OMRON

# Switch Mode Power Supply
# S8VK-C (60/120/240/480-W Models)

## Cost-effective Single Phase Power Supply
## Universal input and Safety standards for worldwide applications
## Space-saving Compact Design

- Universal input for worldwide applications:
  100 to 240 VAC (85 to 264 VAC)
- DC input can be available: 90 to 350 VDC
- Operation temperature range: –25 to 60 °C
- Compact Dimension for small space
- Flexible installation by special mounting brackets
- Safety standards:
  UL508/62368-1, CSA C22.2 No.107.1/62368-1
  EN62477-1, EN62368-1
- EMS: Conform to EN61204-3
  EMI: EN55011 Class A
- Three years Warranty

**Note:** Three years warranty conditions: Rated input voltage, 80% load, Ambient operating temparature: 40 °C, Standard mounting

⚠ Refer to *Safety Precautions for All Power Supplies* and *Safety Precautions* on page 11.

## Model Number Structure

### Model Number Legend

**Note:** Not all combinations are possible. Refer to *List of Models* in *Ordering Information*, below.

**S8VK-C** □□□ **24**
1 2

**1. Power Ratings**
060: 60 W
120: 120 W
240: 240 W
480: 480 W

**2. Output voltage (VDC)**
24: 24 V

## Ordering Information

**Note:** For details on normal stock models, contact your nearest OMRON representative.

| Power ratings | Input voltage | Output Voltage (VDC) | Output current *1 | Model number |
|---|---|---|---|---|
| 60 W | Single phase 100 to 240 VAC 90 to 350 VDC | 24 V | 2.5 A | **S8VK-C06024** |
| 120 W | | 24 V | 5 A | **S8VK-C12024** |
| 240 W | | 24 V | 10 A | **S8VK-C24024** |
| 480 W | | 24 V | 20 A | **S8VK-C48024** |

**✻1.** For rated output current of DC input, refer to Derating Curve on Page 4.

# Specifications

## Ratings, Characteristics, and Functions

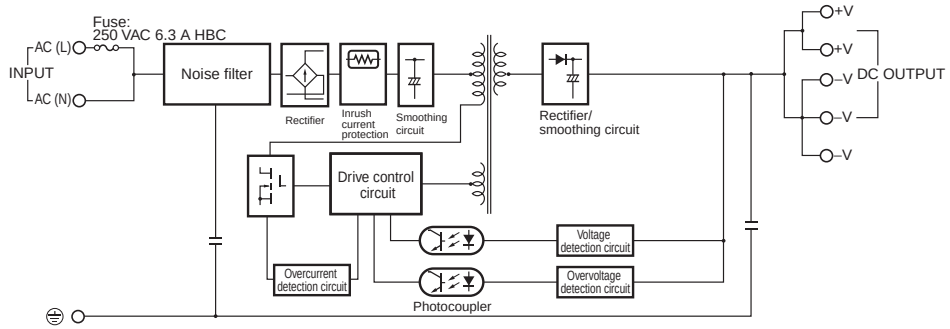
| Item | | Power ratings | 60 W | 120 W | 240 W | 480 W |
|---|---|---|---|---|---|---|
| | | Output voltage (VDC) | 24 V | 24 V | 24 V | 24 V |
| Efficiency (Typical) | | 230 VAC input | 88% | 88% | 87% | 91% |
| Input | Voltage *1 | | 100 to 240 VAC, 90 to 350 VDC (allowable range: 85 to 264 VAC) *6 | | | |
| | Frequency *1 | | 50/60 Hz (47 to 450 Hz) | | 50/60 Hz (47 to 63 Hz) | |
| | Current (Typical) | 115 VAC input | 1.0 A | 2.2 A | 2.5 A | 4.8 A |
| | | 230 VAC input | 0.7 A | 1.4 A | 1.3 A | 2.4 A |
| | Power factor (Typical) *7 | 230 VAC input | 0.44 | 0.45 | 0.92 | 0.97 |
| | Harmonic current emissions | | --- | | Conforms to EN61000-3-2 | |
| | Leakage current (Typical) | 115 VAC input | 0.19 mA | 0.19 mA | 0.24 mA | 0.26 mA |
| | | 230 VAC input | 0.34 mA | 0.36 mA | 0.54 mA | 0.65 mA |
| | Inrush current (Typical) *2 | 115 VAC input | 16 A | | | |
| | | 230 VAC input | 32 A | | | |
| Output | Voltage adjustment range *3 | | –10% to 15% (with V.ADJ) (guaranteed) | | | |
| | Ripple at 20 MHz (Typical) *4 | 230 VAC input | 70 mV | 120 mV | 150 mV | 130 mV |
| | Input variation influence | | 0.5% max. (at 85 to 264 VAC input, 100% load) | | | |
| | Load variation Influence (Rated Input voltage) | | 1.5% max., at 0% to 100% load | | | |
| | Temperature variation influence | | 0.05%/°C max. | | | |
| | Start up time (Typical) *2 | 115 VAC input | 530 ms | 800 ms | 790 ms | 770 ms |
| | | 230 VAC input | 410 ms | 760 ms | 750 ms | 670 ms |
| | Hold time (Typical) *2 | 115 VAC input | 24 ms | 27 ms | 34 ms | 21 ms |
| | | 230 VAC input | 117 ms | 128 ms | 36 ms | 22 ms |
| Additional functions | Overload protection *2 | | 105% to 160% of rated load current | | | |
| | Overvoltage protection *2 | | Yes *5 | | | |
| | Parallel operation | | No | | | |
| | Series operation | | Possible for up to two Power Supplies (with external diode) | | | |
| Others | Ambient operating temperature | | –25 to 60°C (Refer to Engineering Data) | | | |
| | Storage temperature | | –25 to 65°C | | | |
| | Ambient operating humidity | | 20% to 90% (Storage humidity: 10% to 95%) | | | |
| | Dielectric strength (detection current: 20 mA) | | 3.0 kVAC for 1 min. (between all inputs and outputs)<br>2.0 kVAC for 1 min. (between all inputs and PE terminal)<br>1.0 kVAC for 1 min. (between all outputs and PE terminal) | | | |
| | Insulation resistance | | 100 MΩ min. (between all outputs and all inputs/ PE terminals) at 500 VDC | | | |
| | Vibration resistance | | 10 to 55 Hz, 0.375-mm single amplitude for 2 h each in X, Y, and Z directions | | | |
| | | | 10 to 150 Hz, 0.35-mm single amplitude (5 G max for 60W, 120W, 240 W, 3 G max for 480 W) for 80 min. each in X, Y, and Z directions | | | |
| | Shock resistance | | 150 $m/s^2$, 3 times each in ±X, ±Y, and ±Z directions | | | |
| | Output indicatior | | Yes (color: green), lighting from 80% to 90% or more of rated voltage | | | |
| | EMI | Conducted Emission | Conforms to EN61204-3 EN55011 Class A and based on FCC Class A | | | |
| | | Radiated Emission | Conforms to EN61204-3 EN55011 Class A | | | |
| | EMS | | Conforms to EN61204-3 high severity levels | | | |
| | Safety standards | | UL Listed: UL508 (Listing)<br>UL UR: UL No. 62368-1 (Recognition)<br>cUL: CSA C22.2 No.107.1<br>cUR: CSA C22.2 No.62368-1<br>EN: EN 62477-1, EN 62368-1<br>BIS: IS 13252 (Part1) | | | |
| | Fulfilled Standards | | SELV (EN 62368-1/EN 62477-1/UL No. 62368-1) | | | |
| | Degree of protection | | IP20 by EN / IEC60529 | | | |
| | SEMI | | F47-0706 (200 to 240 VAC) | | | |
| | Weight | | 260 g | 580 g | 940 g | 1,550 g |

