

SYSMAC CJ-series Power Supply Unit

CJ1W-PA/PD

CSM_CJ1W-PA_PD_DS_E_3_1

Equipped with the RUN output for checking the operation status, as well as the replacement notification function for easy maintenance.

Lineup of five models including the AC power supply (25W).

- Stable power supply is available from the CJ-series CPU Unit to each I/O Units via the dedicated bus. The most suitable Power Supply Unit can be selected among various I/O specifications and/or options.



CJ1W-PA205C



CJ1W-PA202





Features

- The replacement notification function can prevent an overflow of the system due to the power lifetime. (CJ1W-PA205C only)
- Power Supply Unit provides wide variations according to the system scale up to maximum 25 W.
- Power Supply Unit provides wide variations according to the power supply (100 to 240 V AC/ 24 V DC) status.
- The output contact during operation enables you to check the CPU operation. (CJ1W-PA205R only)
- Conforming to the SEMI-F47 Standard. *

* AC input type, 200 V min. input.

Ordering Information

Power Supply Units

| Product name | Power supply voltage | Output capacity | | | 24-VDC service power supply | Options | | Model | Standards |
|---|----------------------|--|------------------------|-------------------------|-----------------------------|------------|------------------------------|-------------|---------------|
| | | 5-VDC output capacity | 24-VDC output capacity | Total power consumption | | RUN output | Maintenance forecast monitor | | |
|  AC Power Supply Unit | 100 to 240 VAC | 5 A | 0.8 A | 25 W | No | No | Yes | CJ1W-PA205C | UC1, N, L, CE |
| | | | | | | Yes | No | CJ1W-PA205R | |
| | |  | 2.8 A | 0.4 A | | 14 W | No | No | |
|  DC Power Supply Unit | 24 VDC | 5A | 0.8 A | 25 W | No | No | No | CJ1W-PD025 | UC1, CE |
| | |  | 2 A | 0.4 A | | 19.6 W | No | No | |

Accessories

There is no accessory for the CJ series Power Supply Unit.

International Standards

- The standards are abbreviated as follows: U: UL, U1: UL(Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Specifications

