


Solid State Relays

G3NH

CSM_G3NH_DS_E_2_1

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.

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



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.

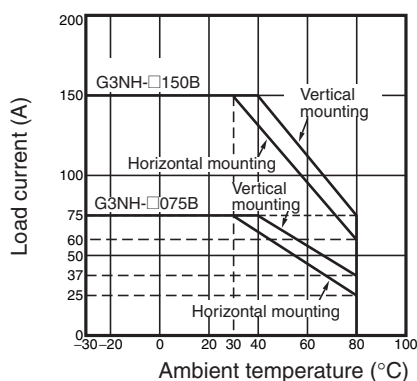
■ Characteristics

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

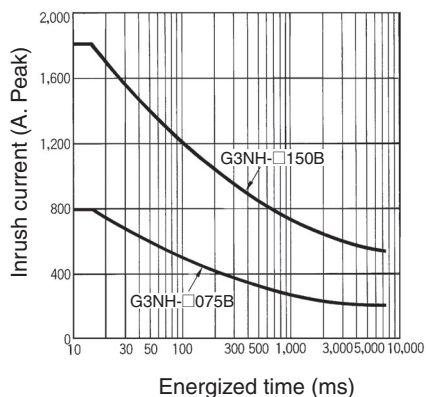
G3NH-□075B, G3NH-□150B



One Cycle Surge Current: Non-repetitive

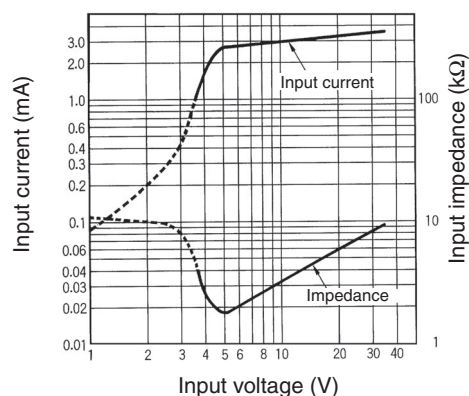
Note: Keep the inrush current to half the rated value if it occurs repeatedly.

G3NH-□075B, G3NH-□150B

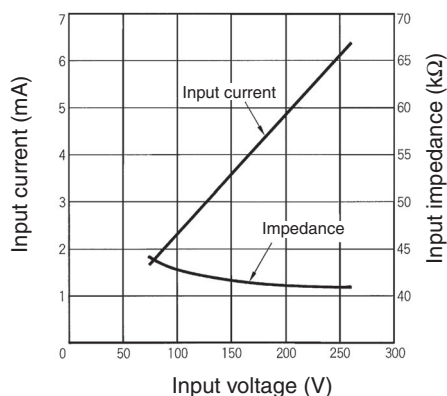


Input Current vs. Input Impedance

G3NH (4 to 30 VDC)



G3NH (75 to 264 VAC)

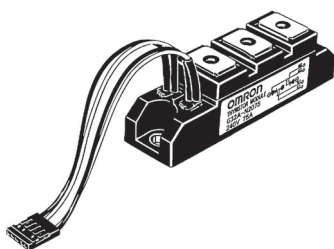


Operation

Replacement Parts

G32A-N Thyristor Module

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

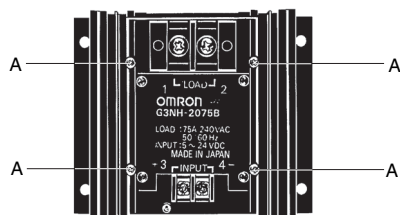


Name	Applicable load	Applicable Relay	Model
Thyristor module	75 A at 75 to 264 VAC	G3NH-2075B	G32A-N2075
	75 A at 150 to 484 VAC	G3NH-4075B	G32A-N4075
	150 A at 75 to 264 VAC	G3NH-2150B	G32A-N2150
	150 A at 150 to 484 VAC	G3NH-4150B	G32A-N4150

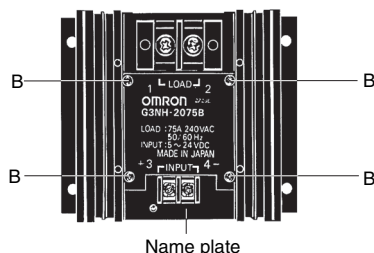
Replacement

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.

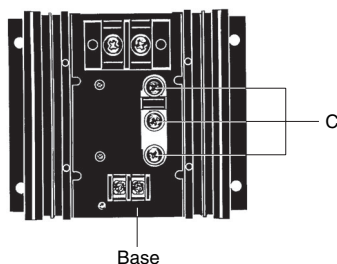


2. Remove the four screws (shown in the following as "B") and the nameplate from the relay housing.



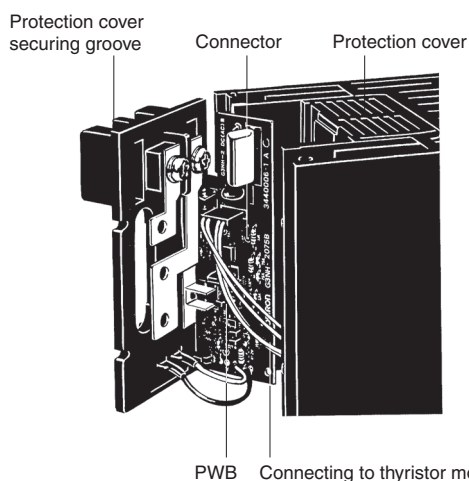
Name plate

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.)

