Solid State Contactors for Heaters

G3PE-Three-phase

CSM_G3PE-Three-phase_DS_E_3_1

Compact, Slim-profile SSRs with Heat Sinks. Solid State Contactors for Three-phase Heaters Reduced Installation Work with DIN Track Mounting.

- RoHS compliant.
- Surge pass protection improved surge dielectric strength for output currents. (OMRON testing)
- Slim design with 3-phase output and built-in heat sinks.
- DIN Track mounting types and screw mounting types are available. All DIN Track mounting types mount to DIN Track (applicable DIN Track: TR35-15Fe (IEC 60715)).
- Conforms to UL, CSA, and EN standards (TÜV certification).

⚠ **Refer to *Safety Precautions for All G3PE Models*.**

Ordering Information

List of Models

Models with Built-in Heat Sinks

Number of phases	Insulation method	Operation indicator	Rated input voltage	Zero cross function	Type	Applicable load *1	Number of poles	Model
Three-phase	Phototriac coupler	Yes (yellow)	12 to 24 VDC	Yes	DIN track mounting *2	15 A, 100 to 240 VAC	3	G3PE-215B-3N DC12-24
							2	G3PE-215B-2N DC12-24
						25 A, 100 to 240 VAC	3	G3PE-225B-3N DC12-24
							2	G3PE-225B-2N DC12-24
						35 A, 100 to 240 VAC	3	G3PE-235B-3N DC12-24
							2	G3PE-235B-2N DC12-24
						45 A, 100 to 240 VAC	3	G3PE-245B-3N DC12-24
							2	G3PE-245B-2N DC12-24
						15 A, 200 to 480 VAC	3	G3PE-515B-3N DC12-24
							2	G3PE-515B-2N DC12-24
						25 A, 200 to 480 VAC	3	G3PE-525B-3N DC12-24
							2	G3PE-525B-2N DC12-24
						35 A, 200 to 480 VAC	3	G3PE-535B-3N DC12-24
							2	G3PE-535B-2N DC12-24
						45 A, 200 to 480 VAC	3	G3PE-545B-3N DC12-24
							2	G3PE-545B-2N DC12-24
					Screw mounting	15 A, 100 to 240 VAC	3	G3PE-215B-3 DC12-24
							2	G3PE-215B-2 DC12-24
						25 A, 100 to 240 VAC	3	G3PE-225B-3 DC12-24
							2	G3PE-225B-2 DC12-24
						35 A, 100 to 240 VAC	3	G3PE-235B-3 DC12-24
							2	G3PE-235B-2 DC12-24
						45 A, 100 to 240 VAC	3	G3PE-245B-3 DC12-24
							2	G3PE-245B-2 DC12-24
						15 A, 200 to 480 VAC	3	G3PE-515B-3 DC12-24
							2	G3PE-515B-2 DC12-24
						25 A, 200 to 480 VAC	3	G3PE-525B-3 DC12-24
							2	G3PE-525B-2 DC12-24
						35 A, 200 to 480 VAC	3	G3PE-535B-3 DC12-24
							2	G3PE-535B-2 DC12-24
						45 A, 200 to 480 VAC	3	G3PE-545B-3 DC12-24
							2	G3PE-545B-2 DC12-24

*1. The applicable load current depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in *Engineering Data* on page 5.

*2. The applicable DIN Track is the TR35-15Fe (IEC 60715). For details, refer to the mounting information in the *Safety Precautions for All G3PE Models*.

Models with Externally Attached Heat Sinks

Number of phases	Insulation method	Operation indicator	Rated input voltage	Zero cross function	Type	Applicable load ✻	Number of poles	Model
Three-phase	Phototriac coupler	Yes (yellow)	12 to 24 VDC	Yes	Externally attached heat sinks	15 A, 100 to 240 VAC	3	**G3PE-215B-3H DC12-24**
							2	**G3PE-215B-2H DC12-24**
						25 A, 100 to 240 VAC	3	**G3PE-225B-3H DC12-24**
							2	**G3PE-225B-2H DC12-24**
						35 A, 100 to 240 VAC	3	**G3PE-235B-3H DC12-24**
							2	**G3PE-235B-2H DC12-24**
						45 A, 100 to 240 VAC	3	**G3PE-245B-3H DC12-24**
							2	**G3PE-245B-2H DC12-24**
						15 A, 200 to 480 VAC	3	**G3PE-515B-3H DC12-24**
							2	**G3PE-515B-2H DC12-24**
						25 A, 200 to 480 VAC	3	**G3PE-525B-3H DC12-24**
							2	**G3PE-525B-2H DC12-24**
						35 A, 200 to 480 VAC	3	**G3PE-535B-3H DC12-24**
							2	**G3PE-535B-2H DC12-24**
						45 A, 200 to 480 VAC	3	**G3PE-545B-3H DC12-24**
							2	**G3PE-545B-2H DC12-24**

✻ The rated load current depends on the heat sink or radiator that is mounted. It also depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature*.

Accessories (Order Separately)

Heat Sink

Heat resistance Rth (s-a) (°C/W)	Model
1.67	**Y92B-P50**
1.01	**Y92B-P100**
0.63	**Y92B-P150**
0.43	**Y92B-P200**
0.36	**Y92B-P250**

Specifications

Certification

UL508, CSA22.2 No.14, and EN60947-4-3

Ratings (at an Ambient Temperature of 25°C)

Operating Circuit (All Models)

ItemModel	Same for all models
Rated operating voltage	12 to 24 VDC
Operating voltage range	9.6 to 30 VDC
Rated input current (impedance)	10 mA max. (24 VDC)
Must-operate voltage	9.6 VDC max.
Must-release voltage	1 VDC min.
Insulation method	Phototriac
Operation indicator	Yellow LED

Main Circuit of Models with Built-in Heat Sinks

Item \ Model	G3PE-215B-3(N)	G3PE-215B-2(N)	G3PE-225B-3(N)	G3PE-225B-2(N)	G3PE-235B-3(N)	G3PE-235B-2(N)	G3PE-245B-3(N)	G3PE-245B-2(N)	G3PE-515B-3(N)	G3PE-515B-2(N)	G3PE-525B-3(N)	G3PE-525B-2(N)	G3PE-535B-3(N)	G3PE-535B-2(N)	G3PE-545B-3(N)	G3PE-545B-2(N)
Rated load voltage	100 to 240 VAC								200 to 480 VAC							
Operating voltage range	75 to 264 VAC								180 to 528 VAC							
Rated load current ✻1	15 A (at 40°C)		25 A (at 40°C)		35 A (at 25°C)		45 A (at 25°C)		15 A (at 40°C)		25 A (at 40°C)		35 A (at 25°C)		45 A (at 25°C)	
Minimum load current	0.2 A				0.5 A											
Inrush current resistance (peak value)	150 A (60 Hz, 1 cycle)		220 A (60 Hz, 1 cycle)		440 A (60 Hz, 1 cycle)				220 A (60 Hz, 1 cycle)				440 A (60 Hz, 1 cycle)			
Permissible I^2t (reference value)	$121A^2s$		$260A^2s$		$1,260A^2s$				$260A^2s$				$1,260A^2s$			
Applicable load (resistive load: AC1 class) ✻2	5.1 kW (at 200 VAC)		8.6 kW (at 200 VAC)		12.1 kW (at 200 VAC)		15.5 kW (at 200 VAC)		12.5 kW (at 480 VAC)		20.7 kW (at 480 VAC)		29.0 kW (at 480 VAC)		37.4 kW (at 480 VAC)	

✻1. The applicable load current depends on the ambient temperature. For details, refer to *Load Current vs. Ambient Temperature* in *Engineering Data* on page 5.

