GAI-TRONICS®
A HUBBELL COMPANY

Model 12598-001
Redundant 12 V DC Module

Confidentiality Notice

General Information

The Model 12598-001 Redundant DC Module is designed to accept the outputs of two 12 V dc power supplies while providing a single dc output. This module will typically be used in custom products, namely ADVANCE cabinets requiring redundant circuits to meet various agency requirements.

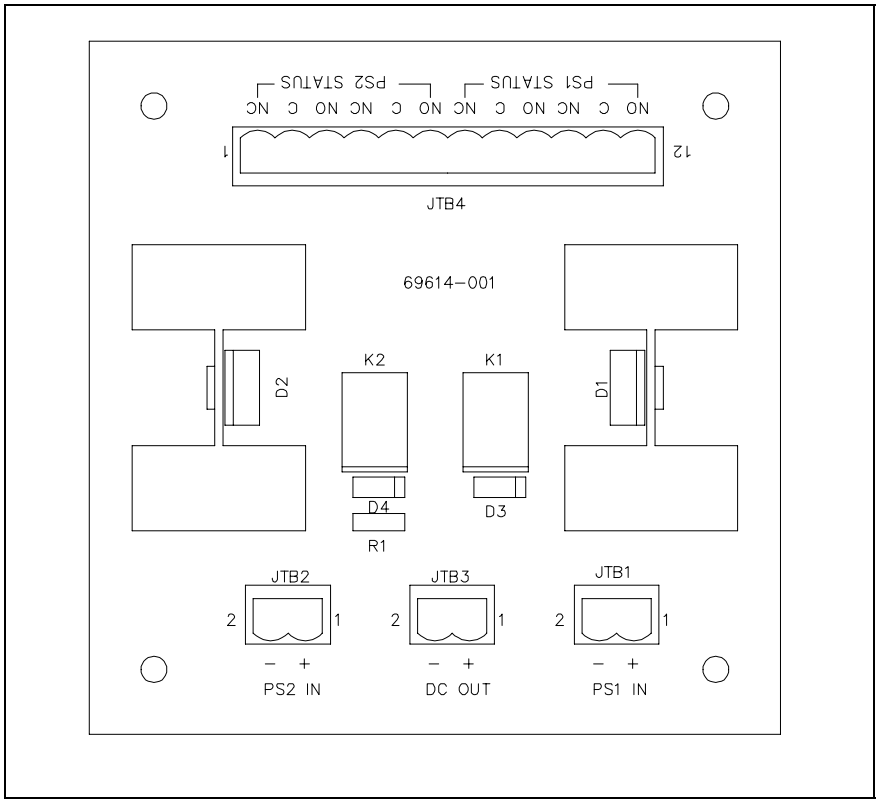

Figure 1. Model 12598-001 Redundant 12 V DC Module

Hardware Configuration

The Model 12598-001 Redundant 12 V DC Module consists of a single-sided printed circuit board measuring 4 L × 4 W × 1.5 H inches (102 × 102 × 38.1 mm). It is equipped with two 15A rated diodes each mounted to a heat sink, two small DPDT relays to provide dry contact status outputs for each power supply, and four modular (plug-in type) terminal blocks. All components on the board are through-hole.

Installation

⚠ **CAUTION** ⚠ **When installing or replacing this module, be sure to disconnect power for safety.**

The Model 12598-001 Redundant 12 V DC Module is designed for chassis mounting or on 4-inch Snap Trak®. When inserting the module in SnapTrak®, exercise care when pressing the module edges into the SnapTrak® to avoid damage to the module's printed circuit board and components.

Once installed in the SnapTrak®, be sure the module edges are secured in the channels so that the module does not dislodge during transport or operation if subjected to vibration. Also, if this module is used with other modules in the SnapTrak®, be sure to leave spacing between modules to facilitate wiring at any edge-mounted terminal blocks.

Terminations

The Model 12598-001 Redundant 12 V DC Module is equipped with modular (plug-in type) terminal blocks, which simplify external wire connections during installation, and provide quick disconnect if replacement is ever required.

The following is a breakdown of each terminal block and its function(s):

TB1 – is the 12 V dc power input from Power Supply 1 (PS1) to the module.

TB2 – is the 12 V dc power input from Power Supply 2 (PS2) to the module.

TB3 – is the 12 V dc power output from the module to the load.

TB4 – are dry output contacts for the PS1 and PS2 faults respectively. Each connected power supply has two sets of contacts, which are a Form "C" type. The maximum switching capacity for each contact set is 30 V dc @ 1 amp, and can be used for triggering a remote status indicator or a supervised input at a system device for visual text display.

Operation

After successful installation and testing, the Model 12598-001 Module requires no operator intervention.

Functional Operation

The Model 12598-001 Redundant 12 V DC Module operates with two 12 V dc power supplies. When 12 V dc power is applied to the PS1 IN and PS2 IN terminals of the module, relays K1 and K2 become active. Output voltage at the DC OUT terminals will be approximately 11.4 V to 11.1 V dc, which is due to a voltage drop of approx. 0.6 V to 0.9 V depending on the load current through CR1 and CR2. Thus, as load current increases through the diodes, the voltage drop across each diode increases toward the maximum value of 0.9 V.

Also, since CR1 or CR2 have a slightly different voltage drops (or turn-on thresholds), either of the connected power supplies (at PS1 IN or PS2 IN) may initially supply power to load.

