GAI-TRONICS®
A HUBBELL COMPANY

Division 1 VoIP Page Phones
Wired & WiFi

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Confidentiality Notice

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General Information

GAI-Tronics' Class 1 Division 1 VoIP page phones are constructed of cast aluminum and are weatherproof and corrosion resistant. The built-in, high-efficiency, Class D paging amplifier provides up to 30 watts of speaker output, allowing multicast broadcasting of pages/announcements over speakers.

GAI-Tronics' VoIP page phones are available in wired and wireless versions with three model types: handset, headset, and amplifier-only. Each model type has several input power options (see Table 1).

Division 1 VoIP wired page phones connect to a 10/100 BaseT Ethernet network. Full power operation requires an external ac or dc power source. PoE (Power-over-Ethernet) 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.

These page phones also provide real-time alarm reporting. This enables monitoring telephone activity to address caller needs or maintenance issues immediately. Configurable inputs and outputs are also available in all models.
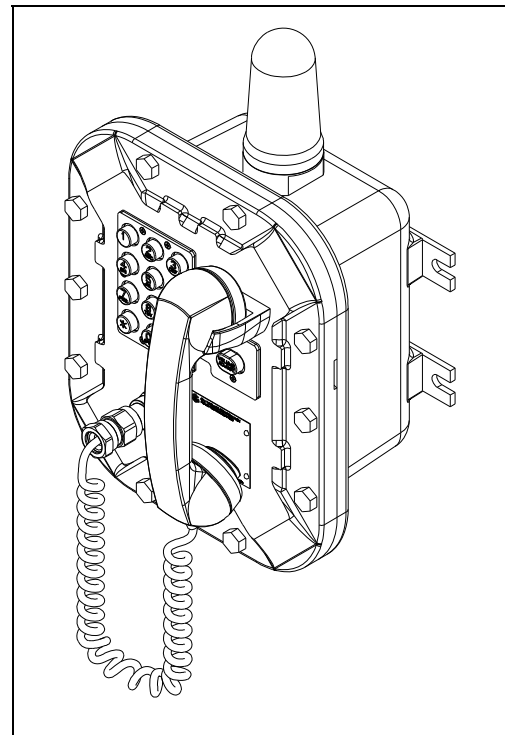
Figure 1. Mode 352-8*xx* Div. 1 VoIP WiFi Page Phone

Table 1. Model Chart

Model	Description
Handset Models	
352-712	Div. 1 VoIP AC Page Phone
352-722	Div. 1 VoIP DC Page Phone
352-732	Div. 1 VoIP PoE Page Phone
352-812	Div. 1 VoIP WiFi AC Page Phone
352-822	Div. 1 VoIP WiFi DC Page Phone
Headset Models	
352-713	Div. 1 VoIP AC Page Phone
352-723	Div. 1 VoIP DC Page Phone
352-733	Div. 1 VoIP PoE Page Phone
352-813	Div. 1 VoIP WiFi AC Page Phone
352-823	Div. 1 VoIP WiFi DC Page Phone
Amplifier-Only Models	
352-711	Div. 1 VoIP AC Page Phone
352-721	Div. 1 VoIP DC Page Phone
352-811	Div. 1 VoIP WiFi AC Page Phone
352-821	Div. 1 VoIP WiFi DC Page Phone

Features and Functions

GAI-Tronics VoIP telephones include the following features:

- SIP compatible (RFC3261)
- real-time alarm reporting via SNMP or syslog
- 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

System Requirements and Limitations

VoIP

Connect two VoIP telephones in a peer-to-peer configuration without the need for a LAN. A 10/100 BaseT Ethernet network with SIP server is required for systems containing three or more VoIP telephones. Conferences are 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 VoIP telephones). Conferences are limited by the customer's LAN media capabilities and the services available at each end point.

Multicast Broadcasting

Each telephone can also receive multicast broadcasts. Multicast sends a single audio stream to multiple end points simultaneously, achieving multi-point paging or *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.

VoIP Subscriber Tips

New and existing subscriptions to an interconnected VoIP service provider should address the following points:

- 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.

Hardware Description

External

Models 352-7*x*2 and 352-8*x*2 contain a handset with an approved cable gland, standard keypad, volume control button, and applicable approval labeling. The handset rests on a cradle with a magnetic reed switch to signal the off-hook condition. Ten cover mounting bolts, located around the perimeter of the enclosure's flange, seal the enclosure. The VoIP WiFi version includes a weatherproof WiFi antenna, mounted on top of the enclosure (see Figure 2).
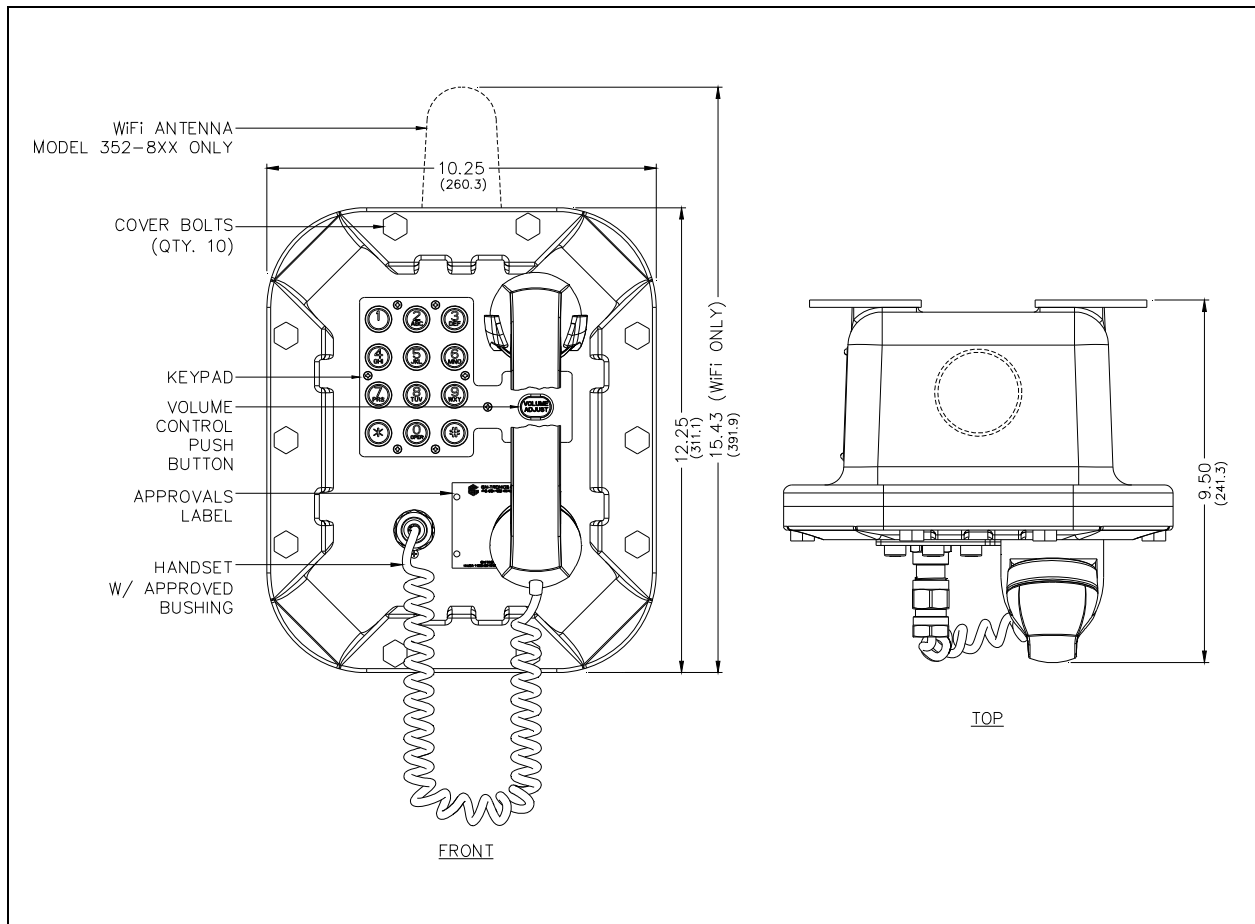
Figure 2. Model 352-7*x*2 and 352-8*x*2 Division 1 VoIP Page Phone with Handset