**✻1.** Do not use an inverter output for the Power Supply. Inverters with an output frequency of 50/60 Hz are available, but the rise in the internal temperature of the Power Supply may result in ignition or burning.
**✻2.** For a cold start at 25°C. Refer to *Engineering Data* on page 5 for details.
**✻3.** If the output voltage adjuster (V. ADJ) is turned, the voltage will increase by more than +15% of the voltage adjustment range. When adjusting the output voltage, confirm the actual output voltage from the Power Supply and be sure that the load is not damaged.
**✻4.** A characteristic when the ambient operating temperature is between –25 to 60°C.
**✻5.** To reset the protection, turn OFF the input power for three minutes or longer and then turn it back ON.
**✻6.** Safety Standard for a DC Input
The following safety standards apply to a DC input: UL No. 62368-1, cUR (CSA C22.2 No.62368-1), EN 62477-1, EN62368-1.
For a DC input, safety is ensured by external fuse.
Select an external fuse the meets the following conditions.
S8VK-C06024: 350 VDC min, 6A
S8VK-C12024: 350 VDC min, 8A
S8VK-C24024: 350 VDC min, 8A
S8VK-C48024: 350 VDC min, 12A
**✻7.** The value is when both rated output voltage and rated output current are satisfied.

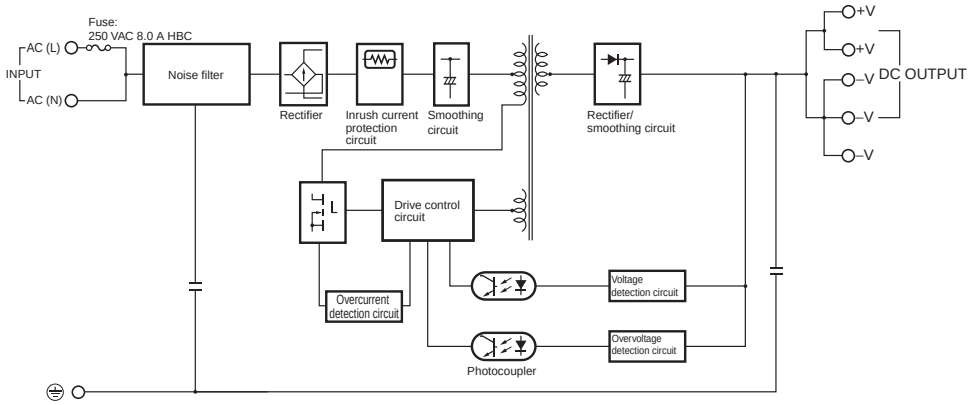
# Connections

## Block Diagrams

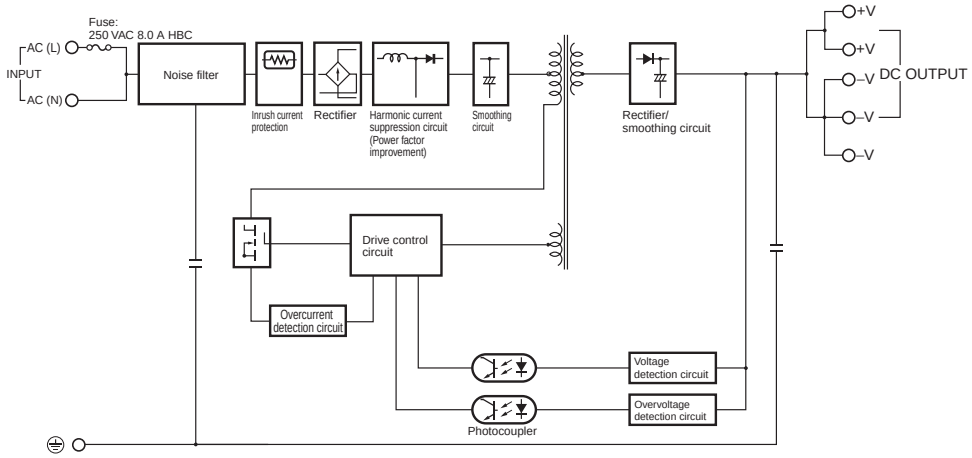
### S8VK-C06024 (60W)



