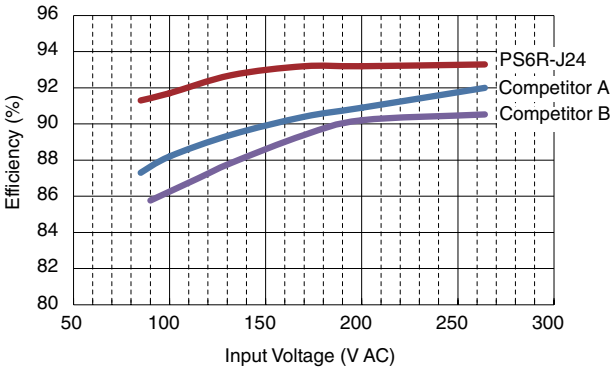
New Series

PS6R 480W Switching Power Supply

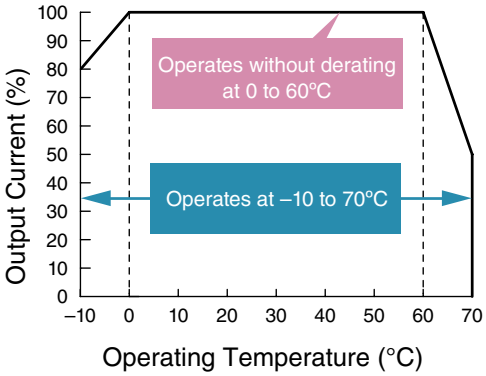
Reduced size and high efficiency cuts operating costs.

Energy-saving 93% Efficiency



Space-saving 85mm wide

Wide Operating Termperature Range



Easily Expandable

DC-DC Converter Unit

In addition to the single output, an additional 10W output can be added. (See Note 1 on page 2.)

Branch Terminal Unit

Two terminals can be added. No wiring is required, reducing installation space.

Easy Maintenance - LED Indicator

Status	Normal	Overload or Input Voltage Low*	Output short-circuit	Output OFF
DC ON (green LED)	☀	☀	●	●
DC Low (amber LED)	●	☀	☀	●

*The LEDs turn on when the input voltage drops.

PS6R Switching Power Supplies

High-power and space-saving switching power supplies.
93% efficiency reduces operation costs.

- Input voltage: 100 to 240V AC
  (voltage range: 85 to 264V AC/110 to 350V DC)
- The terminals are captive spring-up screws. Ring or fork terminals can be used.
- Finger-safe prevents electric shocks.
- Panel mounting bracket and side-mounting panel mounting bracket. Can be attached to a DIN rail or directly to a panel surface.
- CE marking (LVD, EMCD)
- UL508, c-UL (CSA C22.2 No.107.1), TÜV (EN60950-1, EN50178).
- EN61204-3 (Electromagnetic compatibility Class B)


DC-DC Converter Unit


Branch Terminal Unit

Applicable Standards	Mark	File No. or Organization
UL508 CSA C22.2 No. 107.1	c UL us LISTED	UL/c-UL Listed File No. E177168
EN60950-1 EN50178 EN61204-3	TÜV	TÜV SÜD
	CE	EU Low Voltage Directive EMCD

Part Numbers

PS5R

Package Quantity: 1

Output Capacity*	Part No.	Input Voltage	Output Voltage	Output Current
480W	**PS6R-J24**	100 to 240V AC	21.6 to 26.4V	20A

*Output voltage × output current ≤ output capacity

Accessories

Package Quantity: 1

Item	Part No.	Note
DC-DC Converter Unit [1]	PS9Z-6RM1	Output: +5V, 2A, 10W
	PS9Z-6RM2	Output: +12V, 1A, 12W
	PS9Z-6RM5	Output: +5V, 1A/+12V, 0.5A, 11W
Branch Terminal Unit [2]	PS9Z-6RS1	Additional screw terminals for wiring: 2 + terminals / 2 - terminals
Panel Mounting Bracket	PS9Z-6R1F	
Side-mount Panel Mounting Bracket	PS9Z-6R2F	Supplied with M3 × 6 countersunk mounting screws
DIN Rail	BNDN1000	1,000mm
DIN Rail End Clip	BNL5	

1. When using a DC-DC converter unit, reduce 1A from the output current of PS6R.
2. When using a branch terminal unit, the total voltage/current of PS6R and the branch terminal unit should not exceed the rated current/voltage of PS6R.

Reference Value

Expected Life	8 years (70,000 hours) minimum (at the rated input, duty ratio 50%, operating temperature +40°C, standard mounting direction)

Calculation of the expected life is based on the life of the aluminum electrolytic capacitor. The expected life is subject to operating conditions.

