



GAI-TRONICS®
A HUBBELL COMPANY

Model 013-02-0096-001 IP Controller

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Confidentiality Notice

This installation, operation, and maintenance manual contains sensitive business and technical information that is confidential and proprietary to GAI-Tronics. GAI-Tronics retains all intellectual property and other rights in or to the information contained herein, and such information may only be used in connection with the operation of your GAI-Tronics product or system. This manual may not be disclosed in any form, in whole or in part, directly or indirectly, to any third party.

General Information

The Model 013-02-0096-001 IP Controller is the principal component of an IP PAGA (public address and general alarm) system. This standalone IP controller is suitable for a variety of communication and control applications.

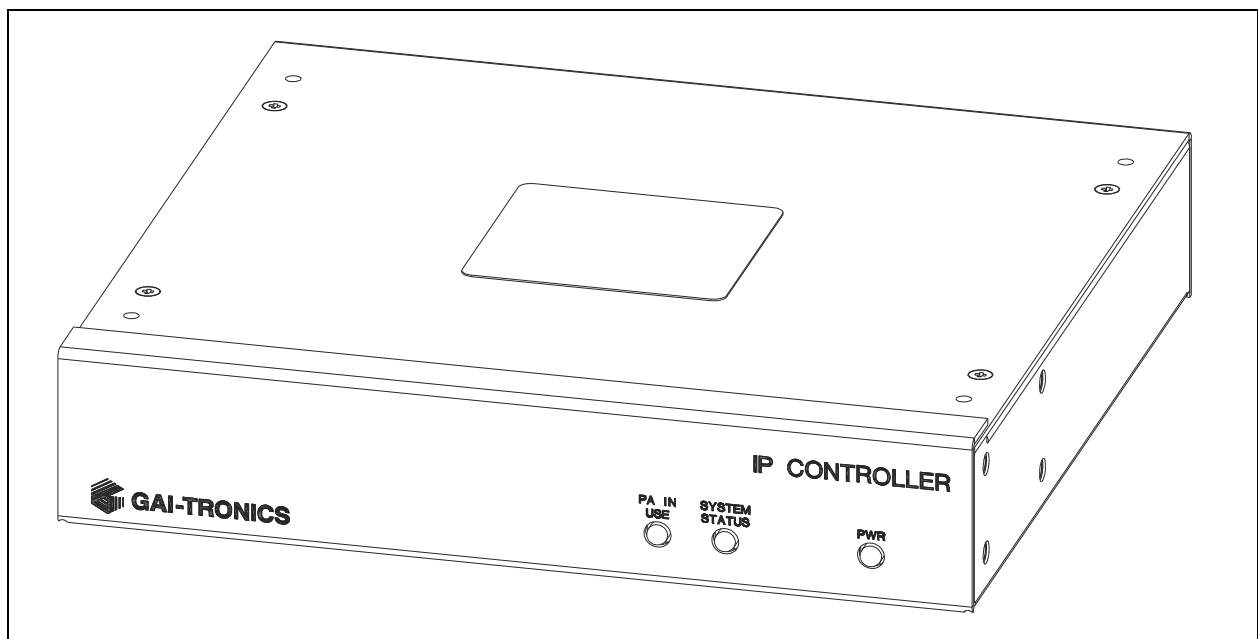


Figure 1. IP Controller

IP controllers are data acquisition, audio signal processing, and control devices. The controller continuously monitors the integrity of the PAGA/control system and immediately reports changes in activity and system health. The controller sends and receives data and test signals to and from connected equipment to provide a reliable, high integrity system. Use the IP controller in a standalone PAGA system or with GAI-Tronics' line of E3 IP products. GAI-Tronics' E3 IP products include IP amplifiers, I/O cards, and an IP access panel. The system monitors access panels, *Elemec* power amplifiers, alarm inputs, beacon outputs, and other components of the E3 system.

IP controllers include a SIP telephone interface for connection to an IP telephone system. The SIP telephone interface allows connection to the E3 system via telephone.

E3 systems are flexible and easy to configure. Use the E3 Console application via a TCP/IP network connection to configure an E3 system (see the [Configuration](#) section).

Use the E3 Portal application to monitor system status, including current audio activity, faults, I/O, and amplifier status via TCP/IP network connection. The IP controller has an internal clock that time stamps system status changes in the event logs.

To eliminate the possibility of acoustic feedback, configure the system to replay digitally recorded audio from access panels, VoIP telephones, SIP PBX, SP2, and Page/Party® systems.

