Pub. 42004-500C

GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Division 2 VoIP Page Phones
Wired and WiFi

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Confidentiality Notice

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.

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 (see the model chart in Table 1).

Div. 2 VoIP Page Phones connect 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 connect to a WLAN (wireless local area network) meeting the IEEE 802.11 a/b/g/n standard. An external ac or dc power source is required for operation.

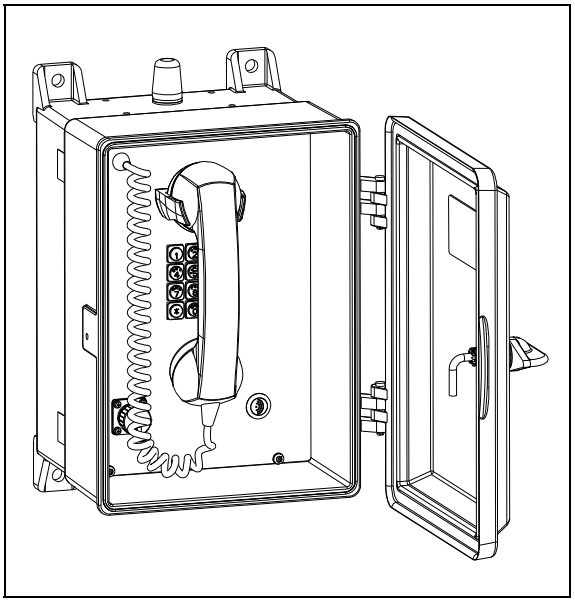


Figure 1. Model 351-8*xx* Div. 2 VoIP WiFi Page Phone

Div. 2 VoIP Page Phones also provide real-time alarm reporting. This enables monitoring the telephones' activity to address caller needs or maintenance issues immediately. There are also configurable inputs and outputs available in all models.

Table 1. Model Chart

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

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

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

Features and Functions

GAI-Tronics VoIP telephones include the following features:

- SIP compatible (RFC3261)
- real-time alarm reporting via SNMP, syslog, or TMA
- PoE (Power-over-Ethernet) compatible (Power Mode A, Class 0)
- configurable via web page or download
- four configurable auxiliary inputs
- two configurable dry-contact outputs (relay units only)

Hardware Description

External

These Division 2 VoIP Page Phones may contain:

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

The handset rests on a cradle with 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 2).

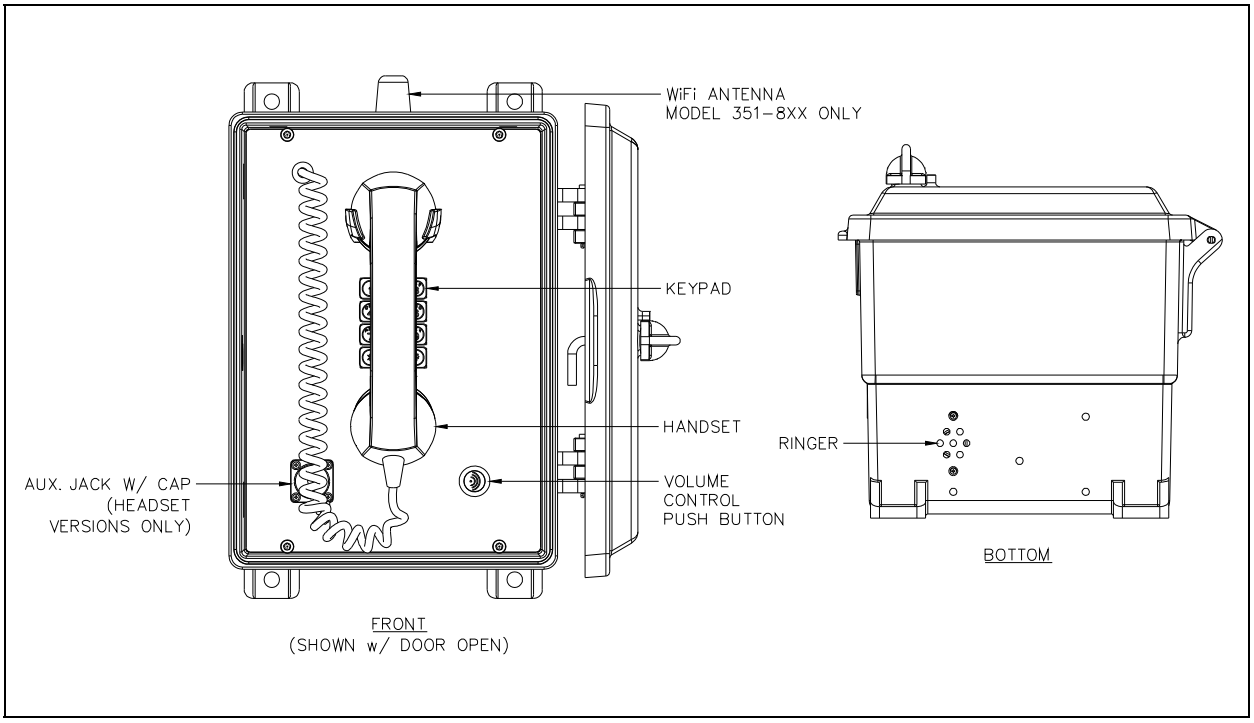


Figure 2. Division 2 VoIP WiFi Page Phone

Internal

Model 351-7*xx* VoIP Page Phones

The power supply, input power terminal block, relay PCBA, ringer and shield are mounted in the rear enclosure. The VoIP carrier PCBA, VoIP circuit PCBA, amplifier PCBA, handset/headset adapter PCBA, and keypad PCBA are mounted to the front cover. Amplifier-only versions do not include a keypad PCBA (see Figure 3).

Model 351-8*xx* VoIP WiFi Page Phones

The power supply, input power terminal block, relay PCBA, ringer, shield, and Div. 2 external antenna are mounted in the rear enclosure. The VoIP/WiFi carrier PCBA, VoIP circuit PCBA, WiFi module, amplifier PCBA, handset/headset adapter PCBA, and keypad PCBA are mounted to the front cover. Amplifier-only versions do not include a keypad (see Figure 4).

