

Ultimate DIN-track-mounting Power Supply with a Wide Power Range from 3 to 240 W

- Wide power range: 3 to 240 W
- Wide AC input voltage range: 100 to 240 V on one body.
- Undervoltage alarm function (indicator) incorporated as standard. (With the 240-W models, applicable only to the “-T” models.) 100-W Model standardized with the alarm output.
- Output/input terminal parts separated on body upper/bottom side, respectively, for safe and smart wiring
- Multiple pairs of output terminals;
Three pairs for 100 and 240-W models
Two pairs for 30 and 50-W models
- Finger-safe terminal block with cover according to VDE0106/P100.
- Conforms to the stringent EN50081-1 standard for universal use in any environment subject to EMI conditions (except for 240-W models) in addition to EN50082-2 conformity for use at any EMS environment.
- DC output ports comply to EN55022 class A, thus ensuring use in any environment subject to EMI with recommended external filters (3- to 100-W models).
- Meets EN61000-3-2 (limits for harmonic current emissions) with PFC on 240 W.
- Parallel running operation (100 and 240 W).
- Class 2 approved (except for 240-W models and 7.5-W dual output models).
- Approvals obtained from various international safety standards for industrial control equipment and industrial computing systems (ITE/TE), in addition to other important approvals.
- Six-language instruction manual provided.



Ordering Information

■ 3 to 100-W Models

Power ratings	Output voltage	Output current	Functional configuration	Models
3 W	5 V	0.6 A	Single output	S82K-00305
	12 V	0.25 A		S82K-00312
	15 V	0.2 A		S82K-00315
	24 V	0.13 A		S82K-00324
7.5 W	5 V	1.5 A	Dual output	S82K-00705
	12 V	0.6 A		S82K-00712
	15 V	0.5 A		S82K-00715
	24 V	0.3 A		S82K-00724
	+12 V/-12 V	0.3 A/0.2 A		S82K-00727
	+15 V/-15 V	0.2 A/0.2 A		S82K-00728
15 W	5 V	2.5 A	Single output	S82K-01505
	12 V	1.2 A		S82K-01512
	24 V	0.6 A		S82K-01524
30 W	5 V	5.0 A	Single output	S82K-03005 (see note)
	12 V	2.5 A		S82K-03012
	24 V	1.3 A		S82K-03024
50 W	24 V	2.1 A	Single output	S82K-05024
90 W	24 V	3.75 A	Single output	S82K-09024
100 W	24 V	4.2 A	Single output	S82K-10024

Note: The output capacity of the S82K-03005 is 25 W.

■ 240-W Models

Power ratings	Output voltage	Output current	Functional configuration	Models
240 W	24 V	10 A	Standard	S82K-24024
240 W	24 V	10 A	With undervoltage alarm indicator/output	S82K-24024T
240 W	24 V	10 A	With PFC	S82K-P24024

■ Model Number Legend

3 to 100-W Models

S82K -

1 2

1. Power Ratings

003: 3 W
007: 7.5 W
015: 15 W
030: 30 W
050: 50 W
090: 90 W
100: 100 W

2. Output Voltage

05: +5 VDC
12: +12 VDC
15: +15 VDC
24: +24 VDC
27: ±12 VDC
28: ±15 VDC

240-W Models

S82K - 24024

1 2

1. Power Factor Correction

None: No
P: Yes

2. Undervoltage alarm indicator/output

None: No
T: Yes

■ Accessories (Order Separately)

Mounting Track	50 cm (l) × 7.3 mm (t)	PFP-50N
	1 m (l) × 7.3 mm (t)	PFP-100N
	1 m (l) × 16 mm (t)	PFP-100N2
Noise Filter	for 3- to 50-W models	S82Y-JF3-N
	for 100-W models	S82Y-JF6-N

Specifications

■ Ratings/Characteristics

Item			PFC								
			No							Yes (-P models)	
			Single output		Dual outputs	Single output					
			3 W	7.5 W	7.5 W	15 W	30 W	50 W	90 W	100 W	240 W
Efficiency (typical)			60% to 80% (Varies depending on specifications.)								
Input	Voltage (see note 1)	AC	100 to 240 V (85 to 264 V)				100 V (85 to 132 V)/ 200 V (170 to 264 V) Selectable		100 V (85 to 132 V)/ 200 V (170 to 253 V) Selectable	100 to 230 V (85 V to 253 V)	
		DC	90 to 350 V (see note 2)			Not possible					
Frequency		50/60 Hz (47 to 450 Hz)							50/60 Hz (47 to 63 Hz)		
Current (see note 3)	100-V input	0.15 A max.	0.25 A max.		0.45 A max.	0.9 A max.	1.3 A max.	2.5 A max.		5.5 A max.	4 A max.
	200-V input				0.25 A max.	0.6 A max.	0.8 A max.	1.5 A max.		3.5 A max.	2 A max.
Power factor		---									0.95 min.
Leakage current (see note 3)	100-V input	0.5 mA max.									
	200-V input	1 mA max.									
Inrush current (see note 3)	100-V input	15 A max.				25 A max.					
	200-V input	30 A max.				50 A max.					
Noise filter		Yes									

- Note:**
1. Use with DC voltage input is beyond the conditions of approval or conformance to applicable safety standards.
 2. Use the 7.5-W single-output models under the load of 90% max. if the voltage range is between 90 and 110 VDC.
 3. Defined with a 100 % load and the rated input voltage (100 or 200 VAC).

Item		PFC									
		No									Yes (-P models)
		Single output		Dual outputs	Single output						
		3 W	7.5 W	7.5 W	15 W	30 W	50 W	90 W	100 W	240 W	240 W
Output (see note 2)	Voltage adjustment range	±10% (V.ADJ)		Not possible (see note 3)	±10% (V.ADJ); -10% to 15% for S82K-03012/-03024/-05024						
	Ripple (see note 1)	2% (p-p) max.									
	Input variation influence	0.5 % max. (at 85 to 264 VAC input, 100% load)					0.5 % max. (at 85 to 132 VAC/170 to 264 VAC input, 100% load)		0.5 % max. (at 85 to 132 VAC /170 to 253 VAC input, 100% load)	0.5 % max. (at 85 to 253 VAC input, 100 % load)	
	Load variation influence	1.5% max. (0 to 100% load)		+V: 1.5% max. -V: 3 % max. (0 to 100% load)	1.5% max. (0 to 100% load)				1.5% max. (10 to 100% load)		
	Temperature variation influence (see note 1)	0.05%/°C max.									
	Rise time	100 ms max. (up to 90% of output voltage at rated input and output)					200 ms max.		300 ms max.	1,000 ms max.	
	Hold time (see note 1)	20 ms min.									
Addi- tional func- tion	Overload protection	105% to 160% of rated load current, automatic reset (see note 4)		105% to 250% of rated load current, automatic reset	105% to 160% of rated load current, automatic reset			101% to 160% of rated load current, automatic reset (see note 5)	105% to 160% of rated load current, automatic reset		
	Overvoltage protection (see note 6)	No							S82K-24024T model only	No	
	Undervoltage alarm indicator (DC LOW indicator)	Yes (color: red)							S82K-24024T model only	No	
	Undervoltage alarm output (DC LOW output)	No					Yes		S82K-24024T model only	No	
	Parallel operation	Impossible					Possible (2 units max.)				

