



GAI-TRONICS®  
A HUBBELL COMPANY

# Model 351-7xx and 351-8xx Division 2 VoIP Page Phones—Wired and WiFi

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# Model 351-7xx and 351-8xx Division 2 VoIP Page Phones—Wired and WiFi

## Confidentiality Notice

This manual is provided solely as an installation, operation, and maintenance guide and 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

GAI-Tronics' Class I, Division 2 VoIP Page Phones are constructed of durable glass-reinforced engineered plastic and are weatherproof rated NEMA 4X. The built-in Class D paging amplifier provides up to 30 watts of speaker output, allowing multicast broadcast page announcements over speakers connected to the phone's amplifier output. Autodial telephone models dial a preprogrammed number when the handset is lifted from the cradle.

The GAI-Tronics VoIP Page Phones are available in wired and wireless versions with two model types, handset and handset with auxiliary jack. Both model types have three input power options (refer to the model chart in [Table 1](#)).

The Div. 2 VoIP Page Phones are designed for connection to a 10/100 BaseT Ethernet network. An external ac or dc power source is required for full audio power operation. Power-over-Ethernet (PoE) models do not require additional power, but have limited speaker output.

WiFi models are designed for connection to a WLAN (wireless local area network) meeting the IEEE 802.11 b/g/n Standard. An external ac or dc power source is required for operation.

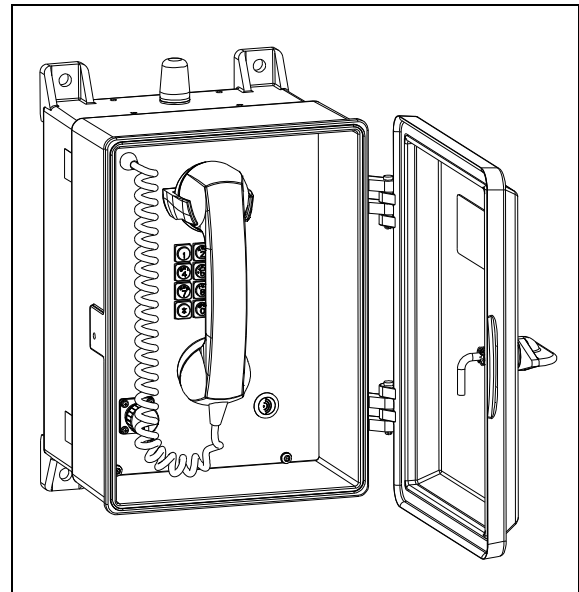


Figure 1. Model 351-8xx Div. 2  
VoIP WiFi Page Phone

In addition to providing SIP telephone operation and speaker amplifier paging, the Div. 2 VoIP Page Phones provide real-time alarm reporting. This enables system supervisors to monitor the telephones' activity and to address caller needs or maintenance issues immediately. There are also configurable inputs and outputs available in all models.

Table 1. Model Chart

| <b>Handset Models</b>                     |   |
|---|---|
| <b>Model</b>                              | <b>Description</b>                        |
| <b>351-713</b>                            | Div. 2 VoIP AC Page Phone                 |
| <b>351-723</b>                            | Div. 2 VoIP DC Page Phone                 |
| <b>351-733</b>                            | Div. 2 VoIP PoE Page Phone                |
| <b>351-714</b>                            | Div. 2 VoIP AC Page Phone with Relay      |
| <b>351-724</b>                            | Div. 2 VoIP DC Page Phone with Relay      |
| <b>351-734</b>                            | Div. 2 VoIP PoE Page Phone with Relay     |
| <b>351-813</b>                            | Div. 2 VoIP WiFi AC Page Phone            |
| <b>351-823</b>                            | Div. 2 VoIP WiFi DC Page Phone            |
| <b>351-814</b>                            | Div. 2 VoIP WiFi AC Page Phone with Relay |
| <b>351-824</b>                            | Div. 2 VoIP WiFi DC Page Phone with Relay |
| <b>Handset with Auxiliary Jack Models</b> |   |
| <b>Model</b>                              | <b>Description</b>                        |
| <b>351-715</b>                            | Div. 2 VoIP AC Page Phone                 |
| <b>351-725</b>                            | Div. 2 VoIP DC Page Phone                 |
| <b>351-735</b>                            | Div. 2 VoIP PoE Page Phone                |
| <b>351-716</b>                            | Div. 2 VoIP AC Page Phone with Relay      |
| <b>351-726</b>                            | Div. 2 VoIP DC Page Phone with Relay      |
| <b>351-736</b>                            | Div. 2 VoIP PoE Page Phone with Relay     |
| <b>351-815</b>                            | Div. 2 VoIP WiFi AC Page Phone            |
| <b>351-825</b>                            | Div. 2 VoIP WiFi DC Page Phone            |
| <b>351-816</b>                            | Div. 2 VoIP WiFi AC Page Phone with Relay |
| <b>351-826</b>                            | Div. 2 VoIP WiFi DC Page Phone with Relay |

**NOTE:** All model numbers require an additional three digits to specify color, handset cord, and additional features (see [Table 2](#) for complete part number configuration).

Table 2. VoIP Page Phone Model Number Breakdown

| <b>351-</b>                                       | <b>Transmission</b> | <b>Power</b> | <b>Operation</b> | <b>Finish</b> | <b>Handset</b> | <b>Options</b> |
|---|---------------------|--------------|------------------|---------------|----------------|----------------|
| <b>Wired</b>                                      | <b>7</b>            |              |                  |               |                |                |
| <b>Wifi*</b>                                      | <b>8</b>            |              |                  |               |                |                |
| <b>AC</b>   |                     | <b>1</b>     |                  |               |                |                |
| <b>DC</b>   |                     | <b>2</b>     |                  |               |                |                |
| <b>POE*</b>                                       |                     | <b>3</b>     |                  |               |                |                |
| <b>Page Phone</b>                                 |                     |              | <b>3</b>         |               |                |                |
| <b>Page Phone with Relay</b>                      |                     |              | <b>4</b>         |               |                |                |
| <b>Page Phone with Auxiliary Jack</b>             |                     |              | <b>5</b>         |               |                |                |
| <b>Page Phone with Auxiliary Jack and Relay</b>   |                     |              | <b>6</b>         |               |                |                |
| <b>Orange</b>                                     |                     |              |                  | <b>1</b>      |                |                |
| <b>Gray</b>                                       |                     |              |                  | <b>2</b>      |                |                |
| <b>Yellow</b>                                     |                     |              |                  | <b>3</b>      |                |                |
| <b>Red</b>  |                     |              |                  | <b>4</b>      |                |                |
| <b>None</b>                                       |                     |              |                  |               | <b>0</b>       |                |
| <b>6 Feet</b>                                     |                     |              |                  |               | <b>1</b>       |                |
| <b>15 Feet</b>                                    |                     |              |                  |               | <b>2</b>       |                |
| <b>6 Feet Hytrel®</b>                             |                     |              |                  |               | <b>4</b>       |                |
| <b>15 Feet Hytrel®</b>                            |                     |              |                  |               | <b>5</b>       |                |
| <b>15 inch Armored Cord</b>                       |                     |              |                  |               | <b>7</b>       |                |
| <b>None</b>                                       |                     |              |                  |               |                | <b>0</b>       |
| <b>Door Spring (SK)</b>                           |                     |              |                  |               |                | <b>1</b>       |
| <b>Keylock Door</b>                               |                     |              |                  |               |                | <b>2</b>       |
| <b>Autodial with Door Spring</b>                  |                     |              |                  |               |                | <b>3</b>       |
| <b>Autodial</b>                                   |                     |              |                  |               |                | <b>4</b>       |
| <b>Autodial with Keylock Door</b>                 |                     |              |                  |               |                | <b>5</b>       |
| <b>Autodial with Door Spring and Keylock Door</b> |                     |              |                  |               |                | <b>6</b>       |

\*NOTE: POE is not available on WiFi models.