Models 352-7*x*3 and 352-8*x*3 are fitted with a removable headset and hook bracket. Activate the headset by flipping the headset hook forward. The enclosure is sealed with ten cover mounting bolts, located around the perimeter of the enclosure's flange. The VoIP WiFi version includes a weatherproof WiFi antenna, mounted to the top of the enclosure (see Figure 3).
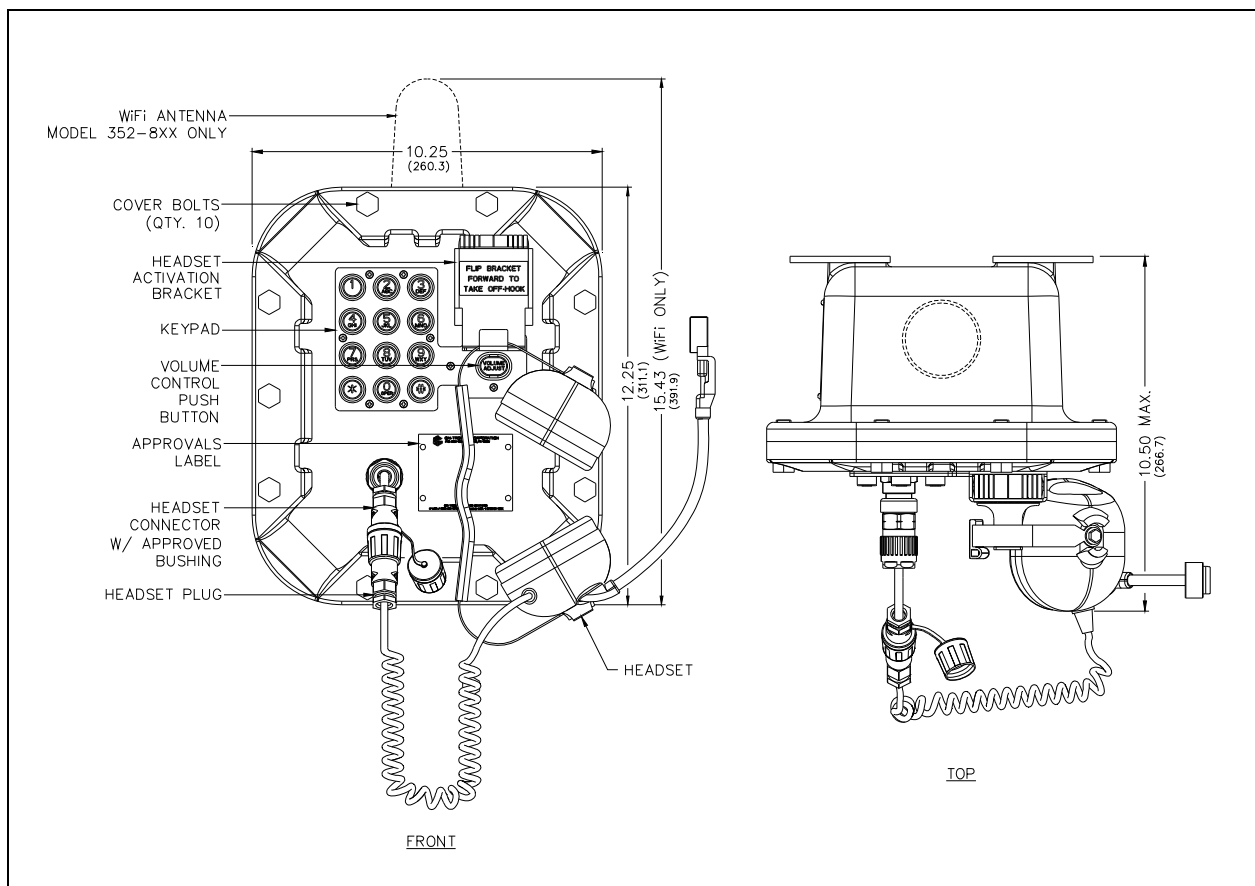
Figure 3. Model 352-7*x*3 and 352-8*x*3 Division 1 VoIP Page Phone with Headset

Models 352-7*x*1 and 352-8*x*1 have no external two-way communication components. These models are for amplifier only usage. Ten cover mounting bolts, located around the perimeter of the enclosure's flange, seal the enclosure The VoIP WiFi version includes a weatherproof WiFi antenna, mounted on top of the enclosure (see Figure 4).
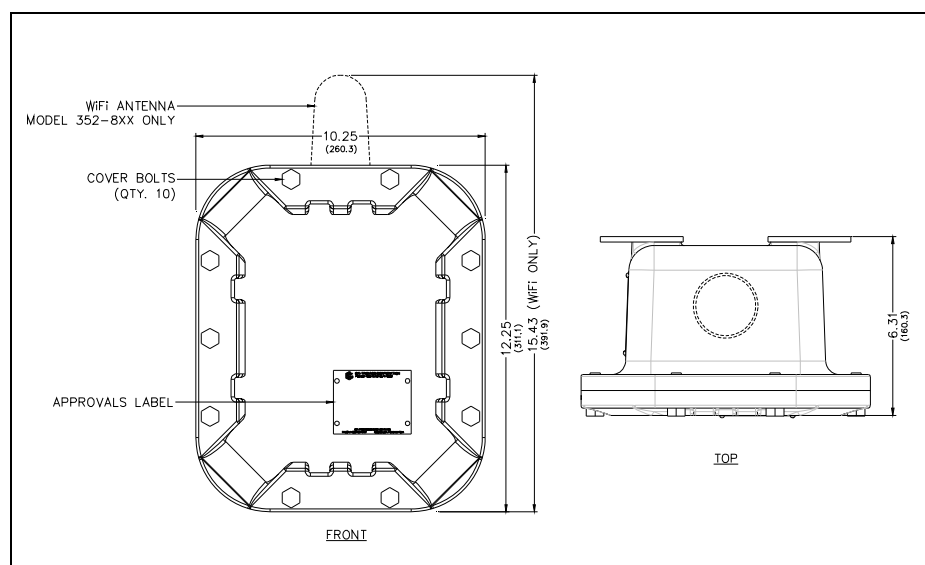

Figure 4. Model 352-7*x*1 and 352-8*x*1 WiFi Page Phone

Internal

Model 352-7*xx* VoIP Page Phones

The power supply, input power terminal block, and shield are mounted in the rear enclosure. The VoIP carrier PCBA, VoIP circuit PCBA, amplifier PCBA, Keypad PCBA, and handset barrier are mounted to the front cover. Amplifier-only versions do not include a keypad PCBA or handset barrier (see Figure 5).
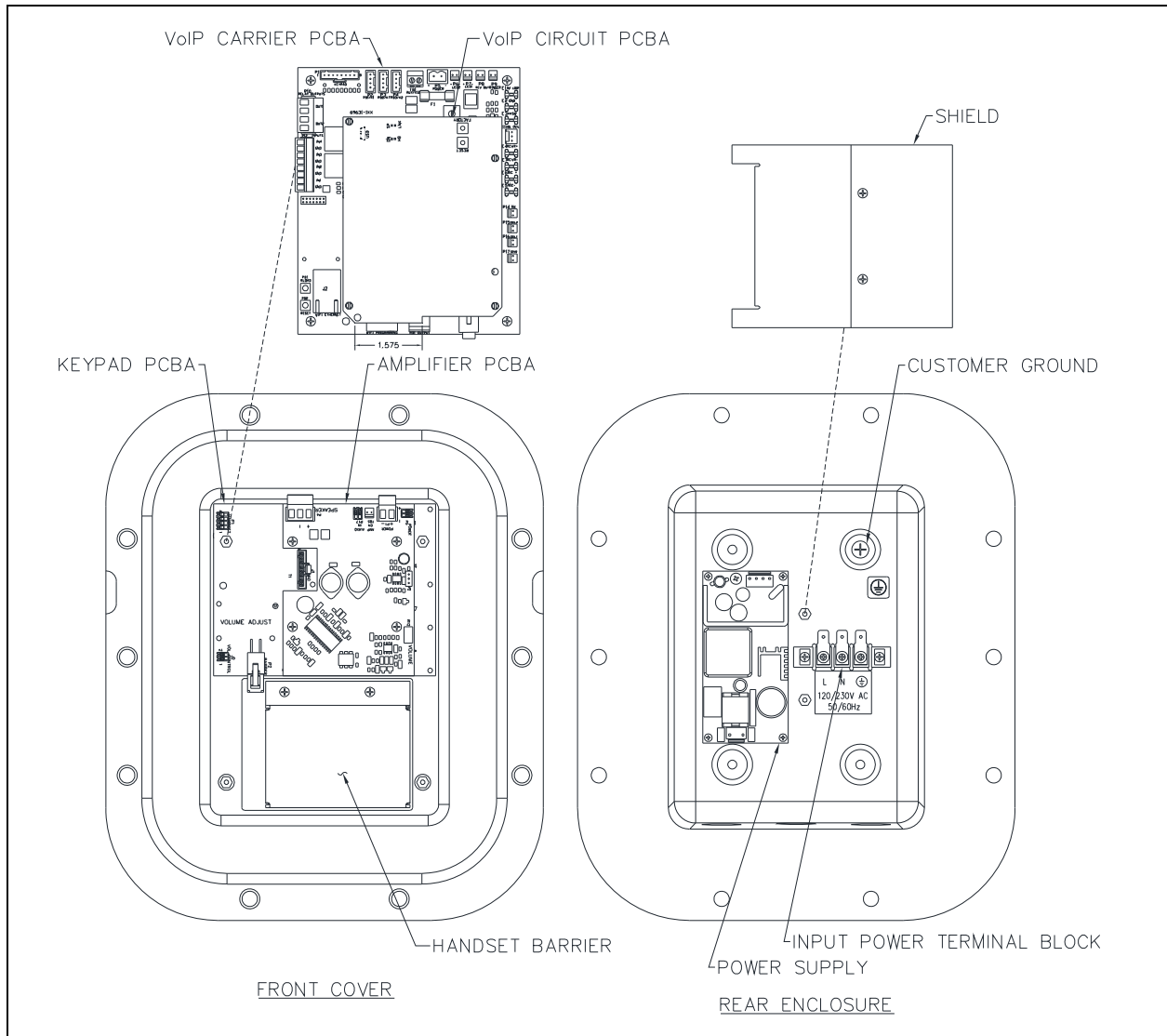
Figure 5. Model 352-7*xx* Div. 1 VoIP Page Phone—Internal View