- Note:**
1. Defined with a 100% load and the rated input voltage (100 or 200 VAC).
 2. The output specification is defined at the power supply output terminals.
 3. The settings for the output voltage must be within the following range:
+V: ±1% of the rated value
-V: ±5% of the rated value
 4. When using the 7.5-W single-output models within the input voltage range between 90 and 110 VDC, the protection function will operate at a current of 95% to 160% of the rated load current.
 5. When the ambient temperature exceeds 25°C, the protection function will operate at a current of 92% to 111% of the rated load current.
 6. Circuit-breaker type. To reset, turn the input power supply OFF, then after 1 min has elapsed, turn the input power supply ON again.

Item	PFC									
	No									Yes (-P models)
	Single output		Dual outputs	Single output						
	3 W	7.5 W	7.5 W	15 W	30 W	50 W	90 W	100 W	240 W	240 W
Other	Ambient temperature	Operating: See the derating curve in the <i>Engineering Data</i> section (no condensation or icing) Storage: -25°C to 65°C (no condensation or icing)								
	Ambient humidity	Operating: 25% to 85% Storage: 25% to 90%								
	Dielectric strength	3,000 VAC at 50/60 Hz for 1 min (between all inputs and outputs) 2,000 VAC at 50/60 Hz for 1 min (between all inputs and GR terminal) 1,000 VAC at 50/60 Hz for 1 min (between all outputs and GR terminal) Alarm current: 10 mA (3- to 7.5-W models) 20 mA (15- to 100-W models) 25 mA (240-W models)								
	Insulation resistance	100 M Ω min. at 500 VDC (between all outputs and all inputs/GR terminal)								
	Vibration resistance	Malfunction: 10 to 55 Hz, 0.375-mm single amplitude for 2 hrs each in X, Y, and Z directions							Malfunction: 10 to 55 Hz, 0.15-mm single amplitude for 2 hrs each in X, Y, and Z directions	
	Shock resistance	Malfunction: 300 m/s ² , 3 times each in $\pm X$, $\pm Y$, and $\pm Z$ directions								
	Screw tightening torque	0.74 N \cdot m max. (see note 2)								
	Output indicator	Yes (green)								
	Electromagnetic interference (see note 1)	Conforms to FCC class B						Conforms to FCC class A		
	EMC (see note 3, 4)	<u>3 to 100-W Models</u> (EMI): EN50081-1 Emission Enclosure: EN55022 class B (equivalent to EN55011 class B) Emission AC Mains: EN55022 class B (equivalent to EN55011 class B) Emission Output Ports: EN55022 class A (with a recommended optional filter) (see note 3) <u>240-W Models</u> (EMI): EN50081-2 Emission Enclosure: EN55011 class A (see note 4) Emission AC Mains: EN55011 class A (see note 4) Harmonic Current: EN61000-3-2 (only for S82K-P24024) <u>Common to All Models</u> (EMS): EN50082-2 Immunity ESD: EN61000-4-2: 4-kV contact discharge (level 2) 8-kV air discharge (level 3) Immunity Burst: EN61000-4-4: 2-kV power-line (level 3) 2-kV output line (level 4) Immunity Surge: EN61000-4-5: between 2-kV lines (except for 240-W models) between 4-kV line and FG (except for 240-W models)								
Approved standards	Class 2 (UL 1310)/Class 2 (CSA C22.2 No. 950) (see notes 5 and 6) UL 508 (Listing)/1950 CSA C22.2 No.14/No.950, EN50178 (VDE0160), EN60950 Conforms to VDE0106/P100							UL 508 (Listing)/1012 CSA C22.2 No.14, CSA E.B. 1402C, EN50178 (VDE0160), EN60950 Conforms to VDE106/P100		
Weight	150 g max.		260 g max.	380 g max.	400 g max.	600 g max.		1,800 g max.	2,200 g max.	

- Note:**
- Defined with a 100% load and the rated input voltage (100 or 200 VAC).
 - Do not press down on the terminal block with a force exceeding 75 N while tightening the terminals.
 - To ensure the emission ratings, a noise filter should be used on the output lines at the closest point.
(3- to 50-W models: S82Y-JF3-N, 90- and 100-W models: S82Y-JF6-N)
 - To ensure the Emission Enclosure rating, a ferrite ring core should be used on all cables (for S82K-P24024).
 - Models other than dual output models satisfy the Class-2 requirements.
 - To meet Class-2 requirements with the 100-W model, either a fuse or circuit breaker that is UL listed or CSA certified, and rated at 4.2 A max. should be wired in series with the load to be connected to the power supply. Only then can the power supply output be considered as meeting Class 2.

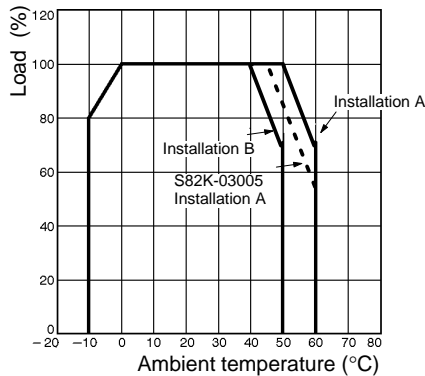
■ Reference Value

Item	Value	Definition
Reliability (MTBF)	135,000 hrs min.	MTBF stands for Mean Time Between Failures, which is calculated according to the probability of accidental device failures, and indicates reliability of devices. Therefore, it does not necessarily represent a life of the product.
Life expectancy	8 yrs. min.	The life expectancy indicates average operating hours under the ambient temperature of 40°C and a load rate of 50%. Normally this is determined by the life expectancy of the built-in aluminum electrolytic capacitor.

