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GAI-TRONICS®
A HUBBELL COMPANY

Rugged VoIP Handset Telephones

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Rugged VoIP Handset Telephones

Confidentiality Notice

Product Overview

GAI-Tronics' rugged VoIP (Voice over Internet Protocol) handset telephones connect to a 10/100 BaseT Ethernet network. These telephones operate from PoE (Power-over-Ethernet) or an external 24 to 48-volt dc power source. VoIP telephones provide direct point-to-point communication between personnel over an existing LAN.

Table 1 lists the VoIP telephones detailed in this manual:

Table 1. Model Chart

Model	Description
210-710BH	**Surface-mount VoIP Behavioral Health Telephone with Keypad** with 12-inch armored cord handset.
210-710BHAC	**Surface-mount VoIP Behavioral Health Telephone with Keypad** and 15-inch armored cord handset.
226-710	**Tough VoIP Telephone with Keypad,** weather and vandal-resistant, sand-cast aluminum enclosure with a spring-loaded door and handset with 15-inch armored cord handset.
246-710	**Rugged Indoor VoIP Telephone with Keypad**, engineered plastic enclosure and handset with Hytrel® coiled cord (6-foot extended).
256-710	**Rugged Weatherproof VoIP Telephone with Keypad**, weatherproof, engineered plastic enclosure with door and handset with Hytrel® coiled cord (6-foot extended).
276-710	**Flush-panel VoIP Telephone with Keypad**, heavy-gauge brushed stainless steel front panel and handset with 29-inch armored cord handset.
276-712BH	**Flush-panel VoIP Behavioral Health Telephone with Keypad**, heavy gauge stainless steel front panel with 12-inch armored cord handset.
276-712BHAC	**Flush-panel VoIP Behavioral Health Telephone with Keypad**, heavy gauge stainless steel front panel with 15-inch armored cord handset.

Features and Functions

The VoIP telephones covered in this manual include the following features:

- SIP compatible (RFC3261)
- weather and/or vandal-resistant
- real-time alarm reporting via SNMP, syslog, or TMA (Telephone Management Application) software
- PoE (Power-over-Ethernet) compatible
- configurable via web page, serial link, or download
- four auxiliary inputs, two dry-contact outputs

System Requirements and Limitations

These VoIP telephones require PoE (Power-over-Ethernet) or a local 24 to 48-volt dc power source for operation. Two VoIP telephones can be connected in a peer-to-peer configuration without the need for a LAN. A 10/100 BaseT Ethernet network with a SIP (Session Initiation Protocol) 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 telephone.

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.

Operation

Place a Call

To place a call:

1. Lift the handset from the cradle.
2. Listen for the dial tone.
3. The handset receiver volume is controlled by pressing the volume control pushbutton.
4. Use the keypad to dial the desired number.
5. The call is terminated by placing handset back in the cradle, the receiving caller hangs up, the defined timeout of the call duration is exceeded, or via the SIP server.

Receive a Call

When a VoIP telephone is called, the telephone's ringer will sound until the handset is removed from the cradle (taken off-hook) and a conversation can take place.

Handset Receiver Volume Control

A push-button switch on the front panel adjusts the handset receiver volume. It decreases the volume gain from 20 dB to 12 dB, to 0 dB, and back up to 20 dB of the original signal, when pressed. After the end of each call the signal level is automatically set to 20 dB.

Monitoring and Reporting

Each telephone can recognize and generate several hardware and configuration fault conditions. 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)

NOTE: The TMA software permits *system* monitoring and data collection/reporting from a central location.

Available alarms:

- handset integrity loop (if applicable)
- configuration error
- cold reset (power cycle)
- warm reset (internal command)
- keypad error (if applicable)
- key hook (off hook status, if applicable)
- register fail (unsuccessful SIP registration)
- audio path test (microphone/receiver test)

Status Indication

Power

The ON LED, located on the VoIP PCBA (see Figure 19 on Page 18), illuminates when power is applied to the telephone.

Heartbeat

The HB LED, located on the VoIP PCBA (see Figure 19 on Page 18), flashes when communication over the LAN is established.

Link

The LNK LED, located on the VoIP PCBA (see Figure 19 on Page 18), indicates an active network connection when illuminated.

Speed

The SP LED, located on the VoIP PCBA (see Figure 19 on Page 18), indicates a 100 Mbps network connection when illuminated or a 10 Mbps connection when off.

VoIP Circuit PCBA Pushbuttons

Reset

Press the RESET button (see Figure 19 on Page 18) momentarily to warm reboot the telephone. The telephone maintains the current configuration.

Factory

Use the FACTORY button (see Figure 19 on Page 18) 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.

Installation

General Information

⚠ **WARNING** ⚠ —**This product can contain hazardous voltages.** Always remove power to this station and any associated equipment before beginning any installation.

⚠ **CAUTION** ⚠ —Do not install this equipment in 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.

Install equipment without modification and according to all applicable local and national electrical codes. Consult the National Electrical Code (NFPA 70), Canadian Standards Association (CSA 22.1), and local codes for specific requirements regarding your installation. Class 2 circuit wiring must be performed in accordance with the NEC.

Safety Guidelines

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

- Do not install wiring during a lightning storm.
- **Electrostatic Discharge (ESD) Protection:** GAI-Tronics' VoIP telephones may have an earth ground terminal provision. Connect this terminal to ground in accordance with all local safety regulations and the NEC (National Electrical Code). Grounding must be ensured for safe and stable communication. Do not use long and coiled ground wires. Trim ground wires to the required length. Use a star configuration whenever possible. Please note proper grounding does not eliminate the need for lightning protection for the telephone or the telephone system. A Cat5 data-line lightning surge protector is recommended for telephones subject to any electrostatic discharge (e.g. lightning).
- Do not install jacks in wet locations unless the jack is specifically designed for wet locations.

Security Hardware

Models 210-710BH/-710BHAC, 226-710 and 276-710/-712BH/-712BHAC are vandal-resistant. The front panel of these telephones is attached to its enclosure with security screws. A GAI-Tronics Model 233-001 security screwdriver or Torx T-25 security head tip (sold separately) is required to install the security screws. The front panels of Model 246-710 and 256-710 telephones are attached with standard Phillips head screws.

Conduit Installation Details (Applicable to Models 246-710 and 256-710)

GAI-Tronics recommends installing cabling in conduit to protect against accidental damage and vandalism (see Figure 1 and Figure 2). The following points are strongly recommended to prevent moisture from entering the enclosure:

- Conduit should enter the enclosure from the bottom.
- Conduit must be internally sealed to prevent moisture ingress.
- Sealed fittings should be installed at all cable entry points.
- Silicone sealant or equivalent must be applied around and inside all conduit entries.

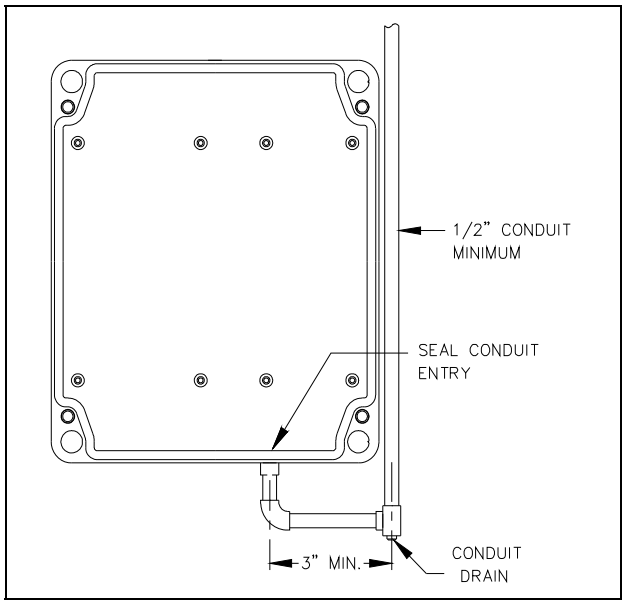

Figure 1. Model 246-710 & 256-710—Bottom entry conduit installation details

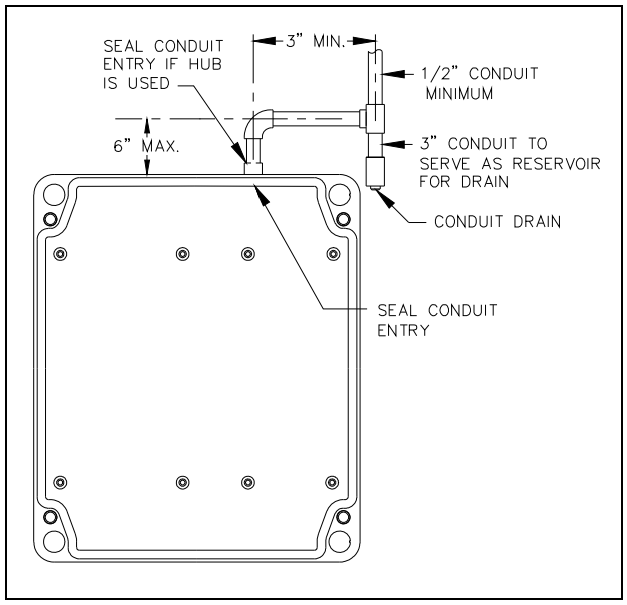

Figure 2. Model 246-710 & 256-710—Top entry conduit installation details—
(NOT RECOMMENDED)