Model 352-8*xx* VoIP WiFi Page Phones

The power supply, input power terminal block, shield, and Div. 1 external antenna are mounted in the rear enclosure. The VoIP/WiFi carrier PCBA, VoIP circuit PCBA, WiFi module, amplifier PCBA, keypad PCBA, and handset barrier are mounted to the front cover. Amplifier-only versions do not include a keypad or barrier (see Figure 6).
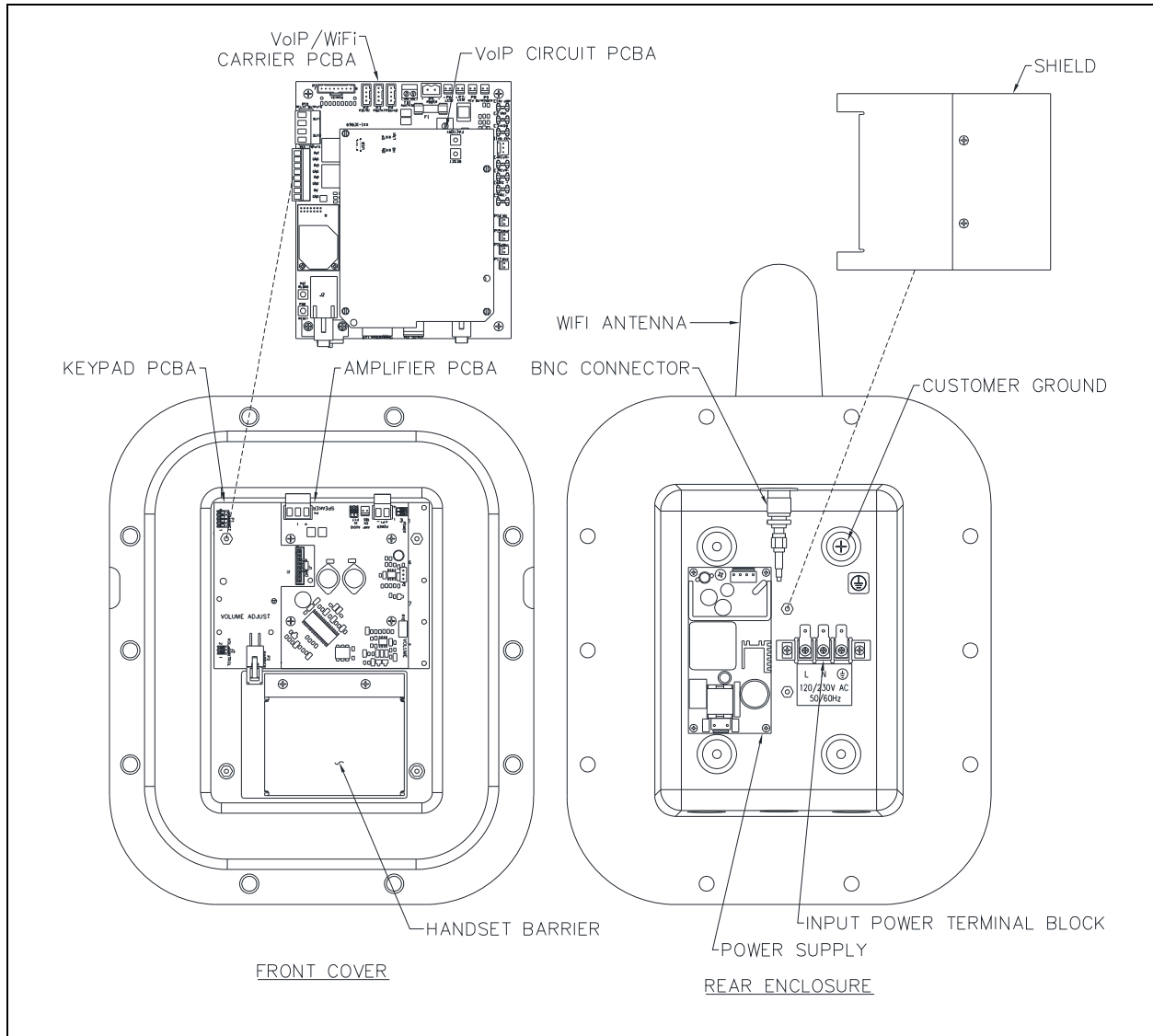
Figure 6. Model 352-8*xx* Div. 1 WiFi Page Phone

Operation

Handset Receiver Volume Control

A push-button switch on the front faceplate adjusts the handset receiver volume (see Figure 7). Press it incrementally to decrease the volume from 20 dB, to 12 dB, to 0 dB, and back up to 20 dB, of the original signal. The signal gain is automatically reset to 20 dB after the end of each call.

