

Compact, Slim-profile SSR with Heat Sink, Offering Heater Control for 480-VAC Rated Loads

- Compact design achieved by optimizing heat sink shape.
- DIN track mounting possible in addition to screw mounting.
- Conforms to CE Marking, EN (VDE approval), UL, CSA, and VDE standards.
(UL pending for 480 V series)

Note: Refer to *Safety Precautions for All Solid State Relays*.



Model Number Structure

Model Number Legend

G3PB-□□□-□□-□
 1 2 3 4 5 6 7

1. Basic Model Name

G3PB: Solid State Relay

2. Rated Load Power Supply Voltage

2: 240 VAC
 5: 480 VAC

3. Applicable Load Current

15: 15 A
 25: 25 A
 35: 35 A
 45: 45 A

4. Terminal Type

B: Screw terminals

5. Number of Elements

Blank: Single-phase models

6. Construction

Blank: DIN track mounting and built-in heat sink

7. Certification

VD: Certified by CSA and VDE

Ordering Information

List of Models

Isolation method	Zero cross function	Operation indicator	Rated input voltage	Applicable load (See note.)	Model number
Phototriac coupler	Yes	Yes (yellow)	12 to 24 VDC	15 A, 100 to 240 VAC	G3PB-215B-VD DC12-24
				25 A, 100 to 240 VAC	G3PB-225B-VD DC12-24
				35 A, 100 to 240 VAC	G3PB-235B-VD DC12-24
				45 A, 100 to 240 VAC	G3PB-245B-VD DC12-24
				15 A, 200 to 480 VAC	G3PB-515B-VD DC12-24
				25 A, 200 to 480 VAC	G3PB-525B-VD DC12-24
				35 A, 200 to 480 VAC	G3PB-535B-VD DC12-24
				45 A, 200 to 480 VAC	G3PB-545B-VD DC12-24

Note: The applicable load current depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in Engineering Data.

Accessories (Order Separately)

Mounting Track	Dimensions	Part Number
	50 cm (1) x 7.3 mm (t)	PPF-50N
	1 m (1) x 7.3 mm (t)	PPF-100N
	1 m (1) x 16 mm (t)	PPF-100N2

Specifications

■ Ratings (at an Ambient Temperature of 25°C)

Input

Item	Common
Rated voltage	12 to 24 VDC
Operating voltage range	9.6 to 30 VDC
Rated input current	7 mA max.
Must operate voltage	9.6 VDC max.
Must release voltage	1 VDC min.

Output

Item	G3PB-215B-VD	G3PB-225B-VD	G3PB-235B-VD	G3PB-245B-VD	G3PB-515B-VD	G3PB-525B-VD	G3PB-535B-VD	G3PB-545B-VD
Rated load voltage	100 to 240 VAC (50/60 Hz)				200 to 480 VAC (50/60 Hz)			
Load voltage range	75 to 264 VAC (50/60 Hz)				180 to 528 VAC (50/60 Hz)			
Applicable load current (See note.)	0.1 to 15 A (at 40°C)	0.1 to 25 A (at 40°C)	0.5 to 35 A (at 25°C)	0.5 to 45 A (at 25°C)	0.1 to 15 A (at 40°C)	0.1 to 25 A (at 40°C)	0.5 to 35 A (at 25°C)	0.5 to 45 A (at 25°C)
Inrush current resistance (peak value)	150 A (60 Hz, 1 cycle)	220 A (60 Hz, 1 cycle)	440 A (60 Hz, 1 cycle)		150 A (60 Hz, 1 cycle)	220 A (60 Hz, 1 cycle)	440 A (60 Hz, 1 cycle)	
Permissible I ² t (half 60-Hz wave)	121 A ² s	260 A ² s	1,260 A ² s		128 A ² s	1,350 A ² s		6,600 A ² s
Applicable load (with Class-1 AC resistive load)	3 kW (at 200 VAC)	5 kW (at 200 VAC)	7 kW (at 200 VAC)	9 kW (at 200 VAC)	6 kW max. (at 400 VAC)	10 kW max. (at 400 VAC)	14 kW max. (at 400 VAC)	18 kW max. (at 400 VAC)