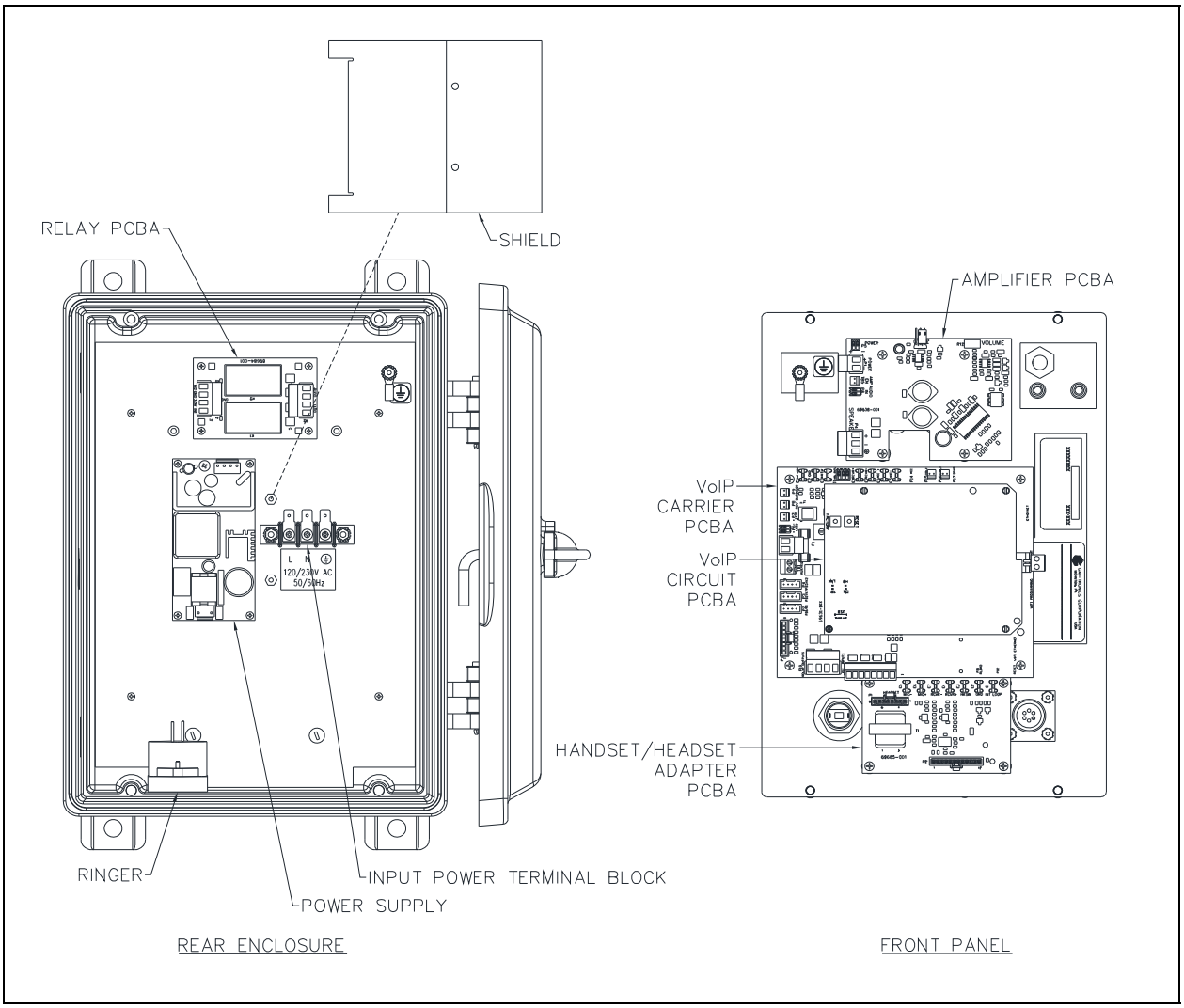


Figure 3. Model 351-7*xx* Div. 2 VoIP Page Phone

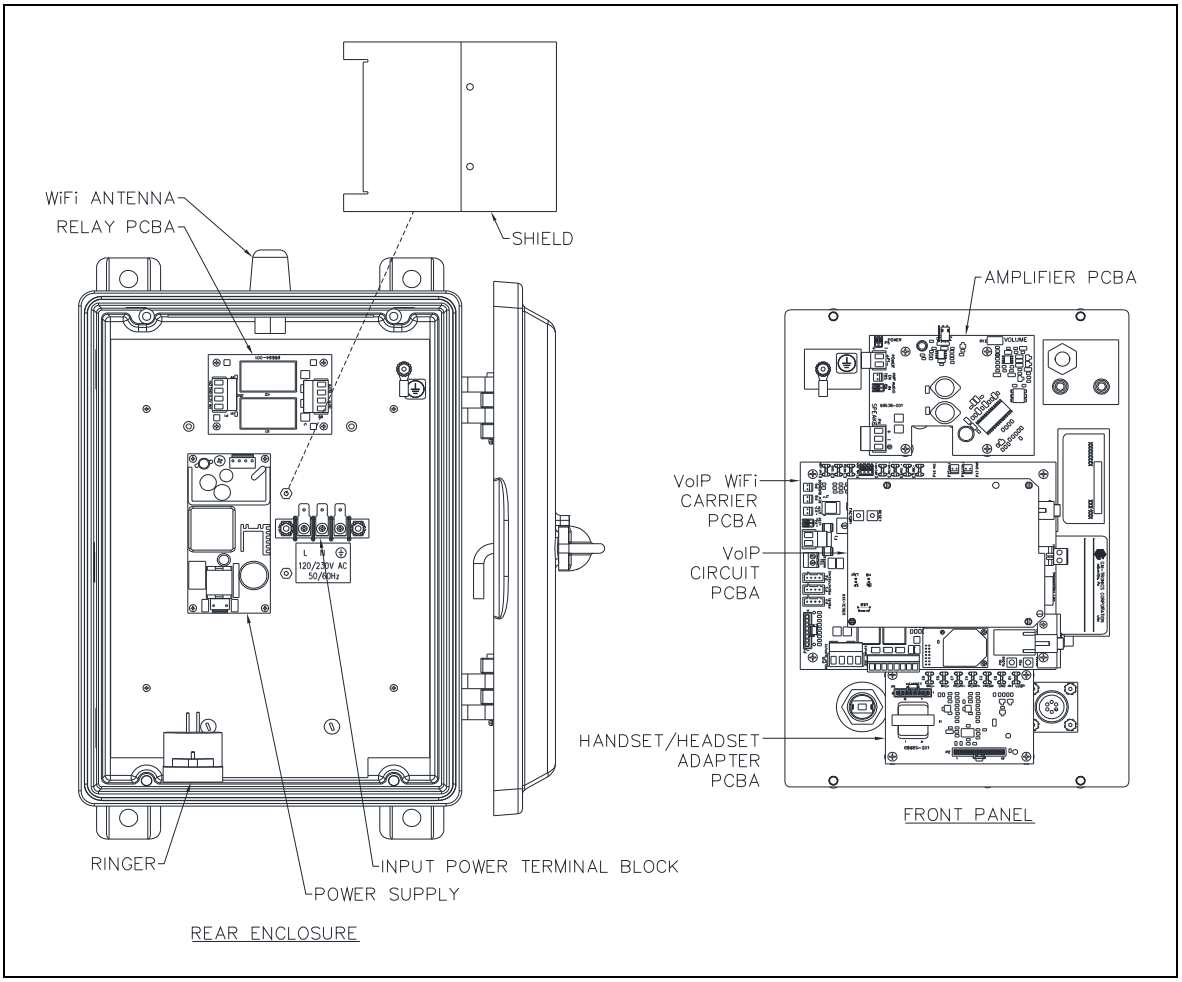


Figure 4. Model 351-8*xx* Div. 2 VoIP WiFi Page Phone

System Requirements and Limitations

VoIP

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

Multicast Broadcasting

Each telephone receives multicast audio streams and broadcasts the audio received. Multicast paging achieves public address functionality when multiple endpoint amplifiers broadcast an audio stream received from a multicast socket. 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.

VoIP Subscriber Tips

For existing and new subscriptions to an interconnected VoIP service provider, the following points should be addressed:

- Provide accurate physical address information to the VoIP service provider to ensure that emergency services can quickly be dispatched to the location.
- Be familiar with the VoIP service provider's procedures for updating the address and promptly update address information in the event of a change.
- Have a clear understanding of any limitations of the local 911 service.
- Be aware that VoIP telephone services may not work if the power is out or the Internet connection is down. Consider installing a backup power supply, maintaining a traditional telephone line, or having a wireless telephone as a backup.
- For questions about interconnected VoIP and 911, or VoIP in general, see http://www.fcc.gov/cgb/consumerfacts/voip.html.

Operation

Handset Receiver Volume Control

Use the push-button switch, located on the front panel, to adjust 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 reset to 20 dB after the end of each call.

