

Compact Switching Power Supply CA-U3

Instruction Manual

Safety Precautions

⚠ DANGER

- Do not perform any electrical wiring while electric current is applied. Failure to follow this may result in an electric shock or fire.
- Be sure to connect the grounding cable. Failure to follow this may result in an electric shock or fire.
- Do not touch this unit within 1 minute after AC input is turned off. Failure to follow this may result in an electric shock.
- Do not modify or repair this unit. Failure to follow this may result in an electric shock, accident, or product failure.
- Do not touch any terminal of this unit while electric current is applied. Use the unit with the terminal cover installed to avoid an electric shock.

⚠ WARNING

- When this unit is used in a system that may cause a serious accident or damage if the unit fails, be sure to install a safety device.
- Pay attention to prevent foreign matter such as metal particles, dust, paper, or wood chips from entering the inside of this unit. Failure to follow this may result in a fire or product failure.
- Do not touch any metallic part while electric current is applied or immediately after input is shut off. Failure to follow this may result in a burn due to a high temperature.
- If a failure or abnormality occurs while this unit is in use, immediately shut off AC input and stop operation of this unit. Failure to follow this may result in a fire or accident.

⚠ CAUTION

- Check that the AC input rated voltage of this unit is equal to the voltage of the AC power supply.
- Do not connect the AC power supply to the DC output terminals.
- Do not disturb the convection of air near the vent of the casing.

Precautions on CE Marking

KEYENCE evaluates a products' conformity, under specified conditions, to the requirements stipulated by EU Directives. Based on the result, KEYENCE has confirmed that the CA-U3 complies with the requirements. The results were approved by TÜV. When using the CA-U3 in EU nations, make sure that the following requirements have been satisfied.

However, the following contents do not by themselves guarantee that the entire machinery manufactured in accordance with the contents is compatible with EU Directives. You are required to judge whether or not the entire machinery is compatible with EU Directives.

■ Cautions on EMC Directive (89/336/EEC)

- There are no specific requirements.

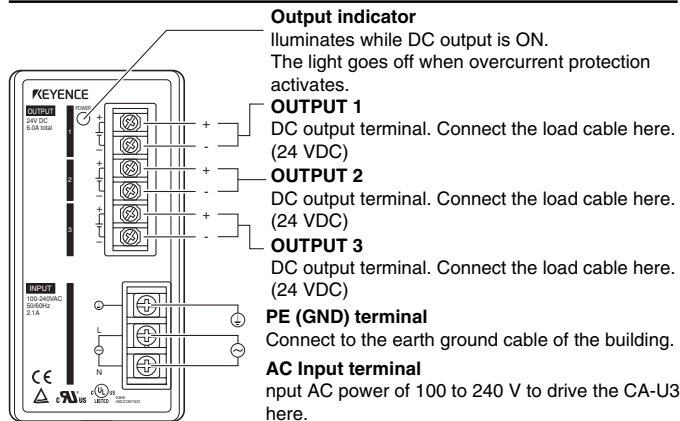
■ Cautions on Low-voltage Directive (73/23/EEC)

- The CA-U3 is certified as an open-type device. When using this product, make sure to install the product in an appropriate enclosure. Enclosures of IP-54 level or higher are recommended.
- The CA-U3 is designated as CLASS I equipment. Therefore, when installing this product, make sure to connect the protection conductor inside the power supply terminal block to the building's earth ground.
- When installing and wiring the CA-U3, make sure to follow the procedures specified in this instructions manual.

Cautions on UL Standard

- The CA-U3 is certified as an open-type device. When using the product, make sure to install the product in an appropriate enclosure. Enclosures of IP-54 level or higher are recommended.
- The CA-U3 is designated as CLASS I equipment. Therefore, when installing this product, make sure to connect the protection conductor inside the power supply terminal block to the building's earth ground.
- When installing and wiring the CA-U3, make sure to follow the procedures specified in this instructions manual.
- The I/O terminal block of the CA-U3 is evaluated as Field Wiring Terminal. Make sure to follow the procedures specified in this instruction manual for wiring, selection of wiring cables, tightening torque, etc. Make sure to use a wiring cable with a temperature rating of 105°C (221°F) or higher.