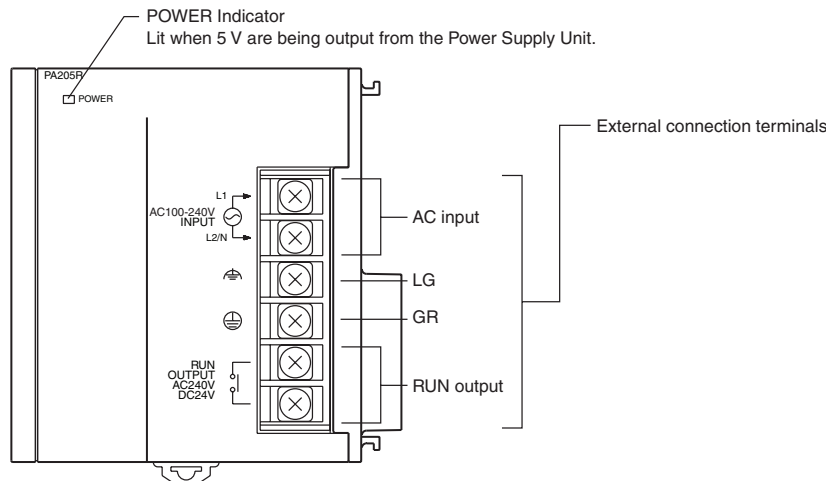
| Item Power Supply Unit | Specifications | | | | |
|---|---|--|--|--|--|
| | CJ1W-PA205R | CJ1W-PA205C | CJ1W-PA202 | CJ1W-PD025 | CJ1W-PD022 |
| Supply voltage | 100 to 240 V AC (wide-range), 50/60 Hz | | | 24 VDC | |
| Operating voltage and frequency ranges | 85 to 264 V AC, 47 to 63 Hz | | | 19.2 to 28.8 V DC | 21.6 to 26.4 V DC |
| Power consumption | 100 VA max. | | 50 VA max. | 50 W max. | 35 W max. |
| Inrush current *1 | At 100 to 120 V AC: 15 A/8 ms max. for cold start at room temperature At 200 to 240 V AC: 30 A/8 ms max. for cold start at room temperature | | At 100 to 120 V AC: 20 A/8 ms max. for cold start at room temperature At 200 to 240 V AC: 40 A/8 ms max. for cold start at room temperature | At 24 V DC: 30 A/20 ms max. for cold start at room temperature | |
| Output capacity *7 | 5.0 A, 5 V DC (including supply to CPU Unit) | | 2.8 A, 5 V DC (including supply to CPU Unit) | 5.0 A, 5 V DC (including supply to CPU Unit) | 2.0 A, 5 V DC (including supply to CPU Unit) |
| | 0.8 A, 24 V DC | | 0.4 A, 24 V DC | 0.8 A, 24 V DC | 0.4 A, 24 V DC |
| | Total: 25 W max. | | Total: 14 W max. | Total: 25 W max. | Total: 19.6 W max. |
| Output terminal (service supply) | Not provided. | | | | |
| RUN output *2 | Contact configuration: SPST-NO Switch capacity: 250 V AC, 2 A (resistive load) 120 V AC, 0.5 A (inductive load), 24 V DC, 2A (resistive load) 24 V DC, 2 A (inductive load) | Not provided. | | | |
| Replacement notification function | Not provided. | With Alarm output (open-collector output) 30 V DC max., 50 mA max. | Not provided. | | |
| Insulation resistance | 20 MΩ min. (at 500 V DC) between AC external and GR terminals *3 | • 20 MΩ min. (at 500 V DC) between all external terminals and GR terminal *3, and between all alarm output terminals. • 20 MΩ 1 min. (at 250 V DC) between all alarm output terminals and GR terminal *3. | 20 MΩ min. (at 500 V DC) between AC external and GR terminals *3 | 20 MΩ min. (at 500 V DC) between DC external and GR terminals *3 | – *6 |
| Dielectric strength *4 | 2,300 V AC 50/60 Hz for 1 min between AC external and GR terminals *3 Leakage current: 10 mA max. | • 2,300 VAC, 50/60 Hz for 1 minute between all external terminals and GR terminal *3 and between all alarm output terminals with a leakage current of 10 mA max. • 1,000 V AC, 50/60 Hz for 1 minute between all alarm output terminals and GR terminal *3 with a leakage current of 10 mA max. | 2,300 V AC 50/60 Hz for 1 min between AC external and GR terminals *3 Leakage current: 10 mA max. | 1,000 V AC, 50/60 Hz for 1 minute between DC external and GR terminals *3 Leakage current: 10 mA max. | – *6 |
| | 1,000 V AC, 50/60 Hz for 1 minute between DC external and GR terminals *3 Leakage current: 10 mA max. | | | | |
| Noise immunity | 2 kV on power supply line (conforming to IEC61000-4-4) | | | | |
| Vibration resistance | Conforms to IEC60068-2-6 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz Acceleration of 9.8 m/s ² for 100 min in X, Y, and Z directions (10 sweeps of 10 min each = 100 min) | | | | |
| Shock resistance | Conforms to IEC60068-2-27 147 m/s ² , 3 times in X, Y, and Z directions (100 m/s ² for Relay Output Units) | | | | |
| Ambient operating temperature | 0 to 55°C | | | | |
| Ambient operating humidity | 10% to 90% (with no condensation) | 10% to 90% (with no condensation) *5 | 10% to 90% (with no condensation) | | |
| Atmosphere | Must be free from corrosive gases. | | | | |
| Ambient storage temperature | –20 to 70°C (excluding battery) | –20 to 75°C (See note 5.) | –20 to 75°C (excluding battery) | | |
| Grounding | Less than 100 Ω | | | | |
| Enclosure | Mounted in a panel. | | | | |
| Weight | All models are each 5 kg max. | | | | |