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 paging requests to a specific IP address and multiple telephones 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 the override order. A telephone with multicast enabled can still make and receive normal calls. Normal calls are also assigned a priority level to define whether calls override multicasts or vice versa.

Installation

Important Safety Information

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 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.

Enclosure Mounting and Cable Entries

The mounting location must be flat and provide proper clearance, rigidity, and strength to support the enclosure and all contained devices.

1. Mount the enclosure using the four 0.437-inch (11 mm) diameter holes located on the mounting flanges with 3/8-inch (M8) hardware (see Figure 5).
   - The suggested mounting height for all station enclosures is 48 inches (1219 mm) to the center of the bottom mounting holes of the enclosure.
   - Class I, Division 2 VoIP Page Phones are not supplied with conduit or cable openings.
2. Remove the front panel.
3. Drill or punch entry openings in the rear section of the enclosure (see Figure 5).
   - The station is suitable for bottom entry.
   - There must be a minimum of ½ inch (13 mm) of material between entry holes.

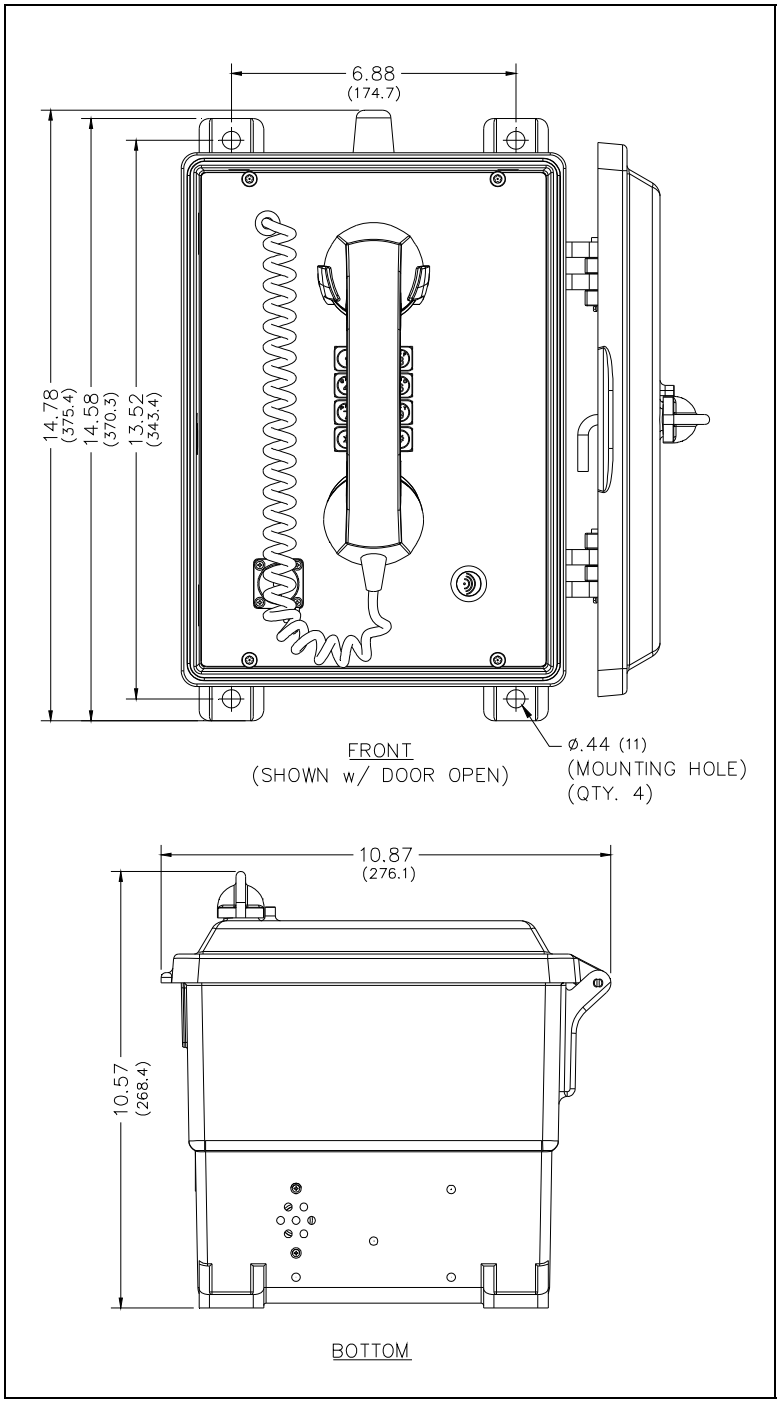


Figure 5. Mounting Details

Front Cover Removal

1. Remove the four screws from the front panel.
2. Turn the front panel to the right to expose the interior of the telephone enclosure.