Engineering Data

■ Derating Curve

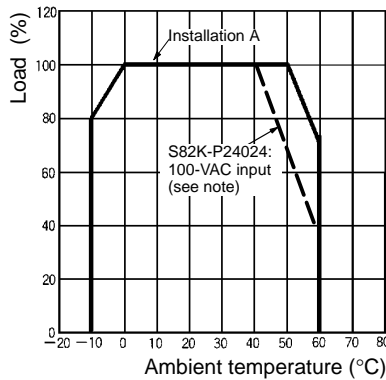
3-/7.5-/15-/30-/50-/90-/100-W Models



- Note:**
1. When using the 7.5-W single-output models within the input voltage range between 90 and 110 VDC, the load rate will become 90% or less.
 2. When using the 90-W model at an ambient temperature exceeding 25°C, the load rate will become 90% or less.

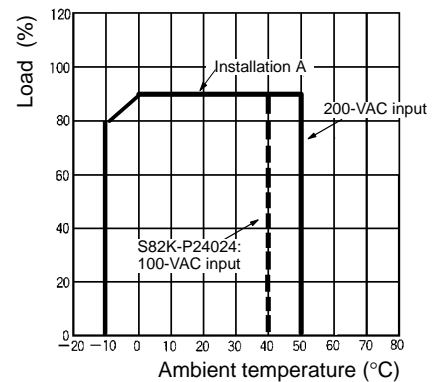
240-W Model

Single-Unit Operation

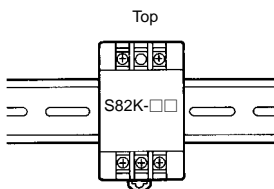


Note: 100-V input: 85 to 132 VAC

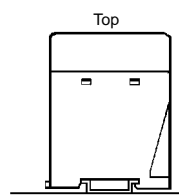
Parallel-Unit Operation



(A) Standard (Vertical) Installation



(B) Horizontal Installation



(Not permitted for 240-W models.)

Note: The derating curve above can be ensured for the above two kinds of installations.

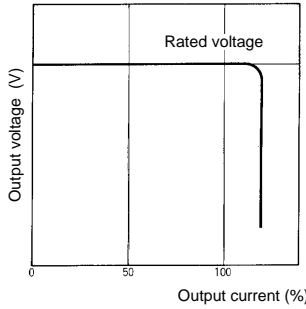
■ Overload Protection

The Power Supply is provided with an overload protection function that protects the load and the power supply from possible damage by overcurrent. When the output current rises above a set value (105% of the rated output current for all models, 101% of the rated output current for 90-W model), the protection function is triggered, decreasing the output voltage. When the output current falls within the rated range, the overload protection function is automatically cleared.

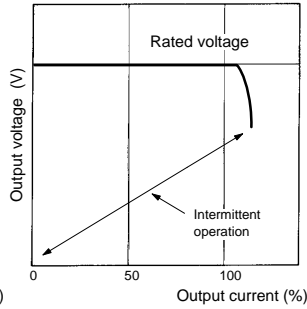
When using the 7.5-W single-output models within the input voltage range between 90 and 110 VDC, the protection function will operate at a current of 95% of the rated load current.

When using the 90-W model at an ambient temperature exceeding 25°C, the protection function will operate at a current of 92% of the rated load current.

3-7.5-/15-/90-/100-/240-W Models



30-/50-W Models

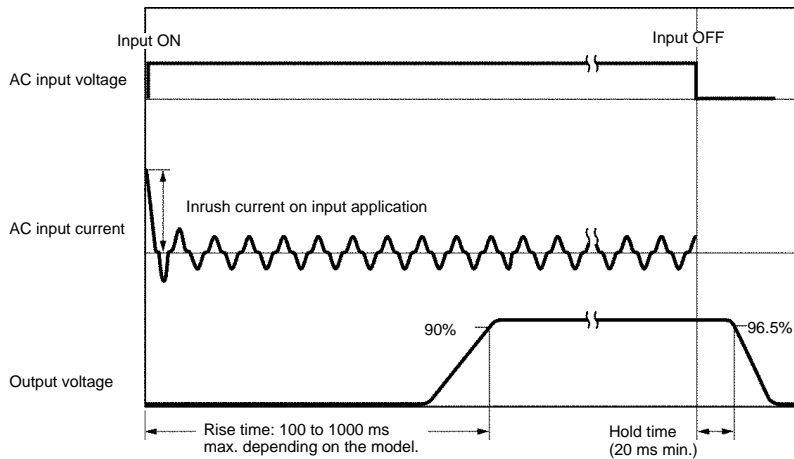


Note: Do not short-circuit the output terminals of the S82K or use the S82K with excessive output current for a long time, otherwise the internal circuitry of the S82K may be deteriorated or damaged.

When Using ± Output Models

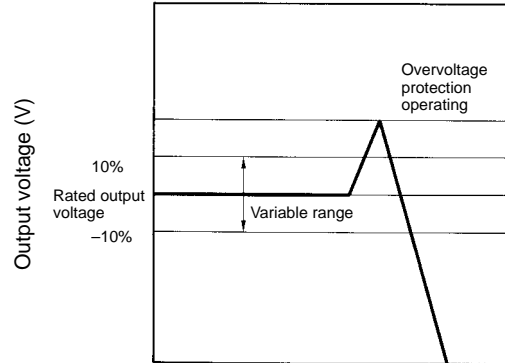
The +V output detects the total output power (+V output and -V output) to trigger the short-circuit protection against overcurrent. This protection varies depending on the -V output state. The -V output independently triggers the short-circuit protection.

■ Inrush Current, Rise Time, Hold Time



■ Overvoltage Protection (S82K-24024T Models Only)

The Power Supply is provided with an overvoltage protection function that protects the load and the Power Supply from possible damage by overvoltage. When the output voltage rises above a set value, the protection function is triggered, shutting off the output voltage. If this occurs, reset the Power Supply by turning it off for 1 minute min. and then turning it on again.



Operation

■ Undervoltage Alarm Indicator and Output Function (All Models Except for S82K-24024/P24024)

If the output voltage at the output terminal drops to 75% to 90% of the rated voltage, the red indicator of the S82K (DC LOW indicator) will be lit. In the case of the S82K-10024/24024T, a voltage drop alarm will be output via the relay available in the models (DC LOW output).