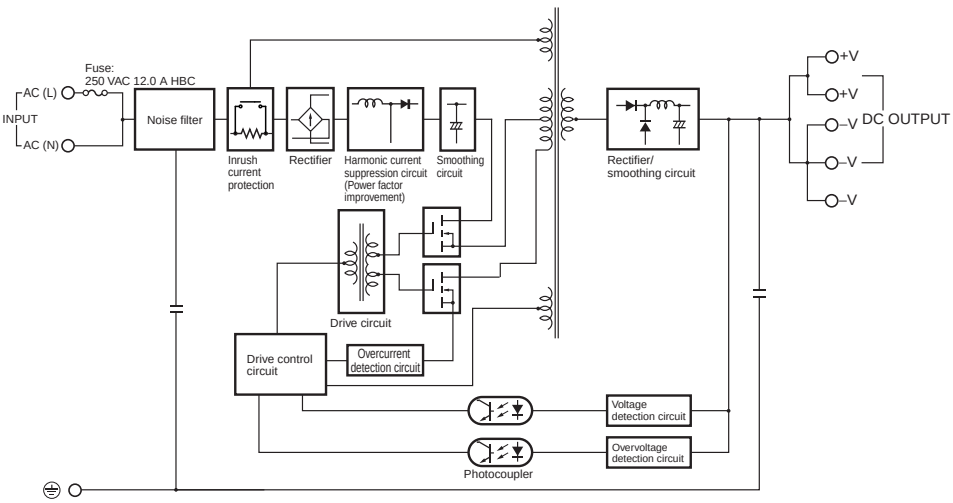

### S8VK-C12024 (120W)




### S8VK-C24024 (240W)




### S8VK-C48024 (480W)

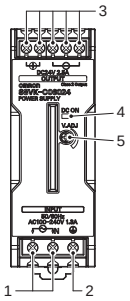


# Construction and Nomenclature

## Nomenclature

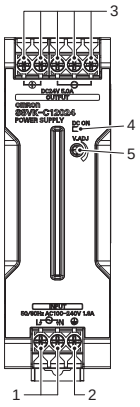
### 60-W Models

**S8VK-C06024**



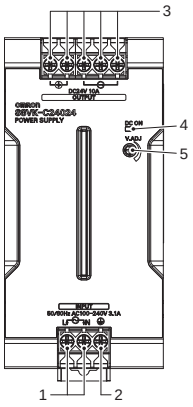

### 120-W Models

**S8VK-C12024**



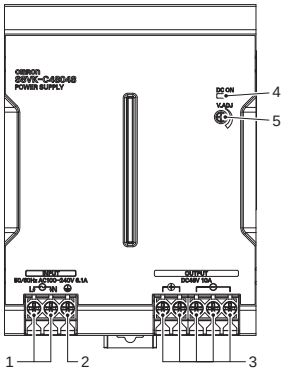

### 240-W Models

**S8VK-C24024**




### 480-W Models

**S8VK-C48024**



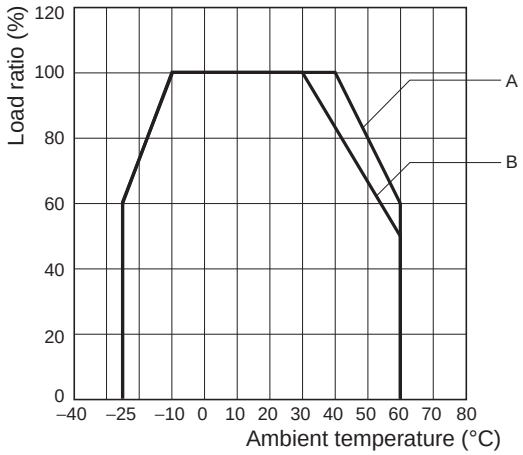

| No. | Name | Function |
|---|---|---|
| 1 | Input terminals (L), (N) | Connect the input lines to these terminals. ✻1 |
| 2 | Protective Earth terminal (PE) | Connect the ground line to this terminal. ✻2 |
| 3 | DC Output terminals (–V), (+V) | Connect the load lines to these terminals. |
| 4 | Output indicator (DC ON: Green) | Lights while a direct current (DC) output is ON. |
| 5 | Output voltage adjuster (V.ADJ) | Use to adjust the voltage. |

**✻1.** The fuse is located on the (L) side. It is not user-replaceable. For a DC input, connect the positive voltage to the L terminal.
**✻2.** This is the protective earth terminal specified in the safety standards. Always ground this terminal.

# Engineering Data

## Derating Curve

**60, 120, 240, 480 W**

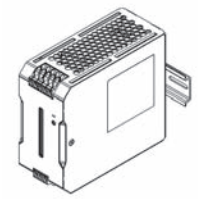



**Note: 1.** At less than 90 VAC, the derating is 2.5%/V
**2.** For a DC power input, reduce the load given in the above derating curve by multiplying the following coefficients.
S8VK-C06024/S8VK-C12024: 0.8
S8VK-C24024/S8VK-C48024: 0.7

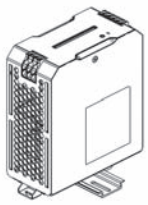
**A.** Standard mounting
40°C and over: the derating is 2.0%/°C
**B.** Face-up mounting
30°C and over: the derating is 1.67%/°C

## Mounting

(A) Standard (Vertical) mounting

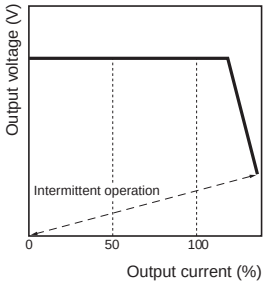


(B) Face-up mounting



## Overload Protection

The load and the power supply are automatically protected from overcurrent damage by this function.
Overload protection is activated if the output current rises above 105% of the rated current.
When the output current returns within the rated range overload protection is automatically cleared.