✻2. Applicable Load
Use the following formula to calculate the maximum total capacity of a heater load for a three-phase balanced load with delta connections.
Maximum load capacity = Load current × Load voltage × $\sqrt{3}$
Example: 15 A × 200 V × $\sqrt{3}$ = 5,196 W ≅ 5.1 kW
Example: 15 A × 400 V × $\sqrt{3}$ = 10,392 W ≅ 10.3 kW

Main Circuit of Models with Externally Attached Heat Sinks

Item \ Model	G3PE-215B-3H	G3PE-215B-2H	G3PE-225B-3HH	G3PE-225B-2H	G3PE-235B-3H	G3PE-235B-2H	G3PE-245B-3H	G3PE-245B-2H	G3PE-515B-3H	G3PE-515B-2H	G3PE-525B-3H	G3PE-525B-2H	G3PE-535B-3H	G3PE-535B-2H	G3PE-545B-3H	G3PE-545B-2H
Rated load voltage	100 to 240 VAC								200 to 480 VAC							
Operating voltage range	75 to 264 VAC								180 to 528 VAC							
Rated load current ✻	15 A (at 40°C)		25 A (at 40°C)		35 A (at 25°C)		45 A (at 25°C)		15 A (at 40°C)		25 A (at 40°C)		35 A (at 25°C)		45 A (at 25°C)	
Minimum load current	0.2 A				0.5 A											
Inrush current resistance (peak value)	150 A (60 Hz, 1 cycle)		220 A (60 Hz, 1 cycle)		440 A (60 Hz, 1 cycle)				220 A (60 Hz, 1 cycle)				440 A (60 Hz, 1 cycle)			
Permissible I^2t (reference value)	$121A^2s$		$260A^2s$		$1,260A^2s$				$260A^2s$				$1,260A^2s$			
Applicable load (resistive load: AC1 class)	Refer to *Engineering Data* on page 5.															

✻ The rated load current depends on the heat sink or radiator that is mounted. It also depends on the ambient temperature.
For details, refer to *Load Current vs. Ambient Temperature* in *Engineering Data* on page 5.

Characteristics

Models with Built-in Heat Sinks

Item \ Model	G3PE-215B-3(N)	G3PE-215B-2(N)	G3PE-225B-3(N)	G3PE-225B-2(N)	G3PE-235B-3(N)	G3PE-235B-2(N)	G3PE-245B-3(N)	G3PE-245B-2(N)	G3PE-515B-3(N)	G3PE-515B-2(N)	G3PE-525B-3(N)	G3PE-525B-2(N)	G3PE-535B-3(N)	G3PE-535B-2(N)	G3PE-545B-3(N)	G3PE-545B-2(N)
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	• DIN Track mounting: 10 to 55 to 10 Hz, 0.175-mm single amplitude (0.35-mm double amplitude) • Screw mounting: 10 to 55 to 10 Hz, 0.375-mm single amplitude (0.75-mm double amplitude)															
Shock resistance	294 m/s^2 (reverse mounting: 98 m/s2)															
Ambient storage temperature	–30 to 100°C (with no icing or condensation)															
Ambient operating temperature	–30 to 80°C (with no icing or condensation)															
Ambient operating humidity	45% to 85%															
Weight	Approx. 1.25 kg		Approx. 1.45 kg	Approx. 1.25 kg	Approx. 1.65 kg	Approx. 1.45 kg	Approx. 2.0 kg	Approx. 1.65 kg	Approx. 1.25 kg		Approx. 1.45 kg	Approx. 1.25 kg	Approx. 1.65 kg	Approx. 1.45 kg	Approx. 2.0 kg	Approx. 1.65 kg

✻ The leakage current of phase S will be approximately $\sqrt{3}$ times larger if the 2-element model is used.

Models with Externally Attached Heat Sinks

Item \ Model	G3PE-215B-3H	G3PE-215B-2H	G3PE-225B-3H	G3PE-225B-2H	G3PE-235B-3H	G3PE-235B-2H	G3PE-245B-3H	G3PE-245B-2H	G3PE-515B-3H	G3PE-515B-2H	G3PE-525B-3H	G3PE-525B-2H	G3PE-535B-3H	G3PE-535B-2H	G3PE-545B-3H	G3PE-545B-2H
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	10 to 55 to 10 Hz, 0.375-mm single amplitude (0.75-mm double amplitude)															
Shock resistance	Destruction: 294 m/s^2															
Ambient storage temperature	–30 to 100°C (with no icing or condensation)															
Ambient operating temperature	–30 to 80°C (with no icing or condensation)															
Ambient operating humidity	45% to 85%															
Weight	Approx. 300 g															

✻ The leakage current of phase S will be approximately $\sqrt{3}$ times larger if the 2-element model is used.

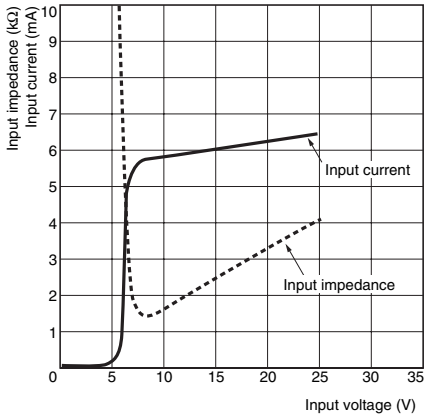
Heat Sinks

Model	Weight
Y92B-P50	Approx. 450 g
Y92B-P100	Approx. 450 g
Y92B-P150	Approx. 600 g
Y92B-P200	Approx. 850 g
Y92B-P250	Approx. 1,200 g

