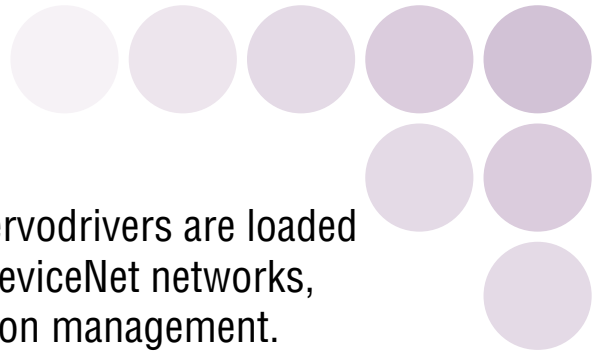


## OMNUC **W**-series AC Servomotors/Servodrivers

- Series now includes 1,500-r/min Servomotors.
- Servodrivers now available with capacities of up to 15 kW.

The advanced W Series of Servomotors and Servodrivers are loaded with functions. They can also be connected to DeviceNet networks, allowing easier distributed control and information management.





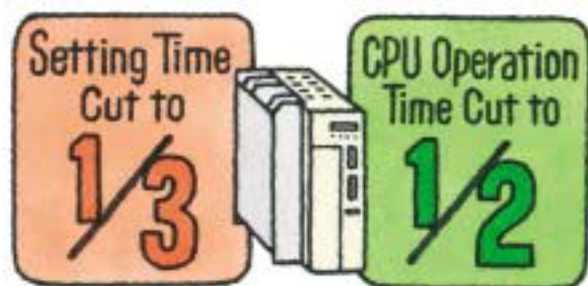
# W Series

The OMNUC W Series provides the performance demanded in today's workplace.

Their fast response, high speed, and precise control will dramatically improve machine performance and productivity.

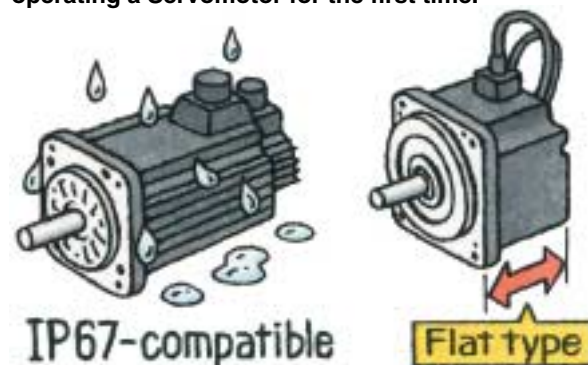
## 1 Dramatically improved basic performance.

To realize the productivity improvements demanded of equipment today, you have to maximize the equipment's performance with the best possible control. The OMNUC W-series CPU operation time has been cut in half and the settling time has been slashed to one-third compared to the OMNUC U Series. These improvements and others, such as upgraded control algorithms, have helped to dramatically improve basic performance.



## 2 More variety to suit different applications.

The OMNUC W Series has a wide range of variations to help build the ideal system. Space-saving flat Servomotors, water-resistant IP67-compatible Servomotors, and Servomotors with gears are all available even with capacities over 1 kW, which could not be handled with earlier models. Of course, absolute encoder compatibility and braking are still available and the Servomotors conform to safety standards, such as CE and UL/cUL. The built-in online autotuning function is effective in applications with machinery that has variable loads. The autotuning function makes it easy to adjust parameters, even for users operating a Servomotor for the first time.



60 to 70 % of U Series.



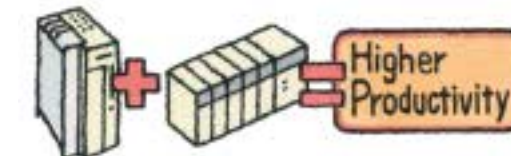
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This catalog provides information and specifications needed to select Servomotors and Servodrivers. It does not provide precautions for operating these products. Always refer to the OMNUC W-series AC Servomotors/Servodriver User's Manual for precautions and other information before operating these products.

## + Improve productivity even more by connecting to a PLC.

Even more advanced control and system configurations can be achieved by connecting to an OMRON Position Control Unit (such as a CS1W-NC□□□) or Motion Control Unit (such as a CS1-MC□□□) mounted to an OMRON PLC. Debugging can be performed using convenient Windows-based tools. For smaller scale systems, it is possible to connect to a compact or micro OMRON PLC.



## + Compatible with the open field network DeviceNet.

A DeviceNet Option Unit is also available. As a Position Control Unit, it can be connected directly to an OMNUC W-series Servodriver, and is equipped with communications functions for DeviceNet. This means that parameters can be set, the operating status can be monitored, and faults can be predicted from a PLC up to 500 m away.



The OMNUC W Series provides high performance and a multitude of functions. They are easy-to-use and the full line-up of variations can be used in a wide range of applications.

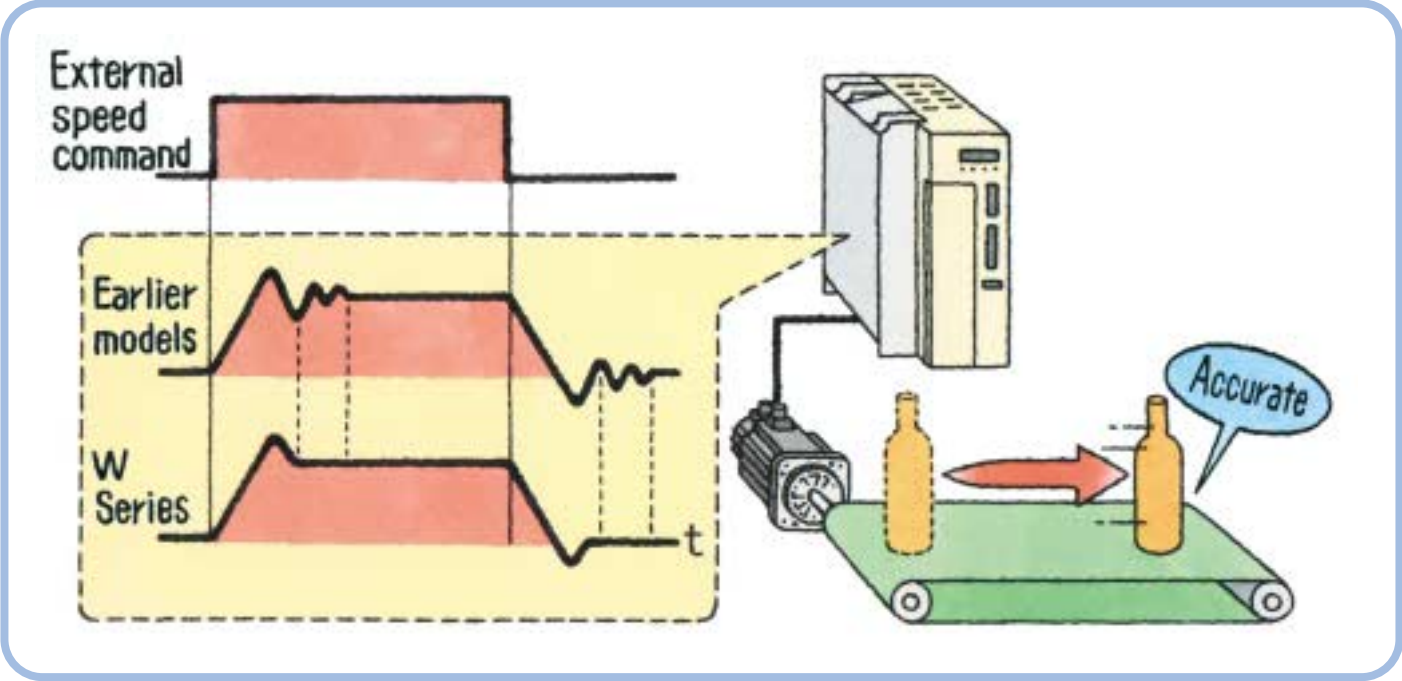
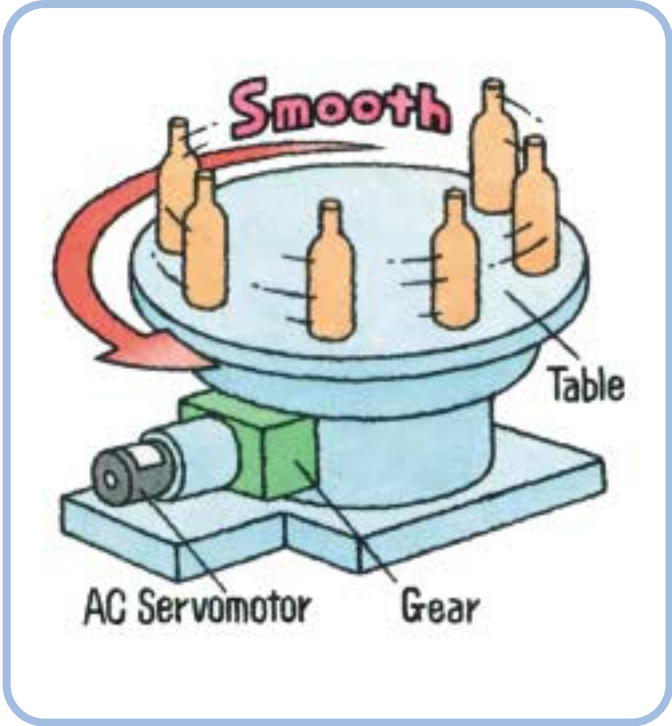
W Series High Performance

**New Additions**.....  
The Series has been expanded to include 1,500-r/min Servomotors (for both incremental and absolute encoders) with capacities ranging from 450 W to 15 kW and Servodrivers with capacities of 7.5 kW and 15 kW.

**Reduced Settling Time**.....  
Vibration-suppression has been improved with upgraded control algorithms. Even with low-rigidity machinery, the upgraded vibration-suppression can slash the settling time to 1/3 the time required in the U Series.

**High-speed, High-precision Drive**.....  
A maximum speed of 5,000 r/min has been achieved in most models. Positioning precision can be improved by using a high-resolution serial encoder (16,384 pulses/revolution or 32,768 pulses/revolution). Torque control precision (reproducibility) has also been improved to -2%.

**Smooth Operation**.....  
Motor speed ripple has been reduced substantially. Operation is smooth at low speeds.



W Series Easy Setup

**Online Autotuning**.....  
Automatically measures machine characteristics and sets required servo gains. Settings can be made quickly even by first-time users.

**Automatic Motor Discrimination Function**.....  
The Servodriver automatically determines the Servomotor's capacity and model and sets the motor parameters accordingly.

**Personal Computer Monitoring Software**.....  
Windows-based monitoring software is available. The software can be used to easily perform tasks such as setting up the system, monitoring operation, and editing parameters. Of course the U-series models (including the UE models) can be connected, too.

W Series Flexibility

**Comprehensive Motor Line**.....  
A full line of variations is available, including motors with brakes, motors with gears, and flat-profile motors. Also, three different rated motor speeds are available: 3,000 r/min, 1,500 r/min, and 1,000 r/min. The wide variety allows you to choose the best model for your application.



**Compatible with Long Cables**.....  
Unlike conventional models, long power cables and encoder cables (up to 70 m) can be used.

**All-in-one Control**.....  
Torque, position, and speed control can be achieved just by switching parameters.

**Regenerative Resistance Terminals Standard**.....  
External regenerative resistance terminals are standard equipment, so regenerative resistance can be connected very easily.

W Series Reliability

**Conformance to International Standards**.....  
The W-series Servomotors and Servodrivers can be exported and used overseas because they conform to UL/cUL standards. 

**Environmentally Resistant Models**.....  
Enclosures can conform to IP67 standards (possible for flat-profile motors, 3,000-r/min motors with capacities of 1 kW or more, 1,000-r/min motors, and 1,500-r/min motors). These motors are ideal for applications where waterproofing is required.

**Countermeasures Against Power Supply Harmonics**.....  
A DC reactor connection terminal is provided.

W Series Easy Maintenance

**Simple Replacement of OMRON Servomotors**....  
OMRON S-, R-, H-, V-, and M-series Servomotors can now be replaced with W-series Servomotors.

**Built-in Parameter Setting Device**.....  
Parameters can be input directly from the Servodriver.

**Reduced Wiring**.....  
When a serial encoder is used, the number of encoder signal wires is 1/2 of earlier models.

**Absolute encoder:** Wires reduced from 15 to just 7.  
**Incremental encoder:** Wires reduced from 9 to just 5.

**Separate Main and Control Power Supplies**....  
The main and control power supplies have been separated completely. If an alarm occurs, the alarm code can be read and the appropriate countermeasures can be taken even with the main power supply turned OFF for safety.

W Series DeviceNet Communications Functions

**Trace Function**.....  
When trigger conditions are satisfied, up to two analog elements and two ON/OFF elements can be recorded in the DeviceNet Option Unit and read from the PLC.

**Monitor Item Reading Function**.....  
The contents of AC Servodriver monitor display can be read from the PLC.

**Parameter Reading/Writing Function**.....  
Parameters can be checked from the PLC using DeviceNet communications, and reading/writing performed according to the operating status.

**Note:** If the DeviceNet Option Unit is mounted to an AC Servodriver, the AC Servodriver will automatically be set to operate in position control mode. No other operating mode can be used.

# Servomotor/Servodriver Combinations

*Choose the Servomotor/Servodriver for Each Application to Maximize Performance*

| R88M Servomotors |                                |          |                                       |                                                               |                                   | R88D Servodrivers |                      |                   | Application                                                                                                                                           |
|------------------|--------------------------------|----------|---------------------------------------|---------------------------------------------------------------|-----------------------------------|-------------------|----------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Style            | Rated speed                    | Capacity | International standards<br>CE, UL/cUL | Shaft end<br>(without reduction gear)                         | Enclosure rating                  | 100 V             | 200 V Single phase   | 200 V Three phase |                                                                                                                                                       |
| Cylinder style   | 3,000 r/min.<br>(5,000 r/min.) | 30 W     | Approved                              | Straight<br>With key<br>With key and tap<br>Straight with tap | IP55<br>(excluding shaft opening) | WTA3HL            | WTA3H                | ---               | Low-inertia machines<br>Machines with fast tact times<br>(Robots, Assembly machines, Conveyance machines)                                             |
|                  |                                | 50 W     |                                       |                                                               |                                   | WTA5HL            | WTA5H                | ---               |                                                                                                                                                       |
|                  |                                | 100 W    |                                       |                                                               |                                   | WT01HL            | WT01H                | ---               |                                                                                                                                                       |
|                  |                                | 200 W    |                                       |                                                               |                                   | WT02HL            | WT02H                | ---               |                                                                                                                                                       |
|                  |                                | 400 W    |                                       |                                                               |                                   | ---               | WT04H                | ---               |                                                                                                                                                       |
|                  |                                | 750 W    |                                       |                                                               |                                   | ---               | WT08H<br>(See note.) | WT08H             |                                                                                                                                                       |
|                  |                                | 1 kW     |                                       | With key and tap<br>Straight                                  | IP67<br>(excluding shaft opening) | ---               | ---                  | WT10H             |                                                                                                                                                       |
|                  |                                | 1.5 kW   |                                       |                                                               |                                   | ---               | ---                  | WT15H             |                                                                                                                                                       |
|                  |                                | 2 kW     |                                       |                                                               |                                   | ---               | ---                  | WT20H             |                                                                                                                                                       |
|                  |                                | 3 kW     |                                       |                                                               |                                   | ---               | ---                  | WT30H             |                                                                                                                                                       |
|                  |                                | 4 kW     |                                       |                                                               |                                   | ---               | ---                  | WT50H             |                                                                                                                                                       |
|                  |                                | 5 kW     |                                       |                                                               |                                   | ---               | ---                  | WT50H             |                                                                                                                                                       |
|                  | 1,500 r/min.<br>(3,000 r/min.) | 450 W    | Approved                              | With key and tap<br>Straight                                  | IP67<br>(excluding shaft opening) | ---               | ---                  | WT05H             |                                                                                                                                                       |
|                  |                                | 850 W    |                                       |                                                               |                                   | ---               | ---                  | WT10H             |                                                                                                                                                       |
|                  |                                | 1.3 kW   |                                       |                                                               |                                   | ---               | ---                  | WT15H             |                                                                                                                                                       |
|                  |                                | 1.8 kW   |                                       |                                                               |                                   | ---               | ---                  | WT20H             |                                                                                                                                                       |
|                  |                                | 2.9 kW   |                                       |                                                               |                                   | ---               | ---                  | WT30H             |                                                                                                                                                       |
|                  |                                | 4.4 kW   |                                       |                                                               |                                   | ---               | ---                  | WT50H             |                                                                                                                                                       |
|                  |                                | 5.5 kW   |                                       |                                                               |                                   | ---               | ---                  | WT60H             |                                                                                                                                                       |
|                  |                                | 7.5 kW   |                                       |                                                               |                                   | ---               | ---                  | WT75H             |                                                                                                                                                       |
|                  | 1,500 r/min.<br>(2,000 r/min.) | 11 kW    |                                       |                                                               |                                   | ---               | ---                  | WT150H            |                                                                                                                                                       |
|                  |                                | 15 kW    |                                       |                                                               |                                   | ---               | ---                  | WT150H            |                                                                                                                                                       |
|                  | 1,000 r/min.<br>(2,000 r/min.) | 300 W    | Approved                              | With key and tap<br>Straight                                  | IP67<br>(excluding shaft opening) | ---               | ---                  | WT05H             | Machines requiring high torque<br>(Simple processing machines, Assembly machines, Transfer machines)                                                  |
|                  |                                | 600 W    |                                       |                                                               |                                   | ---               | ---                  | WT08H             |                                                                                                                                                       |
|                  |                                | 900 W    |                                       |                                                               |                                   | ---               | ---                  | WT10H             |                                                                                                                                                       |
|                  |                                | 1.2 kW   |                                       |                                                               |                                   | ---               | ---                  | WT15H             |                                                                                                                                                       |
|                  |                                | 2 kW     |                                       |                                                               |                                   | ---               | ---                  | WT20H             |                                                                                                                                                       |
|                  |                                | 3 kW     |                                       |                                                               |                                   | ---               | ---                  | WT30H             |                                                                                                                                                       |
|                  |                                | 4 kW     |                                       |                                                               |                                   | ---               | ---                  | WT50H             |                                                                                                                                                       |
|                  |                                | 5.5 kW   |                                       |                                                               |                                   | ---               | ---                  | WT60H             |                                                                                                                                                       |
| Flat style       | 3,000 r/min.<br>(5,000 r/min.) | 100 W    | Approved                              | Straight<br>With key<br>With key and tap<br>Straight with tap | IP55<br>(excluding shaft opening) | WT01HL            | WT01H                | ---               | Machines allowing little motor depth<br>Machines requiring waterproof motor<br>(Semiconductor-manufacturing machines, Food-processing machines, AGVs) |
|                  |                                | 200 W    |                                       |                                                               |                                   | WT02HL            | WT02H                | ---               |                                                                                                                                                       |
|                  |                                | 400 W    |                                       |                                                               |                                   | ---               | WT04H                | ---               |                                                                                                                                                       |
|                  |                                | 750 W    |                                       |                                                               | IP67<br>(including shaft opening) | ---               | WT08H<br>(See note.) | WT08H             |                                                                                                                                                       |
|                  |                                | 1.5 kW   |                                       |                                                               |                                   | ---               | ---                  | WT15H             |                                                                                                                                                       |
|                  |                                |          |                                       |                                                               |                                   | ---               | ---                  |                   |                                                                                                                                                       |

**Note:** When using a 200-V single-phase Servomotor, it is necessary to change part of the power supply wiring. Refer to the relevant connection diagram for details. The power supply specification is 220 to 230 VAC (+10%/–15%).

## ■ Available Models

### AC Servodrivers

**R88D-WT□□H□**

1    2 3 4 5 6

| Part | Item                                         | Code  | Specification               |
|------|----------------------------------------------|-------|-----------------------------|
| 1    | R88D indicates the product is a Servodriver. |       |                             |
| 2    | Series                                       | W     | W-series                    |
| 3    | Input signal                                 | T     | Analog or pulse-train input |
| 4    | Max. output capacity                         | A3    | 30 W                        |
|      |                                              | A5    | 50 W                        |
|      |                                              | 01    | 100 W                       |
|      |                                              | 02    | 200 W                       |
|      |                                              | 04    | 400 W                       |
|      |                                              | 05    | 500 W                       |
|      |                                              | 08    | 750 W                       |
|      |                                              | 10    | 1 kW                        |
|      |                                              | 15    | 1.5 kW                      |
|      |                                              | 20    | 2 kW                        |
|      |                                              | 30    | 3 kW                        |
|      |                                              | 50    | 5 kW                        |
|      |                                              | 60    | 6 kW                        |
|      |                                              | 75    | 7.5 kW                      |
|      |                                              | 150   | 15 kW                       |
| 5    | ---                                          | H     | ---                         |
| 6    | Power supply                                 | Blank | 200 VAC                     |
|      |                                              | L     | 100 VAC                     |

## AC Servomotors (Without Reduction Gear)

R88M-W□□□□□□□□-□□□□  
1 2 3 4 5 6 7 8 9

| Part | Item                                        | Code  | Specification                |
|------|---------------------------------------------|-------|------------------------------|
| 1    | R88M indicates the product is a Servomotor. |       |                              |
| 2    | Series                                      | W     | W-series                     |
| 3    | Style                                       | Blank | Cylinder style               |
|      |                                             | P     | Flat style                   |
| 4    | Motor capacity                              | 030   | 30 W                         |
|      |                                             | 100   | 100 W                        |
|      |                                             | 1K0   | 1 kW                         |
| 5    | Speed                                       | 10    | 1000 r/min.                  |
|      |                                             | 15    | 1500 r/min.                  |
|      |                                             | 30    | 3000 r/min.                  |
| 6    | Motor power supply specifications           | H     | 200 VAC, incremental encoder |
|      |                                             | L     | 100 VAC, incremental encoder |
|      |                                             | T     | 200 VAC, absolute encoder    |
|      |                                             | S     | 100 VAC, absolute encoder    |
| 7    | Brake                                       | Blank | No brake                     |
|      |                                             | B     | 24-VDC brake                 |
| 8    | Waterproof/oil seal specifications          | Blank | No additional specifications |
|      |                                             | O     | With oil seal                |
|      |                                             | W     | Waterproof                   |
| 9    | Shaft end                                   | Blank | Straight                     |
|      |                                             | S1    | With key                     |
|      |                                             | S2    | With key and tap             |
|      |                                             | S3    | Straight with tap            |

**Note:** Waterproof specifications are available for only flat-style motors.

## AC Servomotors (With Reduction Gear)

R88M-W□□□□□□□□-□G□□□□  
1 2 3 4 5 6 7 8 9 10

| Part | Item                                        | Code       | Specification                                                                                              |
|------|---------------------------------------------|------------|------------------------------------------------------------------------------------------------------------|
| 1    | R88M indicates the product is a Servomotor. |            |                                                                                                            |
| 2    | Series                                      | W          | W-series                                                                                                   |
| 3    | Style                                       | Blank      | Cylinder style                                                                                             |
|      |                                             | P          | Flat style                                                                                                 |
| 4    | Motor capacity                              | 030        | 30 W                                                                                                       |
|      |                                             | 100        | 100 W                                                                                                      |
|      |                                             | 1K0        | 1 kW                                                                                                       |
| 5    | Speed                                       | 10         | 1000 r/min.                                                                                                |
|      |                                             | 15         | 1500 r/min.                                                                                                |
|      |                                             | 30         | 3000 r/min.                                                                                                |
| 6    | Motor power supply specifications           | H          | 200 VAC, incremental encoder                                                                               |
|      |                                             | L          | 100 VAC, incremental encoder                                                                               |
|      |                                             | T          | 200 VAC, absolute encoder                                                                                  |
|      |                                             | S          | 100 VAC, absolute encoder                                                                                  |
| 7    | Brake                                       | Blank      | No brake                                                                                                   |
|      |                                             | B          | 24-VDC brake                                                                                               |
| 8    | Gear ratio (See note.)                      | G05 to G45 | G05: 1/5, G09: 1/9, G11: 1/11, G15: 1/15, G20: 1/20, G21: 1/21, G25: 1/25, G29: 1/29, G33: 1/33, G45: 1/45 |
| 9    | Backlash                                    | B          | 3 minutes max.                                                                                             |
|      |                                             | C          | About 45 minutes                                                                                           |
| 10   | Brake shaft end                             | Blank      | Straight                                                                                                   |
|      |                                             | J          | With key                                                                                                   |

**Note:** Not all motors can be combined with a reduction gear. See "Servomotor and Reduction Gear Combinations" on page 10 for more details.

**Servomotor Combinations (Models without Reduction Gears)**

 R88M-W□□□□□□□-□□□□  
                   3  4     5  6  7  8  9

| 3             | 4                  | 5                      | Basic model    | 6                                   |     |     |     | 7                     |     | 8                                     |     |     | 9           |     |     |     |  |
|---------------|--------------------|------------------------|----------------|-------------------------------------|-----|-----|-----|-----------------------|-----|---------------------------------------|-----|-----|-------------|-----|-----|-----|--|
| Type          | Ca-<br>pa-<br>city | Rota-<br>tion<br>speed |                | Motor power supply<br>specification |     |     |     | With/without<br>brake |     | Waterproof/oil seal<br>specifications |     |     | Shaft shape |     |     |     |  |
|               |                    |                        |                | H                                   | L   | T   | S   | Blank                 | B   | Blank                                 | O   | W   | Blank       | S1  | S2  | S3  |  |
| Cylin-<br>der | 30 W               | 3,000<br>r/min         | R88M-W03030    | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 50 W               |                        | R88M-W05030    | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 100 W              |                        | R88M-W10030    | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 200 W              |                        | R88M-W20030    | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 400 W              |                        | R88M-W40030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 750 W              |                        | R88M-W75030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         | Yes | Yes | Yes |  |
|               | 1 kW               |                        | R88M-W1K030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 1.5 kW             |                        | R88M-W1K530    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 2 kW               |                        | R88M-W2K030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 3 kW               |                        | R88M-W3K030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 4 kW               |                        | R88M-W4K030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 5 kW               |                        | R88M-W5K030    | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 450 W              | 1,500<br>r/min         | R88M-W45015    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 850 W              |                        | R88M-W85015    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 1.3 kW             |                        | R88M-W1K315    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 1.8 kW             |                        | R88M-W1K815    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 2.9 kW             |                        | R88M-W2K915    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 4.4 kW             |                        | R88M-W4K415    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 5.5 kW             |                        | R88M-W5K515    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 7.5 kW             |                        | R88M-W7K515    |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 11 kW              |                        | R88M-W11K015   |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 15 kW              |                        | R88M-W15K015   |                                     |     | Yes |     | Yes                   | Yes | Yes                                   | Yes |     | Yes         |     | Yes |     |  |
|               | 300 W              |                        | 1,000<br>r/min | R88M-W30010                         | Yes |     | Yes |                       | Yes | Yes                                   | Yes | Yes |             | Yes |     | Yes |  |
|               | 600 W              |                        |                | R88M-W60010                         | Yes |     | Yes |                       | Yes | Yes                                   | Yes | Yes |             | Yes |     | Yes |  |
| 900 W         | R88M-W90010        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| 1.2 kW        | R88M-W1K210        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| 2 kW          | R88M-W2K010        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| 3 kW          | R88M-W3K010        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| 4 kW          | R88M-W4K010        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| 5.5 kW        | R88M-W5K510        | Yes                    |                |                                     | Yes |     | Yes | Yes                   | Yes | Yes                                   |     | Yes |             | Yes |     |     |  |
| Flat          | 100 W              | 3,000<br>r/min         | R88M-WP10030   | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes | Yes | Yes         | Yes | Yes | Yes |  |
|               | 200 W              |                        | R88M-WP20030   | Yes                                 | Yes | Yes | Yes | Yes                   | Yes | Yes                                   | Yes | Yes | Yes         | Yes | Yes | Yes |  |
|               | 400 W              |                        | R88M-WP40030   | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes | Yes | Yes         | Yes | Yes | Yes |  |
|               | 750 W              |                        | R88M-WP75030   | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes | Yes | Yes         | Yes | Yes | Yes |  |
|               | 1.5 kW             |                        | R88M-WP1K530   | Yes                                 |     | Yes |     | Yes                   | Yes | Yes                                   | Yes | Yes | Yes         | Yes | Yes | Yes |  |

**Note:** 1,500-r/min motors are equipped with absolute encoders only. (These encoders can, however, be used as incremental encoders.)



# Servomotor and Reduction Gear Combinations

## How to Use the Servomotor Combination Tables

Use the table on the right, *Motor and Reduction Gear Combinations*, to check whether or not the desired combination is possible. Next, check the configuration details using the table for the corresponding Servomotor category.

- The model numbers are basically configured with the motor capacity (1) and the gear ratio option specification (2).

R88M-W□-□  
1 2

- The meanings of the symbols used in the tables are as follows:

□ Blank: Without brake  
B: With brake

▲ Blank: Straight shaft  
J: With key

\* H: 200 VAC with incremental encoder  
L: 100 VAC with incremental encoder  
T: 200 VAC with absolute encoder  
S: 100 VAC with absolute encoder

☆ H: 200 VAC with incremental encoder  
T: 200 VAC with absolute encoder

## Motor and Reduction Gear Combinations

| Motor type                         | Capacity        | Reduction gear type           |                                 | Standalone Reduction Gear (See note 1.) |
|------------------------------------|-----------------|-------------------------------|---------------------------------|-----------------------------------------|
|                                    |                 | Standard (Backlash: 30' max.) | Economy (Backlash: Approx. 45') |                                         |
| Cylinder-style motor (3,000 r/min) | 30 W to 750 W   | Yes                           | Yes                             | Yes                                     |
|                                    | 1 kW to 5 kW    | Yes                           |                                 |                                         |
| Cylinder-style motor (1,500 r/min) | 450 W to 15 kW  | Yes                           |                                 |                                         |
| Cylinder-style motor (1,000 r/min) | 300 W to 5.5 kW | Yes                           |                                 |                                         |
| Flat-style motor                   | 100 W to 750 W  | Yes                           | Yes                             | Yes                                     |
|                                    | 1.5 kW          | Yes                           |                                 |                                         |

- Note:** 1. The SMARTSTEP Reduction Gear (backlash: 3 min max.) can be combined with the 3,000-r/min, 50- to 750-W motor. The actual installation work to combine the Reduction Gear and Servomotor should be done by the customer.
2. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

## 30-W to 750-W Cylinder-style Motors (3,000 r/min)

| Motor capacity | Basic model    | Reduction gear ratio |        |        |        |        |
|----------------|----------------|----------------------|--------|--------|--------|--------|
|                |                | 1/5                  | 1/9    | 1/11   | 1/21   | 1/33   |
|                |                | □G05B▲               | □G09B▲ | □G11B▲ | □G21B▲ | □G33B▲ |
| 30 W           | R88M-W03030*-□ | Yes                  | Yes    |        | Yes    | Yes    |
| 50 W           | R88M-W05030*-□ | Yes                  | Yes    |        | Yes    | Yes    |
| 100 W          | R88M-W10030*-□ | Yes                  |        | Yes    | Yes    | Yes    |
| 200 W          | R88M-W20030*-□ | Yes                  |        | Yes    | Yes    | Yes    |
| 400 W          | R88M-W40030*-□ | Yes                  |        | Yes    | Yes    | Yes    |
| 750 W          | R88M-W75030*-□ | Yes                  |        | Yes    | Yes    | Yes    |

**Note:** "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

## Economy Reduction Gears (Backlash: Approx. 45')

| Motor capacity | Basic model    | Reduction gear ratio |        |        |        |
|----------------|----------------|----------------------|--------|--------|--------|
|                |                | 1/5                  | 1/9    | 1/15   | 1/25   |
|                |                | □G05CJ               | □G09CJ | □G15CJ | □G25CJ |
| 30 W           | R88M-W03030*-□ |                      |        |        |        |
| 50 W           | R88M-W05030*-□ |                      |        |        |        |
| 100 W          | R88M-W10030*-□ | Yes                  | Yes    | Yes    | Yes    |
| 200 W          | R88M-W20030*-□ | Yes                  | Yes    | Yes    | Yes    |
| 400 W          | R88M-W40030*-□ | Yes                  | Yes    | Yes    | Yes    |
| 750 W          | R88M-W75030*-□ | Yes                  | Yes    | Yes    | Yes    |

- Note:** 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.

## 1-kW to 5-kW Cylinder-style Motors (3,000 r/min)

| Motor capacity | Basic model    | Reduction gear ratio |        |        |        |        |
|----------------|----------------|----------------------|--------|--------|--------|--------|
|                |                | 1/5                  | 1/9    | 1/20   | 1/29   | 1/45   |
|                |                | □G05BJ               | □G09BJ | □G20BJ | □G29BJ | □G45BJ |
| 1 kW           | R88M-W1K030*-□ | Yes                  | Yes    | Yes    | Yes    | Yes    |
| 1.5 kW         | R88M-W1K030*-□ | Yes                  | Yes    | Yes    | Yes    | Yes    |
| 2 kW           | R88M-W2K030*-□ | Yes                  | Yes    | Yes    | Yes    | Yes    |
| 3 kW           | R88M-W3K030*-□ | Yes                  | Yes    | Yes    | Yes    | Yes    |
| 4 kW           | R88M-W4K030*-□ | Yes                  | Yes    | Yes    | Yes    |        |
| 5 kW           | R88M-W5K030*-□ | Yes                  | Yes    | Yes    |        |        |

- Note:** 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.



## ■ 100-W to 1.5-kW Flat-style Motors (3,000 r/min)

### Standard Reduction Gears (Backlash: 3' max.)

| Motor capacity | Basic model     | Reduction gear ratio |         |         |         |
|----------------|-----------------|----------------------|---------|---------|---------|
|                |                 | 1/5                  | 1/11    | 1/21    | 1/33    |
|                |                 | -□G05B▲              | -□G11B▲ | -□G21B▲ | -□G33B▲ |
| 100 W          | R88M-WP10030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 200 W          | R88M-WP20030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 400 W          | R88M-WP40030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 750 W          | R88M-WP75030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 1.5 kW         | R88M-WP1K530*-□ | Yes                  | Yes     | Yes     | Yes     |

**Note:** "Yes" represents compatible combinations.

### Economy Reduction Gears (Backlash: Approx. 45')

| Motor capacity | Basic model     | Reduction gear ratio |         |         |         |
|----------------|-----------------|----------------------|---------|---------|---------|
|                |                 | 1/5                  | 1/9     | 1/15    | 1/25    |
|                |                 | -□G05CJ              | -□G09CJ | -□G15CJ | -□G25CJ |
| 100 W          | R88M-WP10030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 200 W          | R88M-WP20030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 400 W          | R88M-WP40030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 750 W          | R88M-WP75030*-□ | Yes                  | Yes     | Yes     | Yes     |
| 1.5 kW         | R88M-WP1K530*-□ |                      |         |         |         |

**Note:** 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

2. These reduction gears can be attached to only shafts with key.

## ■ 450-W to 15-kW Cylinder-style Motors (1,500 r/min)

| Motor capacity | Basic model     | Reduction gear ratio |         |         |         |         |
|----------------|-----------------|----------------------|---------|---------|---------|---------|
|                |                 | 1/5                  | 1/9     | 1/20    | 1/29    | 1/45    |
|                |                 | -□G05BJ              | -□G09BJ | -□G20BJ | -□G29BJ | -□G45BJ |
| 450 W          | R88M-W45015*-□  | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 850 W          | R88M-W85015*-□  | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 1.3 kW         | R88M-W1K315*-□  | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 1.8 kW         | R88M-W1K815*-□  | Yes                  | Yes     | Yes     | Yes     |         |
| 2.9 kW         | R88M-W2K915*-□  | Yes                  | Yes     | Yes     |         |         |
| 4.4 kW         | R88M-W4K415*-□  | Yes                  | Yes     |         |         |         |
| 5.5 kW         | R88M-W5K515*-□  |                      |         |         |         |         |
| 7.5 kW         | R88M-W7K515*-□  |                      |         |         |         |         |
| 11 kW          | R88M-W11K015*-□ |                      |         |         |         |         |
| 15 kW          | R88M-W15K015*-□ |                      |         |         |         |         |

**Note:** 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

2. These reduction gears can be attached to only shafts with key.
3. The motors are equipped with absolute encoders only. (These encoders can, however, be used as incremental encoders.)

## ■ 300-W to 5.5-kW Cylinder-style Motors (1,000 r/min)

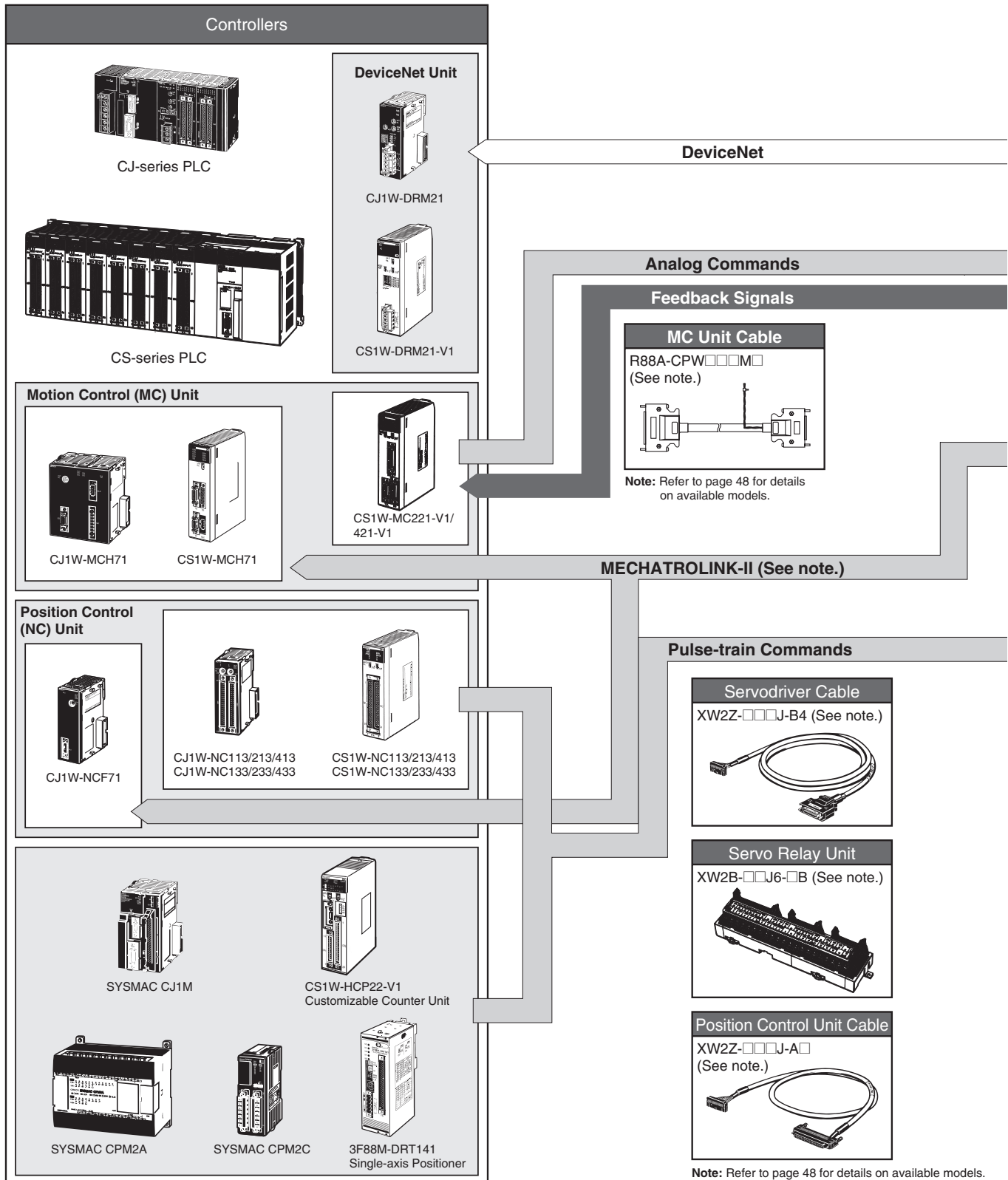
| Motor capacity | Basic model    | Reduction gear ratio |         |         |         |         |
|----------------|----------------|----------------------|---------|---------|---------|---------|
|                |                | 1/5                  | 1/9     | 1/20    | 1/29    | 1/45    |
|                |                | -□G05BJ              | -□G09BJ | -□G20BJ | -□G29BJ | -□G45BJ |
| 300 W          | R88M-W30010*-□ | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 600 W          | R88M-W60010*-□ | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 900 W          | R88M-W90010*-□ | Yes                  | Yes     | Yes     | Yes     | Yes     |
| 1.2 kW         | R88M-W1K210*-□ | Yes                  | Yes     | Yes     |         |         |
| 2 kW           | R88M-W2K010*-□ | Yes                  | Yes     | Yes     |         |         |
| 3 kW           | R88M-W3K010*-□ | Yes                  | Yes     |         |         |         |
| 4 kW           | R88M-W4K010*-□ |                      |         |         |         |         |
| 5.5 kW         | R88M-W5K510*-□ |                      |         |         |         |         |

**Note:** 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

2. These reduction gears can be attached to only shafts with key.

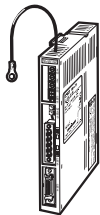
# System Configuration

## Flexible System Configuration That Can Be Matched to the Application



### AC Servodrivers

DeviceNet Option Unit



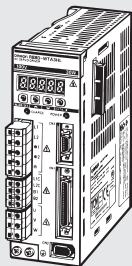
R88A-NCW152-DRT

MECHATROLINK-II Interface Unit

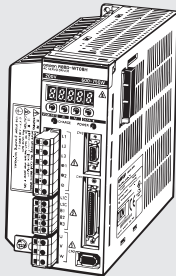


Yaskawa model number  
JUSP-NS115  
(OMRON ordering  
model number  
FNY-NS115)  
(See note.)

