



GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Model 226-001, 246-001, 256-001, and 276-001 Industrial Telephones with Keypads

Confidentiality Notice

This manual is provided solely as an operational, installation, and maintenance guide and contains sensitive business and technical information that is confidential and proprietary to GAI-Tronics. GAI-Tronics retains all intellectual property and other rights in or to the information contained herein, and such information may only be used in connection with the operation of your GAI-Tronics product or system. This manual may not be disclosed in any form, in whole or in part, directly or indirectly, to any third party.

General Information

GAI-Tronics industrial telephones are ideally suited for conditions that are too harsh for a standard telephone. The telephones operate the same as a standard telephone—simply lift the handset and dial the desired telephone number. The telephones are fully line-powered and do not require internal batteries.

This manual applies to the following models:

- 226-001 Public Access Telephone
- 246-001 Indoor Industrial Telephone
- 256-001 Outdoor Industrial Telephone
- 276-001 Flush-Mount Handset Telephone

Installation Guidelines

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

- NEVER install telephone wiring during a lightning storm.
- **Install a UL Listed lightning arrester** on any phone installed where the phone or phone cable is at risk of being exposed to lightning strikes. The lightning arrester must be installed as close to the phone as possible to maximize the protection. The lightning arrester must not be installed within the enclosure supplied with the phone.
- NEVER install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- NEVER touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- USE CAUTION when installing or modifying telephone lines.
- Install UL Listed telephone line suppressor (customer-supplied) on the telephone line.
- Use silicone sealant or equivalent around and inside all conduit entries

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

1. To ensure that the unit is vandal-resistant, run the subscriber line inside conduit.
2. Use the conduit entry located on the bottom of the enclosure to prevent any condensation forming inside the conduit from dripping into the unit. Additionally, using the bottom conduit entry makes water less likely to enter the unit at the conduit connection points.
3. 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.
4. 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. (Silicon sealant manufacturers include: Dow Corning, Duron, General Electric, and DuPont.)
5. Sealed fittings should be installed at all cable entry points to prevent liquids from entering the unit.

Installation

Model 226-001 Mounting and Wiring Instructions

1. Use a GAI-Tronics Model 233-001 Screwdriver to remove the eight tamper-resistant front panel screws.
2. Remove the front panel assembly to expose the eight mounting holes. These holes accept 3/8-inch diameter bolts. The length of these bolts will depend on the mounting surface. For wider and retrofit hole patterns from the Northern Telecom Model NE-2525Q Series, use the 7.875-inch × 4.00-inch hole pattern. Four hole plugs are supplied for the unused holes.

When using the Model 232 Pole Mounting Kit, use the 5.25-inch × 4.00-inch hole pattern. This kit includes four 3/8-inch, 16×1-inch shoulder bolts with Teflon™ seal washers.

3. A 1/2-NPT conduit entrance is provided at both the top and the bottom of the unit. An Allen drive plug is supplied for the unused entry.
4. Connect the free end of the modular telephone cord to the incoming subscriber line using the appropriate mating connector.

- 5. Replace the front panel assembly and tighten the eight front panel screws.
- 6. Check the telephone operation by calling to and from another telephone.