Models 210-710BH and 210-710BHAC

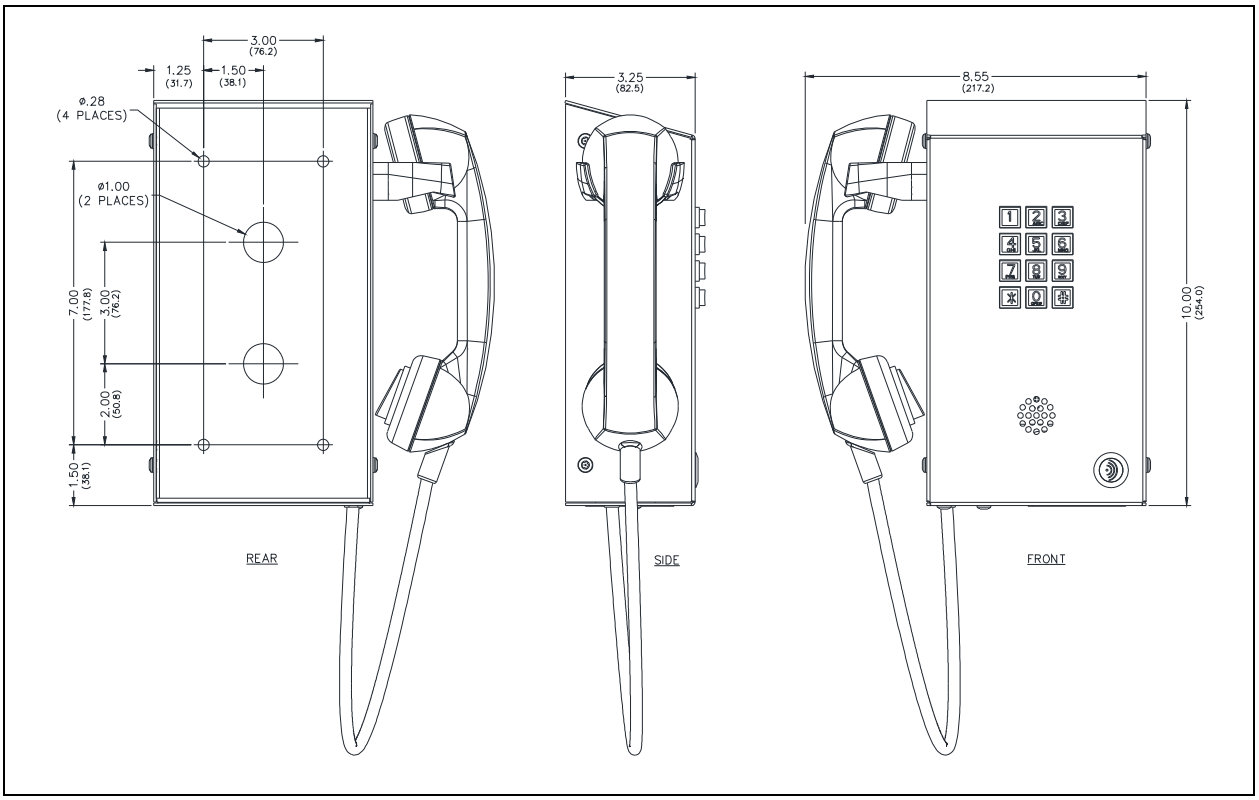

Figure 3. Models 210-710BH/-710BHAC VoIP Behavioral Telephones Outline and Mounting Detail

1. Use a GAI-Tronics No. 233-001 security screwdriver to remove the four tamper-resistant cover panel screws (See Figure 4).
2. Remove the front cover assembly and set it aside to expose the four mounting holes on the mounting panel.
3. Position the rear mounting panel on the mounting surface and fasten with four #10-32 screws (customer supplied).
4. Two 1-inch diameter entry holes are provided on the mounting panel for cable entry (see Figure 3). Pull the Ethernet cable through one of the two holes and install the cable (see the Field Wiring section).

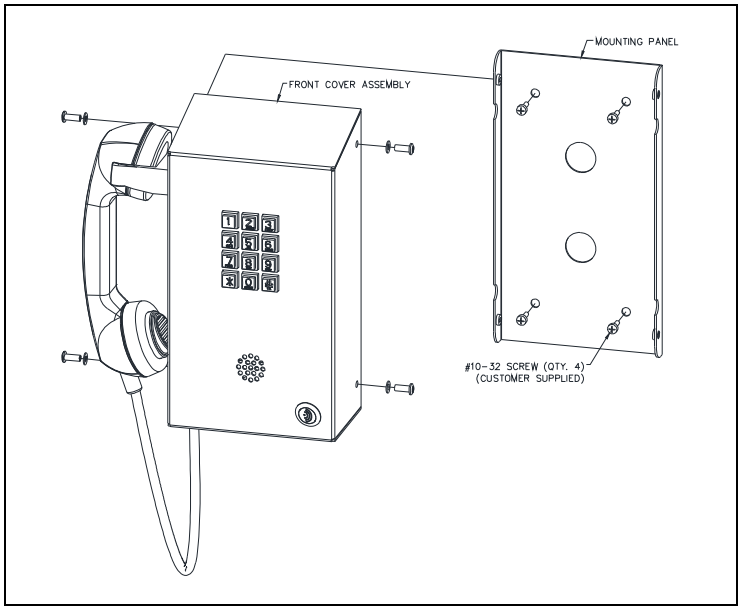

Figure 4. Models 210-710BH/-710BHAC Front Cover Removal

5. Connect all peripheral devices (see the Auxiliary I/O section).
6. Replace the front cover assembly and fasten using the four security screws removed in Step 1.
7. Tighten the four screws using a GAI-Tronics No. 233-001 Security Screwdriver.

8. Verify operation by calling to and from another telephone.
9. Verify operation of peripheral equipment.

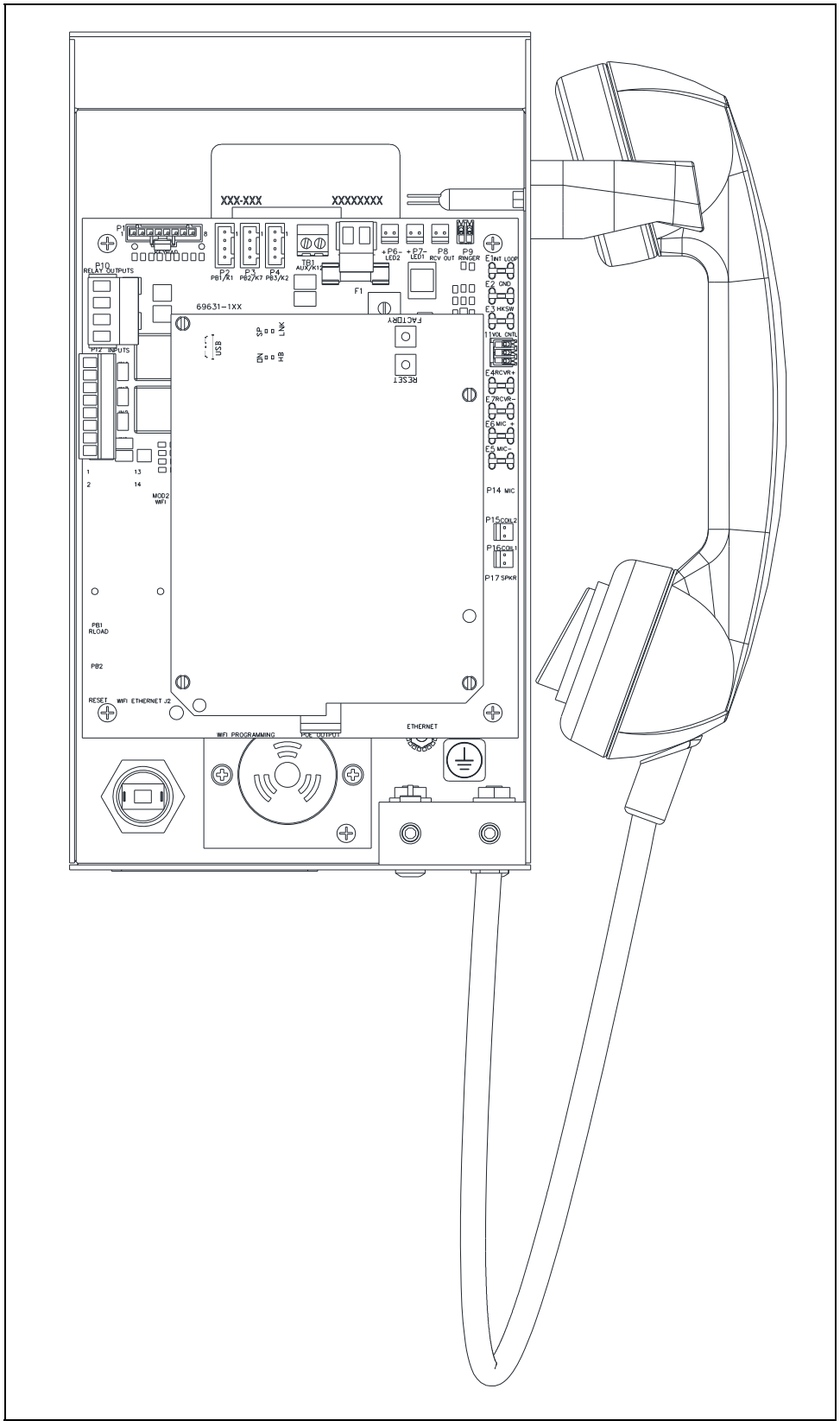

Figure 5. Models 210-710BH/-710BHAC Internal View

Model 226-710

1. Remove the eight security screws from the front panel using a GAI-Tronics No. 233-001 security screwdriver or equivalent.
2. Remove the front panel and set it aside.
3. Determine the hole pattern to be used for mounting (see Figure 8).
   - There are eight mounting holes in the back of the enclosure in two four-hole patterns.
   - For best results, use the 7.875 × 4.0-inch hole pattern for mounting to a wall (outside pattern).
   - Use the 5.25 × 4.0-inch hole pattern when using the No. 232-001 Pole Mounting Kit (inside pattern).
4. Insert the four provided hole plugs in the unused holes.

