CJ-series Power Supply Unit
CJ1W-PA/PD

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.

OMRON

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Ordering Information

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.

Power Supply Units

Product name		Power supply voltage	Output capacity			Options			Model	Standards
			5-VDC output capacity	24-VDC output capacity	Total power consumption	24-VDC service power supply	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	**CJ1W-PA202**	
DC Power Supply Unit		24 VDC	5A	0.8 A	25 W		No	No	**CJ1W-PD025**	
			2 A	0.4 A	19.6 W		No	No	**CJ1W-PD022**	UC1, CE

Note: This unit cannot be used with the Machine Automation Controller NJ-series.

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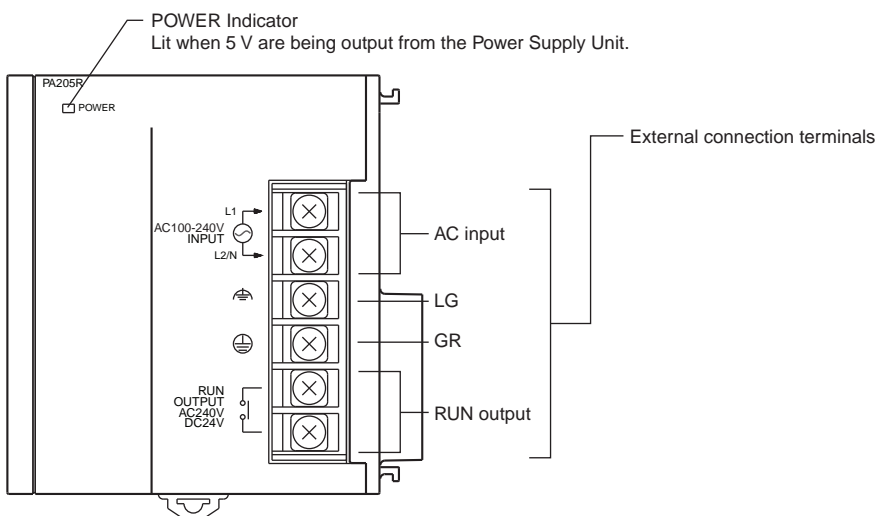
Specifications

Item	Specifications				
Model	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	
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 min 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 min 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 min 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/s² 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/s², 3 times in X, Y, and Z directions (100 m/s² 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 *5	−20 to 75°C (excluding battery)		
Grounding	Less than 100 Ω				
Enclosure	Mounted in a panel.				
Weight	350 g max.	400 g max.	200 g max.	335 g max.	130 g max.

Item	Specifications				
Model	**CJ1W-PA205R**	**CJ1W-PA205C**	**CJ1W-PA202**	**CJ1W-PD025**	**CJ1W-PD022**

CPU Rack dimensions	90.7 to 466.7 × 90 × 65 mm (W × H × D) (not including cables)
	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 *8; CJ1M-CPU2□ = 49 *8
	    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.