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## System Requirements and Limitations

### VoIP

Two VoIP telephones can be connected in a peer-to-peer configuration without the need for a LAN, however, a 10/100 BaseT Ethernet network with SIP (Session Initiation Protocol) server is required for systems containing three or more VoIP telephones. Call capacity is limited by the customer's LAN media capabilities and the services available at each end point.

### VoIP WiFi

Two telephones can communicate wirelessly in a peer-to-peer configuration without the need for a LAN connection. However, a wireless access point connected to a 10/100 BaseT Ethernet network with SIP server is required for systems containing three or more WiFi telephones (or a combination of WiFi and hardwired-connected VoIP telephones). Call capacity is limited by the customer's LAN media capabilities and the services available at each end point.

### Multicast Paging

In addition to point-to-point dialing (peer-to-peer), each telephone is also capable of receiving multicast broadcasts. Multicast paging allows a single audio stream to be sent to multiple end points simultaneously, achieving public address functionality over IP. Multicast requires the use of a SIP server or IP device that specifically supports multicast functionality and each telephone must be configured (enabled) to receive multicast packets.

## Tips for VoIP Subscribers

If you have or are thinking of subscribing to an interconnected VoIP service, you should:

- Provide your accurate physical address to your interconnected VoIP service provider to ensure that emergency services can quickly be dispatched to your location.
- Be familiar with your VoIP service provider's procedures for updating your address, and promptly update address information in the event of a change.
- If power is out or the Internet connection is down be aware that VoIP service may not work. Consider installing a backup power supply.
- If you have questions about VoIP in general, see <http://www.fcc.gov/cgb/consumerfacts/voip.html>.

## Features and Functions

GAI-Tronics VoIP telephones include the following features:

- SIP compatible (RFC3261)
- real-time alarm reporting via email or syslog
- POE (Power-over-Ethernet) compatible (Power Mode A, Class 0)
- configurable via web page, serial link, or download
- four configurable auxiliary inputs and two configurable voltage-free contact outputs (relay units only)

# Installation

## Installation Guidelines

When installing any GAI-Tronics telephone equipment, please adhere to the following guidelines to ensure the safety of all personnel:

- NEVER install a telephone or network wiring during a lightning storm.
- NEVER install network jacks in wet locations unless the jack is specifically designed for wet locations.
- NEVER touch uninsulated network wires or terminals unless the network line has been disconnected at the network interface.
- USE CAUTION when installing or modifying network lines.
- Use silicone sealant or equivalent around and inside all conduit entries
- **Install a Cat5 data line lightning surge protector** on any phone installed where the phone or phone cable is at risk of being exposed to lightning strikes. The lightning arrestor must be installed as close to the phone as possible in a non-hazardous environment. The lightning arrestor must not be installed within the telephone enclosure.
- USE CAUTION when installing or modifying Category 5 data lines.

GAI-Tronics recommends the following precautionary measures to protect the unit during installation:

- Install this unit using appropriate Division 2 wiring methods.
- Run the subscriber line inside conduit to ensure that the unit is vandal-resistant.
- Use the conduit entries located on the bottom of the enclosure to prevent any condensation forming inside the conduit from dripping into the unit. Additionally, using bottom conduit entries makes water less likely to enter the unit at the conduit connection points.
- Use Teflon™ pipe joint tape or a thread sealing compound around the conduit threads to seal threaded connections and prevent water from entering into the unit at the conduit location.
- Apply a small amount of silicone sealant inside and around the end of the conduit pipe that is inside the unit. The sealant helps to prevent any condensation formed inside the conduit from dripping into the unit. This is especially important when using the conduit entry located on the top of the enclosure. (Manufacturers of silicon sealant include: Dow Corning, Duron, General Electric, and DuPont.)
- Sealed fittings should be installed at all cable entry points to prevent liquids from entering the unit.

## Mounting

Mount the enclosure using the four 0.437-inch (11mm) diameter holes located on the mounting flange with 3/8-inch (M8) hardware. The recommended entry is via the enclosure bottom to prevent moisture from dripping onto the terminals. When mounting the enclosure, use caution to avoid damaging the internal components. The suggested mounting height is 48 inches (1219mm) to the center of the bottom mounting holes of the enclosure.

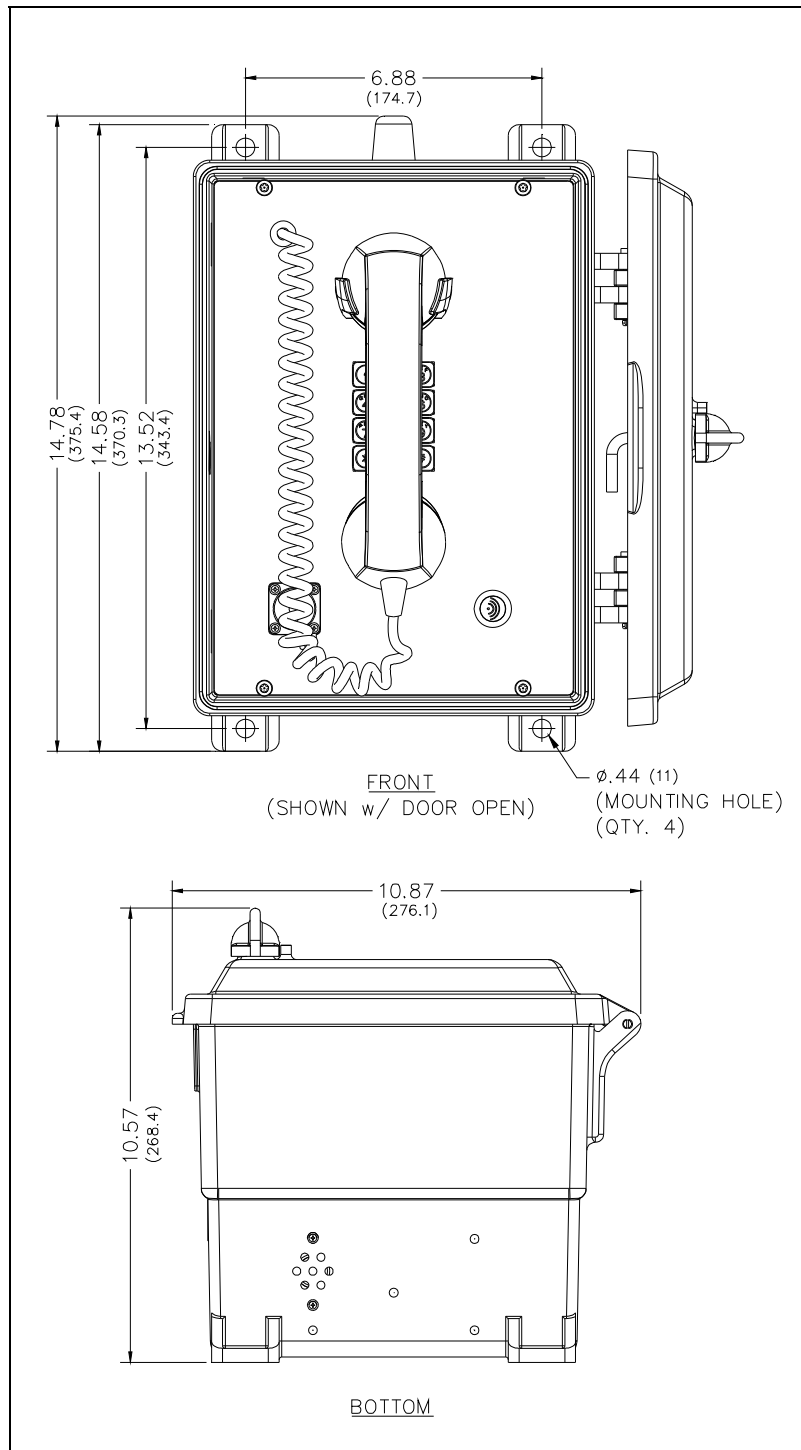


Figure 2. Mounting Details



## Hardware Description

### External

The Division 2 VoIP Page Phones can contain:

- handset
- standard keypad
- volume control push button
- ringer
- auxiliary jack with cap.
- weatherproof WiFi antenna

The handset rests on a cradle that has a magnetic reed switch to signal an off-hook condition. VoIP WiFi models have a weatherproof antenna mounted to the top of the enclosure (see [Figure 3](#)).