Specifications

PS6R

Part No.			PS6R-J24
Input	Input Voltage		100 to 240V AC (Voltage range: 85 to 264V AC/110 to 350V DC) (Load ≤ 80% at 85 to 100V AC, 110 to 140V DC) (Note 1)
	Frequency		50/60Hz
	Input Current	100V AC	5.5A typ.
		230V AC	2.3A typ.
	Inrush Current	100V AC	9A max. (Ta=25°C, 100V AC cold start)
		230V AC	20A max. (Ta=25°C, 230V AC cold start)
	Leakage Current	120V AC	0.5mA max.
		230V AC	1mA max.
	Efficiency (Typical)	100V AC	91%
		230V AC	93%
	Power Factor (Typical)	100V AC	0.98
		230V AC	0.97
Output	Rated Voltage/Current		24V/20A
	Adjustable Voltage Range		±10%
	Output Holding Time		20ms min. (at rated input and output)
	Start Time		800ms max. (at rated input and output)
	Rise Time		200ms max. (at rated input and output)
	Regulation	Total Fluctuation	±5% max.
		Input Fluctuation	0.4% max.
		Load Fluctuation	0.6% max.
		Temperature Change	0.05%/oC max. (–10 to +60°C)
		Ripple (including noise)	1% p-p max. (0 to +60°C)
			1.5% p-p max. (–10 to 0°C)

Supplementary Functions	Overcurrent Protection	105 to 120% (auto reset) (output current when voltage drops by 5%)
	Overvoltage Protection	Output off at 120% (Note 2)
	Operation Indicator	LED (green)
	Voltage Low Indication	LED (amber)
Dielectric Strength	Between input and output terminals	3000V AC, 1 minute
	Between input and ground terminals	2000V AC, 1 minute
	Between output and ground terminals	500V AC, 1 minute
Insulation Resistance		100MΩ min. 500V DC megger (between input and output terminals/between input and ground terminals) (at room temperature and normal humidity)
Operating Temperature		–10 to +70°C (no freezing) (Note 3)
Operating Humidity		20 to 90% RH (no condensation)
Storage Temperature		–25 to +75°C (no freezing)
Storage Humidity		20 to 90% RH (no condensation)
Vibration Resistance		10 to 55 Hz, amplitude 0.375 mm (0.187mm using PS9Z-6R1F) 2 hours each in 3 axes, 6 directions
Shock Resistance		300 m/s² (150 m/s² when using a PS9Z-6R1F panel mounting bracket)
EMC	EMI	EN61204-3 (Class B)
	EMS	EN61204-3 (industrial)
Degree of Protection		IP20 (IEC 60529)
Weight (approx.)		1400g
Terminal Screw		M3.5 (See last page for wire size.)

Note 1: DC input voltage is not subjected to safety standards.
Note 2: One minute after the output has been turned off, turn on the input again.
Note 3: See the output derating curves.

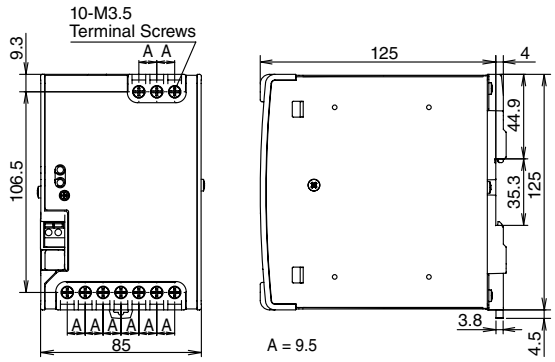
Accessories (For use with PS6R)