*8. Final order entry date for CJ1M :The end of March, 2021
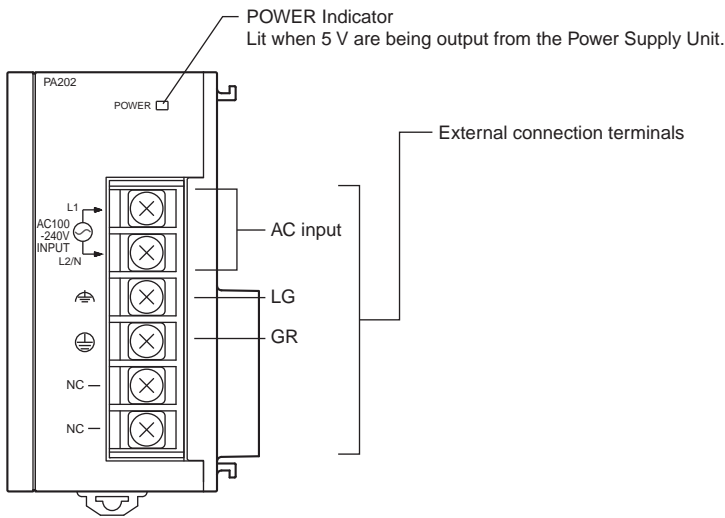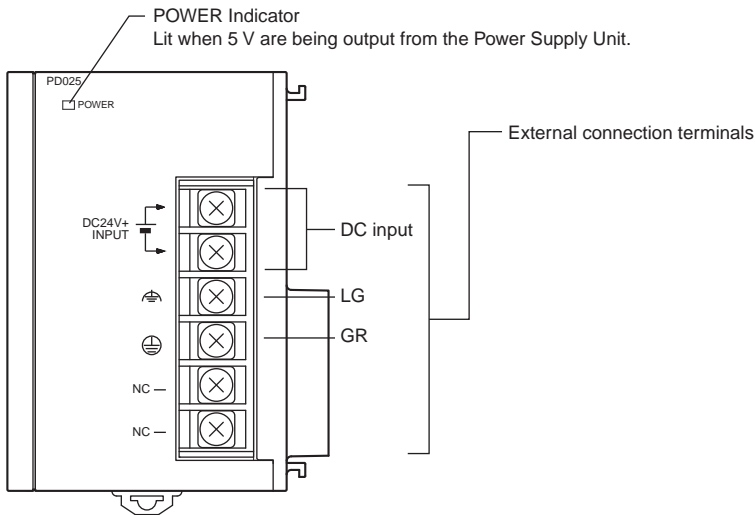
External Interface

CJ1W-PA205R

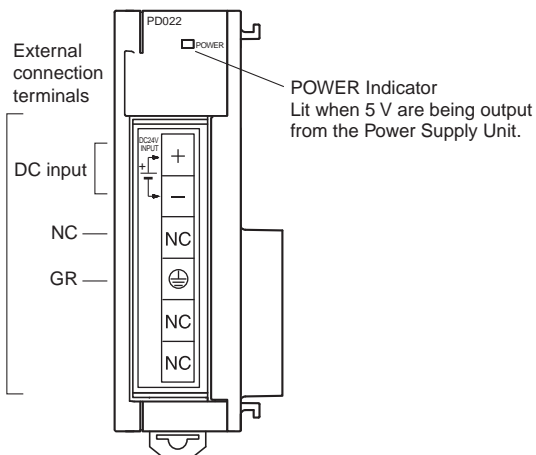POWER Indicator
Lit when 5 V are being output from the Power Supply Unit.

External connection terminals

PA205R
POWER

AC100-240V INPUT
L1
L2/N

AC input

LG

GR

RUN OUTPUT AC240V DC24V

RUN output

CJ1W-PA205C

Replacement notification display

Terminals external connect

CJ1W-PA205C
POWER

FUL

Years

POWER indicator
Lit: 5-V output from Power Supply Unit.

AC100-240V INPUT
L1
L2/N

AC input

LG

GR

NC

NC

TEST

TEST switch
The TEST switch can be used to temporarily turn OFF the alarm output that notifies when replacement is needed.

ALARM OUTPUT DC30V,50mA
NORMAL:ON ALARM :OFF

Alarm output
(replacement notification output)

CJ1W-PA202

POWER Indicator
Lit when 5 V are being output from the Power Supply Unit.

External connection terminals

PA202

POWER

L1
AC100
-240V
INPUT
L2/N

AC input

LG

GR

NC

NC

CJ1W-PD025

POWER Indicator
Lit when 5 V are being output from the Power Supply Unit.

PD025

POWER

External connection terminals

DC24V+
INPUT

DC input

LG

GR

NC

NC

CJ1W-PD022

PD022

POWER

External
connection
terminals

POWER Indicator
Lit when 5 V are being output
from the Power Supply Unit.

DC input

DC24V
INPUT

+

−

NC

NC

GR

NC

NC

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 (±20%)
CJ1W-PD022	21.6 to 26.4 VDC (±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

7mm max.