Program up to 8 individual inputs and 8 individual outputs. Additional inputs and outputs are available via IP MIMs (monitored input modules) or IP MRMs (monitored output modules). Connect IP access panels for speech broadcasts and manual alarm/emergency message activation. Additional audio inputs/outputs are available to accommodate connection to/from ancillary equipment.

Install the IP Controller in a standard 19-inch rack or set it on a stable level surface using the included feet. All connections to the controller are a plug/socket type.

Important Safety Instructions



This symbol indicates the presence of uninsulated “dangerous voltage” within the product’s enclosure. This may constitute a risk of electric shock.



The user should consult the operating and maintenance (servicing) instructions in the literature accompanying the appliance.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this equipment near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Only use attachments/accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel. Obtain service for damaged equipment. This includes but is not limited to; power-supply cord or plug damage, exposure to rain, moisture, or liquid intrusion into the equipment, the equipment has been dropped or has sustained a severe shock, or fails to operate normally for any reason.

Front Panel Indicators & Control

The IP controller front panel has three LED indicators. The LEDs indicate system activity, power supply status, and the system's current operating condition (*normal* or *fault(s) exist*).

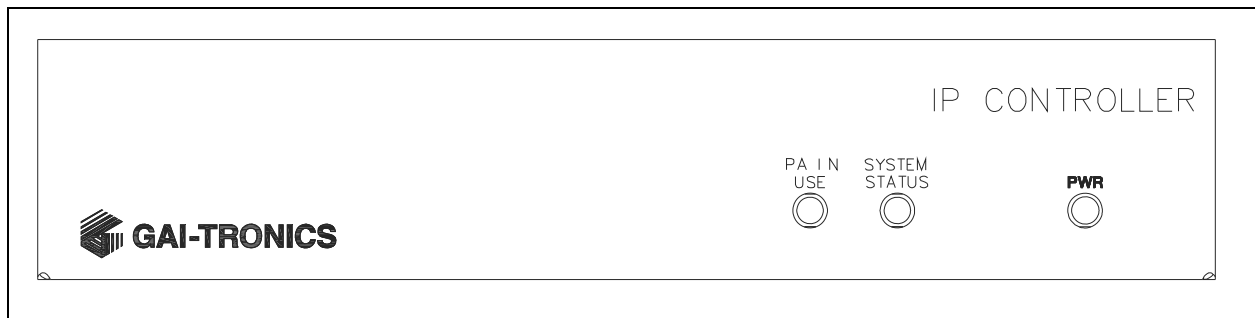


Figure 2. IP Controller—Front View

Rear Panel Connections

System connections to the IP controller are on the rear panel of the unit (see [Figure 3](#)).

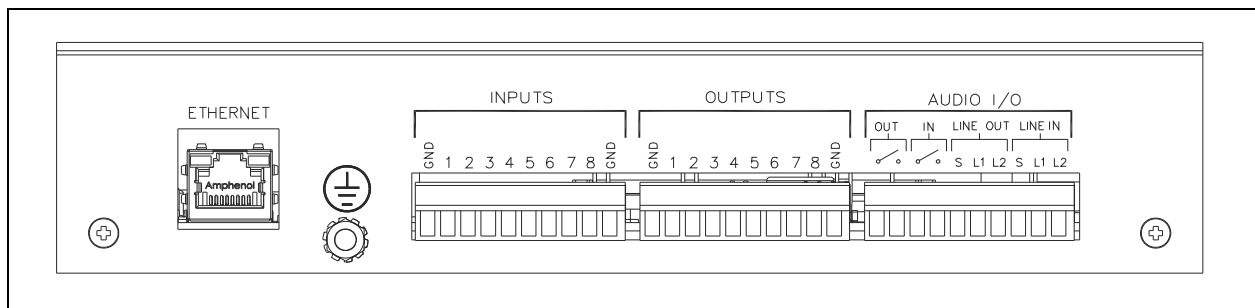


Figure 3. IP controller—Rear View

Internal

The IP controller contains one primary internal component (see [Figure 4](#)):

E3 IP Controller PCBA—Central processing unit, digital communication, speech recording and playback to eliminate feedback.

Installation

Safety Guidelines

Adhere to all warnings, safety, and operating instructions on the unit and in the installation manual.

⚠ WARNING ⚠

- Disconnect power before servicing. Do NOT disconnect equipment from an energized circuit.
- Avoid servicing the unit during electrical storms.
- Do not touch uninsulated wires.
- Notify plant personnel of a system shutdown prior to servicing the unit.
- Disconnect power before installing or removing the system controller.