| Item | Specifications | | | | |
|---------------------|---|-------------|------------|------------|------------|
| | CJ1W-PA205R | CJ1W-PA205C | CJ1W-PA202 | CJ1W-PD025 | CJ1W-PD022 |
| Power Supply Unit | 90.7 to 466.7 × 90 × 65 mm (W × H × D) (not including cables) | | | | |
| CPU Rack dimensions | Note: W = a + b + 20 × n + 31 × m + 14.7 a: Power Supply Unit: PA205R and PA205C = 80; PA202 = 45; PD025 = 60; PD022=27 b: CPU Unit: CJ1-H or CJ1 = 62; CJ1M-CPU1□ = 31; CJ1M-CPU2□ = 49 The total width is given by the following: W = 156.7 + n × 20 + m × 31, where n is the number of 32-point I/O Units or I/O Control Units and m is the number of other Units. | | | | |
| Safety measures | Conforms to cULus and EC Directives. | | | | |

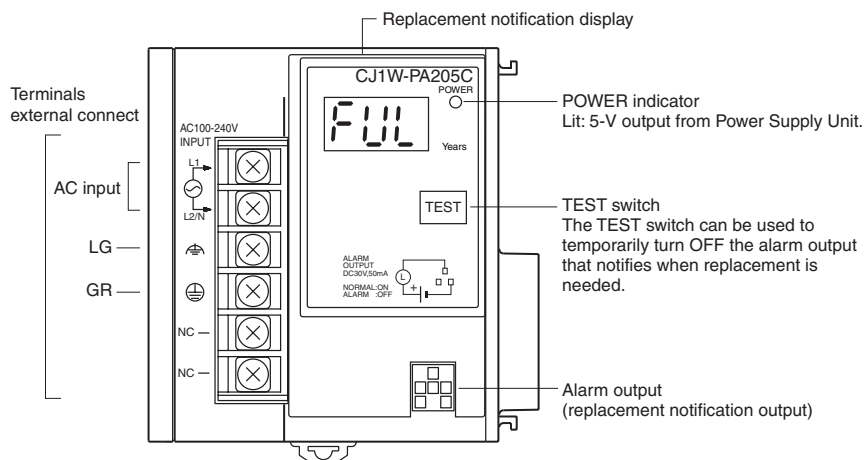
- *1. Disconnect the Power Supply Units LG terminal from the GR terminal when testing insulation and dielectric strength. Testing the insulation and dielectric strength with the LG terminal and the GR terminals connected will damage internal circuits in the CPU Unit.
- *2. Supported only when mounted to CPU Rack.
- *3. The inrush current is given for a cold start at room temperature. The inrush control circuit uses a thermistor element with a low-temperature current control characteristic. If the ambient temperature is high or the PLC is hot-started, the thermistor will not be sufficiently cool, and the inrush currents given in the table may be exceeded by up to twice the given values. When selecting fuses or breakers for external circuits, allow sufficient margin in shut-off performance.
- *4. Maintain an ambient storage temperature of -25 to 30°C and relative humidity of 25% to 70% when storing the Unit for longer than 3 months to keep the replacement notification function in optimum working condition.
- *5. Change the applied voltage gradually using the adjuster on the Tester. If the full dielectric strength voltage is applied or turned OFF using the switch on the Tester, the generated impulse voltage may damage the Power Supply Unit.
- *6. CJ1W-PD022 is not insulated between the primary DC power and secondary DC power.
- *7. Internal components in the Power Supply Unit will deteriorate or be damaged if the Power Supply Unit is used for an extended period of time exceeding the power supply output capacity or if the outputs are shorted.

