

INSTRUCTION SHEET

Switching Power Supply

PS3V Series

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation.

Safety Precautions

In this instruction sheet, safety precautions are categorized in order of importance to Warning and Caution :

WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

WARNING

Do not use the switching power supply on control equipment in aircraft, trains, and atomic equipment where malfunction of the switching power supply may cause severe personal injury or threaten human life. These switching power supplies are designed for use on general electronic equipment such as office equipment, communication equipment, instrumentation equipment, and industrial control equipment.

Make sure that the operating conditions satisfy the values described in the catalog. Confirm the specification values before designing the equipment to use the switching power supply and before supplying power. Contact IDEC if you have any question.

Do not modify or repair the switching power supply. Modification or repairing of the switching power supply by users may cause electrical shocks, damage, fire, malfunction, and other heavy accidents.

Do not install the switching power supply where a human body may come into contact while power is supplied to the switching power supply. Do not touch the switching power supply during operation or immediately after turning off because some parts are at a high voltage, causing electrical shocks. The PS3V switching power supplies are designed for installation in a cabinet.

Do not connect the output terminals or output lead wires together. Fire or damage may result.

Include a protection in the equipment using the switching power supply in consideration of malfunction or damage of the load in case the switching power supply should fail. If the switching power supply should fail, a very high voltage drop may occur at the output terminals.

Turn power off before wiring the switching power supply. Make sure of correct wiring. Incorrect wiring may cause electrical shocks or damage.

For IT power distribution systems, make sure to install an external fuse into (N) AC input terminal for protect the N line.

CAUTION

Make sure of the correct input voltage. Incorrect input voltage may cause blown fuses, fuming, or fire. Make sure of correct polarity of input and output terminals before supplying power to the switching power supply.

HOT SURFACE - Do not touch the switching power supply during operation or immediately after turning off because some parts are heated, causing burns.

Do not touch any part inside the switching power supply. Prevent foreign objects from entering into the housing of the switching power supply. If the internal parts are touched by hand or foreign objects such as a paper clip or screw entering into the housing, accidents or damage may occur.

Observe the temperature derating. The operating temperature is the temperature around the switching power supply. Use the switching power supply within the temperature derating curve. Otherwise, the internal temperature will rise and damage may be caused.

Do not turn the output voltage adjustment beyond the limits. Otherwise, the switching power supply may be deteriorated and damage may be caused.

When damage or malfunction should occur during operation, immediately turn power off and stop the switching power supply. Contact IDEC.

Do not use or store the switching power supply in environments subjected to a large amount of vibrations or shocks. Otherwise, damage may be caused.

Do not install the switching power supply in environments exposed to direct sunlight, iron particles, oil splashes, chemicals, and hydrogen sulfide. Do not use the switching power supply in humid places such as basements or greenhouses or in low-temperature places such as in freezers or in front of cooler outlet.

1 Safety Standard Conditions

Applicable standards: UL62368-1, CSA C22.2 No. 62368-1-14, IEC/EN62368-1

Ambient operating temperature : Mounting A : 50deg. C, Mounting B : 40deg. C

EMC: EN61204-3 CLASS B (EMI)

EN61204-3 INDUSTRIAL (EMS)

2 Conditions

Operating temperature : -25 to +70°C (without freezing, see output derating), Indoor use only

Storage temperature : -25 to +75°C (without freezing)

Operating humidity : 20 to 90% RH (without condensation)

Storage humidity : 20 to 90% RH (without condensation)

Altitude :Up to 2000m above sea level

Overvoltage category : II

Pollution degree : 2

3 Rating

Use the switching power supply with the output wattage within the values shown below.

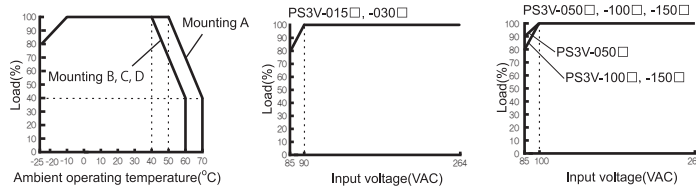
Type	Input Voltage V AC	Input Current A	Input Frequency Hz	Output voltage V DC	Output Current Max. A	Output Wattage Max. W	
PS3V-015AF05C	100 - 240	0.32-0.2	47 - 63	4.5 - 5.5	3.0	15	
PS3V-015AF12C				10.8 - 13.2	1.3	15.6	
PS3V-015AF24C				21.6 - 26.4	0.63	15.1	
PS3V-030AF05C		0.66-0.35		4.5 - 5.5	6.0	30	
PS3V-030AF12C				10.8 - 13.2	2.5	30	
PS3V-030AF24C				21.6 - 26.4	1.3	31.2	
PS3V-050AF12C		1.1-0.6		10.8 - 13.2	4.5	54	
PS3V-050AF24C				21.6 - 26.4	2.3	55.2	
PS3V-100AF24C		1.3-0.6		21.6 - 26.4	4.5	108	
PS3V-150AF24C		1.9-0.9		21.6 - 26.4	6.5	156	

Leakage current : 0.5mA max. (120V AC), 1.0mA max. (240V AC)

4 Output Derating

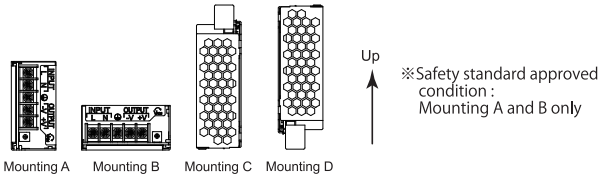
Use the power supply according to Output derating in the [Fig.1] and [Fig.2].