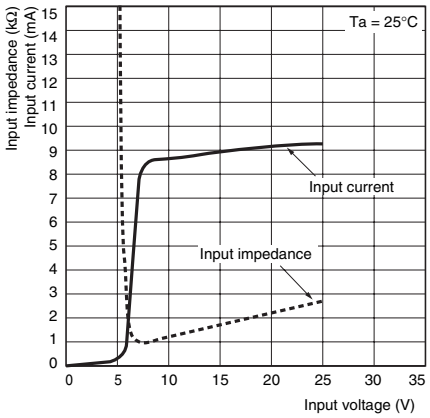
Engineering Data

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

G3PE-2□□B-□□



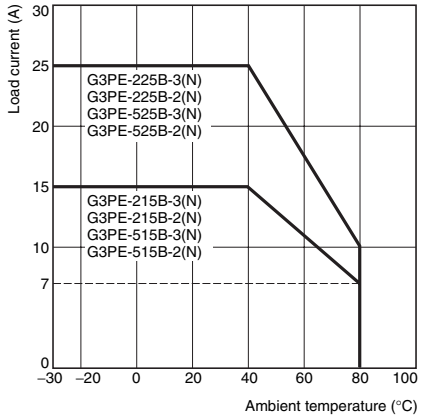
G3PE-5□□B-□□



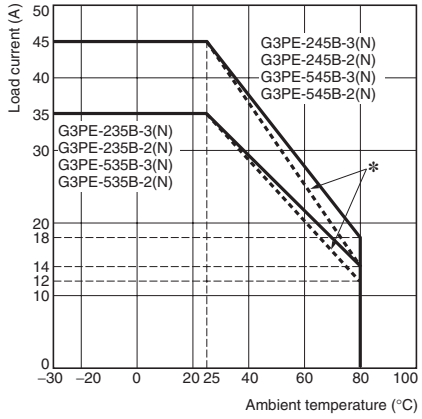
Load Current vs. Ambient Temperature

Models with Built-in Heat Sinks

G3PE-215B-3(N), G3PE-225B-3(N)
G3PE-215B-2(N), G3PE-225B-2(N)
G3PE-515B-3(N), G3PE-525B-3(N)
G3PE-515B-2(N), G3PE-525B-2(N)



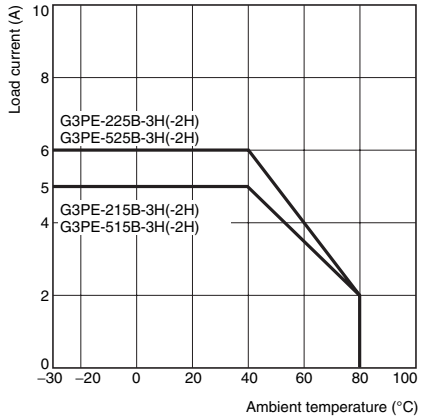
G3PE-235B-3(N), G3PE-245B-3(N)
G3PE-235B-2(N), G3PE-245B-2(N)
G3PE-535B-3(N), G3PE-545B-3(N)
G3PE-535B-2(N), G3PE-545B-2(N)



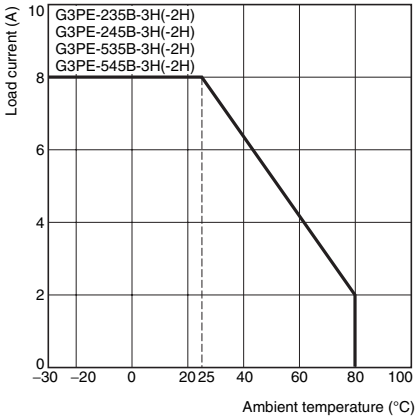
* The dotted lines in the charts are the UL derating curves for the G3PE-235B-3(N), G3PE-245B-3(N), G3PE-235B-2(N), G3PE-245B-2(N), G3PE-535B-3(N), G3PE-545B-3(N), G3PE-535B-2(N), G3PE-545B-2(N).

Models with Externally Attached Heat Sinks

G3PE-215B-3H(-2H)
G3PE-225B-3H(-2H)
G3PE-515B-3H(-2H)
G3PE-525B-3H(-2H)



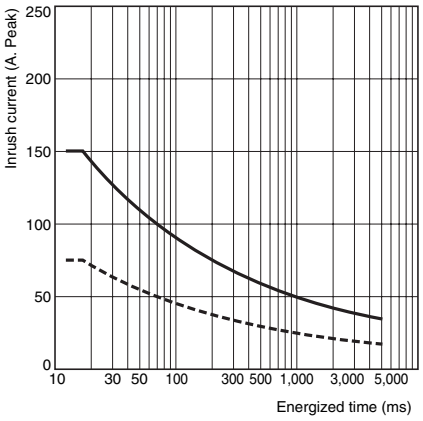
G3PE-235B-3H(-2H)
G3PE-245B-3H(-2H)
G3PE-535B-3H(-2H)
G3PE-545B-3H(-2H)



Inrush Current Resistance: Non-repetitive

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

G3PE-215B-3(N)(H)
G3PE-215B-2(N)(H)



G3PE-225B-3(N)(H), G3PE-525B-3(N)(H)
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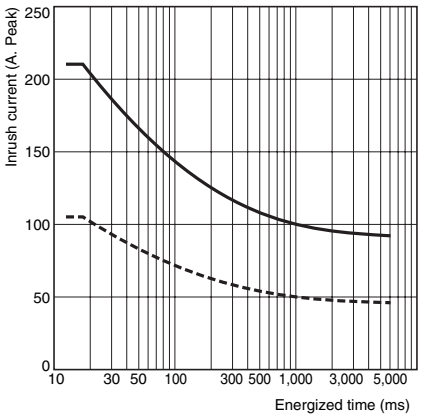
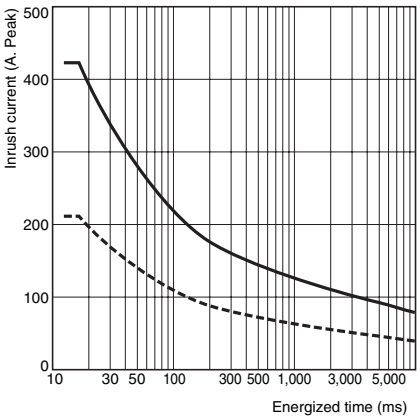
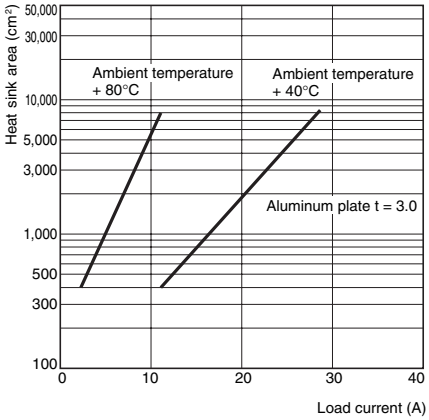


G3PE-235B-3(N)(H), G3PE-535B-3(N)(H)
G3PE-235B-2(N)(H), G3PE-535B-2(N)(H)
G3PE-245B-3(N)(H), G3PE-545B-3(N)(H)
G3PE-245B-2(N)(H), G3PE-545B-2(N)(H)