Part No.			DC-DC Converter Unit			Branch Terminal Unit
			PS9Z-6RM1	PS9Z-6RM2	PS9Z-6RM5	PS9Z-6RS1
Input Voltage			24V DC			
Output Capacity			10W max.	12W max.	11W max.	—
Output	Rated Voltage/Current		5V/2A	12V/1A	5V/1A, 12V/0.5A	24V/10A max. (Note 1)
	Adjustable Voltage Range		Not available			
	Voltage Accuracy		±5% max.			—
	Start Time		200 ms max. (at rated input and output)			—
	Regulation	Input Fluctuation	0.5% max.			—
		Load Fluctuation	1.0% max.			
		Temperature Change	0.05%/max. (–10 to +60°C)			
		Ripple (including noise)	100mV max.	150mV max.	100mV max., 150mV max.	
Supplementary Functions	Overcurrent Protection		105% (auto reset)			—
	Overvoltage Protection		Output off at 120% (Note 2)			
Operating Temperature			–10 to +70°C (no freezing) (Note 3)			
Operating Humidity			20 to 90%RH (no condensation)			
Storage Temperature			–25 to +75°C (no freezing)			
Storage Humidity			20 to 90% RH (no condensation)			
Vibration Resistance			10 to 55 Hz, amplitude 0.375 mm, 2 hours each in 3 axes, 6 directions (in combination with PS6R-J24)			
Shock Resistance			300 m/s² (150 m/s² when using a PS9Z-6R1F panel mounting bracket), 3 shocks each in 6 axes (in combination with PS6R-J24)			
EMC	EMI		EN61204-3 (Class B) (in combination with PS6R-J24)			—
	EMS		EN61204-3 (industrial) (in combination with PS6R-J24)			
Safety Standards			UL508 (Listing), CSA C22.2 No.107.1, IEC/EN60950-1, EN50178 (in combination with PS6R-J24)			
Degree of Protection			IP20 (IEC 60529)			
Weight (approx.)			90g			30g
Terminal Screw			M3.5 (See last page for wire size.)			

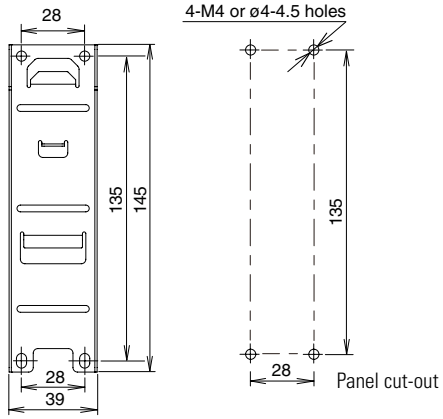
Note 1: Ensure that the current does not exceed the rated current of the PS6R.
Note 2: Repair is needed when output drops due to overvoltage protection. Contact IDEC.
Note 3: See the output derating curves.

Dimensions (mm)

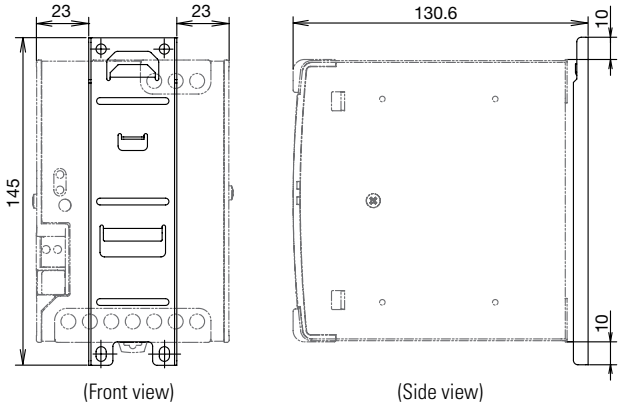
PS6R-J24



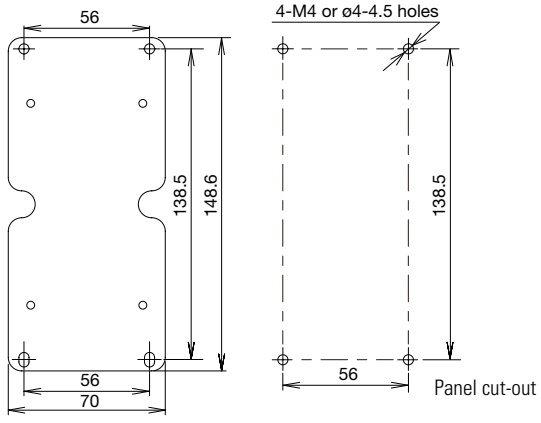
PS9Z-6R1F Panel Mounting Bracket



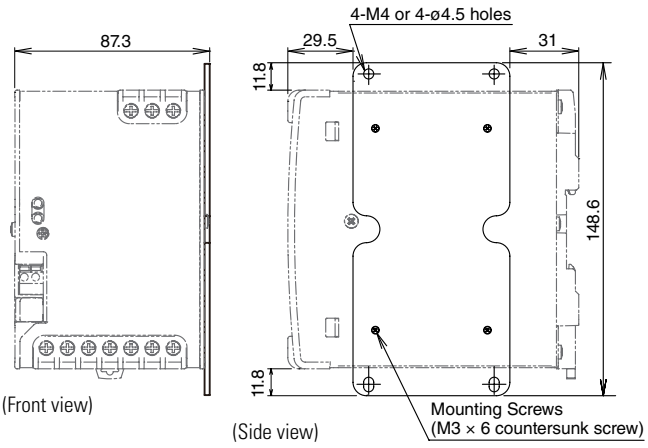
When a PS9Z-6R1F is installed on PS6R



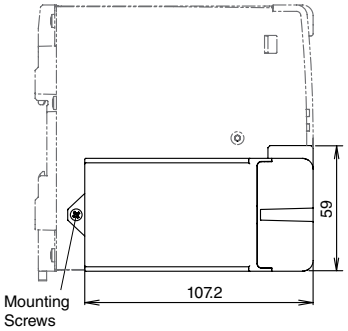
PS9Z-6R2F
Side-mount Panel Mounting Bracket



