
| Applicable load inertia | --- | 20 times rotor inertia max. | | |

*1. These are the values when the Servomotor is combined with a Servo Drive at room temperature.
The momentary maximum torque shown above indicates the standard value.

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