External Interface

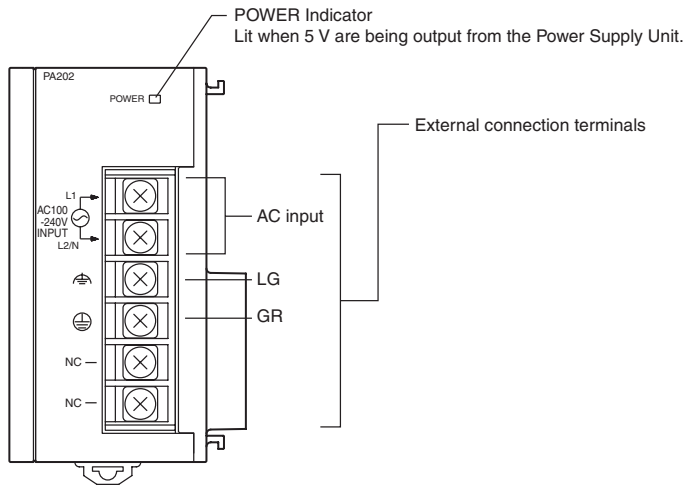
CJ1W-PA205R



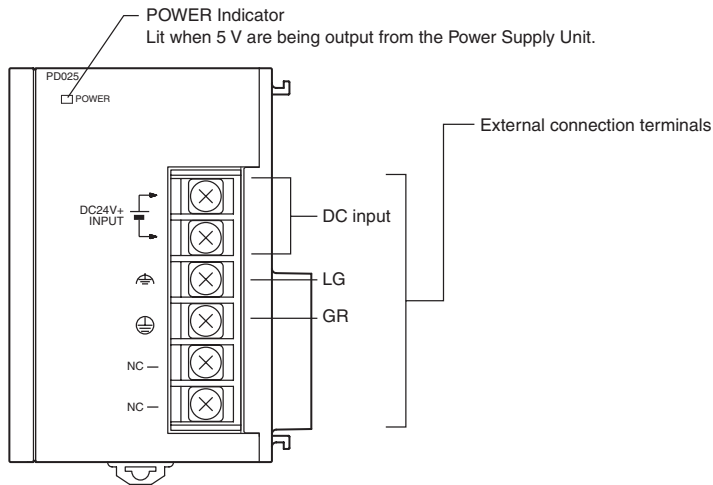
CJ1W-PA205C



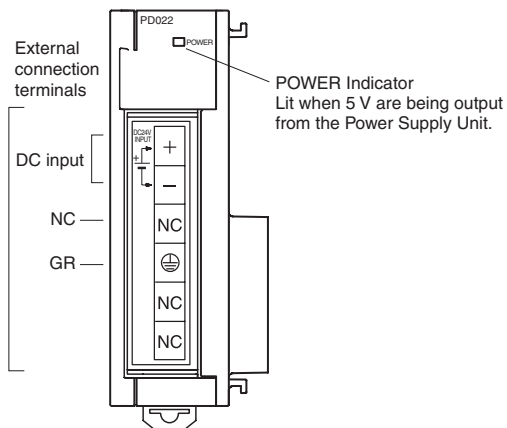
CJ1W-PA202



CJ1W-PD025



CJ1W-PD022



AC Input

Supply 100 to 240 V AC (allowable: 85 to 264 V AC). (Voltage selection is not required.)

DC Input

Supply 24 V DC.

| Model | Allowable power supply voltage fluctuation range |
|------------|--|
| CJ1W-PD025 | 19.2 to 28.8 VDC ($\pm 20\%$) |
| CJ1W-PD022 | 21.6 to 26.4 VDC ($\pm 10\%$) |

LG

Ground to a resistance of 100 Ω or less to increase noise resistance and avoid electric shock.

GR

Ground to a resistance of 100 Ω or less to avoid electric shock.

RUN Output (CJ1W-PA205R Only)

The internal contact turns ON when the CPU Unit is operating (RUN or MONITOR mode). The Power Supply Unit must be in the CPU Rack to use this output.

Alarm Output (CJ1W-PA205C Only)

The alarm output is used to notify when Power Supply Unit replacement is required. The output is normally ON. The output turns OFF when the time until replacement is 6 months or less.