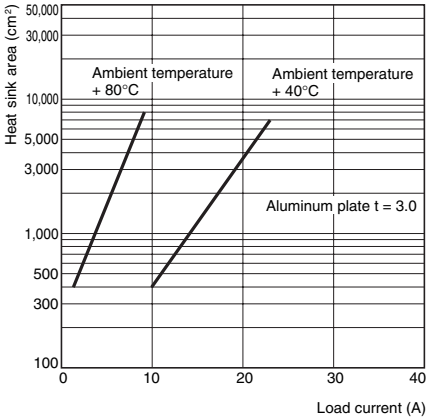


Heat Sink Area vs. Load Current (40°C and 80°C)

G3PE-225B-3H



G3PE-525B-3H



Note: The heat sink area is the combined area of all surfaces of the heat sink that radiate heat.
For the G3PE-525B-3H, when a current of 18 A flows through the SSR at 40°C, the graph shows that a heat sink area of about 2,500 cm^2 would be required. Therefore, if the heat sink is square, one side of an aluminum plate in the heat sink must be 36 cm or longer ($\sqrt{2,500}$ (cm^2)/2 = 36 cm (rounded to a whole number)).

Models with Externally Attached Heat Sinks Heat Resistance Rth (Junction/SSR Back Surface)

Model	Rth (°C/W)
G3PE-215B-3H	1.05
G3PE-225B-3H	0.57
G3PE-235B-3H	0.57
G3PE-245B-3H	0.57

Heat Resistance of Heat Sinks

Model	Rth (°C/W)
Y92B-P50	1.67
Y92B-P100	1.01
Y92B-P150	0.63
Y92B-P200	0.43
Y92B-P250	0.36

Note: If a commercially available heat sink is used, use one that has a heat resistance equal to or lower than a standard OMRON Heat Sink.

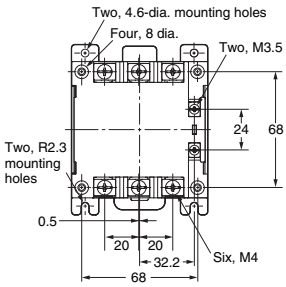
Dimensions

Note: All units are in millimeters unless otherwise indicated.

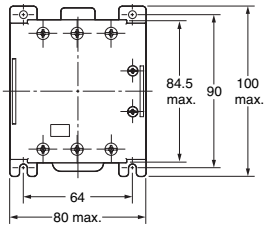
Solid State Relays

Models with DIN Track Mounting

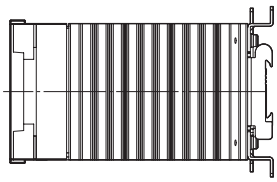
G3PE-215B-3N
G3PE-215B-2N
G3PE-225B-2N
G3PE-515B-3N
G3PE-515B-2N
G3PE-525B-2N



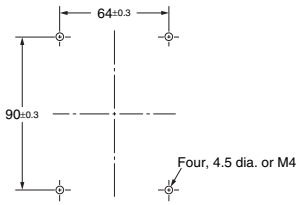
Note: Without terminal cover.

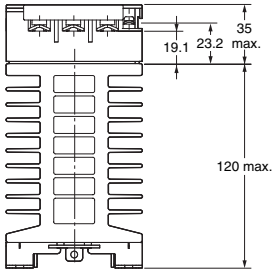


Note: With terminal cover.



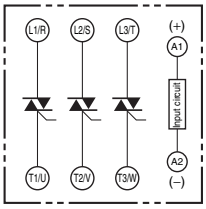
Mounting Holes



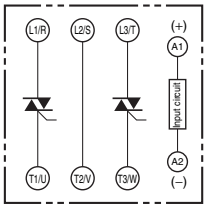


Terminal Arrangement/Internal Circuit Diagram

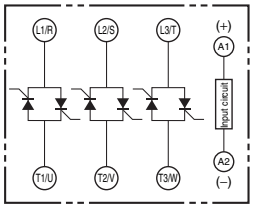
G3PE-215B-3N



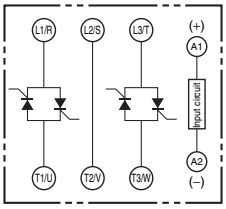
G3PE-2□5B-2N



G3PE-515E-3N

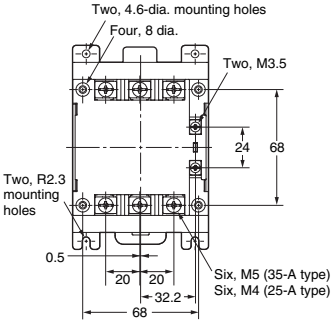


G3PE-5□5B-2N

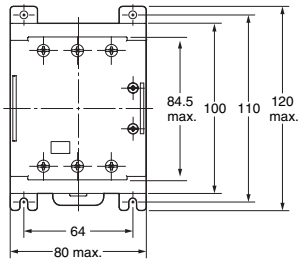


Models with DIN Track Mounting

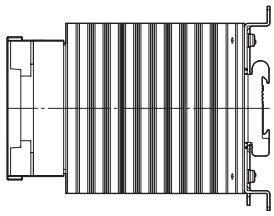
G3PE-225B-3N
G3PE-235B-2N
G3PE-525B-3N
G3PE-535B-2N



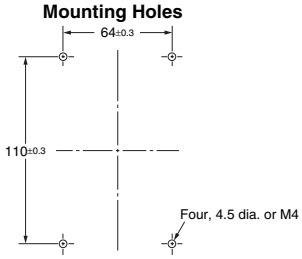
Note: Without terminal cover.

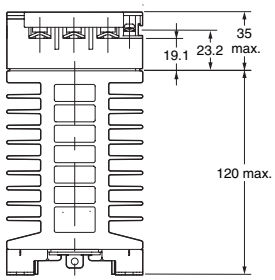


Note: With terminal cover.



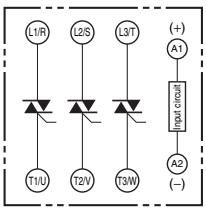
Mounting Holes



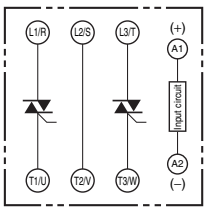


Terminal Arrangement/Internal Circuit Diagram

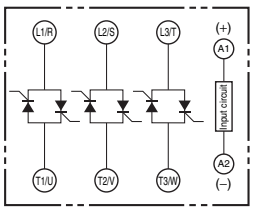
G3PE-225B-3N



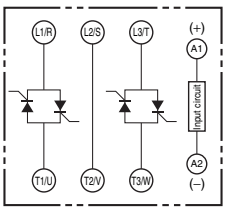
G3PE-235B-2N



G3PE-525B-3N

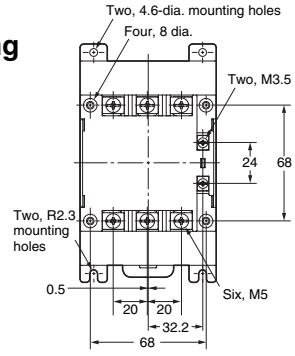


G3PE-535B-2N

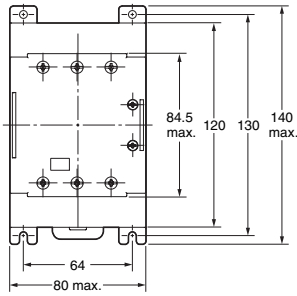


Models with DIN Track Mounting

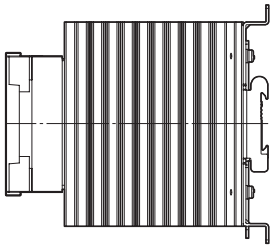
G3PE-235B-3N
G3PE-245B-2N
G3PE-535B-3N
G3PE-545B-2N