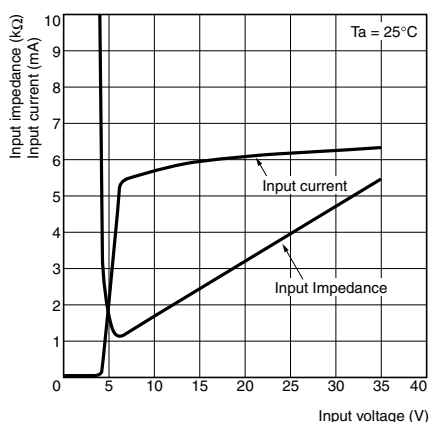
Note: The applicable load current varies depending on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in Engineering Data.

■ Characteristics

Item	G3PB-215B-VD	G3PB-225B-VD	G3PB-235B-VD	G3PB-245B-VD	G3PB-515B-VD	G3PB-525B-VD	G3PB-535B-VD	G3PB-545B-VD
Operate time	1/2 of load power source cycle + 1 ms max.							
Release time	1/2 of load power source cycle + 1 ms max.							
Output ON voltage drop	1.6 V (RMS) max.				1.8 V (RMS) max.			
Leakage current	10 mA max. (at 200 VAC)				20 mA max. (at 480 VAC)			
Insulation resistance	100 MΩ min. (at 500 VDC)							
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min							
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.375-mm single amplitude (Mounted to DIN track)							
Shock resistance	Destruction: 294 m/s ² (DIN track mounting)							
Ambient temperature	Operating: -30°C to 80°C (with no icing or condensation) Storage: -30°C to 100°C (with no icing or condensation)							
Ambient humidity	Operating: 45% to 85%							
Certified standards	UL508 CSA22.2 No. 14 EN60947-4-3				CSA22.2 No. 14 EN60947-4-3			
EMC	Emission: EN55011 Group 1 Class B Immunity: EN61000-6-2							
Weight	Approx. 240 g		Approx. 400 g		Approx. 240 g		Approx. 400 g	

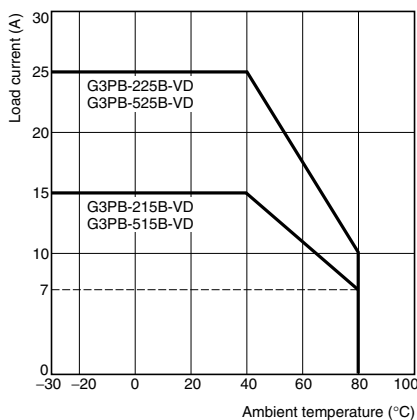
Engineering Data

Input Voltage vs. Input Impedance and Input Voltage vs. Input Current

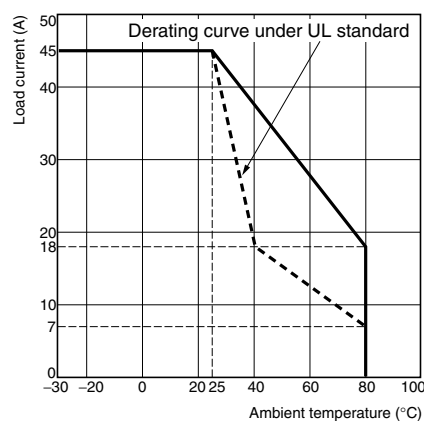
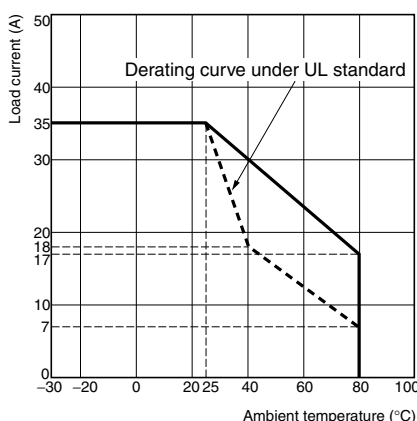
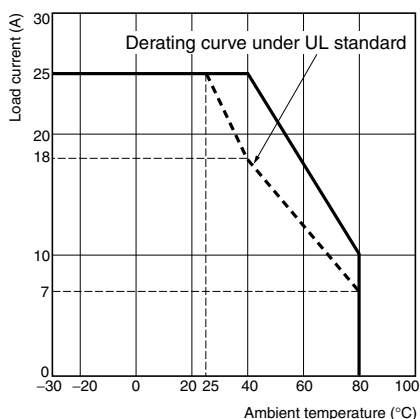
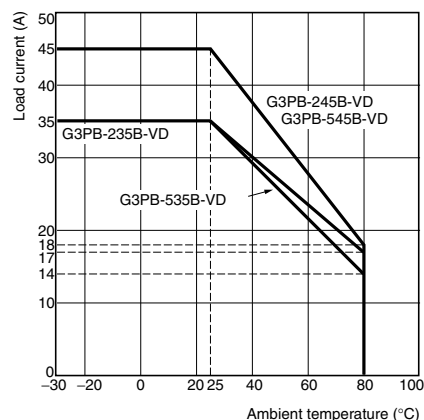


