Solid State Relays
G3NH

Refer to *Safety Precautions* (page 5).

Switching 75 to 150 A at 240 to 440 VAC

- Easy-to-mount monoblock construction incorporating heat sink.
- Replaceable power cartridge.
- Built-in operation indicator and varistor.
- A series of high-voltage (440 V) models available.

Model Number Structure

■ Model Number Legend

G3NH-□□□□
1 2 3 4 5

1. Basic Model Name
G3NH: Solid State Relay
2. Rated Load Power Supply Voltage
2: 200 VAC
4: 400 VAC
3. Rated Load Current
075: 75 A
150: 150 A
4. Terminal Type
B: Screw terminals
5. Zero Cross Function
Blank: Equipped with zero cross function

Ordering Information

■ List of Models

Isolation	Zero cross function	Indicator	Rated output load	Rated input voltage	Model
Photocoupler	Yes	Yes	75 A at 100 to 240 VAC	5 to 24 VDC 100 to 240 VAC	G3NH-2075B
			75 A at 180 to 440 VAC		G3NH-4075B
			150 A at 100 to 240 VAC		G3NH-2150B
			150 A at 180 to 440 VAC		G3NH-4150B

The built-in Thyristor Modules can be replaced. Refer to the table on page 3 for the model number.

Note: When ordering, specify the rated input voltage.

Specifications

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

Input

Rated voltage	Operating voltage	Impedance (Input current)	Voltage level	
			Must operate voltage	Must release voltage
5 to 24 VDC	4 to 30 VDC	5 mA max.*	4 VDC max.	1 VDC min.
100 to 240 VAC	75 to 264 VAC	41 kΩ±20%	75 VAC max.	20 VAC min.

*G3NH converts the input current into a constant current.

Output

Model	Applicable load			
	Rated load voltage	Load voltage range	Load current (See note.)	Inrush current
G3NH-2075B	100 to 240 VAC	75 to 264 VAC	1 to 75 A	800 A (60 Hz, 1 cycle)
G3NH-4075B	180 to 440 VAC	150 to 484 VAC		
G3NH-2150B	100 to 240 VAC	75 to 264 VAC	1 to 150 A	1,800 A (60 Hz, 1 cycle)
G3NH-4150B	180 to 440 VAC	150 to 484 VAC		

Note: The load current varies depending on the ambient temperature. Refer to *Load Current vs. Ambient Temperature* under *Engineering Data* for details.

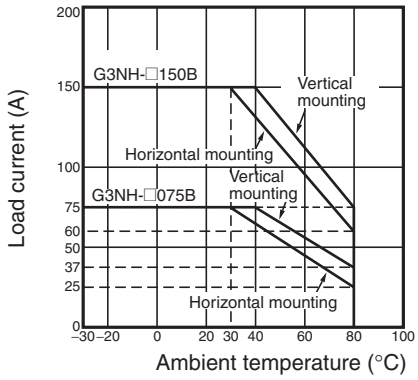
■ Characteristics

Item	G3NH-2075B	G3NH-4075B	G3NH-2150B	G3NH-4150B
Operate time	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)			
Release time	1/2 of load power source cycle + 1 ms max. (DC input) 3/2 of load power source cycle + 1 ms max. (AC input)			
Output ON voltage drop	1.6 V (RMS) max.			
Leakage current	30 mA max. (at 200 VAC)	60 mA max. (at 400 VAC)	30 mA max. (at 200 VAC)	60 mA max. (at 400 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			
Shock resistance	Destruction: 500 m/s^2			
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%			
Weight	Approx. 1.8 kg		Approx. 3.0 kg	

Engineering Data

Load Current vs. Ambient Temperature

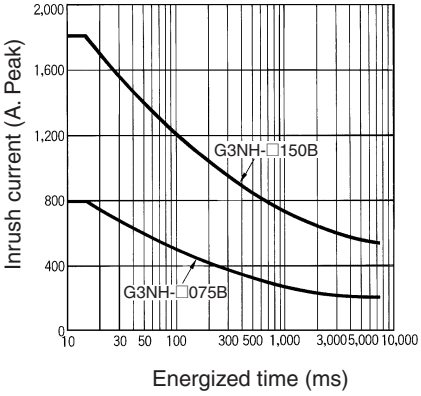
G3NH-□075B, G3NH-□150B



One Cycle Surge Current: Non-repetitive

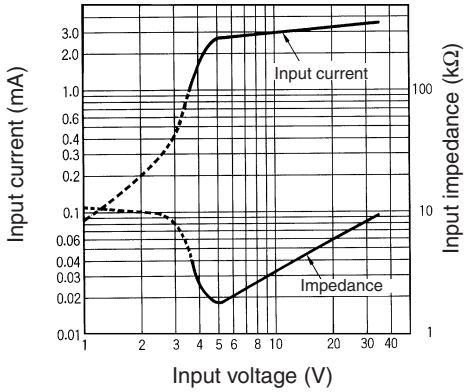
Note: Keep the inrush current to half the rated value if it occurs repeatedly.