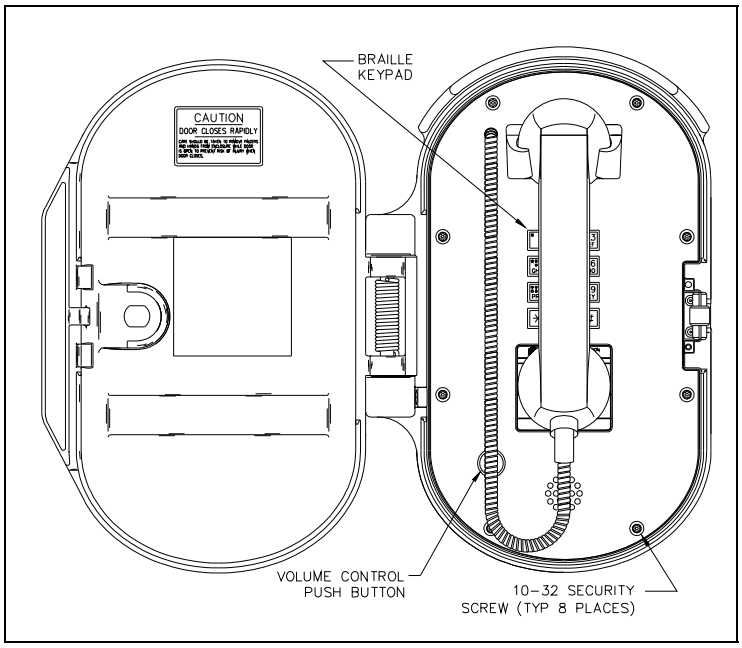

Figure 6. Model 226-710 VoIP Telephone w/ spring loaded door in the open position

5. Position the enclosure on the mounting surface and secure it with four fasteners.
   - The holes in the telephone enclosure accept 3/8-inch screws or bolts.
   - The Model 232-001 Pole Mounting Kit includes four 3/8-16 × 1-inch shoulder bolts with Teflon seal washers.

   NOTE: Use only the round head, hexagon head, or pan head screws that are provided. Do not use screws designed to be countersunk for mounting the enclosure.
6. Install a conduit fitting in one of the 1/2-inch NPT conduit entries located at the top and bottom of the unit.

   The bottom location is preferred (See Figure 7).
7. Insert the conduit into the fitting.
8. Plug the unused access hole with the provided 3/8-inch Allen drive plug.

   NOTE: Use silicone sealant or equivalent around and inside all conduit entries.
9. Pull the Ethernet cable through the conduit and install the cable(see the Field Wiring section).
10. Connect peripheral devices (see the Auxiliary I/O section).

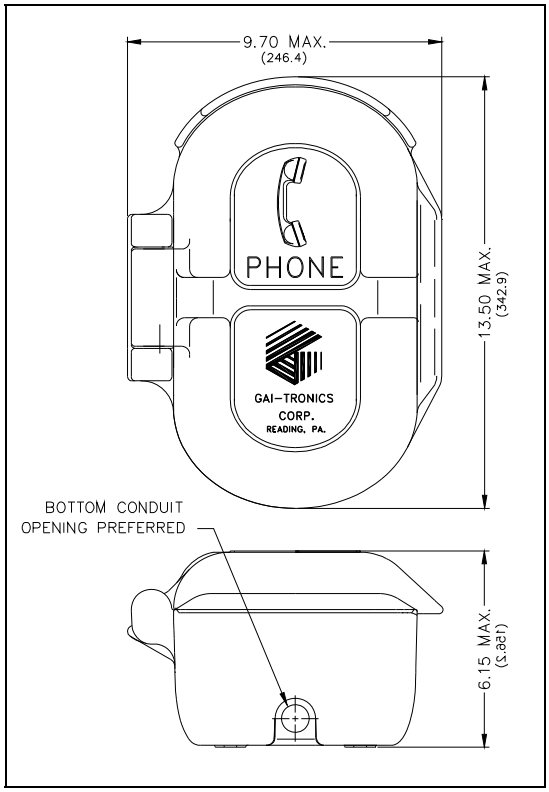

Figure 7. Model 226-710 Outline

11. Seal the conduit entry point(s).

    NOTE: Use silicone sealant or equivalent around and inside all conduit entries.

12. Perform the initial programming of the telephone (see the Reference Documentation section).
13. Verify telephone operation by calling to and from another telephone.
14. Verify the operation of peripheral equipment.
15. Replace the front panel assembly and secure it using the eight front-panel security screws.
16. Torque the screws to 10–12 in·lb (1.1–1.4 N·m).

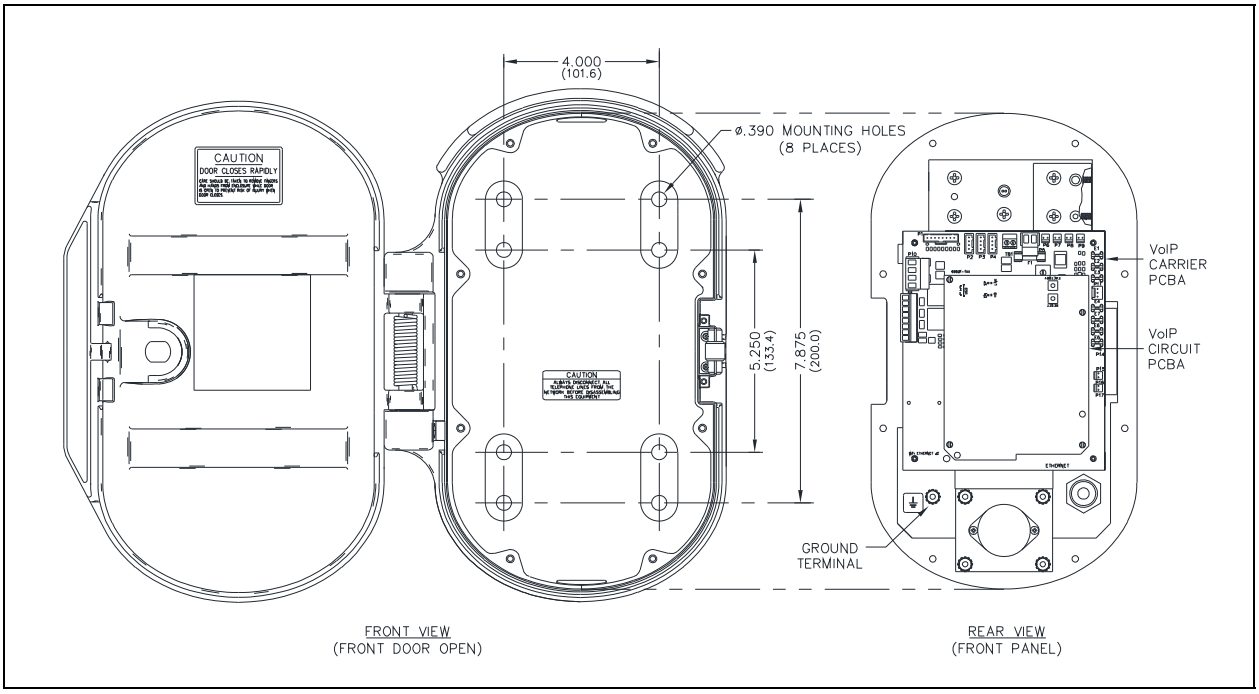

Figure 8. Model 226-710 Mounting Detail

Model 246-710

1. Remove the four screws from the front panel.
2. Remove the front panel and set it aside.
3. Mount the enclosure to the wall using either four ¼-20 machine screws with washers and nuts or four #14 wood screws of the appropriate length, depending on the mounting surface.

   There are four mounting holes in the rear enclosure. (see Figure 10)
4. Drill a hole for the type of bushing to be used.
5. Pull the Ethernet cable through the bushing and install the cable (see the Field Wiring section).
6. Seal the cable entry point.

   NOTE: Use silicone sealant or equivalent around and inside all cable/conduit entries.

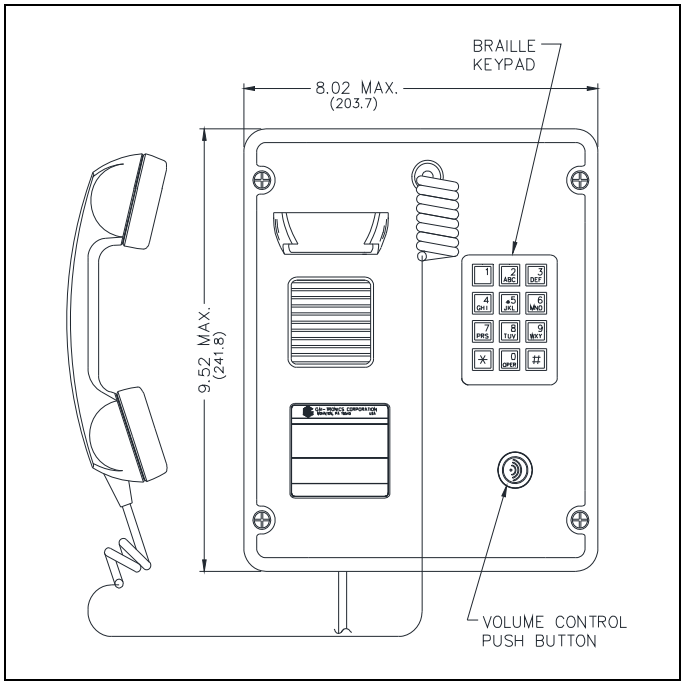

Figure 9. Model 246-710 VoIP Telephone

7. Connect any desired peripheral devices (see the Auxiliary I/O section).
8. Perform the initial programming of the telephone (see the Programming section).
9. Verify telephone operation by calling to and from another telephone.
10. Test the operation of peripheral equipment.
11. Replace the front panel assembly.
12. Secure the front panel using the four front-panel screws.
13. Torque the screws to 10–12 in·lb (1.1–1.4 N·m).