① Ambient operating temperature derating ② Input voltage derating(Ta=25°C)



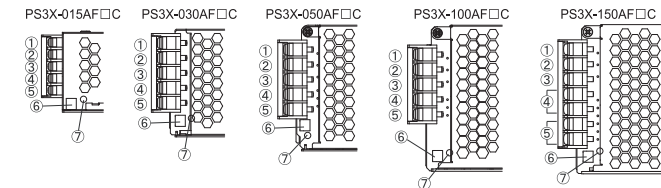
Ambient operating temperature is measured around the Power supply.

[Fig.1 Output Derating]



[Fig.2 Mounting Direction]

5 Terminal Marking and Description



- ① (L) AC Input Terminal
- ② (N) AC Input Terminal
- ③ (⊕) Ground Terminal
- ④ (-V) DC Output Terminal
- ⑤ (+V) DC Output Terminal
- ⑥ (VADJ) Output Voltage Adjustment
- ⑦ Operation Indicator (When Output is ON, LED turns on.)

6 Power Supply Installation

① For mounting direction of Power supply, refer to the [Fig.2].

② For mounting holes dimension of Power supply, refer to the [9.Dimensions].

③ Use M3 or M4 screw for mounting of Power supply.

The mounting screw tightening torque 0.49N·m.

④ Make sure of sufficient convection in consideration of heat radiation.

Do not block the opening of the switching power supply.

⑤ Keep at least 20mm clearance around the switching power supply, except for the opening.

⑥ When the derating is in question, provide forced air-cooling.

⑦ Connect ground terminal to a proper ground completely.

⑧ Use minimum 60 C wire, copper wire only. In addition, refer to the wire type given table to select a wire type and a number of wires.

Terminal	Wire Size (Allowable current)	Wire Type
Input	18 - 14 AWG	Cu, unprepared, solid/stranded
Output	18 - 14AWG (18AWG - 7A, 16AWG - 10A, 14AWG - 15A)	

Cross section - AWG18 : 0.82mm², AWG16 : 1.31mm², AWG14 : 2.08mm²

⑨ The terminal tightening torque 0.8 N·m (PS3V-015□ : 0.5 N·m).

⑩ Adjusting the Output Voltage

The output voltage can be adjusted within ±10% of the rated output voltage using the VADJ (output voltage adjustment). Turning clockwise increases the output voltage, and turning counterclockwise decreases the output voltage. Note that the overvoltage protection may work when the output voltage is raised.

⑪ Overcurrent Protection

When an overcurrent flows due to an overload, the output voltage drops. When the load is reduced to a normal level, the normal output voltage is restored. Note that an overload or short-circuit condition continuing for an extended period of time will deteriorate or damage internal elements.

⑫ Overvoltage Protection

PS3V-015□: The Power supply uses hiccup mode and auto-recovery.

PS3V-030□, -050□, -100□, -150□: The Power supply uses a manual reset method after power shutdown. To recover from output voltage drop due to an overvoltage, turn off the AC input, and turn on the AC input 1 minute later.

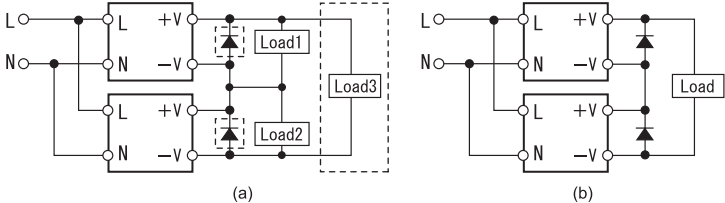
⑬ Series Operation

Two PS3V switching power supplies can be connected in series. When connecting the switching power supplies in series, insert a Schottky diode in the output line of each switching power supply as shown in the figure (b).

If positive and negative outputs are used, connect Power Supplies as in the figure (a).

If the load is in series such as load 3 shown (a), please connect diodes as shown in the figure (a).

The diode having the ratings that the rated output voltage or above and the rated output current or above.



⑭ Parallel Operation

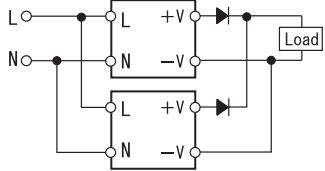
The PS3V cannot be connected in parallel to increase the capacity. If connected in parallel, internal elements and loads would be damaged.

Backup operation is possible. Backup operation is an operation method in which two power supplies are operated in parallel. It is available when the output capacity is sufficient for one power supply.

Even if one unit goes down due to a failure or the like, the other power supply is used for backup.

Make sure that the load and diode loss power does not exceed the rated power for one power supply.

In addition, use a diode that can carry a current that is at least twice the rated current of the power supply, and pay sufficient attention to heat dissipation (heat generation).



< Insulation Resistance and Dielectric Strength Tests > When making these tests, connect the AC input terminals all together and the output terminals all together. Rapid application and interruption of the test voltage will generate a surge voltage, which may damage the switching power supply.

7 Mounting Bracket (Option)

Type	L-shaped Mounting Bracket	DIN-rail Mounting Bracket
PS3V-015□	PS9Z-3N3A	PS9Z-3N4B
PS3V-030□	PS9Z-3E3B	PS9Z-3E4C
PS3V-050□		PS9Z-3E4D
PS3V-100□		
PS3V-150□	-	

8 Disposal

Observe the laws and regulations set by each country concerning refuse disposal.

9 Dimensions

(Unit:mm General Tolerance:±1 mm)