G3NH-□075B, G3NH-□150B

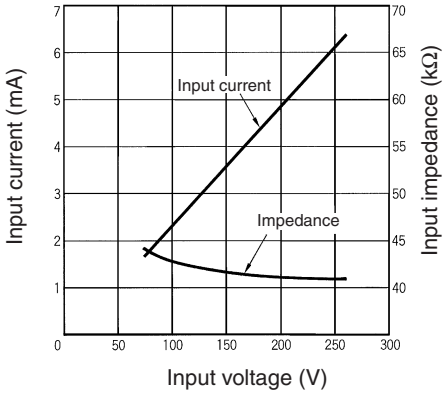


Input Current vs. Input Impedance

G3NH (4 to 30 VDC)



G3NH (75 to 264 VAC)

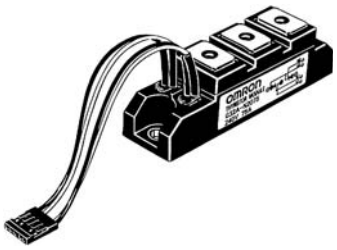


Operation

■ Replacement Parts

G32A-N Thyristor Module

If the thyristor module is damaged, replace it with a new one.



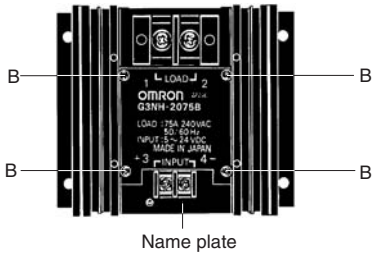
Name	Applicable load	Applicable Relay	Model
Thyristor module	75 A at 75 to 264 VAC	G3NH-2075B	G32A-N2075
	75 A at 150 to 484 VAC	G3NH-4075B	G32A-N4075
	150 A at 75 to 264 VAC	G3NH-2150B	G32A-N2150
	150 A at 150 to 484 VAC	G3NH-4150B	G32A-N4150

Replacement

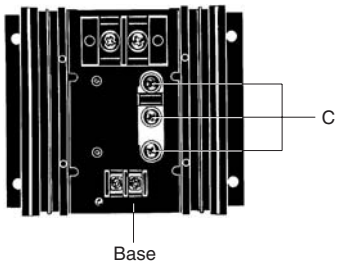
Be sure to turn off the power before replacement.

1. First, remove the four screws (shown below as “A”) and the transparent protective cover from the relay housing and then disconnect the wiring.

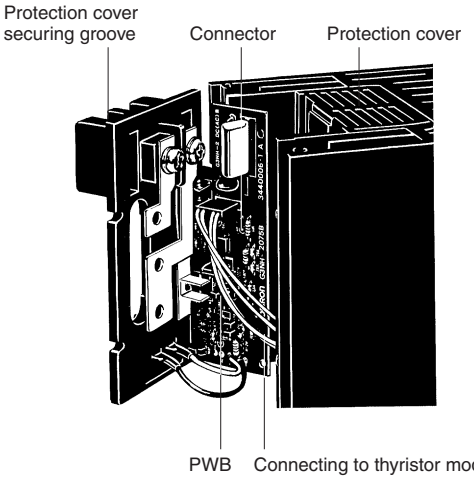
2. Remove the four screws (shown in the following as “B”) and the nameplate from the relay housing.



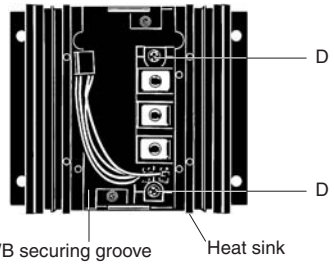
3. Remove the three screws (shown in the following as “C”) from inside the housing and pull the Base Assembly up to detach. (The Base Assembly cannot be removed thoroughly because of the leads connected to the base.)



4. When the Base Assembly is detached, you will see the leads connected to the built-in thyristor module. Pull the connector to disconnect the leads. At this point, if any defect exists in any of the electronic components on the PWB, the SSR may fail again even after the replacement of the built-in thyristor module. In such a case, consult OMRON about appropriate remedial action.