Model 352-7*x*2 and 352-8*x*2 Handset Operation

1. Lift the handset to place a call.

2. Adjust the handset receiver volume using the volume control push button, located on the front cover.

3. Dial the desired number.

4. Place the handset on hook after completion of the call.
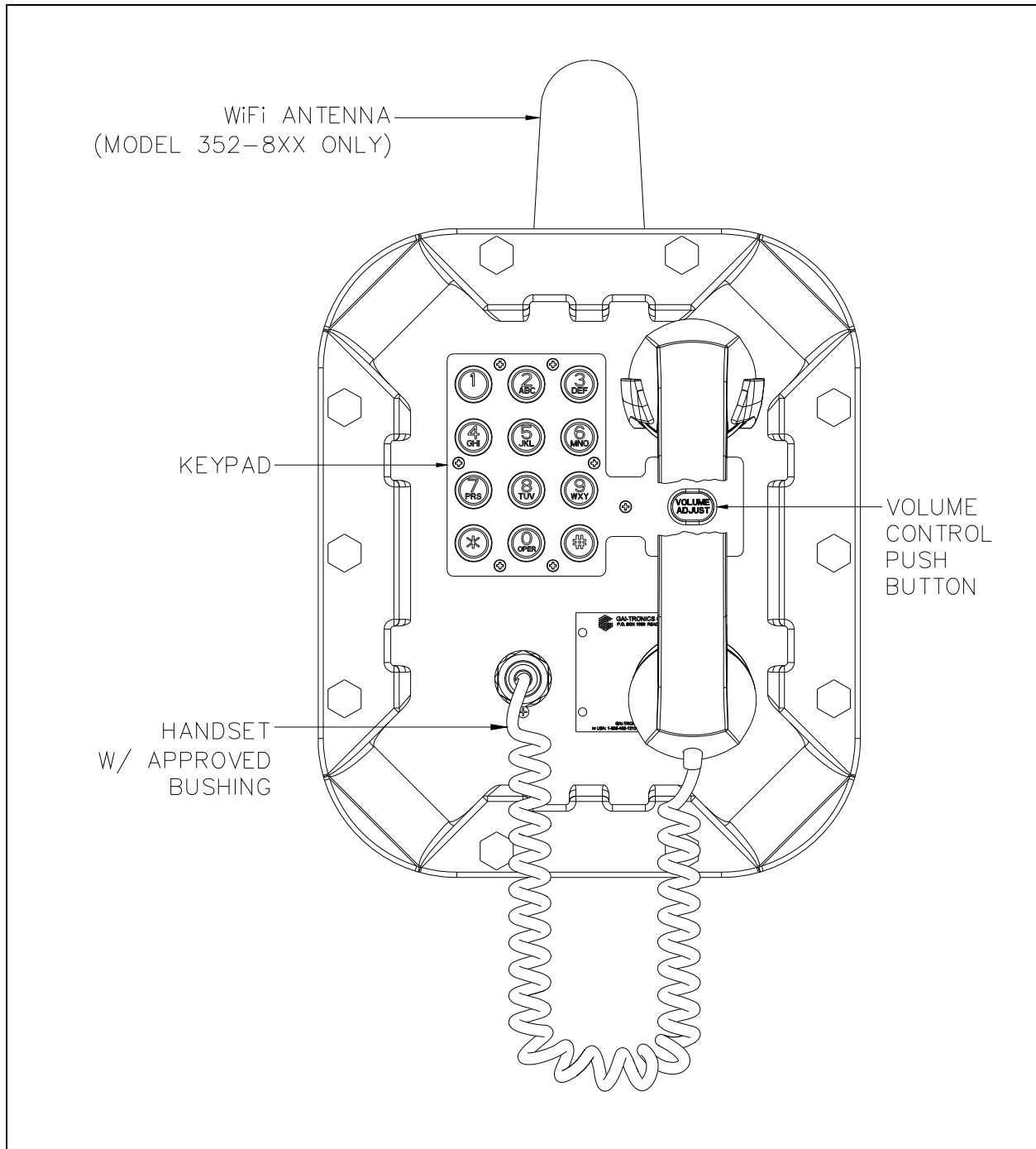
Figure 7. WiFi Page Phone—Handset Version

Model 352-7x3 and 352-8x3 Headset Operation

Headset Connection

1. plug it into the flexible plug on the front of the telephone by removing the sealing cap from the receptacle, aligning the connector pins, and screwing the two ends together (see Figure 8).

    NOTE: The headset can be connected while the unit is powered.
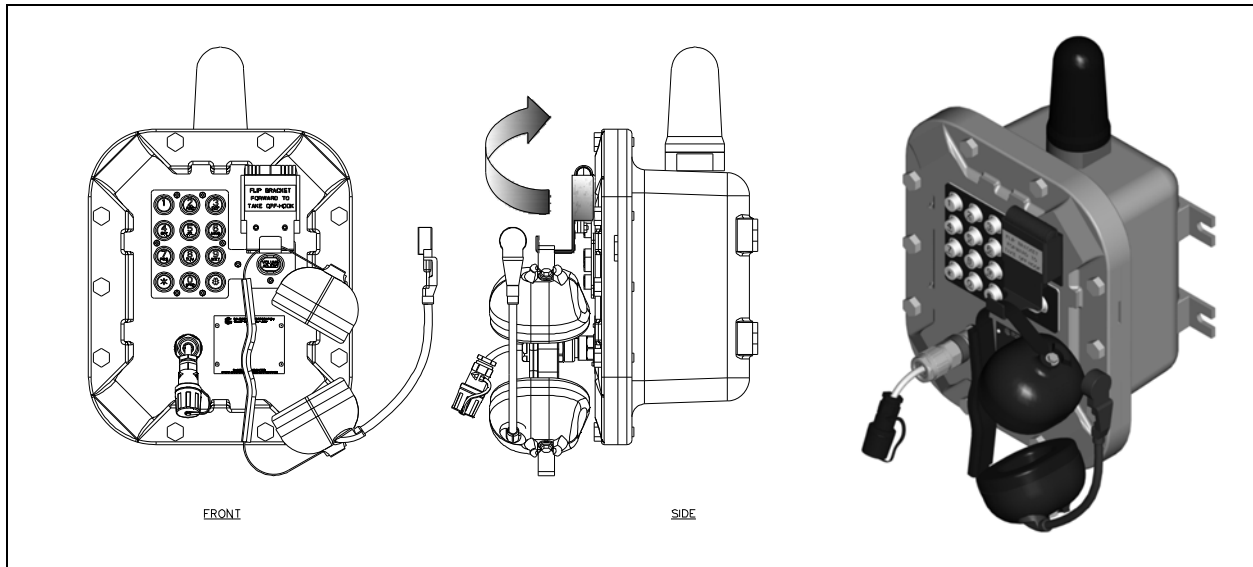
Figure 8. On-hook Configuration—Div. 1 WiFi Page Phone—Headset Version

2. To place a call, remove the headset from the headset activation bracket and flip the headset bracket forward from its pre-set position.

3. Adjust the headset volume using the volume control push button, located on the front cover.

4. Dial the desired number.

5. Flip the headset activation bracket to its vertical pre-set position to hang up. Place the headset on the bracket after the completion of the call or disconnect the flexible receptacle and plug by unscrewing the two ends and pulling them apart. Reattach the sealing cap to the end of the receptacle.
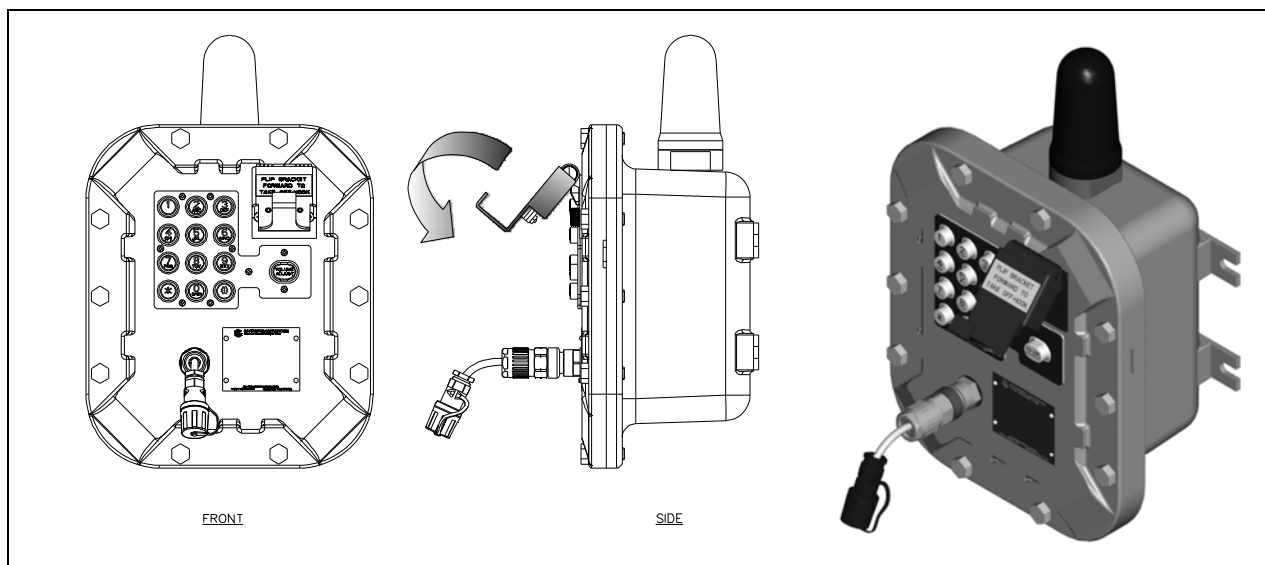
Figure 9. Off-hook Configuration—Div. 1 WiFi Page Phone—Headset Version

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 are programmable 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

Installation Guidelines

These enclosures must be installed by trained, qualified and competent personnel. Installation must comply with state and national regulations, as well as safety practices for this type of equipment.

⚠ **CAUTION** ⚠ —Do not install this equipment in hazardous areas other than those indicated on the approval listing in the Approvals section of this manual. Such installation may cause a safety hazard and consequent injury or property damage.