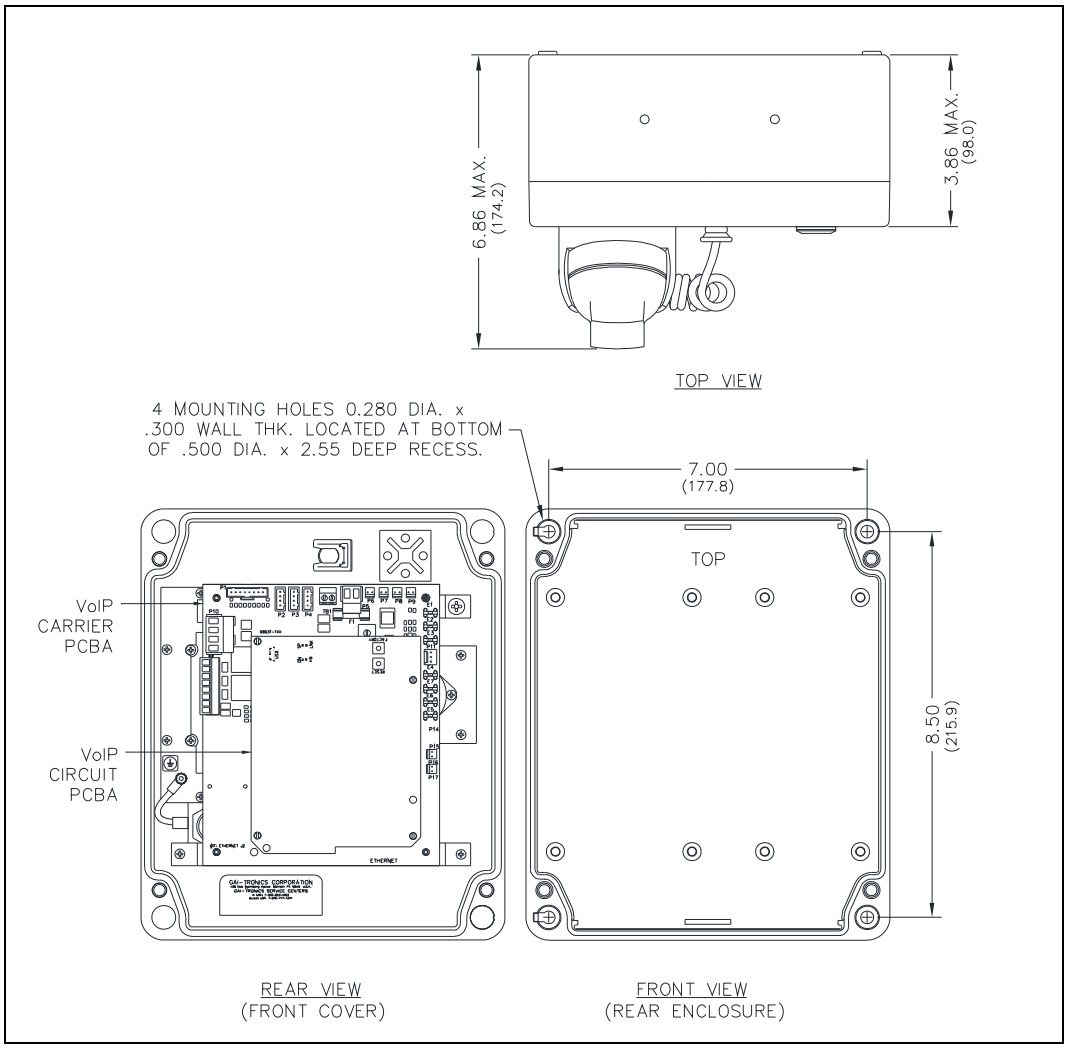

Figure 10. Model 246-710 Mounting Detail

Model 256-710

1. Open the front door and remove the four outer screws from the mid-section.
2. Carefully pull the enclosure apart until encountering a slight resistance on the left side.
3. Pull on the left side of the enclosure until the hinge plugs pull loose to separate the front and rear halves.
4. Set the front half of the enclosure aside.
5. Mount the enclosure on the wall using four ¼-20 machine screws with nuts and washers or #14 wood screws of the appropriate length for the mounting surface.

   There are four mounting holes in the rear enclosure.

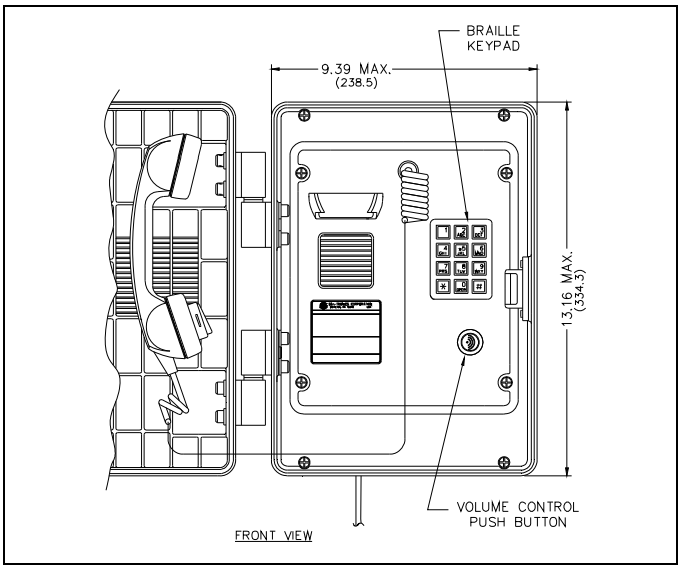

Figure 11. Model 256-710 VoIP Telephone (Front door open)

6. Drill a hole for the type of bushing to be used.
7. Reinsert the hinge pins to attach the front half of the enclosure.
8. Insert the Ethernet cable through the gland bushing and install the cable (see the Field Wiring section).

   NOTE: Conduit may be used in place of the provided gland bushing. The conduit entrance must be sealed after the cable is installed.

   NOTE: Use silicone sealant or equivalent around and inside all conduit entries.
9. Connect peripheral devices (see the Auxiliary I/O section).
10. Perform the initial programming of the telephone (see the Programming section).
11. Verify telephone operation by calling to and from another telephone.
12. Test the operation of peripheral equipment.
13. Close the mid-section and torque the four screws to 10–12 in·lb (1.1–1.4 N·m).