   Keep all wiring connected (see Figure 6).
3. Hang the front panel on the front door with a small piece of wire through a mounting hole on the panel.

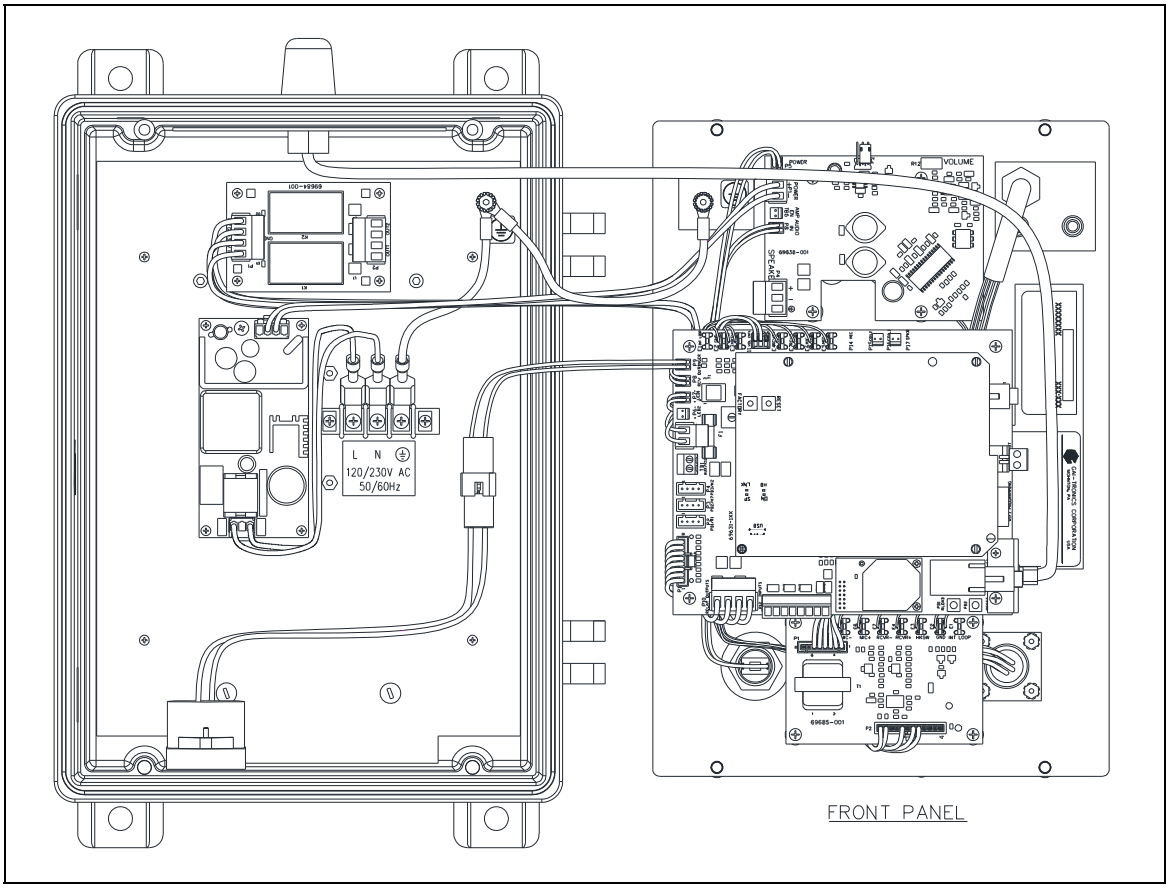


Figure 6. Installation and Maintenance Configuration

Field Wiring

1. *For wired versions*: plug the incoming Category 5 data line into the network RJ45 jack, located on the underside of the VoIP circuit PCBA (see Figure 6 and Figure 7).
2. *ac and dc powered models:*
    1. Remove the two screws from the power supply cover located in the rear enclosure and remove the power supply cover.
    2. Connect the incoming power conductors to the 3-point terminal block in the rear enclosure (see the Local Power section).
    3. Reattach the power supply cover using the two screws previously removed from the cover.
3. Route the speaker cable along the left side of the power supply to the speaker plug, P4, located on the amplifier PCBA, on the front cover.
4. Terminate the speaker connection wires per the PCBA silk screen text.
5. Install all additional connections as indicated in the following subsections (see Table 3 and Figure 7).

Table 3. Recommended Cable

Cable Use	Size
LAN	Cat5 or better 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