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

⚠**WARNING** ⚠ —Securely fasten the enclosure to the mounting location, using 3/8-inch diameter steel mounting bolts and washers, or washer head bolts.

⚠**WARNING** ⚠ —**Do not disconnect equipment while energized.**
Ensure proper grounding to protective earthing.

⚠**WARNING** ⚠ —The front cover is not hinged to the rear enclosure. Adequately support the front cover while removing the cover bolts.

⚠ **ATTENTION** ⚠ —Installation must be performed by qualified personnel and only in accordance with the National Electrical Code or applicable local codes.

Inspect and clean the machined flange flame joint surfaces of both the cover and box. Surfaces must be smooth, free of nicks, scratches, dirt or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint. Clean surfaces by wiping with a clean lint-free cloth.

Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover. Install and tighten all cover bolts to 30 ft·lb. Make certain no cover bolts are omitted. Use only those bolts supplied with the enclosure.

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

- **Electrostatic Discharge (ESD) Protection:** Your telephone has an earth ground terminal provision. Ensure that it is connected to ground in accordance with all local safety regulations and the National Electrical Code (NEC). Grounding must be ensured for safe and stable communications. Do not use

long and coiled ground wires. Trim ground wires to the required length. Please note proper grounding does not eliminate the need for lightning protection for the telephone or the telephone system.

- NEVER install the telephone during a lightning storm.

- **Install a category 5 data line lightning surge protector** on any phone installed where the phone or phone cable is at risk of being exposed to lightning strikes. Install the lightning arrestor 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.

Mount the Telephone

NOTE: The mounting surface must be able to support the 31-pound weight of the telephone.

Securely fasten the telephone enclosure to the mounting surface with 3/8-inch diameter steel mounting bolts on all four mounting feet (see Figure 10).

- Stainless steel hardware is recommended in outdoor applications.

- The suggested mounting height is 48 inches to the bottom of the enclosure.

NOTE: Refer to the Killark Installation, Operation, and Maintenance data sheet for the Killark Part. No. EXB-684 N34 base enclosure (enclosed with the unit) for additional information.
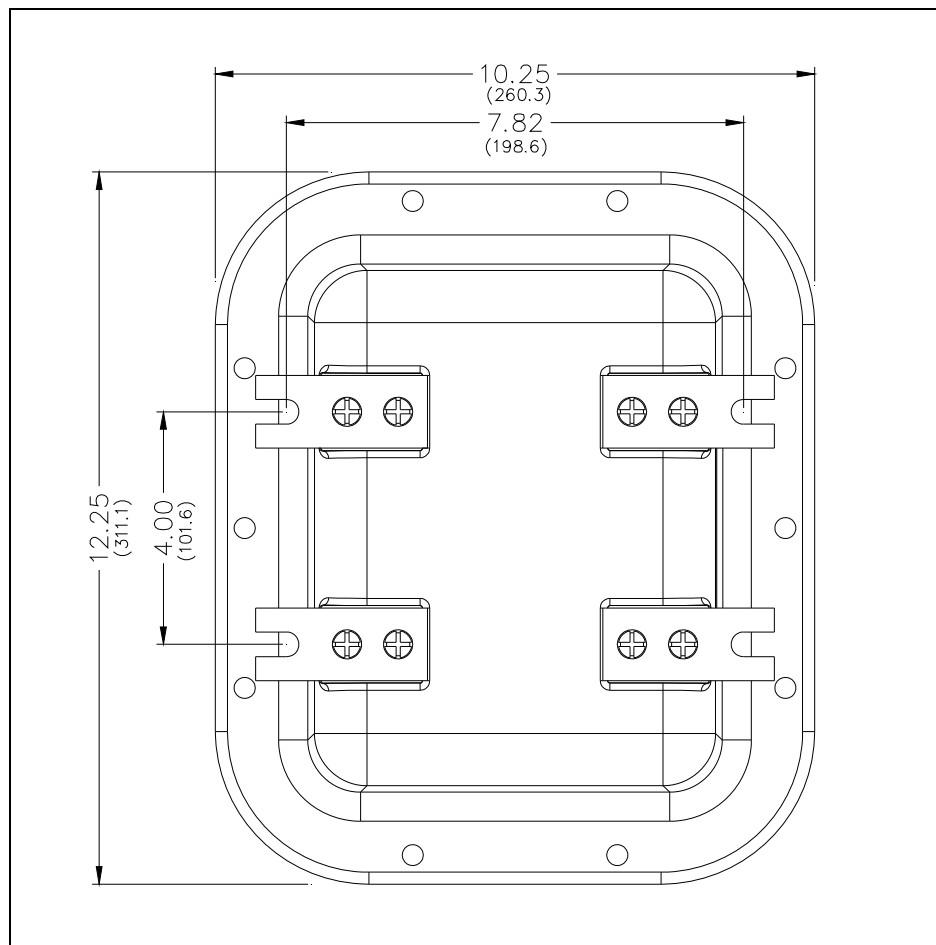
Figure 10. Model 352 Series Division 1 VoIP Page Phone Enclosure Mounting Detail

Cable Entries

- Seal all unused openings with proper fittings per local standards.

- Use field wiring suitable for the ambient temperature.

- Conduit NPT plugs (blanking elements) must be explosion-proof with a Type 4X rating (see Figure 11).
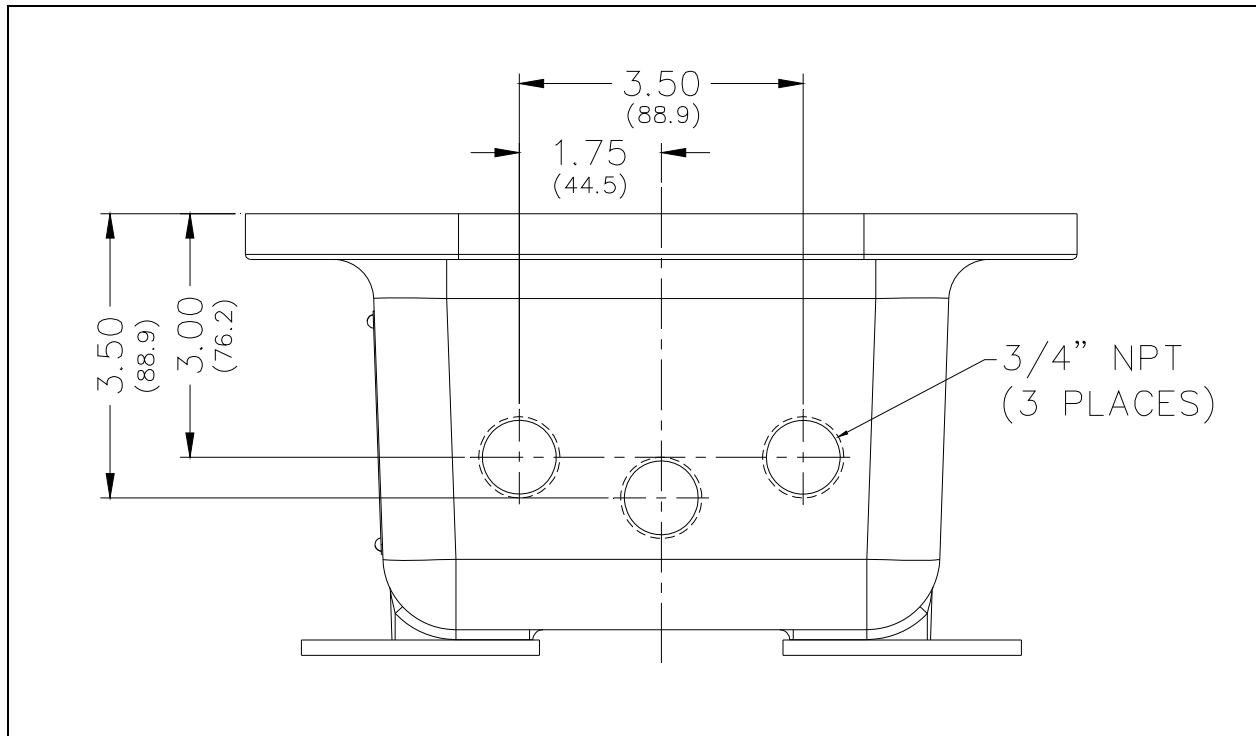
Figure 11. Model 352-7*xx* and 352-8*xx* Series VoIP/WiFi Conduit Entries

Front Cover Removal

⚠**WARNING** ⚠ —The front cover is not hinged to the rear enclosure. Adequately support the cover while removing the cover bolts.