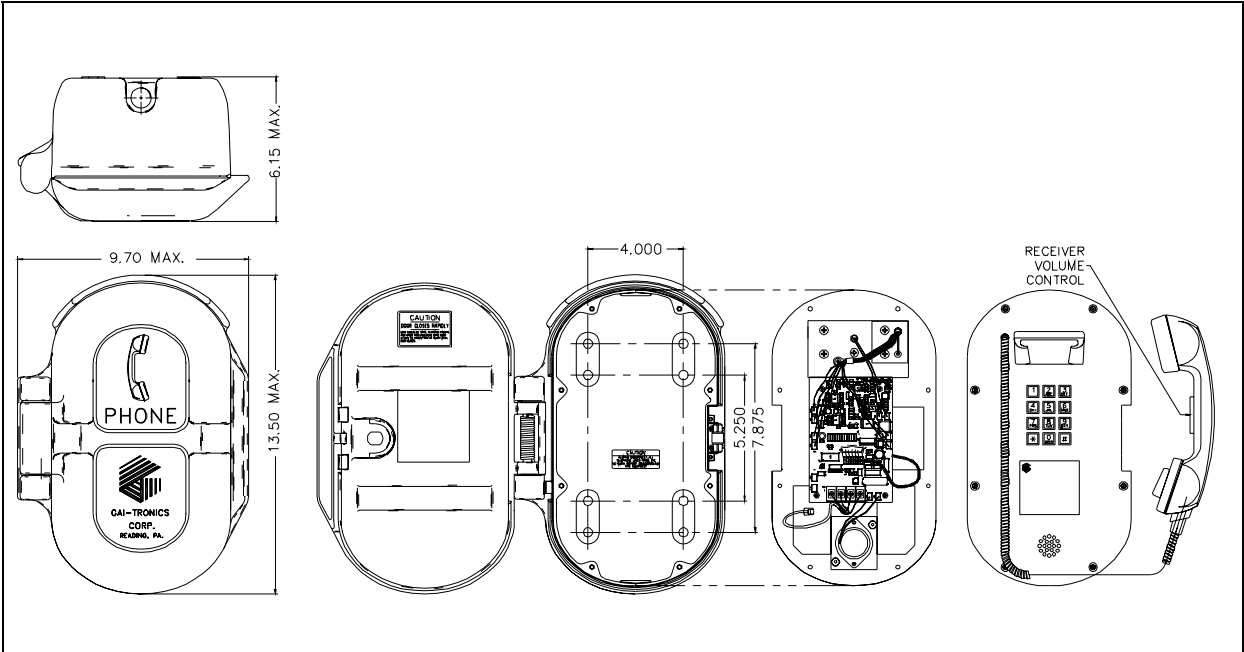


Figure 1. Model 226-001 Outline and Mounting Drawing

Model 246-001 Mounting and Wiring Instructions

1. Remove the four front panel screws using a standard Phillips screwdriver. Remove the front panel assembly until the modular telephone cord can be disconnected from the printed circuit terminal strip. Set aside the front panel.
2. Mount the enclosure on the wall using four 1/4-20 machine screws with nuts and washers or #14 wood screws of appropriate length, depending on the mounting surface. Refer to Figure 4 for details.
3. Reconnect the modular telephone cord to the printed circuit board terminal strip. See Figure 2.
4. Replace the front panel assembly, and replace the four front panel screws.
5. Disassemble bushing and position it over the supplied telephone cable. Assemble the bushing and secure to the enclosure using the supplied locknut. Use a 7/8-inch wrench and channel locks to tighten.
6. Connect the free end of the modular telephone cord to the incoming subscriber line using a USOC RJ11C jack.
7. Check for proper telephone operation by calling to and from another telephone.