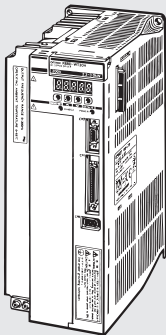
**Note:** Use the OMRON ordering  
model number (FNY-NS115)  
when ordering. The product is  
marked only with the Yaskawa  
model number (JUSP-NS115).



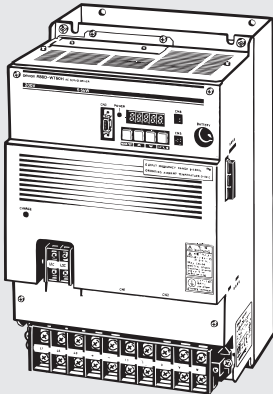
R88D-WTA3HL



R88D-WT08H



R88D-WT30H

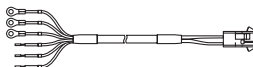


R88D-WT60H

**Note:** The illustrations shown here are examples only.

### Power Cables (See note.)

For motors without brake:  
R88A-CAW□□□S  
For motors with brake:  
R88A-CAW□□□B



**Note:** Refer to page 48 for details  
on available models.

### Power Signals

### Feedback Signals

#### Encoder Cables (See note.)

R88A-CRWA□□□C  
For cylinder-style motors  
(3,000 r/min): 30 W to 75 W

R88A-CRWB□□□N  
For cylinder-style motors  
(3,000 r/min): 1 kW to 5 kW

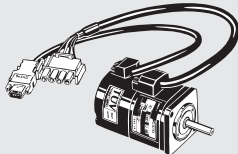
For cylinder-style motors  
(1,000 r/min): 300 W to 5.5 kW

For cylinder-style motors  
(1,500 r/min): 450 W to 15 kW

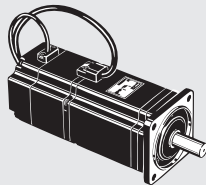


**Note:** Refer to page 48 for details  
on available models.

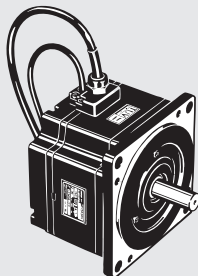
### AC Servomotors



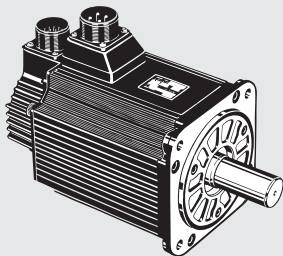
R88M-W03030L



R88M-W75030T-B



R88M-WP75030H



R88M-W3K030H

**Note:** The illustrations shown here are  
examples only.

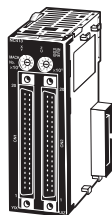


## Controllers

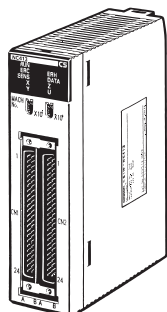
*Combining the Servodriver with a Controller from Simple Positioning Can Improve Machine Productivity to Advanced Positioning*

### ■ Position Control (NC) Units

*Perform simple positioning just by writing position data from the CPU Unit.*

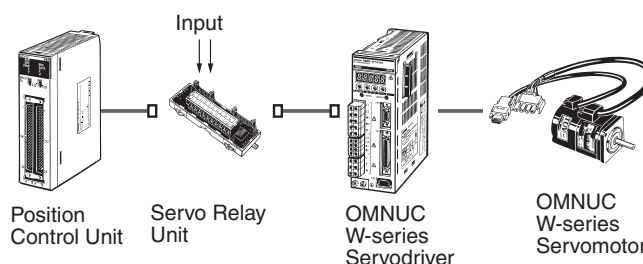


CJ1W-NC113/213/413  
CJ1W-NC133/233/433



CS1W-NC113/213/413  
CS1W-NC133/233/433  
C200HW-NC113/213/413

- The Position Control Unit can respond to commands from the CPU Unit and produce a pulse output at high speed (2 ms when using the CS1W-NC or CJ1W-NC.)
- To suppress machine vibration, an S-shape curve can be specified for the acceleration/deceleration curve instead of a trapezoidal curve.
- When the CS1W-NC or CJ1W-NC is being used, the Unit's data and parameters can be created and stored easily using the Windows-based WS02-NCTC1-E Support Software.
- Position data can be stored in the Position Control Unit's flash memory, which eliminates the need to periodically replace the backup battery.

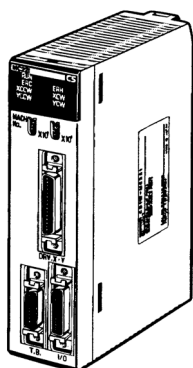


### Open Loop Method, Pulse Output

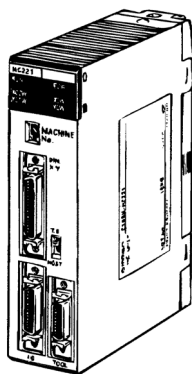
- Simple positioning can be performed with the direct operation function.

### ■ Motion Control (MC) Units

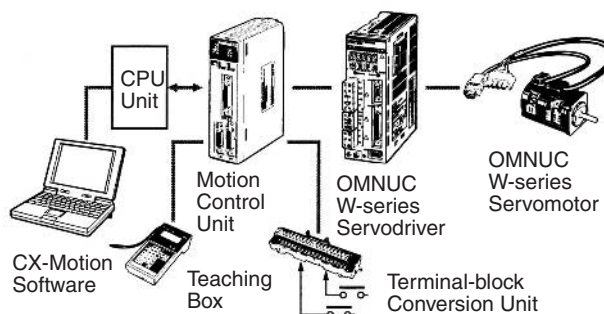
*These high-speed, highly accurate, 2-axis/4-axis Motion Controllers are equipped with the multi-tasking G language and are compatible with absolute and incremental encoders.*



CS1W-MC221/421



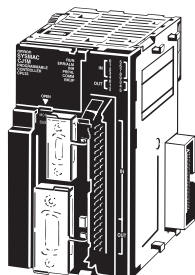
C200H-MC221



- The multi-tasking G language allows 4 axes to be controlled simultaneously and it is also possible to control each axis independently. The G language can simplify the PLC's ladder program by reducing position-control-related ladder programming.
- Winding operations can be simplified and speeded up. (Instructions providing a 2-axis traverse function are available.)
- The encoder response frequency is 2 Mpps for x4 operation, which is compatible with applications requiring high-speed and high-accuracy.
- A D code (interrupt code) can be output to the CPU Unit when positioning is completed or an important position is passed.
- Programming is easy with the Windows-based CX-Motion Support Software.
- A manual pulse generator can be used.

## ■ SYSMAC CJ1M

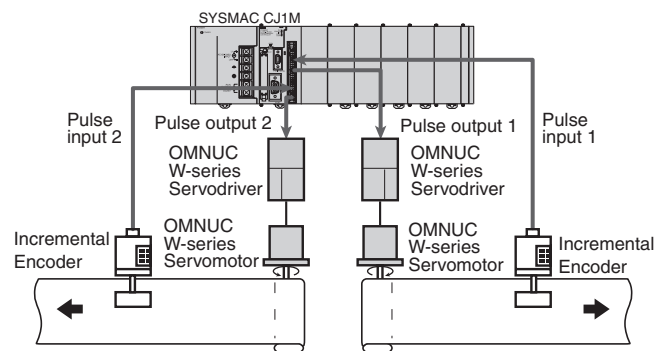
*The CJ1M is a high-performance, compact PLC for distributed control.  
Built-in I/O boards and special instructions support simple positioning and pulse I/O.*



SYSMAC CJ1M

### Simple Positioning

The Pulse I/O board is equipped with two ports each for input and output, supporting high-speed input at up to 100 kHz and output at up to 100 kHz. Connection with a Servodriver enables simple positioning.



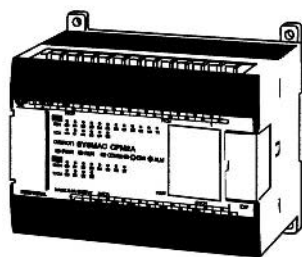
### Special Instructions for Simple Positioning

Equipped with special pulse I/O instructions, the CJ1M can be operated by writing easy ladder programs.

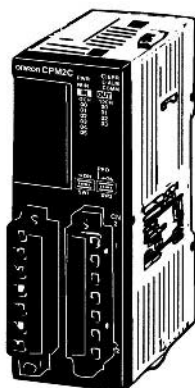
Instruction example: Search for origin (ORG), speed instruction (ACC), pulse output (PLS2)

## ■ SYSMAC CPM2A/CPM2C

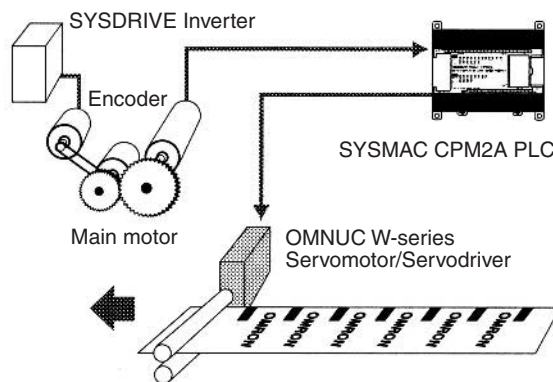
*The CPM2A/CPM2C PLCs are equipped with synchronized pulse control and position control functions. Meets the needs for higher line speed and multiple-product small-lot production.*



SYSMAC CPM2A



SYSMAC CPM2C



### Position Control Function

This function supports 1-axis pulse outputs with trapezoidal acceleration/deceleration (10 kHz) and 2-axis simple pulse outputs. A Servomotor can be used for operations such as adjusting the feed rate of workpieces (constant feed) and the amount of fillings (constant amount) such as jam or custard.

### Synchronized Pulse Control

The output pulse frequency can be set to be a specified multiple of the input pulse frequency and that multiple can be changed from the ladder program. This function can be used to adjust the feed rate of packaging film so that the brand name or other printing remains in the correct location during packaging.

# Servomotor Specifications

## ■ Performance Specifications

### Cylinder-style Motors (3,000 r/min)

| Item                           |                                      | 200 VAC                                                             |         |           |           |         |           |                                |         |         |         |         |         |         |
|--------------------------------|--------------------------------------|---------------------------------------------------------------------|---------|-----------|-----------|---------|-----------|--------------------------------|---------|---------|---------|---------|---------|---------|
|                                |                                      | Servomotor (R88M-)                                                  | W03030□ | W05030□   | W10030□   | W20030□ | W40030□   | W75030□                        | W1K030□ | W1K530□ | W2K030□ | W3K030□ | W4K030□ | W5K030□ |
|                                |                                      | Servodriver (R88D-)                                                 | WTA3H   | WTA5H     | WT01H     | WT02H   | WT04H     | WT08H                          | WT10H   | WT15H   | WT20H   | WT30H   | WT50H   | WT50H   |
| Rated output                   | W                                    | 30                                                                  | 50      | 100       | 200       | 400     | 750       | 1 k                            | 1.5 k   | 2 k     | 3 k     | 4 k     | 5 k     |         |
| Rated torque                   | N·m                                  | 0.0955                                                              | 0.159   | 0.318     | 0.637     | 1.27    | 2.39      | 3.18                           | 4.90    | 6.36    | 9.80    | 12.6    | 15.8    |         |
| Max. momentary torque          | N·m                                  | 0.286                                                               | 0.477   | 0.955     | 1.91      | 3.82    | 7.16      | 9.54                           | 14.7    | 19.1    | 29.4    | 37.8    | 47.6    |         |
| Rated speed                    | r/min                                | 3,000                                                               |         |           |           |         |           |                                |         |         |         |         |         |         |
| Max. momentary speed           | r/min                                | 5,000                                                               |         |           |           |         |           |                                |         |         |         |         |         |         |
| Rated current                  | A(rms)                               | 0.44                                                                | 0.64    | 0.91      | 2.1       | 2.8     | 4.4       | 5.7                            | 9.7     | 12.7    | 18.8    | 25.4    | 28.6    |         |
| Rotor inertia (without brake)  | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.0166                                                              | 0.022   | 0.0364    | 0.106     | 0.173   | 0.672     | 1.74                           | 2.47    | 3.19    | 7.0     | 9.6     | 12.3    |         |
| Power rate                     | kW/s                                 | 5.49                                                                | 11.5    | 27.8      | 38.2      | 93.7    | 84.8      | 57.9                           | 97.2    | 127     | 137     | 166     | 202     |         |
| Applicable load inertia        | Multiple                             | 100 (Restricted, however, by the regenerative processing capacity.) |         |           |           |         |           | 10                             |         |         |         |         |         |         |
| Allowable radial load on shaft | N                                    | 68                                                                  |         | 78        | 245       |         | 392       | 686                            |         |         | 980     | 1176    |         |         |
| Allowable thrust load on shaft | N                                    | 54                                                                  |         |           | 74        |         | 147       | 196                            |         |         | 392     |         |         |         |
| Approx. weight (without brake) | kg                                   | 0.3                                                                 | 0.4     | 0.5       | 1.1       | 1.7     | 3.4       | 4.6                            | 5.8     | 7.0     | 11.0    | 14.0    | 17.0    |         |
| Approx. weight (with brake)    | kg                                   | 0.6                                                                 | 0.7     | 0.8       | 1.6       | 2.2     | 4.3       | 6.0                            | 7.5     | 8.5     | 14.0    | 17.0    | 20.0    |         |
| Encoder resolution (See note.) | INC                                  | A, B phase: 2,048 pulses/rev.                                       |         |           |           |         |           | A, B phase: 32,768 pulses/rev. |         |         |         |         |         |         |
|                                | ABS                                  | A, B phase: 16,384 pulses/rev.                                      |         |           |           |         |           | A, B phase: 32,768 pulses/rev. |         |         |         |         |         |         |
| Brake specifications           |                                      |                                                                     |         |           |           |         |           |                                |         |         |         |         |         |         |
| Inertia                        | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.0085                                                              |         |           | 0.058     |         | 0.14      | 0.325                          |         |         | 2.1     |         |         |         |
| Excitation voltage             | V                                    | 24 VDC ±10%                                                         |         |           |           |         |           | 24 VDC ±10%                    |         |         |         |         |         |         |
| Power consumption              | W                                    | 6                                                                   |         |           | 6.9       |         | 7.7       | 7                              |         |         | 9.85    |         |         |         |
| Current consumption            | A                                    | 0.25                                                                |         |           | 0.29      |         | 0.32      | 0.29                           |         |         | 0.41    |         |         |         |
| Static friction torque         | N·m                                  | 0.2min.                                                             |         | 0.34 min. | 1.47 min. |         | 2.45 min. | 7.84 min.                      |         |         | 20 min. |         |         |         |
| Absorption time                | ms                                   | 30 max.                                                             |         |           | 60 max.   |         | 80 max.   | 180 max.                       |         |         |         |         |         |         |
| Release time                   | ms                                   | 60 max.                                                             |         |           | 20 max.   |         | 20 max.   | 100 max.                       |         |         |         |         |         |         |
| Backlash                       | ---                                  | 1° (reference value)                                                |         |           |           |         |           |                                |         |         |         |         |         |         |
| Rating                         | ---                                  | Continuous                                                          |         |           |           |         |           |                                |         |         |         |         |         |         |
| Insulation                     | ---                                  | Type F                                                              |         |           |           |         |           |                                |         |         |         |         |         |         |

**Note:** The encoder resolution for the Z phase is 1 pulse/rev.

**Cylinder-style Motors (3,000 r/min)**

| Item                           |                                      | 100 VAC                                                             |         |           |          |         |
|--------------------------------|--------------------------------------|---------------------------------------------------------------------|---------|-----------|----------|---------|
|                                |                                      | Servomotor (R88M-)                                                  | W03030□ | W05030□   | W10030□  | W20030□ |
|                                |                                      | Servodriver (R88D-)                                                 | WTA3HL  | WTA5HL    | WT01HL   | WT02HL  |
| Rated output                   | W                                    | 30                                                                  | 50      | 100       | 200      |         |
| Rated torque                   | N·m                                  | 0.0955                                                              | 0.159   | 0.318     | 0.637    |         |
| Max. momentary torque          | N·m                                  | 0.286                                                               | 0.477   | 0.955     | 1.91     |         |
| Rated speed                    | r/min                                | 3,000                                                               |         |           |          |         |
| Max. momentary speed           | r/min                                | 5,000                                                               |         |           |          |         |
| Rated current                  | A(rms)                               | 0.66                                                                | 0.95    | 2.4       | 3.0      |         |
| Rotor inertia (without brake)  | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.0166                                                              | 0.022   | 0.0364    | 0.106    |         |
| Power rate                     | kW/s                                 | 5.49                                                                | 11.5    | 27.8      | 38.2     |         |
| Applicable load inertia        | Multiple                             | 100 (Restricted, however, by the regenerative processing capacity.) |         |           |          |         |
| Allowable radial load on shaft | N                                    | 68                                                                  |         | 78        | 245      |         |
| Allowable thrust load on shaft | N                                    | 54                                                                  |         |           | 74       |         |
| Approx. weight (without brake) | kg                                   | 0.3                                                                 | 0.4     | 0.5       | 1.1      |         |
| Approx. weight (with brake)    | kg                                   | 0.6                                                                 | 0.7     | 0.8       | 16       |         |
| Encoder resolution             | INC                                  | A, B phase: 2,048 pulses/rev.; Z phase: 1 pulse/rev.                |         |           |          |         |
|                                | ABS                                  | A, B phase: 16,384 pulses/rev.; Z phase: 1 pulse/rev.               |         |           |          |         |
| Brake specifications           |                                      |                                                                     |         |           |          |         |
| Inertia                        | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.0085                                                              |         |           | 0.058    |         |
| Excitation voltage             | V                                    | 24 VDC ±10%                                                         |         |           |          |         |
| Power consumption              | W                                    | 6                                                                   |         |           | 6.5      |         |
| Current consumption            | A                                    | 0.25                                                                |         |           | 0.27     |         |
| Static friction torque         | N·m                                  | 0.2 min.                                                            |         | 0.34 min. | 1.5 min. |         |
| Absorption time                | ms                                   | 30 max.                                                             |         |           | 60 max.  |         |
| Release time                   | ms                                   | 60 max.                                                             |         |           | 20 max.  |         |
| Backlash                       | ---                                  | 1° (reference value)                                                |         |           |          |         |
| Rating                         | ---                                  | Continuous                                                          |         |           |          |         |
| Insulation                     | ---                                  | Type F                                                              |         |           |          |         |

**■ General Motor Specifications**
**Cylinder-style Motors (3,000 r/min)**

| Item                                    |                       | 30 to 750 W                                        | 1 to 5 kW             |
|-----------------------------------------|-----------------------|----------------------------------------------------|-----------------------|
| Ambient temperature                     |                       | Operating: 0 to +40°C<br>Storage: -20 to +60°C     |                       |
| Ambient humidity (with no condensation) |                       | Operating: 20% to 80%<br>Storage: 20% to 80%       |                       |
| Atmosphere                              |                       | No corrosive gases                                 |                       |
| Vibration resistance                    |                       | 49 m/s <sup>2</sup>                                | 24.5 m/s <sup>2</sup> |
| Shock resistance                        |                       | 490 m/s <sup>2</sup> (twice in vertical direction) |                       |
| Insulation resistance                   |                       | 10 MΩ min. at 500 VDC                              |                       |
| Dielectric strength                     |                       | 1,500 VAC for 1 min                                |                       |
| Operating position                      |                       | Any direction                                      |                       |
| Insulation class                        |                       | Type B                                             | Type F                |
| Construction                            |                       | Totally-enclosed self-cooling                      |                       |
| Enclosure rating                        |                       | IP55 (See note.)                                   | IP67 (See note.)      |
| Vibration class                         |                       | V-15                                               |                       |
| EC directives                           | EMC directive         | EN55011 class A group1<br>EN61000-6-2              |                       |
|                                         | Low-voltage directive | IEC60034-1, 5, 8, 9<br>EN60034-1, 9                |                       |
| UL standards                            |                       | UL1004                                             |                       |
| cUL standards                           |                       | cUL C22.2 No.100                                   |                       |

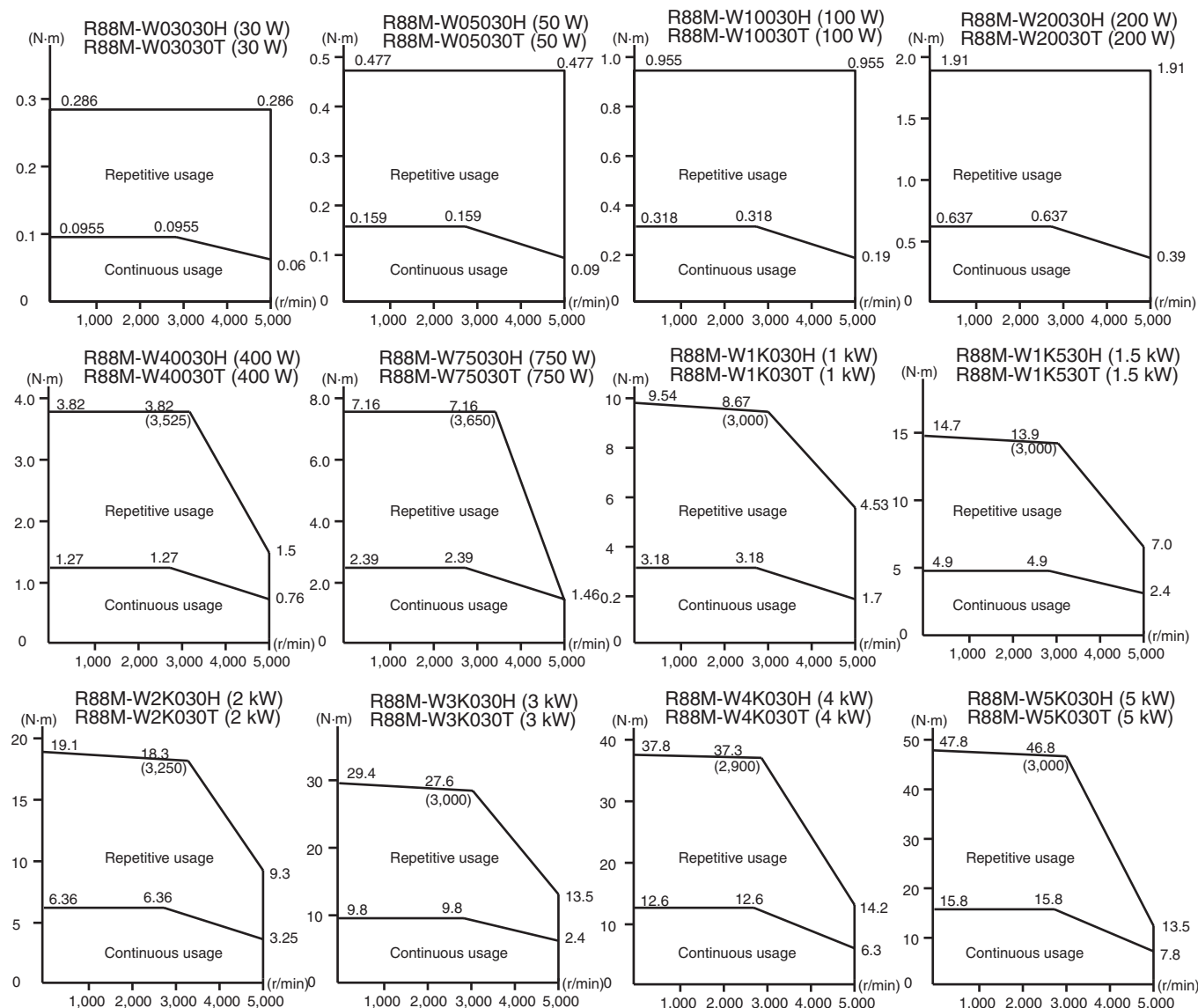
**Note:** Enclosure ratings do not include the shaft opening.



# ■ Torque and Rotation Speed Characteristics

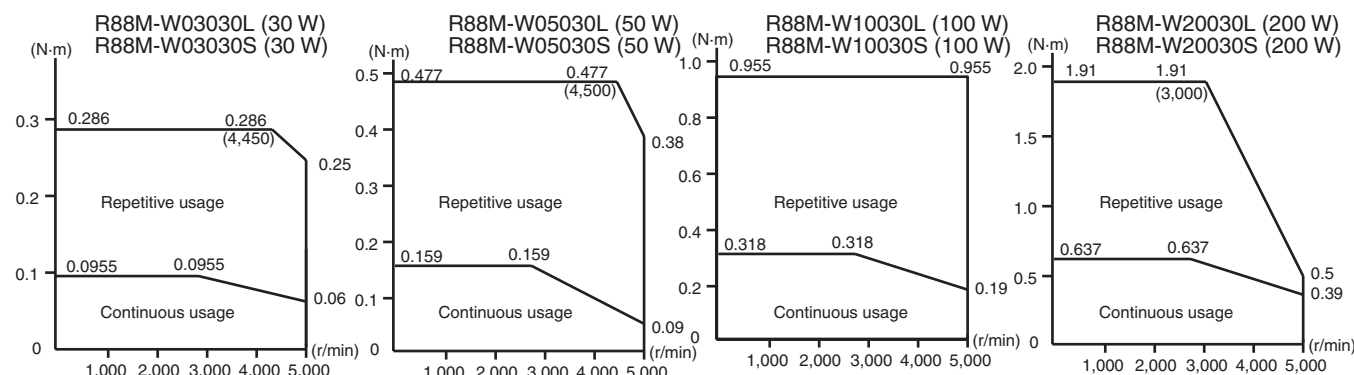
## Cylinder-style Motors with 200-VAC Power Supply (3,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.



## ■ Cylinder-style Motors with 100-VAC Power Supply (3,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 100-VAC input.



**Cylinder-style Motors (1,500 r/min)**

| Item                           |                                      | 200 VAC                                                 |             |             |            |              |              |            |              |              |             |          |
|--------------------------------|--------------------------------------|---------------------------------------------------------|-------------|-------------|------------|--------------|--------------|------------|--------------|--------------|-------------|----------|
|                                |                                      | Servomotor (R88M-)                                      | W45015T     | W85015T     | W1K315T    | W1K815T      | W2K915T      | W4K415T    | W5K515T      | W7K515T      | W11K015T    | W15K015T |
|                                |                                      | Servodriver (R88D-)                                     | WT05H       | WT10H       | WT15H      | WT20H        | WT30H        | WT50H      | WT60H        | WT75H        | WT150H      | WT150H   |
| Rated output                   | W                                    | 450                                                     | 850         | 1,300       | 1,800      | 2,900        | 4,400        | 5,500      | 7,500        | 11,000       | 15,000      |          |
| Rated torque                   | N·m                                  | 2.84                                                    | 5.39        | 8.34        | 11.5       | 18.6         | 28.4         | 35.0       | 48.0         | 70.0         | 95.4        |          |
| Max. momentary torque          | N·m                                  | 8.92                                                    | 13.8        | 23.3        | 28.7       | 45.1         | 71.1         | 87.6       | 119          | 175          | 224         |          |
| Rated speed                    | r/min                                | 1,500                                                   |             |             |            |              |              |            |              |              |             |          |
| Max. momentary speed           | r/min                                | 3,000                                                   |             |             |            |              |              |            |              |              | 2,000       |          |
| Rated current                  | A(rms)                               | 3.8                                                     | 7.1         | 10.7        | 16.7       | 23.8         | 32.8         | 42.1       | 54.7         | 58.6         | 78.0        |          |
| Rotor inertia (without brake)  | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 7.24                                                    | 13.9        | 20.5        | 31.7       | 46.0         | 67.5         | 89.0       | 125          | 281          | 315         |          |
| Power rate                     | kW/s                                 | 11.2                                                    | 20.9        | 33.8        | 41.5       | 75.3         | 120          | 137        | 184          | 174          | 289         |          |
| Applicable load inertia        | Multiple                             | 5                                                       |             |             |            |              |              |            |              |              |             |          |
| Allowable radial load on shaft | N                                    | 490                                                     |             | 686         | 1,176      | 1,470        |              | 1,764      |              | 4,998        |             |          |
| Allowable thrust load on shaft | N                                    | 98                                                      |             | 343         | 490        |              |              | 588        |              | 2,156        |             |          |
| Approx. weight (without brake) | kg                                   | Approx. 5.5                                             | Approx. 7.6 | Approx. 9.6 | Approx. 14 | Approx. 18   | Approx. 23   | Approx. 30 | Approx. 40   | Approx. 57.5 | Approx. 86  |          |
| Approx. weight (with brake)    | kg                                   | Approx. 7.5                                             | Approx. 9.6 | Approx. 12  | Approx. 19 | Approx. 23.5 | Approx. 28.5 | Approx. 35 | Approx. 45.5 | Approx. 65   | Approx. 100 |          |
| Encoder resolution             | INC                                  | ---                                                     |             |             |            |              |              |            |              |              |             |          |
|                                | ABS                                  | A, B phase: 32,768 pulses/rev.<br>Z phase: 1 pulse/rev. |             |             |            |              |              |            |              |              |             |          |
| Brake specifications           |                                      |                                                         |             |             |            |              |              |            |              |              |             |          |
| Inertia                        | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 2.1                                                     |             |             | 8.5        |              |              |            |              | 18.8         | 37.5        |          |
| Excitation voltage             | V                                    | 24 VDC ±10% (nonpolar)                                  |             |             |            |              |              |            |              |              |             |          |
| Power consumption              | W                                    | 9.85                                                    |             |             | 18.5       |              |              | 23.5       |              | 32           | 35          |          |
| Current consumption            | A                                    | 0.41                                                    |             |             | 0.77       |              |              | 0.98       |              | 1.33         | 1.46        |          |
| Static friction torque         | N·m                                  | 4.41                                                    | 12.7        |             | 43.1       |              |              | 72.6       |              | 84.3         | 114.6       |          |
| Absorption time                | ms                                   | 180 max.                                                |             |             |            |              |              |            |              | 170 max.     | 250 max.    |          |
| Release time                   | ms                                   | 100 max.                                                |             |             |            |              |              |            |              | 80 max.      |             |          |
| Backlash                       | ---                                  | 1° max.                                                 |             |             |            |              |              |            |              |              |             |          |
| Rating                         | ---                                  | Continuous                                              |             |             |            |              |              |            |              |              |             |          |
| Insulation                     | ---                                  | Type F                                                  |             |             |            |              |              |            |              |              |             |          |

## ■ General Motor Specifications

### Cylinder-style Motors (1,500 r/min)

| Item                                    |                       | 450 W to 15 kW<br>(standard type: 1,500 r/min)     |
|-----------------------------------------|-----------------------|----------------------------------------------------|
| Ambient temperature                     |                       | Operating: 0 to +40°C<br>Storage: -20 to +60°C     |
| Ambient humidity (with no condensation) |                       | Operating: 20% to 80%<br>Storage: 20% to 80%       |
| Atmosphere                              |                       | No corrosive gases                                 |
| Vibration resistance                    |                       | 24.5 m/s <sup>2</sup>                              |
| Shock resistance                        |                       | 490 m/s <sup>2</sup> (twice in vertical direction) |
| Insulation resistance                   |                       | 10 MΩ min. at 500 VDC                              |
| Dielectric strength                     |                       | 1,500 VAC for 1 min                                |
| Operating position                      |                       | Any direction                                      |
| Insulation class                        |                       | Type F                                             |
| Construction                            |                       | Totally-enclosed self-cooling                      |
| Enclosure rating                        |                       | IP67 (See note.)                                   |
| Vibration class                         |                       | V-15                                               |
| EC directives                           | EMC directive         | EN55011 class A group1<br>EN61000-6-2              |
|                                         | Low-voltage directive | IEC60034-1, 5, 8, 9<br>EN60034-1, 9                |
| UL standards                            |                       | UL1004                                             |
| cUL standards                           |                       | cUL C22.2 No.100                                   |

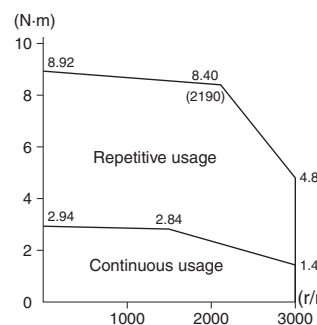
**Note:** Enclosure ratings do not include the shaft opening.

## Torque and Rotation Speed Characteristics

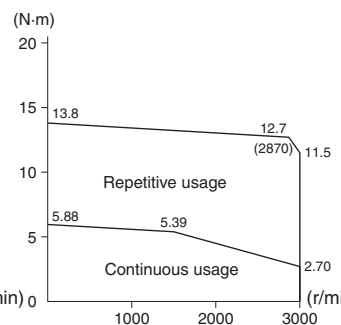
### Cylinder-style Motors with 200-VAC Power Supply (1,500 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.