1. Remove the ten cover bolts from the enclosure flange while supporting the front cover.

2. Pull the front cover far enough away to expose the internal connections.

3. Flip the front cover 180º to the left and attach the front cover to the rear enclosure using the top left bolt hole.

4. Rotate the cover approximately 10º from vertical and place a second bolt in the bottom left rear enclosure hole.

   - Allow the cover to rotate against the bottom bolt.

   - Hand-tighten both bolts to secure.

   - Do not over tighten.

⚠**CAUTION** ⚠ —Do not scratch or nick the flanges of the front cover or rear enclosure.
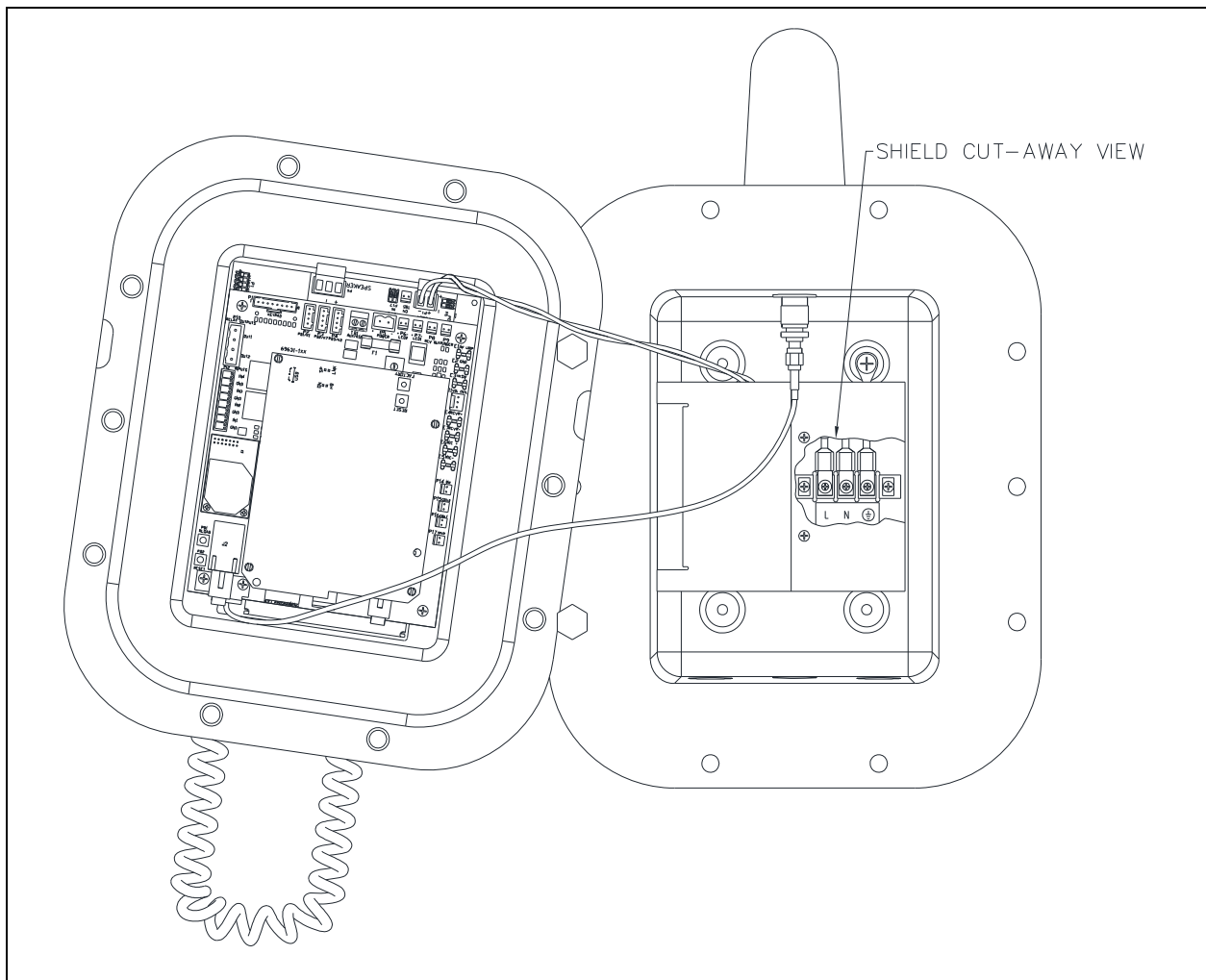
Figure 12. Installation and Maintenance Configuration

Field Wiring

Table 2. Recommended Cable

Cable Use	Size
LAN	Category 5 or Category 5e 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

1. *Wired versions:* Plug the incoming Category 5 network cable into the RJ45 jack, located on the underside of the VoIP PCBA (see Figure 13).

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 (see Figure 13).

5. Install all additional connections as directed in the following subsections (see Table 2 and Figure 13).
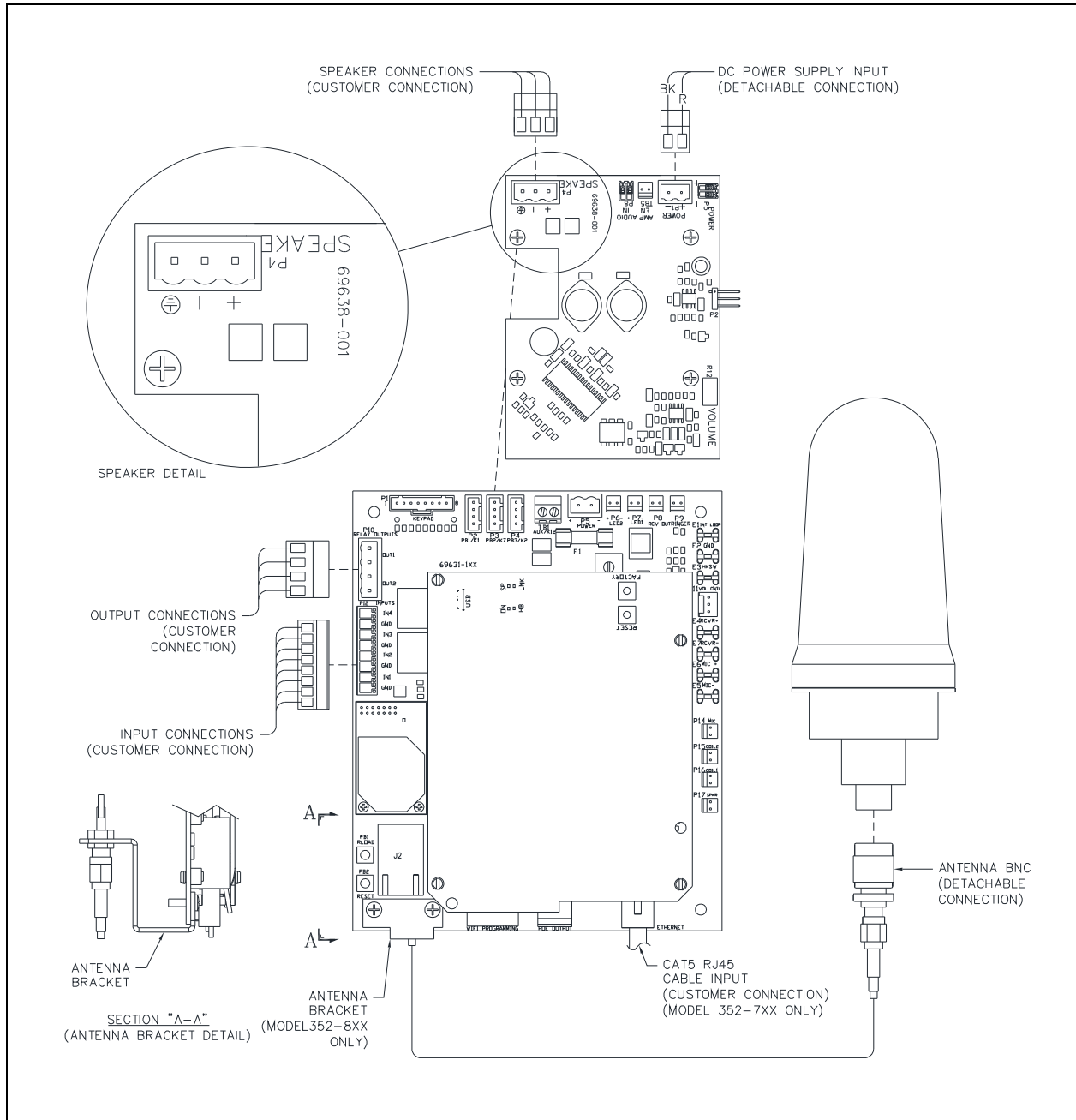
Figure 13. Internal PCBA Connections

Network Cable

Connect a Category 5 or better UTP cable with an RJ45 connector between the LAN and the VoIP PCBA (see Figure 13). The Ethernet jack is located on the underside of the VoIP PCBA.