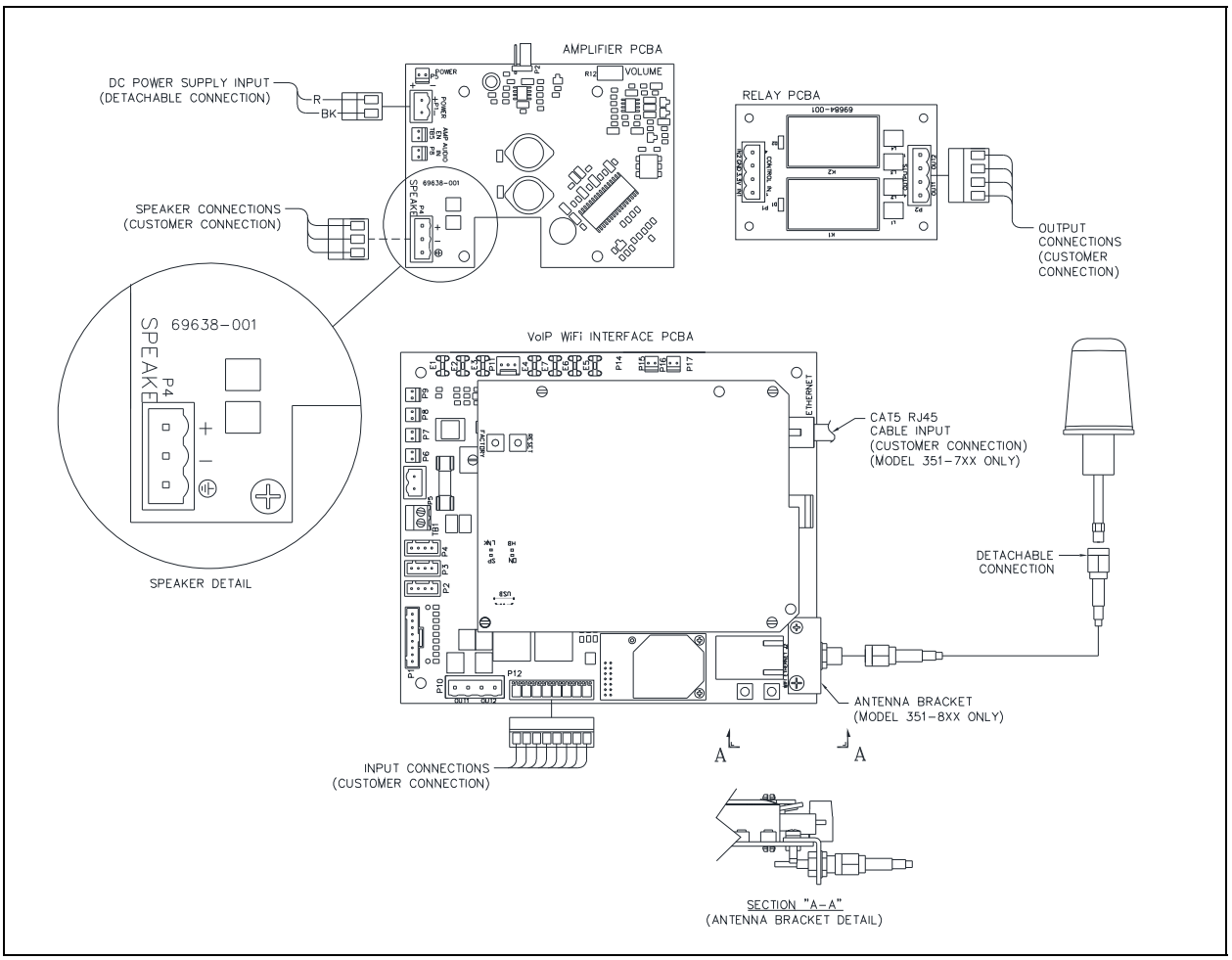


Figure 7. Internal PCBA Connections

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). The RJ45 jack is located on the underside of the VoIP PCBA.

Power

Power-Over-Ethernet (PoE)

Connect power to the unit as indicated in the PoE equipment manual (Power Mode A, Class 0).

Local Power

Connect ac or dc power (as labelled) to the unit's power termination block. located in the rear enclosure (see Figure 8).

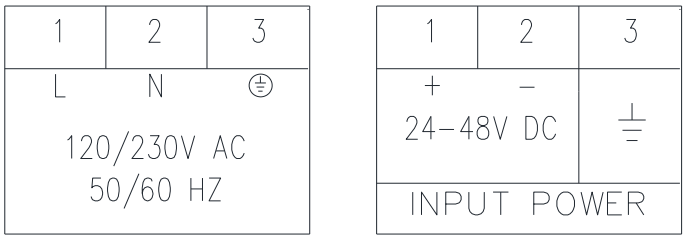


Figure 8. AC and DC Input Power Terminal Block Labels

Auxiliary I/O

Inputs

The page-phones have four auxiliary inputs for customer use

1. Terminate the inputs to terminal block P12 (see Figure 7).
2. Connect each input between the desired input (INPUT 1–4) and common (COM) on terminal block P12 (see Table 4).

The inputs are configurable. See the Inputs section of GAI-Tronics Pub. 42004-548 for configuration instructions (see the Reference Documentation section).

Table 4. 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:

1. Terminate the outputs to connector P2 on the Relay PCBA (see Figure 7).
2. Configure the outputs.

The outputs are configurable. Refer to GAI-Tronics Pub. 42004-548 for configuration instructions (see the Reference Documentation section).

Table 5. 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.

USB port

The USB port is for GAI-Tronics service personnel only. Make no connection to this port.

Front Cover Installation

After all wiring and cable connections are complete:

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).

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

Setup the WiFi interface to configure the telephone's WLAN connection security:

1. Power on the telephone by connecting 24 to 48 V dc to terminal block P5.

   The factory default configuration of the VoIP WiFi telephone's interface is an access point on a network named (SSID) **HF-A11_AP**.

2. Connect to the HF-A11_AP network using a PC/laptop with a wireless adapter.

   The yellow LED on the telephone's WiFi interface should be ON when the PC is connected to the HFA11_AP network.

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

   NOTE: Verify that the PC's wireless network adapter is set to DCHP (Obtain an IP address automatically) to connect to the HF-A11_AP access point.

   The HF-A11_AP WiFi log in window opens.

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

   The WORKING MODE CONFIGURATION web page opens:

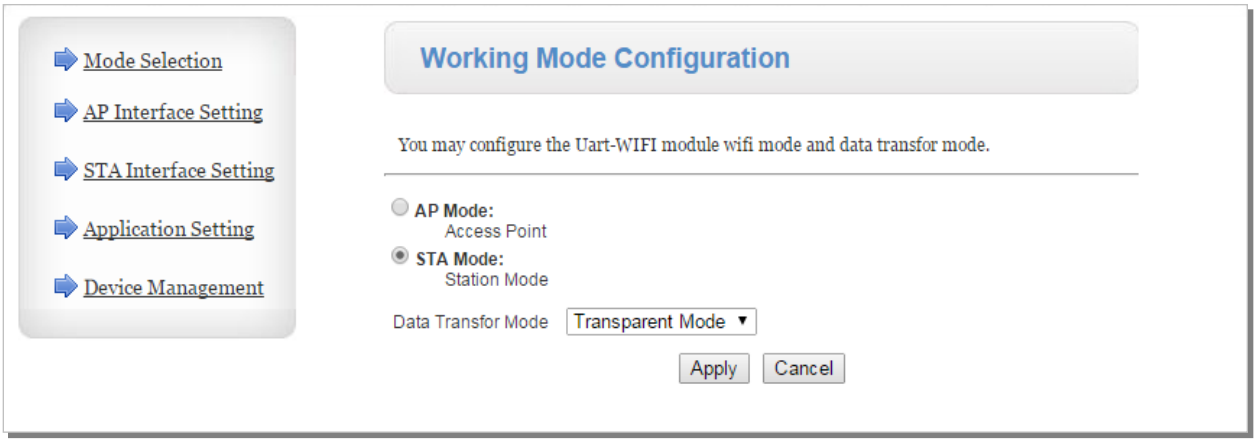


Figure 9. WiFi Interface Working Mode Configuration Web page

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

   The web page will show **Set Successfully, Restart to use new setting**.