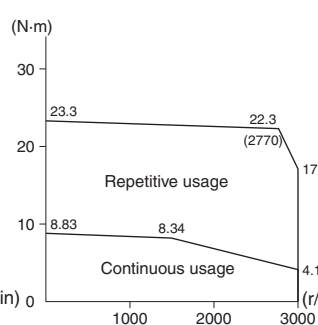
R88M-W45015T (450 W)



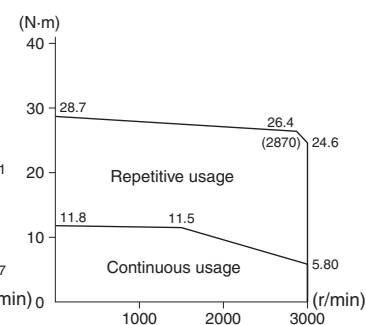
R88M-W85015T (850 W)



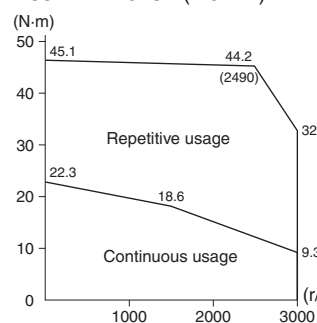
R88M-W1K315T (1.3 kW)



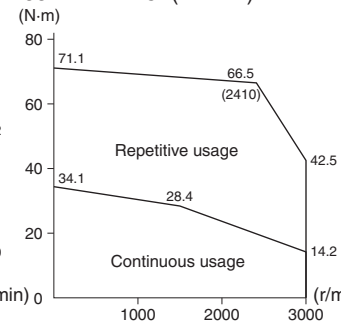
R88M-W1K815T (1.8 kW)



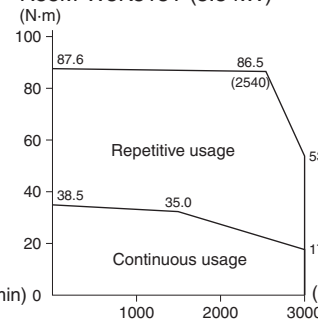
R88M-W2K915T (2.9 kW)



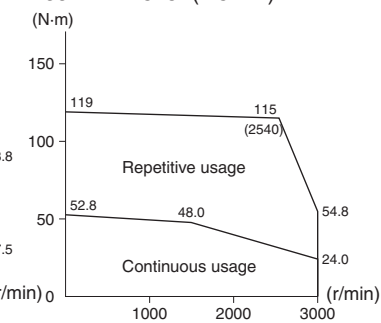
R88M-W4K415T (4.4 kW)



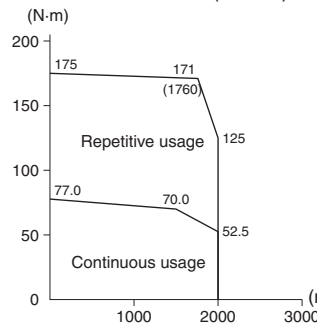
R88M-W5K515T (5.5 kW)



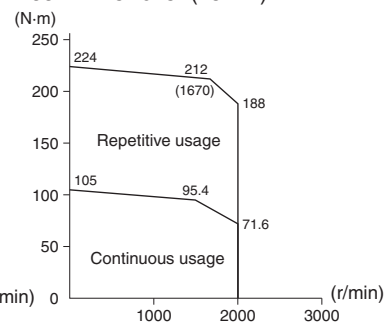
R88M-W7K515T (7.5 kW)



R88M-W11K015T (11 kW)



R88M-W15K015T (15 kW)



## ■ Performance Specifications

### Cylinder-style Motors (1,000 r/min)

| Item                           |                                      | 200 VAC                                               |         |         |         |         |         |         |         |         |
|--------------------------------|--------------------------------------|-------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                |                                      | Servomotor (R88M-)                                    | W30010□ | W60010□ | W90010□ | W1K210□ | W2K010□ | W3K010□ | W4K010□ | W5K510□ |
|                                |                                      | Servodriver (R88D-)                                   | WT05H   | WT08H   | WT10H   | WT15H   | WT20H   | WT30H   | WT50H   | WT60H   |
| Rated output                   | W                                    | 300                                                   | 600     | 900     | 1.2k    | 2k      | 3k      | 4k      | 5.5k    |         |
| Rated torque                   | N·m                                  | 2.84                                                  | 5.68    | 8.62    | 11.5    | 19.1    | 28.4    | 38.2    | 52.6    |         |
| Max. momentary torque          | N·m                                  | 7.17                                                  | 14.1    | 19.3    | 28.0    | 44.0    | 63.7    | 107     | 137     |         |
| Rated speed                    | r/min                                | 1,000                                                 |         |         |         |         |         |         |         |         |
| Max. momentary speed           | r/min                                | 2,000                                                 |         |         |         |         |         |         |         |         |
| Rated current                  | A(rms)                               | 3                                                     | 5.7     | 7.6     | 11.6    | 18.5    | 24.8    | 30      | 43.2    |         |
| Rotor inertia (without brake)  | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 7.24                                                  | 13.9    | 20.5    | 31.7    | 46.0    | 67.5    | 89.0    | 125     |         |
| Power rate                     | kW/s                                 | 11.2                                                  | 23.2    | 36.3    | 41.5    | 79.4    | 120     | 164     | 221     |         |
| Applicable load inertia        | Multiple                             | 10                                                    |         |         |         |         |         |         |         |         |
| Allowable radial load on shaft | N                                    | 490                                                   |         | 686     | 1176    | 1470    |         | 1764    |         |         |
| Allowable thrust load on shaft | N                                    | 98                                                    |         | 343     | 490     |         |         | 588     |         |         |
| Approx. weight (without brake) | kg                                   | 5.5                                                   | 7.6     | 9.6     | 14      | 18      | 23      | 30      | 40      |         |
| Approx. weight (with brake)    | kg                                   | 7.5                                                   | 9.6     | 12      | 19      | 23.5    | 28.5    | 35      | 45.5    |         |
| Encoder resolution             | INC                                  | A, B phase: 32,768 pulses/rev.; Z phase: 1 pulse/rev. |         |         |         |         |         |         |         |         |
|                                | ABS                                  |                                                       |         |         |         |         |         |         |         |         |
| Brake specifications           |                                      |                                                       |         |         |         |         |         |         |         |         |
| Inertia                        | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 2.1                                                   |         |         | 8.5     |         |         |         |         |         |
| Excitation voltage             | V                                    | 24 VDC±10%                                            |         |         |         |         |         |         |         |         |
| Power consumption              | W                                    | 9.85                                                  |         |         | 18.5    |         |         | 23.5    |         |         |
| Current consumption            | A                                    | 0.41                                                  |         |         | 0.77    |         |         | 0.98    |         |         |
| Static friction torque         | N·m                                  | 4.41                                                  | 12.7    |         | 43.1    |         |         | 72.6    |         |         |
| Absorption time                | ms                                   | 180 ms max.                                           |         |         |         |         |         |         |         |         |
| Release time                   | ms                                   | 100 ms max.                                           |         |         |         |         |         |         |         |         |
| Backlash                       | ---                                  | 1° max.                                               |         |         |         |         |         |         |         |         |
| Rating                         | ---                                  | Continuous                                            |         |         |         |         |         |         |         |         |
| Insulation                     | ---                                  | Type F                                                |         |         |         |         |         |         |         |         |



## General Motor Specifications

### Cylinder-style Motors (1,000 r/min)

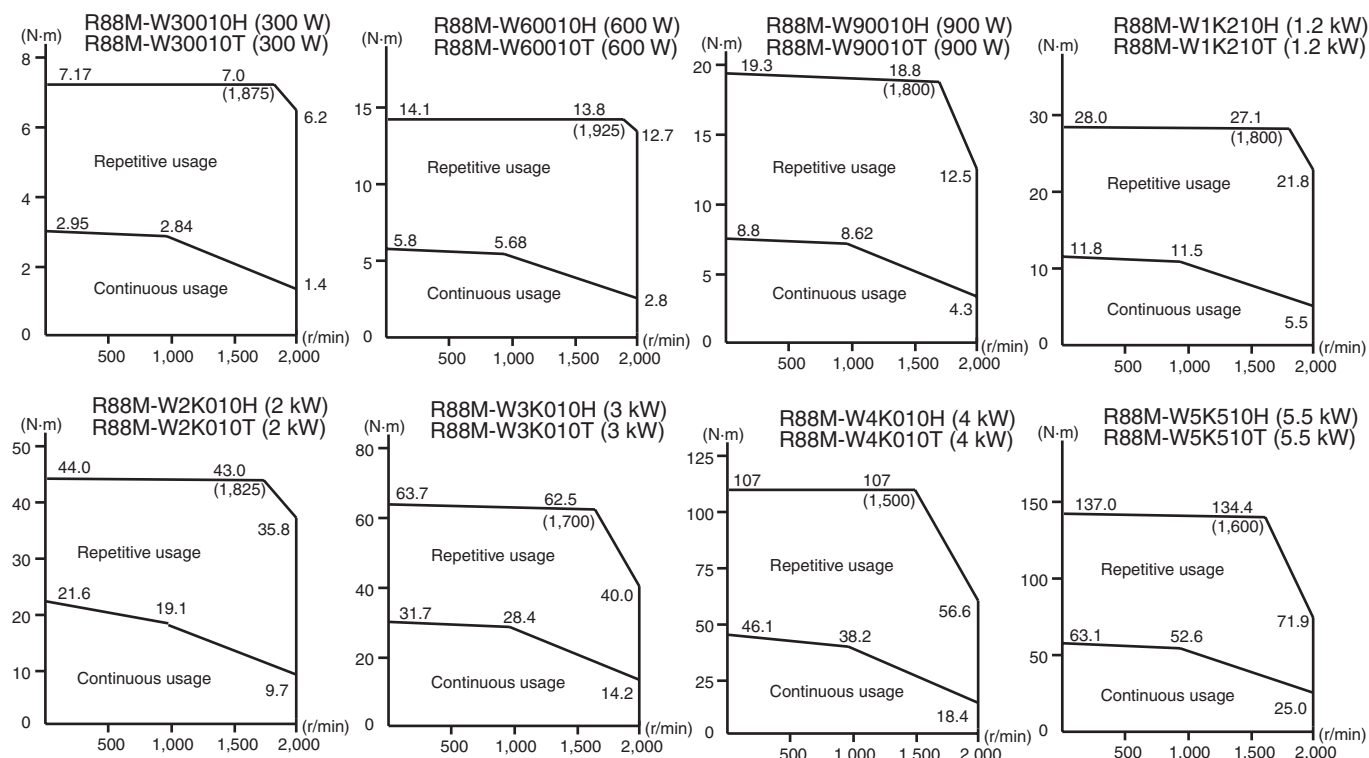
| Item                                       |                       | 300 to 5.5 kW                                      |
|--------------------------------------------|-----------------------|----------------------------------------------------|
| Ambient temperature                        |                       | Operating: 0 to +40°C<br>Storage: -20 to +60°C     |
| Ambient humidity<br>(with no condensation) |                       | Operating: 20% to 80%<br>Storage: 20% to 80%       |
| Atmosphere                                 |                       | No corrosive gases                                 |
| Vibration resistance                       |                       | 24.5 m/s <sup>2</sup>                              |
| Shock resistance                           |                       | 490 m/s <sup>2</sup> (twice in vertical direction) |
| Insulation resistance                      |                       | 10 MΩ min. at 500 VDC                              |
| Dielectric strength                        |                       | 1,500 VAC for 1 min                                |
| Operating position                         |                       | Any direction                                      |
| Insulation class                           |                       | Type F                                             |
| Construction                               |                       | Totally-enclosed self-cooling                      |
| Enclosure rating                           |                       | IP67 (See note.)                                   |
| Vibration class                            |                       | V-15                                               |
| EC directives                              | EMC directive         | EN55011 class A group1<br>EN61000-6-2              |
|                                            | Low-voltage directive | IEC60034-1, 5, 8, 9<br>EN60034-1, 9                |
| UL standards                               |                       | UL1004                                             |
| cUL standards                              |                       | cUL C22.2 No.100                                   |

**Note:** Enclosure ratings do not include the shaft opening.

## Torque and Rotation Speed Characteristics

### Cylinder-style Motors with 200-VAC Power Supply (1,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.



## ■ Performance Specifications

### Flat-style Motors

| Item                           |                                      | 200 VAC                                                             |          |            |            |          | 100 VAC    |          |          |          |
|--------------------------------|--------------------------------------|---------------------------------------------------------------------|----------|------------|------------|----------|------------|----------|----------|----------|
|                                |                                      | Servomotor (R88M-)                                                  |          | WP10030□   | WP20030□   | WP40030□ | WP75030□   | WP1K530□ | WP10030□ | WP20030□ |
|                                |                                      | Servodriver (R88D-)                                                 |          | WT01H      | WT02H      | WT04H    | WT08H      | WT15H    | WT01HL   | WT02HL   |
| Rated output                   | W                                    | 100                                                                 | 200      | 400        | 750        | 1.5k     | 100        | 200      |          |          |
| Rated torque                   | N·m                                  | 0.318                                                               | 0.637    | 1.27       | 2.39       | 4.77     | 0.318      | 0.637    |          |          |
| Max. momentary torque          | N·m                                  | 0.955                                                               | 1.91     | 3.82       | 7.16       | 14.3     | 0.955      | 1.91     |          |          |
| Rated speed                    | r/min                                | 3,000                                                               |          |            |            |          | 3,000      |          |          |          |
| Max. momentary speed           | r/min                                | 5,000                                                               |          |            |            |          | 5,000      |          |          |          |
| Rated current                  | A (rms)                              | 0.89                                                                | 2.0      | 2.6        | 4.1        | 7.5      | 2.2        | 2.7      |          |          |
| Rotor inertia (without brake)  | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.0491                                                              | 0.193    | 0.331      | 2.1        | 4.02     | 0.0491     | 0.193    |          |          |
| Power rate                     | kW/s                                 | 20.6                                                                | 21.0     | 49.0       | 27.1       | 56.7     | 20.6       | 21.0     |          |          |
| Applicable load inertia        | Multiple                             | 100 (Restricted, however, by the regenerative processing capacity.) |          |            |            |          |            |          |          |          |
| Allowable radial load on shaft | N                                    | 78                                                                  | 245      |            | 392        | 490      | 78         | 245      |          |          |
| Allowable thrust load on shaft | N                                    | 49                                                                  | 68       |            | 147        |          | 49         | 68       |          |          |
| Approx. weight (without brake) | kg                                   | 0.7                                                                 | 1.4      | 2.1        | 4.2        | 6.6      | 0.7        | 1.4      |          |          |
| Approx. weight (with brake)    | kg                                   | 0.9                                                                 | 1.9      | 2.6        | 5.7        | 8.1      | 0.9        | 1.9      |          |          |
| Encoder resolution             | INC                                  | A, B phase: 2,048 pulses/rev., Z phase: 1 pulse/rev.                |          |            |            |          |            |          |          |          |
|                                | ABS                                  | A, B phase: 16,384 pulses/rev., Z phase: 1 pulse/rev.               |          |            |            |          |            |          |          |          |
| Brake specifications           |                                      |                                                                     |          |            |            |          |            |          |          |          |
| Inertia                        | kg·m <sup>2</sup> × 10 <sup>-4</sup> | 0.029                                                               | 0.109    |            | 0.875      |          | 0.029      | 0.109    |          |          |
| Excitation voltage             | V                                    | 24 VDC±10%                                                          |          |            |            |          | 24 VDC±10% |          |          |          |
| Power consumption              | W                                    | 8.2                                                                 | 7.6      | 8.2        | 7.5        | 10       | 8.2        | 7.6      |          |          |
| Current consumption            | A                                    | 0.34                                                                | 0.32     | 0.34       | 0.31       | 0.42     | 0.34       | 0.32     |          |          |
| Static friction torque         | N·m                                  | 0.4 min.                                                            | 0.9 min. | 1.9 min.   | 3.5 min.   | 7.1 min. | 0.4 min.   | 0.9 min. |          |          |
| Absorption time                | ms                                   | 20 ms max.                                                          |          | 60 ms max. | 20 ms max. |          | 20 ms max. |          |          |          |
| Release time                   | ms                                   | 40 ms max.                                                          |          | 20 ms max. | 20 ms max. |          | 40 ms max. |          |          |          |
| Backlash                       | ---                                  | 1° max.                                                             |          |            |            |          | 1° max.    |          |          |          |
| Rating                         | ---                                  | Continuous                                                          |          |            |            |          | Continuous |          |          |          |
| Insulation                     | ---                                  | Type F                                                              |          |            |            |          | Type F     |          |          |          |

## ■ General Motor Specifications

### Flat-style Motors (3,000 r/min)

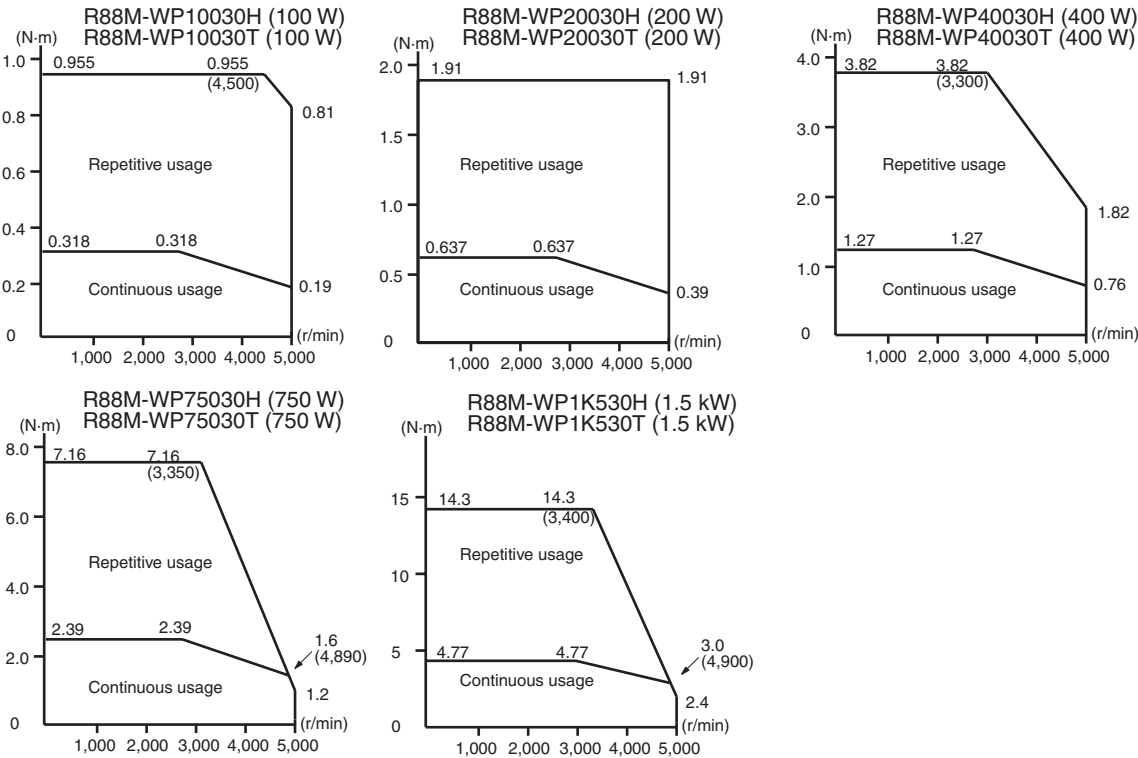
| Item                                    |                       | 100 W to 1.5 kW                                    |
|-----------------------------------------|-----------------------|----------------------------------------------------|
| Ambient temperature                     |                       | Operating: 0 to +40°C, Storage: -20 to +60°C       |
| Ambient humidity (with no condensation) |                       | Operating: 20% to 80%, Storage: 20% to 80%         |
| Atmosphere                              |                       | No corrosive gases                                 |
| Vibration resistance                    |                       | 49 m/s <sup>2</sup>                                |
| Shock resistance                        |                       | 490 m/s <sup>2</sup> (twice in vertical direction) |
| Insulation resistance                   |                       | 10 MΩ min. at 500 VDC                              |
| Dielectric strength                     |                       | 1,500 VAC for 1 min                                |
| Operating position                      |                       | Any direction                                      |
| Insulation class                        |                       | Type B                                             |
| Construction                            |                       | Totally-enclosed self-cooling                      |
| Enclosure rating                        |                       | IP55 (See note.) or IP67                           |
| Vibration class                         |                       | V-15                                               |
| EC directives                           | EMC directive         | EN55011 class A group1                             |
|                                         |                       | EN61000-6-2                                        |
|                                         | Low-voltage directive | IEC60034-1, 5, 8, 9; EN60034-1, 9                  |
| UL standards                            |                       | UL1004                                             |
| cUL standards                           |                       | cUL C22.2 No.100                                   |

**Note:** Enclosure ratings do not include the shaft opening.

■ Torque and Rotation Speed Characteristics

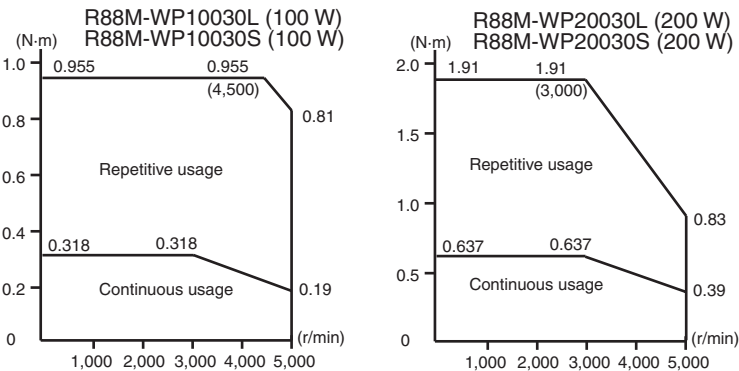
Flat-style Motors with 200-VAC Power Supply

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.



Flat-style Motors with 100-VAC Power Supply

The following graphs show characteristics with a standard 3-m cable and 100-VAC input.



# Servodriver Specifications

## ■ Performance Specifications

### Servodrivers

| Item                                   |                    | 200 VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|----------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|------------------------------------------------------------------|--------|-------|----------------------------------------------------|--------|--------|--------|--------|--------|-------|--------|
|                                        |                    | Servomotor<br>(R88M-)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | WTA3H                                                                                                                                                                                                                                                    | WTA5H  | WT01H | WT02H  | WT04H                                                            | WT05H  | WT08H | WT10H                                              | WT15H  | WT20H  | WT30H  | WT50H  | WT60H  | WT75H | WT150H |
| Maximum servomotor output              |                    | 30 W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 50 W                                                                                                                                                                                                                                                     | 100 W  | 200 W | 400 W  | 500 W                                                            | 750 W  | 1 kW  | 1.5 kW                                             | 2 kW   | 3 kW   | 5 kW   | 5.5 kW | 7.5 kW | 15 kW |        |
| Continuous output current (rms)        |                    | 0.44 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.64 A                                                                                                                                                                                                                                                   | 0.91 A | 2.1 A | 2.8 A  | 3.8 A                                                            | 5.7 A  | 7.6 A | 11.6 A                                             | 18.5 A | 24.8 A | 32.9 A | 46.9 A | 54.7 A | 78 A  |        |
| Momentary maximum output current (rms) |                    | 1.3 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2.0 A                                                                                                                                                                                                                                                    | 2.8 A  | 6.5 A | 8.5 A  | 11.0 A                                                           | 13.9 A | 17 A  | 28 A                                               | 42 A   | 56 A   | 84 A   | 110 A  | 130 A  | 170 A |        |
| Weight                                 |                    | 0.8 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                          |        |       | 1.1 kg | 1.7 kg                                                           |        |       | 2.8 kg                                             | 3.8 kg |        | 5.5 kg | 15 kg  |        | 26 kg |        |
| Input power supply                     |                    | Main circuits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Single-phase 200 to 230 VAC, +10% to −15%, 50/60 Hz                                                                                                                                                                                                      |        |       |        | Three-phase 200 to 230 VAC, +10% to −15%, 50/60 Hz (See note 2.) |        |       | Three-phase 200 to 230 VAC, +10% to −15%, 50/60 Hz |        |        |        |        |        |       |        |
|                                        |                    | Control circuits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Single-phase 200 to 230 VAC, +10% to −15%, 50/60 Hz                                                                                                                                                                                                      |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Control method                         |                    | All-digital servo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Seed feedback                          |                    | Serial encoder, 13/16/17 bits (incremental and absolute encoders)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Capacity                               | Ana-log in-puts    | Speed control range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1:5,000                                                                                                                                                                                                                                                  |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Load fluctuation rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ±0.01% max. at 0% to 100% (at rated rotation speed)                                                                                                                                                                                                      |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Voltage fluctuation rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0% at rated voltage ±10% (at rated rotation speed)                                                                                                                                                                                                       |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Temperature fluctuation rate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ±0.1% max. at 25 ± 25°C (at rated rotation speed)                                                                                                                                                                                                        |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Frequency characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 400 Hz (at the same load as the rotor inertia)                                                                                                                                                                                                           |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Torque control repeatability                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ±2%                                                                                                                                                                                                                                                      |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Acceleration time setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0 to 10 s (acceleration and deceleration set separately)                                                                                                                                                                                                 |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        | Pulse train inputs | Maximum response pulse frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Line driver input: 500 Kpps<br>Open collector input: 200 Kpps                                                                                                                                                                                            |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Positioning range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0 to 250 (command unit)                                                                                                                                                                                                                                  |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Feed-forward compensation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0% to 100%                                                                                                                                                                                                                                               |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Bias setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0 to 450 r/min                                                                                                                                                                                                                                           |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Input signals                          |                    | Position command pulse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Feed pulse, forward/reverse signal, forward pulse, reverse pulse, 90° phase difference (phases A/B) signal                                                                                                                                               |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Speed command voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ±2 to 10 VDC / rated rotation speed (motor forward rotation by +voltage)<br>Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs                                                                                                    |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Torque command voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ±1 to 10 VDC / rated torque (motor forward torque by +voltage)<br>Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs                                                                                                              |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Sequence input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Run command, gain deceleration, position lock command, control mode switch, gain switch, direction command, pulse prohibit, forward/reverse current limit, speed selection command, forward/reverse drive prohibit, alarm reset                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Output signals                         |                    | Position feedback output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Phase A, phase B, phase Z, absolute phase (for absolute encoders only): Line driver output                                                                                                                                                               |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Speed monitor output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 V/1,000 r/min                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Current monitor output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 V/rated torque                                                                                                                                                                                                                                         |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
|                                        |                    | Sequence output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Servo alarm, alarm code (3-bit output): CN1 output terminal fixed, speed conformity, positioning completion 1, motor rotation detection, servo ready, current limit detection, brake interlock, warning, positioning completion 2, speed limit detection |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Dynamic brake stopping                 |                    | Operates when the power supply turns off, a servo alarm is generated, an overrun occurs, or the servo turns off.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |
| Other protective functions             |                    | Parameter destruction, main circuit detector error, parameter setting error, motor mismatch, overcurrent, regenerative error, regenerative overload, overvoltage, undervoltage, overspeeding, overload, dynamic brake overload, inrush resistance overload, heating plate overheating, backup error (absolute), checksum error (absolute), battery error (absolute), absolute error (absolute), overspeed error (absolute), encoder overheating, speed command input read error, torque command input read error, system error, overrun detection, excessive rotation data error (absolute), encoder communications error, encoder parameter error, encoder data error, multiple rotation limit mismatch (absolute), error counter count-up, phase-failure detection. Parameter Unit transmission error |                                                                                                                                                                                                                                                          |        |       |        |                                                                  |        |       |                                                    |        |        |        |        |        |       |        |

**Note:** 1. Applicable rotor inertia differs according to the motor. Refer to the motor specifications.

2. Input power supply specification when using the R88D-WT08H at single-phase 200 V: single-phase 200 to 230 VAC, +10% to -15%, 50/60 Hz.

**Servodrivers**

| Item                                   |                                                                                                                                                                                                                                 |                                  | 100 VAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                                                                                            |         |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------|---------|
|                                        |                                                                                                                                                                                                                                 |                                  | WT A3HL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | WT A5HL                | WT 01HL                                                                                                    | WT 02HL |
| Maximum servomotor output              |                                                                                                                                                                                                                                 |                                  | 30 W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 50 W                   | 100 W                                                                                                      | 200 W   |
| Continuous output current (rms)        |                                                                                                                                                                                                                                 |                                  | 0.66 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.95 A                 | 2.4 A                                                                                                      | 3.0 A   |
| Momentary maximum output current (rms) |                                                                                                                                                                                                                                 |                                  | 2.0 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2.9 A                  | 7.2 A                                                                                                      | 9.0 A   |
| Weight                                 |                                                                                                                                                                                                                                 |                                  | 0.8 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |                                                                                                            | 1.1 kg  |
| Input power supply                     |                                                                                                                                                                                                                                 | Main circuits                    | Single-phase 100 to 115 VAC, +10% to –15%, 50/60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Control circuits                 | Single-phase 100 to 115 VAC, +10% to –15%, 50/60 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                                            |         |
| Control method                         |                                                                                                                                                                                                                                 |                                  | All-digital servo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                                                                                                            |         |
| Seed feedback                          |                                                                                                                                                                                                                                 |                                  | Serial encoder, 13/16/17 bits (incremental and absolute encoders)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                                                                                                            |         |
| Capacity                               | Analog inputs                                                                                                                                                                                                                   | Speed control range              | 1:5000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Load fluctuation rate            | ±0.01% max. at 0% to 100% (at rated rotation speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Voltage fluctuation rate         | 0% at rated voltage ±10% (at rated rotation speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Temperature fluctuation rate     | ±0.1% max. at 25 ± 25°C (at rated rotation speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Frequency characteristics        | 400 Hz (at the same load as the rotor inertia)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Torque control repeatability     | ±2%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Acceleration time setting        | 0 to 10 s (acceleration and deceleration set separately)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                                                                                                            |         |
|                                        | Pulse train inputs                                                                                                                                                                                                              | Maximum response pulse frequency | Line driver input: 500 Kpps<br>Open collector input: 200 Kpps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Positioning range                | 0 to 250 (command unit)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Feed-forward compensation        | 0% to 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Bias setting                     | 0 to 450 r/min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Input signals                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Position command pulse | Feed pulse, forward/reverse signal, forward pulse, reverse pulse, 90° phase difference (phases A/B) signal |         |
| Speed command voltage                  | ±2 to 10 VDC / rated rotation speed (motor forward rotation by +voltage)<br>Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs                                                                           |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |                                                                                                            |         |
| Torque command voltage                 | ±1 to 10 VDC / rated torque (motor forward torque by +voltage)<br>Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs                                                                                     |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |                                                                                                            |         |
| Sequence input                         | Run command, gain deceleration, position lock command, control mode switch, gain switch, direction command, pulse prohibit, forward/reverse current limit, speed selection command, forward/reverse drive prohibit, alarm reset |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |                                                                                                            |         |
| Output signals                         |                                                                                                                                                                                                                                 | Position feedback output         | Phase A, phase B, phase Z, absolute phase (for absolute encoders only): Line driver output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Speed monitor output             | 1 V/1000 r/min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Current monitor output           | 1 V/rated torque                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                                                                                                            |         |
|                                        |                                                                                                                                                                                                                                 | Sequence output                  | Servo alarm, alarm code (3-bit output): CN1 output terminal fixed, speed conformity, positioning completion 1, motor rotation detection, servo ready, current limit detection, brake interlock, warning, positioning completion 2, speed limit detection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                                                                                                            |         |
| Dynamic brake stopping                 |                                                                                                                                                                                                                                 |                                  | Operates when the power supply turns OFF, a servo alarm is generated, an overrun occurs, or the servo turns OFF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                                                                                                            |         |
| Other protective functions             |                                                                                                                                                                                                                                 |                                  | Parameter destruction, main circuit detector error, parameter setting error, motor mismatch, overcurrent, regenerative error, regenerative overload, overvoltage, undervoltage, overspeeding, overload, dynamic brake overload, inrush resistance overload, heating plate overheating, backup error (absolute), checksum error (absolute), battery error (absolute), absolute error (absolute), overspeed error (absolute), encoder overheating, speed command input read error, torque command input read error, system error, overrun detection, excessive rotation data error (absolute), encoder communications error, encoder parameter error, encoder data error, multiple rotation limit mismatch (absolute), error counter count-up, phase-failure detection, Parameter Unit transmission error |                        |                                                                                                            |         |

**Note:** Applicable rotor inertia differs according to the motor. Refer to the motor specifications.

## ■ General Specifications

| Item                                    |                       | Specifications                                                    |
|-----------------------------------------|-----------------------|-------------------------------------------------------------------|
| Ambient temperature                     |                       | Operating: 0 to +55°C<br>Storage: -20 to +85°C                    |
| Ambient humidity (with no condensation) |                       | Operating: 20 to 90% max.<br>Storage: 20 to 90% max.              |
| Atmosphere                              |                       | No corrosive gases                                                |
| Vibration resistance                    |                       | 4.9 m/s <sup>2</sup>                                              |
| Shock resistance                        |                       | 19.6 m/s <sup>2</sup><br>(3 times each in X, Y, and Z directions) |
| Insulation resistance                   |                       | 1 MΩ min. at 500 VDC                                              |
| Dielectric strength                     |                       | 1,500 VAC for 1 min                                               |
| Protective structure                    |                       | Built into control panel (IP10)                                   |
| Vibration class                         |                       | V-15                                                              |
| EC directives                           | EMC directive         | EN55011                                                           |
|                                         |                       | EN61000-6-2                                                       |
|                                         | Low-voltage directive | EN50178                                                           |
| UL standards                            |                       | UL508C                                                            |
| cUL standards                           |                       | cUL C22.2 No. 14                                                  |



External Dimensions

■ AC Servomotors

Cylinder-style Motors without Brakes (3,000 r/min)

200 VAC: 30 W/50 W/100 W

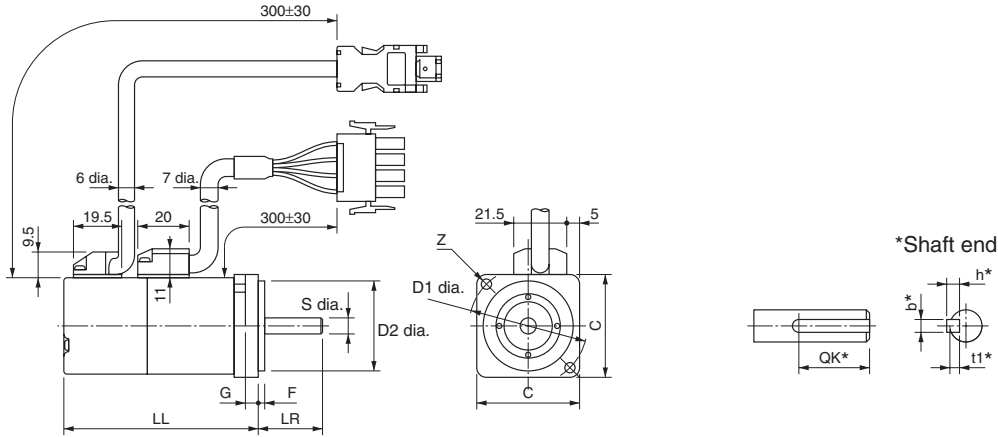
R88M-W03030H (-S1)/W05030H (-S1)/W10030H (-S1)

R88M-W03030T (-S1)/W05030T (-S1)/W10030T (-S1)

100 VAC: 30 W/50 W/100 W

R88M-W03030L (-S1)/W05030L (-S1)/W10030L (-S1)

R88M-W03030S (-S1)/W05030S (-S1)/W10030S (-S1)



\* These dimensions are applicable to R88M-W□-S1 with key.

| Dimensions (mm)    | LL   | LR | Flange surface |    |                  |     |   |                  | Shaft end       |     |    |    |     |
|--------------------|------|----|----------------|----|------------------|-----|---|------------------|-----------------|-----|----|----|-----|
| Model              |      |    | C              | D1 | D2               | F   | G | Z                | S               | QK* | b* | h* | t1* |
| R88M-W03030□ (-S1) | 69.5 | 25 | 40             | 46 | 30 <sup>h7</sup> | 2.5 | 5 | Two,<br>4.3 dia. | 6 <sup>h6</sup> | 14  | 2  | 2  | 1.2 |
| R88M-W05030□ (-S1) | 77   |    |                |    |                  |     |   |                  | 8 <sup>h6</sup> |     | 3  | 3  | 1.8 |
| R88M-W10030□ (-S1) | 94.5 |    |                |    |                  |     |   |                  |                 |     |    |    |     |

**Cylinder-style Motors with Brakes (3,000 r/min)**

**200 VAC: 30 W/50 W/100 W**

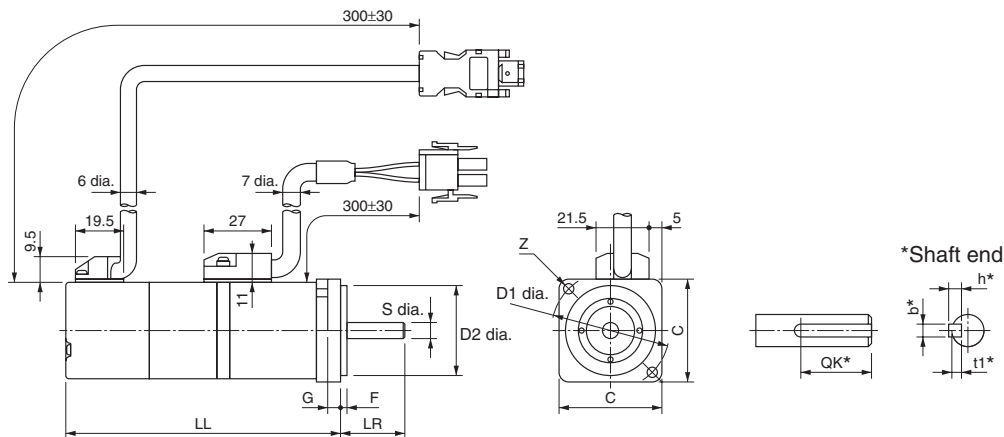
R88M-W03030H-B (S1)/W05030H-B (S1)/W10030H-B (S1)

R88M-W03030T-B (S1)/W05030T-B (S1)/W10030T-B (S1)

**100 VAC: 30 W/50 W/100 W**

R88M-W03030L-B (S1)/W05030L-B (S1)/W10030L-B (S1)

R88M-W03030S-B (S1)/W05030S-B (S1)/W10030S-B (S1)



\* These dimensions are applicable to R88M-W□-BS1 with key.

| Dimensions (mm)     | LL    | LR | Flange surface |    |                  |     |   |                  | Shaft end       |     |    |    |     |
|---------------------|-------|----|----------------|----|------------------|-----|---|------------------|-----------------|-----|----|----|-----|
| Model               |       |    | C              | D1 | D2               | F   | G | Z                | S               | QK* | b* | h* | t1* |
| R88M-W03030□-B (S1) | 101   | 25 | 40             | 46 | 30 <sup>h7</sup> | 2.5 | 5 | Two,<br>4.3 dia. | 6 <sup>h6</sup> | 14  | 2  | 2  | 1.2 |
| R88M-W05030□-B (S1) | 108.5 |    |                |    |                  |     |   |                  | 8 <sup>h6</sup> |     | 3  | 3  | 1.8 |
| R88M-W10030□-B (S1) | 135   |    |                |    |                  |     |   |                  |                 |     |    |    |     |

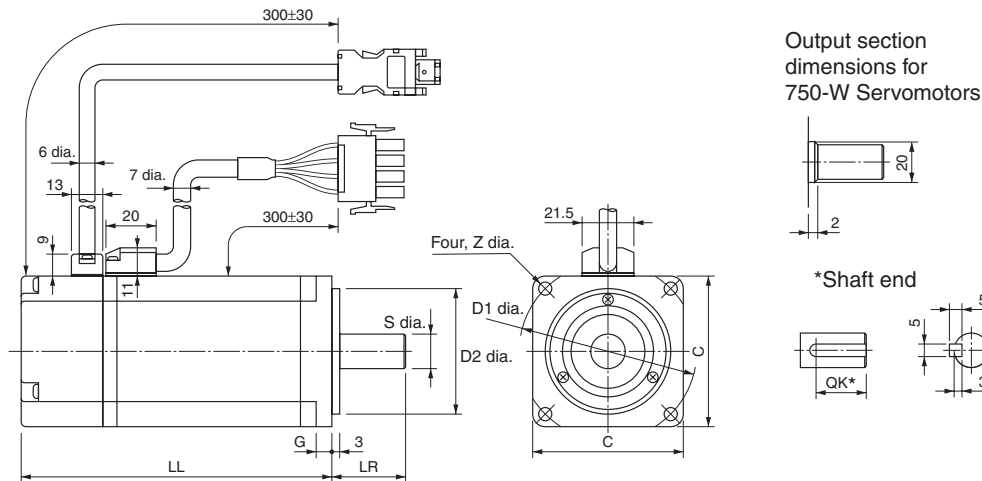
**Cylinder-style Motors without Brakes (3,000 r/min)**

**200 VAC: 200 W/400 W/750 W**

R88M-W20030H (-S1)/W40030H (-S1)/W75030H (-S1)  
R88M-W20030T (-S1)/W40030T (-S1)/W75030T (-S1)

**100 VAC: 200 W**

R88M-W20030L (-S1)  
R88M-W20030S (-S1)



\* These dimensions are applicable to R88M-W□-S1 with key.

| Dimensions (mm)    | LL    | LR | Flange surface |    |                  |   |   |                | Shaft end        |     |    |    |     |
|--------------------|-------|----|----------------|----|------------------|---|---|----------------|------------------|-----|----|----|-----|
| Model              |       |    | C              | D1 | D2               | F | G | Z              | S                | QK* | b* | h* | t1* |
| R88M-W20030□ (-S1) | 96.5  | 30 | 60             | 70 | 50 <sup>h7</sup> | 3 | 6 | Four, 5.5 dia. | 14 <sup>h6</sup> | 20  | 5  | 5  | 3   |
| R88M-W40030□ (-S1) | 124.5 |    |                |    |                  |   |   |                |                  |     |    |    |     |
| R88M-W75030□ (-S1) | 145   | 40 | 80             | 90 | 70 <sup>h7</sup> | 3 | 8 | Four, 7 dia.   | 16 <sup>h6</sup> | 30  |    |    |     |

**Cylinder-style Motors with Brakes (3,000 r/min)**

**200 VAC: 200 W/400 W/750 W**

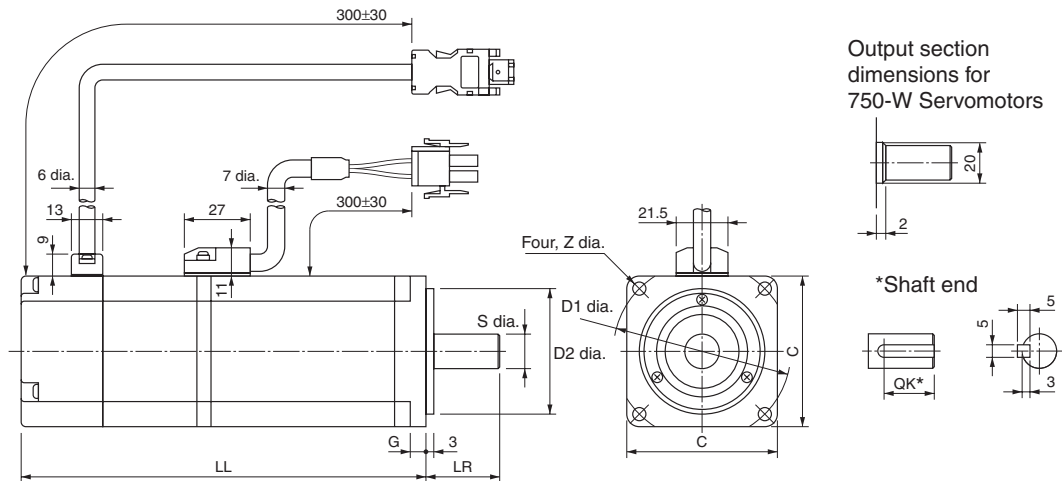
R88M-W20030H-B (S1)/W40030H-B (S1)/W75030H-B (S1)

R88M-W20030T-B (S1)/W40030T-B (S1)/W75030T-B(S1)

**100 VAC: 200 W**

R88M-W20030L-B (S1)

R88M-W20030S-B (S1)



\* These dimensions are applicable to R88M-W□-BS1 with key.