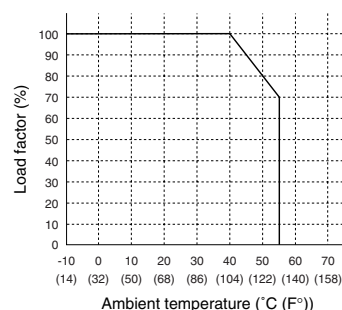
Part Names



■ About the output capacitance

The output capacitance of the CA-U3, 6.0 A is the total output of OUTPUT terminals 1, 2, and 3. Note that 6.0 A is not for the capacitance of each terminal.

Output Derating Characteristic



* The characteristic data shown above are obtained when this unit is installed as described in this Manual.

Installation Conditions

■ Installation environment

- Install this unit indoors.
- Do not install this unit in locations exposed to direct sunlight.
- Do not install this unit in locations in which there is corrosive gas or flammable gas.
- Do not install this unit in locations exposed to a lot of dust, soot, or steam.
- Do not install this unit in locations in which water, oil, or chemicals may splash onto the unit.
- When installing this unit in a location subject to vibration or impact, consider the vibration proof mounting.

■ When installing this unit in a control console

- The ambient temperature for this unit should not exceed the upper temperature limit (refer to the derating characteristic). When the upper temperature limit may be exceeded, install a forced fan or cooler so that the ambient temperature is below the upper temperature limit.
- Leave a sufficient ventilation space around this unit for heat dissipation.
- Do not install this unit just above a device with high heat generation (heater, transformer, large-capacity resistor, etc.).

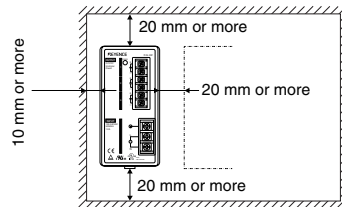
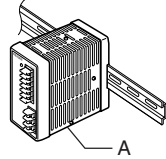
Installation Method

■ Surrounding area

For heat dissipation, leave the following space between this unit and control console walls or other devices.

■ Installation orientation

Install this unit with the base A down as shown below. Do not install the unit in any other orientation.

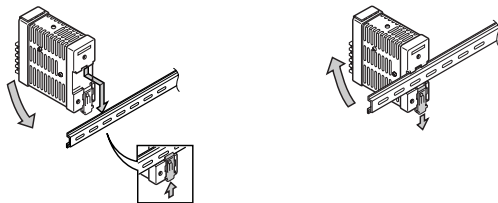


■ Mounting bracket (optional)

- Three types of optional mounting brackets (refer to the dimensions) enable the CA-U3 to be mounted on the front (OP-42174), side (OP-42176), and bottom (OP-42175).
- Make sure that the tightening torque for the mounting screw holes of the bracket is 0.6 N•m or less.

Installing the unit on a DIN rail

Any models of this unit can be installed on a DIN rail. As shown below, hook the claw located in the upper part onto the DIN rail, and push the unit toward the rail until you hear a click. To remove the unit from the DIN rail, pull down on the lever located in the lower part using a slotted screwdriver or similar tool, and then pull the unit forward.