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

   The STA INTERFACE SETTING web page opens:

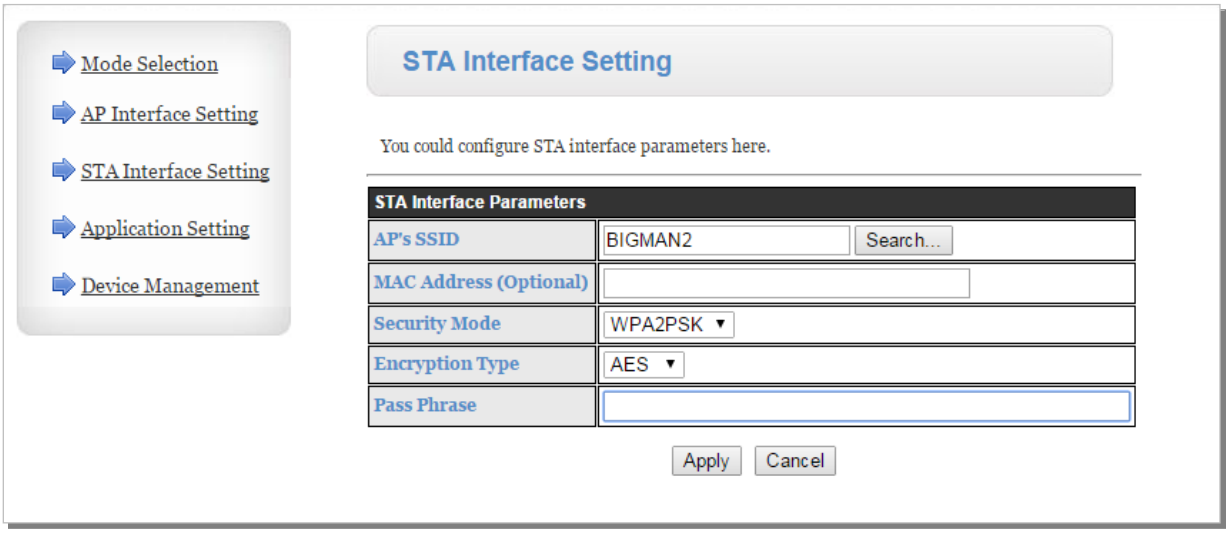


Figure 10. WiFi Interface STA Interface Setting Web page

7. Click the SEARCH button, to the right of in the AP's SSID field, to find the WiFi network that the VoIP telephone will operate in.

   The SITE SURVEY webpage opens, showing all available networks.

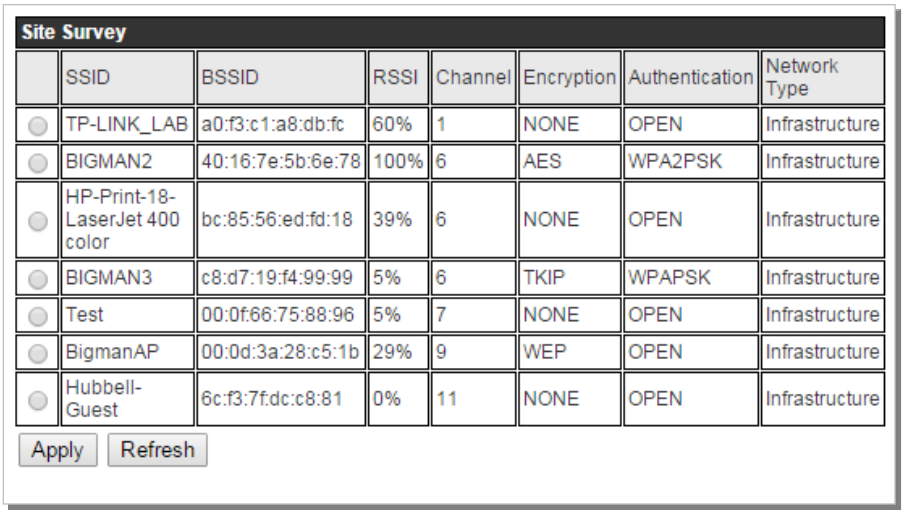


Figure 11. WiFi Interface Site Survey Web page

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

   A reminder window to enter the WEP key or pass phrase pops up.

9. Click the OK button.

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

    The AP's SSID, security mode, and encryption type fields will be filled in when the STA interface setting webpage opens again.

    NOTE: Manually enter the AP's SSID, security mode, encryption type, and WEP key or pass phrase 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, Restart to use new setting** after the configuration has updated.

11. Click on the Device Management selection.

    The DEVICE MANAGEMENT webpage opens.

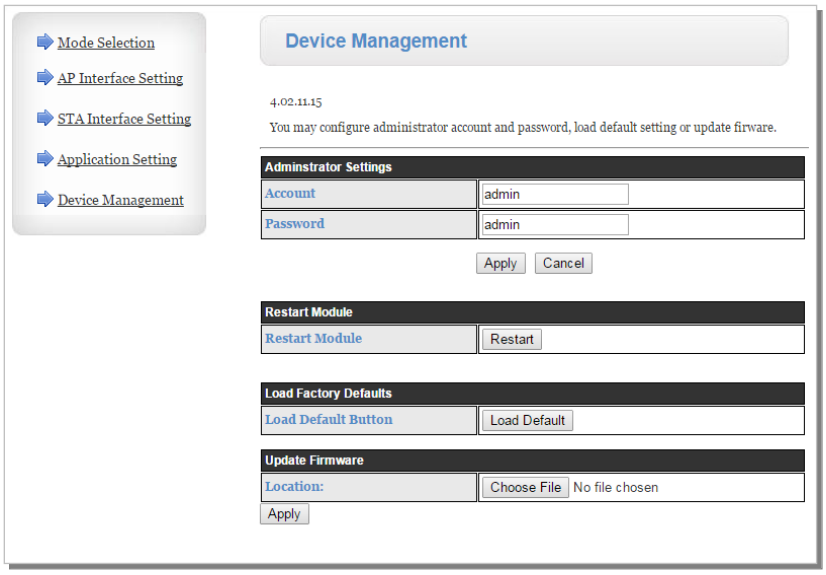


Figure 12. WiFi Interface Device Management Web page

12. Click the RESTART button, located in the RESTART MODULE section.
    - The web page will show REBOOTING… while the WiFi module is restarting.
    - Both LEDs on the RJ-45 jack J2 will turn OFF for several seconds while the WiFi interface restarts.
    - The green LED turns ON first; after the WiFi interface restarts.
    - The yellow LED turns ON when the WiFi interface connects to the newly configured network.
13. Continue with the configuration of the VoIP telephone PCBA (see the section).
14. *If an incorrect WEP Key or Pass Phrase is entered:* Follow the instructions in the next section (see the Reset WiFi Interface section).