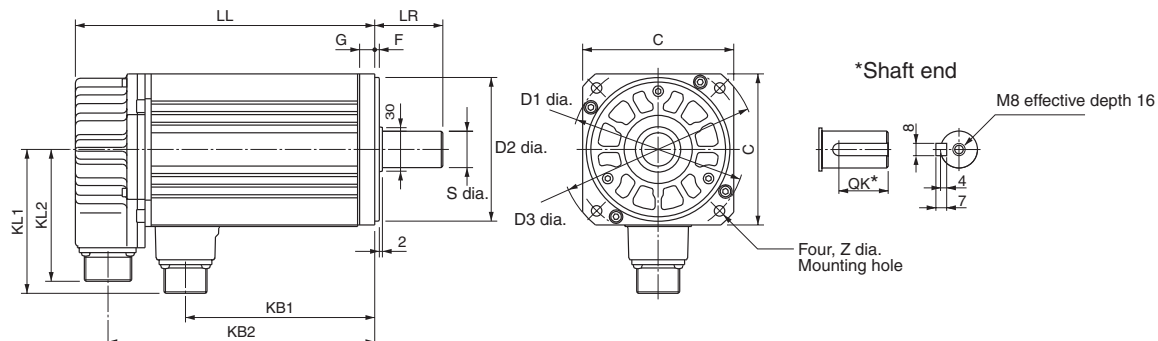
| Dimensions (mm)     | LL    | LR | Flange surface |    |                  |   |   |                   | Shaft end        |     |    |    |     |
|---------------------|-------|----|----------------|----|------------------|---|---|-------------------|------------------|-----|----|----|-----|
| Model               |       |    | C              | D1 | D2               | F | G | Z                 | S                | QK* | b* | h* | t1* |
| R88M-W20030□-B (S1) | 136   | 30 | 60             | 70 | 50 <sup>h7</sup> | 3 | 6 | Four,<br>5.5 dia. | 14 <sup>h6</sup> | 20  | 5  | 5  | 3   |
| R88M-W40030□-B (S1) | 164   |    |                |    |                  |   |   |                   |                  |     |    |    |     |
| R88M-W75030□-B (S1) | 189.5 | 40 | 80             | 90 | 70 <sup>h7</sup> | 3 | 8 | Four,<br>7 dia.   | 16 <sup>h6</sup> | 30  |    |    |     |

### Cylinder-style Motors without Brakes (3,000 r/min)

#### 200 VAC: 1 kW/1.5 kW/2 kW/3 kW/4 kW/5 kW

R88M-W1K030H (-S2)/W1K530H (-S2)/W2K030H (-S2)/W3K030H (-S2)/W4K030H (-S2)/W5K030H (-S2)

R88M-W1K030T (-S2)/W1K530T (-S2)/W2K030T (-S2)/W3K030T (-S2)/W4K030T (-S2)/W5K030T (-S2)



\* These dimensions are applicable to R88M-W□-S2 with key and tap.

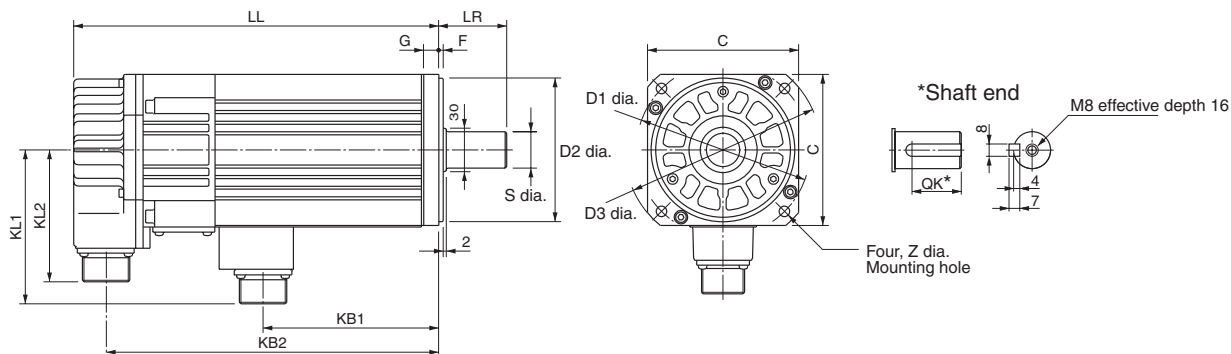
| Dimensions (mm)    | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                   |     |   |    |   | Shaft end        |     |
|--------------------|-----|----|-----|-----|-----|-----|----------------|-----|-------------------|-----|---|----|---|------------------|-----|
| Model              |     |    |     |     |     |     | C              | D1  | D2                | D3  | F | G  | Z | S                | QK* |
| R88M-W1K030□ (-S2) | 149 | 45 | 76  | 128 | 96  | 88  | 100            | 115 | 95 <sup>h7</sup>  | 130 | 3 | 10 | 7 | 24 <sup>h6</sup> | 32  |
| R88M-W1K530□ (-S2) | 175 |    | 102 | 154 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W2K030□ (-S2) | 198 |    | 125 | 177 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W3K030□ (-S2) | 199 | 63 | 124 | 178 | 114 | 88  | 130            | 145 | 110 <sup>h7</sup> | 165 | 6 | 12 | 9 | 28 <sup>h6</sup> | 50  |
| R88M-W4K030□ (-S2) | 236 |    | 161 | 215 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W5K030□ (-S2) | 276 |    | 201 | 255 |     |     |                |     |                   |     |   |    |   |                  |     |

### Cylinder-style Motors with Brakes (3,000 r/min)

#### 200 VAC: 1 kW/1.5 kW/2 kW/3 kW/4 kW/5 kW

R88M-W1K030H-B (S2)/W1K530H-B (S2)/W2K030H-B (S2)/W3K030H-B (S2)/W4K030H-B (S2)/W5K030H-B (S2)

R88M-W1K030T-B (S2)/W1K530T-B (S2)/W2K030T-B (S2)/W3K030T-B (S2)/W4K030T-B (S2)/W5K030T-B (S2)



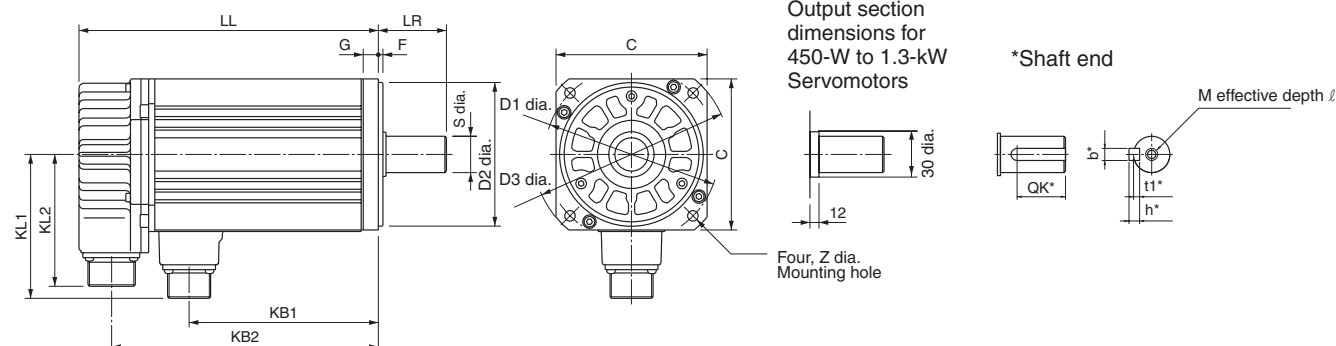
\* These dimensions are applicable to R88M-W□-BS2 with key and tap.

| Dimensions (mm)     | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                   |     |   |    |   | Shaft end        |     |
|---------------------|-----|----|-----|-----|-----|-----|----------------|-----|-------------------|-----|---|----|---|------------------|-----|
| Model               |     |    |     |     |     |     | C              | D1  | D2                | D3  | F | G  | Z | S                | QK* |
| R88M-W1K030□-B (S2) | 193 | 45 | 67  | 171 | 102 | 88  | 100            | 115 | 95 <sup>h7</sup>  | 130 | 3 | 10 | 7 | 24 <sup>h6</sup> | 32  |
| R88M-W1K530□-B (S2) | 219 |    | 93  | 197 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W2K030□-B (S2) | 242 |    | 116 | 220 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W3K030□-B (S2) | 237 | 63 | 114 | 216 | 119 | 88  | 130            | 145 | 110 <sup>h7</sup> | 165 | 6 | 12 | 9 | 28 <sup>h6</sup> | 50  |
| R88M-W4K030□-B (S2) | 274 |    | 151 | 253 |     |     |                |     |                   |     |   |    |   |                  |     |
| R88M-W5K030□-B (S2) | 314 |    | 191 | 293 |     |     |                |     |                   |     |   |    |   |                  |     |

# Cylinder-style Motors without Brakes (1,500 r/min)

200 VAC: 450 W/850 W/1.3 kW/1.8 kW/2.9 kW/4.4 kW

R88M-W45015T (-S2)/W85015T (-S2)/W1K315T (-S2)/W1K815T (-S2)/W2K915T (-S2)/W4K415T (-S2)



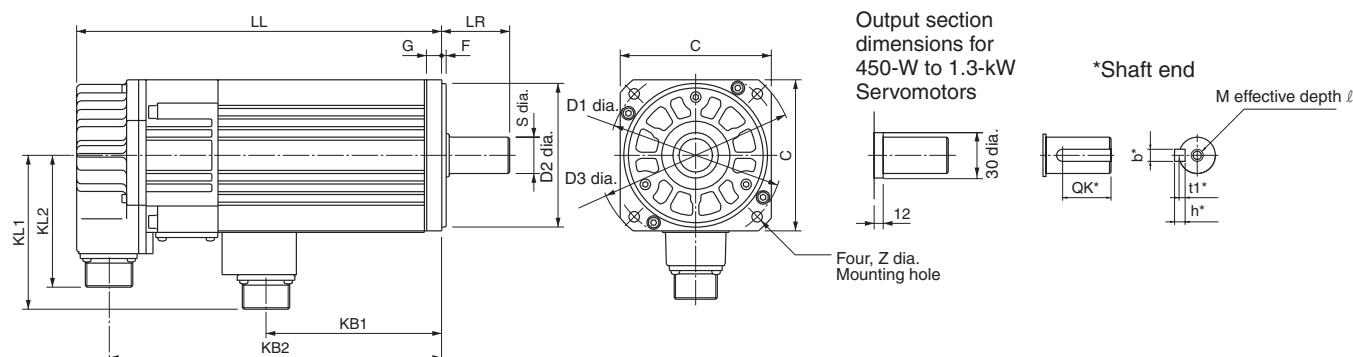
\* These dimensions are applicable to R88M-W□-S2 with key and tap.

| Dimensions (mm)    | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                                      |     |     |    |      | Shaft end                        |     |    |    |     |     |    |
|--------------------|-----|----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------|-----|----|----|-----|-----|----|
| Model              |     |    |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                | QK* | b* | h* | t1* | M   | ℓ  |
| R88M-W45015T (-S2) | 138 | 58 | 65  | 117 | 109 | 88  | 130            | 145 | 110 <sup>h7</sup>                    | 165 | 6   | 12 | 9    | 19 <sup>h6</sup>                 | 25  | 5  | 5  | 3   | M5  | 12 |
| R88M-W85015T (-S2) | 161 |    | 88  | 140 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W1K315T (-S2) | 185 |    | 112 | 164 |     |     |                |     |                                      |     |     |    |      | 22 <sup>h6</sup>                 |     | 6  | 6  | 3.5 |     |    |
| R88M-W1K815T (-S2) | 166 | 79 | 89  | 144 | 140 | 88  | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 35 <sup>+0.01</sup> <sub>0</sub> | 60  | 10 | 8  | 5   | M12 | 25 |
| R88M-W2K915T (-S2) | 192 |    | 115 | 170 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W4K415T (-S2) | 226 |    | 149 | 204 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |

# Cylinder-style Motors with Brakes (1,500 r/min)

200 VAC: 450 W/850 W/1.3 kW/1.8 kW/2.9 kW/4.4 kW

R88M-W45015T-B (S2)/W85015T-B (S2)/W1K315T-B (S2)/W1K815T-B (S2)/W2K915T-B (S2)/W4K415T-B (S2)



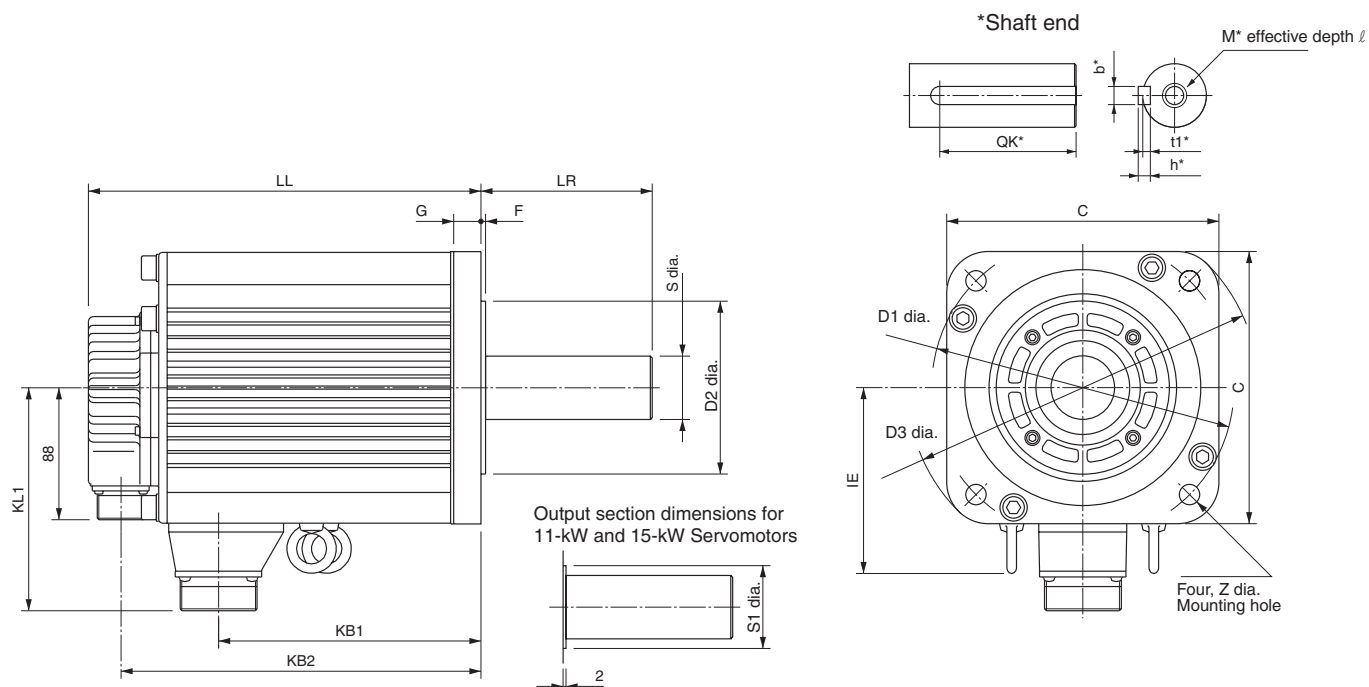
\* These dimensions are applicable to R88M-W□-BS2 with key and tap.

| Dimensions (mm)      | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                                      |     |     |    |      | Shaft end                        |     |    |    |     |     |    |
|----------------------|-----|----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------|-----|----|----|-----|-----|----|
| Model                |     |    |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                | QK* | b* | h* | t1* | M   | ℓ  |
| R88M-W45015T-B (-S2) | 176 | 58 | 56  | 154 | 120 | 88  | 130            | 145 | 110 <sup>h7</sup>                    | 165 | 6   | 12 | 9    | 19 <sup>h6</sup>                 | 25  | 5  | 5  | 3   | M5  | 12 |
| R88M-W85015T-B (-S2) | 199 |    | 79  | 177 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W1K315T-B (-S2) | 223 |    | 103 | 201 |     |     |                |     |                                      |     |     |    |      | 22 <sup>h6</sup>                 |     | 6  | 6  | 3.5 |     |    |
| R88M-W1K815T-B (-S2) | 217 | 79 | 79  | 195 | 146 | 88  | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 35 <sup>+0.01</sup> <sub>0</sub> | 60  | 10 | 8  | 5   | M12 | 25 |
| R88M-W2K915T-B (-S2) | 243 |    | 105 | 221 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W4K415T-B (-S2) | 277 |    | 139 | 255 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |

**Cylinder-style Motors without Brakes (1,500 r/min)**

**200 VAC: 5.5 kW/7.5 kW/11 kW/15 kW**

R88M-W5K515T (-S2)/W7K515T (-S2)/W11K015T (-S2)/W15K015T (-S2)



\* These dimensions are applicable to R88M-W□-S2 with key and tap.

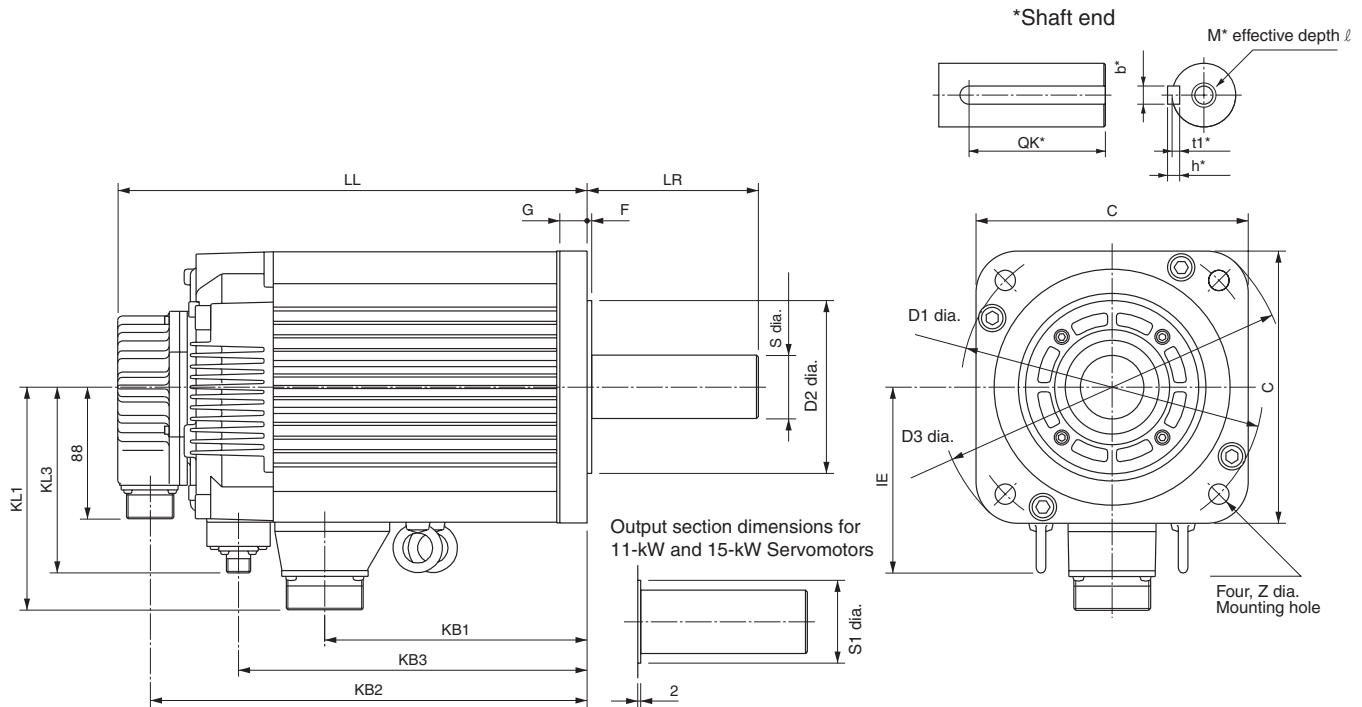
| Dimensions (mm)     | LL  | LR  | KB1 | KB2 | KL1 | IE  | Flange surface |     |                                      |     |     |    |      | Shaft end                              |     |     |    |    |     |     |        |
|---------------------|-----|-----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------------|-----|-----|----|----|-----|-----|--------|
| Model               |     |     |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                      | S1  | QK* | b* | h* | t1* | M   | $\ell$ |
| R88M-W5K515T (-S2)  | 260 | 113 | 174 | 238 | 150 | 123 | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 42 <sup>h6</sup>                       | --- | 90  | 12 | 8  | 5   | M16 | 32     |
| R88M-W7K515T (-S2)  | 334 |     | 248 | 312 |     |     |                |     |                                      |     |     |    |      |                                        |     |     |    |    |     |     |        |
| R88M-W11K015T (-S2) | 338 | 116 | 251 | 317 | 168 | 142 | 220            | 235 | 200 <sup>h7</sup>                    | 270 | 4   |    |      | 45                                     |     |     |    |    |     |     |        |
| R88M-W15K015T (-S2) | 457 |     | 343 | 435 |     | 150 |                |     |                                      |     |     | 20 |      | 55 <sup>+0.030</sup> <sub>+0.011</sub> | 65  |     | 16 | 10 | 6   | M20 | 40     |



**Cylinder-style Motors with Brakes (1,500 r/min)**

**200 VAC: 5.5 kW/7.5 kW/11 kW/15 kW**

R88M-W5K515T-B (-S2)/W7K515T-B (-S2)/W11K015T-B (-S2)/W15K015T-B (-S2)



\* These dimensions are applicable to R88M-W□-BS2 with key and tap.

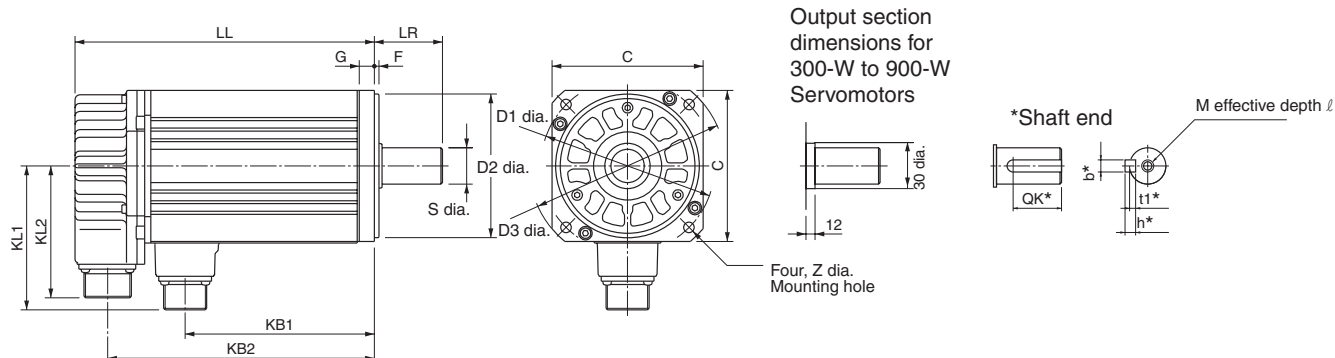
| Dimensions (mm)       | LL  | LR  | KB1 | KB2 | KB3 | KL1 | KL3 | IE  | Flange surface |     |                                      |     |     |    |      |                                        | Shaft end |     |    |    |     |     |    |  |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------------|-----------|-----|----|----|-----|-----|----|--|
| Model                 |     |     |     |     |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                      | S1        | QK* | b* | h* | t1* | M   | ℓ  |  |
| R88M-W5K515T-B (-S2)  | 311 | 113 | 174 | 289 | 231 | 150 | 123 | 123 | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 42 <sup>h6</sup>                       | ---       | 90  | 12 | 8  | 5   | M16 | 32 |  |
| R88M-W7K515T-B (-S2)  | 385 |     | 248 | 363 | 305 |     |     |     |                |     |                                      |     |     |    |      |                                        |           |     |    |    |     |     |    |  |
| R88M-W11K015T-B (-S2) | 383 | 116 | 258 | 362 | 315 | 168 | 142 | 142 | 220            | 235 | 200 <sup>h7</sup>                    | 270 | 4   |    |      |                                        | 45        |     |    |    |     |     |    |  |
| R88M-W15K015T-B (-S2) | 519 |     | 343 | 497 | 415 |     |     | 150 |                |     |                                      |     |     | 20 |      | 55 <sup>+0.030</sup> <sub>+0.011</sub> | 65        |     | 16 | 10 | 6   | M20 | 40 |  |

### Cylinder-style Motors without Brakes (1,000 r/min)

#### 200 VAC: 300 W/600 W/900 W/1.2 kW/2 kW/3 kW

R88M-W30010H (-S2)/W60010H (-S2)/W90010H (-S2)/W1K210H (-S2)/W2K010H (-S2)/W3K010H (-S2)

R88M-W30010T (-S2)/W60010T (-S2)/W90010T (-S2)/W1K210T (-S2)/W2K010T (-S2)/W3K010T (-S2)



\* These dimensions are applicable to R88M-W□-S2 with key and tap.

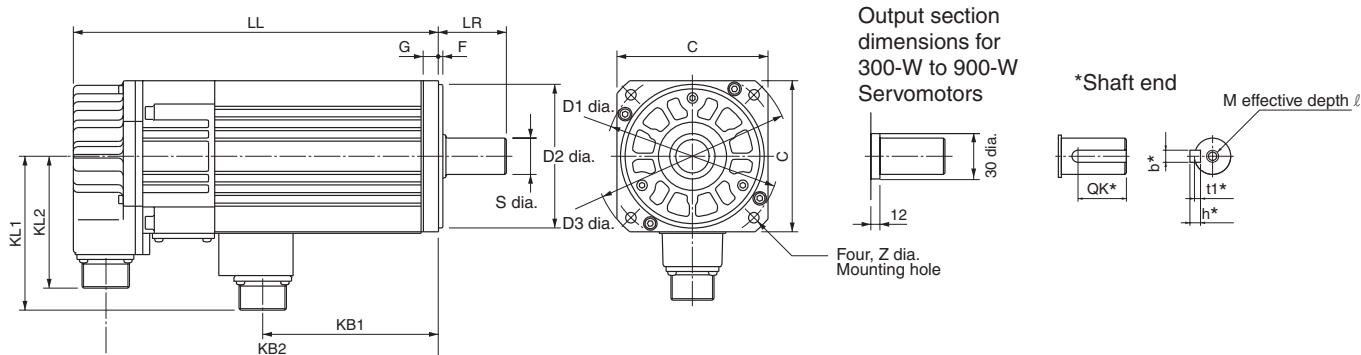
| Dimensions (mm)    | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                                      |     |     |    |      | Shaft end                        |     |    |    |     |     |    |
|--------------------|-----|----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------|-----|----|----|-----|-----|----|
| Model              |     |    |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                | QK* | b* | h* | t1* | M   | ℓ  |
| R88M-W30010□ (-S2) | 138 | 58 | 65  | 117 | 109 | 88  | 130            | 145 | 110 <sup>h7</sup>                    | 165 | 6   | 12 | 9    | 19 <sup>h6</sup>                 | 25  | 5  | 5  | 3   | M5  | 12 |
| R88M-W60010□ (-S2) | 161 |    | 88  | 140 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W90010□ (-S2) | 185 |    | 112 | 164 |     |     |                |     |                                      |     |     |    |      | 22 <sup>h6</sup>                 |     | 6  | 6  | 3.5 |     |    |
| R88M-W1K210□ (-S2) | 166 | 79 | 89  | 144 | 140 | 88  | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 35 <sup>+0.01</sup> <sub>0</sub> | 60  | 10 | 8  | 5   | M12 | 25 |
| R88M-W2K010□ (-S2) | 192 |    | 115 | 170 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W3K010□ (-S2) | 226 |    | 149 | 204 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |

### Cylinder-style Motors with Brakes (1,000 r/min)

#### 200 VAC: 300 W/600 W/900 W/1.2 kW/2 kW/3 kW

R88M-W30010H-B (S2)/W60010H-B (S2)/W90010H-B (S2)/W1K210H-B (S2)/W2K010H-B (S2)/W3K010H-B (S2)

R88M-W30010T-B (S2)/W60010T-B (S2)/W90010T-B (S2)/W1K210T-B (S2)/W2K010T-B (S2)/W3K010T-B (S2)



\* These dimensions are applicable to R88M-W□-BS2 with key and tap.

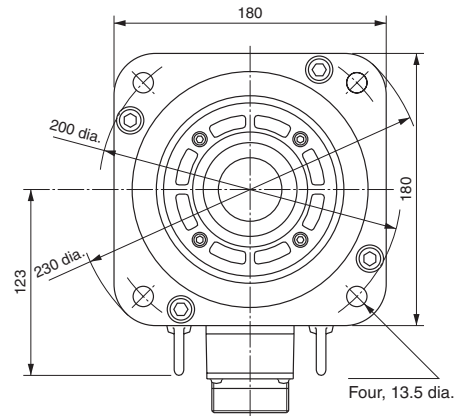
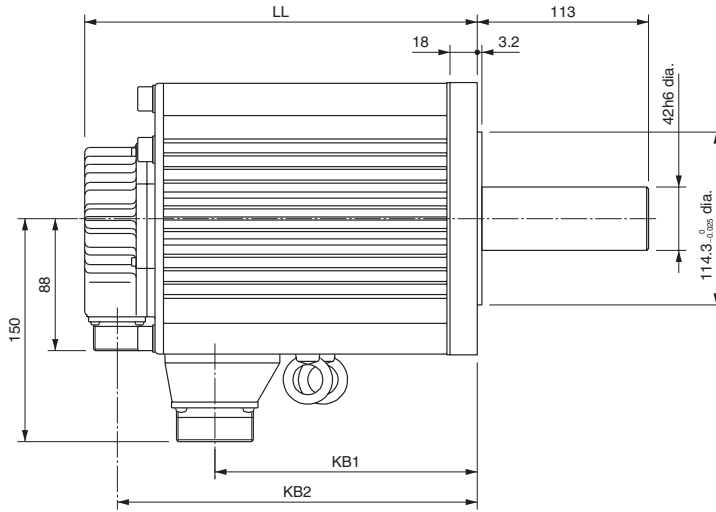
| Dimensions (mm)     | LL  | LR | KB1 | KB2 | KL1 | KL2 | Flange surface |     |                                      |     |     |    |      | Shaft end                        |     |    |    |     |     |    |
|---------------------|-----|----|-----|-----|-----|-----|----------------|-----|--------------------------------------|-----|-----|----|------|----------------------------------|-----|----|----|-----|-----|----|
| Model               |     |    |     |     |     |     | C              | D1  | D2                                   | D3  | F   | G  | Z    | S                                | QK* | b* | h* | t1* | M   | ℓ  |
| R88M-W30010□-B (S2) | 176 | 58 | 56  | 154 | 120 | 88  | 130            | 145 | 110 <sup>h7</sup>                    | 165 | 6   | 12 | 9    | 19 <sup>h6</sup>                 | 25  | 5  | 5  | 3   | M5  | 12 |
| R88M-W60010□-B (S2) | 199 |    | 79  | 177 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W90010□-B (S2) | 223 |    | 103 | 201 |     |     |                |     |                                      |     |     |    |      | 22 <sup>h6</sup>                 |     | 6  | 6  | 3.5 |     |    |
| R88M-W1K210□-B (S2) | 217 | 79 | 79  | 195 | 146 | 88  | 180            | 200 | 114.3 <sup>0</sup> <sub>-0.025</sub> | 230 | 3.2 | 18 | 13.5 | 35 <sup>+0.01</sup> <sub>0</sub> | 60  | 10 | 8  | 5   | M12 | 25 |
| R88M-W2K010□-B (S2) | 243 |    | 105 | 221 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |
| R88M-W3K010□-B (S2) | 277 |    | 139 | 255 |     |     |                |     |                                      |     |     |    |      |                                  |     |    |    |     |     |    |

**Cylinder-style Motors without Brakes (1,000 r/min)**

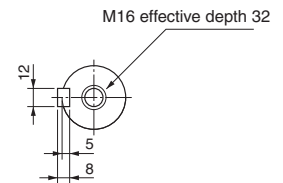
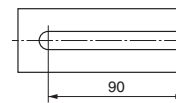
**200 VAC: 4 kW/5.5 kW**

R88M-W4K010H (-S2)/W5K510H (-S2)

R88M-W4K010T (-S2)/W5K510T (-S2)



\*Shaft end

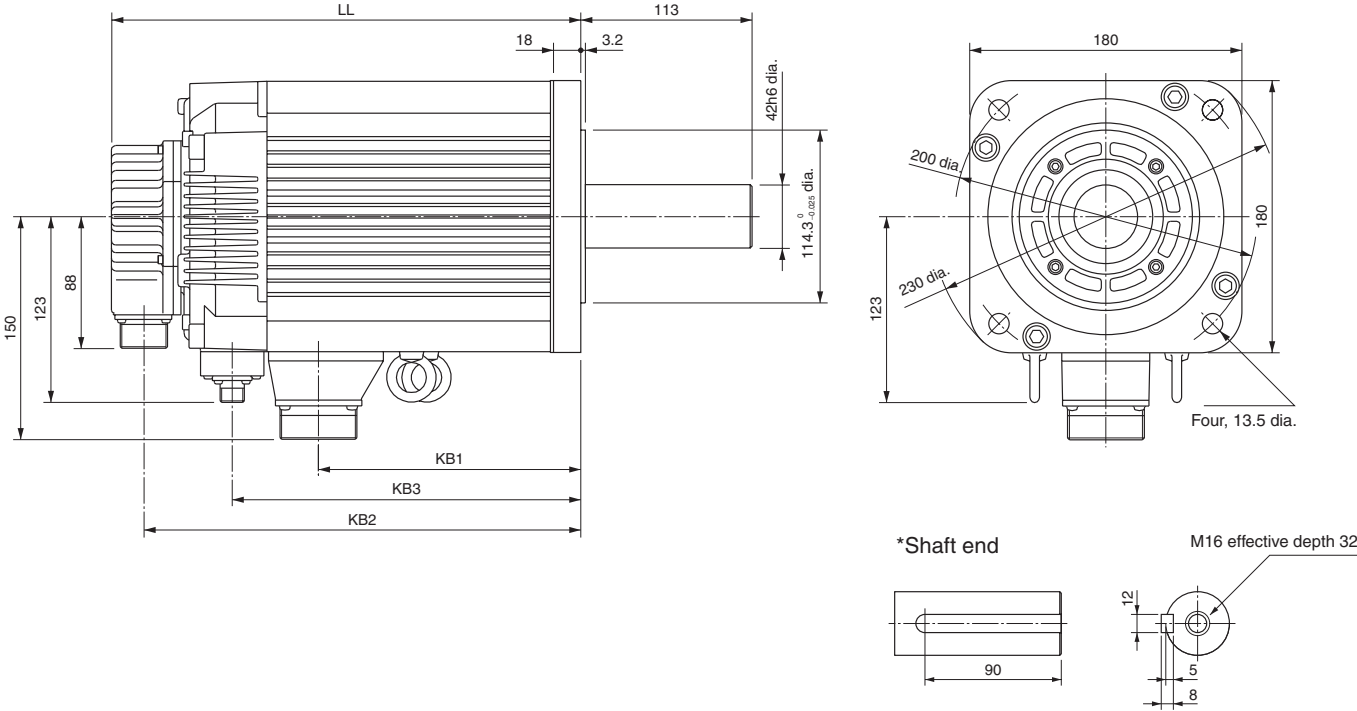


| Dimensions (mm)    | LL  | KB1 | KB2 |
|--------------------|-----|-----|-----|
| Model              |     |     |     |
| R88M-W4K010□ (-S2) | 260 | 174 | 238 |
| R88M-W5K010□ (-S2) | 334 | 248 | 312 |

Cylinder-style Motors with Brakes (1,000 r/min)

200 VAC: 4 kW/5.5 kW

R88M-W4K010H-B (S2)/W5K510H-B (S2)  
R88M-W4K010T-B (S2)/W5K510T-B (S2)



| Dimensions (mm)     | LL  | KB1 | KB2 | KB3 |
|---------------------|-----|-----|-----|-----|
| Model               |     |     |     |     |
| R88M-W4K010□-B (S2) | 311 | 174 | 289 | 231 |
| R88M-W5K510□-B (S2) | 385 | 248 | 363 | 305 |

# Flat-style Motors without Brakes

## 200 VAC: 100 W/200 W/400 W/750 W/1.5 kW

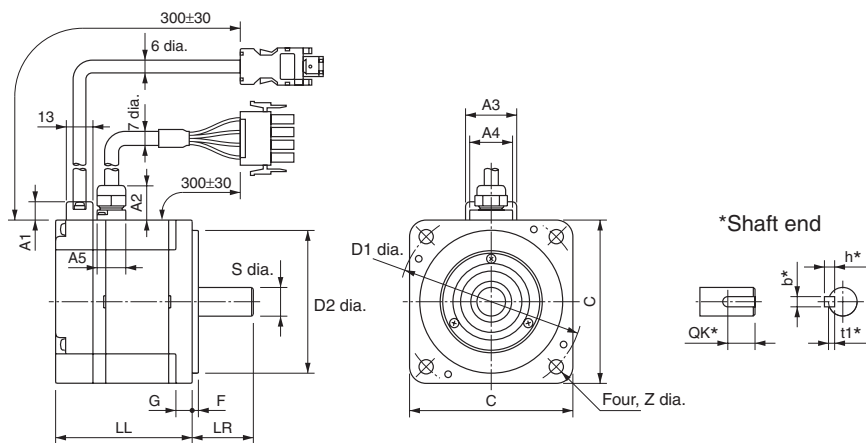
R88M-WP10030H (-S1)/WP20030H (-S1)/WP40030H (-S1)/WP75030H (-S1)/WP1K530H (-S1)

R88M-WP10030T (-S1)/WP20030T (-S1)/WP40030T (-S1)/WP75030T (-S1)/WP1K530T (-S1)

## 100 VAC: 100 W/200 W

R88M-WP10030L (-S1)/WP20030L (-S1)

R88M-WP10030S (-S1)/WP20030S (-S1)



\* These dimensions are applicable to R88M-W□-S1 with key.