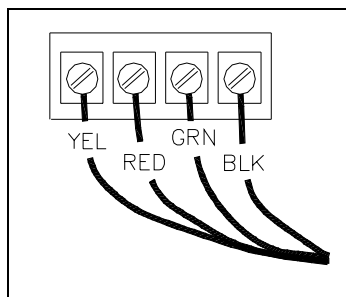


Figure 2. PCBA Connection

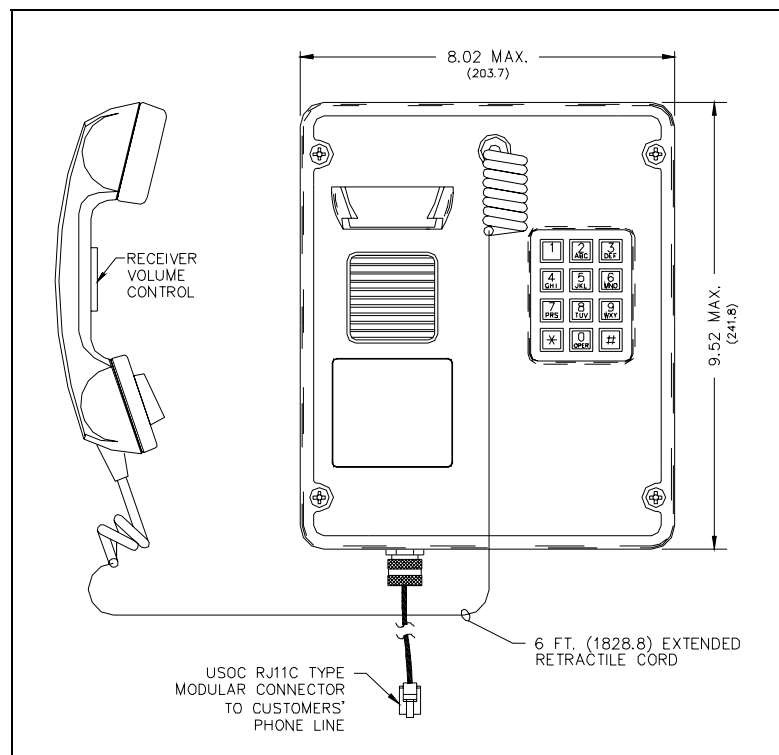


Figure 3. Model 246-001 Outline Drawing

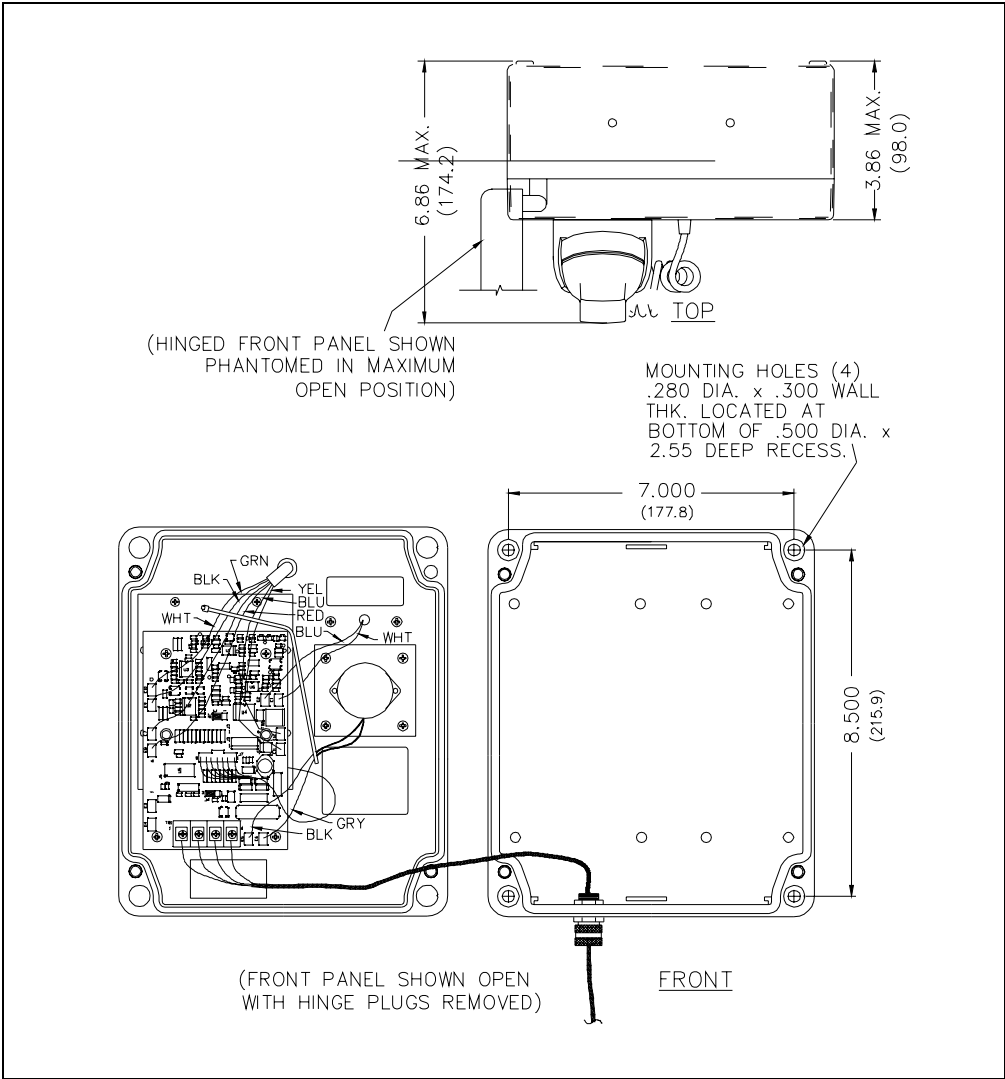


Figure 4. Model 246-001 Mounting Diagram

Model 256-001 Mounting and Wiring Instructions

1. Open the front door of the enclosure. Locate the four outermost screws.
2. Using a standard Phillips screwdriver, remove the four screws and carefully pull the enclosure apart until encountering a slight resistance on the left side.
3. Open the front half of the enclosure to the left until the length of modular telephone cord inside the enclosure can be disconnected from the printed circuit board terminal strip. See Figure 6. Pull on the left side of the enclosure until the hinge plugs pull loose to separate the front half from the rear half. Set the front half of the enclosure aside.
4. Mount the enclosure on the wall using four ¼-20 machine screws with nuts and washers or #14 wood screws of appropriate length, depending on the mounting surface.
5. Reconnect the modular telephone cord to the printed circuit board terminal strip. See Figure 6 for details.
6. Close the front half of the enclosure and secure it by replacing the four outermost screws.
7. Disassemble the bushing and position it over the supplied telephone cable. Assemble the bushing and secure to the enclosure using the supplied locknut. Use a 7/8-inch wrench and channel locks to tighten.
8. Connect the free end of the modular telephone to the incoming subscriber line using a USOC RJ11C jack. Check the telephone by calling to and from another telephone.