NOTE: The WiFi module is no longer an access point on 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.

Reset WiFi Interface

Use this procedure to erase the current WiFi configuration in the telephone and configure the WiFi adapter with the factory default settings.

1. Press the RLOAD button for 10 seconds to reset the WiFi interface back to factory default settings.
    - The RLOAD button is on the WiFi interface PCBA.
    - Both LEDs on the RJ-45 jack (J2) turn OFF for several seconds while the WiFi interface resets.
    - Wait for the green LED to turn ON before trying to connect to the HF-A11_AP network.
2. Follow the instructions in the First Time WiFi Interface Setup section to connect to the HF-A11x_AP network and change the configuration settings.

NOTE: The telephone's power must be cycled before it will connect to the wireless network after changing the WiFi interface configuration if the VoIP telephone was configured for DHCP.

VoIP Page Phone Setup

1. Connect a PC to the same network as the VoIP telephone.
2. Log into the unit's web interface.

   The unit is factory configured with a static IP address: ***192.168.1.2.***
3. Enter the username and password when prompted.

   The initial factory settings are:
    - USER NAME: ***user***
    - PASSWORD: ***password***
4. Change the username and password upon first login.

   This security measure helps prevent unauthorized changes to the VoIP telephone's interface configuration.

VoIP Page Phone Initial Network Configuration

Configure each VoIP PCBA for operation on the network prior to installation. Assign a local ID, domain, proxy, and registrar.

1. Assign a host name.

   Host names provide identification of different VoIP PCBAs on the network.

2. Test that calls can be made successfully.
3. Maintain the telephone by monitoring alarms.
4. Set up auto-updates.

Refer to Pub. 42004-548 for basic programming instructions for these VoIP telephones.

Alternate Configuration Methods

There are two methods to configure a GAI-Tronics VoIP page phone:

- web pages
- configuration file

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.

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. 42004-548, VoIP Telephone Basic Configuration Guide (see the Reference Documentation section).

Input Contacts

Each RED ALERT VoIP telephone includes four dry-contact inputs (see the Specifications section for the ratings). Each input's mode is configurable. Inputs can be configured for one of the following modes:

- None
- Digit
- Memory Dial
- PTT/Mute
- Redial
- Volume
- Hook
- Hook HF
- Memory Hook

The inputs will generate a SYSLOG or an SNMP trap when active. Refer to Pub. 42004-548 for programming instructions for the inputs (see the Reference Documentation section).

Output Contacts

Each RED ALERT WiFi VoIP telephone contains two dry-contact outputs (see the Specifications section for the output ratings). Both outputs are SPST (single-pole, single-throw) contacts. The mode of each output is configurable. Configure outputs for one of the following modes:

- On
- Off
- Ring
- Connect
- Hook
- In Use
- Ring Out
- Registered
- Emergency

The duration of activation, or on/off times, can also be set in some modes. Refer to Pub. 42004-548, for programming instructions for the outputs (see the Reference Documentation section).

Maintenance

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
- SNMP (Simple Network Management Protocol)
- 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)

Status Indication

Power

The ON LED, located on the VoIP PCBA (see Figure 13), illuminates when power is applied to the telephone.

Heartbeat

The HB LED, located on the VoIP PCBA (see Figure 13), flashes when communication over the LAN is established.

Link

The LNK LED, located on the VoIP PCBA (see Figure 13), indicates an active network connection when illuminated.

Speed

The SP LED, located on the VoIP PCBA, (see Figure 13) indicates a 100 Mbps network connection when illuminated or a10 Mbps connection when off.

WiFi Activity (WiFi Units Only)

The WiFi Activity LED ,located on the WiFi module, turns ON when the VoIP telephone is powered, and flashes when data is being transmitted (see Figure 13).

WiFi Ready (WiFi Units Only)

The WiFi READY LED is a green LED, located on the RJ-45 connecter, J2, on the VoIP carrier PCBA. It illuminates when the WiFi Interface is ready to connect to a wireless network (see Figure 13).

WiFi Connected (WiFi Units Only)

The WiFi CONNECTED LED is a yellow LED, located on the RJ-45 connecter, J2, on the VoIP carrier PCBA. It illuminates when the WiFi Interface is connected to a wireless network or device (see Figure 13 for its location.

VoIP Circuit PCBA Pushbuttons

Reset

Press the RESET button (see Figure 13) momentarily to warm reboot the telephone. The telephone maintains the current configuration.

Factory

Use the FACTORY button (see Figure 13) to erase the current configuration and restore the factory default settings as follows:

1. Press and release the RESET button.
2. Press and hold the FACTORY button for 10 seconds while the telephone is rebooting.

The telephone will reboot again with the factory default settings configured.

