**GAI-TRONICS®**
A HUBBELL COMPANY

# Model 013-02-0096-001 IP Controller

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## Confidentiality Notice

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## 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.
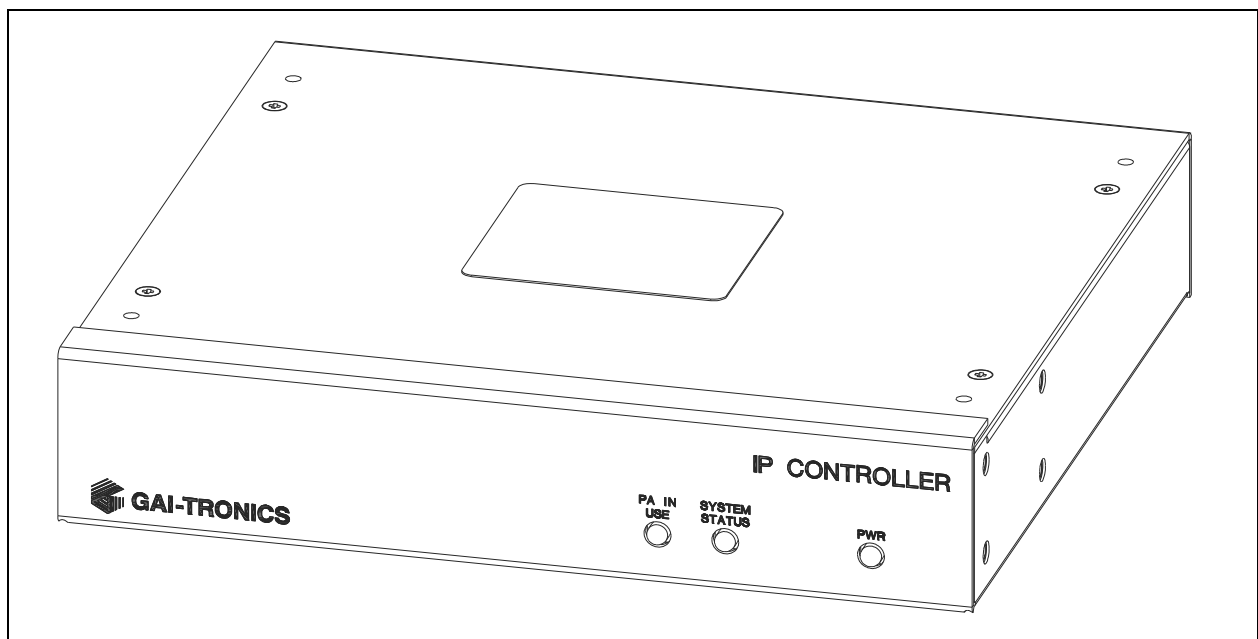


Figure 1. IP Controller

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).
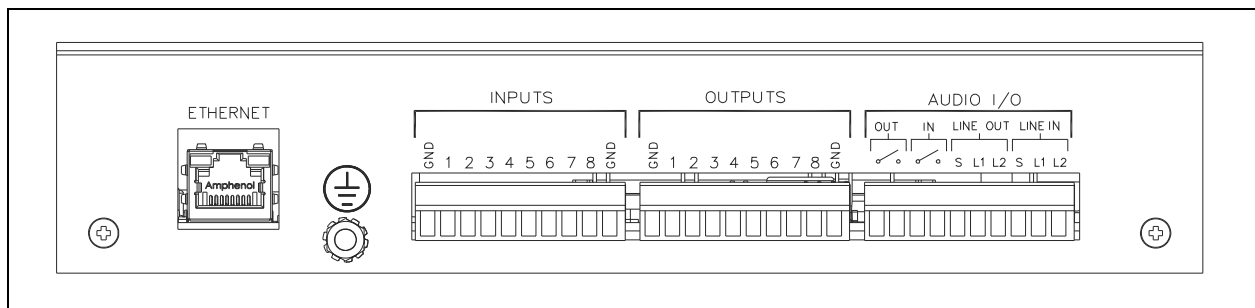