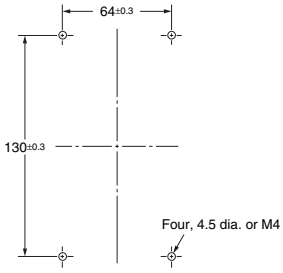
Note: Without terminal cover.

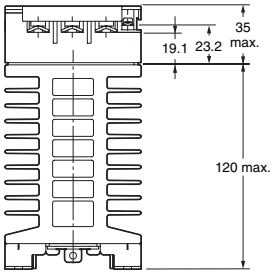


Note: With terminal cover.



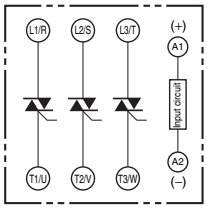
Mounting Holes



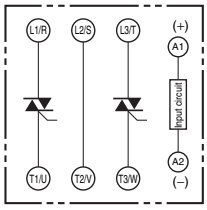


Terminal Arrangement/Internal Circuit Diagram

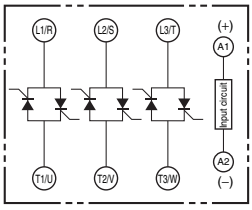
G3PE-235B-3N



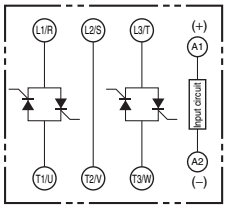
G3PE-245B-2N



G3PE-535B-3N

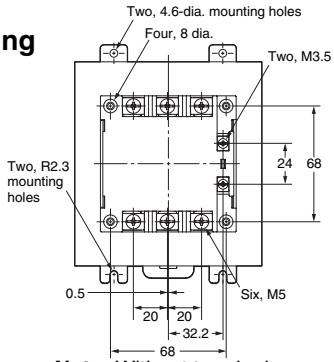


G3PE-545B-2N

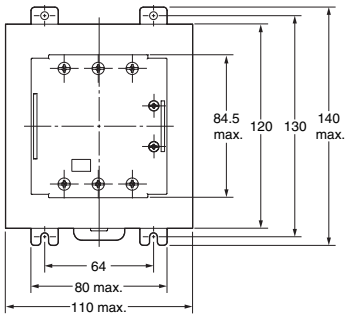


Models with DIN Track Mounting

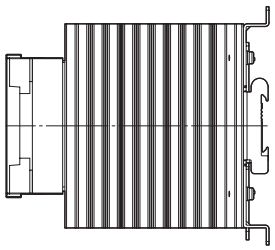
G3PE-245B-3N
G3PE-545B-3N



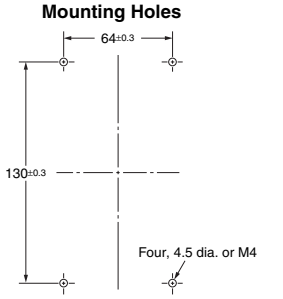
Note: Without terminal cover.

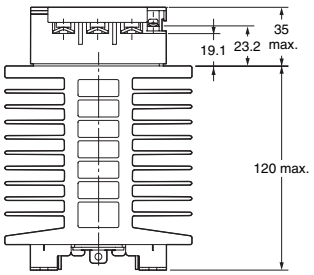


Note: With terminal cover.



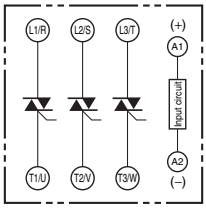
Mounting Holes



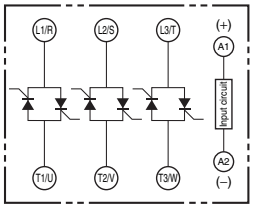


Terminal Arrangement/Internal Circuit Diagram

G3PE245B-3N



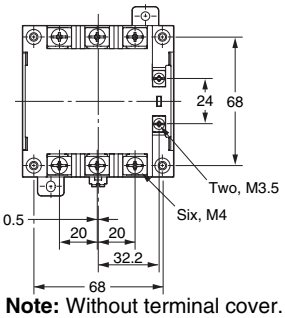
G3PE-545B-3N



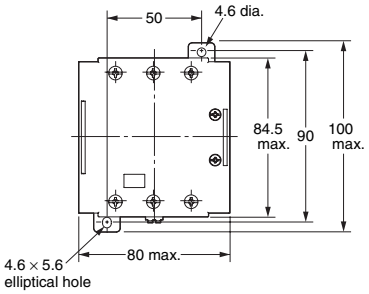
Models with Screw Mounting

G3PE-215B-2
G3PE-515B-2

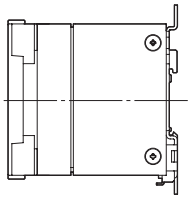
DIN Track or screw mounting



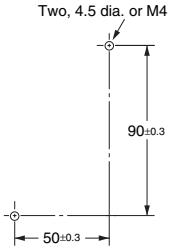
Note: Without terminal cover.

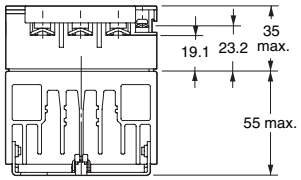


Note: With terminal cover.