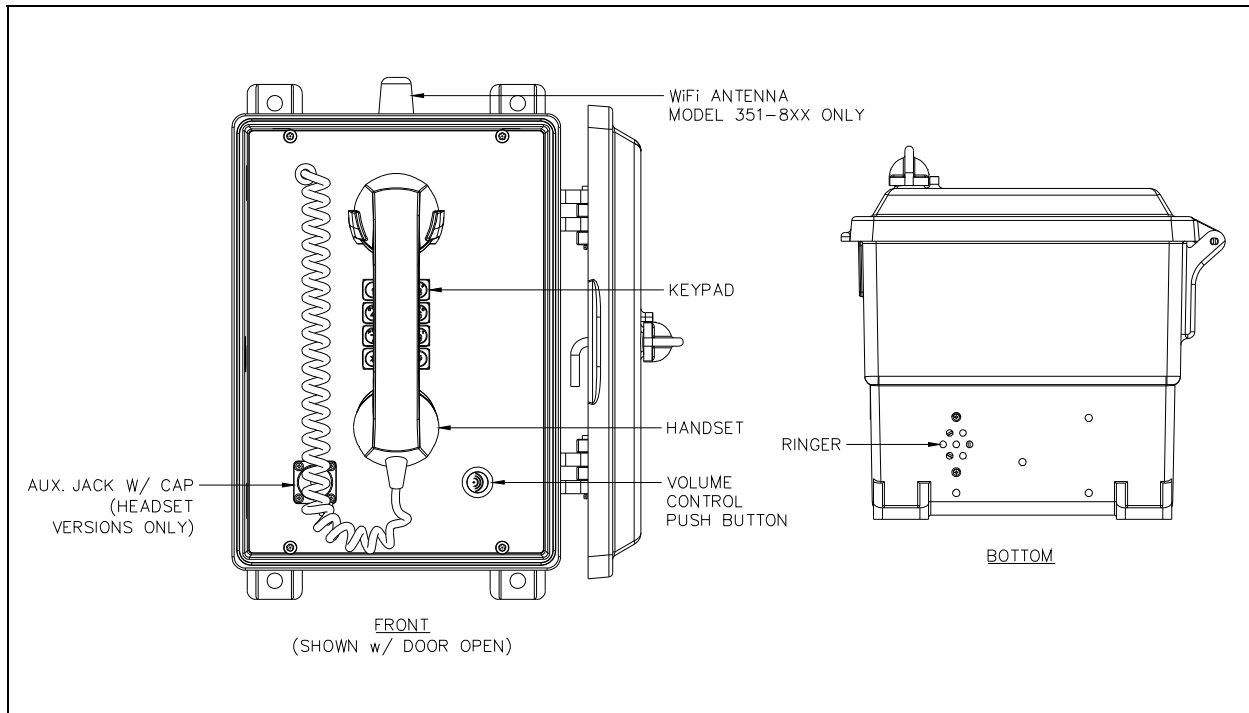


Figure 3. Division 2 VoIP WiFi Page Phone

Internal

**Model 351-7xx VoIP Page Phones**

The Model 351-7xx VoIP Page Phones may include:

- power supply
- input power terminal block
- relay PCBA
- ringer and shield in the rear enclosure

The front cover holds the main VoIP carrier PCBA, VoIP circuit PCBA, amplifier PCBA, handset/headset adapter PCBA, and keypad PCBA. Amplifier-only versions do not include a keypad PCBA (see [Figure 4](#)).

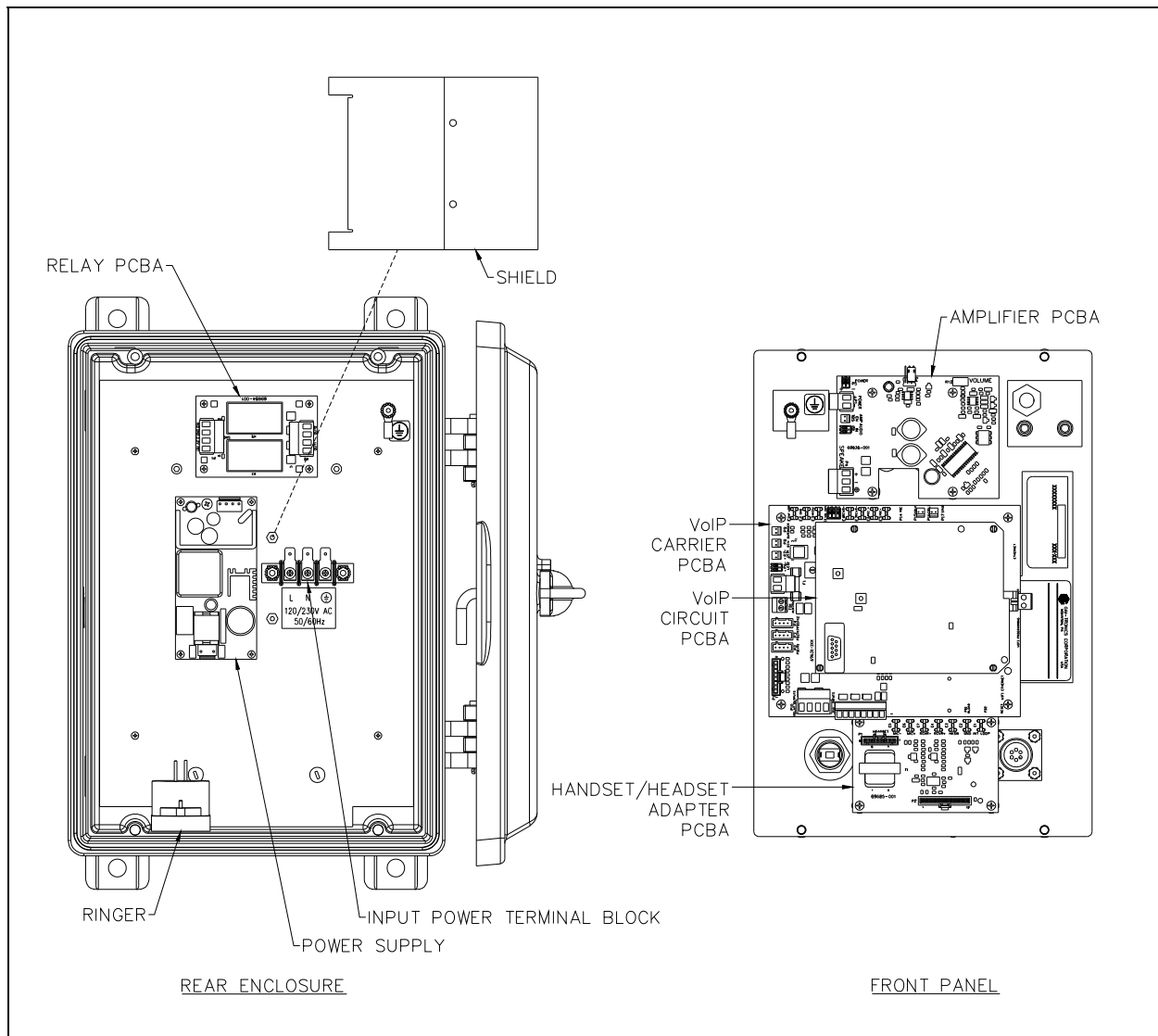


Figure 4. Model 351-7xx Div. 2 VoIP Page Phone

## Model 351-8xx VoIP Page Phones

The Model 351-8xx VoIP WiFi Page Phones may include:

- power supply
- input power terminal block
- relay PCBA
- ringer
- shield
- Div. 2 external antenna

The front cover holds the main VoIP/WiFi carrier PCBA, VoIP circuit PCBA, WiFi module, amplifier PCBA, handset/headset adapter PCBA, and keypad PCBA. Amplifier-only versions do not include a keypad (see [Figure 5](#)).