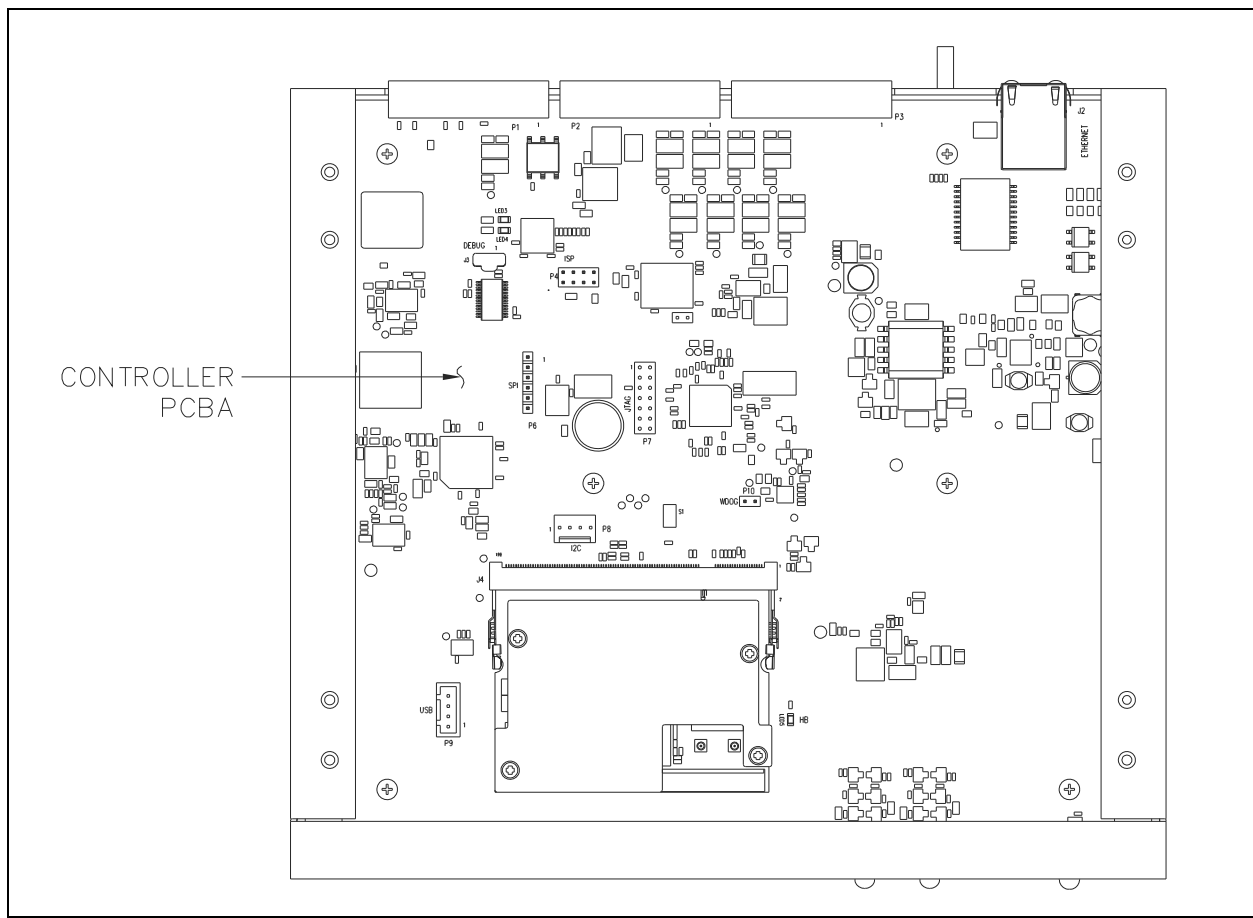


Figure 4. IP Controller—Internal Component—Top View

Location

Set the IP controller on a desk or shelf or mount it in a 19-inch rack using GTC Kit No. 12625-001 (*purchased separately*).

Desktop

Install the four stabilizing feet and set the unit on a stable level surface.

Rackmount

Use GTC Kit No. 12625-001 to mount the IP controller in an standard EIA 19-inch rack (see [Figure 5](#)). The controller is 1.75 inches tall/1 U of rack height.

1. Install the support bracket to the IP controller using four M4 flat head screws (included with the kit).
2. Install the blank bracket to the opposite side of the IP controller using four M4 flat head screws (included with the kit).
3. Mount the IP controller, in the desired location, in the rack, using four (*customer supplied*) screws.