Note: This function detects the voltage at the output terminal of the Power Supply. To check the precise output voltage, measure the voltage at the terminal of the load.

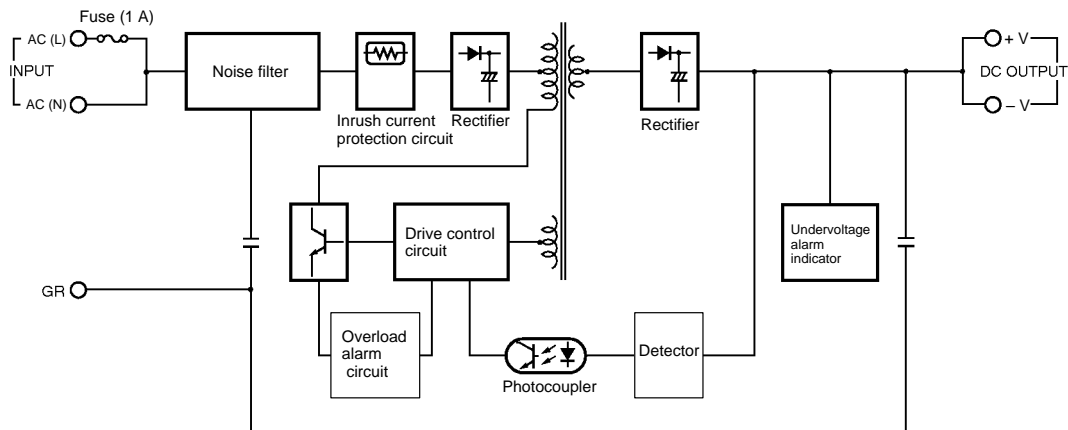
Indicator	Voltage	Operation of 10024/ 24024T's output (DC LOW output) (see note 2)
Green: ● DC ON Red: ○ DC LOW	If the voltage at the output terminal is more than 90% of the rated voltage, the green indicator will be lit.	
Green: ● DC ON Red: ● DC LOW (see note 1)	If the voltage at the output terminal is 75% to 90%, the red indicator will be lit.	
Green: ○ DC ON Red: ○ DC LOW	If the voltage at the output terminal is 0 V, both the green and red indicators will not be lit.	

Note: 1. The more the voltage at the output terminal drops, the darker both the green and red indicators will be.
2. The relay contacts have a capacity of 0.1 A at 24 VDC.

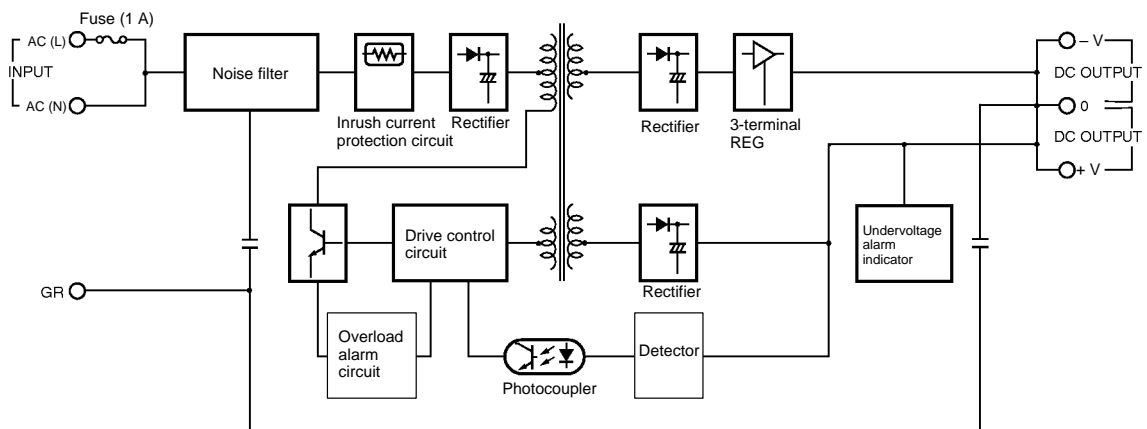
■ Block Diagrams

S82K-003□□ (3 W)

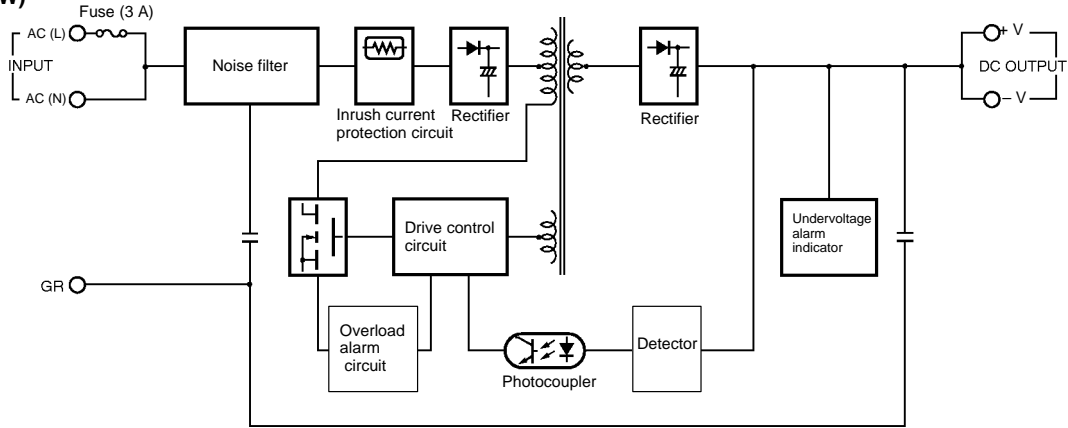
S82K-007□□ (7.5 W, Single Output)