Load Current vs. Ambient Temperature

G3PB-215B-VD, PB-225B-VD
G3PB-515B-VD, G3PB-525B-VD



G3PB-235B-VD, PB-245B-VD
G3PB-535B-VD, G3PB-545B-VD

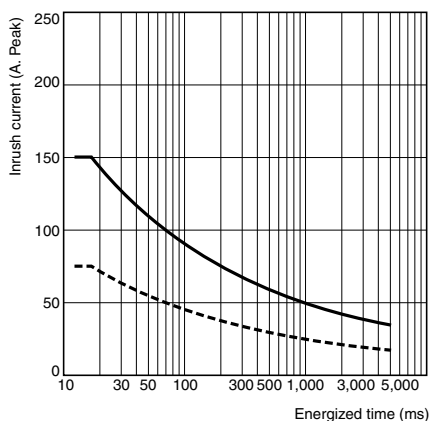


- Note: 1.** Please use proper ventilation and cooling as recommended by the instruction sheet packaged with the product.
- 2.** Please note that the derating curve above 18 A is applicable under the UL standard only with forced air cooling by fan.

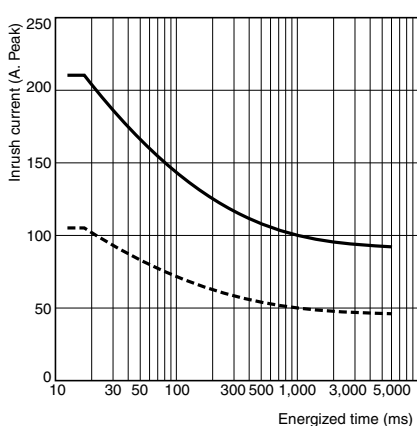
One Cycle Surge Current: Non-repetitive

Keep the inrush current to below the inrush current resistance value (i.e., below the broken line) if it occurs repetitively.