| Dimensions<br>(mm)  | LL    | LR | Flange surface |     |                   |     |    |     | Shaft end        |     |    |    |     | Cable pull-out section |    |    |    |    |
|---------------------|-------|----|----------------|-----|-------------------|-----|----|-----|------------------|-----|----|----|-----|------------------------|----|----|----|----|
| Model               |       |    | C              | D1  | D2                | F   | G  | Z   | S                | QK* | b* | h* | t1* | A1                     | A2 | A3 | A4 | A5 |
| R88M-WP10030□ (-S1) | 62    | 25 | 60             | 70  | 50 <sup>h7</sup>  | 3   | 6  | 5.5 | 8 <sup>h6</sup>  | 14  | 3  | 3  | 1.8 | 9                      | 18 | 25 | 21 | 14 |
| R88M-WP20030□ (-S1) | 67    | 30 | 80             | 90  | 70 <sup>h7</sup>  | 3   | 8  | 7   | 14 <sup>h6</sup> | 16  | 5  | 5  | 3   |                        | 28 | 38 | 19 |    |
| R88M-WP40030□ (-S1) | 87    |    |                |     |                   |     |    |     |                  |     |    |    |     |                        |    |    |    |    |
| R88M-WP75030□ (-S1) | 86.5  | 40 | 120            | 145 | 110 <sup>h7</sup> | 3.5 | 10 | 10  | 16 <sup>h6</sup> | 22  |    |    |     |                        |    |    |    |    |
| R88M-WP1K530□ (-S1) | 114.5 |    |                |     |                   |     |    |     | 19 <sup>h6</sup> |     | 6  | 6  | 3.5 |                        |    |    |    |    |

# Flat-style Motors with Brakes

## 200 VAC: 100 W/200 W/400 W/750 W/1.5 kW

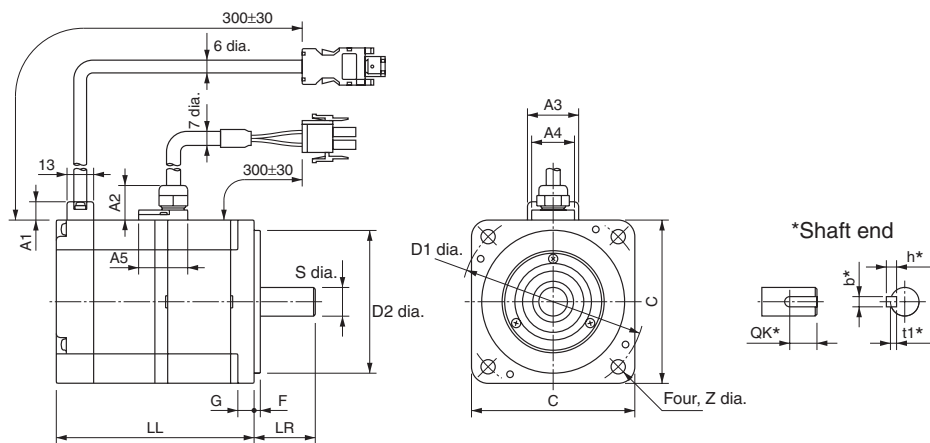
R88M-WP10030H-B (S1)/WP20030H-B (S1)/WP40030H-B (S1)/WP75030H-B (S1)/WP1K530H-B (S1)

R88M-WP10030T-B (S1)/WP20030T-B (S1)/WP40030T-B (S1)/WP75030T-B (S1)/WP1K530T-B (S1)

## 100 VAC: 100 W/200 W

R88M-WP10030L-B (S1)/WP20030L-B (S1)

R88M-WP10030S-B (S1)/WP20030S-B (S1)



\* These dimensions are applicable to R88M-W□-BS1 with key.

| Dimensions (mm)      | LL    | LR | Flange surface |     |                   |     |    |     | Shaft end        |     |    |    |     | Cable pull-out section |    |    |    |    |
|----------------------|-------|----|----------------|-----|-------------------|-----|----|-----|------------------|-----|----|----|-----|------------------------|----|----|----|----|
| Model                |       |    | C              | D1  | D2                | F   | G  | Z   | S                | QK* | b* | h* | t1* | A1                     | A2 | A3 | A4 | A5 |
| R88M-WP10030□-B (S1) | 91    | 25 | 60             | 70  | 50 <sup>h7</sup>  | 3   | 6  | 5.5 | 8 <sup>h6</sup>  | 14  | 3  | 3  | 1.8 | 9                      | 18 | 25 | 21 | 23 |
| R88M-WP20030□-B (S1) | 98.5  | 30 | 80             | 90  | 70 <sup>h7</sup>  | 3   | 8  | 7   | 14 <sup>h6</sup> | 16  | 5  | 5  | 3   |                        | 28 |    | 38 | 26 |
| R88M-WP40030□-B (S1) | 118.5 |    |                |     |                   |     |    |     |                  |     |    |    |     |                        |    |    |    |    |
| R88M-WP75030□-B (S1) | 120   | 40 | 120            | 145 | 110 <sup>h7</sup> | 3.5 | 10 | 10  | 16 <sup>h6</sup> | 22  | 6  | 6  | 3.5 |                        |    |    |    |    |
| R88M-WP1K530□-B (S1) | 148   |    |                |     |                   |     |    |     | 19 <sup>h6</sup> |     |    |    |     |                        |    |    |    |    |

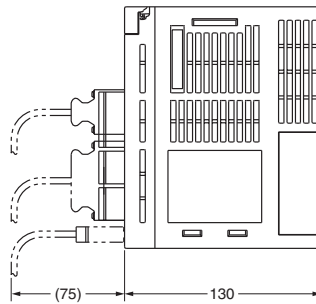
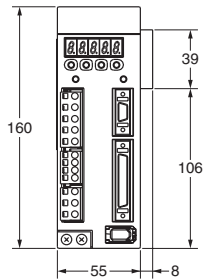
## ■ AC Servodrivers

### 200 VAC: 30 W/50 W/100 W/200 W

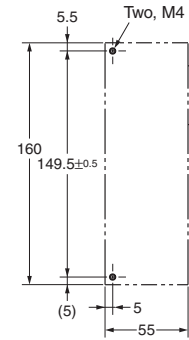
R88D-WTA3H/WT A5H/WT01H/WT02H

### 100 VAC: 30 W/50 W/100 W

R88D-WTA3HL/WT A5HL/WT01HL



Mounting hole dimensions

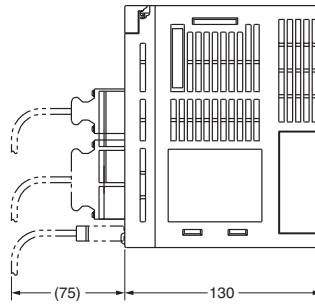
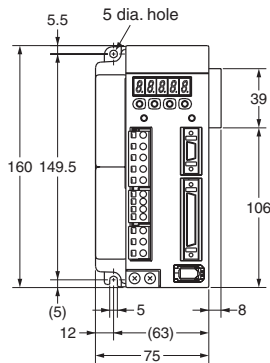


### 200 VAC: 400 W

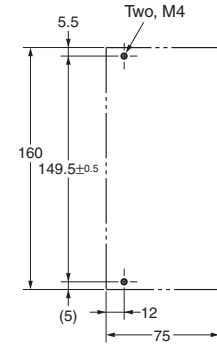
R88D-WT04H

### 100 VAC: 200 W

R88D-WT02HL

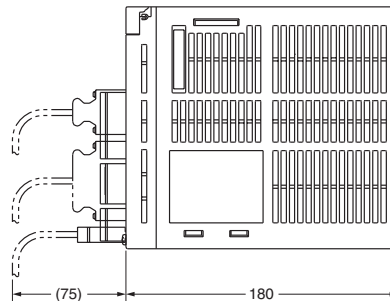
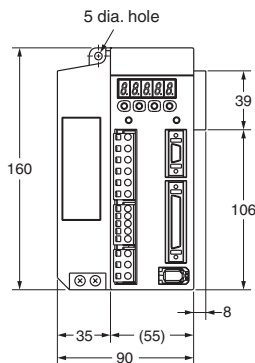


Mounting hole dimensions

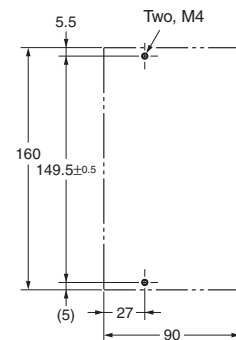


### 200 VAC: 500 W/750 W/1 kW

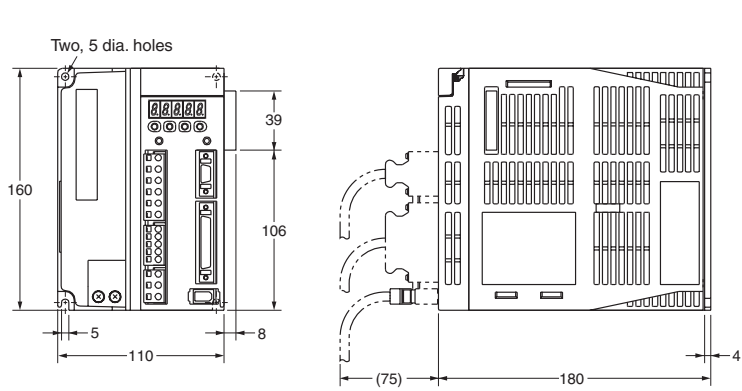
R88D-WT05H/WT08H/WT10H



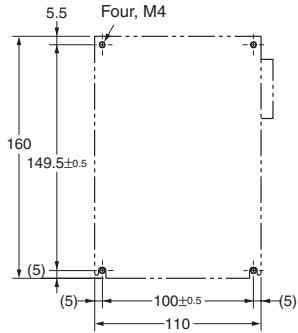
Mounting hole dimensions



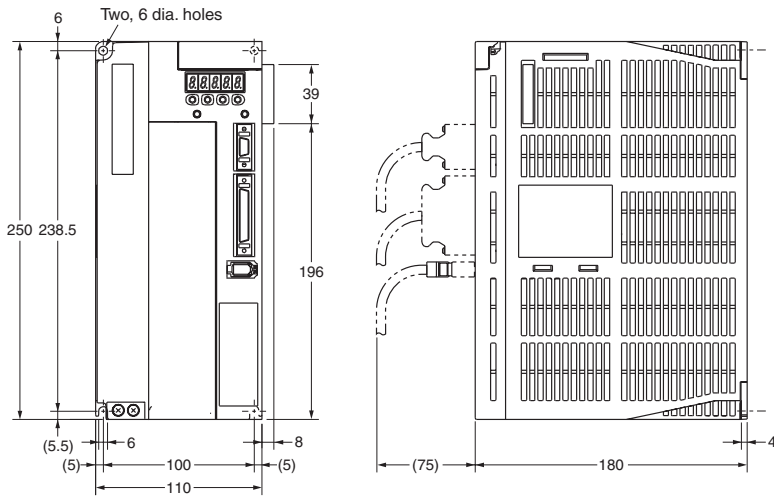
**200 VAC: 1.5 kW**  
R88D-WT15H



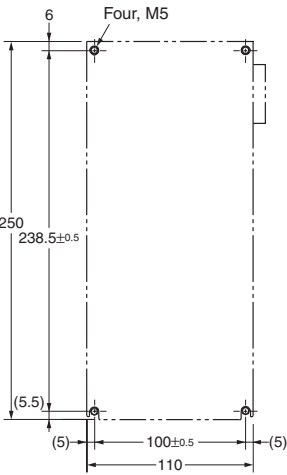
Mounting hole dimensions



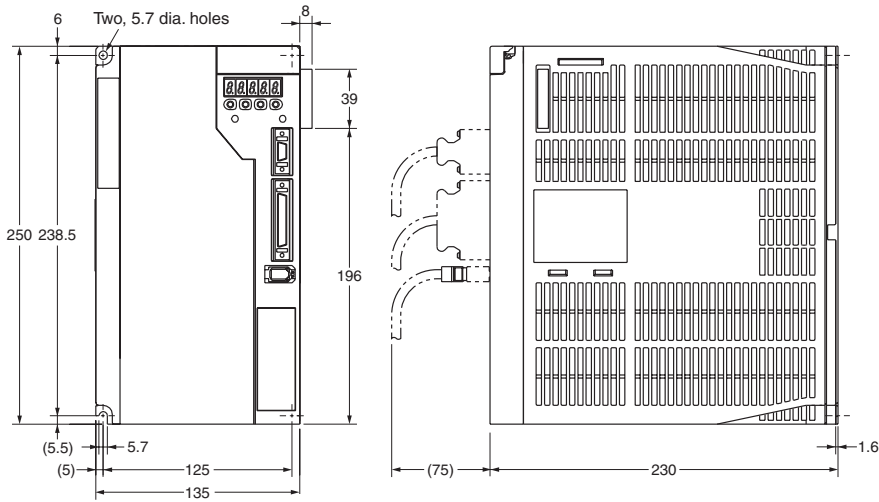
**200 VAC: 2 kW/3 kW**  
R88D-WT20H/WT30H



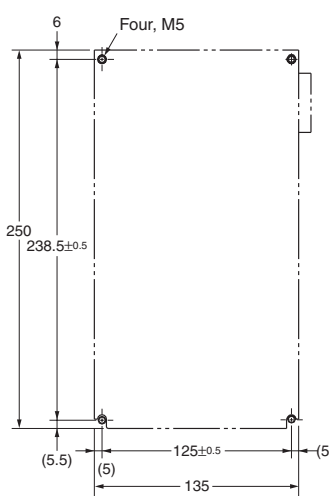
Mounting hole dimensions



**200 VAC: 5 kW**  
R88D-WT50H



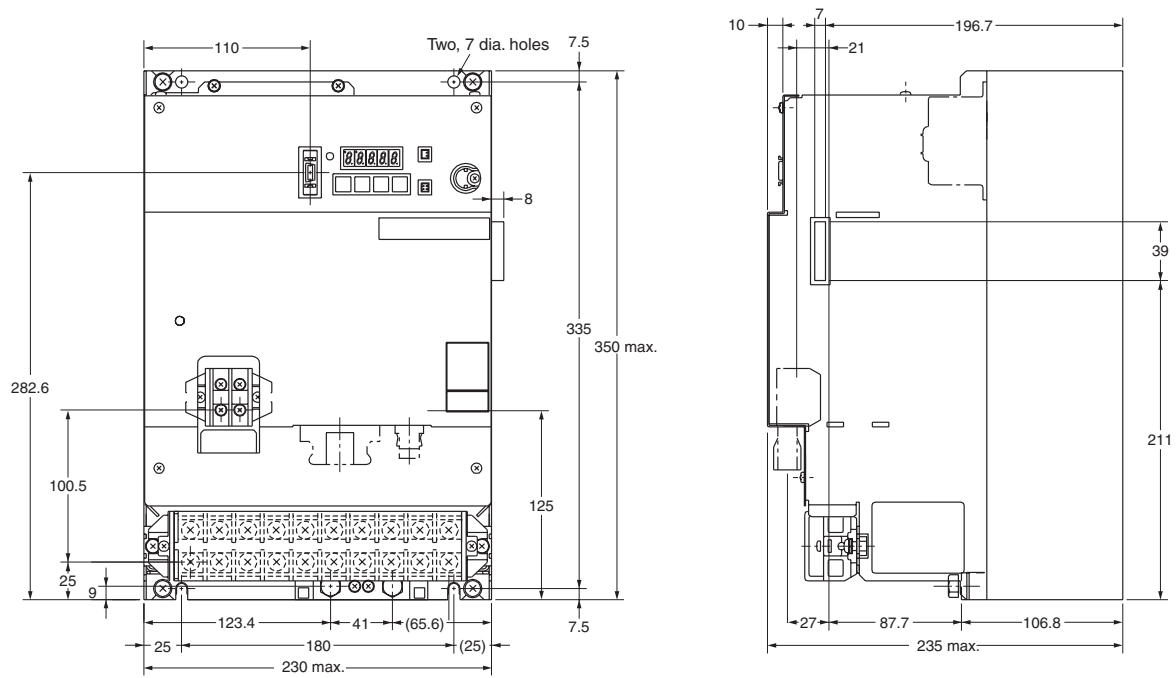
Mounting hole dimensions



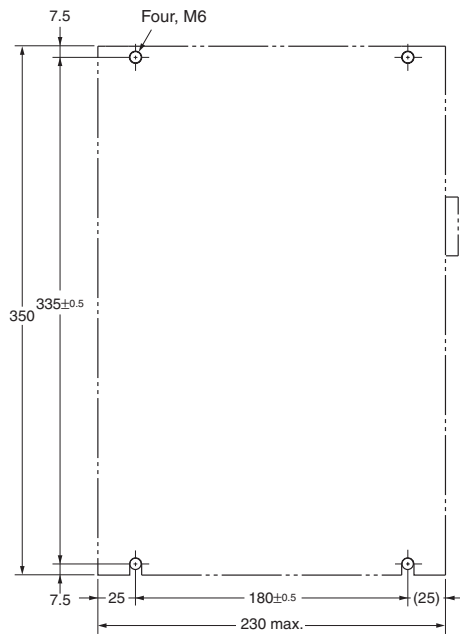


**200 VAC: 6 kW/7.5 kW**

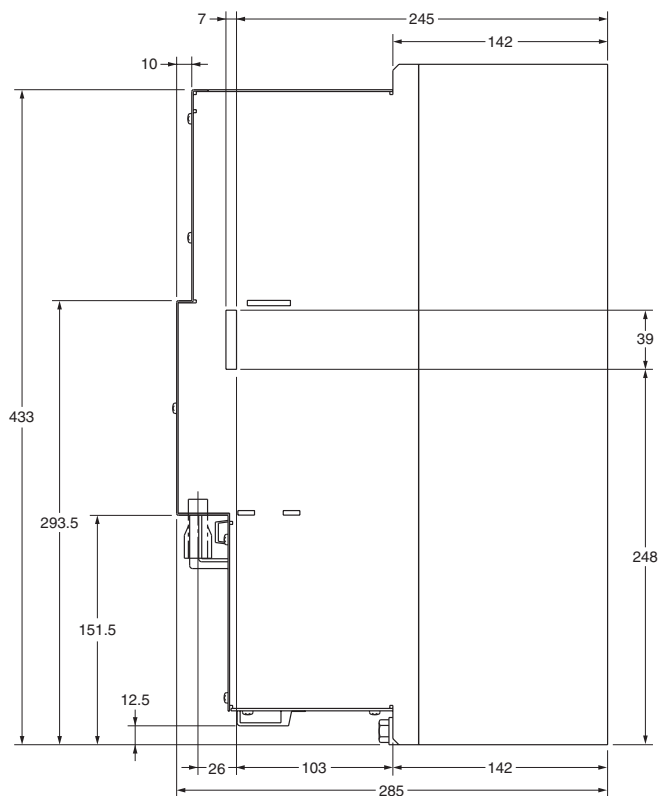
R88D-WT60H/WT75H



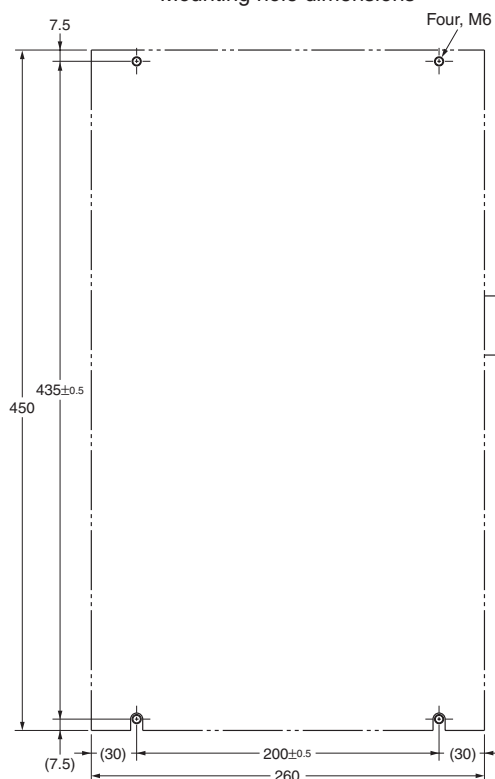
**Mounting hole dimensions**



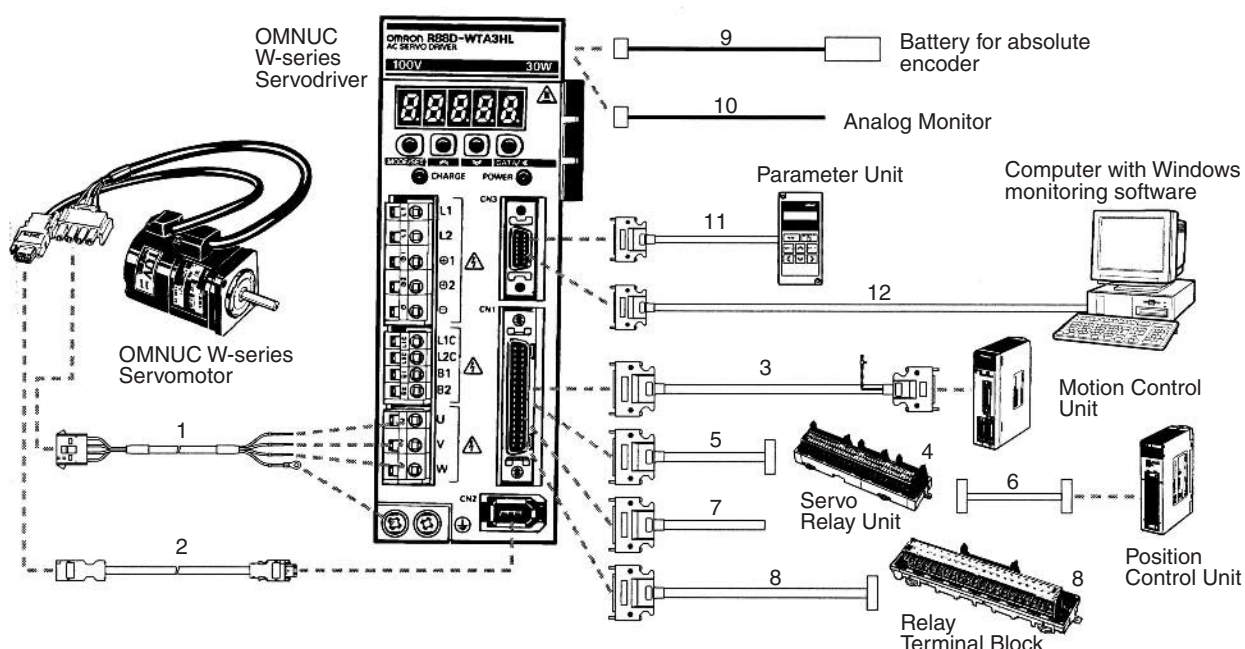
## R88D-WT150H



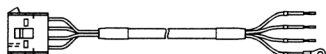
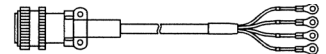
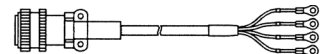
### Mounting hole dimensions

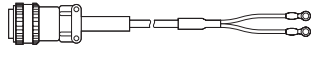
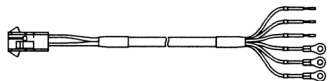
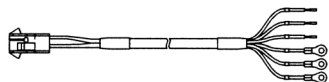
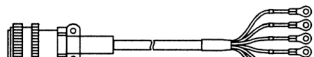


# Cable Specifications



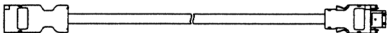
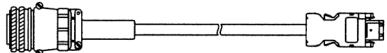
## Power Cables

| Symbol | Description                                 | Connect to:                                                                                                                                                                | Model                                                                                                             | Remarks                                                                                                                                                                                                                                      |
|--------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Power Cables for Servomotors without Brakes | Cylinder-style Servomotors (3,000 r/min): 30 to 750 W<br>Flat-style Servomotors (3,000 r/min): 100 to 750 W                                                                | R88A-CAWA□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by AMP Japan, Ltd.)<br>Connector cap: 350780-1<br>Connector socket: 350689-3<br>                                   |
|        |                                             | Flat-style Servomotors (3,000 r/min): 1.5 kW                                                                                                                               | R88A-CAWB□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by AMP Japan, Ltd.)<br>Connector cap: 350780-1<br>Connector socket: 350551-6 (pins 1 to 3)<br>350551-3 (pin 4)<br> |
|        |                                             | Cylinder-style Servomotors (3,000 r/min): 1 to 2 kW<br>Cylinder-style Servomotors (1,500 r/min): 450 W to 1.3 kW<br>Cylinder-style Servomotors (1,000 r/min): 300 to 900 W | R88A-CAWC□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B18-10S<br>Cable clamp: MS3057-10A<br>                  |
|        |                                             | Cylinder-style Servomotors (3,000 r/min): 3 to 5 kW<br>Cylinder-style Servomotors (1,500 r/min): 1.8 to 4.4 kW<br>Cylinder-style Servomotors (1,000 r/min): 1.2 to 3 kW    | R88A-CAWD□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B22-22S<br>Cable clamp: MS3057-12A<br>                  |

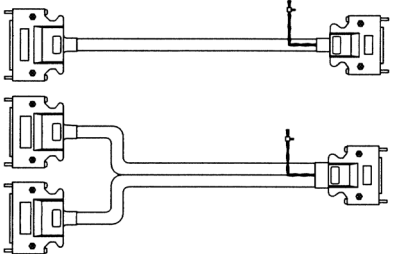
| Symbol | Description                                                                          |                              | Connect to:                                                                                                                                                                                                     | Model                                                                                                             | Remarks                                                                                                                                                                                                                                      |
|--------|--------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Power Cables for Servomotors without Brakes, and Servomotors with Brakes (See note.) | Power connectors (See note.) | Cylinder-style Servomotors (1,000 r/min): 4 kW                                                                                                                                                                  | R88A-CAWE□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B32-17S<br>Cable clamp: MS3057-20A<br>                    |
|        |                                                                                      |                              | Cylinder-style Servomotors (1,500 r/min): 5.5 to 11 kW<br>Cylinder-style Servomotors (1,000 r/min): 5.5 kW                                                                                                      | R88A-CAWF□□□S<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B32-17S<br>Cable clamp: MS3057-20A<br>                    |
|        |                                                                                      | Brake connectors (See note.) | Cylinder-style Servomotors (1,500 r/min): 5.5 to 11 kW<br>Cylinder-style Servomotors (1,000 r/min): 4 to 5.5 kW<br><b>Note:</b> Must be used in combination with an R88A-CAWE□□□S or R88A-CAWF□□□S Power Cable. | R88A-CAWE□□□B<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106A10SL-3S<br>Cable clamp: MS3057-4A<br>                    |
|        | Power Cables for Servomotors with Brakes                                             |                              | Cylinder-style Servomotors (3,000 r/min): 30 to 750 W<br>Flat-style Servomotors (3,000 r/min): 100 to 750 W                                                                                                     | R88A-CAWA□□□B<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by AMP Japan, Ltd.)<br>Connector cap: 350781-1<br>Connector socket: 350689-3<br>                                    |
|        |                                                                                      |                              | Flat-style Servomotors (3,000 r/min): 1.5 kW                                                                                                                                                                    | R88A-CAWB□□□B<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by AMP Japan, Ltd.)<br>Connector cap: 350781-1<br>Connector socket: 350551-6 (pins 1 to 3)<br>350551-3 (pin 4)<br> |
|        |                                                                                      |                              | Cylinder-style Servomotors (3,000 r/min): 1 to 2 kW<br>Cylinder-style Servomotors (1,500 r/min): 450 W to 1.3 kW<br>Cylinder-style Servomotors (1,000 r/min): 300 to 900 W                                      | R88A-CAWC□□□B<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B20-15S<br>Cable clamp: MS3057-12A<br>                  |
|        |                                                                                      |                              | Cylinder-style Servomotors (3,000 r/min): 3 to 5 kW<br>Cylinder-style Servomotors (1,500 r/min): 1.8 to 4.4 kW<br>Cylinder-style Servomotors (1,000 r/min): 1.2 to 3 kW                                         | R88A-CAWD□□□B<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector cap: MS3106B24-10S<br>Cable clamp: MS3057-16A<br>                  |

**Note:** Power connectors and brake connectors are separate for Servomotors with a capacity of 4 kW min. (1,000 r/min) and 5.5 kW min. (1,500 r/min). This means that two cables are necessary when using Servomotors with Brakes: an R88A-CAWE□□□S or R88A-CAWF□□□S Power Connector and an R88A-CAWF□□□B Brake Connector. The R88A-CAWF□□□B Brake Connector is wired (2 conductors) only for braking.

# Encoder Cables (for CN2)

| Symbol | Description   | Connect to:                                                                                                                                                                  | Model                                                                                                             | Remarks                                                                                                                                                                                                                                                                                                                                                    |
|--------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2      | Encoder Cable | Cylinder-style Servomotors (3,000 r/min): 30 to 750 W<br>Flat-style Servomotors (3,000 r/min): 100 W to 1.5 kW                                                               | R88A-CRWA□□□C<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by MOLEX JAPAN CO., Ltd.)<br>Connector socket: 54280-0600<br>                                                                                                                                                                       |
|        |               | Cylinder-style Servomotors (3,000 r/min): 1 to 5 kW<br>Cylinder-style Servomotors (1,500 r/min): 450 W to 15 kW<br>Cylinder-style Servomotors (1,000 r/min): 300 W to 5.5 kW | R88A-CRWB□□□N<br>□ represents one of the following cable lengths:<br>3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m | Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.)<br>Connector socket: MS3106B20-29S<br>Cable clamp: MS3057-12A<br>Connector on driver end (manufactured by MOLEX JAPAN CO., Ltd.)<br>Crimp terminal: 50639-8091<br>Connector plug: 55101-0600<br> |

# Control Cables (for CN1)

| Symbol | Description                            | Connect to                                                                               | Model                                                                                                                                                 | Remarks                                                                              |
|--------|----------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 3      | Control Cable                          | Motion Control Units (for all SYSMAC CS1, C200H, and CV PCs)                             | R88A-CPW□□□M◇<br>□ represents one of the following cable lengths:<br>1 m, 2 m, 3 m, 5 m<br>◇ represents the number of axes:<br>1: 1 axis<br>2: 2 axes |  |
| 4      | Servo Relay Unit                       | 1-axis Position Control Unit                                                             | XW2B-20J6-1B                                                                                                                                          | ---                                                                                  |
|        |                                        | 2-axis Position Control Unit                                                             | XW2B-40J6-2B                                                                                                                                          |                                                                                      |
|        |                                        | 1-axis CJ1M                                                                              | XW2B-20J6-8A                                                                                                                                          |                                                                                      |
|        |                                        | 2-axis CJ1M                                                                              | XW2B-40J6-9A                                                                                                                                          |                                                                                      |
| 5      | Servodriver Connecting Cable           | XW2B-20J6-1B, XW2B-40J6-2B, XW2B-20J6-3B, XW2B-20J6-8A, or XW2B-40J6-9A Servo Relay Unit | XW2Z-□□□J-B4<br>□ represents either of the following cable lengths:<br>1 m, 2 m                                                                       | ---                                                                                  |
|        |                                        | XW2B-40J6-4A Servo Relay Unit                                                            | XW2Z-□□□J-B8<br>□ represents either of the following cable lengths:<br>1 m, 2 m                                                                       |                                                                                      |
| 6      | Position Control Unit Connecting Cable | CS1W-NC113 or C200HW-NC113 Position Control Unit                                         | XW2Z-□□□J-A6<br>□ represents either of the following cable lengths:<br>50 cm, 1 m                                                                     | ---                                                                                  |
|        |                                        | CS1W-NC213/413 or C200HW-NC213/413 Position Control Unit                                 | XW2Z-□□□J-A7<br>□ represents either of the following cable lengths:<br>50 cm, 1 m                                                                     |                                                                                      |
|        |                                        | CJ1W-NC113 Position Control Unit                                                         | XW2Z-□□□J-A14<br>□ represents either of the following cable lengths:<br>50 cm, 1 m                                                                    |                                                                                      |
|        |                                        | CJ1W-NC213/413 Position Control Unit                                                     | XW2Z-□□□J-A15<br>□ represents either of the following cable lengths:<br>50 cm, 1 m                                                                    |                                                                                      |
|        |                                        | CJ1M (CJ1M-CPU22/23)                                                                     | XW2Z-100J-A27                                                                                                                                         |                                                                                      |
| 7      | Control Cable                          | General-purpose Controller                                                               | R88A-CPW□□□S<br>□ represents either of the following cable lengths:<br>1 m, 2 m                                                                       | ---                                                                                  |

| Symbol | Description                | Connect to                 | Model                                                                           | Remarks |
|--------|----------------------------|----------------------------|---------------------------------------------------------------------------------|---------|
| 8      | Relay Terminal Block Cable | General-purpose Controller | R88A-CTW□□□N<br>□ represents either of the following cable lengths:<br>1 m, 2 m | ---     |
|        | Relay Terminal Block       |                            | XW2B-50G5                                                                       |         |
| ---    | Control I/O Connector CN1  | ---                        | R88A-CNU11C                                                                     |         |

## ■ CN3 Options

| Symbol | Description                           | Connect to:              | Model         |
|--------|---------------------------------------|--------------------------|---------------|
| 11     | Parameter Unit with Cable (1 m)       | ---                      | R88A-PR02W    |
|        | Parameter Unit Connecting Cable (2 m) | R88A-PR02U/<br>PR02W     | R88A-CCW002C  |
| 12     | Computer Connecting Cable (2 m)       | IBM PC/AT or compatibles | R88A-CCW002P2 |

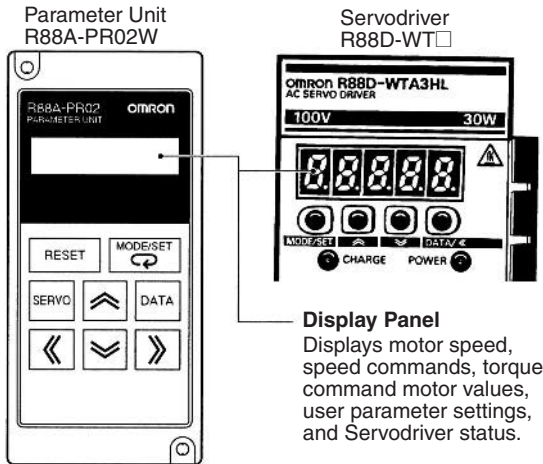
## ■ Other Options

| Symbol | Description                | Connect to:                  | Model        |
|--------|----------------------------|------------------------------|--------------|
| 9      | Backup Battery             | R88D-WT□H<br>(□: 50 or less) | R88A-BAT01W  |
|        |                            | R88D-WT60H/<br>75H/150H      | R88A-BAT02W  |
| 10     | Analog Monitor Cable (1 m) | ---                          | R88A-CMW001S |
| ---    | Encoder Cable Connector    | Servodriver side             | R88A-CNW01R  |
|        |                            | Servomotor side              | R88A-CNW02R  |

**Note:** For details, refer to *Ordering Information* on page 67.

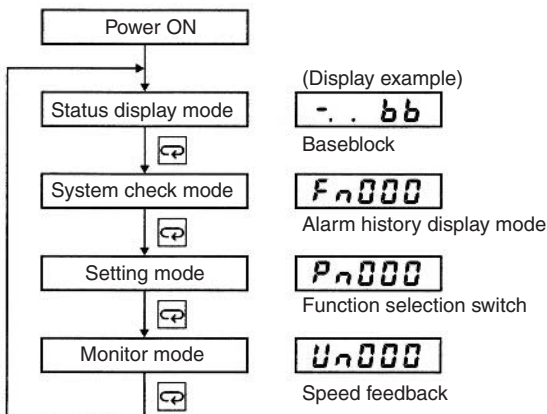
# Operation and Display

## Operating Functions

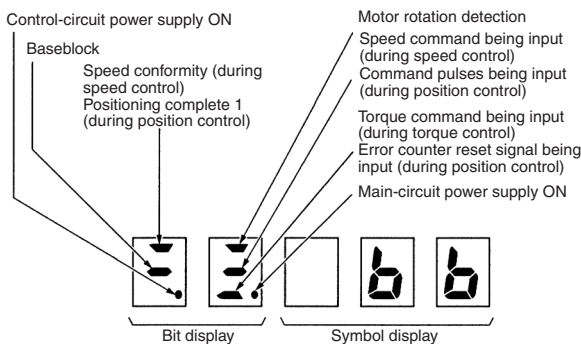


## Changing Modes

To change modes, press the MODE/SET Key.