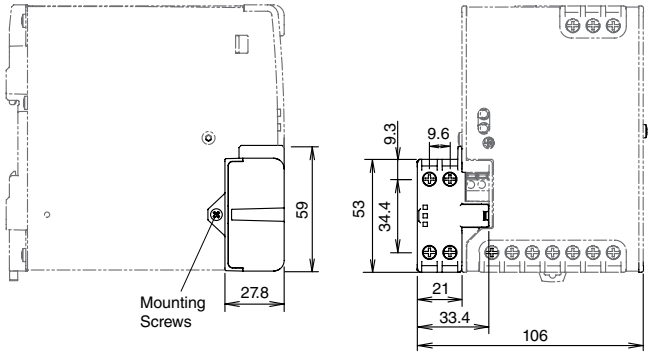
When a PS9Z-6R2F is installed on PS6R



When using a PS9Z-6RM∗
DC-DC Converter Unit

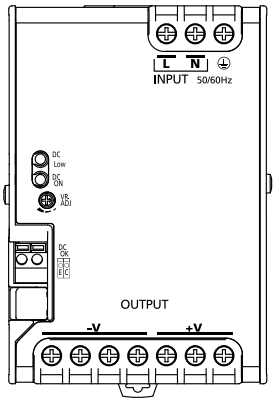


When using a PS9Z-6RS1
Branch Terminal Unit

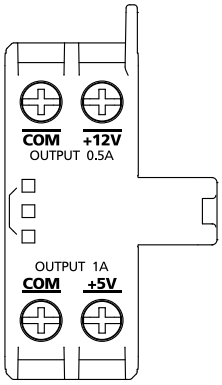


Parts Description

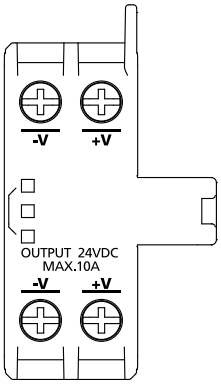
PS6R-J24



PS6R-6RM∗
DC-DC Converter Unit



PS6R-6RS1
Branch Terminal Unit



(PS6R-6RM5 shown)

PS6R-J24/PS9Z-6RS1

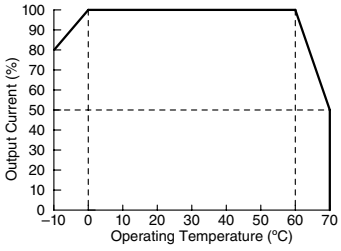
Marking	Name	Description
L, N	Input Terminal	Voltage range: 85 to 264V AC/110 to 350V DC
⏚	Ground Terminal	Be sure to connect this terminal to a proper ground.
+V, –V	DC Output Terminals	+V: Positive output terminal –V: Negative output terminal
VR.ADJ	Output Voltage Adjustment	Allows adjustment within ±10%. Turning clockwise increases the output voltage.
DC ON	Operation Indicator (green)	Lights on when the output voltage is on.
DC LOW	Output Low Indicator (Amber)	Lights on when the output voltage drops approximately 80% of the rated value.
DC OK	DC OK Output	Lights on when the output voltage is more than 80% of the rated value. NPN transistor output (50V DC max., 50 mA max.)

PS9Z-6RM□

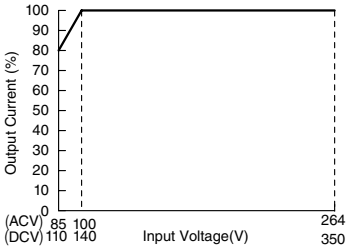
Marking	Name	Description
+5V, +12V	DC Output Terminal	+5V side, +12V side
COM	DC Output Terminal	0V side (wired internally to –V of PR6R-J24)

Characteristics

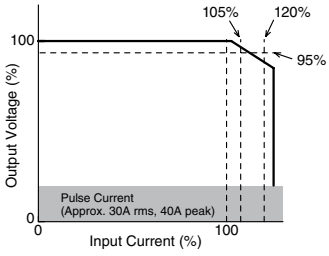
Operating Temperature vs.
Output Current (Derating Curves)