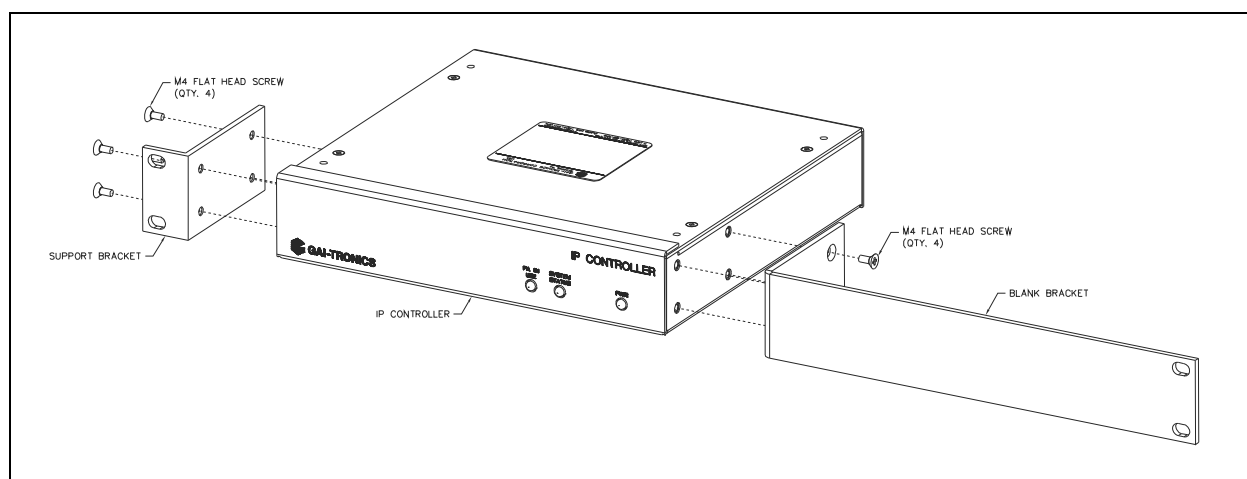


Figure 5. IP Controller Rackmount Installation

Connections

Input Power/Network

Connect the IP controller to the LAN (Local Area Network) to upload the system configuration from the E3 Console and send status information to the E3 Portal application. Power to the E3 controller is via PoE (Power over Ethernet) over the LAN.

1. Connect the IP Controller to a 100/1000 Mbps PoE network switch using an Ethernet cable from RJ45 jack (J2).

Connector J2 contains two LEDs:

- green LED—indicates link status
- yellow LED—indicates activity

2. Terminate the connector in accordance with the T-568B wiring method.

Earth

The E3 IP controller requires bonding to earth ground.

1. Install a ring lug on an appropriately sized green-yellow sheathed conductor.
2. Connect the ring lug to the DC EARTH terminal, on the rear of the unit.
3. Connect the opposite end of the ground conductor to earth ground.

NOTE: The equipment rack requires bonding to earth ground in rackmount installations.

Amplifiers

IP Controllers connect to *Elemec3* power amplifiers over a 100/1000 Mbps Ethernet network. The IP controller is compatible with the D600IP power amplifier. Refer to the amplifier manual, included with the *Elemec3* system, for information on installation, operation, and maintenance of the system's amplifier.

600-ohm Audio I/O with Control

Audio Input

The IP controller has a 600-ohm audio input. Enable the audio input via the closure of a dry contact input control:

1. Connect the 600-ohm audio input wires to connector P1; pins 9, 10, and shield.
2. Connect the input control contact to connector P1; pins 3 and 4.

Audio Output

The IP controller has a 600-ohm audio output to send audio to remote equipment. A solid-state relay contact activates the remote audio equipment's input when the audio output is active:

1. Connect the 600-ohm audio output wires to P1 pins 6, 7, and 5 (optional shield).
2. Connect the output contact to P1 pins 1 and 2.

API (Access Panel Interfaces)

The IP controller is compatible with *Elemec3* IP access panels. Refer to the *Elemec3* IP access panel manual included with the *Elemec3* system for information on installation, operation, and maintenance of the installed *Elemec3* IP access panels.

Inputs/Outputs

The IP controller has eight unsupervised inputs and eight outputs to initiate events in the system (see [Figure 3](#)).

Connect each input between common (P3 pin 1 or 10) and the associated input; one through eight (P3 pin 2 to 9), on connector P3.

Connector P2 contains eight, open-drain outputs (see [Figure 6](#)):

1. Connect each output device between the + terminal of the (*customer supplied*) power supply and the desired output contact (P2 pins 2 through 9).
2. Connect the - terminal of the power supply to common (P2 pin 1 or 10) on the controller.

The IP controller is compatible with *Elemec3* IP MIMs (monitored input modules) and MRMs (monitored relay modules). Refer to the *Elemec3* IP MIM/MRM manual, included with the *Elemec3* system, for information on installation, operation, and maintenance of the installed *Elemec3* IP MIM(s)/MRM(s).