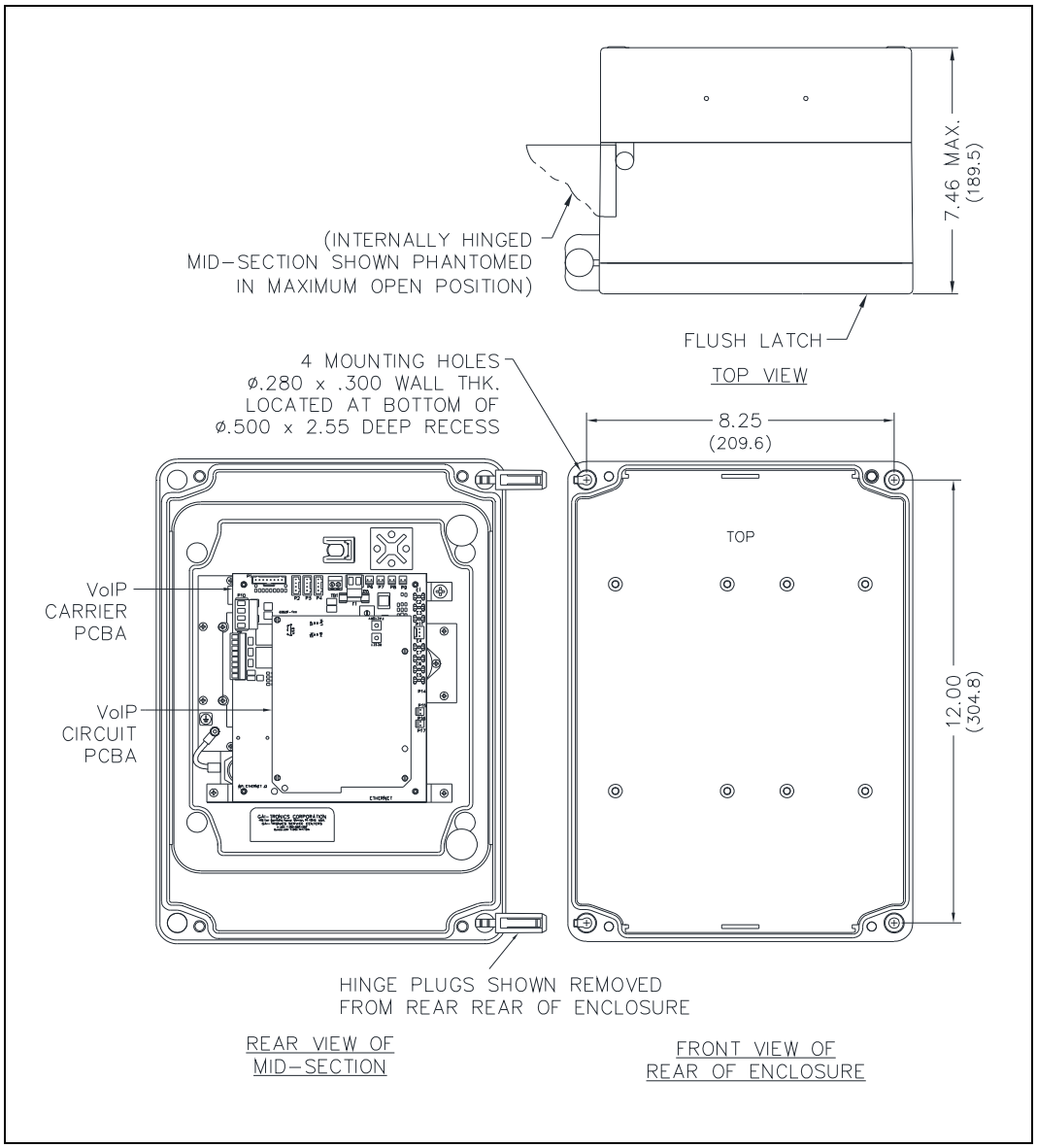

Figure 12. Model 256-710 Mounting Detail

Model 276-710

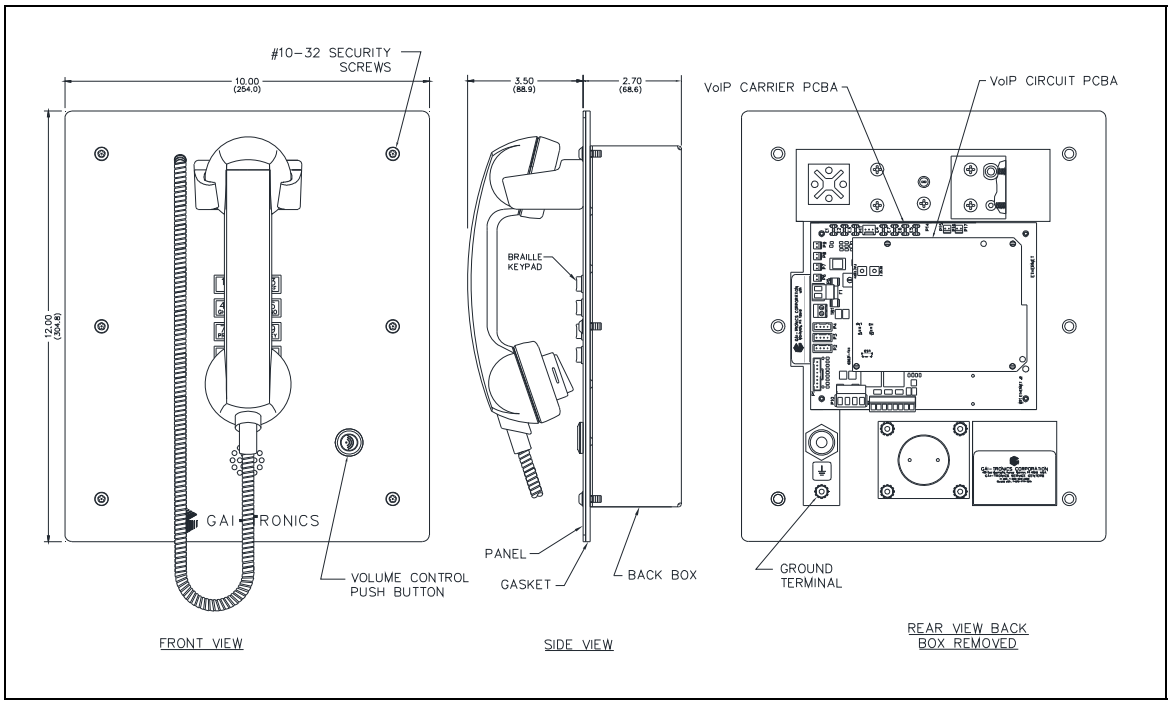

Figure 13. Model 276-710 Outline Drawing

1. Remove the six tamper-resistant screws securing the backbox to the telephone.
2. *Flush-mount and GAI-Tronics Model 234 Communication Station Installations:*

   Mount the backbox to the structure using appropriate hardware (see Figure 14 for the cutout dimensions).

   Surface-mount installations using a GAI-Tronics 236-00x Series or 238-001 Surface-Mount Enclosure:

   Install the surface-mount enclosure following the instructions included with the enclosure.

   The front panel assembly mounts directly to the enclosure (the back box is not required.)
3. Remove a tapered plug from one of the cable-entry holes in the backbox.
4. Install a cable fitting and pull the cabling into the backbox.

   NOTE: Installation of a (customer-supplied) surge suppressor on the Ethernet cable and the power line (if used) is recommended for outdoor installations.

   NOTE: Use silicone sealant or equivalent around and inside all conduit entries.
5. Terminate all wires (see the Field Wiring section).
6. Connect all peripheral devices (see the Auxiliary I/O section).
7. Perform the initial programming of the telephone (see the Programming section).
8. Verify telephone operation by calling to and from another telephone.
9. Test the operation of peripheral equipment.
10. Attach the telephone's front panel to the mounting flanges of the back box using the six supplied #10-32 security screws and washers.
11. Torque the screws to 10–12 in·lb (1.1–1.4 N·m).

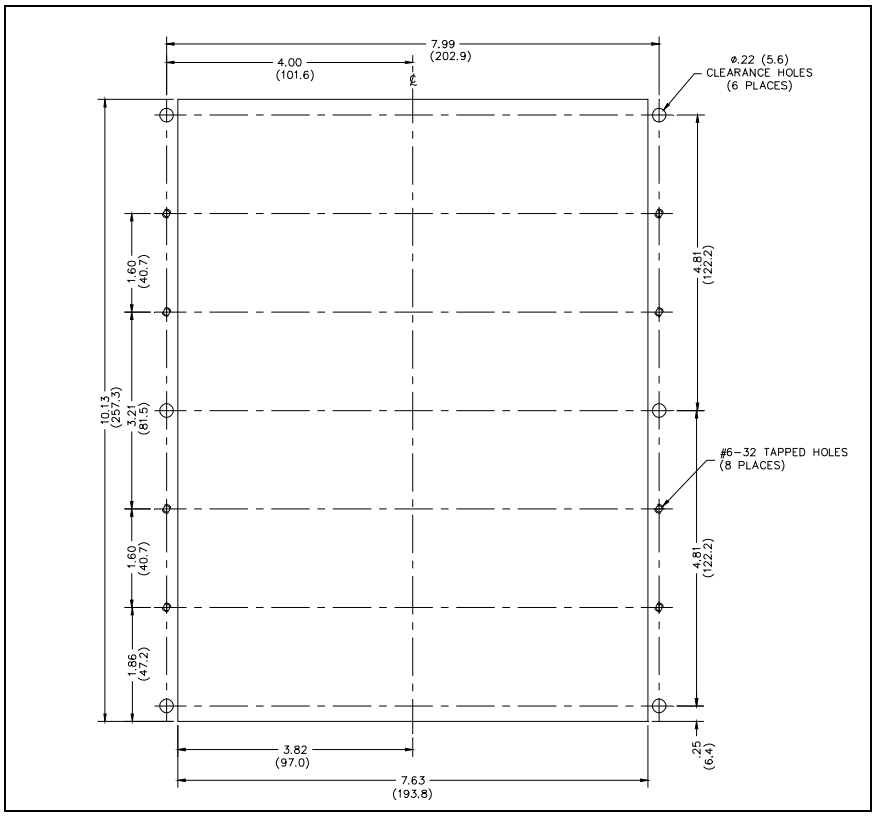

Figure 14. Model 276-710 Cutout Detail

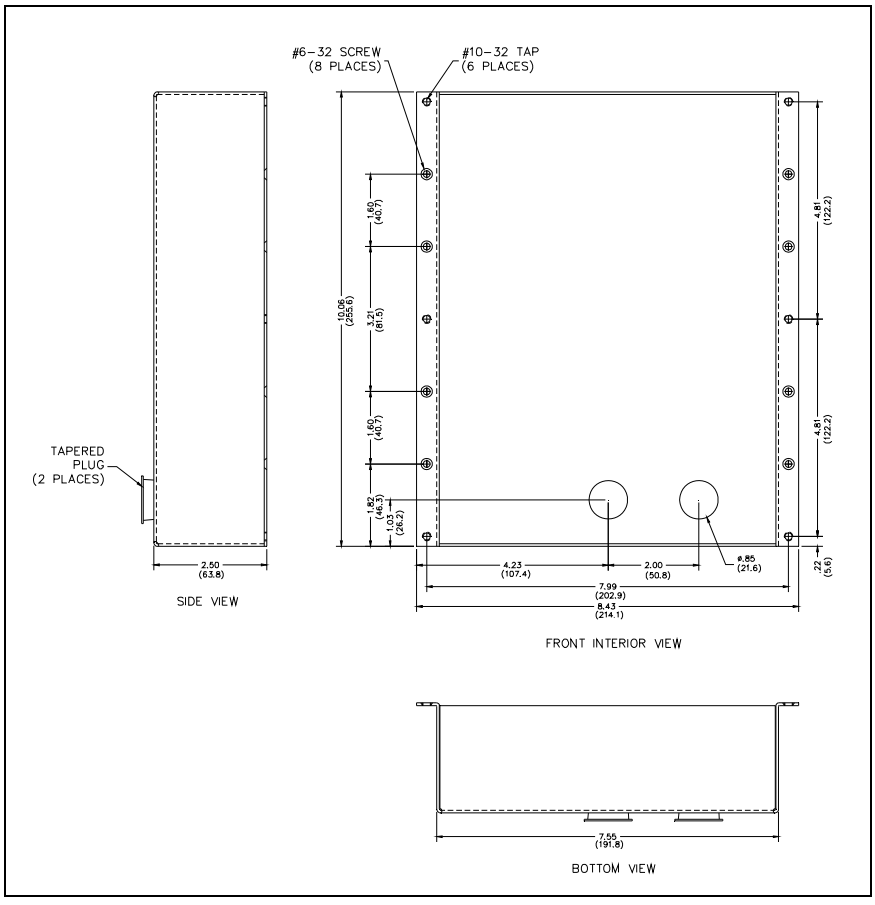

Figure 15. Model 276-710 Mounting Detail

Models 276-712BH and 276-712BHAC

NOTE: See the cutout and support framing detail for installation planning (see Figure 18).