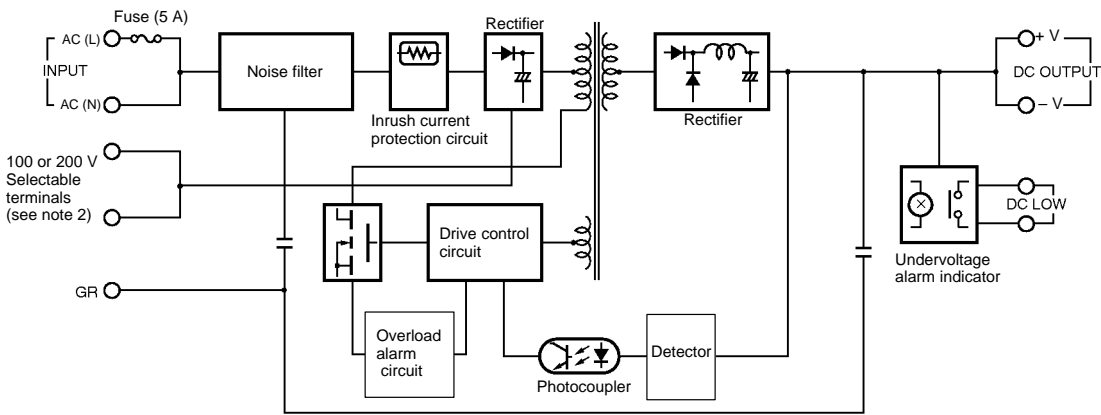
S82K-007□□ (7.5 W, Dual Outputs)



S82K-015□□ (15 W)
 S82K-030□□ (30 W)
 S82K-05024 (50 W)

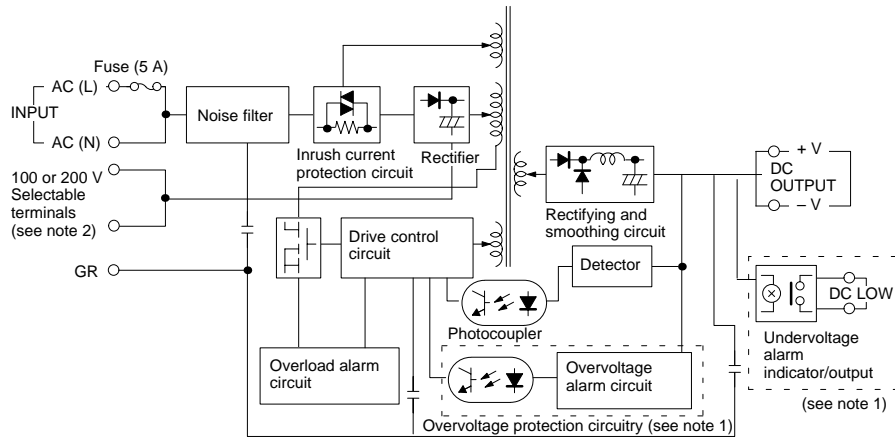


S82K-09024 (90 W)
 S82K-10024 (100 W)



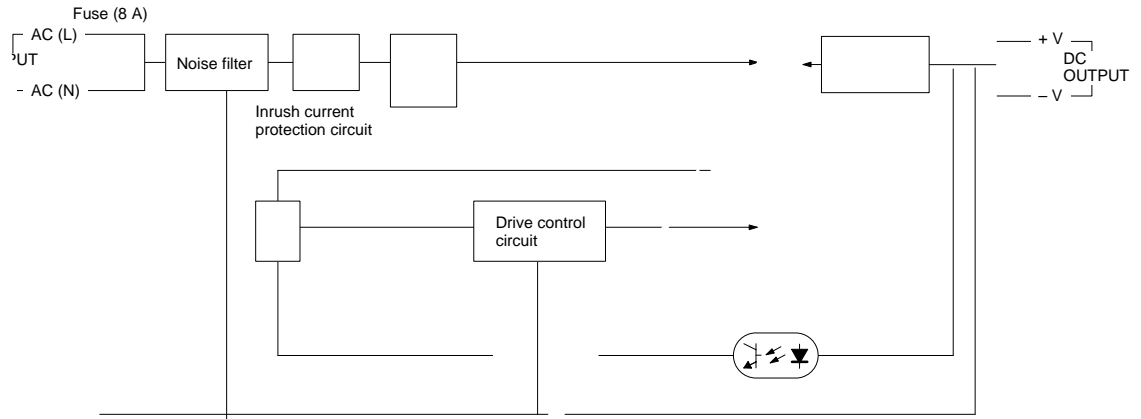
Note: Use the short bar to short-circuit terminals 7 and 8 to select 100 to 120 VAC and remove the short bar to select 200 to 240 VAC.

S82K-24024□ (240 W)



Note: 1. The overvoltage protection circuitry and undervoltage alarm indicator are available in the S82K-24024T only.
 2. Use the short bar to short-circuit terminals 7 and 8 to select 100 to 120 VAC and remove the short bar to select 200 to 230 VAC.

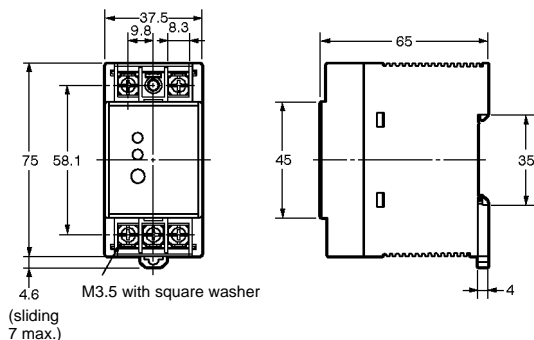
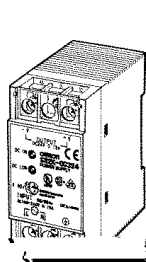
24 (240 W)



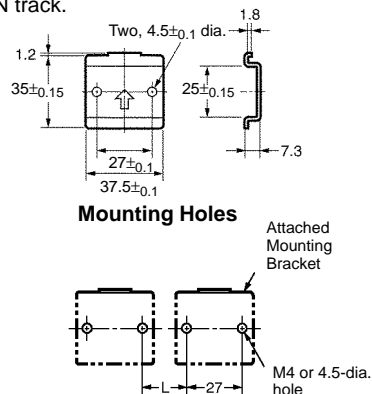
Dimensions

Note: All units are in millimeters unless otherwise indicated.

S82K-003 (3 W)
S82K-007 (7.5 W)

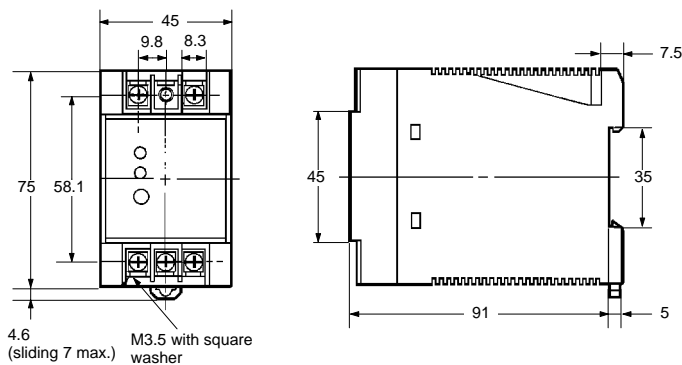
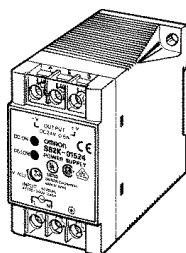


Mounting Brackets
(Supplied with the Switching Power Supply)
 Used when not mounting the Power Supply directly on the DIN track.