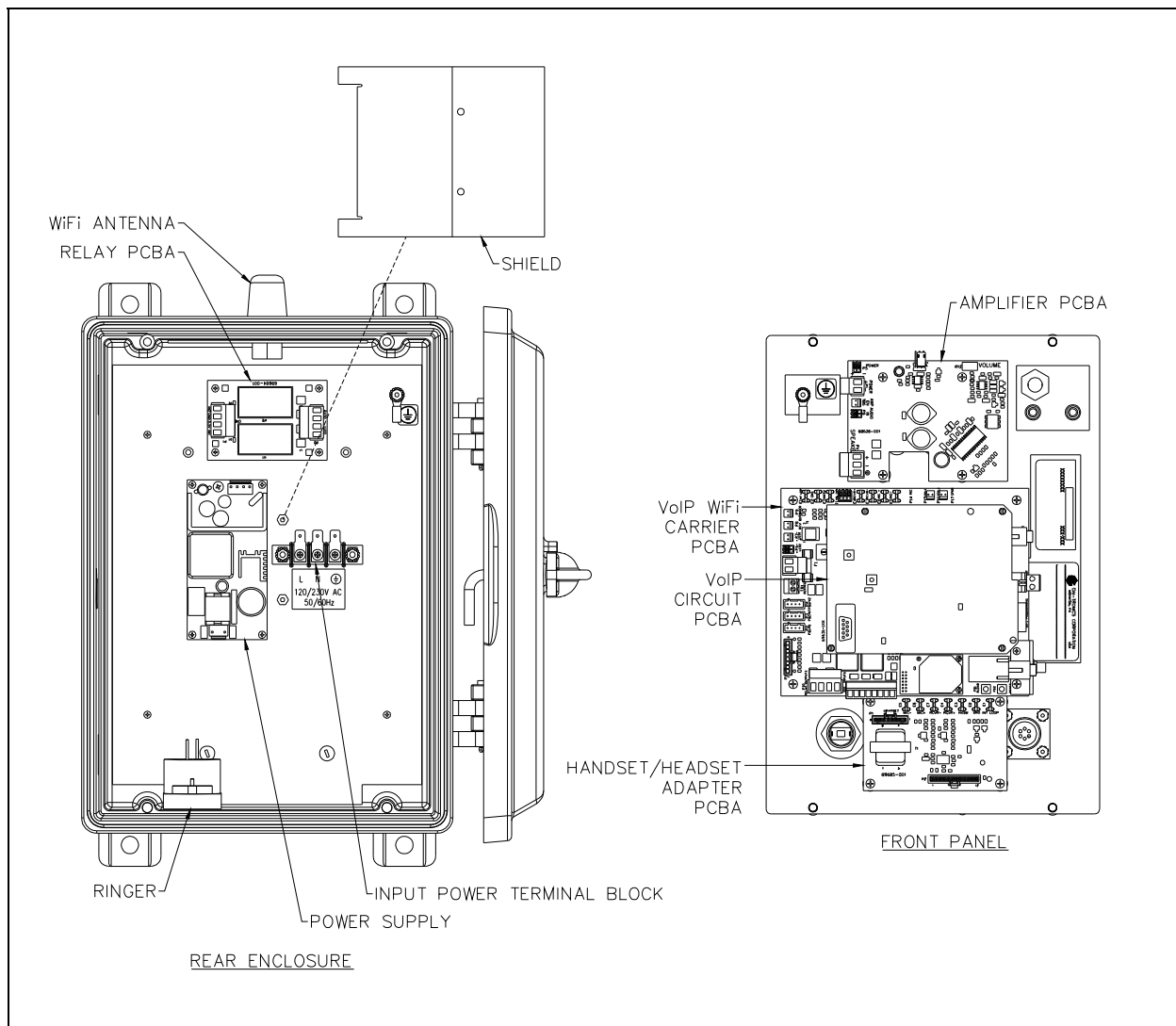


Figure 5. Model 351-8xx Div. 2 VoIP WiFi Page Phone

## Wiring

1. Remove the four screws from the front panel and turn it to the right so that the interior surface faces you. Allow the wiring to remain connected.
2. Hang the front panel on the front door by hooking a small piece of wire in the mounting holes of the panel. The front panel interior surface and the back box interior now face you (see [Figure 6](#)).
3. For wired versions, plug the incoming Category 5 data line into the network RJ45 cable jack on the underside of the VoIP circuit PCBA (see [Figure 6](#) and [Figure 7](#)).
4. For ac and dc powered models, remove the power supply cover in the rear enclosure for access to the input power terminal block. Connect the incoming power conductors to the 3-point terminal block in the rear enclosure.
5. Route the speaker connection wire on the left side of the power supply to the P4 speaker plug on the amplifier PCBA located on the front cover. Terminate the wires per the PCBA silk screen text.
6. Reattach the power supply cover using the two screws previously removed from the cover.

Install any additional connections as indicated below (refer to [Figure 7](#) for wiring details and [Table 5](#) for the recommended conductor sizes).

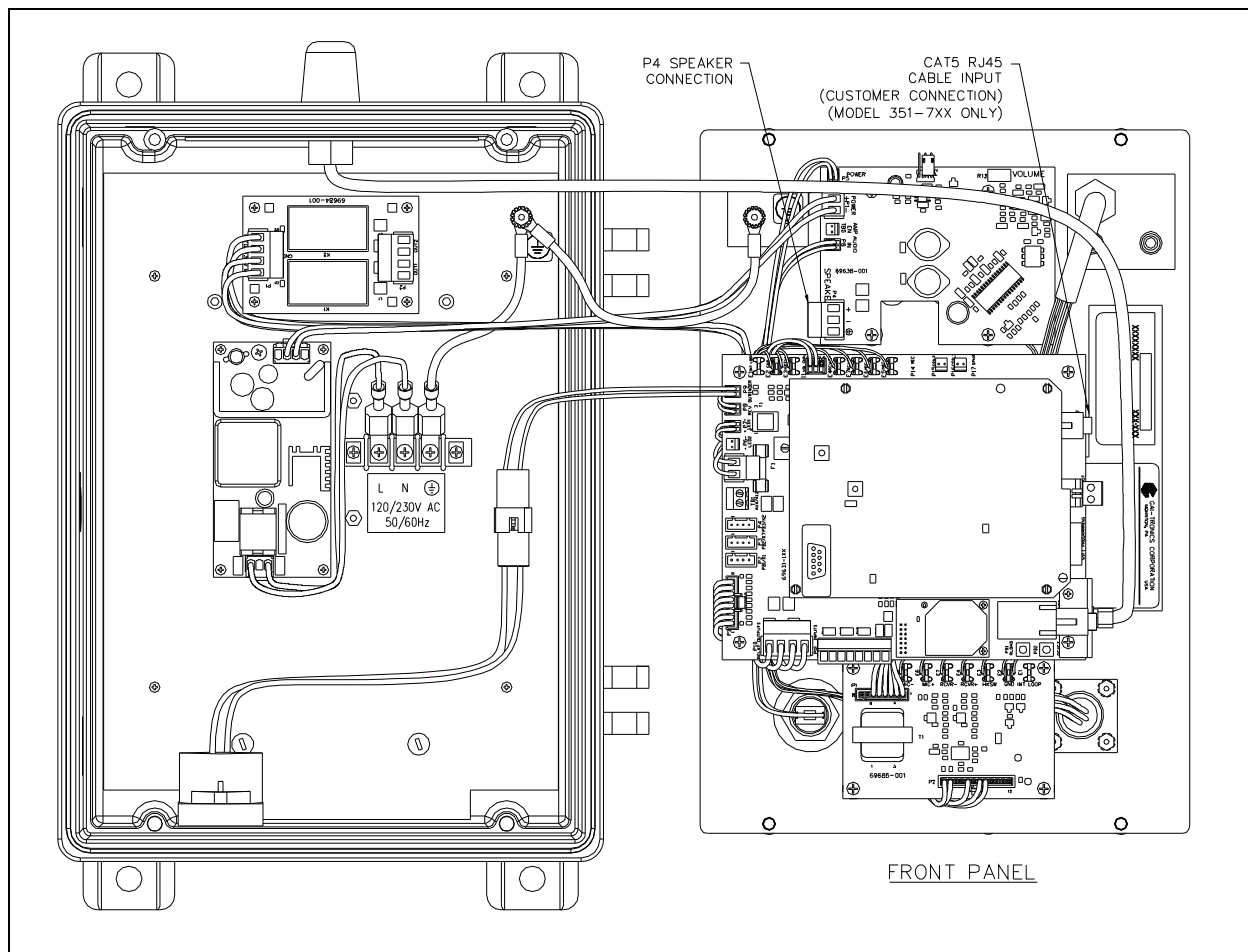


Figure 6. Installation and Maintenance Configuration

### Network Cable

Connect a Category 5 or better UTP cable with an RJ45 connector between the LAN (Local Area Network) and the VoIP PCBA (see [Figure 7](#)).