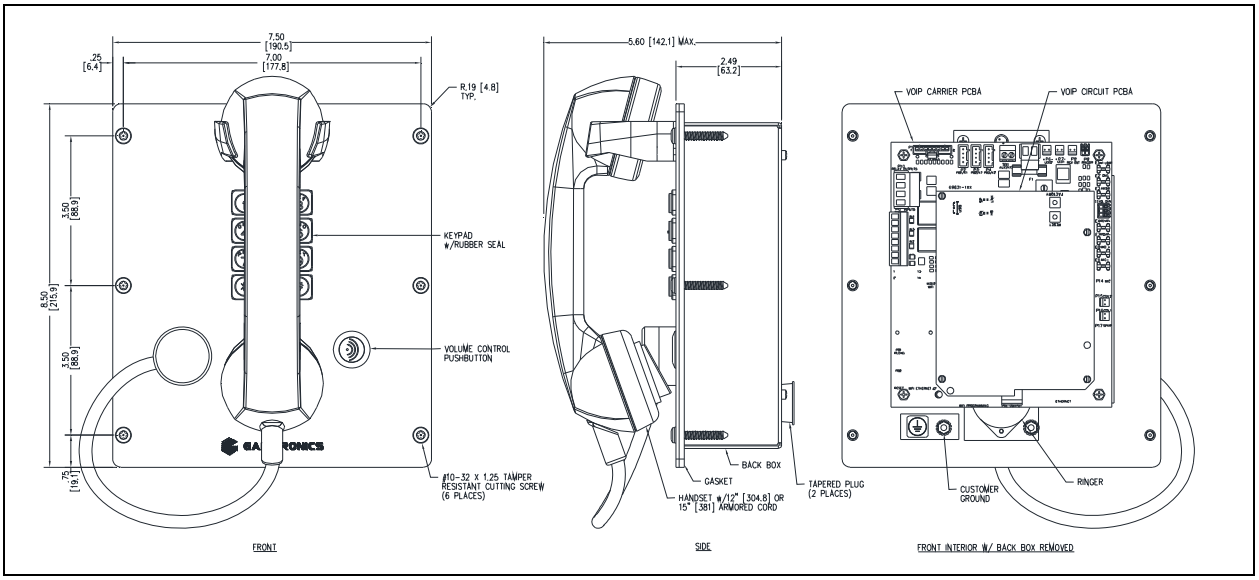

Figure 16. Models 276-712BH/-712BHAC Behavioral Health Telephone Outline Diagram

Flush Mount Installation

1. Remove the four screws securing the dust cover to the back of the telephone and remove the dust cover.
2. Remove the tapered plug(s) from the cable entry holes and feed all cabling into the dust cover (see Figure 17).
3. Terminate all wires (see the Field Wiring section).
4. Connect peripheral I/O devices (see the Auxiliary I/O section).
5. Reinstall the dust cover on the back of the telephone and secure it with the four screws removed in step one.
6. Perform the initial programming of the telephone (see the Programming section).
7. Verify telephone operation by calling to and from another telephone.
8. Test the operation of peripheral equipment.
9. Attach the front panel assembly to the mounting surface using the six supplied #10 thread-cutting security screws.

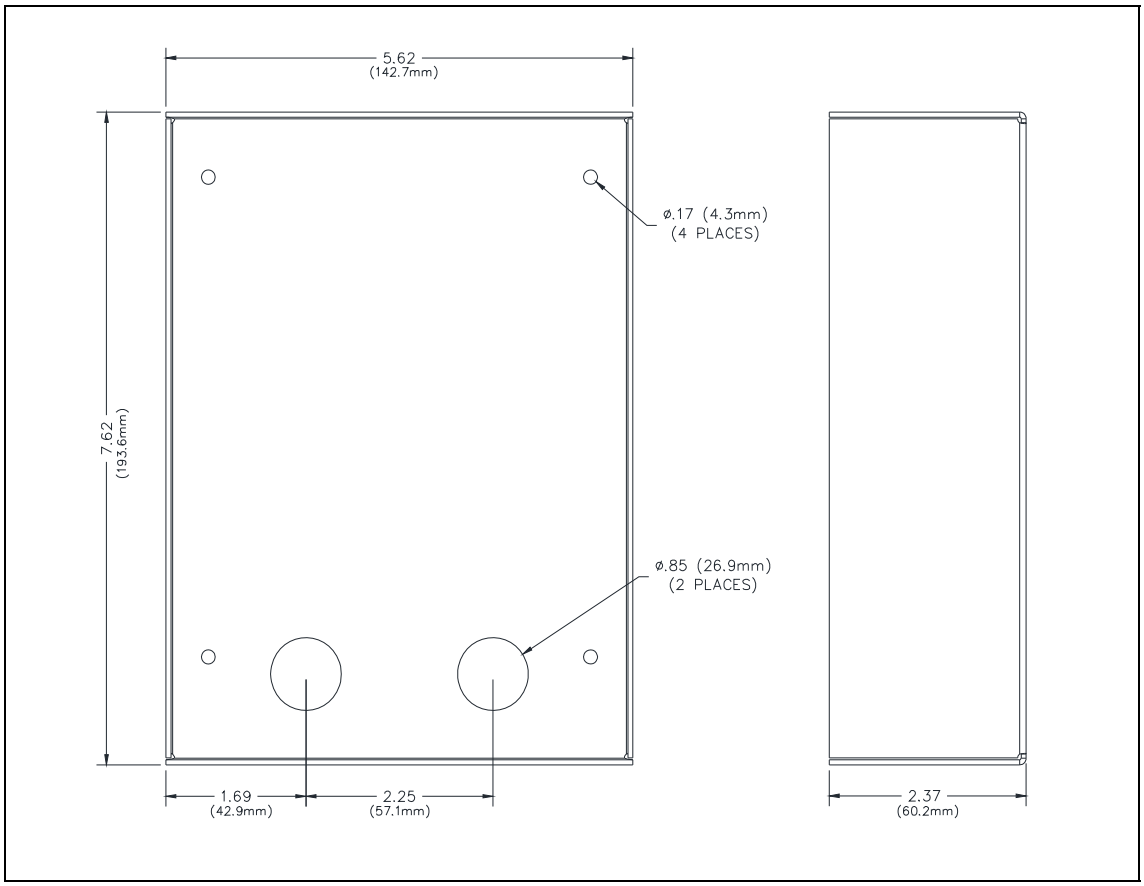

Figure 17. Models 276-712BH/-712BHAC Dust Cover Detail

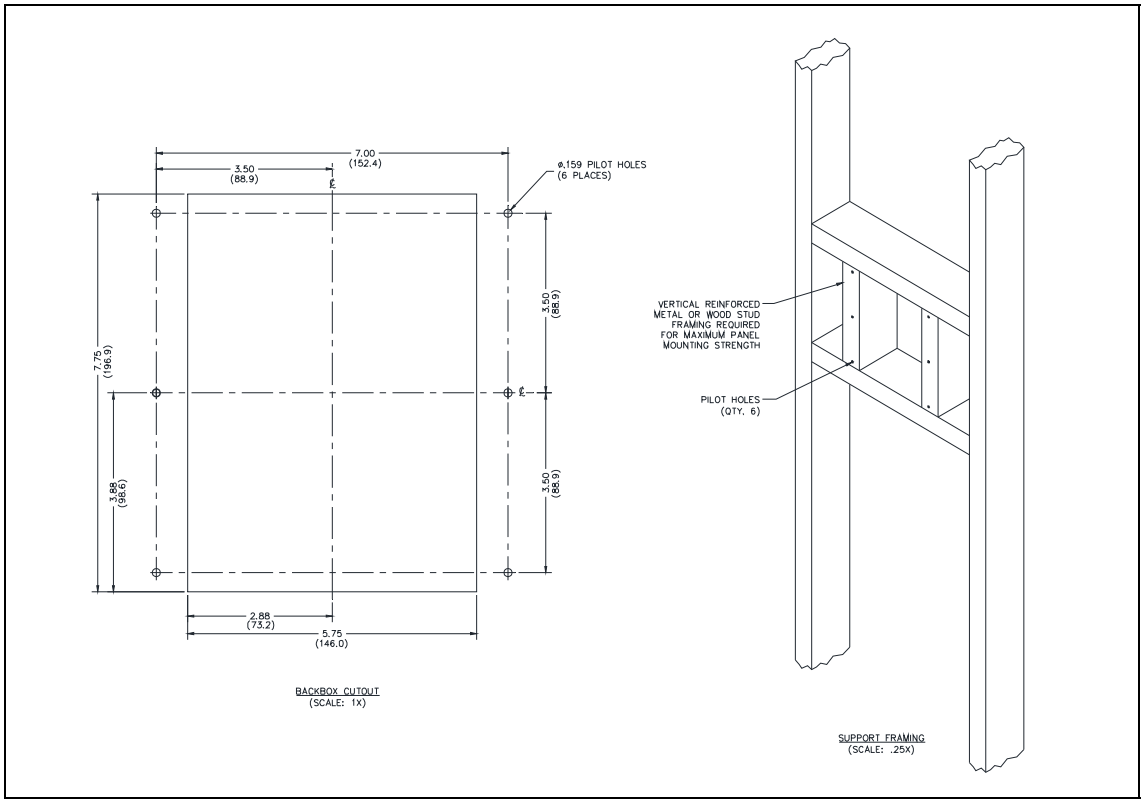

Figure 18. Cutout and Framing Support Detail for Models 276-712BH/-712BHAC

Surface-Mount Installation using the No. 238-003 Enclosure

The Model 238-003 enclosure includes rear and bottom access holes for cable entry. Utilize the rear access hole(s) for a completely hidden installation or the bottom access hole(s) for conduit installation.