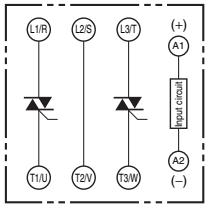
Mounting Holes



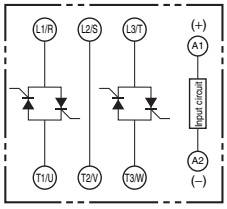


Terminal Arrangement/Internal Circuit Diagram

G3PE-215B-2

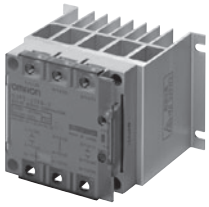


G3PE-515B-2

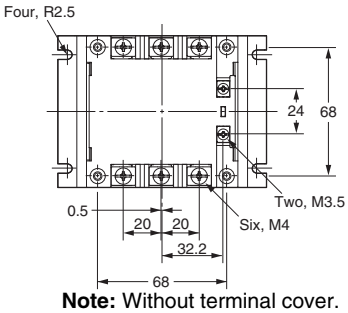


Models with Screw Mounting

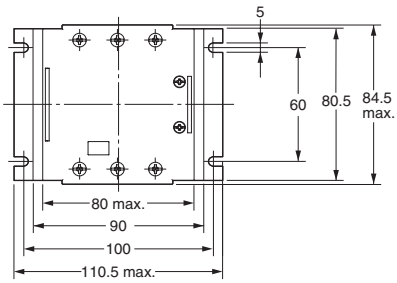
G3PE-215B-3
G3PE-225B-2
G3PE-515B-3
G3PE-525B-2



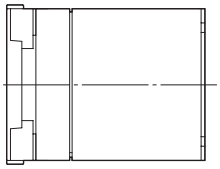
For screw mounting only



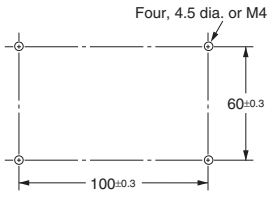
Note: Without terminal cover.

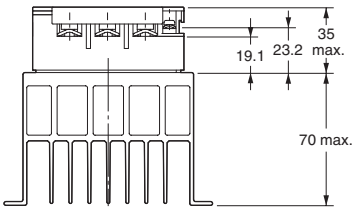


Note: With terminal cover.



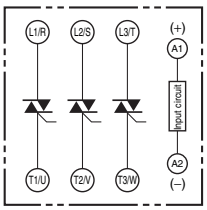
Mounting Holes



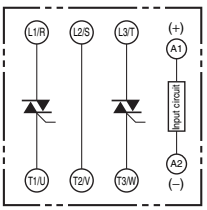


Terminal Arrangement/Internal Circuit Diagram

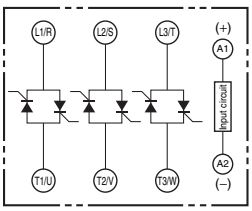
G3PE-215B-3



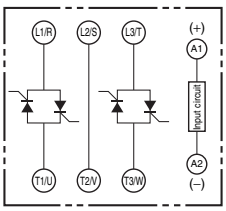
G3PE-225B-2



G3PE-515B-3



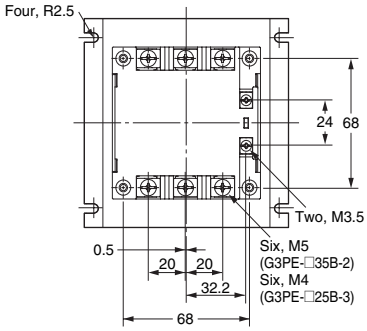
G3PE-525B-2



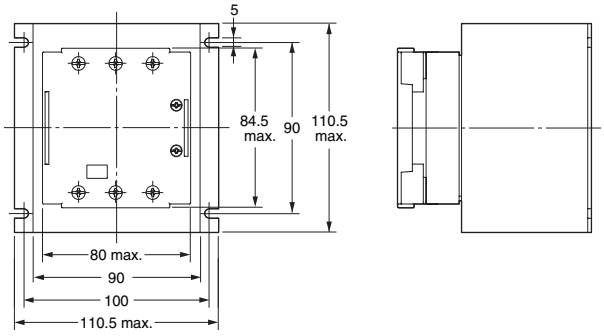
Models with Screw Mounting

G3PE-225B-3
G3PE-235B-2
G3PE-525B-3
G3PE-535B-2

For screw mounting only

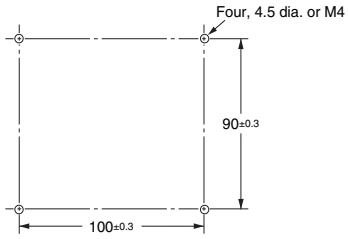


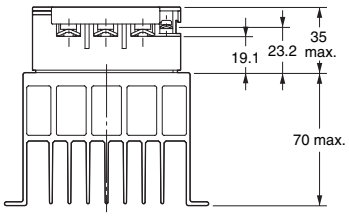
Note: Without terminal cover.



Note: With terminal cover.

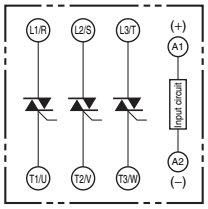
Mounting Holes



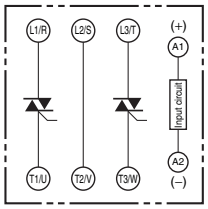


Terminal Arrangement/Internal Circuit Diagram

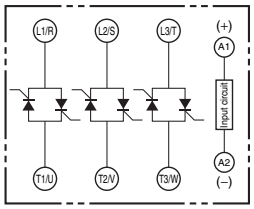
G3PE-225B-3



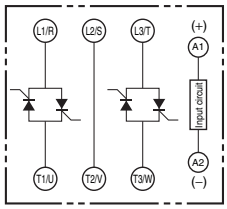
G3PE-235B-2



G3PE-525B-3



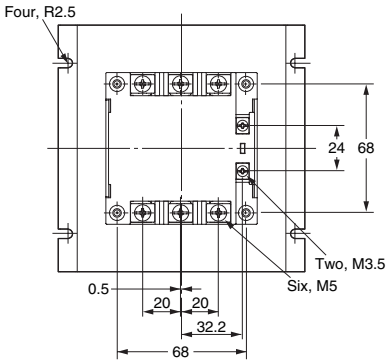
G3PE-535B-2



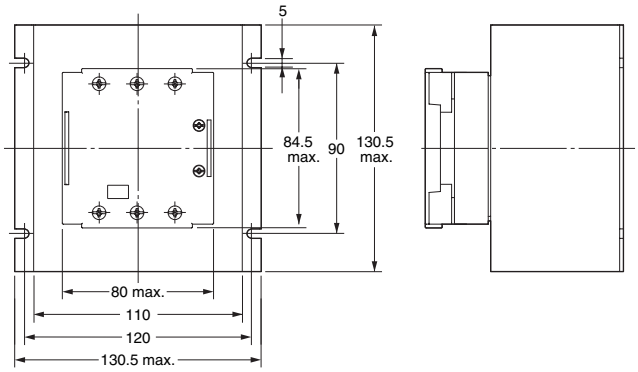
Models with Screw Mounting

G3PE-235B-3
G3PE-245B-2
G3PE-535B-3
G3PE-545B-2

For screw mounting only

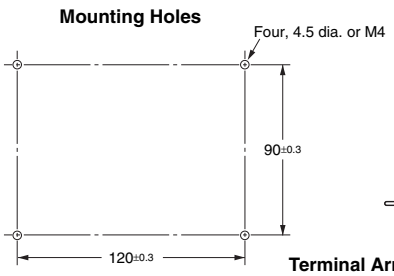


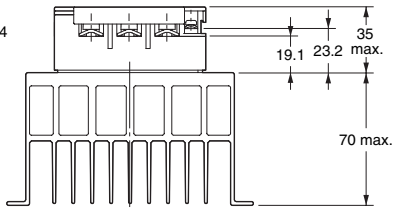
Note: Without terminal cover.