5. Remove the two screws (shown in the following as “D”) and take out the built-in thyristor module.



Assembly of the thyristor module must be performed in the exact reverse order of the previous disassembly steps 1 to 5.

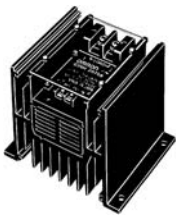
6. Before mounting the new thyristor module for replacement, wipe off the silicone grease adhering to the heat sink, keep clean the jointing surfaces of the heat sink and thyristor module, and apply the new grease (supplied as an accessory) to the jointing surfaces. Secure the thyristor module to the heat sink with the two screws “D” and tighten each screw to a torque of 2.45 to 2.94 N·m.
7. Connect the thyristor module to the PWB with the socket. (The socket may be inserted in either direction.) Assemble the Base Assembly with the heat sink by aligning the PWB with the PWB securing groove and the protective cover with the protective cover securing groove, respectively, while exercising caution not to get any of the leads caught between the Base Assembly and the heat sink.
8. Secure the Base Assembly with the three screws “C”. Because a large current flows into these screw parts, make sure that any of the screws is not clogged with foreign matter and tighten each screw to a torque of 4.41 to 4.90 N·m.
9. Check the assembled parts again for any lead caught between the Base Assembly and heat sink and for proper fitting of the PWB and protective cover into their respective securing grooves. Then, replace the nameplate and secure it with the four screws “B”.
10. Complete the wiring and secure the protective cover with the four screws “A”.
11. Apply power to the relay and check the relay for proper operation.

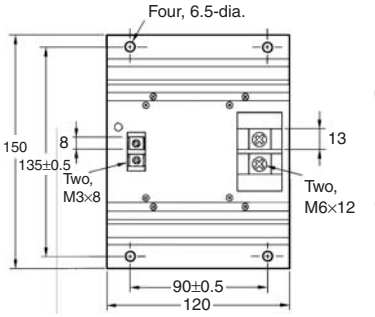
Dimensions

Note: All units are in millimeters unless otherwise indicated.

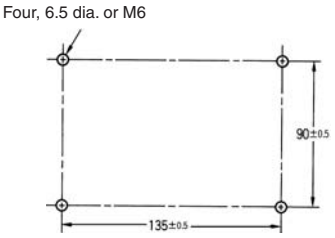
The orientation indicated by the external dimensions is not the correct mounting orientation. When opening mounting holes, refer to the mounting hole dimensions.

G3NH-2075B/4075B

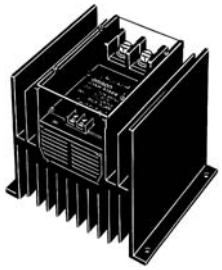


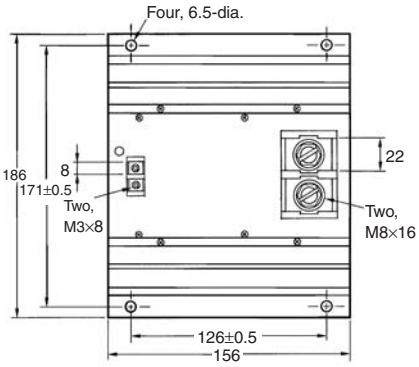


Mounting Holes

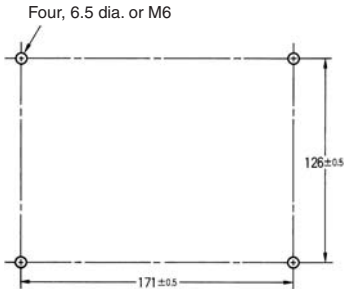


G3NH-2150B/4150B





Mounting Holes



Safety Precautions

■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

Load Connection

Securely tighten the LOAD terminal screws with the torque specified in the following list after you connect the load to the LOAD terminals. If the tightening torque is not enough, the terminals will generate heat.

Model	Tightening torque
G3NH-□075B	4.41 to 4.90 N·m
G3NH-□150B	8.82 to 9.80 N·m

Mounting

When you locate the G3NH near other equipment, take the heat resistivity of the equipment into consideration. The temperature of the G3NH's heat sink will rise by approximately 50°C with a rated current flow through the G3NH.

The G3NH will rise the ambient temperature. When mounting the G3NH inside a panel, install a fan for proper ventilation.

When closely mounting the G3NH Solid State Relays side by side, reduce the load current 30% lower than the specified value shown in the load current vs. ambient temperature graph.

Take proper measures so that the heat sink will be protected from dust.

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

Cat. No. K070-E2-05