## Status Display Mode

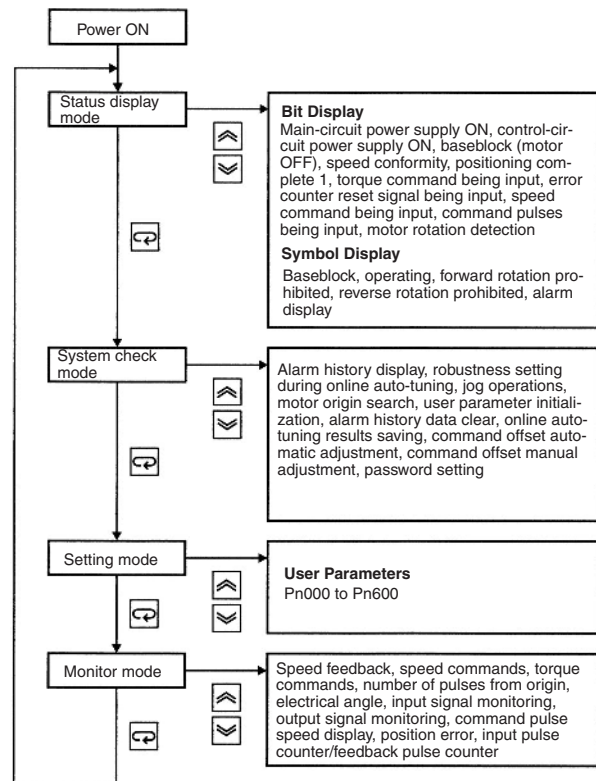


| Symbol | Status                                                |
|--------|-------------------------------------------------------|
| bb     | Baseblock (motor OFF)                                 |
| run    | Operating                                             |
| Pn0    | Forward rotation prohibited (forward overtravel)      |
| n0     | Reverse rotation prohibited (reverse overtravel)      |
| R.02   | Alarm display (refer to <i>Alarm List</i> on page 51) |

## Unit Keys

| R88A-PR02W | R88D-WT□ | Function                                                                                                                                   |
|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| RESET      | +        | Resets an alarm.                                                                                                                           |
| MODE/SET   |          | Switches between status display mode, system check mode, setting mode, and monitor mode. Used as a data setting key while in setting mode. |
| SERVO      |          | Turns ON or OFF the Servo while jog operations are being performed.                                                                        |
| DATA       |          | Switches between parameter display and data display, and records data.                                                                     |
|            |          | Increments parameter settings. Used as a forward rotation start key during jog operation.                                                  |
|            |          | Decrements parameter settings. Used as a reverse rotation start key during jog operation.                                                  |
|            |          | Selects the digit whose setting is to be changed. When selected, the digit flashes.                                                        |
|            |          |                                                                                                                                            |

## Mode Details



# Monitor Item and Alarm List

## ■ Monitor Mode

| Monitor No. | Monitor item                       | Unit            | Explanation                                                                                                                                                        |
|-------------|------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Un000       | Speed Feedback                     | r/min           | Displays the actual motor speed.                                                                                                                                   |
| Un001       | Speed Command                      | r/min           | Displays the speed command value or internally set speed value during speed control. 0 is displayed during pulse-train input control.                              |
| Un002       | Torque Command                     | %               | Displays the command value for a current loop that is expressed by treating the rated torque as 100%.                                                              |
| Un003       | Number of Pulses from Z-Phase      | Pulses          | Displays the number of pulses from Z-Phase in encoder resolution units (times 4).                                                                                  |
| Un004       | Electrical Angle                   | degrees         | Displays the motor electrical angle.                                                                                                                               |
| Un005       | Input Signal Monitor               | ---             | Displays driver I/O signal status by turning ON or OFF each signal bit.                                                                                            |
| Un006       | Output Signal Monitor              | ---             |                                                                                                                                                                    |
| Un007       | Command Pulse Speed Display        | r/min           | Displays command pulse frequency converted in r/min.                                                                                                               |
| Un008       | Position Deviation (Error Counter) | Reference units | Displays the number of pulses accumulated in the error counter (Position Deviation) that are converted in reference units (input pulse references).                |
| Un009       | Motor Load Rate                    | %               | Displays effective torque at intervals of 10 s that is expressed by treating the rated torque as 100%.                                                             |
| Un00A       | Regeneration Load Rate             | %               | Displays the amount of regeneration energy absorbed at intervals of 10 s that is expressed by treating the Pn600 setting (Regenerative Resistor Capacity) as 100%. |
| Un00B       | Dynamic Brake Resistance Load Rate | %               | Displays the resistance load factor at intervals of 10 s that is expressed by treating the rated load factor as 100%.                                              |
| Un00C       | Input Pulse Counter                | Reference units | Displays the number of counted input pulses in hexadecimal notation.                                                                                               |
| Un00D       | Feedback Pulse Counter             | Pulses          | Displays the number of counted encoder feedback pulses in hexadecimal notation (multiplied by 4).                                                                  |

## ■ Alarm Displays

In addition to the displays listed below, error codes for the Option Unit are also output.

| Display | Alarm code |      |      | Alarm details                                                           |
|---------|------------|------|------|-------------------------------------------------------------------------|
|         | AL01       | AL02 | AL03 |                                                                         |
| R.02    | OFF        | OFF  | OFF  | Parameter destruction, Servodriver EEPROM data error                    |
| R.03    |            |      |      | Main circuit detector error                                             |
| R.04    |            |      |      | Parameter setting error                                                 |
| R.05    |            |      |      | Motor mismatch, Servomotor and Servodriver capacity mismatch            |
| R.10    | ON         | OFF  | OFF  | Overcurrent or heat sink overheating (1.5 kW min.)                      |
| R.30    |            |      |      | Regeneration error (broken resistor wiring, transistor short-circuit )  |
| R.32    |            |      |      | Regeneration overload                                                   |
| R.33    |            |      |      | Main-circuit power supply setting error                                 |
| R.40    | OFF        | OFF  | ON   | Overvoltage                                                             |
| R.41    |            |      |      | Undervoltage                                                            |
| R.51    | ON         | OFF  | ON   | Overspeed                                                               |
| R.71    |            |      |      | Overload (maximum momentary load)                                       |
| R.72    |            |      |      | Overload (maximum continuous load)                                      |
| R.73    |            |      |      | Dynamic brake overload                                                  |
| R.74    |            |      |      | Inrush resistance overload                                              |
| R.7A    |            |      |      | Radiation shield overheating (Displayed for 30 W to 1.0 kW models only) |
| R.81    | OFF        | OFF  | OFF  | Backup error                                                            |
| R.82    |            |      |      | Checksum error                                                          |
| R.83    |            |      |      | Parity error                                                            |
| R.84    |            |      |      | Absolute error                                                          |
| R.85    |            |      |      | Overspeed error                                                         |
| R.8b    |            |      |      | Encoder overheating                                                     |
| R.b1    |            |      |      | Speed command input read error                                          |
| R.b2    |            |      |      | Torque command input read error                                         |
| R.bF    |            |      |      | System error                                                            |



| Display | Alarm code |      |      | Alarm details                    |
|---------|------------|------|------|----------------------------------|
|         | AL01       | AL02 | AL03 |                                  |
| R.C1    | ON         | OFF  | ON   | Overrun detection                |
| R.CB    |            |      |      | Excessive rotation data error    |
| R.C9    |            |      |      | Encoder communications error     |
| R.CR    |            |      |      | Encoder parameter error          |
| R.Cb    |            |      |      | Encoder data error               |
| R.CC    | ON         | OFF  | ON   | Multiple rotation limit mismatch |
| R.d0    | ON         | ON   | OFF  | Error counter count-up           |
| R.d1    |            |      |      | Motor-load deviation over        |
| R.E7    | OFF        | ON   | ON   | Option detection error           |
| R.F1    | OFF        | ON   | OFF  | Phase-failure detected           |
| R.F5    | OFF        | ON   | OFF  | Motor current error              |
| R.F6    | OFF        | ON   | OFF  | Motor conduction error           |

**Note:** Alarm codes are output to pin 37 (AL01), pin 38 (AL02), and pin 39 (AL03) of the CN1 connector on the Servodriver.

# User Parameters

## Function Selection Parameters

| PRM. No. | Parameter name                            | Digit | Function name                                   | Setting | Explanation                                                                                               | Factory setting | Unit | Setting range |
|----------|-------------------------------------------|-------|-------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------|-----------------|------|---------------|
| Pn000    | Function Selection Basic Switches         | 0     | Reverse Rotation Mode                           | 0       | Defines forward rotation as counter-clockwise (CCW) rotation.                                             | 0010            | ---  | ---           |
|          |                                           |       |                                                 | 1       | Defines forward rotation as clockwise (CW) rotation.                                                      |                 |      |               |
|          |                                           | 1     | Control Mode Selection                          | 0       | Speed control (analog command)                                                                            |                 |      |               |
|          |                                           |       |                                                 | 1       | Position control (pulse-train command)                                                                    |                 |      |               |
|          |                                           |       |                                                 | 2       | Torque control (analog command)                                                                           |                 |      |               |
|          |                                           |       |                                                 | 3       | Internally set speed control                                                                              |                 |      |               |
|          |                                           |       |                                                 | 4       | Internally set speed control ↔ Speed control (analog command)                                             |                 |      |               |
|          |                                           |       |                                                 | 5       | Internally set speed control ↔ Position control (pulse-train command)                                     |                 |      |               |
|          |                                           |       |                                                 | 6       | Internally set speed control ↔ Torque control (analog command)                                            |                 |      |               |
|          |                                           |       |                                                 | 7       | Position control (pulse-train command) ↔ Speed control (analog command)                                   |                 |      |               |
|          |                                           |       |                                                 | 8       | Position control (pulse-train command) ↔ Torque control (analog command)                                  |                 |      |               |
|          |                                           |       |                                                 | 9       | Torque control (analog command) ↔ Speed control (analog command)                                          |                 |      |               |
|          |                                           |       |                                                 | A       | Speed control with position lock function (analog command)                                                |                 |      |               |
|          |                                           |       |                                                 | B       | Position control with pulse prohibit function (pulse-train command)                                       |                 |      |               |
|          |                                           | 2     | Unit No. Setting                                | 0 to F  | Sets the unit No. of the device communicating with Servodriver.                                           |                 |      |               |
|          |                                           | 3     | Not Used                                        |         |                                                                                                           |                 |      |               |
| Pn001    | Function Selection Application Switches 1 | 0     | Servo OFF or Alarm Stop Mode                    | 0       | Uses the dynamic brake to stop the Servomotor.                                                            | 1002            | ---  | ---           |
|          |                                           |       |                                                 | 1       | Uses the dynamic brake to stop the Servomotor, and releases the dynamic brake after the Servomotor stops. |                 |      |               |
|          |                                           |       |                                                 | 2       | Coasts the Servomotor to a stop.                                                                          |                 |      |               |
|          |                                           | 1     | Run Prohibit Input Stop Mode                    | 0       | Stops the Servomotor according to the Pn001.0 setting.                                                    |                 |      |               |
|          |                                           |       |                                                 | 1       | Decelerates the Servomotor to a stop at the torque specified in Pn406 and then locks the Servomotor.      |                 |      |               |
|          |                                           |       |                                                 | 2       | Decelerates the Servomotor to a stop at the torque specified in Pn406 and then turns OFF the Servomotor.  |                 |      |               |
|          |                                           | 2     | Main Circuit Power Supply AC/DC Input Selection | 0       | Supplies AC power from L1, L2, and (L3) terminals.                                                        |                 |      |               |
|          |                                           |       |                                                 | 1       | Supplies DC power from (+) 1 and (–) terminals.                                                           |                 |      |               |
|          |                                           | 3     | Warning Code Output Selection                   | 0       | Outputs only alarm codes from AL01, AL02, and AL03.                                                       |                 |      |               |
|          |                                           |       |                                                 | 1       | Outputs both alarm codes and warning codes from AL01, AL02, and AL03.                                     |                 |      |               |

**Note:** 1. Do not change the factory settings of any "Not Used" parameters.

2. When changing the Pn000, Pn001, or Pn002 parameter, always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

| PRM. No.        | Parameter name                            | Digit  | Function name                                             | Setting | Explanation                                                            | Factory setting | Unit | Setting range |
|-----------------|-------------------------------------------|--------|-----------------------------------------------------------|---------|------------------------------------------------------------------------|-----------------|------|---------------|
| Pn002           | Function Selection Application Switches 2 | 0      | Torque Command Input Switch during Position/Speed Control | 0       | None.                                                                  | 0000            | ---  | ---           |
|                 |                                           |        |                                                           | 1       | Uses TREF for analog torque limit input.                               |                 |      |               |
|                 |                                           |        |                                                           | 2       | Uses TREF for torque feed-forward input.                               |                 |      |               |
|                 |                                           |        |                                                           | 3       | Uses TREF for analog torque limit input when PCL and NCL are ON.       |                 |      |               |
|                 |                                           | 1      | Speed Command Input Switch during Torque Control          | 0       | None.                                                                  |                 |      |               |
|                 |                                           |        |                                                           | 1       | Uses REF for analog torque limit input.                                |                 |      |               |
|                 |                                           | 2      | Absolute Encoder Usage                                    | 0       | Uses the absolute encoder as an absolute encoder.                      |                 |      |               |
|                 |                                           |        |                                                           | 1       | Uses the absolute encoder as an incremental encoder.                   |                 |      |               |
|                 |                                           | 3      | Fully Closed Encoder Usage                                | 0       | Fully closed encoder is not used.                                      |                 |      |               |
|                 |                                           |        |                                                           | 1       | Fully closed encoder is used without phase Z.                          |                 |      |               |
|                 |                                           |        |                                                           | 2       | Fully closed encoder is used with phase Z.                             |                 |      |               |
|                 |                                           |        |                                                           | 3       | Fully closed encoder is used in Reverse Rotation Mode without phase Z. |                 |      |               |
|                 |                                           |        |                                                           | 4       | Fully closed encoder is used in Reverse Rotation Mode with phase Z.    |                 |      |               |
| Pn003           | Function Selection Application Switches 3 | 0      | Analog Monitor 1                                          | 0       | Motor speed: 1 V/1,000 r/min                                           | 0002            | ---  | ---           |
|                 |                                           |        |                                                           | 1       | Speed command: 1 V/1,000 r/min                                         |                 |      |               |
|                 |                                           |        |                                                           | 2       | Torque command: 0.05 V/rated torque                                    |                 |      |               |
|                 |                                           |        |                                                           | 3       | Position error: 0.05 V/1 command unit                                  |                 |      |               |
|                 |                                           |        |                                                           | 4       | Position error: 0.05 V/100 command units                               |                 |      |               |
|                 |                                           |        |                                                           | 5       | Reference pulse frequency: 1 V/1,000 r/min                             |                 |      |               |
|                 |                                           |        |                                                           | 6       | Motor speed: 1 V/250 r/min                                             |                 |      |               |
|                 |                                           |        |                                                           | 7       | Motor speed: 1 V/125 r/min                                             |                 |      |               |
|                 |                                           |        |                                                           | 8 to F  | Reserved                                                               |                 |      |               |
|                 |                                           | 1      | Analog Monitor 2                                          | 0 to F  | Same as Analog Monitor 1                                               |                 |      |               |
|                 |                                           | 2 to 3 | Not Used                                                  |         |                                                                        |                 |      |               |
| Pn004 and Pn005 | Not Used                                  |        |                                                           |         |                                                                        | 0000            | ---  | ---           |

**Note: 1.** Do not change the factory settings of any "Not Used" parameters.

- 2.** When changing the Pn000, Pn001, or Pn002 parameter, always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

### Gain-related Parameters

| PRM. No. | Parameter name                             | Digit                                                                                                     | Function name                      | Setting | Explanation                                                                              | Factory setting | Unit          | Setting range |
|----------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------|---------|------------------------------------------------------------------------------------------|-----------------|---------------|---------------|
| Pn100    | Speed Loop Gain                            | Adjusts speed loop response.                                                                              |                                    |         |                                                                                          | 80              | Hz            | 1 to 2000     |
| Pn101    | Speed Loop Integral Time Constant          | Speed loop integral time constant                                                                         |                                    |         |                                                                                          | 2000            | 0.01 ms       | 15 to 51200   |
| Pn102    | Position Loop Gain                         | Adjusts speed loop response.                                                                              |                                    |         |                                                                                          | 40              | 1/s           | 1 to 2000     |
| Pn103    | Inertia Ratio                              | Sets the ratio for the mechanical inertia relative to the Servomotor rotor inertia.                       |                                    |         |                                                                                          | 300             | %             | 0 to 20000    |
| Pn104    | Speed Loop Gain 2                          | Adjusts speed loop response (enabled by gain selector input).                                             |                                    |         |                                                                                          | 80              | Hz            | 1 to 2000     |
| Pn105    | Speed Loop Integral Time Constant 2        | Speed loop integral time constant (enabled by gain selector input).                                       |                                    |         |                                                                                          | 2000            | 0.01 ms       | 15 to 51200   |
| Pn106    | Position Loop Gain 2                       | Adjusts speed loop response (enabled by gain selector input).                                             |                                    |         |                                                                                          | 40              | 1/s           | 1 to 2000     |
| Pn107    | Bias Rotational Speed                      | Position control bias setting                                                                             |                                    |         |                                                                                          | 0               | r/min         | 0 to 450      |
| Pn108    | Bias Addition Baud                         | Uses the deviation counter pulse width to set the operation start for the position control bias function. |                                    |         |                                                                                          | 7               | Command units | 0 to 250      |
| Pn109    | Feed-forward Amount                        | Position control feed-forward compensating gain value                                                     |                                    |         |                                                                                          | 0               | %             | 0 to 100      |
| Pn10A    | Feed-forward Command Filter                | Sets the command filter for position control feed-forward.                                                |                                    |         |                                                                                          | 0               | 0.01 ms       | 0 to 6400     |
| Pn10B    | Speed Control Settings                     | 0                                                                                                         | P Control Switching Condition      | 0       | Uses an internal torque command value as the switching condition (level setting: Pn10C). | 0004            | ---           | ---           |
|          |                                            |                                                                                                           |                                    | 1       | Uses a speed command value as the switching condition (level setting: Pn10D).            |                 |               |               |
|          |                                            |                                                                                                           |                                    | 2       | Uses an acceleration command value as the switching condition (level setting: Pn10E).    |                 |               |               |
|          |                                            |                                                                                                           |                                    | 3       | Uses the number of error pulses as the switching condition (level setting: Pn10F).       |                 |               |               |
|          |                                            |                                                                                                           |                                    | 4       | Does not use the P control switching function.                                           |                 |               |               |
|          |                                            | 1                                                                                                         | Speed Control Loop Switch          | 0       | PI control                                                                               |                 |               |               |
|          |                                            |                                                                                                           |                                    | 1       | IP control                                                                               |                 |               |               |
|          |                                            | 2                                                                                                         | Automatic Gain Switching Selection | 0       | Automatic gain switching disabled                                                        |                 |               |               |
|          |                                            |                                                                                                           |                                    | 1       | Gain switching using position commands                                                   |                 |               |               |
|          |                                            |                                                                                                           |                                    | 2       | Gain switching using position deviation                                                  |                 |               |               |
|          |                                            |                                                                                                           |                                    | 3       | Gain switching using position commands and position deviation                            |                 |               |               |
|          |                                            | 3                                                                                                         | Not Used                           |         |                                                                                          |                 |               |               |
| Pn10C    | P Control Switching (Torque Command)       | Sets the torque command level for switching from PI control to P control.                                 |                                    |         |                                                                                          | 200             | %             | 0 to 800      |
| Pn10D    | P Control Switching (Speed Command)        | Sets the speed command level for switching from PI control to P control.                                  |                                    |         |                                                                                          | 0               | r/min         | 0 to 10000    |
| Pn10E    | P Control Switching (Acceleration Command) | Sets the acceleration command level for switching from PI control to P control.                           |                                    |         |                                                                                          | 0               | 10r/ min/s    | 0 to 3000     |
| Pn10F    | P Control Switching (Deviation Pulse)      | Sets the deviation pulse level for switching from PI control to P control.                                |                                    |         |                                                                                          | 10              | Command units | 0 to 10000    |

| PRM. No. | Parameter name                                             | Digit                                                                                                                                                         | Function name                         | Setting | Explanation                                                                                    | Factory setting | Unit          | Setting range |
|----------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------|------------------------------------------------------------------------------------------------|-----------------|---------------|---------------|
| Pn110    | Online Autotuning Setting                                  | 0                                                                                                                                                             | Online Autotuning Selection           | 0       | Performs autotuning only when the system runs for the first time after the power is turned ON. | 0012            | ---           | ---           |
|          |                                                            |                                                                                                                                                               |                                       | 1       | Performs autotuning continuously.                                                              |                 |               |               |
|          |                                                            |                                                                                                                                                               |                                       | 2       | Does not perform autotuning.                                                                   |                 |               |               |
|          |                                                            | 1                                                                                                                                                             | Speed Feedback Compensation Selection | 0       | Enabled                                                                                        |                 |               |               |
|          |                                                            |                                                                                                                                                               |                                       | 1       | Disabled                                                                                       |                 |               |               |
|          |                                                            | 2                                                                                                                                                             | Friction Compensation Selection       | 0       | Friction compensation: Disabled                                                                |                 |               |               |
|          |                                                            |                                                                                                                                                               |                                       | 1       | Friction compensation: Small rated torque ratio                                                |                 |               |               |
|          |                                                            |                                                                                                                                                               |                                       | 2       | Friction compensation: Large rated torque ratio                                                |                 |               |               |
|          |                                                            | 3                                                                                                                                                             | Not Used                              |         |                                                                                                |                 |               |               |
| Pn111    | Speed Feedback Compensating Gain                           | Adjusts the speed loop feedback gain.                                                                                                                         |                                       |         |                                                                                                | 100             | %             | 0 to 500      |
| Pn124    | Automatic Gain Switching Timer                             | Sets the switching delay following the completion of the condition when using the automatic gain switching function (Pn10B.2 = 1 to 3).                       |                                       |         |                                                                                                | 100             | ms            | 1 to 10000    |
| Pn125    | Automatic Gain Switching Width (Position Deviation Amount) | Sets the position deviation amount for the switching condition when using the automatic gain switching function based on position deviation (Pn10B.2 = 2, 3). |                                       |         |                                                                                                | 7               | Command units | 1 to 250      |

**Note:** Do not change the factory settings of any "Not Used" parameters.

**Position Control-related Parameters**

| PRM. No. | Parameter name                            | Digit                                                                                          | Function name                                 | Setting | Explanation                                                                                  | Factory setting | Unit                  | Setting range |
|----------|-------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------|---------|----------------------------------------------------------------------------------------------|-----------------|-----------------------|---------------|
| Pn200    | Position Control Setting 1                | 0                                                                                              | Command Pulse Mode                            | 0       | Feed pulse/forward-reverse signal: Positive logic                                            | 1011            | ---                   | ---           |
|          |                                           |                                                                                                |                                               | 1       | Forward rotation pulse/reverse rotation pulse: Positive logic                                |                 |                       |               |
|          |                                           |                                                                                                |                                               | 2       | Phase-A/B signal with 90° phase differential (×1): Positive logic                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 3       | Phase-A/B signal with 90° phase differential (×2): Positive logic                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 4       | Phase-A/B signal with 90° phase differential (×4): Positive logic                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 5       | Feed pulse/forward-reverse signal: Negative logic                                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 6       | Forward rotation pulse/reverse rotation pulse: Negative logic                                |                 |                       |               |
|          |                                           |                                                                                                |                                               | 7       | Phase-A/B signal with 90° phase differential (×1): Negative logic                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 8       | Phase-A/B signal with 90° phase differential (×2): Negative logic                            |                 |                       |               |
|          |                                           |                                                                                                |                                               | 9       | Phase-A/B signal with 90° phase differential (×4): Negative logic                            |                 |                       |               |
|          |                                           | 1                                                                                              | Error Counter Clear Signal Form               | 0       | Clears the error counter when the clear signal goes high.                                    |                 |                       |               |
|          |                                           |                                                                                                |                                               | 1       | Clears the error counter on the rising edge of the clear signal.                             |                 |                       |               |
|          |                                           |                                                                                                |                                               | 2       | Clears the error counter when the clear signal goes low.                                     |                 |                       |               |
|          |                                           |                                                                                                |                                               | 3       | Clears the error counter on the falling edge of the clear signal.                            |                 |                       |               |
|          |                                           | 2                                                                                              | Error Counter Clear during Servo OFF or Alarm | 0       | Clears the error counter when the Servo is turned OFF or when an alarm is generated.         |                 |                       |               |
|          |                                           |                                                                                                |                                               | 1       | Does not clear the error counter when the Servo is turned OFF or when an alarm is generated. |                 |                       |               |
|          |                                           |                                                                                                |                                               | 2       | Clears the error counter only when an alarm is generated.                                    |                 |                       |               |
|          |                                           | 3                                                                                              | Pulse Command Filter Selection                | 0       | Uses command filter for line driver signal input (500 Kpps).                                 |                 |                       |               |
|          |                                           |                                                                                                |                                               | 1       | Uses command filter for open collector signal input (200 Kpps).                              |                 |                       |               |
| Pn201    | Encoder Divider Rate                      | Sets the number of output pulses from the driver.                                              |                                               |         |                                                                                              | 1000            | Pulses/revolution     | 16 to 16384   |
| Pn202    | Electronic Gear Ratio G1 (Numerator)      | Sets the pulse rate for the command pulse and amount of Servomotor movement.<br>0.01≤G1/G2≤100 |                                               |         |                                                                                              | 4               | ---                   | 1 to 65535    |
| Pn203    | Electronic Gear Ratio G2 (Denominator)    |                                                                                                |                                               |         |                                                                                              | 1               | ---                   | 1 to 65535    |
| Pn204    | Position Command Filter Time Constant 1   | Soft start setting for command pulse (soft start characteristic: primary filter)               |                                               |         |                                                                                              | 0               | 0.01 ms               | 0 to 6400     |
| Pn205    | Absolute Encoder Multi-turn Limit Setting | Sets the multi-turn limit when using a Servomotor with an absolute encoder.                    |                                               |         |                                                                                              | 65535           | Number of revolutions | 0 to 65535    |
| Pn206    | Number of Fully Closed Encoder Pulses     | Sets the number of fully closed encoder pulses per Servomotor revolution.                      |                                               |         |                                                                                              | 16384           | P/R                   | 25 to 65535   |

| PRM. No. | Parameter name                                                                 | Digit                                                                                                  | Function name                                        | Setting | Explanation                                    | Factory setting | Unit    | Setting range |
|----------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------|------------------------------------------------|-----------------|---------|---------------|
| Pn207    | Position Control Setting 2                                                     | 0                                                                                                      | Position Command Filter Selection                    | 0       | Primary filter                                 | 0000            | ---     | ---           |
|          |                                                                                |                                                                                                        |                                                      | 1       | Linear acceleration/deceleration               |                 |         |               |
|          |                                                                                | 1                                                                                                      | Speed Command Input Switch (during Position Control) | 0       | None                                           |                 |         |               |
|          |                                                                                |                                                                                                        |                                                      | 1       | Uses REF for speed feed-forward input.         |                 |         |               |
|          |                                                                                | 2 to 3                                                                                                 | Not Used                                             |         |                                                |                 |         |               |
| Pn208    | Position Command Filter Time Constant 2 (Linear Acceleration and Deceleration) | Soft start setting for command pulse (soft start characteristic: linear acceleration and deceleration) |                                                      |         |                                                | 0               | 0.01 ms | 0 to 6400     |
| Pn217    | Command Pulse Factor                                                           | Sets the factor for command pulse input.                                                               |                                                      |         |                                                | 1               | Factor  | 1 to 99       |
| Pn218    | Position Control Setting 3                                                     | 0                                                                                                      | Command Pulse Factor Switching Selection             | 0       | Disables function.                             | 0000            | ---     | ---           |
|          |                                                                                |                                                                                                        |                                                      | 1       | Uses command pulse factor switching selection. |                 |         |               |
|          |                                                                                | 1 to 3                                                                                                 | Not Used                                             |         |                                                |                 |         |               |

### Speed-related Parameters

| PRM. No. | Parameter name                      | Digit                                                                | Function name | Setting | Explanation | Factory setting | Unit               | Setting range |
|----------|-------------------------------------|----------------------------------------------------------------------|---------------|---------|-------------|-----------------|--------------------|---------------|
| Pn300    | Speed Command Scale                 | Sets the speed command voltage (REF) to rotate at the rated r/min.   |               |         |             | 1000            | 0.01 V/rated speed | 150 to 3000   |
| Pn301    | No.1 Internal Speed Setting         | r/min for No. 1 internal speed setting                               |               |         |             | 100             | r/min              | 0 to 10000    |
| Pn302    | No. 2 Internal Speed Setting        | r/min for No. 2 internal speed setting                               |               |         |             | 200             | r/min              | 0 to 10000    |
| Pn303    | No. 3 Internal Speed Setting        | r/min for No. 3 internal speed setting                               |               |         |             | 300             | r/min              | 0 to 10000    |
| Pn304    | Jog Speed                           | Sets the r/min for jog operation.                                    |               |         |             | 500             | r/min              | 0 to 10000    |
| Pn305    | Soft Start Acceleration Time        | Sets the acceleration time for speed-controlling soft start.         |               |         |             | 0               | ms                 | 0 to 10000    |
| Pn306    | Soft Start Deceleration Time        | Sets the deceleration time for speed-controlling soft start.         |               |         |             | 0               | ms                 | 0 to 10000    |
| Pn307    | Speed Command Filter Time Constant  | Sets the filter time constant for speed command voltage input (REF). |               |         |             | 40              | 0.01 ms            | 0 to 65535    |
| Pn308    | Speed Feedback Filter Time Constant | Sets the filter time constant for speed feedback.                    |               |         |             | 0               | 0.01 ms            | 0 to 65535    |

- Note:**
- Do not change the factory settings of any "Not Used" parameters.
  - When changing any position control-related parameters (Pn200 to Pn208), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.
  - For 13-bit encoders, dividing will not occur if a value of 2048 or greater is specified in Pn201.

### Torque-related Parameters

| PRM. No. | Parameter name                          | Digit                                                                                              | Function name | Setting | Explanation | Factory setting | Unit               | Setting range |
|----------|-----------------------------------------|----------------------------------------------------------------------------------------------------|---------------|---------|-------------|-----------------|--------------------|---------------|
| Pn400    | Torque Command Scale                    | Sets the torque command voltage (TREF) to output the rated torque.                                 |               |         |             | 30              | 0.1 V/rated torque | 10 to 100     |
| Pn401    | Torque Command Filter Time Constant     | Sets the filter time constant for internal torque command.                                         |               |         |             | 40              | 0.01 ms            | 0 to 65535    |
| Pn402    | Forward Torque Limit                    | Output torque limit (percentage of rated torque) for forward direction                             |               |         |             | 350             | %                  | 0 to 800      |
| Pn403    | Reverse Torque Limit                    | Output torque limit (percentage of rated torque) for reverse direction                             |               |         |             | 350             | %                  | 0 to 800      |
| Pn404    | Forward Rotation External Current Limit | Output torque limit (percentage of rated torque) for forward rotation external current limit input |               |         |             | 100             | %                  | 0 to 800      |
| Pn405    | Reverse Rotation External Current Limit | Output torque limit (percentage of rated torque) for reverse rotation external current limit input |               |         |             | 100             | %                  | 0 to 800      |
| Pn406    | Emergency Stop Torque                   | Deceleration torque (percentage of rated torque) for emergency stops                               |               |         |             | 350             | %                  | 0 to 800      |
| Pn407    | Speed Limit                             | Sets the speed limit for the torque control mode                                                   |               |         |             | 3000            | r/min              | 0 to 10000    |

| PRM. No. | Parameter name           | Digit                                                     | Function name                    | Setting | Explanation                              | Factory setting | Unit | Setting range |
|----------|--------------------------|-----------------------------------------------------------|----------------------------------|---------|------------------------------------------|-----------------|------|---------------|
| Pn408    | Torque Command Setting   | 0                                                         | Selects Notch Filter 1 Function. | 0       | None                                     | 0000            | ---  | ---           |
|          |                          |                                                           |                                  | 1       | Notch filter 1 used for torque commands. |                 |      |               |
|          |                          | 1                                                         | Not Used                         |         |                                          |                 |      |               |
|          |                          | 2                                                         | Selects Notch Filter 2 Function. | 0       | None                                     |                 |      |               |
|          |                          |                                                           |                                  | 1       | Notch filter 2 used for torque commands. |                 |      |               |
|          |                          | 3                                                         | Not Used                         |         |                                          |                 |      |               |
| Pn409    | Notch Filter 1 Frequency | Sets the notch filter 1 frequency for the torque command. |                                  |         |                                          | 2000            | Hz   | 50 to 2000    |
| Pn40A    | Notch Filter 1 Q Value   | Sets the notch filter 1 Q value.                          |                                  |         |                                          | 70              | 0.01 | 50 to 400     |
| Pn40B    | Notch Filter 2 Frequency | Sets the notch filter 2 frequency for the torque command. |                                  |         |                                          | 2000            | Hz   | 50 to 2000    |
| Pn40C    | Notch Filter 2 Q Value   | Sets the notch filter 2 Q value.                          |                                  |         |                                          | 70              | 0.01 | 50 to 400     |

### Sequence-related Parameters

| PRM. No. | Parameter name                              | Digit                                                                                                  | Function name                | Setting | Explanation                                                                                                                                                              | Factory setting | Unit                | Setting range |
|----------|---------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------|
| Pn500    | Positioning Completed Width 1               | Sets the width for positioning completed output 1 (INP1).                                              |                              |         |                                                                                                                                                                          | 3               | Command units       | 0 to 250      |
| Pn501    | Position Lock Rotation Speed                | Sets the r/min for position lock during speed control.                                                 |                              |         |                                                                                                                                                                          | 10              | r/min               | 0 to 10000    |
| Pn502    | Rotation Speed For Motor Rotation Detection | Sets the r/min for the motor rotation detection output (TGON).                                         |                              |         |                                                                                                                                                                          | 20              | r/min               | 0 to 10000    |
| Pn503    | Speed Conformity Signal Output Width        | Sets the allowable variation width (r/min) for the speed conformity output signal (VCMP).              |                              |         |                                                                                                                                                                          | 10              | r/min               | 0 to 100      |
| Pn504    | Positioning Completion Range 2              | Sets the width for positioning completed output 1 (INP2).                                              |                              |         |                                                                                                                                                                          | 3               | Command units       | 1 to 250      |
| Pn505    | Deviation Counter Overflow Level            | Sets the detection level for the deviation counter overflow alarm.                                     |                              |         |                                                                                                                                                                          | 1024            | Command units × 256 | 1 to 32767    |
| Pn506    | Brake Timing 1                              | Sets the amount of delay time from the brake command to the time the servomotor turns OFF.             |                              |         |                                                                                                                                                                          | 0               | 10 ms               | 0 to 50       |
| Pn507    | Brake Command Speed                         | Sets the r/min for outputting the brake command.                                                       |                              |         |                                                                                                                                                                          | 100             | r/min               | 0 to 10000    |
| Pn508    | Brake Timing 2                              | Sets the amount of wait time from the time the servomotor turns OFF until the brake command is output. |                              |         |                                                                                                                                                                          | 50              | 10 ms               | 10 to 100     |
| Pn509    | Momentary Hold Time                         | Sets the alarm detection disable time for generating a momentary hold.                                 |                              |         |                                                                                                                                                                          | 20              | ms                  | 20 to 1000    |
| Pn50A    | Input Signal Selections 1                   | 0                                                                                                      | Input Signal Allocation Mode | 0       | Uses the same sequence input signal allocation setting as the R88D-UT. For details, refer to the OMNUC W-series AC SERVOMOTORS/ SERVO DRIVERS User's Manual (I531-E1-□). | 8100            | ---                 | ---           |
|          |                                             |                                                                                                        |                              | 1       | Enables any sequence input signal allocation settings.                                                                                                                   |                 |                     |               |

**Note:** 1. Do not change the factory settings of any "Not Used" parameters.

- When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.



| PRM. No. | Parameter name            | Digit | Function name                                                      | Setting | Explanation                                            | Factory setting | Unit | Setting range |
|----------|---------------------------|-------|--------------------------------------------------------------------|---------|--------------------------------------------------------|-----------------|------|---------------|
| Pn50A    | Input Signal Selections 1 | 1     | RUN Signal Input Terminal Allocation                               | 0       | Allocates the signal to CN1-40 pin: Enabled when low.  | 8100            | ---  | ---           |
|          |                           |       |                                                                    | 1       | Allocates the signal to CN1-41 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 2       | Allocates the signal to CN1-42 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 3       | Allocates the signal to CN1-43 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 4       | Allocates the signal to CN1-44 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 5       | Allocates the signal to CN1-45 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 6       | Allocates the signal to CN1-46 pin: Enabled when low.  |                 |      |               |
|          |                           |       |                                                                    | 7       | Always enabled.                                        |                 |      |               |
|          |                           |       |                                                                    | 8       | Always disabled.                                       |                 |      |               |
|          |                           |       |                                                                    | 9       | Allocates the signal to CN1-40 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | A       | Allocates the signal to CN1-41 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | B       | Allocates the signal to CN1-42 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | C       | Allocates the signal to CN1-43 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | D       | Allocates the signal to CN1-44 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | E       | Allocates the signal to CN1-45 pin: Enabled when high. |                 |      |               |
|          |                           |       |                                                                    | F       | Allocates the signal to CN1-46 pin: Enabled when high. |                 |      |               |
|          |                           | 2     | MING (Gain Reduction) Signal Input Terminal Allocation             | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
|          |                           | 3     | POT (Forward Run Prohibit) Signal Input Terminal Allocation        | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
| Pn50B    | Input Signal Selection 2  | 0     | NOT (Reverse Run Prohibit) Signal Input Terminal Allocation        | 0 to F  | Same as Pn50A.1                                        | 6548            | ---  | ---           |
|          |                           | 1     | RESET (Alarm Reset) Signal Input Terminal Allocation               | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
|          |                           | 2     | PCL (Forward Torque Limit) Signal Input Terminal Allocation        | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
|          |                           | 3     | NCL (Reverse Torque Limit) Signal Input Terminal Allocation        | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
| Pn50C    | Input Signal Selections 3 | 0     | RDIR (Rotation Direction Command) Signal Input Terminal Allocation | 0 to F  | Same as Pn50A.1                                        | 8888            | ---  | ---           |
|          |                           | 1     | SPD1 (Speed Selection Command 1) Signal Input Terminal Allocation  | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
|          |                           | 2     | SPD2 (Speed Selection Command 2) Signal Input Terminal Allocation  | 0 to F  | Same as Pn50A.1                                        |                 |      |               |
|          |                           | 3     | CSEL (Control Mode Selection) Signal Input Terminal Allocation     | 0 to F  | Same as Pn50A.1                                        |                 |      |               |

**Note:** 1. Do not change the factory settings of any "Not Used" parameters.

2. When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

3. When installing an external regenerative resistor, set the resistor capacity (W).

| PRM. No. | Parameter name                           | Digit                                                                                                                                      | Function name                                                          | Setting | Explanation                                     | Factory setting | Unit  | Setting range |
|----------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------|-------------------------------------------------|-----------------|-------|---------------|
| Pn50D    | Input Signal Selections 4                | 0                                                                                                                                          | PLOCK (Position Lock Command) Signal Input Terminal Allocation         | 0 to F  | Same as Pn50A.1                                 | 8888            | ---   | ---           |
|          |                                          | 1                                                                                                                                          | IPG (Pulse Prohibit) Signal Input Terminal Allocation                  | 0 to F  | Same as Pn50A.1                                 |                 |       |               |
|          |                                          | 2                                                                                                                                          | GSEL (Gain Selection) Signal Input Terminal Allocation                 | 0 to F  | Same as Pn50A.1                                 |                 |       |               |
|          |                                          | 3                                                                                                                                          | Not Used                                                               |         |                                                 |                 |       |               |
| Pn50E    | Output Signal Selections 1               | 0                                                                                                                                          | INP1 (Positioning Completed 1) Signal Output Terminal Allocation       | 0       | Disabled (Not used for the output signal)       | 3211            | ---   | ---           |
|          |                                          |                                                                                                                                            |                                                                        | 1       | Allocates the signal to CN1-25 and CN1-26 pins. |                 |       |               |
|          |                                          |                                                                                                                                            |                                                                        | 2       | Allocates the signal to CN1-27 and CN1-28 pins. |                 |       |               |
|          |                                          |                                                                                                                                            |                                                                        | 3       | Allocates the signal to CN1-29 and CN1-30 pins. |                 |       |               |
|          |                                          | 1                                                                                                                                          | VCMP (Speed Coincidence) Signal Output Terminal Allocation             | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
|          |                                          | 2                                                                                                                                          | TGON (Motor Rotation Detection) Signal Output Terminal Allocation      | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
|          |                                          | 3                                                                                                                                          | READY (Servo Ready) Signal Output Terminal Allocation                  | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
| Pn50F    | Output Signal Selections 2               | 0                                                                                                                                          | CLMT (Torque Limit Detection) Signal Output Terminal Allocation        | 0 to 3  | Same as Pn50E.0.                                | 0000            | ---   | ---           |
|          |                                          | 1                                                                                                                                          | VLMT (Speed Limit Detection) Signal Output Terminal Allocation         | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
|          |                                          | 2                                                                                                                                          | BKIR (Brake Interlock) Signal Output Terminal Allocation               | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
|          |                                          | 3                                                                                                                                          | WRN (Warning) Signal Output Terminal Allocation                        | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
| Pn510    | Output Signal Selections 3               | 0                                                                                                                                          | INP2 (Positioning Completed 2) Signal Output Terminal Allocation       | 0 to 3  | Same as Pn50E.0.                                | 0000            | ---   | ---           |
|          |                                          | 1                                                                                                                                          | Not Used                                                               |         |                                                 |                 |       |               |
|          |                                          | 2                                                                                                                                          | PSON (Command Pulse Factor Enable) Signal Output Terminal Allocation   | 0 to 3  | Same as Pn50E.0.                                |                 |       |               |
|          |                                          | 1 to 3                                                                                                                                     | Not Used                                                               |         |                                                 |                 |       |               |
| Pn511    | Not Used                                 |                                                                                                                                            |                                                                        |         |                                                 | 8888            | ---   | ---           |
| Pn512    | Output Signal Reversal                   | 0                                                                                                                                          | CN1-25/26 Pin Output Signal Reversal                                   | 0       | Does not reverse output signal.                 | 0000            | ---   | ---           |
|          |                                          |                                                                                                                                            |                                                                        | 1       | Reverses output signal.                         |                 |       |               |
|          |                                          | 1                                                                                                                                          | CN1-27/28 Pin Output Signal Reversal                                   | 0, 1    | Same as Pn512.0.                                |                 |       |               |
|          |                                          | 2                                                                                                                                          | CN1-29/30 Pin Output Signal Reversal                                   | 0, 1    | Same as Pn512.0.                                |                 |       |               |
|          |                                          | 3                                                                                                                                          | Not Used                                                               |         |                                                 |                 |       |               |
| Pn513    | Input Signal Selection 5                 | 0                                                                                                                                          | PSEL (Command Pulse Factor Switching) Signal Input Terminal Allocation | 0 to F  | Same as Pn50A.1.                                | 0088            | ---   | ---           |
| Pn51A    | Motor-load Deviation Over Level          | Sets the allowable deviation level for fully closed and semi-closed encoders.                                                              |                                                                        |         |                                                 | 0               | Pulse | 0 to 32767    |
| Pn51E    | Deviation Counter Overflow Warning Level | Sets the detection level for the deviation counter overflow warning (set as a percentage of the Deviation Counter Overflow Level (Pn505)). |                                                                        |         |                                                 | 0               | %     | 0 to 100      |

**Note:** Do not change the factory settings of any "Not Used" parameters.

### Other Parameters

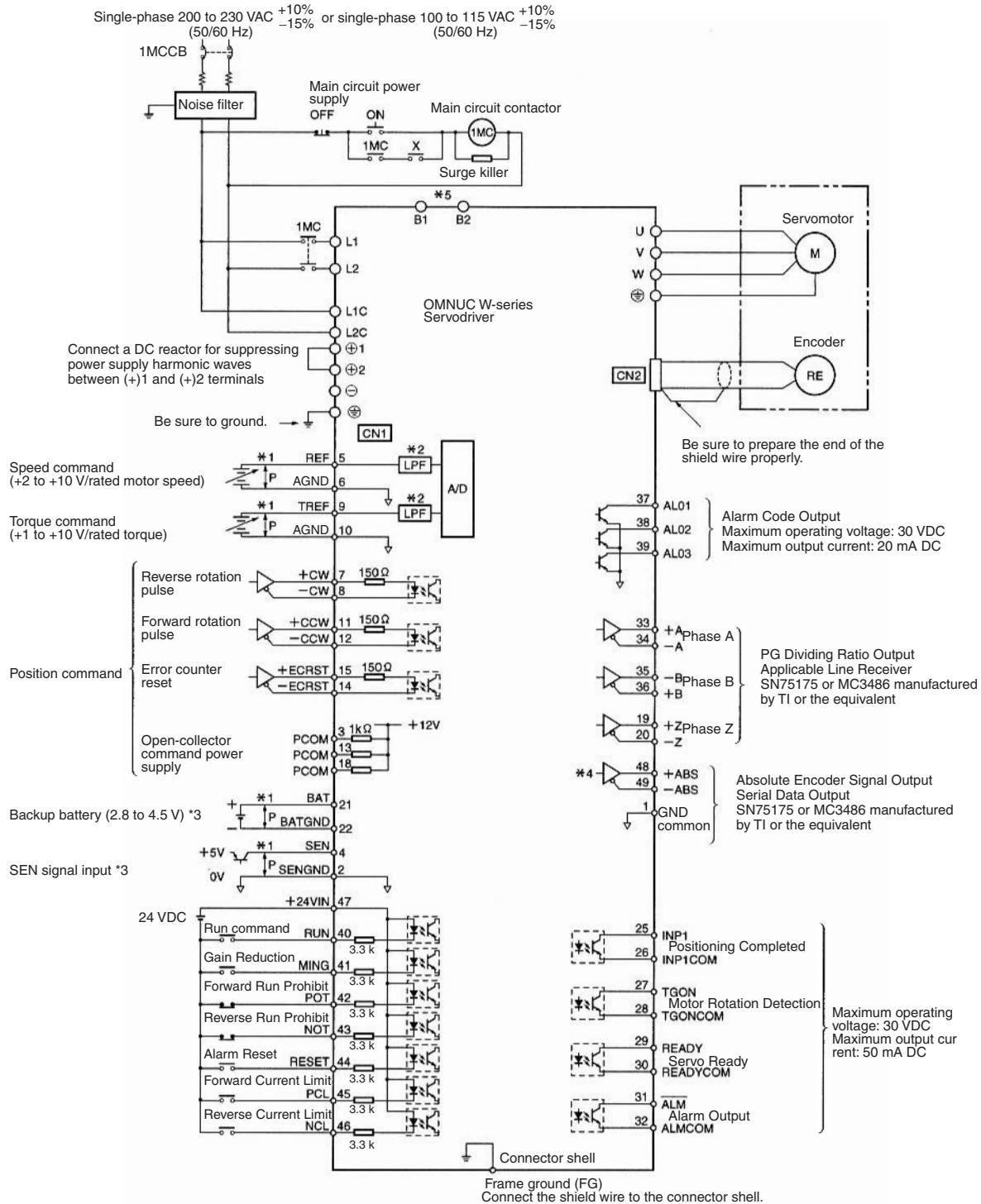
| PRM. No. | Parameter name                 | Digit                                                                 | Function name | Setting | Explanation | Factory setting | Unit | Setting range                          |
|----------|--------------------------------|-----------------------------------------------------------------------|---------------|---------|-------------|-----------------|------|----------------------------------------|
| Pn600    | Regenerative Resistor Capacity | Sets the monitor calculation for the regenerative resistor load rate. |               |         |             | 0               | 10 W | 0 to maximum (depending on each model) |
| Pn601    | Not Used                       |                                                                       |               |         |             | 0               |      |                                        |

**Note:** 1. Do not change the factory settings of any "Not Used" parameters.

2. When installing an external regenerative resistor, set the resistor capacity (W).

# Connection Diagrams

## Single-phase



\*1.  represents a twisted-pair cable.