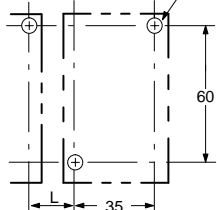
Note: If more than one Power Supply is installed in a row, keep a distance of 20 mm min. (L = 20 mm min.) between each adjacent Power Supply.

S82K-015 (15 W)



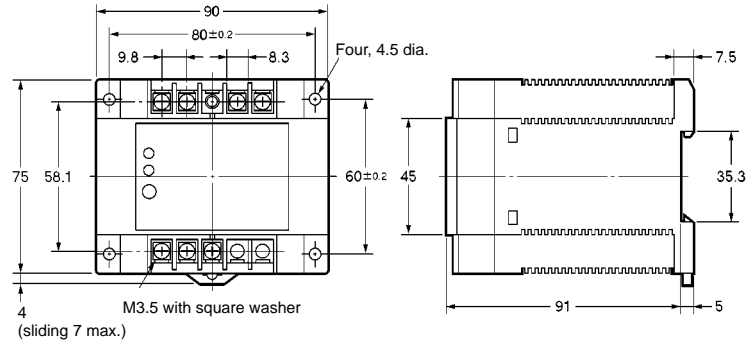
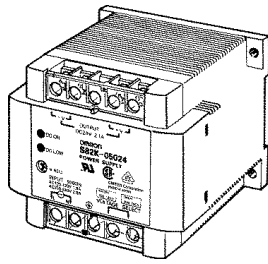
Mounting Holes

Two, M4 or 4.5-dia. mounting holes

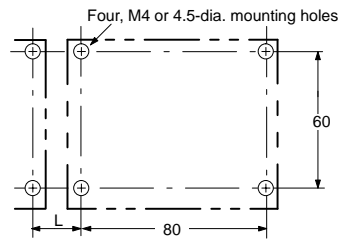


Note: If more than one Power Supply is installed in a row, keep a distance of 20 mm min. (L = 20 mm min.) between each adjacent Power Supply.

S82K-030□□ (30 W)
S82K-05024 (50 W)

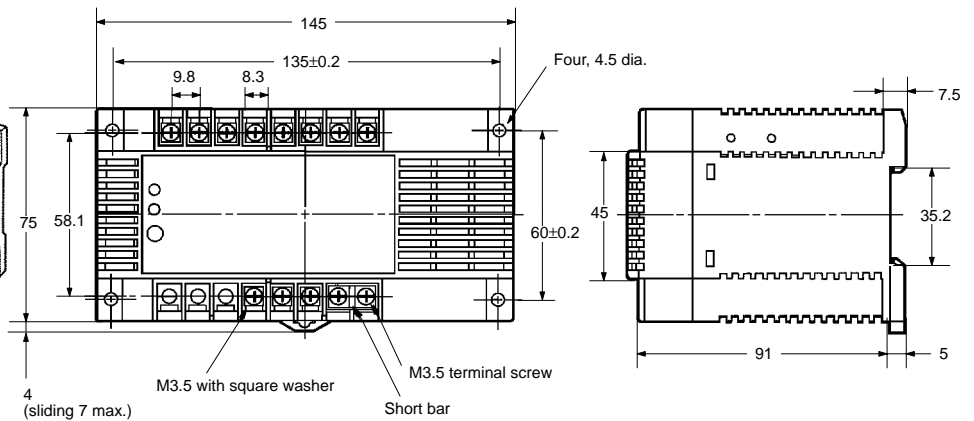
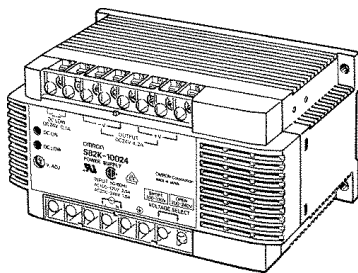


Mounting Holes

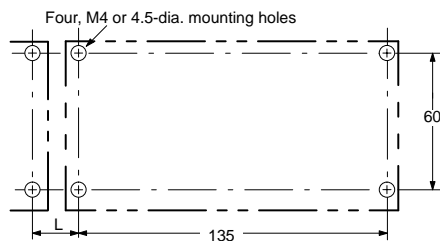


Note: If more than one Power Supply is installed in a row, keep a distance of 20 mm min. (L = 20 mm min.) between each adjacent Power Supply.

S82K-09024 (90 W)
S82K-10024 (100 W)

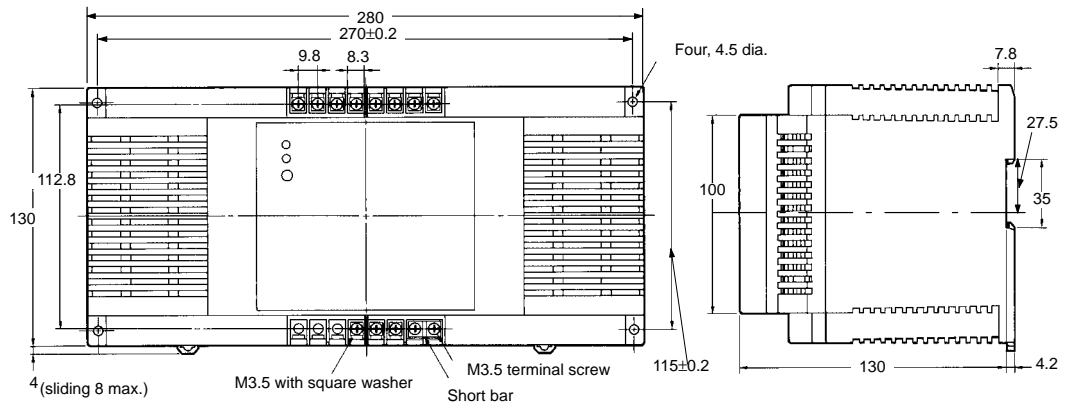


Mounting Holes

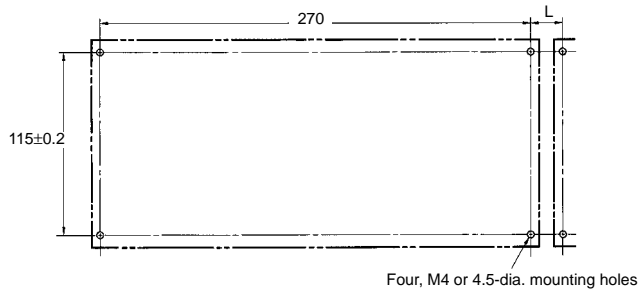


Note: If more than one Power Supply is installed in a row, keep a distance of 20 mm min. (L = 20 mm min.) between each adjacent Power Supply.