Crimp terminal for the DC power supply

7mm max.   7mm max.
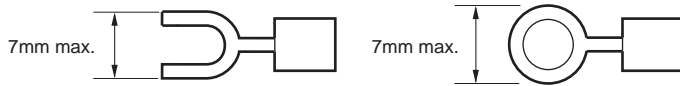
Crimp terminal for the grounding wire

7mm max.   7mm max.

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	CJ1M-CPU13 *1	1	0.580 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		$0.580 + 0.020 + 0.080 \times 2 + 0.090 \times 2 + 0.090 \times 2 + 0.120 + 0.350$	$0.048 \text{ A} \times 2$
	Result		1.59 A (≤ 2.8 A)	0.096 A (≤ 0.4 A)
Power consumption	Total		$1.59 \times 5 \text{ V} = 7.95 \text{ W}$	$0.096 \text{ A} \times 24 \text{ V} = 2.304 \text{ W}$
	Result		7.95 + 2.304 = 10.254 W (≤ 14 W)	

Note: For details on Unit current consumption, refer to Ordering Information.
*1. Final order entry date:The end of March, 2021

Using the CX-Programer 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

CJ1W-PA205R

65
81.6

PA205R
POWER
AC100-240V INPUT
L1
L2/N
RUN
OUTPUT
AC240V
DC24V
90
80

CJ1W-PA205C

65
81.6

CJ1W-PA205C
POWER
AC100-240V INPUT
L1
L2/N
NC
NC
Years
TEST
ALARM
OUTPUT
DC30V,50mA
NORMAL:ON
ALARM :OFF
90
80

CJ1W-PA202

65
81.6
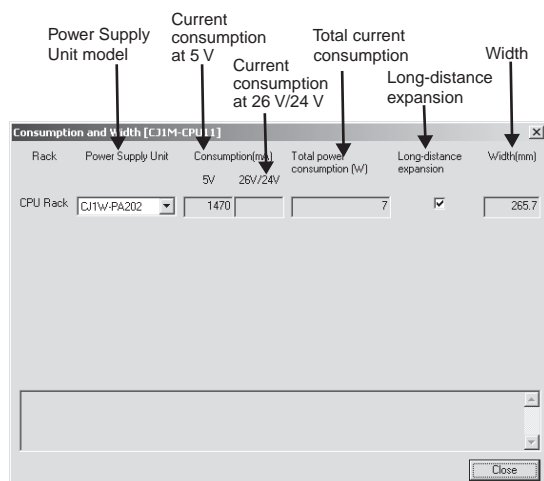
PA202
POWER
AC100-240V INPUT
L1
L2/N
NC
NC
90
45
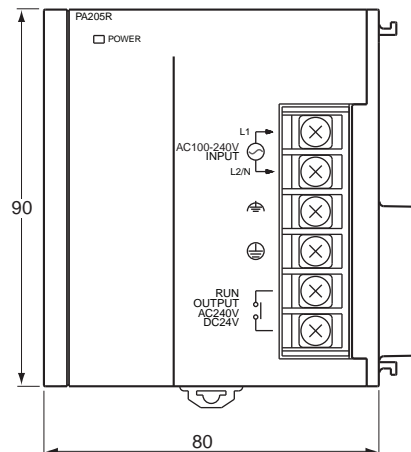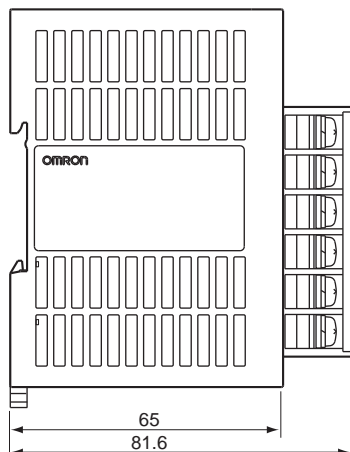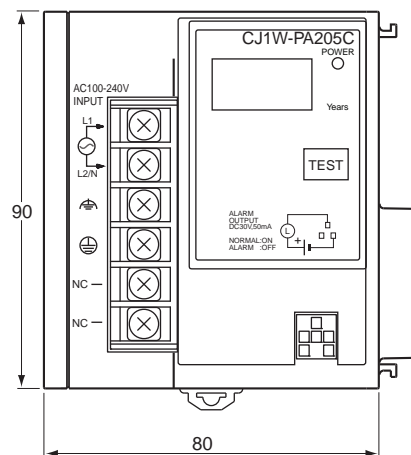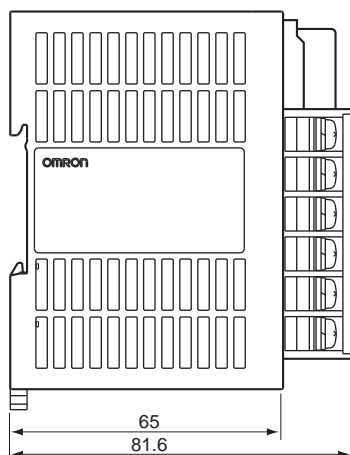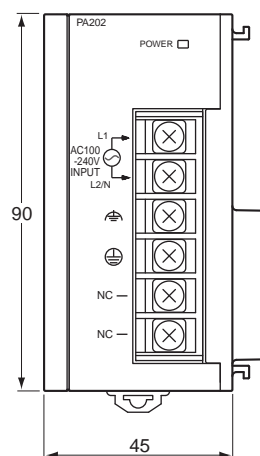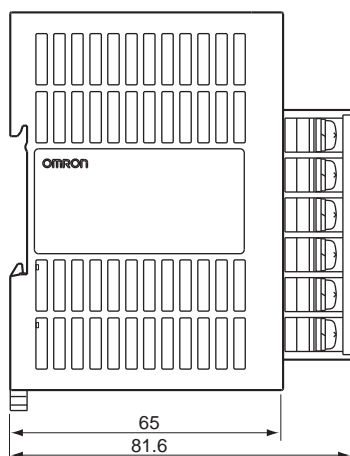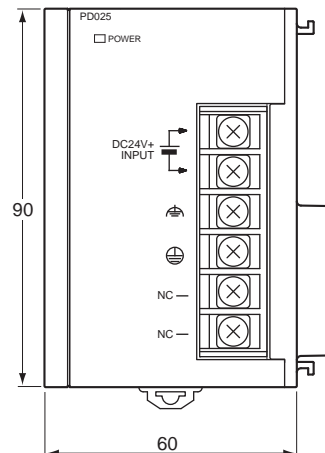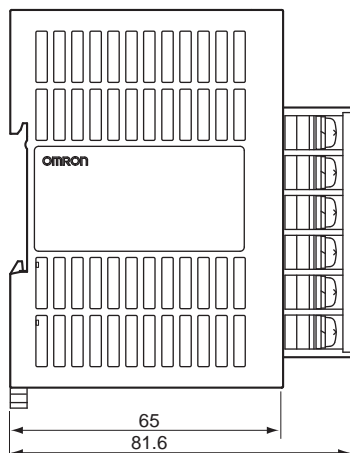
CJ1W-PD025

CJ1W-PD022
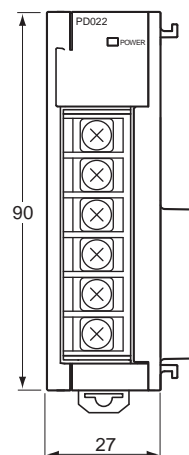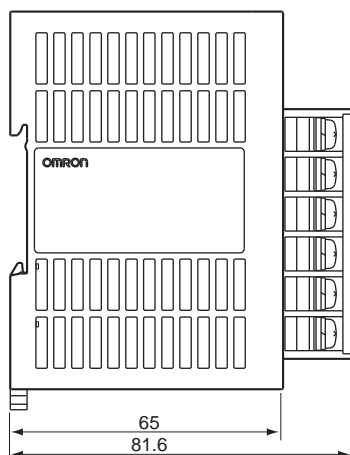
Related Manuals

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.

Terms and Conditions Agreement