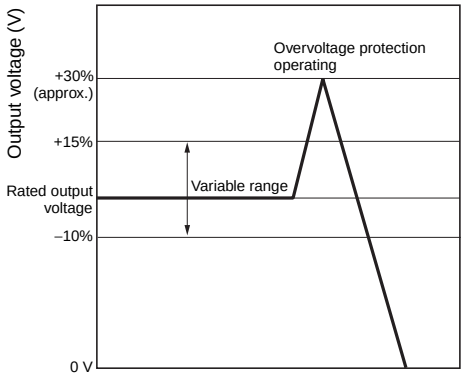



The values shown in the above diagrams are for reference only.

**Note: 1.** Internal parts may occasionally deteriorate or be damaged if a short-circuited or overcurrent state continues during operation.
**2.** Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

## Overvoltage Protection

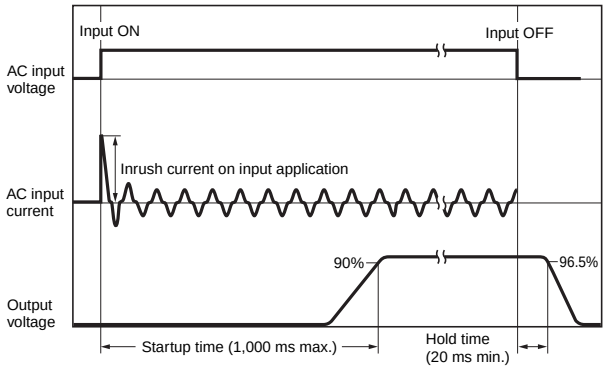
Consider the possibility of an overvoltage and design the system so that the load will not be subjected to an excessive voltage even if the feedback circuit in the Power Supply fails. If an excessive voltage that is approximately 130% of the rated voltage or more is output, the output voltage is shut OFF. Reset the input power by turning it OFF for at least three minutes and then turning it back ON again.




The values shown in the above diagram is for reference only.

**Note:** Do not turn ON the power again until the cause of the overvoltage has been removed.

## Inrush Current, Startup Time, Output Hold Time



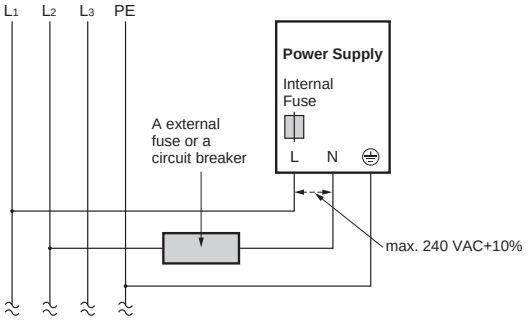

**Note:** Twice the input current or above will flow during the redundant system.
Therefore, check the fusing characteristics of fuses and operating characteristics of breakers making sure that the external fuses will not burn out and the circuit breakers will not be activated by the inrush current.

## Two phases application for Single phase models

### For All Single phase Models, S8VK-C

Basically OMRON single phase power supply can be used on two-phases of a 3–phase-system when some of conditions satisfy like below.

1. The supplying voltage is below the maximum rated input.
   OMRON Power supply allows the input voltage equivalent or less than 240 VAC+10%.
   Please confirm the input voltage between two lines if the input voltage satisfies this condition before connecting.
2. The external protector is needed on N input line to secure a safety.
   N line has no protection of a fuse internally.
   An appropriate fuse or circuit breaker should be connected on N input line like the following.



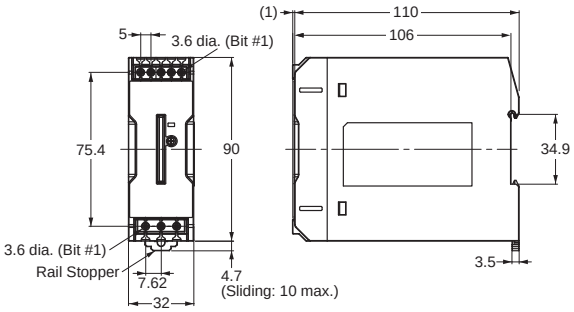

## Reference Value

| | Value |
|---|---|
| **Reliability (MTBF)** | Single phase model<br>60 W: 630,000 hrs<br>120 W: 490,000 hrs<br>240 W: 270,000 hrs<br>480 W: 190,000 hrs |
| **Definition** | MTBF stands for Mean Time Between Failures, which is calculated according to the probability of accidental device failures, and indicates reliability of devices.<br>Therefore, it does not necessarily represent a life of the product. |
| **Life expectancy** | 10 yrs. Min. |
| **Definition** | 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. |

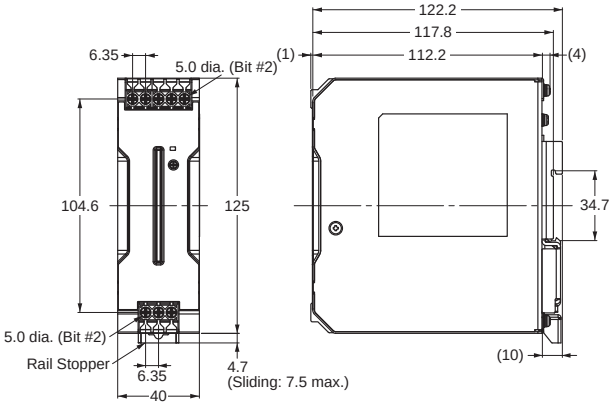
# Dimensions

(Unit: mm)