S82K-□24024□



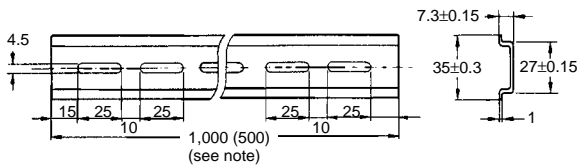
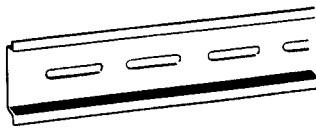
Mounting Holes



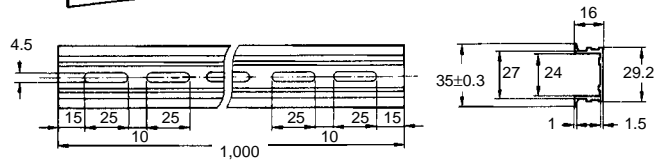
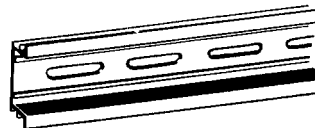
Note: If more than one Power Supply is installed in a row, keep a distance of 20 mm min. (L = 20 mm min.) between each adjacent Power Supply.

Accessories

Mounting Track (Order Separately)
PFP-100N/PFP-50N

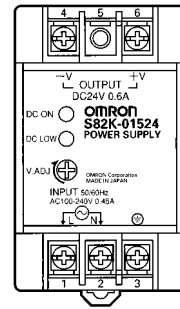
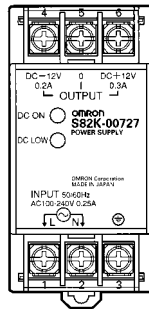
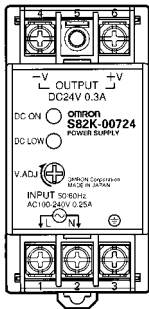


PFP-100N2

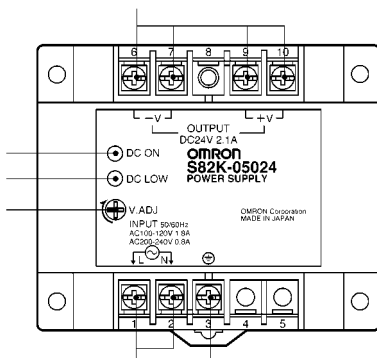


Installation

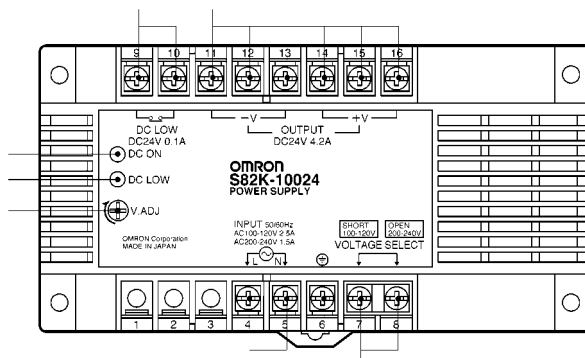
S82K-015□□



S82K-030□□/S82K-05024



S82K-09024/S82K-10024



S82K-

1. **DC Output Terminals:** Connect the load lines to these terminals.
2. **Input Terminals:** Connect the input lines to these terminals.
3. **Ground Terminal (GR):** Connect a ground line to this terminal.
4. **Input Voltage Selector Terminals:** Selects a 100 V or 200 V input voltage.
5. **Output Indicator (DC ON):** Lights while a Direct Current (DC) output is ON.
6. **Output Voltage Adjuster(V.ADJ):** It is possible to increase or decrease the output voltage.
7. **Undervoltage Alarm Indicator (DC LOW):** Other than S82K-24024 and S82K-P24024 models.
8. **Undervoltage Alarm Output (DC LOW):** S82K-09024/-10024/-24024T models only.
9. **Parallel/Single Operation Selector:** Set to "PARALLEL" for parallel operation.

Precautions

Caution

Be sure to connect the grounding line. Not doing so may result in electric shock.

WARNING

Do not attempt to disassemble the Power Supply or touch its internal parts while power is being supplied. Doing so may result in electric shock.

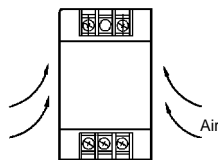
Do not touch the terminals of the Power Supply within one minute after power has been turned OFF. Doing so may result in electric shock due to a residual voltage.

Do not touch the Power Supply Unit while power is being supplied or immediately after power has been turned OFF. Doing so may result in a skin burn due to high temperature of the Power Supply.

Mounting

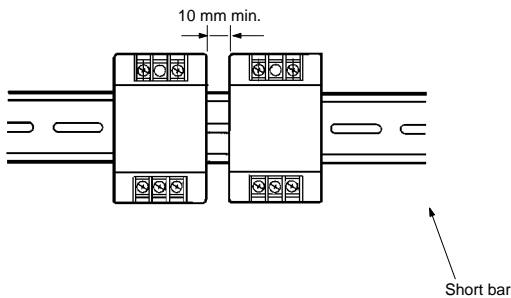
To improve and maintain the reliability of the Power Supply over a long period of time, adequate consideration must be given to heat radiation.

The Power Supply is designed to radiate heat by means of natural air-flow. Therefore, mount the Power Supply so that air flow takes place around the Power Supply.

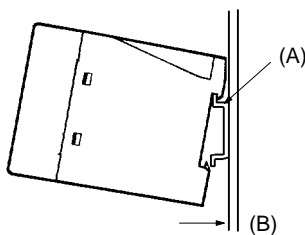


When mounting two or more Power Supplies side-by-side, allow at least 10 mm spacing between them, as shown in the following illustration.