Maintenance

The Model 12598-001 Redundant 12 V DC Module does not contain any user serviceable parts. Do **not** attempt to make any repairs to the module.

If the module requires service, contact your Regional Service Center for a return authorization number (RA#). The module should be shipped prepaid to GAI-Tronics with a return authorization number and a purchase order number. If the module is under warranty, repairs or a replacement will be made in accordance with GAI-Tronics' warranty policy. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts.

Call 800-492-1212 inside the USA or 610-777-1374 outside the USA for help identifying the Regional Service Center closest to you.

Troubleshooting

Problem	Solution
Module is damaged.	Do not attempt to repair the module. Contact GAI-Tronics service for repair or replacement of the module in accordance with the information provided on this page.
Voltage is applied to both inputs, but voltage is not present at the output terminals.	Verify plug-in connectors at JTB1, JTB2 and JTB3 are properly inserted.
All connections and connectors are properly made, but still no output voltage.	Verify wiring at each connector has proper polarity.
Relay status contact markings are incorrect when module is not powered.	The relay status contact markings are based on the module being actively powered (i.e., in an energized state).
After performing all wiring checks, trouble-shooting, etc. as described in this section, the module still does not function properly.	Contact GAI-Tronics service for repair or replacement of the module in accordance with the information provided on this page.

Specifications

Electrical

Power requirements ..... 10–14 V dc (12 V dc nominal)
Current handling capacity ..... 10 A maximum @ 12 V dc
Voltage drop from input(s) to output ..... Approximately 0.6 V dc to 0.9 V dc
Number of inputs 2
Number of outputs 1
Number of fault outputs ..... Four (Two per input)
Fault output type ..... Form "C" dry contact
Fault output contact rating ..... 1 A maximum @ 30 V dc

Terminations

Type ..... Modular (plug-in) terminal blocks
Minimum conductor size ..... No. 28 AWG (0.5 mm^2)
Maximum conductor size ..... No. 12 AWG (3.0 mm^2)

Mechanical

Module dimensions ..... 4.00 L × 4.00 W × 1.50 H inches (101.6 × 101.6 × 38.1 mm)
Module weight ..... 0.32 lbs. (0.14 kg)

Environmental

Temperature range – 100% load (operating ambient) ..... 32° to 77° F (0° to 25° C)
Temperature range – 50% load (operating ambient) ..... 32° to 115° F (0° to 46° C)
Temperature range – 25% load (operating ambient) ..... 32° to 140° F (0° to 60° C)
Temperature range (storage) ..... 32° to 140° F (0° to 60° C)
Humidity ..... 85% non-condensing relative humidity

Warranty

Equipment. GAI-Tronics warrants for a period of one (1) year from the date of shipment, that any GAI-Tronics equipment supplied hereunder shall be free of defects in material and workmanship, shall comply with the then-current product specifications and product literature, and if applicable, shall be fit for the purpose specified in the agreed-upon quotation or proposal document. If (a) Seller's goods prove to be defective in workmanship and/or material under normal and proper usage, or unfit for the purpose specified and agreed upon, and (b) Buyer's claim is made within the warranty period set forth above, Buyer may return such goods to GAI-Tronics' nearest depot repair facility, freight prepaid, at which time they will be repaired or replaced, at Seller's option, without charge to Buyer. Repair or replacement shall be Buyer's sole and exclusive remedy. The warranty period on any repaired or replacement equipment shall be the greater of the ninety (90) day repair warranty or one (1) year from the date the original equipment was shipped. In no event shall GAI-Tronics warranty obligations with respect to equipment exceed 100% of the total cost of the equipment supplied hereunder. Buyer may also be entitled to the manufacturer's warranty on any third-party goods supplied by GAI-Tronics hereunder. The applicability of any such third-party warranty will be determined by GAI-Tronics.

Services. Any services GAI-Tronics provides hereunder, whether directly or through subcontractors, shall be performed in accordance with the standard of care with which such services are normally provided in the industry. If the services fail to meet the applicable industry standard, GAI-Tronics will re-perform such services at no cost to buyer to correct said deficiency to Company's satisfaction provided any and all issues are identified prior to the demobilization of the Contractor's personnel from the work site. Re-performance of services shall be Buyer's sole and exclusive remedy, and in no event shall GAI-Tronics warranty obligations with respect to services exceed 100% of the total cost of the services provided hereunder.

Warranty Periods. Every claim by Buyer alleging a defect in the goods and/or services provided hereunder shall be deemed waived unless such claim is made in writing within the applicable warranty periods as set forth above. Provided, however, that if the defect complained of is latent and not discoverable within the above warranty periods, every claim arising on account of such latent defect shall be deemed waived unless it is made in writing within a reasonable time after such latent defect is or should have been discovered by Buyer.

Limitations / Exclusions. The warranties herein shall not apply to, and GAI-Tronics shall not be responsible for, any damage to the goods or failure of the services supplied hereunder, to the extent caused by Buyer's neglect, failure to follow operational and maintenance procedures provided with the equipment, or the use of technicians not specifically authorized by GAI-Tronics to maintain or service the equipment. THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES AND REMEDIES, WHETHER EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Return Policy

If the equipment requires service, contact your Regional Service Center for a return authorization number (RA#). Equipment should be shipped prepaid to GAI-Tronics with a return authorization number and a purchase order number. If the equipment is under warranty, repairs or a replacement will be made in accordance with the warranty policy set forth above. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts.

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