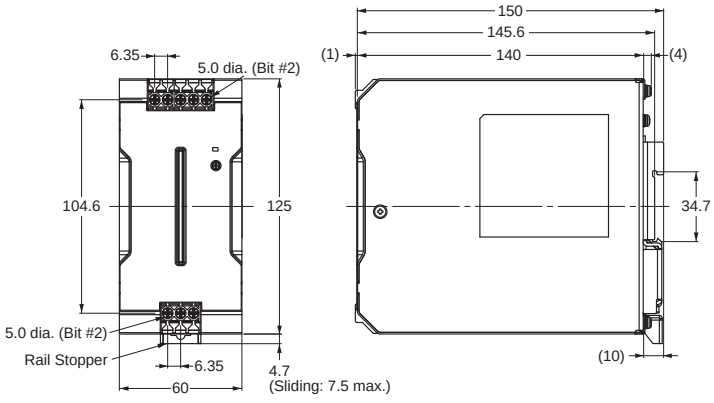
### S8VK-C06024 (60 W)



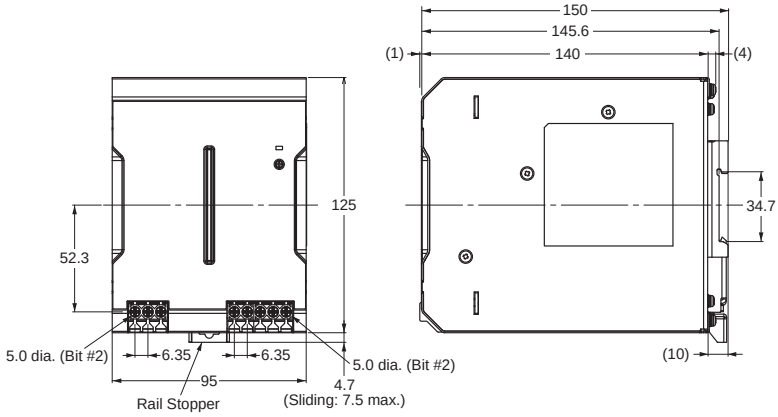

### S8VK-C12024 (120 W)




### S8VK-C24024 (240 W)




### S8VK-C48024 (480 W)

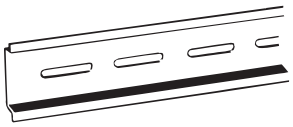


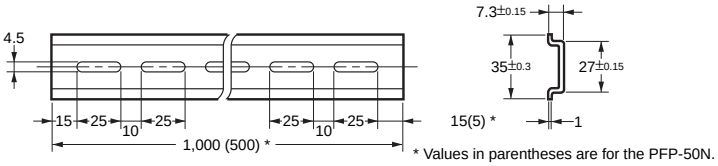
## DIN Rail (Order Separately)

**Note:** All units are in millimeters unless otherwise indicated.

### Mounting Rail (Material: Aluminum)

**PFP-100N**
**PFP-50N**

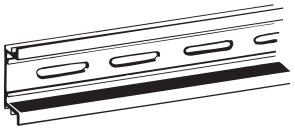


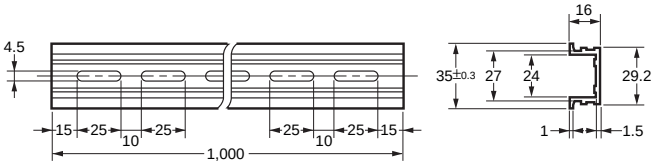



* Values in parentheses are for the PFP-50N.

### Mounting Rail (Material: Aluminum)

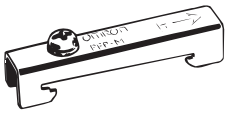
**PFP-100N2**

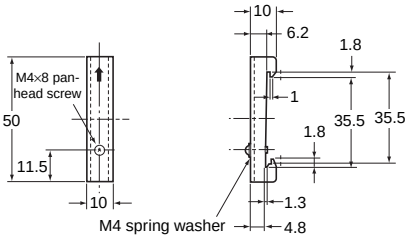





### End Plate

**PFP-M**

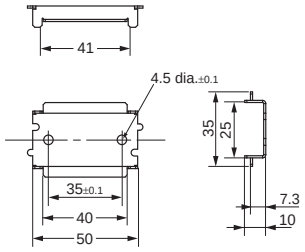
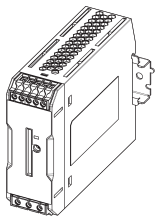
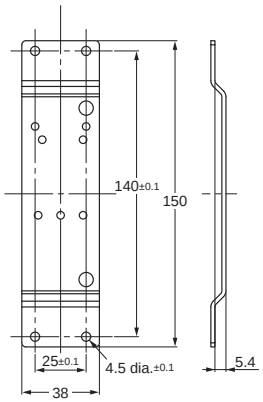
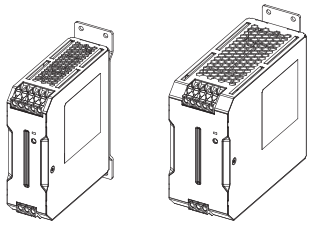


