



GAI-TRONICS®
A HUBBELL COMPANY

Model 12591-001 Audio Transformer Module

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General Information

The Model 12591-001 Audio Transformer Module is designed to accept a 600-ohm, 0-dBm (0.775-Vrms) audio input signal, and provide an output signal with either 1x (unity) or 2x signal gain over a 20–20 kHz frequency range with no more than 5% deviation in the output signal level.

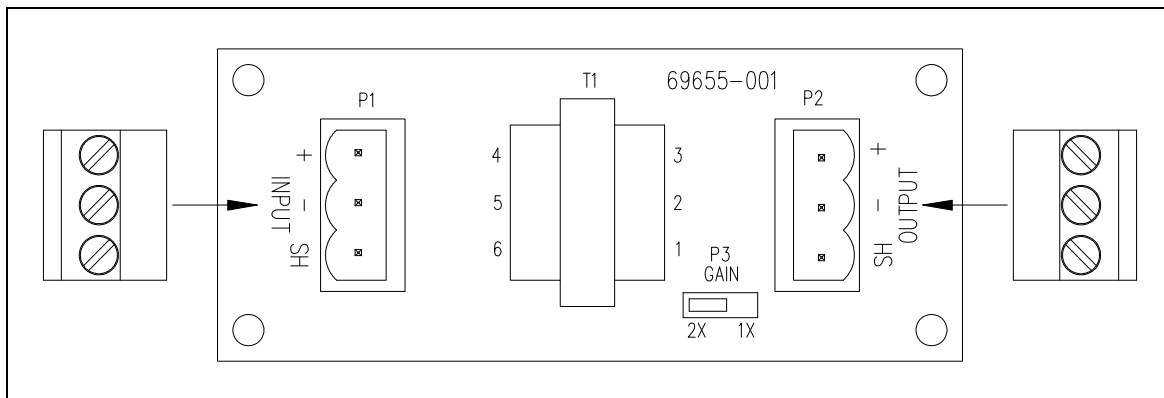


Figure 1. Model 12591-001 Audio Transformer Module
(shown with supplied plug-in terminals)

Hardware Configuration

The Model 12591-001 Audio Transformer Module consists of a double-sided printed circuit board measuring 3.00 L × 1.25 W × 0.81 H inches (76.2 × 31.7 × 20.6 mm). It is equipped with a 100-mW audio transformer, a gain select jumper and two modular (plug-in type) terminal blocks. All components on the PCBA are through-hole.

Installation

The Model 12591-001 Audio Transformer Module is designed for chassis mounting on four standoffs with 4-40 screws, or in 3-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, be sure to leave sufficient space on either side of the SnapTrak[®] to facilitate wiring at the terminals.

Terminations

The Model 12591-001 Audio Transformer Module is equipped with two 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):

P1 – is the audio input to the module.

P2 – is the audio output from the module.

NOTE: Be sure to use shielded pair cables for the audio input and output connections. The SH (shield) terminals at P1 and P2 are bussed together on the module's circuit board.

Operation

After successful installation, set-up and testing, the Model 12591-001 Module requires no operator intervention.

Functional Operation

When a 600-ohm, 0dBm (0.775V_{rms}) signal is applied to the input, this module can either double the audio signal to the output, or provide unity gain. Signal gain through this module is determined by the position of the Gain jumper at P3. Listed below are the two gain settings for this module:

P3 Gain Select Jumper

2X position - provides a signal gain of approx. 2.6 dB from input to output (*see note 1*).

1X position - provides a unity (zero) signal gain from input to output (*see notes 1 and 2*).

NOTES:

1. Output signal level deviation is no more than 5% over the entire 20 – 20k Hz frequency range.
2. The 1X jumper setting can be used to couple a single-ended audio source to a balanced input or provide dc isolation between two circuits.

Maintenance

The Model 12591-001 Audio Transformer 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.
An audio signal is applied to the input, but a signal is not present at the output.	Verify plug-in connectors at P1 and P2 are properly inserted and the P3 jumper clip is installed across the 1X or 2X position.
Audio output level from the module is too low.	Verify the source audio signal is at least 0.775Vrms. Check the P3 gain jumper position; a 2X setting is required to achieve a 2.6dB signal gain. Verify input impedance of the connected device is 10k-ohms, or higher. Verify multiple devices are not connected to the module output, thus, creating excessive load. If multiple devices are connected, a distribution amplifier may be needed to distribute source audio across all devices. Check the input level control of the connected device and ensure it is not set to minimum; adjust accordingly for more gain.
Audio output level from the module is too high.	Verify source audio signal does not exceed 1.5Vrms. Check the P3 gain jumper position; a 1X setting is required for a unity signal level if using the transformer for isolation. Check the input level control of the connected device and ensure it is not set to maximum output; adjust accordingly for less gain.
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 in the maintenance section of this manual.

Specifications

Electrical

Signal Level Capacity	100 mW (max.)
Frequency Response	20 – 20k Hz
Nominal Input Impedance.....	2 k-ohms
Nominal Output Impedance.....	10 k-ohms (P3 at 2X position)
.....	2.5 k-ohms (P3 at 1X position)
Signal Gain (Input to Output)	2.6dB (P3 at 2X position)
.....	Unity (P3 at 1X position)
Number of inputs	1
Number of outputs	1

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.....	3.00 L × 1.25 W × 1.38 H inches (76.2 × 31.7 × 35.0 mm)
Module weight	0.08 lbs. (0.04 kg)

Environmental

Temperature range	-4° to 158° F (-20° to 70° 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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