OMRON S8VK-R Redundancy Unit Instruction Manual

Contents

OMRON S8VK-R Redundancy Unit

This Instruction Manual describes the functions, performance, and application methods required to use the S8VK-R.

- Make sure that a specialist with electric knowledge operates the S8VK-R.
- Read and understand this Instruction Manual, and use the product with enough understanding.

Keep this Instruction Manual close at hand and use it for reference during operation.

CAUTION

- CAUTION : FOR USE IN A CONTROLLED ENVIRONMENT.REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS.

Precautions for Safe Use

Installing/Storage Environment

1. Store the product with ambient temperature –40 to +85°C, and relative humidity 0 to 95%.
2. The internal parts may occasionally be deteriorated or broken. Do not use at a temperature that exceed the operating temperature range for the mounting type.
3. Use the product where the relative humidity is 0 to 95%.
4. Avoid places where the product is subjected to direct sunlight.
5. Avoid places where the product is subjected to penetration of liquid, foreign substance, or corrosive gas.
6. Avoid places subject to shock or vibration.A device such as a contact breaker may be a vibration source. Set the Power Supply as far as possible from possible sources of shock or vibration. For application on a ship, always attach an End Plate (PFP-M) to each end to hold the Power Supply in place.

7. If the Power Supply is used in an area with excessive electronic noise or surge, be sure to separate the Power Supply as far as possible from the noise sources.

Arrangement/Wiring

1. Minor fire may possibly occur. Ensure that input and output terminals are wired correctly.
2. Increases in the temperature of internal parts resulting from heating of wiring materials may result in deterioration or damage to parts. Use wiring materials suitable to the current being used. The following wiring materials and strip length are recommended to prevent heating and possible fires in wiring materials.
   Inputs: Use the following recommended wire diameters or the recommended wire diameters for the power supply.
   Outputs: Use the following recommended wire diameters or ensure that there is leeway for the total current from two power supplies.

Terminal	Model	Recommend Wire Type		
		AWG	Solid Wire	Twisted Wire
Input	S8VK-R10	AWG14 to 12	2.5 to 4mm²	2.5mm²
	S8VK-R20	AWG12 to 10	4 to 6mm²	4mm²
Output	S8VK-R10	AWG14 to 12	2.5 to 4mm²	2.5mm²
	S8VK-R20	AWG12 to 10	4 to 6mm²	4mm²
Signal Output	S8VK-R@@	AWG16	1.5mm²	–
All Terminals	wires to be stripped: 8mm			

Refer to the following table for the suitable wire diameters for the terminal block. Applicable Wire Diameters for Terminal Blocks
Connect wires of the recommended diameter or larger to ensure safety.

Model	AWG	Solid Wire	Twisted Wire
S8VK-R10	AWG24 to 12	0.25 to 4mm²	0.25 to 2.5mm²
S8VK-R20	AWG22 to 10	0.35 to 6mm²	0.35 to 4mm²

3. On rare occasions there is a risk of internal element deterioration and damage if use is continued in a short-circuit or over-current state.
4. Do not apply more than 75N force to the terminal block when tightening
5. Use within a range that does not exceed the output current rating. When a load short-circuit occurs, the short-circuit current of two power supply units flows. Use output wiring that can handle the short-circuit current of two units. If the wiring does not have sufficient current capacity, connect a fuse on the output side.
   Recommended fuse R10: 15A, R20: 30A Fast-acting type
   If the current rating of the output terminal is exceeded on the S8VK-R20, always use multiple terminals simultaneously.
6. Risk of damage to internal Do not use in a state that exceeds the rated current of the signal output.

Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer' s application or use of the Product. At Buyer' s request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer' s application, product or system. Buyer shall take application responsibility in all cases.
NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Nomenclature

1. Input terminal 1
2. Input terminal 2
3. Ground terminal
4. Output terminal
5. Status display (redundancy OK: Green)
6. Status display (voltage balance: Green)
7. Signal output (redundancy OK: photo switch)

Safety Standards

According to EN 62477-1

- Power input terminals and Branch output terminals are not isolated.
- Overvoltage category II.
- This equipment is for protection class III.
- Climatic class:3K3.

According to UL508

- Use in an enclosure that maintains a Pollution Degree 2 environment.

Surrounding air temperature for UL 508 listing: 40°C

Precautions for Correct Use

- **Mounting**
  For other than the standard installation in figre, refer to the catalogue.
  - **Mounting Space**
    The long-term reliability of the S8VK-R can be increased by installing it properly and sufficiently considering heat dissipation. Install the S8VK-R so that the air flow circulates around it, because the S8VK-R is designed to radiate heat by means of natural air circulation.
    Can be used in a contact mounting with the S8VK-G (not covered by safety certification). Two S8VK-G units cannot be mounted together in a contact mounting.
- **Input voltage**
  Rating
  R10: DC 5 to 30 V
  R20: DC 10 to 60 V
- **Output current**
  Rating
  R10: 0 to 10 A
  R20: 0 to 20 A
- **Connections**
  If a power supply other than an S8VK-series Power Supply or a recommended power supply is used, the fuse may blow, depending on the state of the load.
  Refer to the datasheet for the recommended power supplies.
  If you are building a redundant system, never use in a state that exceeds the rated current of the power supply. If one of the power supplies goes down, there is a risk that the voltage on the load side cannot be attained.
  Use the same model for the power supplies that are connected.
  On rare occasions internal element deterioration and damage may occur if use is continued in a short-circuit or over-current state. Do not continue use for more than 10 seconds.
  Do not use in applications where load rush current or overload may frequently occur. Slight risk of deterioration and damage due to internal loss.
  The signal output / status LED may occasionally not operate stably.
  When using in environments where the temperature is less than -25 °C, always adjust the 5 V power supply to 5.3 V or higher.
- **Dielectric Strength Test**

The S8VK-R is designed to withstand a voltage test of 1 kV AC between all input/output terminals and the chassis, and 0.5 kV AC between all input/output terminals and the signal output terminal, for one minute.

Notes:

- The S8VK-R may possibly be damaged from the impulse voltage if a testing device switch is used to abruptly apply or shut off 1kVAC, 0.5kVAC. Increase the applied voltage gradually using the voltage adjustment on the testing device.

  When testing, always short-circuit all terminals to prevent damage to the output terminal.

- **Signal output**

  Photo switch output

  Photo switch ON when input voltage difference is 2.4 V typ. or less.

  30 VDC max. (LVLC), 50 mA max., residual voltage when ON: 2 V max., leakage current when OFF: 0.1 mA max.

- **Status display LEDs**

  The status display LEDs show the status of the input power as shown in the table below.

  Redundancy OK

  Green on: Input voltage difference is 2.4 V typ. or less.

  Voltage balance

  Green on: Input voltage difference is 50 mV typ. or less. The redundancy OK display/signal operates when the voltage difference is no more than 2.4 V typ. When using a 5 V or 12 V power supply, verify that there is no difference in the output voltages of the power supplies.

  The degree of balance varies by model, and therefore if you require operation with balanced current, use the same thickness and length of wiring from each power supply to the S8VK-R, and check the output current of each power supply unit.

  When adjusting the voltage based on the voltage balance, adjust the voltage of only one power supply. If you must adjust the voltages of both power supplies, be sure to check the output voltage before use.