## Power-Over-Ethernet (POE)

Connect power to the system as indicated in your POE equipment manual to provide power to the unit via Ethernet network cabling (Power Mode A, Class 0).

## I/O

### Inputs

Four clean dry-contact auxiliary inputs have been provided for customer use. Terminations for these inputs are provided on terminal block P12 (see [Figure 7](#)). Connect each input between the desired input (INPUT 1–4) and common (GND) on terminal block P12. Refer to the Inputs section of GAI-Tronics Pub. 42004-481, VoIP Telephone Basic Programming Guide, for programming instructions for these inputs.

Table 3. Auxiliary Inputs—P12

| Pin | Label | Function |
|-----|-------|----------|
| 1   | IN4   | Input 4  |
| 2   | COM   | Common   |
| 3   | IN3   | Input 3  |
| 4   | COM   | Common   |
| 5   | IN2   | Input 2  |
| 6   | COM   | Common   |
| 7   | IN1   | Input 1  |
| 8   | COM   | Common   |

Inputs have an internal pull-up resistor and need to be 3.3 V dc tolerant.

### Outputs (Relay Units Only)

Two outputs have been provided for customer use. Terminate these outputs on connector P2 on the Relay PCBA (see [Figure 7](#)). The function of each output is configurable and can be configured for one of the following modes:

- On
- Mute
- Hook
- Ring Out
- Emergency
- Off
- Ring
- In Use
- Page
- Pulse
- Call Connect
- Ring Cadence
- Registered

In some modes, the duration of the activation or on/off times can also be set. Refer to the Logic Settings section of Pub. 42004-481, VoIP Telephone Basic Programming Guide, for more details.

Table 4. Output Contacts—P2

| Pin | Label | Description            |
|-----|-------|------------------------|
| 1   | C2    | Common Output 2        |
| 2   | NO2   | Normally Open Output 2 |
| 3   | C1    | Common Output 1        |
| 4   | NO1   | Normally Open Output 1 |

Relay capacity is 5 A at 30 V dc or 120 V ac.

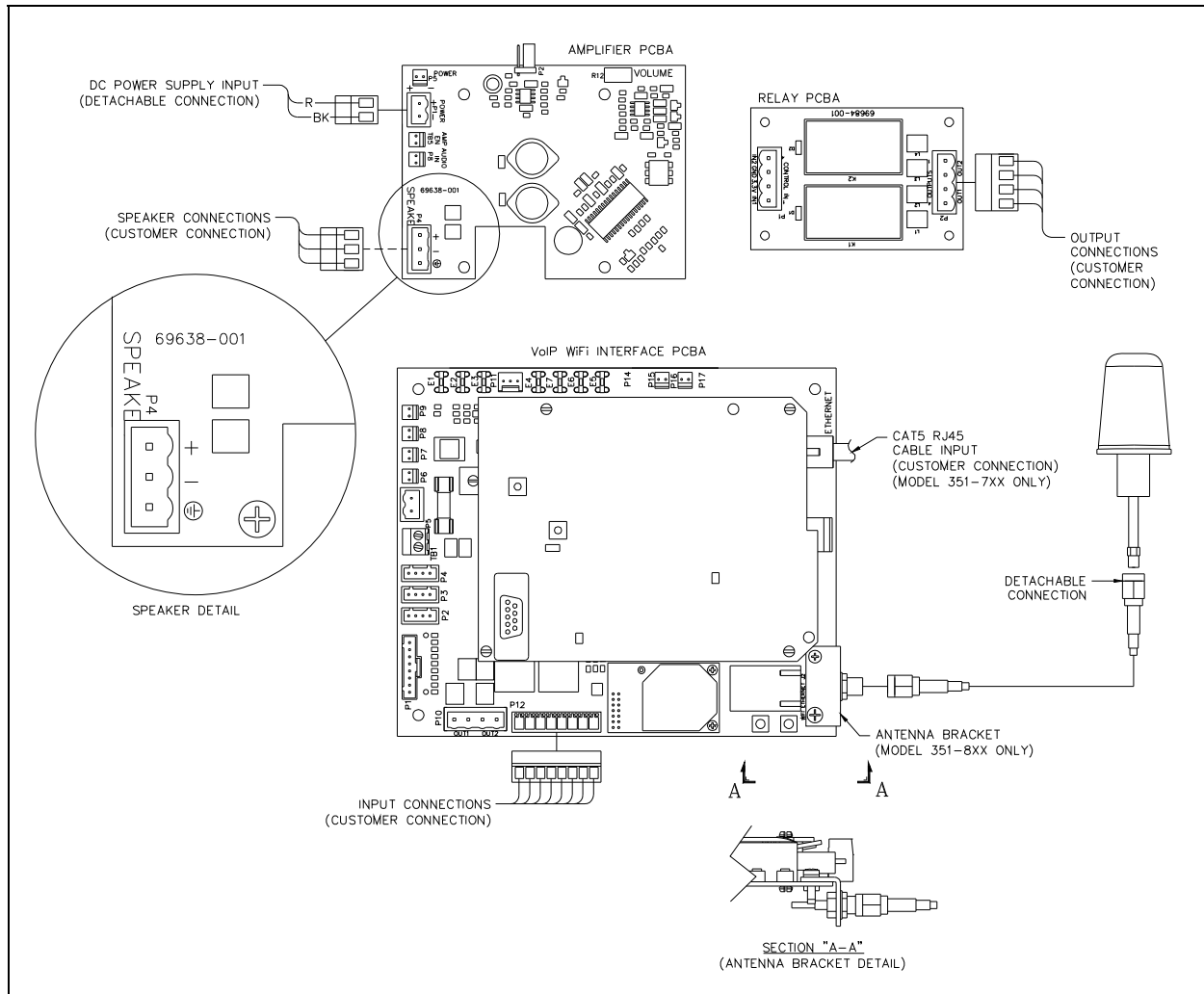


Figure 7. Internal PCBA Connections

Table 5. Recommended Cabling

| <b>Cable Use</b> | <b>Size</b>                                    |
|------------------|--|
| LAN              | Cat5 or Cat5e UTP cable with an RJ45 connector |
| Power            | two-conductor, No. 18 AWG is typical           |
| Inputs           | two-conductor, No. 22 AWG is typical           |
| Output contacts  | two-conductor, No. 18 AWG is typical           |
| Speaker          | two or three-conductor, No. 18 AWG is typical  |

## Status Indication

### Power

The Power LED located on the VoIP PCBA illuminates when power is applied to the telephone (see [Figure 8](#)).

### Heartbeat

The Heartbeat LED located on the VoIP PCBA will flash when the telephone is operational over the WLAN (see [Figure 8](#)).

### EACT

The EACT LED located on the VoIP PCBA will turn ON when VoIP PCBA is connected to an Ethernet device and flash when data is being transmitted (see [Figure 8](#)).