Figure 3.  IP controller—Rear View

## Internal

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

**E3 IP Controller PCBA**—Central processing unit, digital communication, speech recording and play-back 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.
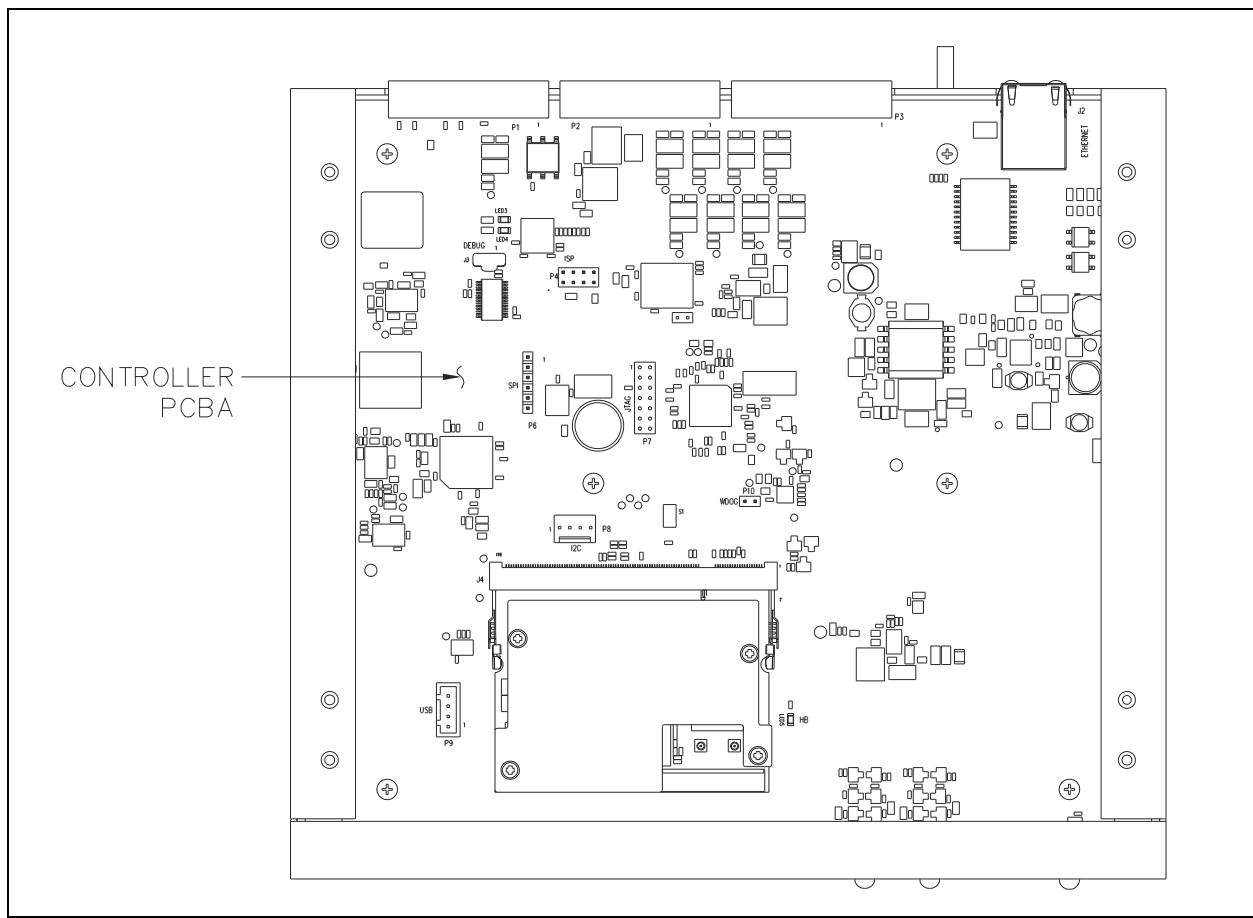
Figure 4. IP Controller—Internal Component—Top View