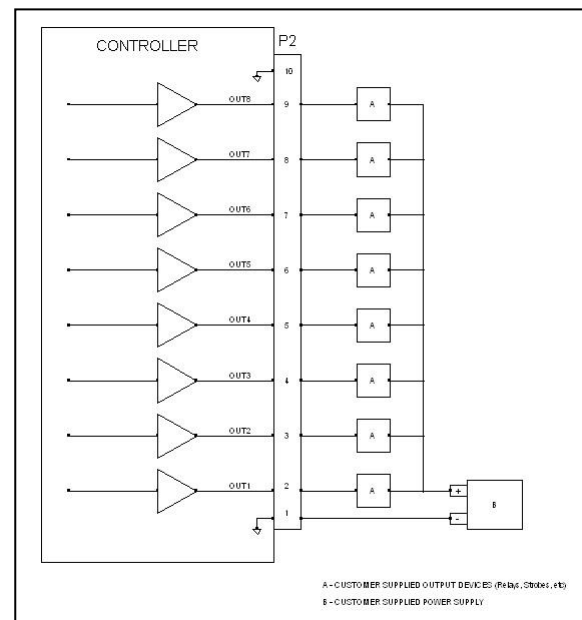


Figure 6. Output Device Connections (P2)

Configuration

Custom configure the IP controller for its intended purpose using the E3 Console application. Refer to GAI-Tronics Pub. 42004-550 for E3 Console software user instructions (see the [Reference Documentation](#) section).

Operation

The IP controller front panel contains three status LEDs.

The IP controller requires an *Elemec3* console database version 3.3.3 or later. Upgrade older database versions using the E3 Console application. Refer to the E3 Console manual for additional details (see the [Reference Documentation](#) section).

The LEDs operate according to the following table:

Table 1. Front Panel LED Indicators

LED	Indication
PA IN USE	Green —Indicates the PA system is in use. Off—Not in use
SYSTEM STATUS	Green —Normal operation Red —Fault condition—Utilize the <i>Elemec3</i> Portal application for detailed status information. Blinking Red —Fault acknowledged Amber —Non-critical fault
PWR	Blue —Power is on. Off—No power

The IP controller displays system status via the E3 Portal application over an IP network. Loss of connection to the data network constitutes a fault condition indicated by the SYSTEM STATUS LED on the front of the controller.

Reference Documentation

GAI-Tronics' product documentation is located on the GAI-Tronics website at <https://www.gai-tronics.com>.

Document Title	Publication No.
Elemec3 Console Manual—Version 3.0.....	42004-550
Elemec3 Portal System-Administration Utility—Version 3.1.....	42004-485

Specifications

Electrical

PoE:

PoE, IEEE 802.23af Class 0	4.3 W/15.4 W (idle / maximum)
PoE Plus, IEEE 802.3at Class 4.....	4.3W/25.5 W (idle / maximum)

Ethernet

Ethernet.....	100/1000 Base-T
Speed.....	100/1000 Mbps
Cable	Category 5e or better

IP Controller

Connection RJ-45 T568B jack
 Maximum cable length 100 m

Audio**Output**

Audio level..... 0.775 V_{RMS} at 1 kHz (600 Ω)
 Frequency response..... 300–3,400 Hz, +0/–3 dB reference to 1 kHz
 Distortion <1% THD @ 1 kHz to 1 V_{RMS} into 600 Ω
 Isolation 500 V_{RMS}
 Control Output Isolated Normally Open SSR
 Maximum voltage 50 V dc
 Maximum current..... 100 mA

Input

Input level 0.775 V_{RMS}
 Input impedance..... >50 kΩ at 1 kHz
 Bandwidth..... 300–3,400 Hz, +0/–3 dB reference to 1 kHz
 Isolation 500 V_{RMS}
 Control Input..... N.O. dry contact
 Open circuit voltage..... 3.3 V dc (typical)
 Short circuit current 35 μA (maximum)
 Status LEDs Power, PA in use, System status

I/O Control**Inputs**

Open circuit voltage..... 3.3 V dc (typical)
 Short circuit current 35 μA (maximum)

Outputs

Maximum voltage 30 V dc
 Maximum sink current per output..... 100 mA

Mechanical

Unit dimensions 43.7 H × 215.9 W × 197.9 D mm (1.72 × 8.50 × 8.91 in)
 Unit weight..... 2.4 kg (5.2 lb)

Environmental

Operating temperature range..... –20 °C to +55 °C
 Relative humidity..... 95%

Approvals

CE Mark

NRTL..... UL/CSA 60065

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.

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