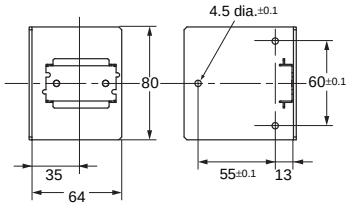
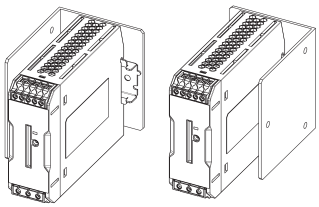
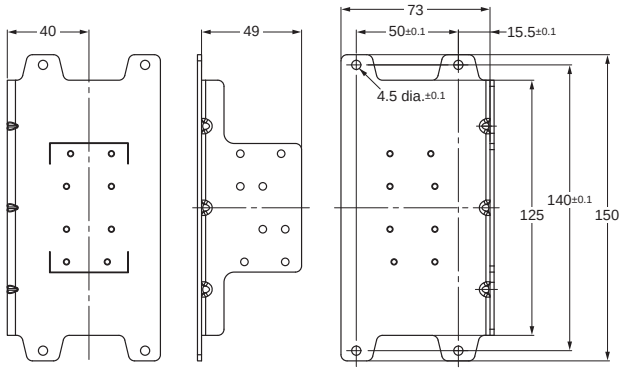
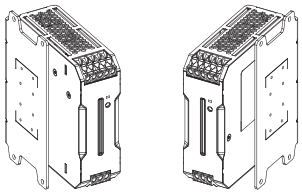
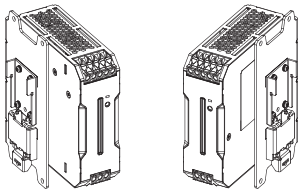
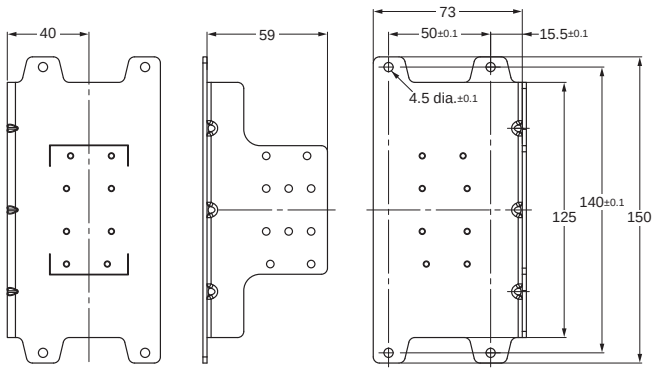
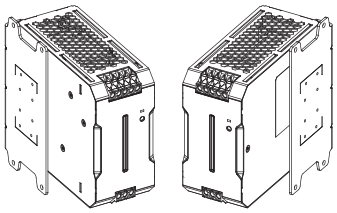
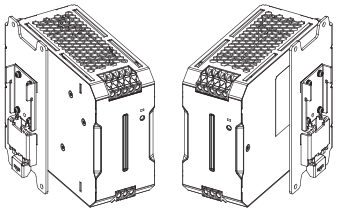



**Note:** If there is a possibility that the Unit will be subject to vibration or shock, use a steel DIN Rail. Otherwise, metallic filings may result from aluminum abrasion.

## Mounting Brackets

| Name | Model |
|---|---|
| Front-mounting bracket (for 60 W models) | **S82Y-VS10F** |
| Front-mounting bracket (for 120, 240 and 480 W models) | **S82Y-VK10F** |
| Side-mounting bracket (for 60 W models) | **S82Y-VS10S** |
| Side-mounting bracket (for 120 W models) | **S82Y-VK10S** |
| Side-mounting bracket (for 240 W models) | **S82Y-VK20S** |

| Type | Model | Dimensions | Appearance |
|---|---|---|---|
| **Front-mounting bracket (For 60 W models)** | **S82Y-VS10F** |  t = 1.0 |  |
| **Front-mounting bracket (for 120, 240 and 480 W models)** | **S82Y-VK10F** |  t = 2.0 | (For 120 W types) (For 240 W types)<br>  |

| Type | Model | Dimensions | Appearance |
|---|---|---|---|
| **Side-mounting bracket (For 60 W models)** | **S82Y-VS10S** |  <br>t = 2.0 | Left-side mounting Right-side mounting<br>  |
| **Side-mounting bracket (For 120 W models)** | **S82Y-VK10S** |  <br>t = 2.0 | Left-side mounting Right-side mounting<br>  <br>Left-side mounting (DIN Rail) ✻ Right-side mounting (DIN Rail) ✻<br>  |
| **Side-mounting bracket (For 240 W models)** | **S82Y-VK20S** |  <br>t = 2.0 | Left-side mounting Right-side mounting<br>  <br>Left-side mounting (DIN Rail) ✻ Right-side mounting (DIN Rail) ✻<br>  |

✻ You can mount the side of the Power Supply to a DIN Rail by removing the DIN Rail Back-mounting Bracket and then attaching a Side-mounting Bracket to the Power Supply.

# Safety Precautions

## Warning Indications

| | |
|---|---|
| **CAUTION** | **Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.** |
| **Precautions for Safe Use** | **Supplementary comments on what to do or avoid doing, to use the product safely.** |
| **Precautions for Correct Use** | **Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.** |

## Meaning of Product Safety Symbols

| | |
|---|---|
| | **Used to warn of the risk of electric shock under specific conditions.** |
| | **Used to warn of the risk of minor injury caused by high temperatures.** |
| | **Used for general mandatory action precautions for which there is no specified symbol.** |
| | **Use to indicate prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.** |

**⚠ CAUTION**

**Minor electric shock, fire, or Product failure may occasionally occur. Do not disassemble, modify, or repair the Product or touch the interior of the Product.**

**Minor burns may occasionally occur. Do not touch the Product while power is being supplied or immediately after power is turned OFF.**

**Fire may occasionally occur. Tighten terminal screws to the specified torque (0.5 to 0.6 N·m).**

**Minor injury due to electric shock may occasionally occur. Do not touch the terminals while power is being supplied. Always close the terminal cover after wiring.**

**Minor electric shock, fire, or Product failure may occasionally occur. Do not allow any pieces of metal or conductors or any clippings or cuttings resulting from installation work to enter the Product.**

## Precautions for Safe Use

### Wiring

- Connect the ground completely. A protective earthing terminal stipulated in safety standards is used. Electric shock or malfunction may occur if the ground is not connected completely.
- Minor fire may possibly occur. Ensure that input and output terminals are wired correctly.
- Do not apply more than 75-N force to the terminal block when tightening it.
- Be sure to remove the sheet covering the Product for machining before power-ON so that it does not interfere with heat dissipation.
- Use the following material for the wires to be connected to the S8VK-C to prevent smoking or ignition caused by abnormal loads.