### WiFi Activity (WiFi Units Only)

The WiFi Activity LED located on the WiFi module will turn ON when the VoIP telephone is powered and flash when data is being transmitted (see [Figure 8](#)).

### WiFi Ready (WiFi Units Only)

The WiFi Ready LED is a green LED on the RJ45 connector J2 located on the VoIP carrier PCBA that illuminates when the WiFi interface is ready to connect to a wireless network (see [Figure 8](#)).

### WiFi Connected (WiFi Units Only)

The WiFi Connected LED is a yellow LED on the RJ45 connector J2 located on the VoIP carrier PCBA that illuminates when the WiFi interface is connected to a wireless network or device (see [Figure 8](#)).

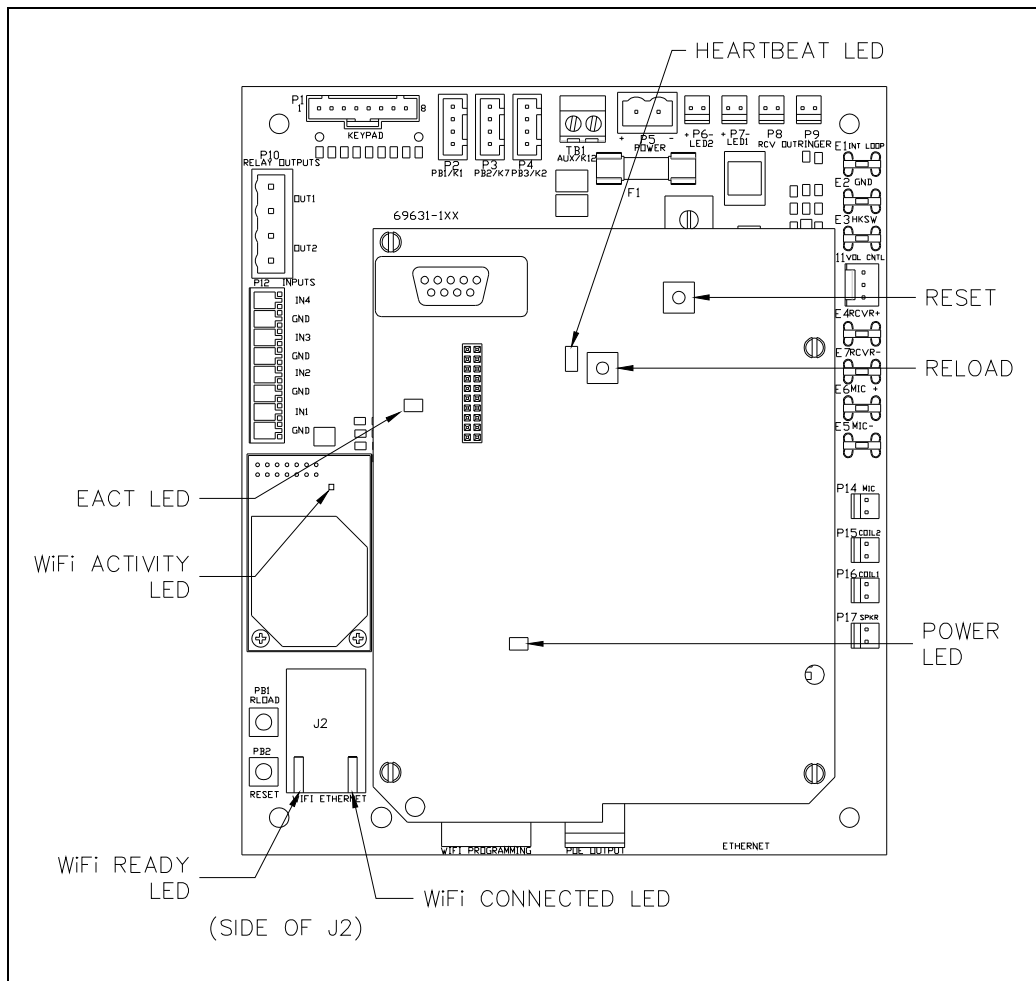


Figure 8. VoIP Carrier PCBA Component Locations

## Attach the Front Cover

After all wiring and cable connections have been completed:

1. Place the front panel on the rear enclosure.
2. Do not pinch any cables
3. Secure the front panel using the four screws and washers provided
4. Torque the screws to 10–12 lb·in (1.13–1.36 N·m).

## External Controls

### Handset Receiver Volume Control

A push-button switch is provided on the front panel for adjustment of the handset receiver volume. The volume decreases from 20 dB to 12 dB, to 0 dB, and back up to 20 dB of the original signal with each button press. The signal level is automatically reset to 20 dB after the end of each call.

### Maximum (Handset Receiver) Level Remote Control

The receiver volume level can be controlled remotely by changing the setting in the configuration file. Refer to the Handset Volume Setting in the Audio Setting section in Pub. 42004-481, VoIP Telephone Basic Programming Guide, for programming instructions.



# Programming

The installer should ensure that the network is configured to allow VoIP communications (using the SIP protocol) between the desired locations before attempting to configure the GAI-Tronics VoIP Telephones.

## First Time WiFi Interface Setup

Configuration of the WiFi interface is required to set up security of the WLAN unit's connection:

1. Power the telephone by connecting 24–48 V dc to P5.

The VoIP telephone's factory default WiFi interface configuration provides an access point to a network named **HF-A11\_AP**.

2. Connect to the HF-A11\_AP network using a PC/laptop with wireless capability.

The yellow LED on the WiFi interface should be ON when the PC is connected to the HF-A11\_AP network.

3. Open a web browser on the PC and type **10.10.100.254** into the address field and press **Enter**.

The HF-A11\_AP WiFi LOG IN window will open.

4. Enter **admin** for both the user name and password, and then log in.

The WORKING MODE CONFIGURATION web page will open.

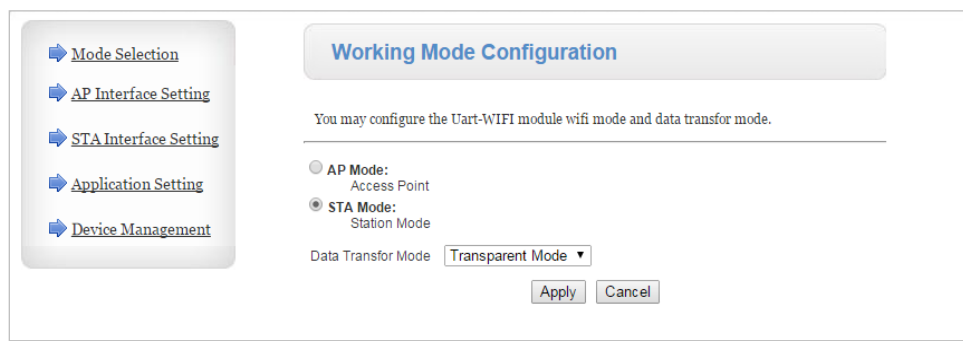


Figure 9. WiFi Interface Working Mode Configuration web page

5. Select **STA Mode** then click the **APPLY** button.

**NOTE:** If you are having a problem connecting to the **HF-A11\_AP** network, verify that the PC's wireless network adapter is set to DHCP (Obtain an IP address automatically).

The web page will show **Set Successfully** after the configuration has updated.

6. Restart to use the new setting, and then click on the **STA Interface Setting** selection.

The STA INTERFACE SETTING web page will open.