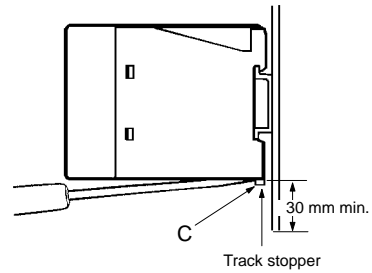
Forced air-cooling is recommended.



To mount the Power Supply on a DIN track, hook portion (A) of the Power Supply to the track and press the Power Supply toward direction (B).



To dismount the Power Supply, pull down portion (C) with a flat-blade screwdriver and pull out the Power Supply.



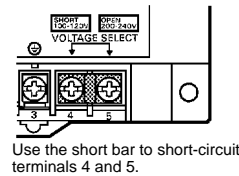
When tightening the terminals, do not tighten the terminal block to a torque greater than 75 N.

Selection of 100 or 200 VAC Input Voltage (S82K-09024/-10024/-24024/-24024T)

Select a 100 V or 200 V input by shorting or opening the Input Voltage Selector Terminals, as shown in the following diagram.

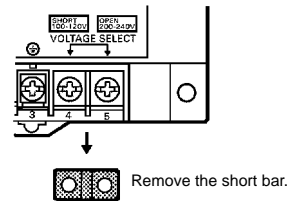
The default setting is 200 V.

100 V Input



Use the short bar to short-circuit terminals 4 and 5.

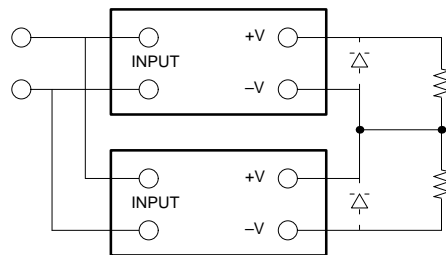
200 V Input



Remove the short bar.

Generating Output Voltage (±)

An output of ± can be generated by using two Power Supplies as shown below, because the Power Supply produces a floating output.



When connecting the Power Supplies in series with an operation amplifier, connect diodes to the output terminals as shown by the dotted lines in the figure. No diodes are required with S82K 90-W/100-W/240-W models.

Wiring

Carefully wire the input/output terminals while paying attention to their polarities so as to prevent incorrect wiring.

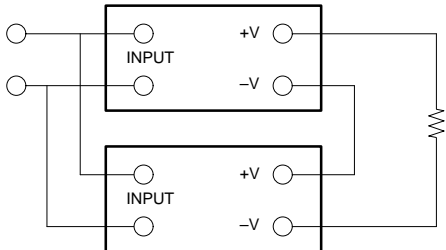
Battery Charging

When connecting a battery to the load, install an overcurrent limit circuit and overvoltage protection circuit.

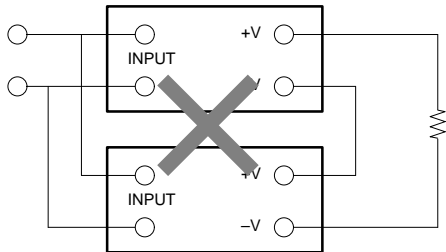
Series Operation

S82K 90-W/100-W/240-W model can be operated in series. It must be noted that the + output of the 7.5-W dual output model cannot be connected in series to its - output.

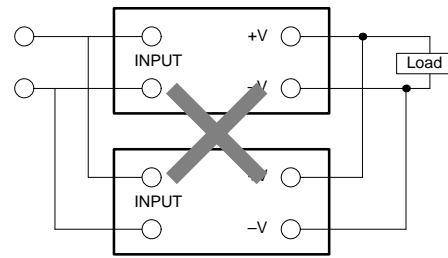
90-, 100-, and 240-W Models



3-, 7.5-, 15-, 30-, 50-W Models



3-, 7.5-, 15-, 30-, and 50-W Models



Parallel Operation Precautions

- The length and thickness of each wire connected to the load must be the same so that there is no difference in voltage drop value between the load and the output terminals of each Power Supply.
- Adjust the output voltage of each Power Supply so that there will be no difference in output voltage between each Power Supply.
- If the 240-W Power Supply is used in single operation under the parallel operation setting, the overcurrent protection will be actuated at an output of 90% to 95% (in current), and will not allow a 100% output.
- If the 240-W Power Supplies are used in parallel operation under the single operation setting, one of them will operate at 110% output, causing severe heat derating and shortening the service life.

Minimum Output Current

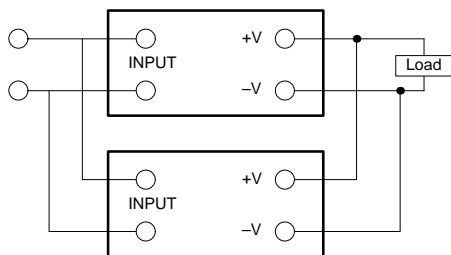
The minimum output current of the S82K-00727 and S82K-00728 is restricted by the output voltage and control method.

Note: All the outputs of the S82K-00727 and S82K-00728 are controlled by the +V output. If the +V output current falls to 10% or less of the rated output, the -V output voltage may drop.

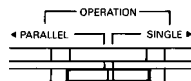
Parallel Operation

S82K 90-W/100-W/240-W models can be operated in parallel. Perform parallel operation with power supplies satisfying the same specifications.

90-, 100-, and 240-W Models



Note: When operating the 240-W model in parallel operation, set the switch to "PARALLEL." Refer to the derating curve for the rated current under this operation.



Operating and Storage Environments

Do not use or store the Unit in the following places, otherwise the Unit may malfunction or the characteristics of the Unit may deteriorate.

- Locations subject to direct sunlight.
- Locations subject to ambient operating temperatures outside the range indicated by the derating curve.
- Locations subject to ambient operating humidity outside the range of 25% to 85%.
- Locations subject to condensation as the result of severe changes in temperature.
- Locations subject to ambient storage temperatures outside the range of -25°C to 65°C.
- Locations subject to corrosive or flammable gases.
- Locations subject to dust (especially iron dust) or salts.
- Locations subject to shock or vibration.
- Locations subject to exposure to water, oil, or chemicals.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. M048-E1-4 **In the interest of product improvement, specifications are subject to change without notice.**

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Printed in Japan
0799-2M (A)