**Terminals and Wiring**

| | INPUT | | OUTPUT | | PE | |
|---|---|---|---|---|---|---|
| **Model** | **American Wire Gauge** | **Solid Wire /Stranded Wire** | **American Wire Gauge** | **Solid Wire /Stranded Wire** | **American Wire Gauge** | **Solid Wire /Stranded Wire** |
| **S8VK-C06024** | AWG22 to 12 | 0.35 to 4 $mm^2$ /0.35 to 2.5 $mm^2$ | AWG20 to 12 | 0.5 to 4 $mm^2$ /0.5 to 2.5 $mm^2$ | AWG14 to 12 | 2.5 to 4 $mm^2$ |
| **S8VK-C12024** | AWG22 to 10 | 0.35 to 6 $mm^2$ /0.35 to 4 $mm^2$ | AWG18 to 10 | 0.75 to 6 $mm^2$ /0.75 to 4 $mm^2$ | AWG14 to 10 | |
| **S8VK-C24024** | AWG20 to 10 | 0.5 to 6 $mm^2$ /0.5 to 4 $mm^2$ | AWG14 to 10 | 2.5 to 6 $mm^2$ /2.5 to 4 $mm^2$ | | |
| **S8VK-C48024** | AWG16 to 10 | 1.5 to 6 $mm^2$ /1.5 to 4 $mm^2$ | AWG12 to 10 | 4 to 6 $mm^2$ /4 $mm^2$ | | |

- Strip I/O wires for 8 mm when using a screwless terminal block.

**Note:** The rated current for output terminals is 10 A per terminal.
Be sure to use multiple terminals simultaneously for current that exceeds the terminal rating.
When applying a current of 10 A or more, use at least two terminals each for the positive and negative wires.

### Installation Environment

- Do not use the Power Supply in locations subject to shocks or vibrations. In particular, install the Power Supply as far away as possible from contactors or other devices that are a vibration source.
- Install the Power Supply well away from any sources of strong, high-frequency noise and surge.

### Operating Life

- The life of a Power Supply is determined by the life of the electrolytic capacitors used inside. Here, Arrhenius Law applies, i.e., the life will be cut in half for each rise of 10°C or the life will be doubled for each drop of 10°C. The life of the Power Supply can thus be increased by reducing its internal temperature.

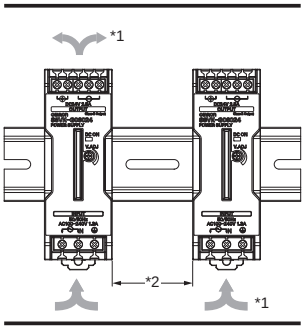
### Ambient Operating and Storage Environments

- Store the Power Supply at a temperature of −25 to 65°C and a humidity of 10% to 95%.
- Do not use the Power Supply in areas outside the derating curve otherwise, internal parts may occasionally deteriorate or be damaged.
- Use the Power Supply at a humidity of 20% to 90%.
- Do not use the Power Supply in locations subject to direct sunlight.
- Do not use locations where liquids, foreign matter, or corrosive gases may enter the interior of Products.

## Precautions for Correct Use

### Mounting

- Take adequate measures to ensure proper heat dissipation to increase the long-term reliability of the Product. Be sure to allow convection in the atmosphere around devices when mounting. Do not use in locations where the ambient temperature exceeds the range of the derating curve.
- When cutting out holes for mounting, make sure that cuttings do not enter the interior of the Products.




*1. Convection of air
*2. 20 mm min.

- Improper mounting will interfere with heat dissipation and may occasionally result in deterioration or damage of internal parts. Use the Product within the derating curve for the mounting direction that is used.
- Use a mounting bracket when the Product is mounted facing horizontally.
- Heat dissipation will be adversely affected. When the Product is mounted facing horizontally, always place the side with the label facing upward.
- Operate the Power Supply within a range that is 5°C less than the values in the derating curve in *Engineering Data* on page 4 if the Power Supply is used with an installation spacing of 10 mm min. (20 mm max.) on the left and right.

### Overcurrent Protection

- Internal parts may possibly deteriorate or be damaged if a short-circuited or overcurrent state continues during operation.
- Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.
- The DC ON indicator (green) flashes if the overload protection function operates.

### Charging a Battery

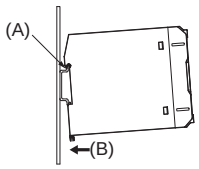
If you connect a battery as the load, install overcurrent control and overvoltage protection circuits.

### Output Voltage Adjuster (V.ADJ)

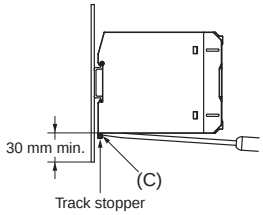
- The output voltage adjuster (V.ADJ) may possibly be damaged if it is turned with unnecessary force. Do not turn the adjuster with excessive force.
- After completing output voltage adjustment, be sure that the output capacity or output current does not exceed the rated output capacity or rated output current.

### DIN Rail Mounting

To mount the Block on a DIN Rail, hook portion (A) of the Block onto the rail and press the Block in direction (B).



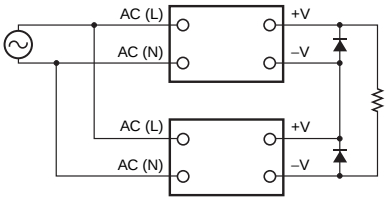

To dismount the Block, pull down portion (C) with a flat-blade screwdriver and pull out the Block.