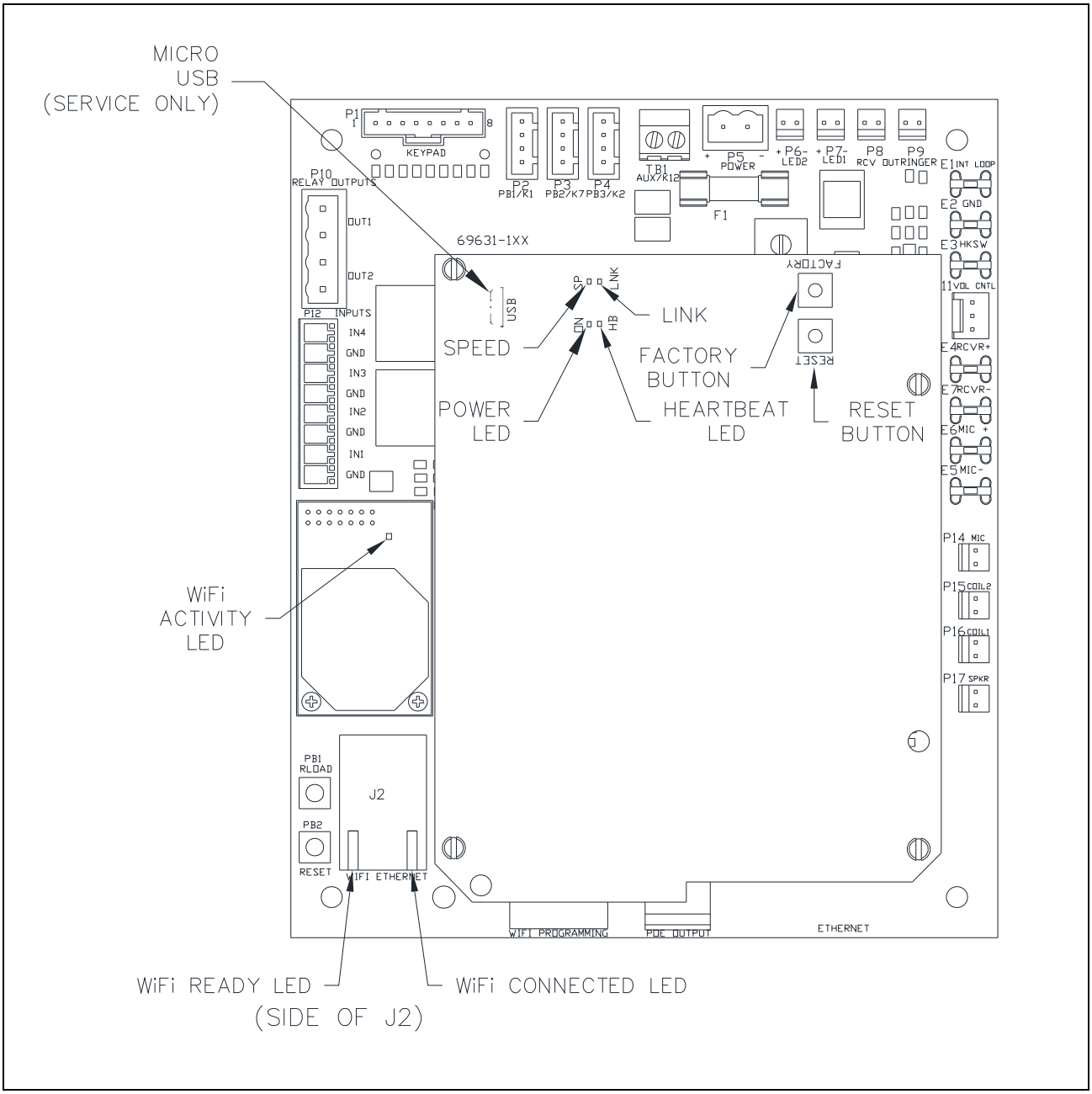


Figure 13. VoIP Carrier PCBA Component Locations

Service

Contact GAI-Tronics' regional service center if the equipment requires service or spare parts. An RA# (Return Authorization Number) will be issued if service is required. Equipment must be shipped prepaid to GAI-Tronics with an RA# and a purchase order number. Repairs or a replacement will be made in accordance with GAI-Tronics' warranty policy if the equipment is under warranty. 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 with identifying the nearest regional service center.

Troubleshooting

Table 6. Troubleshooting Chart

Problem	Possible Solution
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 not operational	Verify the push buttons are properly configured.
inputs not operational	• Check the input connections. • Verify the inputs are properly configured.
outputs not operational	• Check the output connections. • Verify the outputs are properly configured.
cannot make or receive calls	• Check the connection of the LAN cable. • Verify that power is applied to the unit. • Verify the LAN parameters have been configured properly. • Verify the telephone has been set up on the network.
no power indication	• Check the power connections. • Check fuses. Replace fuses with identical type/ratings. • If using POE, check the operation of the POE equipment.

Reference Documentation

VoIP Telephone Basic Configuration Guide 42004-548

VoIP Telephone Firmware Programming Guide 502-20-0171-001

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

Station Speaker Load (8-ohm load)	24 V DC	48 V DC	120 V AC	230 V AC
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
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

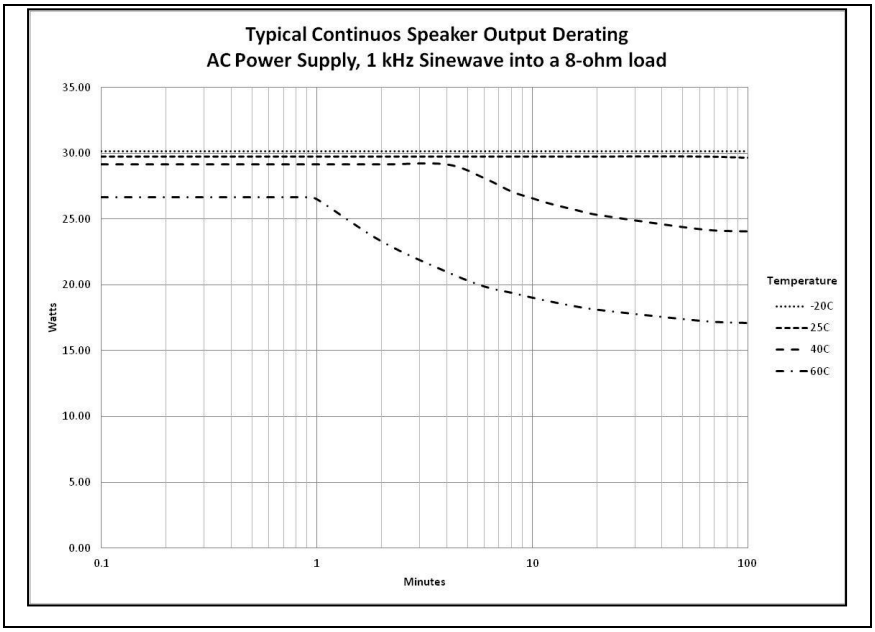
VOX hold time.....2 s

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 ..... heartbeat, link, power, and speed 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, SNMP, TMA automatic fault reporting

Environmental

Operating temperature ..... −4 ºF to +140 ºF (−20 ºC to +60 ºC)
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 jack
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

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.