Power

PoE (Power-over-Ethernet)

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

Local Power

Connect ac or dc power to the unit's power termination block located in the rear enclosure (see Figure 14).

1	2	3
L	N	⏚

120/240V AC
50/60 HZ

1	2	3
+	−	⏚

24−48V DC
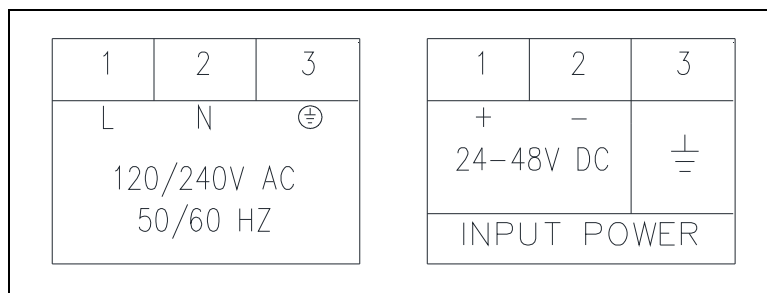
INPUT POWER

Figure 14. 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).

2. Connect each input between the desired input (INPUT 1–4) and common (COM) on terminal block P12. Refer to the Pub. 42004-548 for programming instructions for these inputs (see the .

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 that is 3.3 V dc tolerant.

Outputs

Two outputs have been provided for customer use. Terminations for these outputs are provided on connector P10.

Table 4. Output Contacts—P10

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

Relay capacity is 5 A @ 30 V ac/V dc.

USB port

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

Front Cover Installation

After all adjustments are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.

    - Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that may prevent a proper seal.
    - Surfaces must seat fully against each other to provide a proper explosion-proof joint.

2. Clean surfaces by wiping with a clean lint-free cloth.

3. Apply a light coat of Killark LUBG lubricant to flange surfaces.

4. Close the cover.

5. Install and tighten all cover bolts to 30 ft·lb.

    - Do not omit any cover bolts.
    - Use only those bolts supplied with the enclosure.

NOTE: Refer to the Killark Installation, Operation, and Maintenance Data Sheet, Killark Part. No. EXB-684 N34 base enclosure (enclosed with the unit) for additional information.

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 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 15. WiFi Interface Working Mode Configuration Web page

5. Select STA MODE then click the APPLY button.

    The webpage 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:
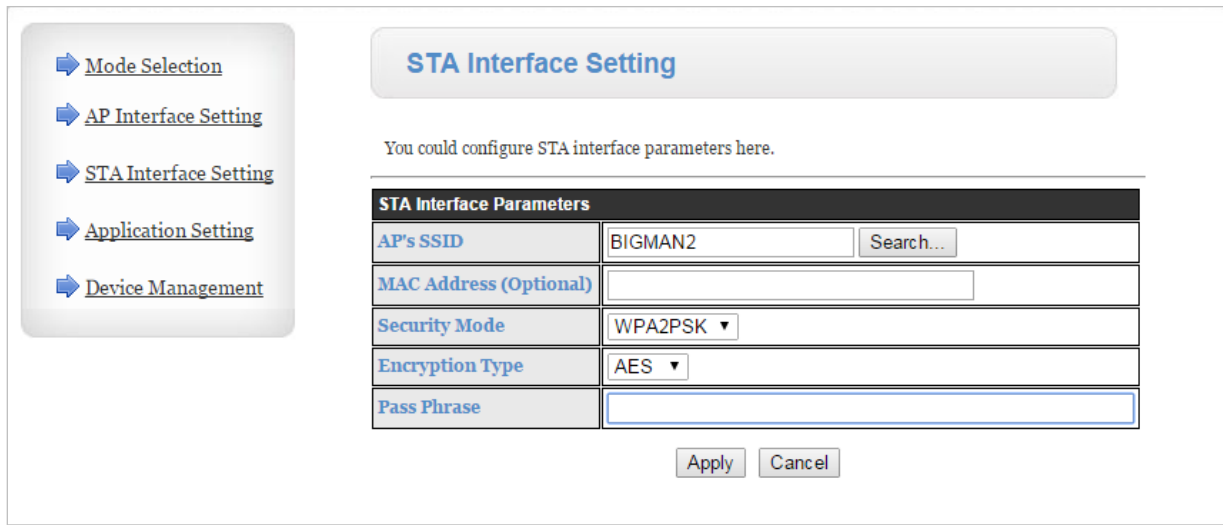
Figure 16. WiFi Interface STA Interface Setting Web page

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 17. 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 18. 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 VoIP Page Phone Setup section).

14. *If an incorrect WEP Key or Pass Phrase is entered:* Follow the instructions in the next section (see the Reset WiFi Interface Configuration 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 Configuration

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 configuration instructions for these VoIP devices.

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.

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).

Maximum (Handset Receiver) Level Remote Control

Control the receiver volume remotely by changing the setting in the configuration file. Refer to Pub. 42004-548 for programming instructions (see the Reference Documentation section).

Maintenance

Status Indication

Power

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

Heartbeat

The **HB** LED, located on the VoIP PCBA (see Figure 19), flashes when communication over the LAN is established.

Link

The **LNK** LED, located on the VoIP PCBA (see Figure 19), indicates an active network connection when illuminated.

Speed

The **SP** LED, located on the VoIP PCBA (see Figure 19), indicates a 100 Mbps network connection when illuminated or a 10 Mbps connection when off.
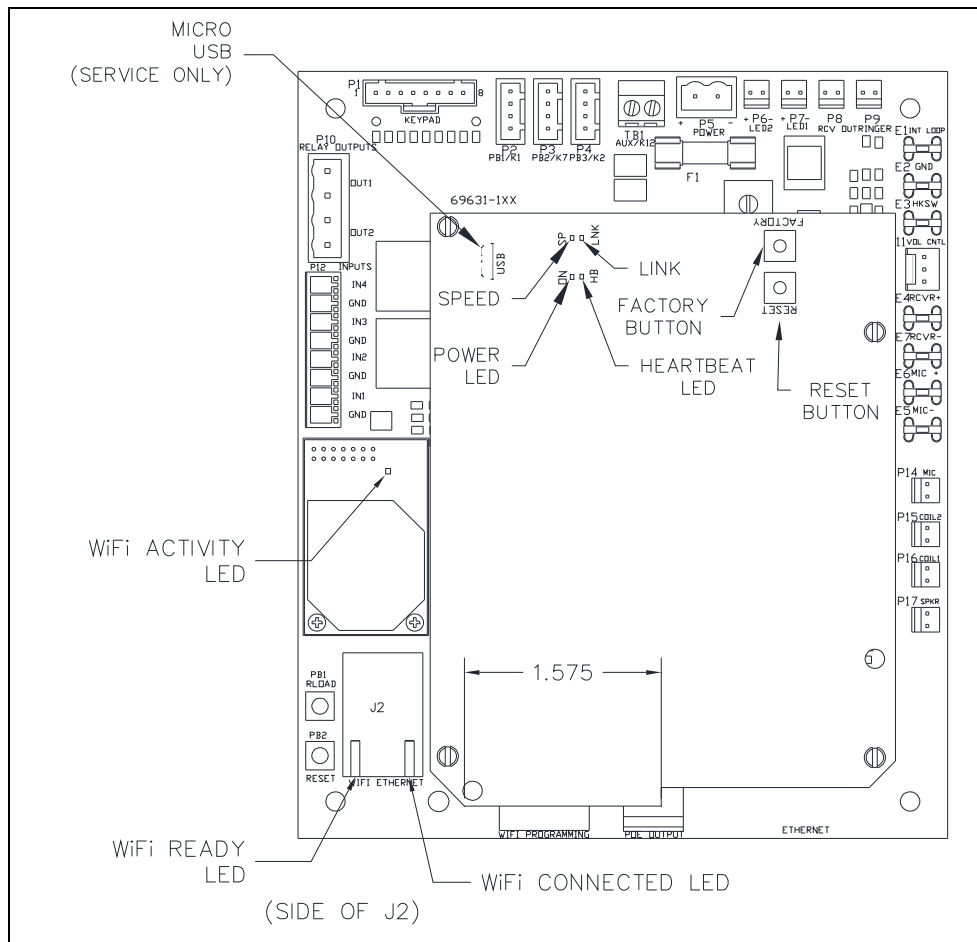
Figure 19. VoIP PCBA Component Locations

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 transmitted (see Figure 19).