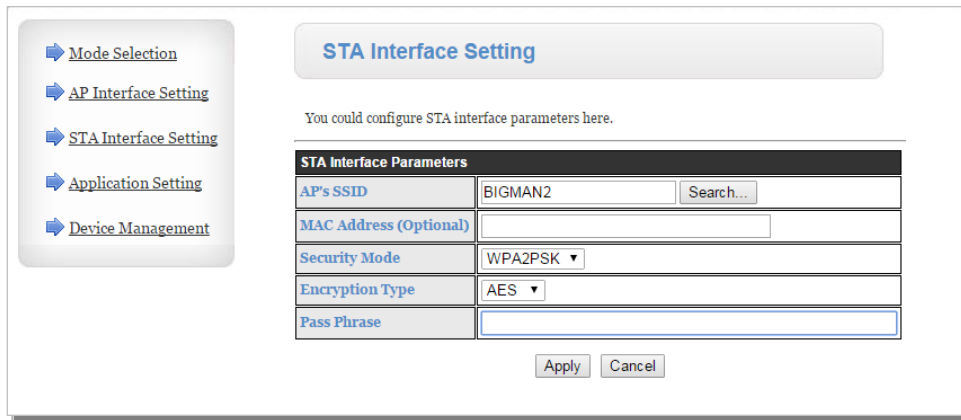


Figure 10. WiFi Interface STA Interface Setting web page

7. Click the **SEARCH** button in the AP'S SSID section to find the WiFi network that the VoIP Telephone will operate in.

The **SITE SURVEY** web page will open showing all available networks.

8. Select the desired network and click the **APPLY** button.

| Site Survey           |                                |                   |      |         |            |                |                |
|-----------------------|--------------------------------|-------------------|------|---------|------------|----------------|----------------|
|                       | SSID                           | BSSID             | RSSI | Channel | Encryption | Authentication | Network Type   |
| <input type="radio"/> | TP-LINK_LAB                    | a0:f3:c1:a8:db:fc | 60%  | 1       | NONE       | OPEN           | Infrastructure |
| <input type="radio"/> | BIGMAN2                        | 40:16:7e:5b:6e:78 | 100% | 6       | AES        | WPA2PSK        | Infrastructure |
| <input type="radio"/> | HP-Print-18-LaserJet 400 color | bc:85:56:ed:fd:18 | 39%  | 6       | NONE       | OPEN           | Infrastructure |
| <input type="radio"/> | BIGMAN3                        | c8:d7:19:f4:99:99 | 5%   | 6       | TKIP       | WPAPSK         | Infrastructure |
| <input type="radio"/> | Test                           | 00:0f:66:75:88:96 | 5%   | 7       | NONE       | OPEN           | Infrastructure |
| <input type="radio"/> | BigmanAP                       | 00:0d:3a:28:c5:1b | 29%  | 9       | WEP        | OPEN           | Infrastructure |
| <input type="radio"/> | Hubbell-Guest                  | 6c:f3:7f:dc:c8:81 | 0%   | 11      | NONE       | OPEN           | Infrastructure |

Apply Refresh

Figure 11. WiFi Interface Site Survey web page

A reminder window for entering the WEP Key will pop up.

9. Click the **OK** button.

The AP's SSID, Security Mode, and Encryption Type fields will automatically be filled in when the STA Interface Setting web page opens again.

10. Enter the **WEP Key** or **Pass Phrase** for the selected network and click the **APPLY** button.

**NOTE:** The AP's SSID, Security Mode, Encryption Type, and WEP Key or Pass Phrase fields will need to be manually entered before clicking the **APPLY** button if the VoIP telephone is not within the range of the wireless network that it is being configured to operate in.

The web page will show **Set Successfully** after the configuration has updated.

11. Restart to use the new setting, and then click on the **Device Management** selection.

The **DEVICE MANAGEMENT** web page will open.

12. Click the **RESTART** button in the **Restart Module** section.

Figure 12. WiFi Interface Device Management web page

When the WiFi module is restarting the web page will show **Rebooting...** Both LEDs on the RJ45 jack J2 will turn OFF for several seconds while the WiFi interface is restarting. The green LED will turn ON first when the WiFi interface is done restarting. The yellow LED will turn ON if the WiFi interface can connect to the newly configured network.



If the VoIP Telephone does not connect to the wireless network due to an incorrect WEP Key or Pass Phrase, follow the instructions in the next section, [Change WiFi Interface Configuration](#).

**NOTE:** The WiFi module is no longer an access point to its own network (HF-A11\_AP). The WiFi module should now be connected to or trying to connect to the newly configured wireless network. The browser web page will not change from showing **Rebooting...** because the PC is no longer connected to the HF-A11\_AP network.

## Change WiFi Interface Configuration

To change the configuration of the WiFi interface first press the RLOAD button (PB1) for 10 seconds to return the WiFi interface to its default settings. The RLOAD button is located on the VoIP telephone PCBA near the WiFi module and J2. Both LEDs on the RJ45 jack J2 will turn OFF for several seconds while the WiFi interface is resetting. Wait for the green LED to turn ON before trying to connect to the HF-A11\_AP network.

With the default settings loaded and the green LED on the RJ45 jack J2 on, follow the instructions in the [First Time WiFi Interface Setup](#) section to connect to the HF-A11\_AP network and change the configuration settings.

 **WARNING**  —After changing the WiFi Interface configuration, if the VoIP telephone has been configured for DHCP, the telephone's power must be cycled before the telephone will connect to the wireless network. After power is reapplied, the green and yellow LEDs on the RJ45 Jack (J2) are ON, and the HEART BEAT LED on the VoIP Telephone PCBA is flashing, proceed to the next section, [VoIP PCBA Setup](#) to set up the VoIP telephone configuration.

## VoIP PCBA Setup

Verify the PC is connected to the same network as the VoIP telephone.

The easiest way to get started is to make a network connection to the unit and log on via a web browser. The unit is initially set with a static IP address:

**IP address**      **192.168.1.2**

A user name and password will be requested. The initial factory settings are:

**User Name**      **user**

**Password**        **password**

Changing the user name and password is recommended. This security measure helps to prevent unauthorized changes to the VoIP Telephone Interface's configuration.

## Initial VoIP PCBA Network Configuration

Each VoIP PCBA must be set up for the network prior to installation. Assign a local ID, domain, proxy, and registrar:

**Assign a host name**      The host name provides identification of the different VoIP PCBAs on the network.

**Test**                      Verify that calls can be made successfully.

**Maintain**                Monitor alarms. Set up auto-updates.

Refer to Pub. 42004-481 VoIP Telephone Basic Programming Guide for detailed programming instructions for this VoIP device.

## Alternative Configuration Methods

There are three methods for configuring GAI-Tronics Handset VoIP telephones:

- web pages
- configuration file
- CLI (Command Line Interface)

Web pages (held within the telephone) can be accessed over the network using a browser such as Internet Explorer™ to view and change settings within a single unit.

Configuration files are ASCII text files containing configuration options that can be read and edited by a knowledgeable user. The telephone can automatically download a configuration file from the network, providing a controlled method of configuring multiple telephones.

The telephone can also be configured using a command line interface, either via the local serial port or remotely via a TELNET session over the network.

## Operation

### Handset Operation

1. Lift the handset to place a call.
2. Adjust the handset receiver volume control to the desired level by pressing the volume control push button located on the front panel.
3. Dial the desired number. Autodial models will call a preprogrammed number (garage, dorm, etc.).
4. Place the handset on hook after completing the call.

### Headset Operation

1. Plug the headset into the auxiliary jack on the front panel by removing the sealing cap from the receptacle, aligning the connector pins, and screwing the two ends together.  
**NOTE:** The headset can be connected while the unit is powered.
2. Press the headset page switch on the extension cord to place a call.
3. Slide the page switch to maintain it in a pressed state.
4. Adjust the headset receiver volume to the desired level by pressing the volume control push button located on the front panel.
5. Dial the desired number. Autodial models will call a preprogrammed number (garage, dorm, etc.).
6. Release the page switch from the pressed state to end the call.

### Amplifier Paging (Multicast Broadcast)

When making a multicast call, the SIP server or IP device will send a paging request to a specific IP address and expect multiple telephones to accept and play the subsequent audio. GAI-Tronics VoIP telephones can be programmed for up to eight multicast addresses to permit the receipt of multicast broadcasts from different sources or to enable zoning of broadcasts. Each multicast address can be assigned a priority (via programming) to define page priority. Depending upon the configuration, a telephone with multicast enabled can still make and receive normal calls. Normal calls can be assigned a priority level, defining whether calls can override multicasts or vice versa.