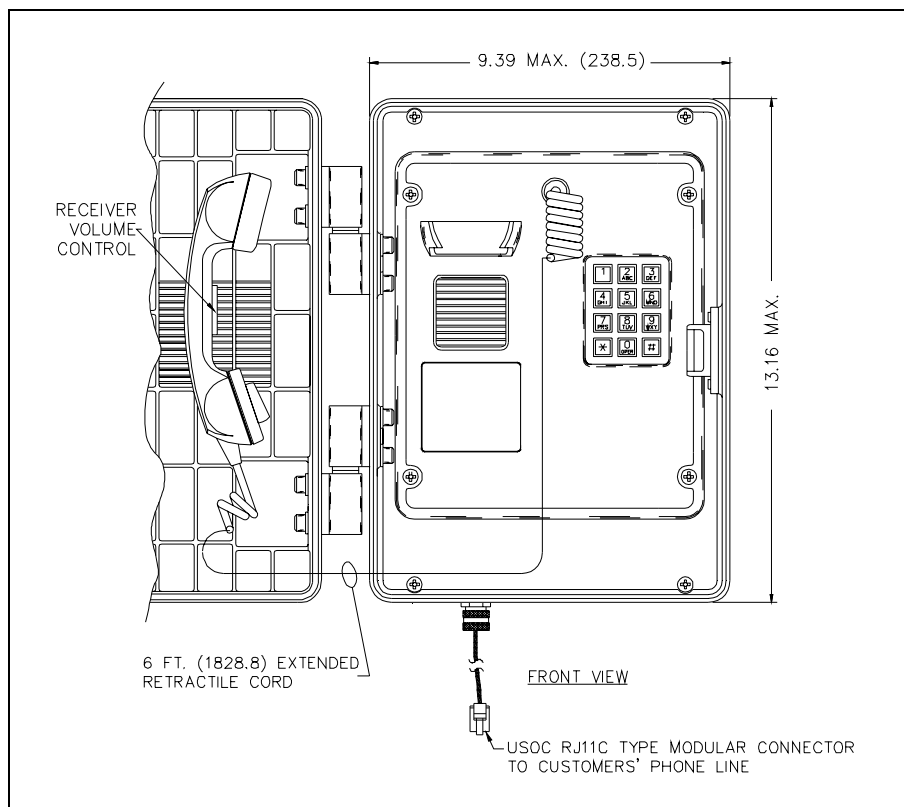


Figure 5. Model 256-001 Outline Drawing

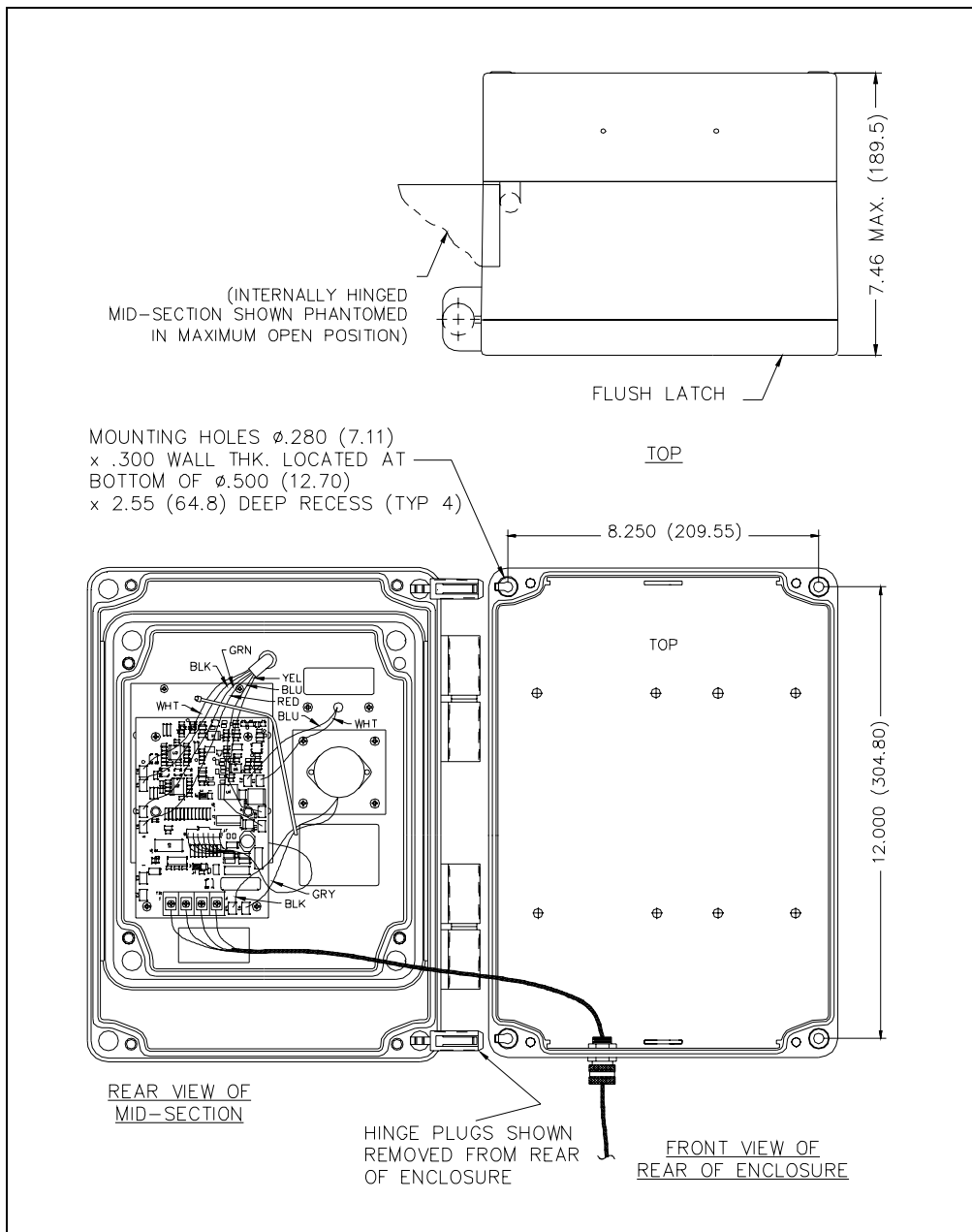


Figure 6. Model 256-001 Mounting Detail

Model 276-001 Mounting and Wiring Instructions

Flush-Mounting

Refer to Figure 8 for additional installation information.