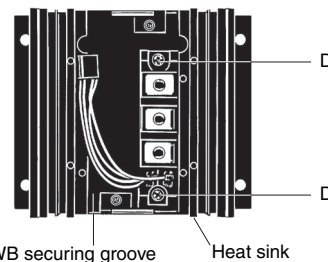


Base

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.

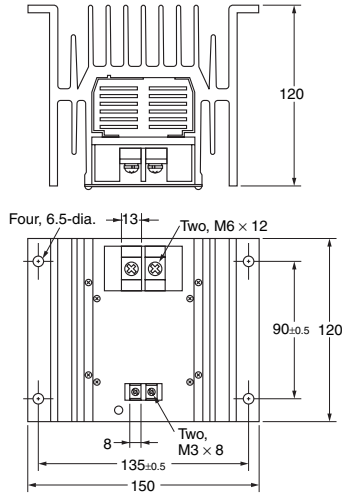
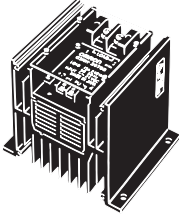
6. Before mounting the new thyristor module for replacement, wipe off the silicone grease adhering to the heat sink, keep clean the joining surfaces of the heat sink and thyristor module, and apply the new grease (supplied as an accessory) to the joining surfaces. Secure the thyristor module to the heat 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

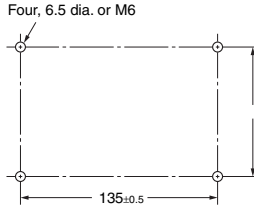
Note: All units are in millimeters unless otherwise indicated.

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

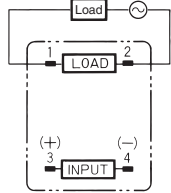
G3NH-2075B/4075B



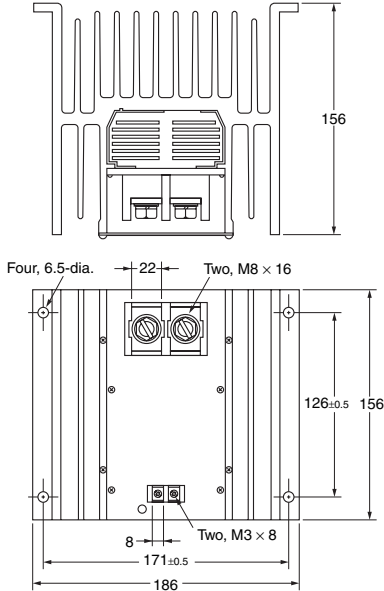
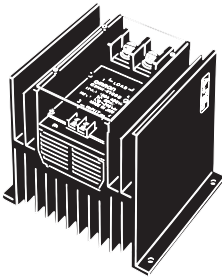
Mounting Holes



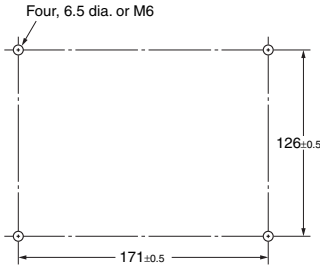
Terminal Arrangement/ Internal Connections (Top View)



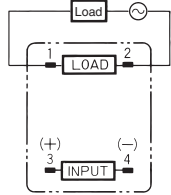
G3NH-2150B/4150B



Mounting Holes



Terminal Arrangement/ Internal Connections (Top View)



Safety Precautions

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

■ 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.

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

Terms and Conditions of Sale

1. **Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. **Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
3. **Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
4. **Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. **Orders.** Omron will accept no order less than \$200 net billing.
6. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
7. **Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
8. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
9. **Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
10. **Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
11. **Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
 - a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
 - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
 - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
 - d. Delivery and shipping dates are estimates only; and
 - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. **Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses 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. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://www.omron247.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

Certain Precautions on Specifications and Use

1. **Suitability of 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 but the following is a non-exhaustive list of applications for which particular attention must be given:
 - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
 - (ii) Use in consumer products or any use in significant quantities.
 - (iii) 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.
 - (iv) Systems, machines and equipment that could present a risk to life or property. Please 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 OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials 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 user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **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 part 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 part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.



OMRON ELECTRONICS LLC • THE AMERICAS HEADQUARTERS

Schaumburg, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE

São Paulo, SP, Brasil • 55.11.2101.6300 • www.omron.com.br

OMRON ELECTRONICS MEXICO SA DE CV • HEAD OFFICE

Apodaca, N.L. • 52.811.156.99.10 • 001.800.556.6766 • mela@omron.com

OMRON ARGENTINA • SALES OFFICE

Cono Sur • 54.11.4783.5300

OMRON CHILE • SALES OFFICE

Santiago • 56.9.9917.3920

OTHER OMRON LATIN AMERICA SALES

54.11.4783.5300

© 2009 Omron Electronics LLC

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Omron:

[G32A-N2075](#) [G32A-N4075](#)