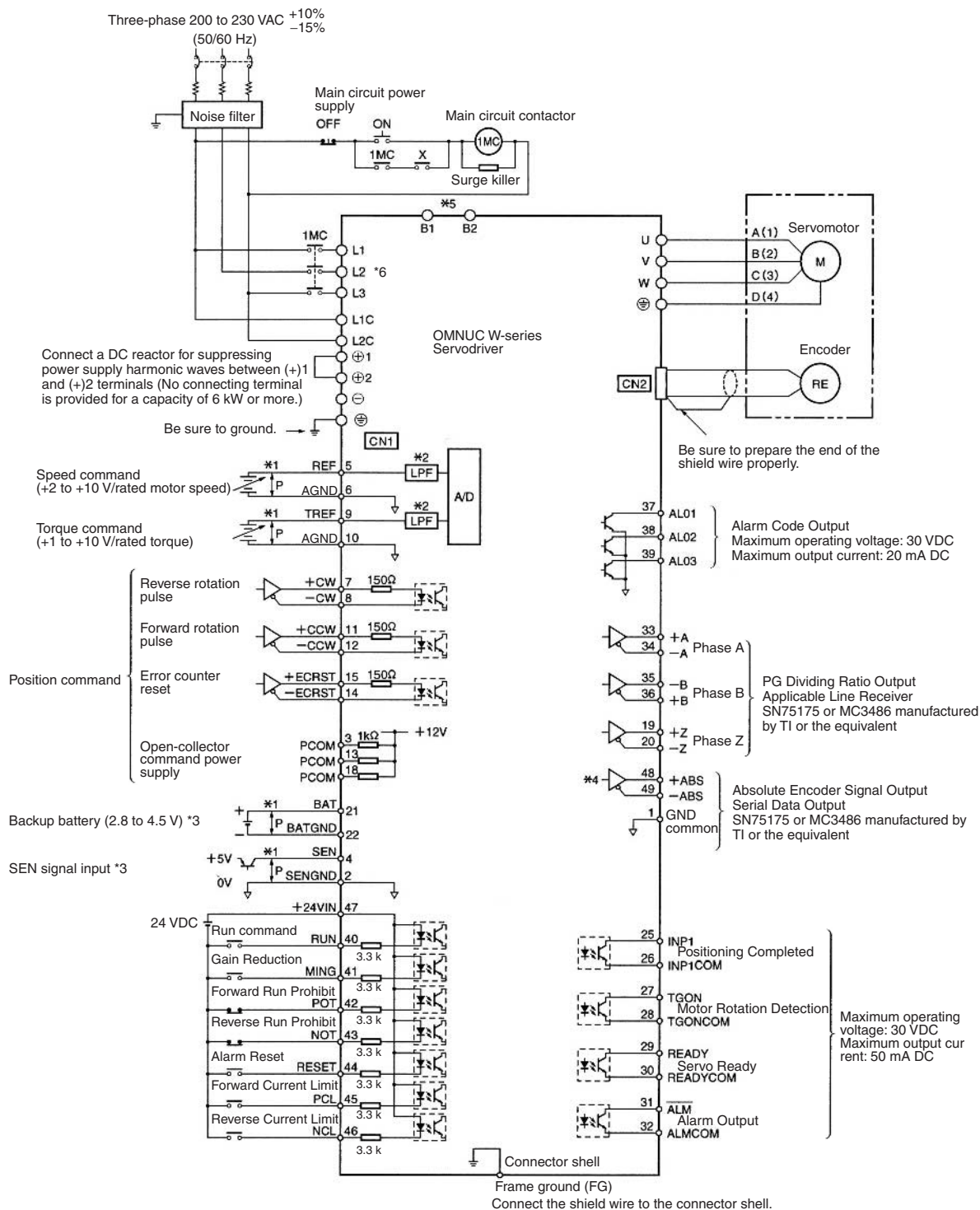
\*2. Primary filter

\*3. Connect when using an absolute encoder.

\*4. Used only with an absolute encoder.

\*5. A regenerative resistor can be connected between B1 and B2.

# ■ Three-phase



\*1. represents a twisted-pair cable.

\*2. Primary filter

\*3. Connect when using an absolute encoder.

\*4. Used only with an absolute encoder.

\*5. When using an external regenerative resistor, connect it between B1 and B2.  
(When the capacity is 6 kW, connect a Regenerative Resistor Unit.)

\*6. When using the R88D-WT08H at single-phase 200 V, connect single-phase 200 V to L1 and L3, and short-circuit L1 to L2.

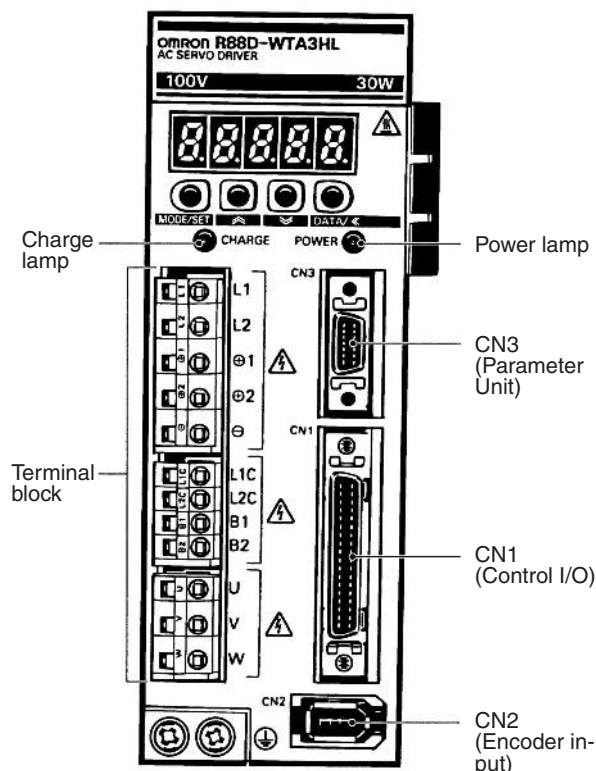
# Terminal Blocks and Connectors

## ■ Terminal Blocks

| Symbol                                                                            | Name                                                                       | Function                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L1, L2 or L1, L2, L3                                                              | Main circuit AC input terminal                                             | AC power input terminals for the main circuit.<br>R88D-WT□□ H (200 VAC):<br>200/230 VAC (170 to 253 V),<br>50/60 Hz<br>R88D-WT□□ HL (100 VAC):<br>100/115 VAC (85 to 127 V),<br>50/60 = Hz                 |
| U                                                                                 | Servomotor connection terminal                                             | Red                                                                                                                                                                                                        |
| V                                                                                 |                                                                            | White                                                                                                                                                                                                      |
| W                                                                                 |                                                                            | Blue                                                                                                                                                                                                       |
| L1C, L2C                                                                          | Control power input terminal                                               | AC power input terminals for the control circuit.<br>R88D-WT□□ H (200 VAC):<br>200/230 VAC (170 to 253 V),<br>50/60 Hz<br>R88D-WT□□ HL (100 VAC):<br>100/115 VAC (85 to 127 V),<br>50/60 Hz                |
|  | Frame ground                                                               | Ground terminal.<br>Ground to a maximum of 100 Ω (class 3).                                                                                                                                                |
| B1, B2 or B1, B2, B3                                                              | Main circuit DC output terminal                                            | 5 kW or less: Connect an external regenerative resistor if regenerative energy is high.<br>5.5 kW: There is no internal regenerative resistor. Be sure to connect an external Regenerative Resistor Unit.  |
| ⊕1, ⊕2                                                                            | DC reactor connection terminal for suppressing power supply harmonic waves | Normally, short ⊕1 and ⊕2.<br>If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.<br>Note: These terminals do not exist on the R88D-WT60H/75H/150H. |
| ⊕                                                                                 | Main circuit DC output terminal (positive)                                 | Normally, not connected.<br>This terminal exists on the R88D-WT60H only.                                                                                                                                   |
| ⊖                                                                                 | Main circuit DC output terminal (negative)                                 | Normally, not connected.                                                                                                                                                                                   |

## ■ CN2 Encoder Inputs

| Pin No. | Symbol | Signal name                                 |
|---------|--------|---------------------------------------------|
| 1       | E5V    | Encoder power supply + 5V                   |
| 2       | E0V    | Encoder power supply ground                 |
| 3       | BAT+   | Battery + (used only with absolute encoder) |
| 4       | BAT-   | Battery - (used only with absolute encoder) |
| 5       | S+     | Encoder + serial signal input               |
| 6       | S-     | Encoder - serial signal input               |



## ■ CN1 Control Inputs

### For Speed and Torque Control

| Pin No. | Symbol | Signal name                 | Function/interface                                                    |
|---------|--------|-----------------------------|-----------------------------------------------------------------------|
| 5       | REF    | Speed command input         | ±2 to ±10 V/rated speed                                               |
| 6       | AGND   | Speed command input ground  | Can be changed using the Pn300 user parameter (Speed Command Scale).  |
| 9       | TRFF   | Torque command input        | ±1 to ±10 V/rated torque                                              |
| 10      | AGND   | Torque command input ground | Can be changed using the Pn400 user parameter (Torque Command Scale). |

### For Position Control

| Pin No. | Symbol      | Signal name                                                                 | Function/interface                                                                                                                                                                                                              |
|---------|-------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3       | PCOM        | Open collector command power supply                                         | Used to input CW, CCW, and ECRST signals as open-collector outputs. Connect + inputs to these terminals and connect – inputs to open-collector output terminals.                                                                |
| 13      |             |                                                                             |                                                                                                                                                                                                                                 |
| 18      |             |                                                                             |                                                                                                                                                                                                                                 |
| 7       | +PULS/CW/A  | Feed pulse, reverse pulse, 90° phase difference pulse (phase A)             | Line-driver input: 10 mA at 3 V; maximum response frequency: 500 kpps                                                                                                                                                           |
| 8       | –PULS/CW/A  |                                                                             | Open-collector input: 25 mA at 5 V; maximum response frequency: 200 kpps                                                                                                                                                        |
| 11      | +SIGN/CCW/B | Forward/reverse signal, forward pulse, 90° phase difference pulse (phase B) | Switches between feed pulse and forward/reverse signal, between reverse pulse and forward pulse, or between phases A and B 90° phase difference pulses (×1, 2, 4) according to the Pn200 setting (Position Control Switches 1). |
| 12      | –SIGN/CCW/B |                                                                             |                                                                                                                                                                                                                                 |
| 14      | –ECRST      | Error counter reset                                                         | Line-driver input: 10 mA at 3 V                                                                                                                                                                                                 |
| 15      | +ECRST      |                                                                             | Open-collector input: 25 mA at 5 V<br>ON: Disables the command and resets the error counter.                                                                                                                                    |

### Shared Terminals

Pins 41 to 44 can be reassigned using the Pn50A to Pn50D user parameters.

| Pin No.  | Symbol | Signal name                          | Function/interface                                                                                           |
|----------|--------|--------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 40       | RUN    | Speed command input                  | ON: Servo ON                                                                                                 |
| 41 to 46 | MING   | Gain deceleration input              | ON: Switches speed loop to P control to decrease speed loop gain.                                            |
|          | TVSEL  | Control mode switch input            | ON: Switches each control mode.                                                                              |
|          | PLOCK  | Position lock command input          | ON: Enables position lock when the motor speed drops below the position lock rotation speed set in Pn501.    |
|          | IPG    | Pulse disable input                  | ON: Prohibits input command pulses.                                                                          |
|          | RDIR   | Rotation direction command input     | Rotation direction command for internal speed settings 1 to 3. (OFF: Forward rotation, ON: Reverse rotation) |
|          | POT    | Forward drive prohibit input         | Forward rotation overtravel input (OFF when prohibited)                                                      |
|          | NOT    | Reverse drive prohibit input         | Reverse rotation overtravel input (OFF when prohibited)                                                      |
|          | RESET  | Alarm reset input                    | ON: Resets Servo alarm status.                                                                               |
|          | PCL    | Forward rotation current limit input | ON: Limits current according to the value specified in Pn404 (Forward External Torque Limit)                 |
|          | NCL    | Reverse rotation current limit input | ON: Limits current according to the value specified in Pn405 (Reverse External Torque Limit)                 |
|          | SPD1   | Speed selection command 1 input      | Switches the internal speed settings (Pn301, Pn302, Pn303).                                                  |
|          | SPD2   | Speed selection command 2 input      |                                                                                                              |
|          | GSEL   | Gain selection input                 | ON: Switches to the second speed loop gain (Pn104, Pn105, Pn106).                                            |
| 47       | +24VIN | +24 VDC control power supply input   | +24 V input power supply for pins 40, 41, 42, 43, 44, 45, and 46                                             |
| 4        | SEN    | Sensor ON input (See note.)          | ON: Supplies 5 V power to absolute encoder.                                                                  |
| 2        | SENGND | Sensor ON input ground (See note.)   |                                                                                                              |
| 21       | BAT    | Backup battery + input (See note.)   | Backup battery connection terminals for absolute encoder in case of power interruption                       |
| 22       | BATGND | Backup battery – input (See note.)   |                                                                                                              |

**Note:** These input signals are used with absolute encoder only.

## ■ CN1 Control Outputs

Pins 16 and 17 can be reassigned using the Pn003 user parameter. Pins 25 to 30 can be reassigned using the Pn50E to Pn510 user parameters.

| Pin No.  | Symbol     | Signal name                                  | Function/interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | GND        | Ground common                                | Ground for encoder outputs and alarm codes.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 19       | +Z         | Encoder Z-phase + output                     | Encoder Z-phase output (1 pulse/revolution).                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 20       | –Z         | Encoder Z-phase – output                     | Line-driver output: Conforms to RS-422A                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 25       | INP1, INP2 | Positioning completion output 1, 2           | ON when the position error is within the positioning completed width specified in Pn500 while in position control mode.<br>Always OFF while in other modes.                                                                                                                                                                                                                                                                                                                                   |
| 26 to 30 | VCMP       | Speed conformity output                      | ON when the speed error is within the speed coincidence signal output width specified in Pn503 while in speed control mode.<br>Always OFF while in other modes.                                                                                                                                                                                                                                                                                                                               |
|          | TGON       | Servomotor rotation detection output         | ON when the motor speed exceeds the motor rotation detection level specified in Pn502.                                                                                                                                                                                                                                                                                                                                                                                                        |
|          | READY      | Servo ready output                           | ON if no errors are detected after the main circuit power supply is turned ON.                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | CLIMT      | Current limit detection output               | If PCL (forward rotation current limit input) or NCL (reverse rotation current limit input) is ON, the CLIMT signal will turn ON when the output torque reaches the external torque limit specified in Pn404/405 or the torque limit specified in Pn402/403, whichever is lower.<br>If PCL (forward rotation current limit input) or NCL (reverse rotation current limit input) is OFF, the CLIMT signal will turn ON when the output torque reaches the torque limit specified in Pn402/403. |
|          | VLIMIT     | Speed limit detection output                 | ON when the motor speed is controlled by Pn407 in torque control mode.<br>Always OFF while in other modes.                                                                                                                                                                                                                                                                                                                                                                                    |
|          | BKIR       | Brake interlock output                       | Outputs holding brake timing signals according to the Pn506, Pn507, and Pn508 user parameter settings.                                                                                                                                                                                                                                                                                                                                                                                        |
|          | WARN       | Warning output                               | OFF when an overload warning or a regeneration overload warning is detected.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 31       | ALM        | Alarm output                                 | Turns OFF the output when the Servodriver generates an alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 32       | ALMCOM     | Alarm output ground                          | Open-collector output: 30 VDC, 50 mA max.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 33       | +A         | Encoder A-phase + output                     | Outputs encoder pulses divided according to the Pn201 setting (PG ratio).                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 34       | –A         | Encoder A-phase – output                     | Line-driver output: Conforms to RS-422A                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 35       | –B         | Encoder B-phase – output                     | Outputs encoder pulses divided according to the Pn201 setting (PG ratio).                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 36       | +B         | Encoder B-phase + output                     | Line-driver output: Conforms to RS-422A                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 37       | AL01       | Alarm code output 1                          | Outputs an alarm code when the Servodriver generates an alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 38       | AL02       | Alarm code output 2                          | Open-collector output: 30 VDC, 20 mA max.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 39       | AL03       | Alarm code output 3                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 48       | +ABS       | Absolute encoder signal + output (See note.) | Outputs absolute encoder data.<br>Line-driver output: Conforms to RS-422A                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 49       | –ABS       | Absolute encoder signal – output (See note.) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Shell    | FG         | Frame ground                                 | Ground terminal for shield wire of cable and FG line                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**Note:** These input signals are used with absolute encoder only.

# Ordering Information

## ■ AC Servomotors

### Cylinder-style Motors (3,000 r/min) with Incremental Encoders

| Specifications              |               |         |       | Model          |
|-----------------------------|---------------|---------|-------|----------------|
| Straight shafts without key | Without brake | 200 VAC | 30 W  | R88M-W03030H   |
|                             |               |         | 50 W  | R88M-W05030H   |
|                             |               |         | 100 W | R88M-W10030H   |
|                             |               |         | 200 W | R88M-W20030H   |
|                             |               |         | 400 W | R88M-W40030H   |
|                             |               |         | 750 W | R88M-W75030H   |
|                             |               | 100 VAC | 30 W  | R88M-W03030L   |
|                             |               |         | 50 W  | R88M-W05030L   |
|                             |               |         | 100 W | R88M-W10030L   |
|                             |               |         | 200 W | R88M-W20030L   |
|                             | With brake    | 200 VAC | 30 W  | R88M-W03030H-B |
|                             |               |         | 50 W  | R88M-W05030H-B |
|                             |               |         | 100 W | R88M-W10030H-B |
|                             |               |         | 200 W | R88M-W20030H-B |
|                             |               |         | 400 W | R88M-W40030H-B |
|                             |               |         | 750 W | R88M-W75030H-B |
|                             |               | 100 VAC | 30 W  | R88M-W03030L-B |
|                             |               |         | 50 W  | R88M-W05030L-B |
|                             |               |         | 100 W | R88M-W10030L-B |
|                             |               |         | 200 W | R88M-W20030L-B |

| Specifications           |               |         |        | Model            |
|--------------------------|---------------|---------|--------|------------------|
| Straight shafts with key | Without brake | 200 VAC | 30 W   | R88M-W03030H-S1  |
|                          |               |         | 50 W   | R88M-W05030H-S1  |
|                          |               |         | 100 W  | R88M-W10030H-S1  |
|                          |               |         | 200 W  | R88M-W20030H-S1  |
|                          |               |         | 400 W  | R88M-W40030H-S1  |
|                          |               |         | 750 W  | R88M-W75030H-S1  |
|                          |               |         | 1 kW   | R88M-W1K030H-S2  |
|                          |               |         | 1.5 kW | R88M-W1K530H-S2  |
|                          |               |         | 2 kW   | R88M-W2K030H-S2  |
|                          |               |         | 3 kW   | R88M-W3K030H-S2  |
|                          |               |         | 4 kW   | R88M-W4K030H-S2  |
|                          |               |         | 5 kW   | R88M-W5K030H-S2  |
|                          |               | 100 VAC | 30 W   | R88M-W03030L-S1  |
|                          |               |         | 50 W   | R88M-W05030L-S1  |
|                          |               |         | 100 W  | R88M-W10030L-S1  |
|                          |               |         | 200 W  | R88M-W20030L-S1  |
|                          | With brake    | 200 VAC | 30 W   | R88M-W03030H-BS1 |
|                          |               |         | 50 W   | R88M-W05030H-BS1 |
|                          |               |         | 100 W  | R88M-W10030H-BS1 |
|                          |               |         | 200 W  | R88M-W20030H-BS1 |
|                          |               |         | 400 W  | R88M-W40030H-BS1 |
|                          |               |         | 750 W  | R88M-W75030H-BS1 |
|                          |               |         | 1 kW   | R88M-W1K030H-BS2 |
|                          |               |         | 1.5 kW | R88M-W1K530H-BS2 |
|                          |               |         | 2 kW   | R88M-W2K030H-BS2 |
|                          |               |         | 3 kW   | R88M-W3K030H-BS2 |
|                          |               |         | 4 kW   | R88M-W4K030H-BS2 |
|                          |               |         | 5 kW   | R88M-W5K030H-BS2 |
|                          |               | 100 VAC | 30 W   | R88M-W03030L-BS1 |
|                          |               |         | 50 W   | R88M-W05030L-BS1 |
|                          |               |         | 100 W  | R88M-W10030L-BS1 |
|                          |               |         | 200 W  | R88M-W20030L-BS1 |

**Note:** "S1" at the end of a model name represents models with key and without tap. "S2" at the end of a model name represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 or S3 type.



**Cylinder-style Motors (3,000 r/min) with Absolute Encoders**

| Specifications              |               |         |       | Model          |
|-----------------------------|---------------|---------|-------|----------------|
| Straight shafts without key | Without brake | 200 VAC | 30 W  | R88M-W03030T   |
|                             |               |         | 50 W  | R88M-W05030T   |
|                             |               |         | 100 W | R88M-W10030T   |
|                             |               |         | 200 W | R88M-W20030T   |
|                             |               |         | 400 W | R88M-W40030T   |
|                             |               |         | 750 W | R88M-W75030T   |
|                             |               | 100 VAC | 30 W  | R88M-W03030S   |
|                             |               |         | 50 W  | R88M-W05030S   |
|                             |               |         | 100 W | R88M-W10030S   |
|                             |               |         | 200 W | R88M-W20030S   |
|                             | With brake    | 200 VAC | 30 W  | R88M-W03030T-B |
|                             |               |         | 50 W  | R88M-W05030T-B |
|                             |               |         | 100 W | R88M-W10030T-B |
|                             |               |         | 200 W | R88M-W20030T-B |
|                             |               |         | 400 W | R88M-W40030T-B |
|                             |               |         | 750 W | R88M-W75030T-B |
|                             |               | 100 VAC | 30 W  | R88M-W03030S-B |
|                             |               |         | 50 W  | R88M-W05030S-B |
|                             |               |         | 100 W | R88M-W10030S-B |
|                             |               |         | 200 W | R88M-W20030S-B |

| Specifications           |               |         |        | Model            |
|--------------------------|---------------|---------|--------|------------------|
| Straight shafts with key | Without brake | 200 VAC | 30 W   | R88M-W03030T-S1  |
|                          |               |         | 50 W   | R88M-W05030T-S1  |
|                          |               |         | 100 W  | R88M-W10030T-S1  |
|                          |               |         | 200 W  | R88M-W20030T-S1  |
|                          |               |         | 400 W  | R88M-W40030T-S1  |
|                          |               |         | 750 W  | R88M-W75030T-S1  |
|                          |               |         | 1 kW   | R88M-W1K030T-S2  |
|                          |               |         | 1.5 kW | R88M-W1K530T-S2  |
|                          |               |         | 2 kW   | R88M-W2K030T-S2  |
|                          |               |         | 3 kW   | R88M-W3K030T-S2  |
|                          |               |         | 4 kW   | R88M-W4K030T-S2  |
|                          |               |         | 5 kW   | R88M-W5K030T-S2  |
|                          |               | 100 VAC | 30 W   | R88M-W03030S-S1  |
|                          |               |         | 50 W   | R88M-W05030S-S1  |
|                          |               |         | 100 W  | R88M-W10030S-S1  |
|                          |               |         | 200 W  | R88M-W20030S-S1  |
|                          | With brake    | 200 VAC | 30 W   | R88M-W03030T-BS1 |
|                          |               |         | 50 W   | R88M-W05030T-BS1 |
|                          |               |         | 100 W  | R88M-W10030T-BS1 |
|                          |               |         | 200 W  | R88M-W20030T-BS1 |
|                          |               |         | 400 W  | R88M-W40030T-BS1 |
|                          |               |         | 750 W  | R88M-W75030T-BS1 |
|                          |               |         | 1 kW   | R88M-W1K030T-BS2 |
|                          |               |         | 1.5 kW | R88M-W1K530T-BS2 |
|                          |               |         | 2 kW   | R88M-W2K030T-BS2 |
|                          |               |         | 3 kW   | R88M-W3K030T-BS2 |
|                          |               |         | 4 kW   | R88M-W4K030T-BS2 |
|                          |               |         | 5 kW   | R88M-W5K030T-BS2 |
|                          |               | 100 VAC | 30 W   | R88M-W03030S-BS1 |
|                          |               |         | 50 W   | R88M-W05030S-BS1 |
|                          |               |         | 100 W  | R88M-W10030S-BS1 |
|                          |               |         | 200 W  | R88M-W20030S-BS1 |

**Note:** “S1” at the end of a model name represents models with key and without tap. “S2” at the end of a model name represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 or S3 type.

### Cylinder-style Motors (1,500 r/min) with Incremental or Absolute Encoders

| Specifications           |               |         |        | Model             |
|--------------------------|---------------|---------|--------|-------------------|
| Straight shafts with key | Without brake | 200 VAC | 450 W  | R88M-W45015T-S2   |
|                          |               |         | 850 W  | R88M-W85015T-S2   |
|                          |               |         | 1.3 kW | R88M-W1K315T-S2   |
|                          |               |         | 1.8 kW | R88M-W1K815T-S2   |
|                          |               |         | 2.9 kW | R88M-W2K915T-S2   |
|                          |               |         | 4.4 kW | R88M-W4K415T-S2   |
|                          |               |         | 5.5 kW | R88M-W5K515T-S2   |
|                          |               |         | 7.5 kW | R88M-W7K515T-S2   |
|                          |               |         | 11 kW  | R88M-W11K015T-S2  |
|                          |               |         | 15 kW  | R88M-W15K015T-S2  |
|                          | With brake    | 200 VAC | 450 W  | R88M-W45015T-BS2  |
|                          |               |         | 850 W  | R88M-W85015T-BS2  |
|                          |               |         | 1.3 kW | R88M-W1K315T-BS2  |
|                          |               |         | 1.8 kW | R88M-W1K815T-BS2  |
|                          |               |         | 2.9 kW | R88M-W2K915T-BS2  |
|                          |               |         | 4.4 kW | R88M-W4K415T-BS2  |
|                          |               |         | 5.5 kW | R88M-W5K515T-BS2  |
|                          |               |         | 7.5 kW | R88M-W7K515T-BS2  |
|                          |               |         | 11 kW  | R88M-W11K015T-BS2 |
|                          |               |         | 15 kW  | R88M-W15K015T-BS2 |

**Note:** "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,500 r/min do not have the S1 or S3 type.

### Cylinder-style Motors (1,000 r/min) with Incremental Encoders

| Specifications           |               |         |        | Model            |
|--------------------------|---------------|---------|--------|------------------|
| Straight shafts with key | Without brake | 200 VAC | 300 W  | R88M-W30010H-S2  |
|                          |               |         | 600 W  | R88M-W60010H-S2  |
|                          |               |         | 900 W  | R88M-W90010H-S2  |
|                          |               |         | 1.2 kW | R88M-W1K210H-S2  |
|                          |               |         | 2 kW   | R88M-W2K010H-S2  |
|                          |               |         | 3 kW   | R88M-W3K010H-S2  |
|                          |               |         | 4 kW   | R88M-W4K010H-S2  |
|                          |               |         | 5.5 kW | R88M-W5K510H-S2  |
|                          | With brake    | 200 VAC | 300 W  | R88M-W30010H-BS2 |
|                          |               |         | 600 W  | R88M-W60010H-BS2 |
|                          |               |         | 900 W  | R88M-W90010H-BS2 |
|                          |               |         | 1.2 kW | R88M-W1K210H-BS2 |
|                          |               |         | 2 kW   | R88M-W2K010H-BS2 |
|                          |               |         | 3 kW   | R88M-W3K010H-BS2 |
|                          |               |         | 4 kW   | R88M-W4K010H-BS2 |
|                          |               |         | 5.5 kW | R88M-W5K510H-BS2 |

**Note:** "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,000 r/min do not have the S1 or S3 type.

### Cylinder-style Motors (1,000 r/min) with Absolute Encoders

| Specifications           |               |         |        | Model            |
|--------------------------|---------------|---------|--------|------------------|
| Straight shafts with key | Without brake | 200 VAC | 300 W  | R88M-W30010T-S2  |
|                          |               |         | 600 W  | R88M-W60010T-S2  |
|                          |               |         | 900 W  | R88M-W90010T-S2  |
|                          |               |         | 1.2 kW | R88M-W1K210T-S2  |
|                          |               |         | 2 kW   | R88M-W2K010T-S2  |
|                          |               |         | 3 kW   | R88M-W3K010T-S2  |
|                          |               |         | 4 kW   | R88M-W4K010T-S2  |
|                          |               |         | 5.5 kW | R88M-W5K510T-S2  |
|                          | With brake    | 200 VAC | 300 W  | R88M-W30010T-BS2 |
|                          |               |         | 600 W  | R88M-W60010T-BS2 |
|                          |               |         | 900 W  | R88M-W90010T-BS2 |
|                          |               |         | 1.2 kW | R88M-W1K210T-BS2 |
|                          |               |         | 2 kW   | R88M-W2K010T-BS2 |
|                          |               |         | 3 kW   | R88M-W3K010T-BS2 |
|                          |               |         | 4 kW   | R88M-W4K010T-BS2 |
|                          |               |         | 5.5 kW | R88M-W5K510T-BS2 |

**Note:** "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,000 r/min do not have the S1 or S3 type.

### Flat-style Motors with Incremental Encoders

| Specifications              |               |         |        | Model             |
|-----------------------------|---------------|---------|--------|-------------------|
| Straight shafts without key | Without brake | 200 VAC | 100 W  | R88M-WP10030H     |
|                             |               |         | 200 W  | R88M-WP20030H     |
|                             |               |         | 400 W  | R88M-WP40030H     |
|                             |               |         | 750 W  | R88M-WP75030H     |
|                             |               |         | 1.5 kW | R88M-WP1K530H     |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L     |
|                             |               |         | 200 W  | R88M-WP20030L     |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030H-B   |
|                             |               |         | 200 W  | R88M-WP20030H-B   |
|                             |               |         | 400 W  | R88M-WP40030H-B   |
|                             |               |         | 750 W  | R88M-WP75030H-B   |
|                             |               |         | 1.5 kW | R88M-WP1K530H-B   |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-B   |
|                             |               |         | 200 W  | R88M-WP20030L-B   |
| Straight shafts with key    | Without brake | 200 VAC | 100 W  | R88M-WP10030H-S1  |
|                             |               |         | 200 W  | R88M-WP20030H-S1  |
|                             |               |         | 400 W  | R88M-WP40030H-S1  |
|                             |               |         | 750 W  | R88M-WP75030H-S1  |
|                             |               |         | 1.5 kW | R88M-WP1K530H-S1  |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-S1  |
|                             |               |         | 200 W  | R88M-WP20030L-S1  |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030H-BS1 |
|                             |               |         | 200 W  | R88M-WP20030H-BS1 |
|                             |               |         | 400 W  | R88M-WP40030H-BS1 |
|                             |               |         | 750 W  | R88M-WP75030H-BS1 |
|                             |               |         | 1.5 kW | R88M-WP1K530H-BS1 |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-BS1 |
|                             |               |         | 200 W  | R88M-WP20030L-BS1 |

# Flat-style Motors with Absolute Encoders

| Specifications              |               |         |        | Model             |
|-----------------------------|---------------|---------|--------|-------------------|
| Straight shafts without key | Without brake | 200 VAC | 100 W  | R88M-WP10030T     |
|                             |               |         | 200 W  | R88M-WP20030T     |
|                             |               |         | 400 W  | R88M-WP40030T     |
|                             |               |         | 750 W  | R88M-WP75030T     |
|                             |               |         | 1.5 kW | R88M-WP1K530T     |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S     |
|                             |               |         | 200 W  | R88M-WP20030S     |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030T-B   |
|                             |               |         | 200 W  | R88M-WP20030T-B   |
|                             |               |         | 400 W  | R88M-WP40030T-B   |
|                             |               |         | 750 W  | R88M-WP75030T-B   |
|                             |               |         | 1.5 kW | R88M-WP1K530T-B   |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-B   |
|                             |               |         | 200 W  | R88M-WP20030S-B   |
| Straight shafts with key    | Without brake | 200 VAC | 100 W  | R88M-WP10030T-S1  |
|                             |               |         | 200 W  | R88M-WP20030T-S1  |
|                             |               |         | 400 W  | R88M-WP40030T-S1  |
|                             |               |         | 750 W  | R88M-WP75030T-S1  |
|                             |               |         | 1.5 kW | R88M-WP1K530T-S1  |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-S1  |
|                             |               |         | 200 W  | R88M-WP20030S-S1  |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030T-BS1 |
|                             |               |         | 200 W  | R88M-WP20030T-BS1 |
|                             |               |         | 400 W  | R88M-WP40030T-BS1 |
|                             |               |         | 750 W  | R88M-WP75030T-BS1 |
|                             |               |         | 1.5 kW | R88M-WP1K530T-BS1 |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-BS1 |
|                             |               |         | 200 W  | R88M-WP20030S-BS1 |

# Flat-style Motors (Waterproof Type) with Incremental Encoders

| Specifications              |               |         |        | Model              |
|-----------------------------|---------------|---------|--------|--------------------|
| Straight shafts without key | Without brake | 200 VAC | 100 W  | R88M-WP10030H-W    |
|                             |               |         | 200 W  | R88M-WP20030H-W    |
|                             |               |         | 400 W  | R88M-WP40030H-W    |
|                             |               |         | 750 W  | R88M-WP75030H-W    |
|                             |               |         | 1.5 kW | R88M-WP1K530H-W    |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-W    |
|                             |               |         | 200 W  | R88M-WP20030L-W    |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030H-BW   |
|                             |               |         | 200 W  | R88M-WP20030H-BW   |
|                             |               |         | 400 W  | R88M-WP40030H-BW   |
|                             |               |         | 750 W  | R88M-WP75030H-BW   |
|                             |               |         | 1.5 kW | R88M-WP1K530H-BW   |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-BW   |
|                             |               |         | 200 W  | R88M-WP20030L-BW   |
| Straight shafts with key    | Without brake | 200 VAC | 100 W  | R88M-WP10030H-WS1  |
|                             |               |         | 200 W  | R88M-WP20030H-WS1  |
|                             |               |         | 400 W  | R88M-WP40030H-WS1  |
|                             |               |         | 750 W  | R88M-WP75030H-WS1  |
|                             |               |         | 1.5 kW | R88M-WP1K530H-WS1  |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-WS1  |
|                             |               |         | 200 W  | R88M-WP20030L-WS1  |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030H-BWS1 |
|                             |               |         | 200 W  | R88M-WP20030H-BWS1 |
|                             |               |         | 400 W  | R88M-WP40030H-BWS1 |
|                             |               |         | 750 W  | R88M-WP75030H-BWS1 |
|                             |               |         | 1.5 kW | R88M-WP1K530H-BWS1 |
|                             |               | 100 VAC | 100 W  | R88M-WP10030L-BWS1 |
|                             |               |         | 200 W  | R88M-WP20030L-BWS1 |

## Note: Precautions When Selecting Products

1. The standard cable (R88A-CAW□) can be connected, but it is not water resistant. Use a water-resistant cable in locations subject to water.
2. The cable attached to the Motor is water resistant, but the connector is not. Do not allow water to come into contact with the connector to protect the terminals.