Note: With terminal cover.

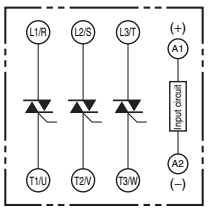
Mounting Holes



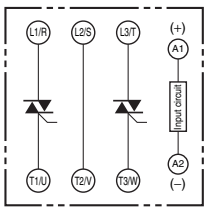


Terminal Arrangement/Internal Circuit Diagram

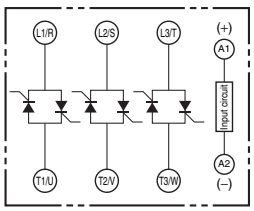
G3PE-235B-3



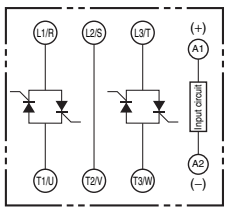
G3PE-245B-2



G3PE-535B-3



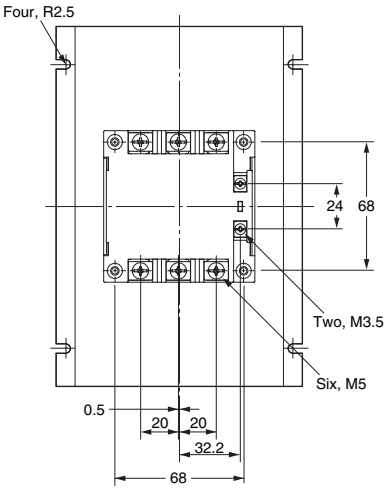
G3PE-545B-2



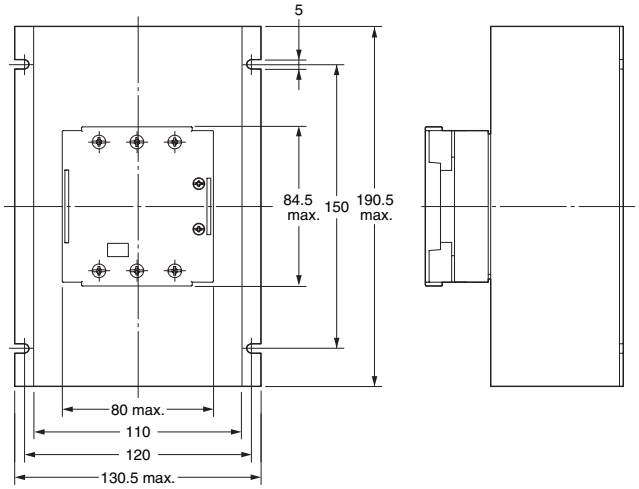
Models with Screw Mounting

G3PE-245B-3
G3PE-545B-3

For screw mounting only

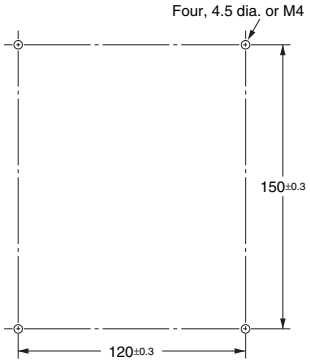


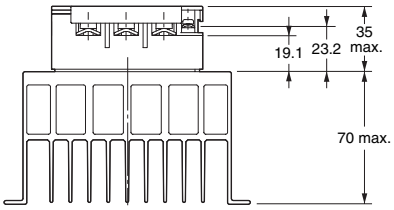
Note: Without terminal cover.



Note: With terminal cover.

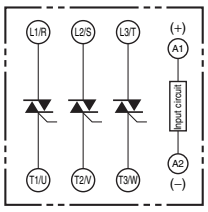
Mounting Holes



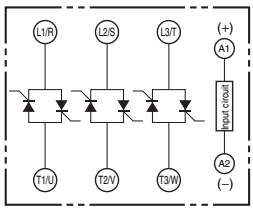


Terminal Arrangement/Internal Circuit Diagram

G3PE-245B-3

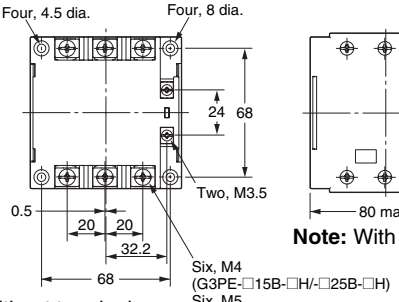


G3PE-545B-3

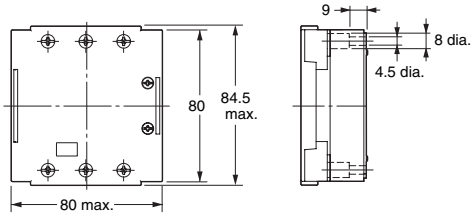


Models with Externally Attached Heat Sinks

G3PE-215B-3H
G3PE-215B-2H
G3PE-225B-3H
G3PE-225B-2H
G3PE-235B-3H
G3PE-235B-2H
G3PE-245B-3H
G3PE-245B-2H
G3PE-515B-3H
G3PE-515B-2H
G3PE-525B-3H
G3PE-525B-2H
G3PE-535B-3H
G3PE-535B-2H
G3PE-545B-3H
G3PE-545B-2H

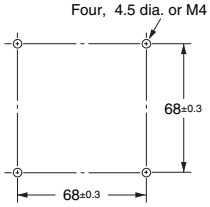


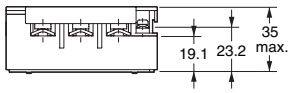
Note: Without terminal cover.



Note: With terminal cover.