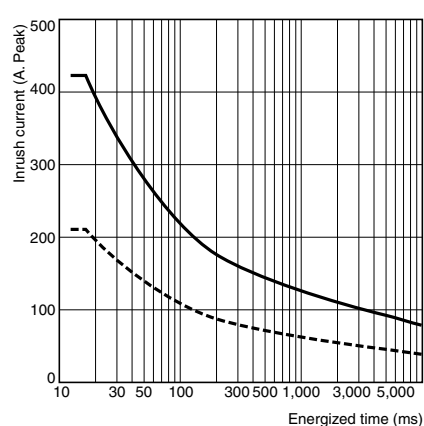
G3PB-215B-VD, G3PB-515B-VD



G3PB-225B-VD, G3PB-525B-VD

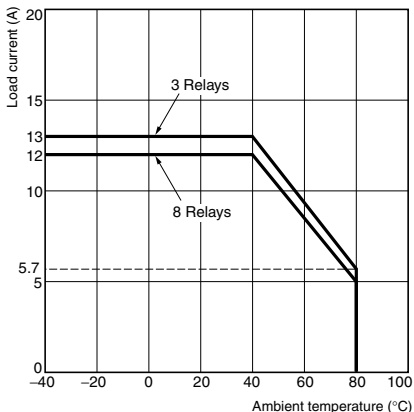


G3PB-235B-VD, G3PB-245B-VD
G3PB-535B-VD, G3PB-545B-VD

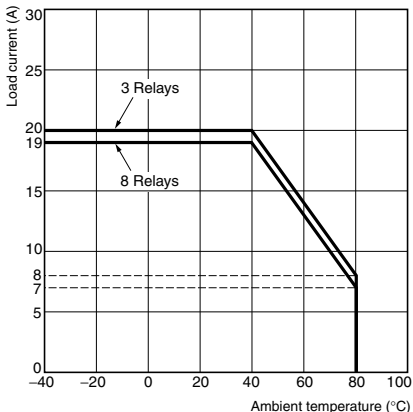


Close Mounting (3 or 8 Relays)

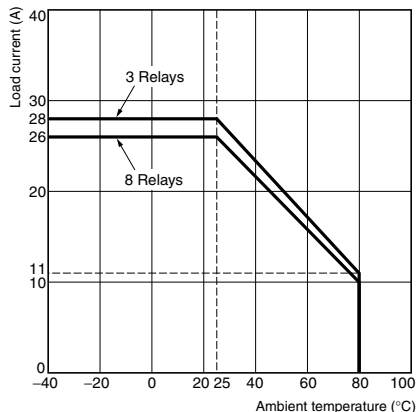
G3PB-215B-VD



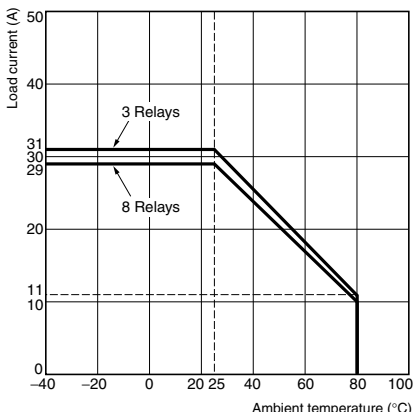
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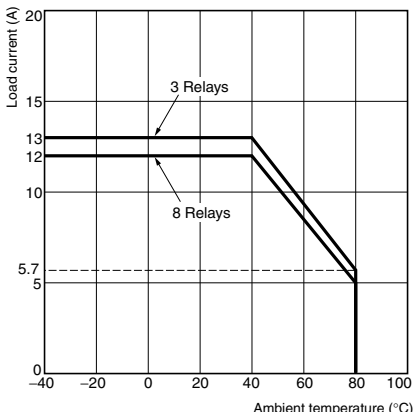
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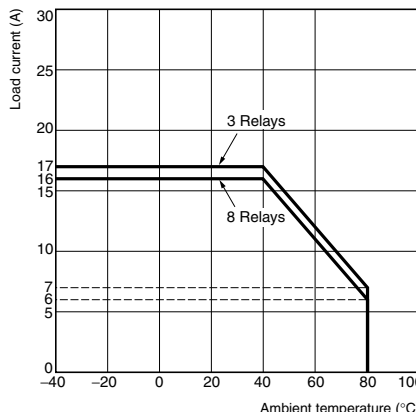
G3PB-245B-VD



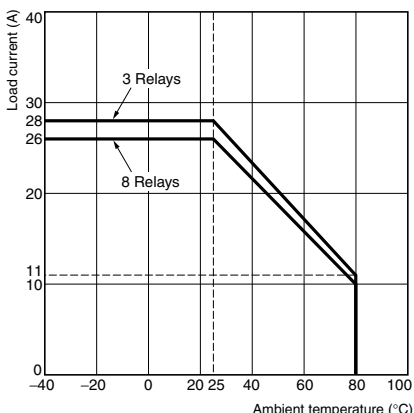
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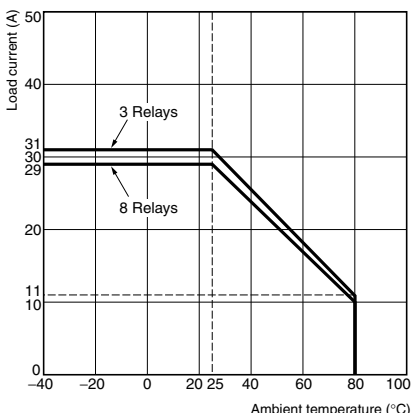
G3PB-525B-VD