NOTE: The dust cover included with the Model 276-712BH and 276-712BHAC telephones is not required for use with the Model 238-003 Surface-Mount Enclosure and must be removed.

1. Remove and discard the rear dustcover from the telephone.
2. Install the Model 238-003 Enclosure following the instructions included with the enclosure.
3. Pull all field wiring into the enclosure.
4. Terminate all wiring to the telephone (see the Field Wiring section).
5. Attach the telephone's front panel to the mounting flanges of the Model 238-003 Surface-Mount Enclosure.

   NOTE: Use the six #10-32 security machine screws supplied with the surface-mount enclosure along with the flat black washers included with the telephone. Do not use the thread-cutting screws supplied with the telephone in the Model 238-003 enclosure's tapped holes. A Model 233-001 Security Screwdriver (sold separately) is required for installing the security screws. Recommended torque is 10–12 in·lb.

Field Wiring

Pull the required field cables into the rear enclosure and install the connections as indicated in the following subsections (see Table 2 for recommended conductor sizes and Figure 19 for wiring details).

NOTE: Consult the National Electrical Code (NFPA 70), Canadian Standards Association (CSA 22.1), and local codes for the specific requirements regarding your installation. Install all equipment without modification and according to the local and national codes. Class 2 circuit wiring must be performed in accordance with the NEC.

Recommended Cabling

Table 2. Recommended Cabling

Cable Use	Size and Type
LAN	Category 5 or better Ethernet cable with an RJ45 connector
Power	two-conductor, No. 22 AWG is typical
Inputs	two-conductor, No. 22 AWG is typical
Output contacts	two-conductor, No. 18 AWG is typical

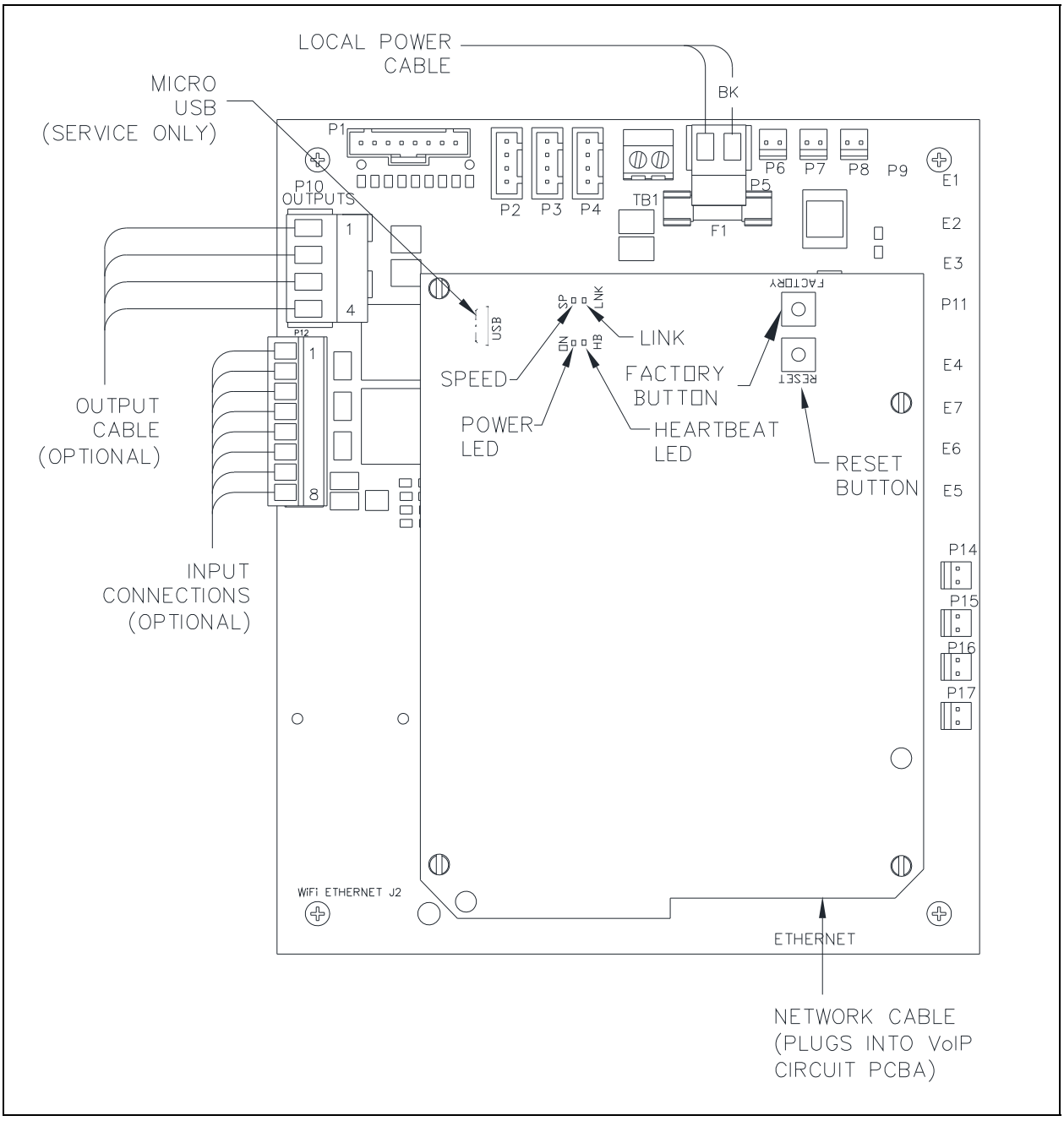

Figure 19. VoIP Telephone PCB Assembly

Power

Ground (Models 210-710BH/-710BHAC, 226-710, 276-710/-712BH/-712BHAC Only)

Connect the applicable enclosures to earth ground:

1. Install a #6 ring lug on the ground conductor.
2. Secure the ground conductor to the ground terminal, located on the rear of the front panel.

NOTE: Not applicable to Models 246-710 and 256-710.

Power-Over-Ethernet

Connect power to the system as indicated in the PoE equipment manual.

Local Power

A separate, isolated, 24 to 48-volt dc power supply is required when PoE is not available (see Table 8 on Page 24 for the recommended optional plug-in power supply). Connect the local 24–48 V dc power source to removable terminal block, P5 (see Figure 19), on the VoIP Carrier PCBA.

1. Install ferrules or tin the wire ends.
2. Connect the positive conductor to the (+) terminal of P5.
3. Connect the negative conductor to the (−) terminal of P5.
4. Install the removable terminal block onto pin header P5, on the VoIP carrier PCBA.

Table 3. Power—P5

Pin	Label	Description
1	(+)	Positive
2	(−)	Negative

Network

Connect a Category 5 or better Ethernet cable with an RJ45 connector from the LAN (Local Area Network) to the Ethernet jack, located on the underside of the VoIP PCBA (see Figure 19).

Auxiliary I/O

Inputs

The telephones have four auxiliary inputs for customer use. Terminate these inputs to terminal block P12, on the VoIP Carrier PCBA (see Figure 19).

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

Outputs

The telephones have two dry-contact outputs for customer use. Terminate these outputs to connector P10, on the VoIP Carrier PCBA (see Figure 19).

Table 5. 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

USB port

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

Programming

The network configuration must provide VoIP service (using the SIP protocol) between the desired locations before attempting to configure a GAI-Tronics VoIP telephone.

The general sequence to set up a VoIP telephone is as follows:

VoIP PCBA 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 PCBA 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.

Input Contacts

Each VoIP telephone includes four dry-contact inputs (see the Specifications section for the input ratings). Each input's mode is configurable. Configure inputs for one of the following modes: On, Off, or On/Off. The inputs can be configured to update a SYSLOG or generate an SNMP trap when active (see Figure 19 on Page 18). Refer to GTC Pub. 42004-548 for programming instructions for these inputs (see the Reference Documentation section).

Output Contacts

Each VoIP telephone contains two voltage-free output contacts (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, or Emergency. The duration of the activation, or on/off times, can also be set in some modes (see Figure 19 on Page 18). Refer to GTC Pub. 42004-548, for programming instructions for the outputs (see the Reference Documentation section).

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 Pub. 42004-548. (see the Reference Documentation section).

Maintenance

⚠**WARNING** ⚠ —**This product can contain hazardous voltages. Always remove power to this station prior to servicing.**

USB port

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

Corrective Actions

1. Inspect and replace frayed or cracked wiring.
2. Secure/replace loose wires and terminal lugs.
3. Remove corrosion from terminals.
4. Inspect fuse F1 on the VoIP carrier PCBA.