Specifications

Model		CA-U3
Input conditions	Input voltage	100 to 240 VAC (±10%) 50/60 Hz
	Efficiency	76 to 81% (typical)
	Input current (100/200 VAC)	2.1 A max.
	Power factor (100/200 VAC)	0.99/0.95 (typical) with maximum load applied
	Leakage current (100/200 VAC)	0.4/0.75 mA max.
	Rush current (100/200 VAC)	18/36 A max. (at 25°C (77°F) cold start)
	Overvoltage category	II
Output conditions	Rated output voltage	24 VDC
	Rated output current	6.0 A (Total of 3 output terminals)
	Ripple/noise voltage	1% (p-p) max.
	Input fluctuation	0.4% max.
	Load fluctuation	0.7% max.
	Starting time ¹	1300/700 ms max.
	Output holding time	20 ms min. (100 to 240 VAC)
Protection	Overcurrent ²	6.0 A or less Constant-current drooping or output interruption.
	Overvoltage ³	Provided
Environmental resistance	Ambient temperature	-10 to +55°C (14 to 131°F), No freezing (Refer to the derating characteristic.)
	Relative humidity	25 to 85%, No condensation
	Ambient temperature for storage	-20 to +70°C (-4 to 158°F), No freezing
	Pollution degree	2
	Dielectric strength	3.0 kVAC, 50/60 Hz, 1 minute (between input and output terminals), 2.0 kVAC, 50/60 Hz, 1 minute (between input and FG terminals) 500 VDC, 1 minute. (between output and FG terminals)
	Shock immunity	300 m/s ² in X, Y, and Z directions, 2 times respectively
	Vibration	10 to 55 Hz, 1.5 mm (max.) double amplitude in X, Y, and Z directions, 2 hours respectively (9.8m/s ² max. when installed to DIN rail)
	Insulation resistance	100 MΩ min. at 500 VDC (between input and output terminals) (between input and GND terminals) (between output and GND terminals)
	Safety standards	UL-60950-1, UL508 CAN/CSA C22.2 60950-1-3 EN60950-1
Noise terminal voltage		FCC part 15B class A, EN55011 class A
Radiated interference field strength		FCC part 15B class A, EN55011 class A
Limits for harmonic current emissions		Conforms to EN61000-3-2.
Weight		Approx. 700 g

- Specified with the rated input voltage (100 or 200 VAC) and 100% load applied.
- The current automatically recovers upon the drooping. When output is interrupted, wait one minute or longer after the input is OFF, and then turn ON the input for recovery.
- The output is interrupted with the oscillation-suspend method. When output is interrupted, wait one minute or longer after the input is OFF, and then turn ON the input for recovery.

Wiring

■ Selecting cables and crimp terminals

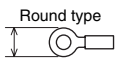
Terminals

Terminals	Screw size	Tightening torque
OUTPUT	M3	0.6 N•m max. (5.1Lb•In)
INPUT	M4	1.8 N•m max. (16.0Lb•In)

Crimp terminals

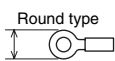
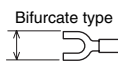
OUTPUT M3 size

6.4 mm max.



INPUT M4 size

8.6 mm max.



Cables

For output

Material: Copper (either twisted or single cable)

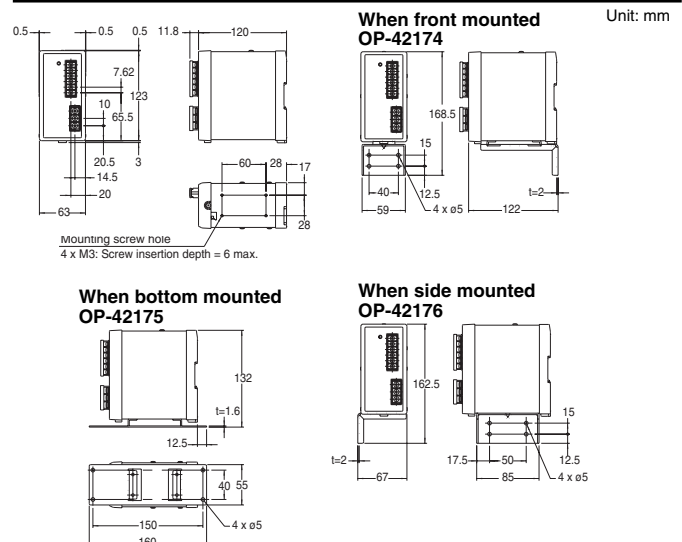
Size: AWG18

For input

Material: Copper (either twisted or single cable)

Size: AWG12 to 22

Dimensions



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