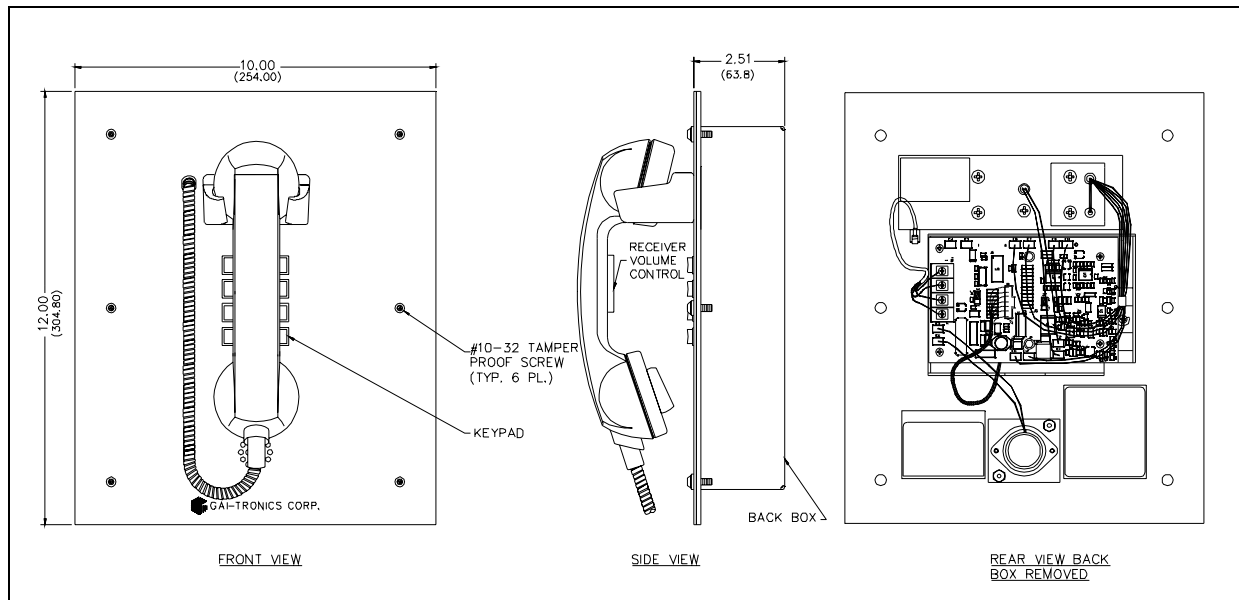


Figure 7. Model 276-001 Outline Drawing

1. When mounting in a Model 234 Series Stanchion or for flush-mount installations, the supplied back box must be used to mount the Model 276-001 Telephone. Mount the back box to the structure using appropriate hardware.
2. If mounted outdoors, install the telephone line suppressor (customer-supplied) on the telephone line.
3. Remove the tapered plug from the top or bottom cable entry hole in the back box, and install the telephone line (customer-supplied) and cable fitting.
4. *Recommendation*—use silicone sealant or equivalent around and inside all conduit entries.
5. Connect the USOC RJ11C modular connector of the 7-foot supplied telephone cord to the incoming subscriber line or the telephone line suppressor (if applicable) using the appropriate mating connector.
6. Attach telephone's front panel to the mounting flanges of the back box using the 6 supplied #10 tamper-resistant screws and the six black flat washers. A Model 233-001 Tamper-Resistant Screwdriver (sold separately) is recommended for installing the tamper-resistant screws.