Wiring

Wire

For AC/DC power supply

| | |
|-----------------------|--|
| Recommended wire size | AWG14 to 20 (0.517 to 2.08mm ²) |
|-----------------------|--|

For grounding wire

| | |
|-----------------------|------------------------|
| Recommended wire size | 2 mm ² min. |
|-----------------------|------------------------|

For alarm output

| Recommended wire size | Use | Pushing strength (clamping operation) | Pulling strength (holding force) | Length of stripped section |
|---|---|---------------------------------------|----------------------------------|----------------------------|
| AWG 22 to 18 (0.32 to 0.82 mm ²) | Connecting to PLC terminal block models | 30 N max. | 30 N min. | 7 to 10 mm |
| AWG 28 to 24 (0.08 to 0.2 mm ²) | Connecting to PLC connector models | | 10 N min. | |

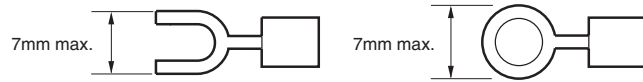
Crimp Terminals

The terminals on the Power Supply Unit are M4, self-raising terminals with screws. Use crimp terminals for wiring.

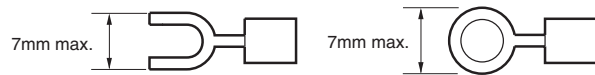
Crimp terminal for the AC power supply



Crimp terminal for the DC power supply



Crimp terminal for the grounding wire



The crimp terminal is not required for the alarm output.

Checking Current Consumption and Power Consumption

After selecting a Power Supply Unit based on considerations such as the power supply voltage, calculate the current and power requirements for each Rack.

Condition 1: Current Requirements

There are two voltage groups for internal power consumption: 5 V and 24 V.

Current consumption at 5 V (internal logic power supply)

Current consumption at 24 V (relay driving power supply)

Condition 2: Power Requirements

For each Rack, the upper limits are determined for the current and power that can be provided to the mounted Units. Design the system so that the total current consumption for all the mounted Units does not exceed the maximum total power or the maximum current supplied for the voltage groups shown in the following tables.

The maximum current and total power supplied for CPU Racks and Expansion Racks according to the Power Supply Unit model are shown below.

Note: 1. For CPU Racks, include the CPU Unit current and power consumption in the calculations. When expanding, also include the current and power consumption of the I/O Control Unit in the calculations.

2. For Expansion Racks, include the I/O Interface Unit current and power consumption in the calculations.

| Power Supply Units | Max. current supplied | | Max. total power supplied |
|--------------------|-----------------------|------------------------------|---------------------------|
| | 5 V | 24 V (relay driving current) | |
| CJ1W-PA205R | 5.0 A | 0.8 A | 25 W |
| CJ1W-PA205C | 5.0 A | 0.8 A | 25 W |
| CJ1W-PA202 | 2.8 A | 0.4 A | 14 W |
| CJ1W-PD025 | 5.0 A | 0.8 A | 25 W |
| CJ1W-PD022 | 2.0 A | 0.4 A | 19.6 W |

Conditions 1 and 2 below must be satisfied.

Condition 1: Maximum Current

(1) Total Unit current consumption at 5 V \leq (A) value

(2) Total Unit current consumption at 24 V \leq (B) value

Condition 2: Maximum Power

(1) \times 5 V + (2) \times 24 V \leq (C) value

Example: Calculating Total Current and Power Consumption

Example: When the Following Units are Mounted to a CJ-series CPU Rack Using a CJ1W-PA202 Power Supply Unit