## 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.
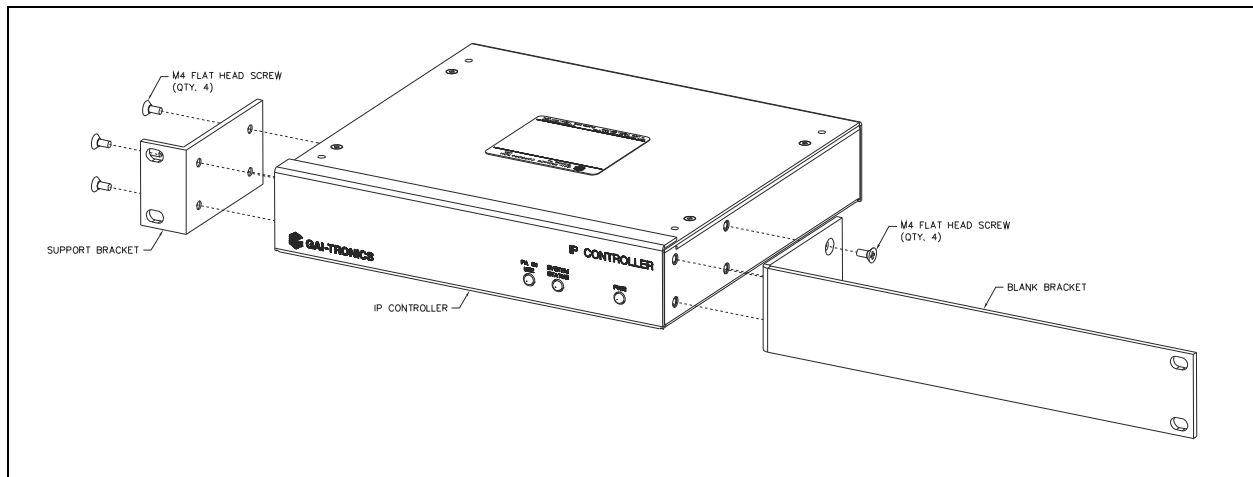
Figure 5.  IP Controller Rackmount Installation

## 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).
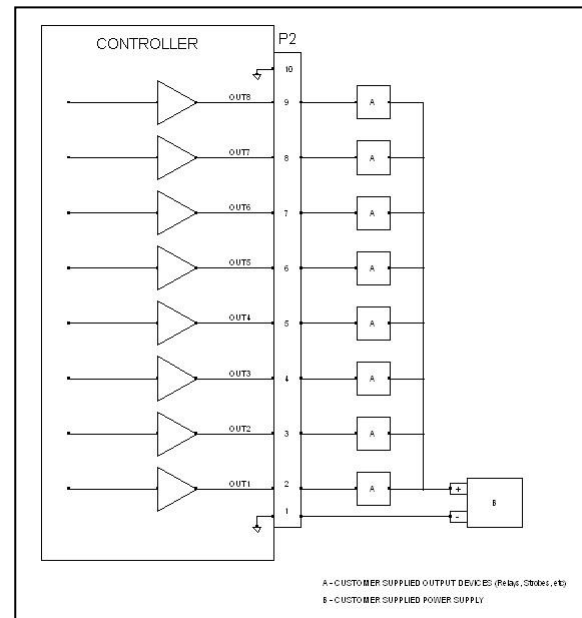


Figure 6.  Output Device Connections (P2)

# 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.<br>Off—Not in use |
| SYSTEM STATUS | **Green**—Normal operation<br>Red—Fault condition—Utilize the *Elemec3* Portal application for detailed status information.<br>Blinking Red—Fault acknowledged<br>Amber—Non-critical fault |
| PWR | **Blue**—Power is on.<br>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 |

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