# Flat-style Motors (Waterproof Type) with Absolute Encoders

| Specifications              |               |         |        | Model              |
|-----------------------------|---------------|---------|--------|--------------------|
| Straight shafts without key | Without brake | 200 VAC | 100 W  | R88M-WP10030T-W    |
|                             |               |         | 200 W  | R88M-WP20030T-W    |
|                             |               |         | 400 W  | R88M-WP40030T-W    |
|                             |               |         | 750 W  | R88M-WP75030T-W    |
|                             |               |         | 1.5 kW | R88M-WP1K530T-W    |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-W    |
|                             |               |         | 200 W  | R88M-WP20030S-W    |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030T-BW   |
|                             |               |         | 200 W  | R88M-WP20030T-BW   |
|                             |               |         | 400 W  | R88M-WP40030T-BW   |
|                             |               |         | 750 W  | R88M-WP75030T-BW   |
|                             |               |         | 1.5 kW | R88M-WP1K530T-BW   |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-BW   |
|                             |               |         | 200 W  | R88M-WP20030S-BW   |
| Straight shafts with key    | Without brake | 200 VAC | 100 W  | R88M-WP10030T-WS1  |
|                             |               |         | 200 W  | R88M-WP20030T-WS1  |
|                             |               |         | 400 W  | R88M-WP40030T-WS1  |
|                             |               |         | 750 W  | R88M-WP75030T-WS1  |
|                             |               |         | 1.5 kW | R88M-WP1K530T-WS1  |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-WS1  |
|                             |               |         | 200 W  | R88M-WP20030S-WS1  |
|                             | With brake    | 200 VAC | 100 W  | R88M-WP10030T-BWS1 |
|                             |               |         | 200 W  | R88M-WP20030T-BWS1 |
|                             |               |         | 400 W  | R88M-WP40030T-BWS1 |
|                             |               |         | 750 W  | R88M-WP75030T-BWS1 |
|                             |               |         | 1.5 kW | R88M-WP1K530T-BWS1 |
|                             |               | 100 VAC | 100 W  | R88M-WP10030S-BWS1 |
|                             |               |         | 200 W  | R88M-WP20030S-BWS1 |

## Note: Precautions When Selecting Products

1. The standard cable (R88A-CAW□) can be connected, but it is not water resistant. Use a water-resistant cable in locations subject to water.
2. The cable attached to the Motor is water resistant, but the connector is not. Do not allow water to come into contact with the connector to protect the terminals.

# AC Servodrivers

| Specifications                                                                         |         |        | Model                   |
|----------------------------------------------------------------------------------------|---------|--------|-------------------------|
| Common to analog and pulse train inputs<br>Common to incremental and absolute encoders | 200 VAC | 30 W   | R88D-WTA3H              |
|                                                                                        |         | 50 W   | R88D-WTA5H              |
|                                                                                        |         | 100 W  | R88D-WT01H              |
|                                                                                        |         | 200 W  | R88D-WT02H              |
|                                                                                        |         | 400 W  | R88D-WT04H              |
|                                                                                        |         | 500 W  | R88D-WT05H              |
|                                                                                        |         | 750 W  | R88D-WT08H              |
|                                                                                        |         | 1 kW   | R88D-WT10H              |
|                                                                                        |         | 1.5 kW | R88D-WT15H              |
|                                                                                        |         | 2 kW   | R88D-WT20H              |
|                                                                                        |         | 3 kW   | R88D-WT30H              |
|                                                                                        |         | 5 kW   | R88D-WT50H              |
|                                                                                        |         | 6 kW   | R88D-WT60H (See note.)  |
|                                                                                        |         | 7.5 kW | R88D-WT75H (See note.)  |
|                                                                                        |         | 15 kW  | R88D-WT150H (See note.) |
|                                                                                        | 100 VAC | 30 W   | R88D-WTA3HL             |
|                                                                                        |         | 50 W   | R88D-WTA5HL             |
|                                                                                        |         | 100 W  | R88D-WT01HL             |
|                                                                                        |         | 200 W  | R88D-WT02HL             |

**Note:** When ordering the R88D-WT60H/75H/150H, a regenerative resistor must also be ordered.

## ■ Power Cables

| Specification             |                                                      |      | Model         |
|---------------------------|------------------------------------------------------|------|---------------|
| For motors without brakes | 30-W to 750-W cylinder-style motors (3,000 r/min)    | 3 m  | R88A-CAWA003S |
|                           |                                                      | 5 m  | R88A-CAWA005S |
|                           |                                                      | 10 m | R88A-CAWA010S |
|                           | 100-W to 750-W flat-style motors                     | 15 m | R88A-CAWA015S |
|                           |                                                      | 20 m | R88A-CAWA020S |
|                           |                                                      | 30 m | R88A-CAWA030S |
|                           |                                                      | 40 m | R88A-CAWA040S |
|                           |                                                      | 50 m | R88A-CAWA050S |
|                           | 1.5-kW flat-style motors                             | 3 m  | R88A-CAWB003S |
|                           |                                                      | 5 m  | R88A-CAWB005S |
|                           |                                                      | 10 m | R88A-CAWB010S |
|                           |                                                      | 15 m | R88A-CAWB015S |
|                           |                                                      | 20 m | R88A-CAWB020S |
|                           |                                                      | 30 m | R88A-CAWB030S |
|                           |                                                      | 40 m | R88A-CAWB040S |
|                           |                                                      | 50 m | R88A-CAWB050S |
|                           | 300-W to 900-W cylinder-style motors (1,000 r/min)   | 3 m  | R88A-CAWC003S |
|                           |                                                      | 5 m  | R88A-CAWC005S |
|                           |                                                      | 10 m | R88A-CAWC010S |
|                           | 450-W to 1.3-kW cylinder-style motors (1,500 r/min)  | 15 m | R88A-CAWC015S |
|                           |                                                      | 20 m | R88A-CAWC020S |
|                           |                                                      | 30 m | R88A-CAWC030S |
|                           | 1-kW to 2-kW cylinder-style motors (3,000 r/min)     | 40 m | R88A-CAWC040S |
|                           |                                                      | 50 m | R88A-CAWC050S |
|                           | 1.2-kW to 3-kW cylinder-style motors (1,000 r/min)   | 3 m  | R88A-CAWD003S |
|                           |                                                      | 5 m  | R88A-CAWD005S |
|                           |                                                      | 10 m | R88A-CAWD010S |
|                           | 1.8-kW to 4.4-kW cylinder-style motors (1,500 r/min) | 15 m | R88A-CAWD015S |
|                           |                                                      | 20 m | R88A-CAWD020S |
|                           |                                                      | 30 m | R88A-CAWD030S |
|                           | 3-kW to 5-kW cylinder-style motors (3,000 r/min)     | 40 m | R88A-CAWD040S |
|                           |                                                      | 50 m | R88A-CAWD050S |

| Specification      |                                                      |      | Model         |
|--------------------|------------------------------------------------------|------|---------------|
| Motors with brakes | 30-W to 750-W cylinder-style motors (3,000 r/min)    | 3 m  | R88A-CAWA003B |
|                    |                                                      | 5 m  | R88A-CAWA005B |
|                    |                                                      | 10 m | R88A-CAWA010B |
|                    | 100-W to 750-W flat-style motors                     | 15 m | R88A-CAWA015B |
|                    |                                                      | 20 m | R88A-CAWA020B |
|                    |                                                      | 30 m | R88A-CAWA030B |
|                    |                                                      | 40 m | R88A-CAWA040B |
|                    |                                                      | 50 m | R88A-CAWA050B |
|                    | 1.5-kW flat-style motors                             | 3 m  | R88A-CAWB003B |
|                    |                                                      | 5 m  | R88A-CAWB005B |
|                    |                                                      | 10 m | R88A-CAWB010B |
|                    |                                                      | 15 m | R88A-CAWB015B |
|                    |                                                      | 20 m | R88A-CAWB020B |
|                    |                                                      | 30 m | R88A-CAWB030B |
|                    |                                                      | 40 m | R88A-CAWB040B |
|                    |                                                      | 50 m | R88A-CAWB050B |
|                    | 300-W to 900-W cylinder-style motors (1,000 r/min)   | 3 m  | R88A-CAWC003B |
|                    |                                                      | 5 m  | R88A-CAWC005B |
|                    |                                                      | 10 m | R88A-CAWC010B |
|                    | 450-W to 1.3-kW cylinder-style motors (1,500 r/min)  | 15 m | R88A-CAWC015B |
|                    |                                                      | 20 m | R88A-CAWC020B |
|                    |                                                      | 30 m | R88A-CAWC030B |
|                    | 1-kW to 2-kW cylinder-style motors (3,000 r/min)     | 40 m | R88A-CAWC040B |
|                    |                                                      | 50 m | R88A-CAWC050B |
|                    | 1.2-kW to 3-kW cylinder-style motors (1,000 r/min)   | 3 m  | R88A-CAWD003B |
|                    |                                                      | 5 m  | R88A-CAWD005B |
|                    |                                                      | 10 m | R88A-CAWD010B |
|                    | 1.8-kW to 4.4-kW cylinder-style motors (1,500 r/min) | 15 m | R88A-CAWD015B |
|                    |                                                      | 20 m | R88A-CAWD020B |
|                    |                                                      | 30 m | R88A-CAWD030B |
|                    | 3-kW to 5-kW cylinder-style motors (3,000 r/min)     | 40 m | R88A-CAWD040B |
|                    |                                                      | 50 m | R88A-CAWD050B |

| Specification                                                                                  |                               |      | Model                              |
|------------------------------------------------------------------------------------------------|-------------------------------|------|------------------------------------|
| 4-kW cylinder-style motors (1,000 r/min)                                                       | Power connector for the motor | 3 m  | R88A-CAWE003S                      |
|                                                                                                |                               | 5 m  | R88A-CAWE005S                      |
|                                                                                                |                               | 10 m | R88A-CAWE010S                      |
|                                                                                                |                               | 15 m | R88A-CAWE015S                      |
|                                                                                                |                               | 20 m | R88A-CAWE020S                      |
|                                                                                                |                               | 30 m | R88A-CAWE030S                      |
|                                                                                                |                               | 40 m | R88A-CAWE040S                      |
|                                                                                                |                               | 50 m | R88A-CAWE050S                      |
|                                                                                                | Brake connector for the motor | 3 m  | R88A-CAWE003B (See note 1.)        |
|                                                                                                |                               | 5 m  | R88A-CAWE005B (See note 1.)        |
|                                                                                                |                               | 10 m | R88A-CAWE010B (See note 1.)        |
|                                                                                                |                               | 15 m | R88A-CAWE015B (See note 1.)        |
|                                                                                                |                               | 20 m | R88A-CAWE020B (See note 1.)        |
|                                                                                                |                               | 30 m | R88A-CAWE030B (See note 1.)        |
|                                                                                                |                               | 40 m | R88A-CAWE040B (See note 1.)        |
|                                                                                                |                               | 50 m | R88A-CAWE050B (See note 1.)        |
| 5.5-kW cylinder-style motors (1,000 r/min)<br>5.5-kW/11-kW cylinder-style motors (1,500 r/min) | Power connector for the motor | 3 m  | R88A-CAWF003S                      |
|                                                                                                |                               | 5 m  | R88A-CAWF005S                      |
|                                                                                                |                               | 10 m | R88A-CAWF010S                      |
|                                                                                                |                               | 15 m | R88A-CAWF015S                      |
|                                                                                                |                               | 20 m | R88A-CAWF020S                      |
|                                                                                                |                               | 30 m | R88A-CAWF030S                      |
|                                                                                                |                               | 40 m | R88A-CAWF040S                      |
|                                                                                                |                               | 50 m | R88A-CAWF050S                      |
|                                                                                                | Brake connector for the motor | ---  | R88A-CAWE□□□B (See notes 1 and 2.) |

**Note:** 1. When using a motor with brake, a cable for the power connector is required in addition to the cable for the brake connector.

2. The boxes (□□□) indicate cable length.

## Encoder Cables

| Specification                                                                                                                                                 |      | Model         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------|
| 30-W to 750-W cylinder-style motors (3,000 r/min)<br>100-W to 1.5-kW flat-style motors                                                                        | 3 m  | R88A-CRWA003C |
|                                                                                                                                                               | 5 m  | R88A-CRWA005C |
|                                                                                                                                                               | 10 m | R88A-CRWA010C |
|                                                                                                                                                               | 15 m | R88A-CRWA015C |
|                                                                                                                                                               | 20 m | R88A-CRWA020C |
|                                                                                                                                                               | 30 m | R88A-CRWA030C |
|                                                                                                                                                               | 40 m | R88A-CRWA040C |
|                                                                                                                                                               | 50 m | R88A-CRWA050C |
| 1-kW to 5-kW cylinder-style motors (3,000 r/min)<br>450-W to 15-kW cylinder-style motors (1,500 r/min)<br>300-W to 5.5-kW cylinder-style motors (1,000 r/min) | 3 m  | R88A-CRWB003N |
|                                                                                                                                                               | 5 m  | R88A-CRWB005N |
|                                                                                                                                                               | 10 m | R88A-CRWB010N |
|                                                                                                                                                               | 15 m | R88A-CRWB015N |
|                                                                                                                                                               | 20 m | R88A-CRWB020N |
|                                                                                                                                                               | 30 m | R88A-CRWB030N |
| Encoder Cable for 70-m connection (cable line material only)                                                                                                  | 40 m | R88A-CRWB040N |
|                                                                                                                                                               | 50 m | R88A-CRWB050N |
|                                                                                                                                                               | 1 m  | R88A-CRW001   |

**Note:** All these cables are common to incremental and absolute encoders.

## Control Cables and Relay Units

| Specification                              |                                                                            |                                                                          | Model                                      |
|--------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------|
| For Motion Control Units                   | Control cables for 1 axis (common to SYSMAC CS1, C200H, and CV-series PCs) | 1 m                                                                      | R88A-CPW001M1                              |
|                                            |                                                                            | 2 m                                                                      | R88A-CPW002M1                              |
|                                            |                                                                            | 3 m                                                                      | R88A-CPW003M1                              |
|                                            |                                                                            | 5 m                                                                      | R88A-CPW005M1                              |
|                                            | Control cables for 2 axes (common to SYSMAC CS1, C200H, and CV-series PCs) | 1 m                                                                      | R88A-CPW001M2                              |
|                                            |                                                                            | 2 m                                                                      | R88A-CPW002M2                              |
|                                            |                                                                            | 3 m                                                                      | R88A-CPW003M2                              |
|                                            |                                                                            | 5 m                                                                      | R88A-CPW005M2                              |
| For Position Control Units and SYSMAC CQM1 | Servo Relay Units                                                          | For CS1W-NC113/133, CJ1W-NC113/133, C200HW-NC113, and 3F88M-DRT141       | XW2B-20J6-1B                               |
|                                            |                                                                            | For CS1W-NC213/413/233/433, CJ1W-NC213/413/233/433, and C200HW-NC213/413 | XW2B-40J6-2B                               |
|                                            |                                                                            | For CQM1-CPU43, CQM1H-PLB21                                              | XW2B-20J6-3B                               |
|                                            |                                                                            | For CJ1M-CPU22/23 (1 axis)                                               | XW2B-20J6-8A                               |
|                                            |                                                                            | For CJ1M-CPU22/23 (2 axes)                                               | XW2B-40J6-9A                               |
|                                            |                                                                            | For CJ1W-NC213/413/223/423 (with communications support)                 | XW2B-40J6-4A                               |
|                                            |                                                                            | For CS1W-HCPP22-V1                                                       | XW2B-80J7-1A                               |
|                                            | Servodriver cable                                                          | Relay Units other than those listed below                                | 1 m<br>2 m<br>XW2Z-100J-B4<br>XW2Z-200J-B4 |

| Specification                               |                                          |                                                       |       | Model         |
|---------------------------------------------|------------------------------------------|-------------------------------------------------------|-------|---------------|
| For Position Control Units and SYS-MAC CQM1 | Servodriver cable                        | XW2B-40J6-4A                                          | 1 m   | XW2Z-100J-B8  |
|                                             |                                          |                                                       | 2 m   | XW2Z-200J-B8  |
|                                             |                                          | Communications support type                           |       |               |
|                                             |                                          |                                                       |       |               |
|                                             |                                          | XW2B-80J7-1A                                          | 1 m   | XW2Z-100J-B11 |
|                                             |                                          |                                                       | 2 m   | XW2Z-200J-B11 |
|                                             |                                          | For customizable counters                             |       |               |
|                                             | Cables on Position Control Unit end      | For C200HW-NC113 and CS1W-NC113                       | 0.5 m | XW2Z-050J-A6  |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A6  |
|                                             |                                          | For C200HW-NC213/413 and CS1W-NC213/413               | 0.5 m | XW2Z-050J-A7  |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A7  |
|                                             |                                          | For CS1W-NC133                                        | 0.5 m | XW2Z-050J-A10 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A10 |
|                                             |                                          | For CS1W-NC233/433                                    | 0.5 m | XW2Z-050J-A11 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A11 |
|                                             |                                          | For CJ1W-NC113                                        | 0.5 m | XW2Z-050J-A14 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A14 |
|                                             |                                          | For CJ1W-NC213/413                                    | 0.5 m | XW2Z-050J-A15 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A15 |
|                                             |                                          | For CJ1W-NC133                                        | 0.5 m | XW2Z-050J-A18 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A18 |
|                                             |                                          | For CJ1W-NC233/433                                    | 0.5 m | XW2Z-050J-A19 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A19 |
|                                             |                                          | For CQM1-CPU43-V1 and CQM1H-PLB21                     | 0.5 m | XW2Z-050J-A3  |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A3  |
|                                             |                                          | For 3F88M-DRT141                                      | 0.5 m | XW2Z-050J-A24 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A24 |
|                                             |                                          | For CS1W-HCP22-V1 (For 24-pin connectors) (See note.) | 0.5 m | XW2Z-050J-A29 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A29 |
|                                             |                                          | For CS1W-HCP22-V1 (For 40-pin connectors) (See note.) | 0.5 m | XW2Z-050J-A32 |
|                                             |                                          |                                                       | 1 m   | XW2Z-100J-A32 |
|                                             |                                          | For CJ1M-CPU22/23                                     |       | XW2Z-100J-A27 |
| For general-purpose controllers             | Control cables with connector at one end |                                                       | 1 m   | R88A-CPW001S  |
|                                             |                                          |                                                       | 2 m   | R88A-CPW002S  |
|                                             | Cables for relay terminal block          |                                                       | 1 m   | R88A-CTW001N  |
|                                             |                                          |                                                       | 2 m   | R88A-CTW002N  |
|                                             | Relay terminal block                     |                                                       |       | XW2B-50G5     |

**Note:** When using the CS1W-HCP22-V1, cables for both 24-pin connectors and 40-pin connectors are required.

## Parameter Units

| Specification                                  | Model        |
|------------------------------------------------|--------------|
| Handy type for OMNUC W-series (with 1-m cable) | R88A-PR02W   |
| Cable for U-series (2 m) (See note.)           | R88A-CCW002C |

**Note:** This cable can be used to connect the R88A-PR02U Parameter Unit for U-series to the W-series Servodriver.

## Backup Battery Unit for Absolute Encoder

| Specification             | Model       |
|---------------------------|-------------|
| R88D-WT□H (□: 50 or less) | R88A-BAT01W |
| R88D-WT60H/75H/150H       | R88A-BAT02W |

## External Regenerative Resistors

| Specification | Model         |
|---------------|---------------|
| 220 W, 47 Ω   | R88A-RR22047S |
| 880 W, 6.25 Ω | R88A-RR88006  |

## DC Reactors

| Specification                 | Model       |
|-------------------------------|-------------|
| For R88D-WT30H                | R88A-PX5059 |
| For R88D-WT15H/WT20H          | R88A-PX5060 |
| For R88D-WT05H/WT08H/WT10H    | R88A-PX5061 |
| For R88D-WT02HL               | R88A-PX5062 |
| For R88D-WTA3HL/WTA5HL/WT01HL | R88A-PX5063 |
| For R88D-WT50H                | R88A-PX5068 |
| For R88D-WT04H                | R88A-PX5069 |
| For R88D-WT02H                | R88A-PX5070 |
| For R88D-WTA3H/WTA5H/WT01H    | R88A-PX5071 |

## Front Panel Mounting Brackets

| Specification              | Model      |
|----------------------------|------------|
| For R88D-WTA3□ to WT10H    | R88A-TK01W |
| For R88D-WT15H             | R88A-TK02W |
| For R88D-WT20H/WT30H/WT50H | R88A-TK03W |

## Other Peripheral Cables and Connectors

| Specification                                | Model         |
|----------------------------------------------|---------------|
| Analog monitoring cable (1 m)                | R88A-CMW001S  |
| Personal computer monitoring cable (2 m)     | R88A-CCW002P2 |
| Control I/O connector CN1                    | R88A-CNU11C   |
| Encoder connector CN2                        | R88A-CNW01R   |
| Encoder connector (for R88A-CRWA motor side) | R88A-CNW02R   |

## ■ Equipment for Replacing S/R/H/M-series Products

### Mounting Brackets

| Specifications                                                                | Model      |
|-------------------------------------------------------------------------------|------------|
| R Series, 60 W/110 W                                                          | R88A-MF01W |
| S Series, 50 W/100 W; R Series, 100 W;<br>H Series, 50 W/100 W                | R88A-MF02W |
| S Series, 500 W/750 W; R Series, 450 W<br>min., H Series, 500 W/750 W/1,100 W | R88A-MF03W |

### Power Cables

| Specifications                                                                                                         | Model          |
|------------------------------------------------------------------------------------------------------------------------|----------------|
| S Series, 50 W/100 W/200 W/300 W, without<br>brake;<br>R Series, 60 W/100 W/110 W/200 W/300 W/<br>450 W, without brake | R88A-CAWR0R5S1 |
| S Series, 500 W/750 W, without brake;<br>R Series, 500 W/600 W/750 W/820 W, with-<br>out brake                         | R88A-CAWR0R5S2 |
| R Series, 820 W/1,100 W, with brake                                                                                    | R88A-CAWR0R5S3 |
| S Series, 50 W/100 W/200 W/300 W, with<br>brake;<br>R Series, 60 W/100 W/110 W/200 W/300 W/<br>450 W, with brake       | R88A-CAWR0R5B1 |
| S Series, 500 W/750 W, with brake;<br>R Series, 500 W/600 W/750 W/820 W, with<br>brake                                 | R88A-CAWR0R5B2 |
| R Series, 820 W/1,100 W, with brake                                                                                    | R88A-CAWR0R5B3 |
| H Series, 50 W/100 W/200 W/300 W/500W/<br>750 W, without brake                                                         | R88A-CAWH0R5S1 |
| H Series, 1,100 W, without brake                                                                                       | R88A-CAWH0R5S2 |
| H Series, 50 W/100 W/200 W/300 W/500 W/<br>750 W, with brake                                                           | R88A-CAWH0R5B1 |
| H Series, 1,100 W, with brake                                                                                          | R88A-CAWH0R5B2 |

### Encoder Cables

| Specifications                                                                                                     | Model          |
|--------------------------------------------------------------------------------------------------------------------|----------------|
| S Series, Servodriver side                                                                                         | R88A-CRWS0R3D  |
| S Series, 50 W/100 W/200 W/300 W, Servo-<br>motor side;<br>R Series, 100 W/200 W/300 W/450 W, Ser-<br>vomotor side | R88A-CRWR0R5M1 |
| S Series, 500 W/750 W, Servomotor side                                                                             | R88A-CRWS0R5M  |
| R Series, Servodriver side                                                                                         | R88A-CRWR0R3D  |
| R Series, 60 W/110 W, Servomotor side;<br>H Series, Servomotor side                                                | R88A-CRWH0R5M  |
| R Series, 500 W/600 W/750 W/820 W/<br>1,100 W, Servomotor side                                                     | R88A-CRWR0R5M2 |
| H Series, Servodriver side                                                                                         | R88A-CRWH0R3D  |

### Control Cables

| Specifications                     | Model         |
|------------------------------------|---------------|
| S/R Series, analog input           | R88A-CPWR0R3A |
| S/R Series, pulse train input      | R88A-CPWR0R3P |
| H Series, analog/pulse train input | R88A-CPWH0R3C |
| M Series, analog/pulse train input | R88A-CPWM0R3C |

**Note:** Refer to *Replacement Set for S, R, and H Series* (I806-E1-□) for detailed specifications.



## Unit Descriptions

DeviceNet Option Unit for OMNUC W-series AC Servo Drivers  
R88A-NCW152-DRT

# DeviceNet Option Unit for OMNUC W-series AC Servo Drivers R88A-NCW152-DRT

**Distributed control with a built-in Single-axis Position Control Unit, information management via DeviceNet, and a failure prediction function for servo systems, can all be added to OMNUC W-series AC Servo Drivers with just one Unit.**

- **Two Roles Performed by One Unit**  
The Option Unit has both DeviceNet communications functions and the positioning functions of a Position Control Unit. These functions can be added to a W-series AC Servo Driver simply by mounting the Option Unit directly to it.
- **Distributed Control of up to 63 Units**  
Using Option Units allows up to 63 W-series AC Servo Drivers to be connected as DeviceNet slaves to an open field network with a total network length of 500 m.
- **Batch Handling of Operating Information for Servo Systems**  
Information that can be displayed at W-series AC Servo Drivers using monitor functions (e.g., speed commands and speed feedback) can be read by a PLC using remote I/O functions.
- **Failure Prediction and Diagnosis**  
Up to 1,000 samples of sequential data, such as speed feedback and torque commands, can be recorded in units as small as 250  $\mu$ s to approx. 8 seconds. Comparison with data recorded during normal operation allows failure prediction and effective cause analysis for incorrect operation.



**NEW**

## Ordering Information

### ■ List of Models

| Product name                                           | Model number    |
|--------------------------------------------------------|-----------------|
| DeviceNet Option Unit                                  | R88A-NCW152-DRT |
| External I/O Connector                                 | R88A-CNU01R     |
| Cable for Setup Tool<br>(IBM PC/AT or compatible: 2 m) | R88A-CCW002P4   |

# Unit Descriptions

## DeviceNet Option Unit for OMNUC W-series AC Servo Drivers R88A-NCW152-DRT

# Specifications

## Position Control Function Specifications

| Item                                        |                                  | Specifications                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of control axes                      |                                  | 1 axis per slave                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Control system                              |                                  | Semi-closed loop/full closed-loop control                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Controlled driver                           |                                  | R88D-WT Servo Drivers                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Positioning unit                            |                                  | User-specified position units (set freely). The amount moved per step can be set as an electronic gear ratio (setting range: 10,000,000 to 0.0000001)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Operating specifications                    | Memory operation                 | Step operation and point table operation                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Direct operation                 | Direct operation, interrupt feeding, notch signal output positioning, and multi-speed positioning                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Move command specifications                 | Type                             | Incremental (positioning according to relative coordinates) or absolute (positioning according to absolute coordinates)                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Position commands                | Signed, 32-bit data (setting range: -99,999,999 to 99,999,999 steps)                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Speed commands                   | Unsigned, 32-bit data (units: step/min; setting range: 1 to 240,000 steps)                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Acceleration/deceleration method | Fixed acceleration/deceleration                                                                                                                        | Single-step linear acceleration/deceleration, 2-step linear acceleration/deceleration, asymmetric linear acceleration/deceleration, S-curve acceleration/deceleration, asymmetric S-curve acceleration/deceleration                                                                                                                                                                                                                                             |
|                                             |                                  | Fixed acceleration/deceleration time                                                                                                                   | Exponential acceleration/deceleration, exponential acceleration/deceleration with bias, single-step linear acceleration/deceleration                                                                                                                                                                                                                                                                                                                            |
|                                             | Acceleration/deceleration time   | 1 to 10,000 ms (time taken to reach maximum speed)                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Coordinate system settings       | Set whether to use the AC Servomotor as a linear axis or a rotary axis.                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Speed changes                    | The speed can be switched between 16 settings while positioning during multi-speed operation.                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Operation management/compensation functions | Origin search operation          | Without limit reversal                                                                                                                                 | Use the ON/OFF signal of any of the following: Origin proximity signal + origin signal, origin signal, origin proximity signal + phase Z, or phase Z                                                                                                                                                                                                                                                                                                            |
|                                             |                                  | With limit reversal                                                                                                                                    | Use the ON/OFF signal of any of the following: Origin proximity signal + origin signal, origin signal, or origin proximity signal + Phase Z                                                                                                                                                                                                                                                                                                                     |
|                                             | Backlash compensation            | 0 to 32,767 steps                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Jog operation                    | Based on the origin position when power is turned ON and after origin search                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Indexing operation               | Positioning performed with 1 motor revolution divided equally by a specified number (range: 1 to 32,767).                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Software limits                  | Decelerates to a stop at a specified position. (The direction can be specified as either positive or negative in the range -99,999,999 to 99,999,999.) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Emergency stop/deceleration stop | Possible via remote I/O communications or using input signal.                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Present position preset          | Possible via remote I/O communications.                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                             | Trace function                   | Analog trace data (Select up to 2 elements.)                                                                                                           | Command pulse speed (r/min), position deviation (command units), speed feedback (r/min), or torque commands (%)                                                                                                                                                                                                                                                                                                                                                 |
|                                             |                                  | ON/OFF trace data (Select up to 2 elements.)                                                                                                           | Sensor-ON input, alarm output, positioning completed output 1, speed coincidence output, motor revolution detection output, servo ready output, current limit detection output, speed control detection output, brake interlock output, warning output, positioning completed output 2, alarm code output 1, alarm code output 2, alarm code output 3                                                                                                           |
|                                             |                                  | Trigger data                                                                                                                                           | Analog trace data (rising edge, falling edge, or rising/falling edge)<br>ON/OFF trace data (rising edge, falling edge, or rising/falling edge)                                                                                                                                                                                                                                                                                                                  |
|                                             |                                  | Data sampling                                                                                                                                          | Sampling cycle: Set in 250-μs units (range: 250 to 8,191,750 μs)<br>Number of samples: 1,000 samples (fixed)                                                                                                                                                                                                                                                                                                                                                    |
|                                             | Reading monitor items            | Monitor items                                                                                                                                          | Speed feedback (r/min), torque commands (%), number of pulses from phase Z (pulses), electrical angle (°), input signal monitor (no units), output signal monitor (no units), command pulse speed display (r/min), position deviation (command units), cumulative load rate (%), regenerative load rate (%), dynamic brake resistance load rate (%), input pulse counter (rightmost 16 bits; command units), feedback pulse counter (rightmost 16 bits; pulses) |

# Unit Descriptions

## DeviceNet Option Unit for OMNUC W-series AC Servo Drivers R88A-NCW152-DRT

### DeviceNet Communications Specifications

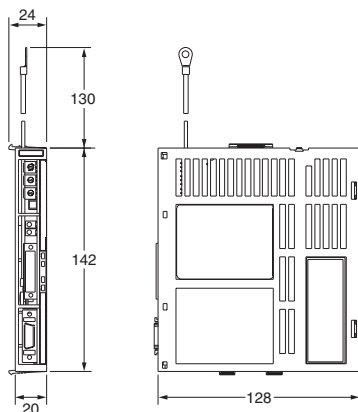
| Item                     |                                     | Details                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DeviceNet Communications | Unit classification                 | Slave Unit                                                                                                                                                                                                                                                                                                                                                   |
|                          | Baud rate                           | 125, 250, or 500 kbps (selected with rotary switch)                                                                                                                                                                                                                                                                                                          |
|                          | Communications functions            | Remote I/O communications (operates as slave) and explicit message communications (sends explicit messages)                                                                                                                                                                                                                                                  |
|                          | Communications contents             | Remote I/O communications <ul style="list-style-type: none"> <li>• Move commands for positioning</li> <li>• Origin compensation (when absolute encoder is used)</li> <li>• Reading and writing Servo Driver and DeviceNet Option Unit parameters</li> <li>• Reading monitor items</li> <li>• Present position compensation</li> <li>• Alarm reset</li> </ul> |
|                          |                                     | Explicit message communications <ul style="list-style-type: none"> <li>• Setting trace function</li> <li>• Reading trace data</li> <li>• Reading and writing Servo Driver and DeviceNet Option Unit parameters</li> </ul>                                                                                                                                    |
|                          | Connection format                   | Combinations of multi-drop method and T-branch method                                                                                                                                                                                                                                                                                                        |
|                          | Maximum number of connectable nodes | 64 (This figure includes the Master Unit, Slave Units, and Configurator (if connected).)                                                                                                                                                                                                                                                                     |
|                          | Node address setting                | 0 to 63 (selected with rotary switch)                                                                                                                                                                                                                                                                                                                        |

### General Specifications

| Item                     |                                            | Details                                                                                    |
|--------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------|
| Applicable Servo Drivers |                                            | R88D-WT□ (software version 14 or later)                                                    |
| Mounting method          |                                            | Mounted to the side of R88D-WT□ Servo Drivers                                              |
| Basic specifications     | Power supply voltage                       | Unit: Supplied from the Servo Driver<br>DeviceNet: 11 to 25-VDC Isolated Power Supply Unit |
|                          | Power consumption                          | 1.3 W (current consumption: 250 mA)                                                        |
|                          | Ambient operating temperature and humidity | 0 to 55°C, 90% max. (with no condensation or corrosive gases)                              |
|                          | Ambient storage temperature and humidity   | -20 to 85°C, 90% max. (with no corrosive gases)                                            |
|                          | Vibration resistance                       | 4.9 m/s <sup>2</sup>                                                                       |
|                          | External dimensions                        | 20 × 142 × 128 mm (W × H × D)                                                              |
|                          | Approximate weight                         | 0.2 kg                                                                                     |

### Dimensions (Unit: mm)

#### R88A-NCW152-DRT

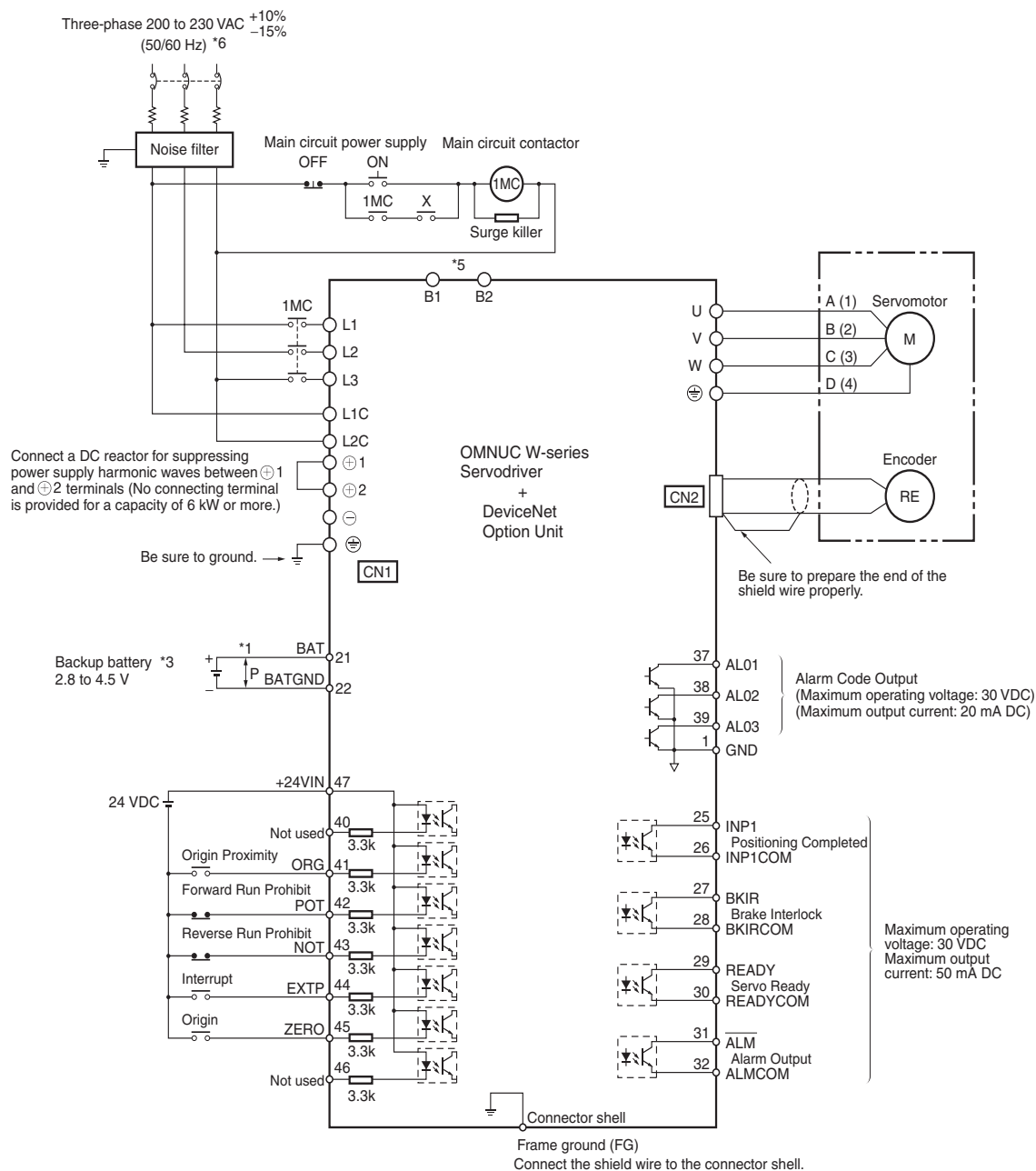


# Unit Descriptions

DeviceNet Option Unit for OMNUC W-series AC Servo Drivers  
R88A-NCW152-DRT

## Connection Diagram (for Mounting to OMNUC W-series Products)

### Three-phase (See \*6.)



\*1. represents a twisted-pair cable.

\*2. Primary filter

\*3. Connect when using an absolute encoder.

\*4. Used only with an absolute encoder.

\*5. When using an external regenerative resistor, connect it between B1 and B2.  
(When the capacity is 6 kW, connect a Regenerative Resistor Unit.)

\*6. For single-phase connection, refer to page 62. The wiring is different only around L1, L2, L3, L1C, L2C, the main circuit power supply, and the main circuit contactor.

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1. **Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
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  - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
  - d. Delivery and shipping dates are estimates only; and
  - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. **Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://www.omron247.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

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1. **Suitability of Use.** Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:
  - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - (ii) Use in consumer products or any use in significant quantities.
  - (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.
 NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.



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