Preventive Maintenance for Model 276-710/-712BH/-712BHAC

Stainless steel does require maintenance to prevent corrosion from occurring. Different installation locations may require more regular maintenance than others, depending on the environment and exposure to airborne contaminants. The following maintenance steps should be performed on a regular basis or when corrosion is first noticed on a Model 276-710 Telephone.

Cleaning

For general cleaning, wipe surface with a cleanser or cleanser and water mixture. Any cleanser that is safe for glass is usually safe for stainless steel. Wipe dry.

If corrosion or rusting is noticed, remove with a non-abrasive commercial cleanser and water. Rub stained areas in the same direction as the existing grain. Stubborn stains may be removed with a paste made from magnesium oxide, ammonia, and water. Wipe clean, water rinse, and dry.

Prevention

Automotive wax provides the best results in preventing corrosion on stainless steel. Simply apply wax, let dry to a haze, and buff to a shine with a clean dry cloth. This application should protect the telephone surface for many months as it will allow natural re-formation of the chromium oxide layer.

DO NOT use steel wool, sandpaper, mineral acids, bleaches, or chlorine cleansers on stainless steel.

Service

Contact a regional service center for an RA# (return authorization number) if the telephone requires service. 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 locating the nearest regional service center.

Troubleshooting

Table 6. Troubleshooting Chart

Problem	Possible Solution
Low volume	Increase the volume level in the telephone's programming configuration.
High volume	Decrease the volume level in the telephone's programming configuration.
Front panel push buttons not operational	• Verify the push buttons are properly configured. • Verify power is applied to the unit.
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. • If using PoE, check the operation of the PoE equipment.

Replacement Parts and Accessories

Table 7. Replacement Parts by Model Number

Part No.	Description	210-710BH	210-710BHAC	226-710	246-710	256-710	276-710	276-712BH	276-712BHAC
10113-020	Handset Assembly with Armored Cord, 15-inch		■	■					■
10113-021	Handset Assembly with Armored Cord, 29-inch						■		
10113-022	Hytrel® Cord Handset Assembly, 6-foot				■	■			
10113-030	Handset Assembly with Armored Cord, 12-inch	■						■	
12512-001	Hookswitch/Assembly Kit (plastic)				■	■			
12512-002	Hookswitch/Assembly Kit (metallic)			■			■		
12512-012	Hookswitch Assembly Replacement	■	■					■	■
12513-006	Replacement Door Kit					■			
12516-001	Replacement Mounting Screw Kit (Phillips, #10-32 × 1 1/8-inch machine screw, Pack of 10)				■	■			
12516-002	Replacement Mounting Screw Kit (Security, #10-32 × ½-inch machine screw, Pack of 10)			■					
12542-002	Replacement Mounting Screw Kit (Security, #10-32 × ½-inch machine screw, 15 pack)	■	■				■		
12542-003	Replacement Mounting Screw Kit (Security, #10 × 1 ¼-inch thread cutting screw, 15 pack)							■	■
12565-711	VoIP Carrier PCBA Replacement Kit	■	■	■	■	■	■	■	■
13707-008	Ringer, Panel-Mount			■	■	■	■		
13707-015	Ringer, Panel-Mount	■	■					■	■
51035-005A	PCBA, Keypad	■	■	■	■	■	■	■	■

Table 8. Available Accessories by Model Number

Part No.	Description	210-710BH	210-710BHAC	226-710	246-710	256-710	276-710	276-712BH	276-712BHAC
230-001	Pole Mounting Kit, Rugged Phone/RF Call Box					■			
231-001FS	Pole Mounting Kit for BH/FS Series Telephones when installed in a Model 238-003 Enclosure							■	■
231-002	Pole Mounting Kit for Model 246-710 and for Model 276-710 when installed in a No. 238-001 Enclosure				■		■		
232-001	Pole Mounting Kit, (22x Series)			■					
233-001	Model 233-001 Security Screwdriver	■	■	■			■	■	■
238-001	Surface-Mount Enclosure, Stainless Steel, Standard						■		
238-003	Surface-Mount Enclosure, Stainless Steel, BH Telephones							■	■
12573-001	Spring Door Kit					■			
40419-011	Optional Plug-in Power Supply, 120/240 V ac input, 24 V dc output	■	■	■	■	■	■	■	■

Reference Documentation

VoIP Basic Configuration Guide 42004-548

VoIP Programming Manual 502-20-0171-001

Specifications

Electrical

Power

Network power ..... Power-over-Ethernet, 802.3af compliant (via RJ45)

Local power requirements ..... 24–48 V dc, 6 W

Network

Topology ..... 10/100 BaseT Ethernet

Cabling ..... Category 5 or better UTP with RJ45 jack

Addressing ..... static IP provisioning or DHCP STUN client (NAT traversal)

Call control signaling ..... SIP (RFC3261 compliant) loose routing

Configuration ..... embedded web server, configuration file download, direct serial connection 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 Hz to 6500 Hz
Frequency response flatness ..... 3 dB minimum
THD @ 1 kHz ..... 1% minimum

Inputs

Keypad ..... 3 × 4 matrix
Push buttons ..... volume control
Configurable inputs (quantity = 4) ..... internal pull-up 3.3 V dc tolerant

Outputs

Output 1 ..... 8 A @ 30 V ac/dc (resistive load)
Output 2 ..... 8 A @ 30 V ac/dc (resistive load)

Indicators

Internal on VoIP PCBA ..... heartbeat, link, power, and speed LEDs

Mechanical

Temperature range
- Operating ..... −4 ºF to +131 ºF (−20 ºC to +55 ºC)
- Storage ..... −40 ºF to 158 ºF (−40 ºC to +70 ºC)

Relative humidity ..... up to 95%, non-condensing
PCBA (printed circuit board assembly) ..... conformal coated

Models 210-710BH/-710BHAC

Enclosure Construction ..... 16-guage (0.060 in) type 304 stainless steel
Dimensions ..... 10.00 H × 5.50 W × 3.27 D in (254 × 139.7 × 83.1 mm)
Weight ..... 5.5 lb (2.5 kg)
Handset/cord
- 210-710BH ..... G-style with 12-inch armored cord
- 210-710BHAC ..... G-style with 15-inch armored cord

Dial pad ..... chrome-plated zinc

Model 226-710

Construction
- Enclosure ..... thick-walled cast aluminum with protective gray coating
- Panel ..... 0.125-inch brushed aluminum

Handset/cord ..... G-style with 15-inch armored cord and internal lanyard
Braille dial pad ..... chrome-plated zinc
Dimensions ..... 13.50 H × 9.70 W × 6.15 D inches (342.9 × 246.4 × 156.2 mm)
Mounting ..... eight 0.39-inch diameter holes
Weight ..... 14.5 lb (6.58 kg)

Model 246-710

Construction ..... engineered plastic enclosure
Handset/cord ..... Hytrel® cord (6-foot) with noise-canceling microphone
Braille dial pad ..... chrome-plated zinc
Dimensions ..... 9.50 H × 8.00 W × 6.90 D in (241.3 × 203.2 × 175.3 mm)
Mounting ..... four 0.28-inch diameter holes
Weight ..... 4.8 lb (2.18 kg)

Model 256-710

Construction ..... engineered plastic enclosure
Handset/cord ..... Hytrel® cord (6-foot) with noise-canceling microphone
Braille dial pad ..... chrome-plated zinc
Dimensions ..... 13.20 H × 9.40 W × 7.40 D in (335.4 × 238.8 × 188.0 mm)
Mounting ..... four 0.28-inch diameter holes
Weight ..... 10.0 lb (4.54 kg)

Model 276-710

Construction
- Front Panel ..... 14-gauge (0.075-inch) type 304 brushed stainless steel
- Back Box ..... 16-gauge (0.060 in) steel with black polyurethane finish

Handset/cord ..... G-style with 29-inch armored cord and internal lanyard
Braille dial pad ..... chrome-plated zinc
Dimensions
- Front panel ..... 12.00 H × 10.00 W in (304.8 × 254.0 mm)
- Back box (overall) ..... 10.06 H × 8.43 W × 2.50 D in (255.5 × 214.1 × 63.5 mm)

Cutout for mounting back box ..... 10.13 H × 7.63 W in (257.3 × 193.8 mm)
Weight ..... 7.0 lb (3.18 kg)

Models 276-712BH/-712BHAC

Construction
- Front Panel ..... 14-gauge (0.075 in) type 304 brushed stainless steel
- Back Box ..... 16-gauge (0.060 in) cold rolled steel with black polyurethane finish

Handset/cord
- 276-712BH ..... G-style with 12-inch armored cord
- 276-712BHAC ..... G-style with 15-inch armored cord

Keypad ..... chrome plated with rubber seal
Dimensions
- Front Panel ..... 8.50 H ×7.50 W in (215.9 × 190.5 mm)
- Back Box (overall) ..... 7.62 H × 5.62 W × 2.31 D in (193.5 × 142.7 × 58.7 mm)

Weight (approximate) ..... 5 lb (2.3 kg)

Approvals

Models All:

Compliance to Standard.....FCC CFR 47 Part 15

Models 226, 246, 256, 276:

Safety of Information Technology Equipment ..... UL/CSA 60950

Models 226, 256, and 276 only:

Enclosure for Electrical Equipment ..... Type 3R

FCC Notice

NOTE: 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. Depending upon the wiring and features used on this device, additional precautions may be necessary not to cause harmful interference. 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 their 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.