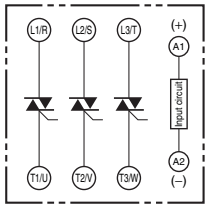
Mounting Holes



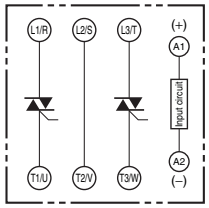


Terminal Arrangement/Internal Circuit Diagram

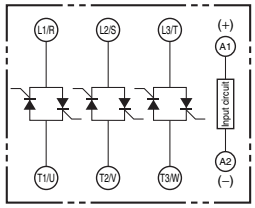
G3PE-2□5B-3H



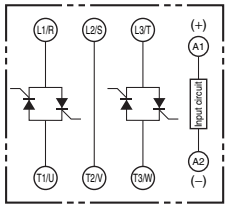
G3PE-2□5B-2H



G3PE-5□5B-3H

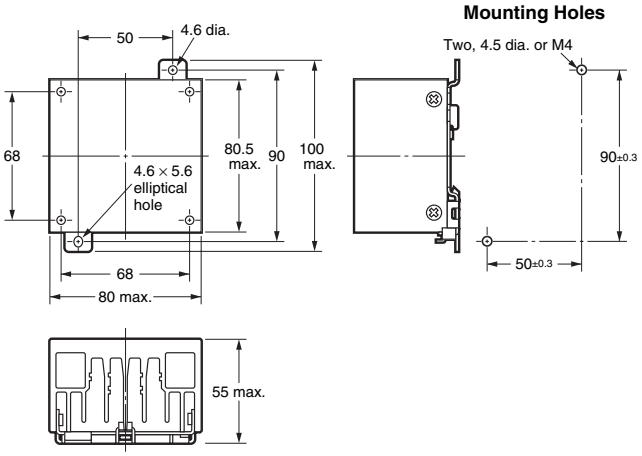


G3PE-5□5B-2H

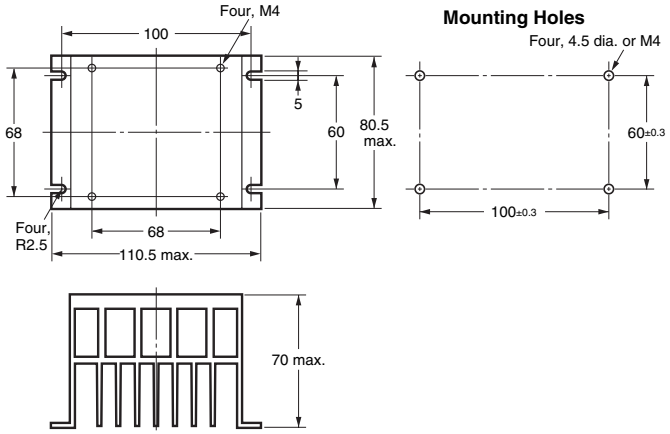


Accessories (Order Separately)

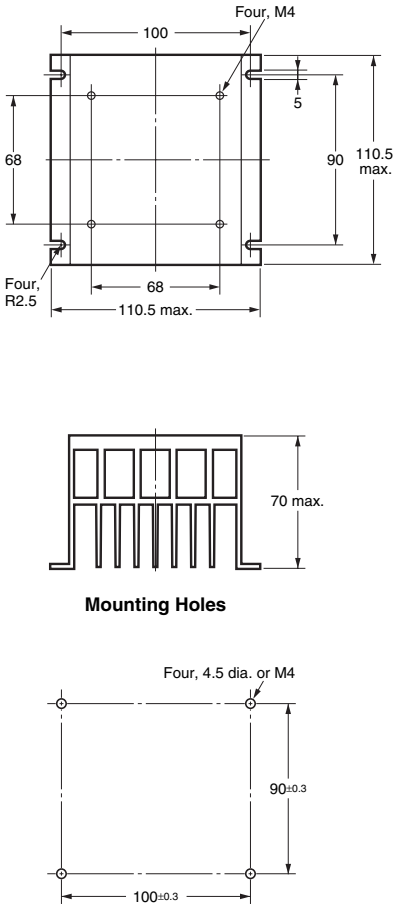
Heat Sink
Y92B-P50 (Mounts to DIN Track.)
For G3PE-215B-2H and G3PE-515B-2H



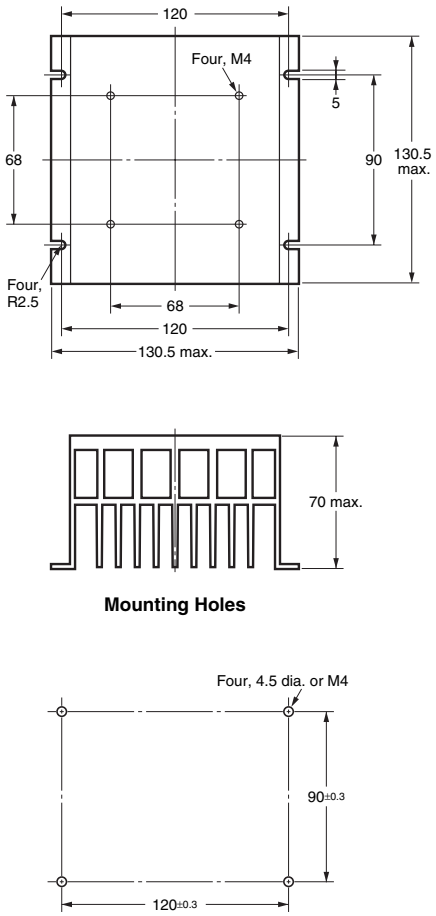
Heat Sink
Y92B-P100
For G3PE-215B-3H, G3PE-225B-2H, G3PE-515B-3H, and G3PE-525B-2H



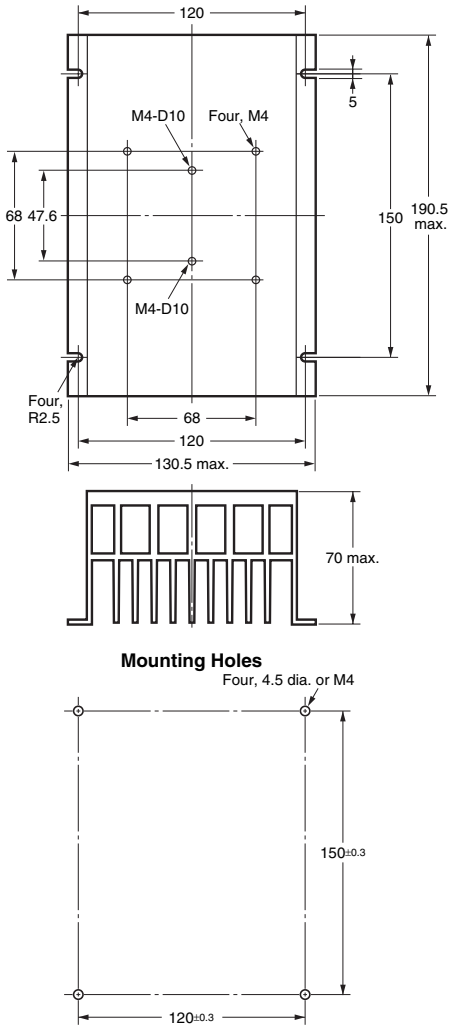
Heat Sink
Y92B-P150
For G3PE-225B-3H, G3PE-235B-2H, G3PE-525B-3H, and G3PE-535B-2H



Heat Sink
Y92B-P200
For G3PE-235B-3H, G3PE-245B-2H, G3PE-535B-3H, and G3PE-545B-2H



Heat Sink
Y92B-P250
For G3PE-245B-3H and G3PE-545B-3H



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2010.1

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