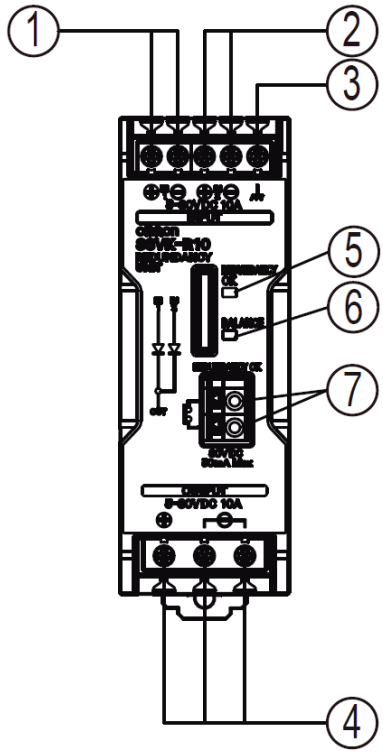
  With some of the recommended power supply models, a longer life cannot be expected through use of the power balance display.

  For these models, please consult us.

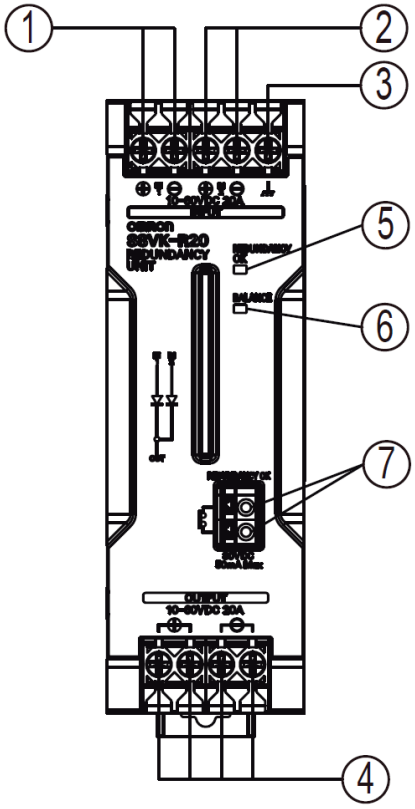
  Conformance to EU Directives and Shipping Standards Refer to the catalogue and this instruction manual for details on the operating condition for compliance with the EMC Directive and shipping standards.