WiFi Ready (WiFi Units Only)

The green WiFi ready LED, on the RJ-45 connecter J2, located on the WiFi interface PCBA, illuminates when the WiFi interface is ready to connect to a wireless network (see Figure 19).

WiFi Connected (WiFi Units Only)

The yellow WiFi connection LED, on the RJ-45 connecter J2, located on the WiFi interface PCBA, illuminates when the WiFi interface is connected to a wireless network or device (see Figure 19).

VoIP Circuit PCBA Pushbuttons

Reset

Press the RESET button (see Figure 19) momentarily to warm reboot the telephone. The telephone maintains the current configuration.

Factory

Use the FACTORY button (see Figure 19) 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.

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 (SIP registration failure)

- audio path test (speaker/microphone test)

Service

Contact GAI-Tronics' regional service center for a return authorization number (RA#) if the telephone requires depot service. Equipment must be shipped prepaid to GAI-Tronics with an RA# and a purchase order number. Repairs will be made without charge 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 closest regional service center.

Troubleshooting

Table 5. Troubleshooting Chart

Problem	Possible Solution
low handset or headset volume	Increase the volume setting using the volume adjust button on the front panel.
high handset or headset volume	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

Specifications

Power Requirements

AC Input

ac power supply: .... 120 V ac or 230 V ac, 50/60 Hz, +/−10%

DC Input

dc power supply: ....24–48 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/8W	180 mA/8.5 W	120 mA/15 VA	100 mA/23VA
4-watt output (default setting)	620 mA/15W	350 mA/17 W	275 mA/33 VA	130 mA/30 VA
30-watt output	2200mA/53W	1100 mA/53 W	800 mA/96 VA	400 mA/92 VA

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 802.11a/b/g/n

Frequency ....2.412–2.484 GHz

Configuration ....embedded web server, configuration file download

password protection

Handset Audio

Analog microphone gain ....30 dB

Analog earpiece gain .... default: +20 dB

setting 2: +12 dB

setting 3: 0 dB

Frequency response ....250–6500 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 ....250–6500 Hz

Frequency response flatness .... 3 dB minimum

THD @ 1 kHz, 24 W .... 1% minimum

THD @ 1 kHz, 30 W .... 3% minimum

Typical Continuos Speaker Output Derating
AC Power Supply, 1 kHz Sinewave into a 8-ohm load

Temperature
- -20C
- 25C
- 40C
- 60C

Typical Continuos Speaker Output Derating
AC Power Supply, 1 kHz Sinewave into a 8-ohm load

Temperature
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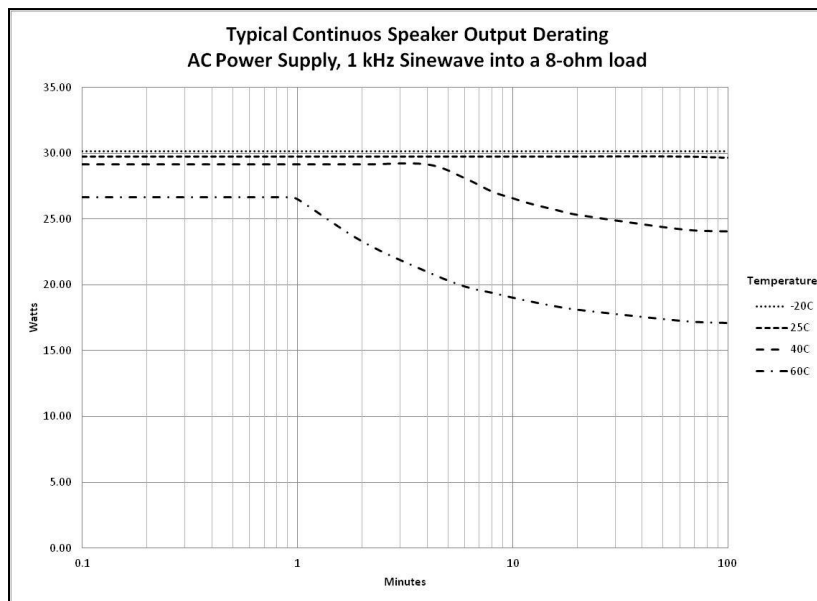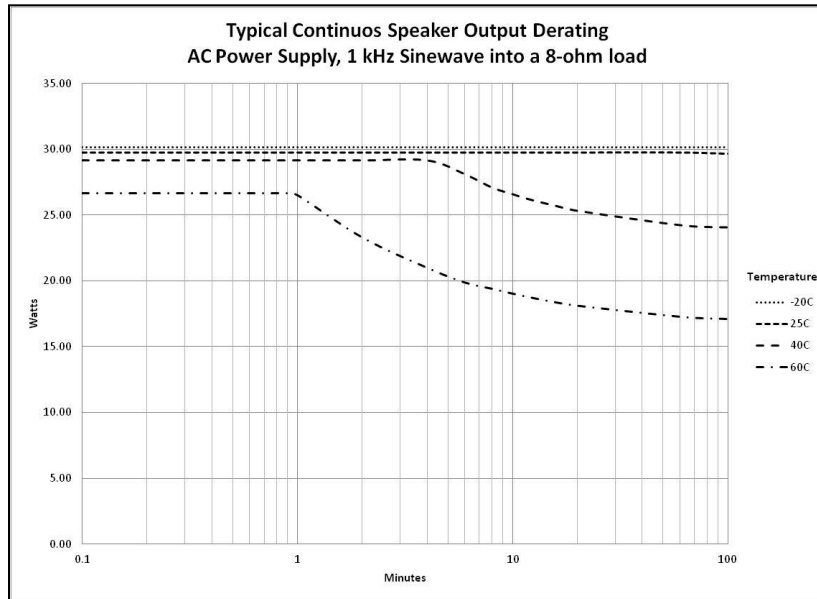
Inputs

Keypad* ....3 × 4 matrix

Configurable inputs (quantity = 4)...internal pull-up 3.3 V dc tolerant

*Not available on all models.

Outputs

Output 1 .... 5.0 A @ 30 V ac/dc maximum (resistive load)

Output 2 .... 5.0 A @ 30 V ac/dc maximum (resistive load)

Indicators

Internal on VoIP Circuit Board.. power, heartbeat, link, and speed LEDs

Internal on VoIP Carrier Board (WiFi Unit only)..... WiFi activity, WiFi ready, and WiFi connected LEDs

Monitoring and reporting.. real-time over TCP/IP proprietary Syslog application

embedded SNMP client

automatic fault reporting

Environmental

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

Weather resistance ....IP66, NEMA Type 4X

Humidity .... 95% non-condensing

Mechanical

Enclosure .... cast aluminum with aluminized lacquer paint

Handset Cord .... "G" style handset/PVC 6-foot extended length (standard)

Connection .... RJ45 jack

Dimensions, outside (VoIP)............................. 10.25 W × 12.25 H × 9.50 D in (260.3 × 311.1 × 241.3 mm)

Dimensions, outside (WiFi) .... 10.25 W × 15.43 H × 9.50 D in (260.3 × 391.9 × 241.3 mm)

Mounting... wall or column, four 3/8-in (10 mm) mounting feet with slots

Shipping weight .... 33.0 lb (15.0 kg)

Net weight.. 31.0 lb (14.1 kg)

Approvals

With antenna

NRTL listed ....Hazardous locations Class I, Division 1, Groups C & D

(USA and Canada) .... Class II, Groups F & G

Class III

Part 15 compliant

Temperature code T6—gas

T4a—dust

Without antenna

NRTL listed .... Hazardous locations Class I, Division 1, Groups B, C & D

(USA and Canada) .... Class II, Groups F & G

Class III

Part 15 compliant

Temperature code T6—gas

T4a—dust

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.