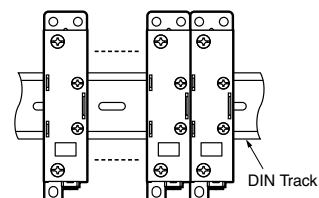
G3PB-535B-VD



G3PB-545B-VD



Close Mounting Example

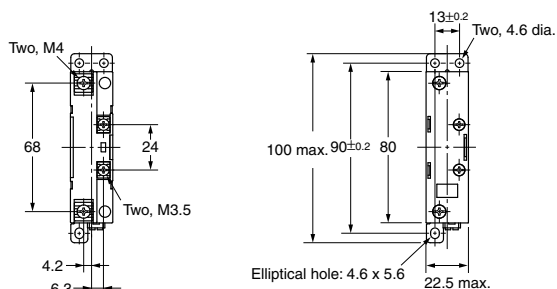
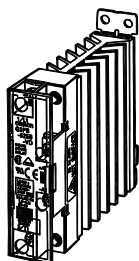


Note: Close mounting of 3 Relays:
7 A at an ambient temperature of 80°C.
Close mounting of 8 Relays:
6 A at an ambient temperature of 80°C.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

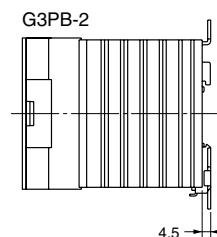
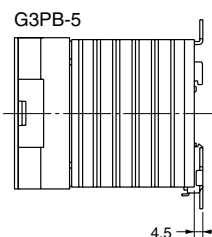
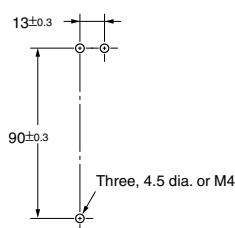
G3PB-215B-VD
G3PB-225B-VD
G3PB-515B-VD
G3PB-525B-VD



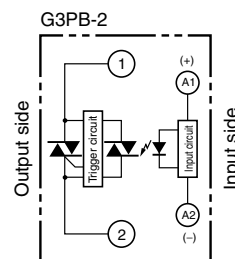
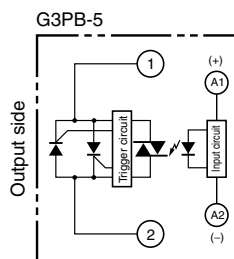
Note: Without terminal cover.

Note: With terminal cover.

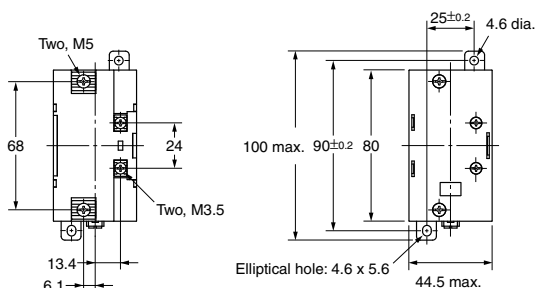
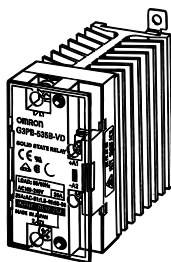
Mounting Holes