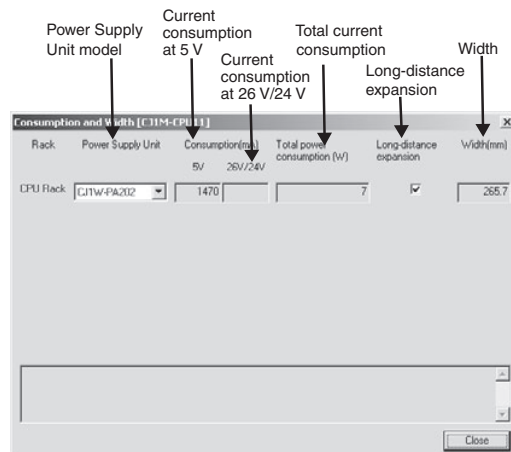
| Unit type | Model | Quantity | Voltage group | |
|-----------------------------------|-------------|----------|--|---|
| | | | 5 V | 24 V |
| CPU Unit | CJ1G-CPU45H | 1 | 0.910 A | – |
| I/O Control Unit | CJ1W-IC101 | 1 | 0.020 A | – |
| Basic I/O Units (Input Units) | CJ1W-ID211 | 2 | 0.080 A | – |
| | CJ1W-ID231 | 2 | 0.090 A | – |
| Basic I/O Units (Output Units) | CJ1W-OC201 | 2 | 0.090 A | 0.048 A |
| Special I/O Unit | CJ1W-DA041 | 1 | 0.120 A | – |
| CPU Bus Unit | CJ1W-CLK23 | 1 | 0.350 A | – |
| Current consumption | Total | | $0.910 + 0.020 + 0.080 \times 2 + 0.090 \times 2 + 0.090 \times 2 + 0.120 + 0.350$ | $0.048 \text{ A} \times 2$ |
| | Result | | 1.92 A ($\leq 2.8 \text{ A}$) | 0.096 A ($\leq 0.4 \text{ A}$) |
| Power consumption | Total | | $1.92 \times 5 \text{ V} = 9.60 \text{ W}$ | $0.096 \text{ A} \times 24 \text{ V} = 2.304 \text{ W}$ |
| | Result | | $9.60 + 2.304 = 11.904 \text{ W} (\leq 14 \text{ W})$ | |

Note: For details on Unit current consumption, refer to Ordering Information.

Using the CX-Programmer to Display Current Consumption and Width

CPU Rack and Expansion Rack current consumption and width can be displayed by selecting Current Consumption and Width from the Options Menu in the CS/CJ/CP Table Window. (The width can be displayed for the CJ/CP Series only.) If the capacity of the Power Supply Unit is exceeded, it will be displayed in red characters. For details, refer to the CX-Programmer Operation Manual (Cat. No. W446).

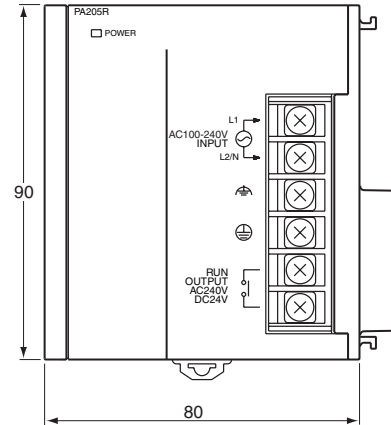
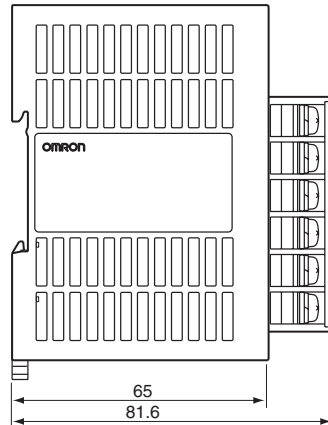
Example:



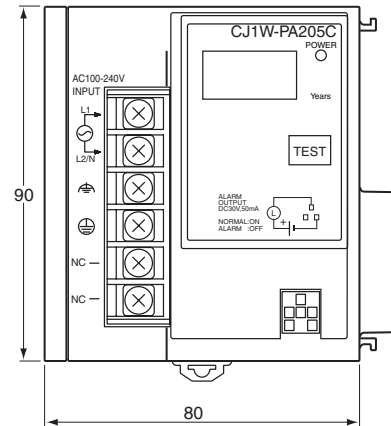
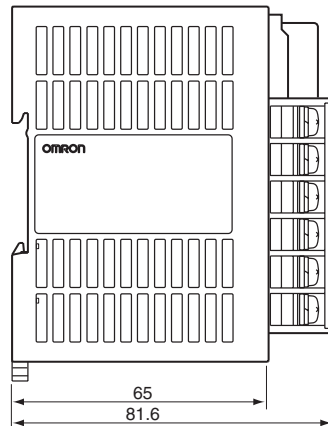
Dimension

(Unit: mm)

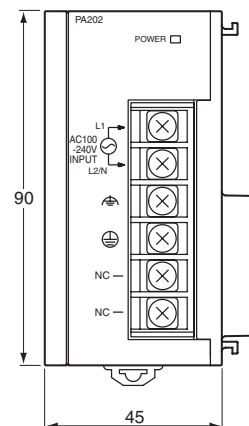
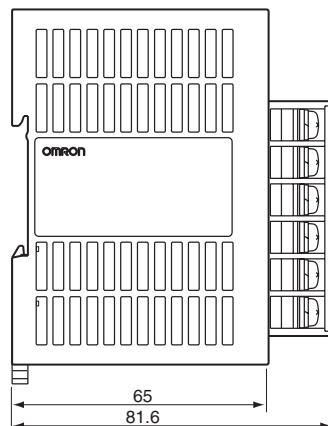
CJ1W-PA205R



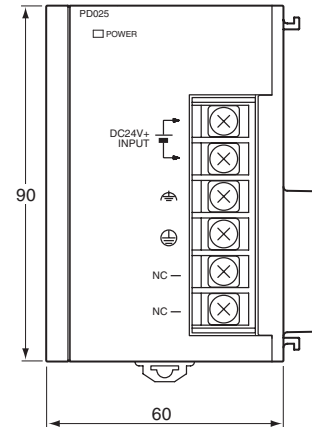
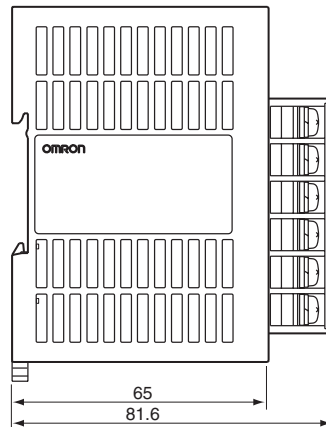
CJ1W-PA205C



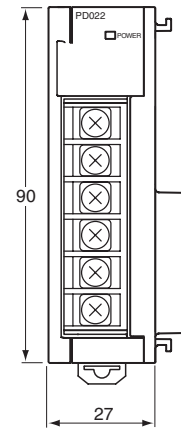
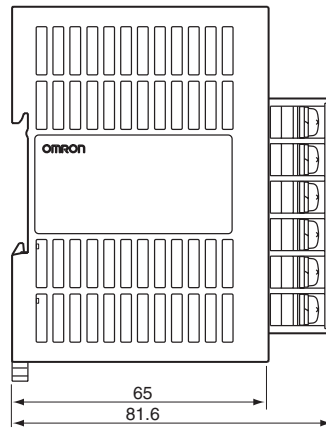
CJ1W-PA202



CJ1W-PD025



CJ1W-PD022



Related Manuals

| Cat. No. | Name | Contents |
|----------|---|---|
| W393 | SYSMAC CJ Series CJ1H-CPU□□H-R, CJ1G/H-CPU□□H, CJ1G-CPU□□P, CJ1G-CPU□□, CJ1M-CPU□□ Programmable Controllers Operation Manual | Provides an outlines of and describes the design, installation, maintenance, and other basic operations for the CJ-series PLCs. |

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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.

Certain Precautions on Specifications and Use

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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