Nomenclature

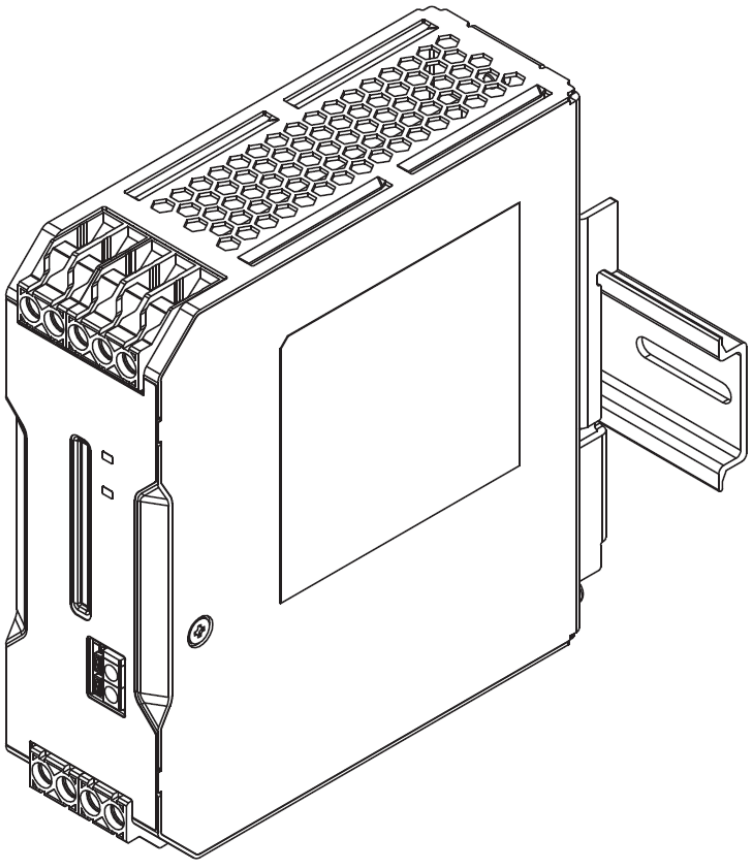
S8VK-R10



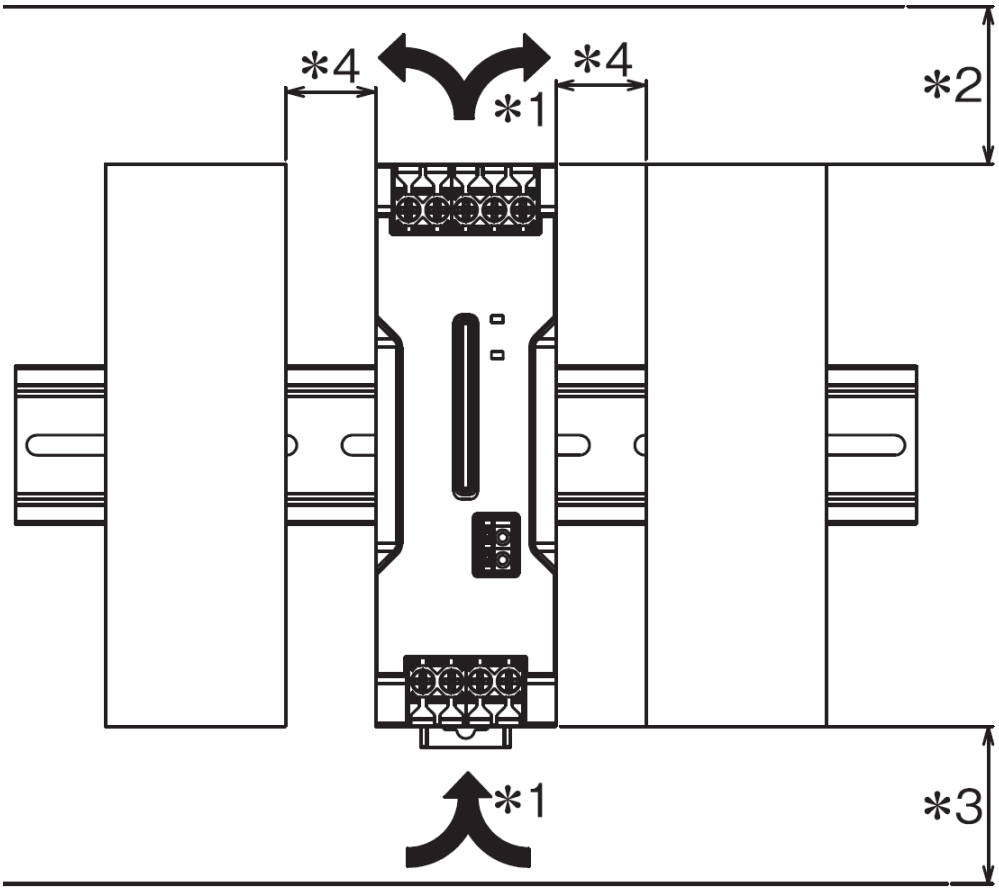
S8VK-R20



Standard Mounting

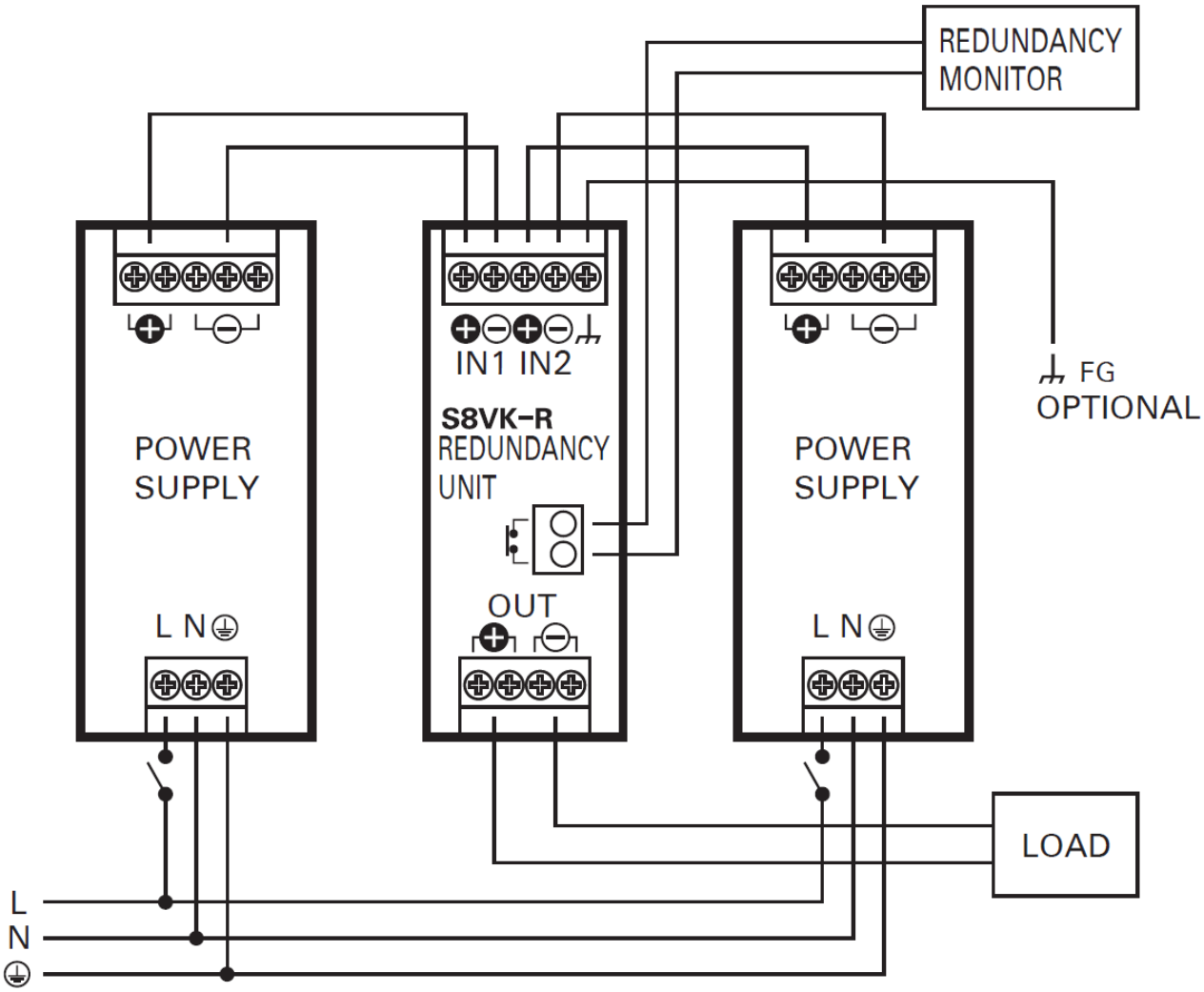


Mounting



* 1. Direction of air circulation
* 2. 75 mm min. / Mind. 75 mm. / 75 mm min.
* 3. 75 mm min. / Mind. 75 mm. / 75 mm min.
* 4. 20 mm min. / Mind. 20 mm. / 20 mm min.

Wiring Diagram, Combinations with the S8VK-G/ Schaltplan



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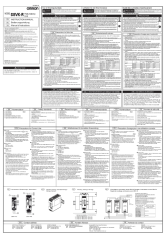
Documents / Resources

	**OMRON S8VK-R Redundancy Unit** [pdf] Instruction Manual S8VK-R, Redundancy Unit