Terminal Arrangement/Internal Circuit Diagram



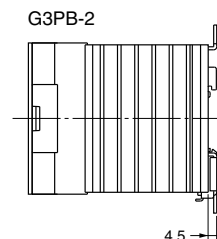
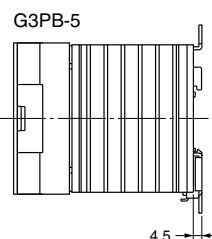
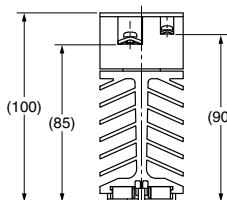
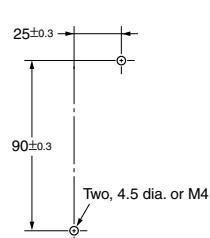
G3PB-235B-VD
G3PB-245B-VD
G3PB-535B-VD
G3PB-545B-VD



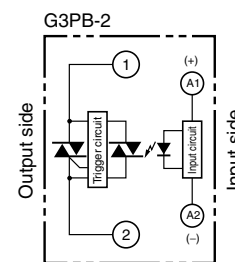
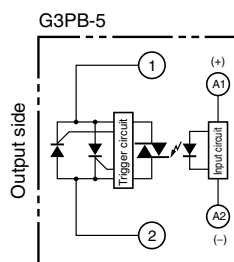
Note: Without terminal cover.

Note: With terminal cover.

Mounting Holes



Terminal Arrangement/Internal Circuit Diagram

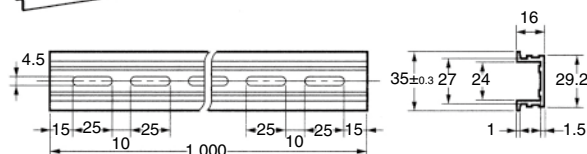
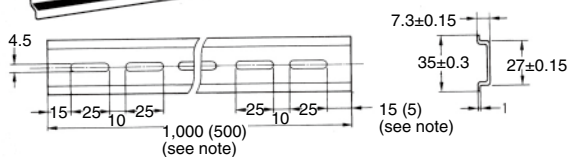


Accessories (Order Separately)

Mounting Tracks

PFP-100N, PFP-50N

PFP-100N2



Note: Values in parentheses indicate dimensions for the PFP-50N.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

Safety Precautions for All Solid State Relays

Refer to the *Safety Precautions* section for each SSR for specific precautions applicable to that SSR.

⚠ CAUTION

Do not touch the SSR or the heat sink while the power is being supplied or immediately after the power supply has been turned OFF.
Touching the SSR or heat sink while it is hot may result in burns.



Do not touch the LOAD terminals on the SSR immediately after the power supply has been turned OFF.
Shock may result due to the electrical charge stored in the built-in snubber circuit.



Always attach the cover terminal if the SSR has one.
Contact with current-carrying parts may result in shock.



Always turn OFF the power supply before performing wiring.
Not doing so may result in shock.



Do not allow short-circuit current to flow to the load side of the SSR.
The SSR may explode if short-circuit current flows.



■ Precautions for Safe Use

OMRON constantly strives to improve quality and reliability. SSRs, however, use semiconductors, and semiconductors may commonly malfunction or fail. In particular, it may not be possible to ensure safety if the SSRs are used outside the rated ranges. Therefore, always use the SSRs within the ratings. When using an SSR, always design the system to ensure safety and prevent human accidents, fires, and social harm in the event of SSR failure. System design must include measures such as system redundancy, measures to prevent fires from spreading, and designs to prevent malfunction.

1. Do not apply voltage or current in excess of the ratings to the terminals of the SSR.
Doing so may result in failure or burn damage.
2. Do not use the SSR with loose terminal screws.
Doing so may result in burn damage due to abnormal heat produced by the terminals.
3. Do not block the movement of the air surrounding the SSR or heat sink.
Abnormal heating of the SSR may result in shorting failures of the elements or burn damage.
4. Follow the *Precautions for Correct Use* when performing wiring or tightening the screws.
If the SSR is used with the wiring or screw tightening performed improperly, burn damage may occur due to abnormal heat generated when the power is being applied.

■ Precautions for Correct Use

For details, refer to *Technical Guide for Solid State Relays*.

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

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Application Considerations

SUITABILITY FOR USE

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- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS 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.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased product.

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