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## Monitoring and Reporting

Each telephone can recognize and generate several hardware and configuration fault condition alarms. These alarms can be signaled to a remote site using three methods:

- syslog output over TCP
- SMTP mail message
- TMA (Telephone Management Application) software (purchased separately)

Available alarms are:

- handset integrity loop (if applicable)
- configuration error
- cold reset (power cycle)
- warm reset (internal command)
- keypad error, such as a stuck button (if applicable)
- key hook (off-hook status, if applicable)
- register fail
- audio path test (speaker/microphone test)

## Maintenance

### Service

If your telephone requires depot 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 will be made without charge. 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

Table 6. Troubleshooting Chart

| <b>Problem</b>                               | <b>Possible Solution</b>  |
|--|---|
| low volume in handset or headset             | Increase the volume setting using the Volume Adjust button on the front panel.  |
| high volume in handset or headset            | Decrease the volume setting using the Volume Adjust button on the front panel.  |
| front panel push buttons are not operational | Verify the push buttons are properly configured.  |
| inputs not operational                       | Check the input connections.<br>Verify the inputs are properly configured.  |
| outputs not operational                      | Check the output connections.<br>Verify the outputs are properly configured.  |
| cannot make or receive calls                 | Check the connection of the LAN cable.<br>Verify that power is applied to the unit.<br>Verify the LAN parameters have been configured properly.<br>Verify the telephone has been set up on the network. |
| no power indication                          | Check the power connections.<br>Check fuses. Replace fuses with identical type/ratings.<br>If using POE, check the operation of the POE equipment.  |

## Specifications

### Power

#### AC Power

Input voltage ..... 120 V ac or 230 V ac, 50/60 Hz, +/-10%

#### DC Power

Input voltage ..... 24 V dc to 48 V dc

Power-over-Ethernet ..... 12.95 W  
802.11af compliant (via RJ45) Power Mode A, Class 0

| <b>Station Speaker Load (8-ohm load)</b> | <b>24 V DC</b> | <b>48 V DC</b> | <b>120 V AC</b> | <b>230 V AC</b> |
|--|----------------|----------------|-----------------|-----------------|
| Idle                                     | 325 mA/8 W     | 180 mA/8.5 W   | 120 mA/15 VA    | 100 mA/23 VA    |
| 4-watt output (default setting)          | 620 mA/15 W    | 350 mA/17 W    | 275 mA/33 VA    | 130 mA/30 VA    |
| 30-watt output                           | 2200mA/53 W    | 1100 mA/53 W   | 800 mA/96 VA    | 400 mA/92 VA    |

**Network**

**VoIP Network**

Network ..... 10/100 BaseT Ethernet RJ45, Cat5/6 UTP  
 static IP or DHCP STUN client (NAT traversal) address provisioning  
 Call control signaling ..... SIP (RFC3261 compliant) Loose routing call control signaling

**WiFi Network**

Standards ..... IEEE 802.11b/g/n  
 Frequency ..... 2.412 GHz to 2.484 GHz

**Configuration**

..... embedded web server  
 configuration file download  
 direct serial connection  
 password protection

**Audio**

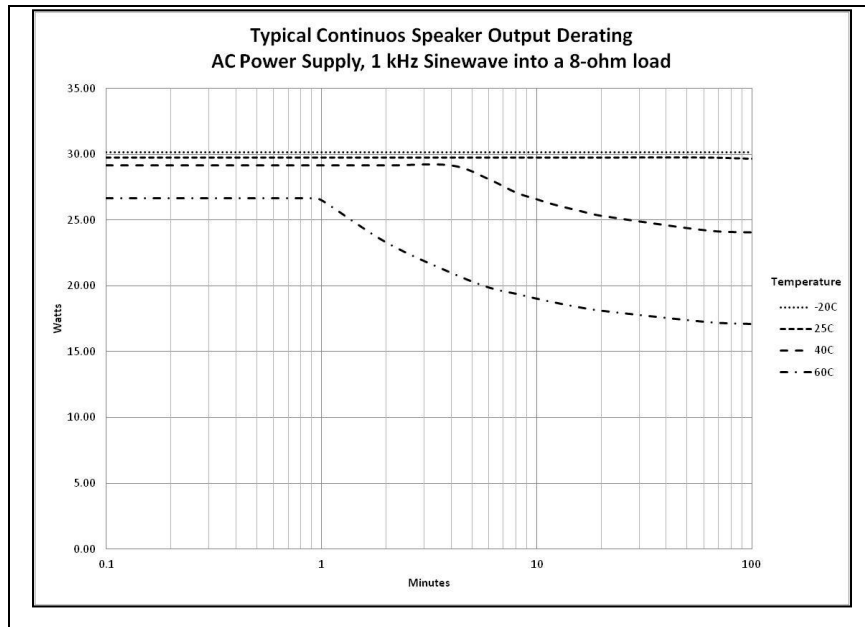
**Handset Audio**

Analog microphone gain ..... 30 dB  
 Analog earpiece gain ..... Default: +20 dB  
 Setting 2: +12 dB  
 Setting 3: 0 dB  
 Frequency response ..... 250 Hz to 6500 Hz  
 Frequency response flatness ..... 3 dB minimum  
 THD @ 1 kHz ..... 1% minimum

**Speaker Audio**

Output level to 8-ohm speaker (ac/dc version) ..... 30 W maximum  
 Gain below limiter (ac/dc version) ..... 27 dB  
 Output level to 8-ohm speaker (PoE version) ..... 3 W maximum  
 Gain below limiter (PoE version) ..... 10 dB  
 VOX activation time ..... 20 ms  
 VOX hold time ..... 2 s  
 Frequency response ..... 250 Hz to 6500 Hz  
 Frequency response flatness ..... 3 dB minimum  
 THD @ 1 kHz, 24 W ..... 1% minimum  
 THD @ 1 kHz, 30 W ..... 3% minimum





**I/O**

**Inputs**

Keypad\* ..... 3 × 4 matrix  
 Configurable inputs (quantity = 4)..... Internal pull-up 3.3 V dc tolerant

\*Not available on all models.

**Outputs**

Output 1 ..... 5 A @ 30 V dc or 120 V ac maximum (resistive load)  
 Output 2 ..... 5 A @ 30 V dc or 120 V ac maximum (resistive load)

**Indicators**

Internal on VoIP Circuit Board.....Power, Heartbeat, & EACT LEDs  
 Internal on VoIP Carrier Board (WiFi Unit only).... WiFi Activity, WiFi Ready, & WiFi Connected LEDs  
 Monitoring and reporting ..... real-time over TCP/IP proprietary syslog application or email  
 embedded SMTP client  
 automatic fault reporting

**Environmental**

Operating temperature ..... -4 °F to +140 °F (-20 °C to +60 °C)  
 Weather resistance ..... NEMA Type 4X with door closed  
 Humidity ..... 90% non-condensing

**Mechanical**

Enclosure (gray, yellow, orange, or red)..... engineered plastic  
 Handset Cord ..... G- style handset/Hytrel® or PVC 6-foot extended length (standard)  
 Connection ..... RJ45 receptacle  
 Dimensions, outside (VoIP)..... 14.6 H × 10.9 W × 10.5 D in (371 × 276 × 267 mm)  
 Dimensions, outside (WiFi)..... 14.8 H × 10.9 W × 10.5 D in (375 × 276 × 267 mm)  
 Mounting..... wall or column, four 0.44 in (11mm) diameter mounting holes  
 Shipping weight ..... 14.7 lb (6.7 kg)  
 Net weight..... 13.7 lb (6.2 kg)

## Approvals

NRTL listed for USA and Canada ..... Class I, Groups A, B, C, and D, Division 2  
Class II, Groups F & G, Division 2  
Class III, Division 2 Hazardous Locations  
Temperature code T4

Outdoor environmental rating ..... Type 3R, Type 4X with door closed

### User Instructions (USA)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# Warranty

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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

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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.