### Series Operation

Two power supplies can be connected in series.

**Correct**



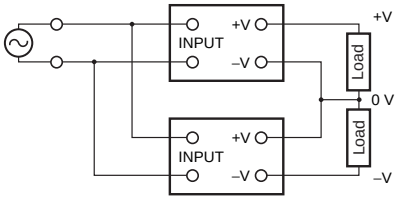

**Note: 1.** The diode is connected as shown in the figure. If the load is short-circuited, a reverse voltage will be generated inside the Power Supply. If this occurs the Power Supply may possibly deteriorate or be damaged. Always connect a diode as shown in the figure.
Select a diode having the following ratings.

| Type | Schottky Barrier diode |
|---|---|
| Dielectric strength ($V_{RRM}$) | Twice the rated output voltage or above |
| Forward current ($I_F$) | Twice the rated output current or above |

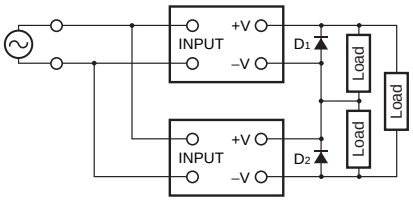
**2.** Although Products having different specifications can be connected in series, the current flowing through the load must not exceed the smaller rated output current.

#### Making Positive/Negative Outputs

- The outputs are floating outputs (i.e., the primary circuits and secondary circuits are separated). You can therefore make positive and negative outputs by using two Power Supplies.
If positive and negative outputs are used, connect Power Supplies of the same series as in the following figure. (Combinations with different output capacities or output voltages can be made. However, use the lower of the two maximum rated output currents as the current to the loads.)



- Depending on the model, internal circuits may be damaged due to startup failure when the power is turned ON if loads such as a servomotor or operational amplifier may operate in series. Therefore, connect bypass diodes (D1, D2) as shown in the following figure.
  If the list of models that support series connection of outputs says that an external diode is not required, an external diode is also not required for positive/negative outputs.




- Use the following information as a guide to the diode type, dialectic strength, and current.

- Type: Schottky barrier diode
- Dielectric strength ($V_{RRM}$): Twice the rated Power Supply output voltage or higher
- Forward current ($I_F$): Twice the rated Power Supply output current or higher

## Backup Operation

Backup operation can be performed with S8VK-R.
Refer to the S8VK-R Datasheet for detail.

## In Case There Is No Output Voltage

The possible cause for no output voltage may be that the overcurrent or overvoltage protection has operated. The internal protection may operate if a large amount of surge voltage such as a lightening surge occurs while turning ON the power supply.
In case there is no output voltage, please check the following points before contacting us:

- Checking overload protected status:
  Check whether the load is in overload status or is short-circuited. Remove wires to load when checking.
- Checking overvoltage or internal protection:
  Turn the power supply OFF once, and leave it OFF for at least 3 minutes. Then turn it ON again to see if this clears the condition.

## Audible Noise at Power ON

### (240-W, and 480-W Models)

A harmonic current suppression circuit is built into the Power Supply. This circuit can create noise when the input is turned ON, but it will last only until the internal circuits stabilize and does not indicate any problem in the Product.

# Period and Terms of Warranty

## Warranty Period

The product warranty is valid for a period of three years from the date of shipment from the factory.

## Terms of Warranty

The warranty is valid only for the following operating conditions.
**1.** Average ambient operating temperature of the product: 40°C max.
**2.** Average load rate: 80% max.
**3.** Mounting method: Standard mounting
✻ The maximum ratings must be within the derating curve.

If the product fails for reasons attributable to OMRON within the above warranty period, OMRON will repair or replace the faulty part of the product at the place of purchase or the place where the product delivered without charge.
This warranty does not cover the following types of failures.

**(1)** Failures that result from handling or operation of the product under conditions or in environments that are not given in this document and not given in any other specifications exchanged between OMRON and the customer
**(2)** Failures that originate in causes other than the delivered product itself
**(3)** Failures caused by disassembly, modification, or repair of the product by anyone other than OMRON
**(4)** Failures caused by applications or uses for which the product was not originally intended
**(5)** Failures caused by factors that could not be anticipated with the scientific or technical knowledge available when the product was shipped
**(6)** Failures caused by other causes for which OMRON is not responsible, such as natural disasters and other acts of God
This warranty is limited to the individual product that was delivered and does not cover any secondary, subsequent, or related damages.

# Recommended Replacement Periods and Periodic Replacement for Preventive Maintenance

The recommended replacement period for preventive maintenance is greatly influenced by the application environment of the product. As a guideline, the recommended replacement period is 7 to 10 years.*
To prevent failures or accidents that can be caused by using a product beyond its service live, we recommend that you replace the product as early as possible within the recommended replacement period.
However, bear in mind that the recommended replacement period is for reference only and does not guarantee the life of the product.

Many electronic components are used in the product and the product depends on the correct operation of these components to achieve the original product functions and performance.
However, the influence of the ambient temperature on aluminum electrolytic capacitors is large, and the service life is reduced by half for each 10°C rise in temperature (Arrhenius law).
When the capacity reduction life of the electrolytic capacitor is reached, the product failures or accidents may occur.
We therefore recommend that you replace the product periodically to minimize product failures or accidents in advance.
✻ The recommended replacement period applies under the following conditions: rated input voltage, load rate of 50% max., ambient temperature of 40°C max., and the standard mounting method. (The fan is excluded for models with fans.)

This product model is designed with a service life of 10 years minimum under the above conditions.

MEMO

**MEMO**

MEMO

## Read and Understand this Catalog

Please read and understand this catalog before purchasing the product. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the product in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

**Note: Do not use this document to operate the Unit.**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