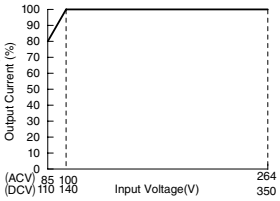
Output Current vs. Input Voltage
(Derating Curves) PS9Z-J24
(Ta=25°C)



Overcurrent Protection Characteristics
PS6R-J24



Overcurrent Protection
Characteristics PS9Z-6RM∗



Operating Temperature approved by Safety Standards

Part No.	UL508, CSA C22.2 No. 107. 1	EN60950-1, EN50178
PS6R-J24	55°C	60°C
PS9Z-6R□□	55°C	60°C

Operating Instructions

The PS6R should be placed in a proper enclosure. It is designed to be used with general electrical equipment and industrial electric devices.

Operation Notes

1. Output interruption may indicate blown fuses. Contact IDEC.
2. The PS6R contains an internal fuse for AC input. When using DC input, install an external fuse or DC input. To avoid blown fuses, select a fuse in consideration of the rated current of the internal fuse.

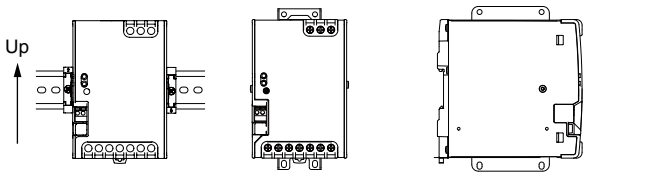
Rated Current of Internal Fuses

Part No.	Internal Fuse Rated Current
PS6R-J24	10A

- Avoid overload and short-circuit for a long period of time, otherwise internal elements may be damaged.
- DC input operation is not subjected to safety standards.

Installation Notes

- The PS6R can be installed in the direction shown below only.



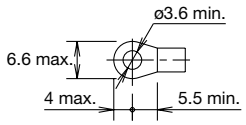
Vertical | When using PS9Z-6R1F Panel Mounting Bracket | When using PS9Z-6R2F Side-mount Panel Mounting Bracket

- Do not close the top and bottom openings of the PS6R to allow for heat radiation by convection.
- Maintain a minimum of 20mm clearance around the PS6R, except for the top and bottom openings.
- When derating of the output does not work, provide forced air-cooling.
- Make sure to wire the ground terminal correctly.
- For wiring, use wires with heat resistance of 60°C or higher. Use copper wire of the following sizes.

  AWG18 to 14 (cross section 0.75 to 2.0 mm^2), 2-wire (solid/stranded) or AWG12 (cross section 3.3 mm^2), 1-wire (solid/stranded) with UL-approved crimp terminal

  Note: Wires of the above size must be used to comply with UL508, CSA C22.2 No. 107.1.

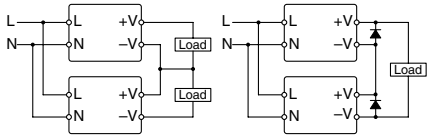
Applicable Crimp Terminal (reference)



- Recommended tightening torque of the input and output terminals is 0.8N·m.
- The output voltage can be adjusted within ±10% of the rated output voltage by using the V.ADJ control. Note that overvoltage protection may work when increasing the output voltage.
- When large shocks or heavy vibrations on the PS6R are expected, the use of DIN rail or PS9Z-6R2F side-mount panel mounting bracket is recommended.

Series Operation

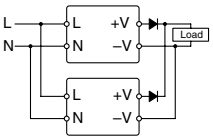
The following series operation is allowed. Connect Schottky barrier diodes as shown below. DC-DC converter unit cannot be connected in series.



Select a Schottky diode in consideration of the rated current. The diode's reverse voltage must be higher than the PS6R's output voltage.

Parallel Operation

Parallel operation is possible to increase the output capacity.
DC-DC converter unit cannot be connected in series.



When increasing the capacity, observe the following.

1. Maintain the operating temperature below 40°C.
2. Output cannot be connected directly in parallel operation. Connect a diode to the output of each PS6R.
3. Output terminal voltage of both power supplies must be the same. Also, maintain the voltage difference between the power supplies below 30mV.
4. Use load lines of the same diameter and length.
5. Set the output voltage higher for the amount of diode forward voltage drop.
6. Turn on the inputs at the same time.
7. Select a diode in consideration of:
   Diode's reverse voltage must be higher than the PS6R's output voltage.
   Diode's current must be three times the PS6R's output current. Provide a heat sink for heat dissipation.

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