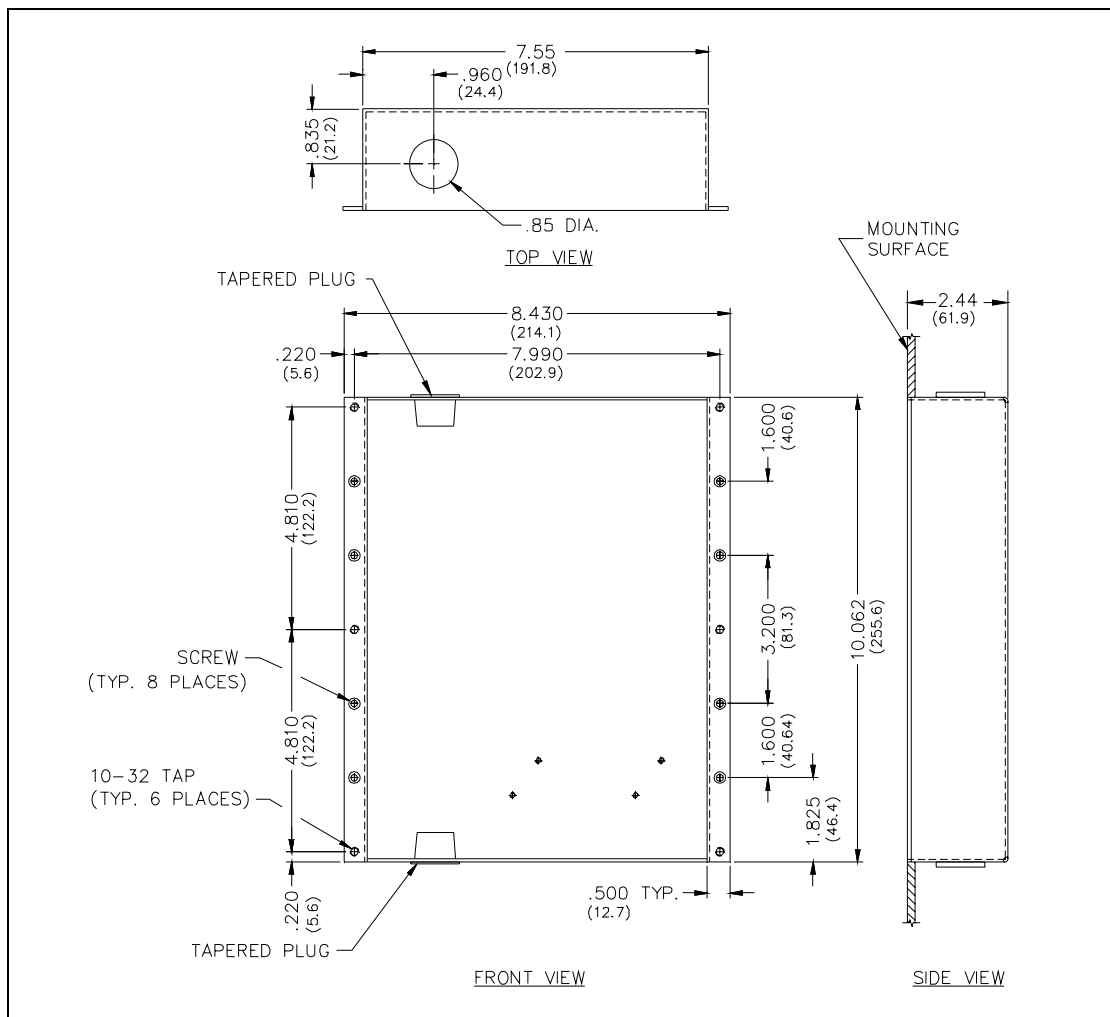




Figure 8. Model 276-001 Back Box Diagram

Surface-Mount using 236-00x Series Enclosure

1. The back box is not required for use with a Model 236 Series Surface-Mount Enclosure and should be removed.
2. Drill or punch conduit entries.

 **WARNING**  **To prevent accidentally damaging equipment, drill all holes before mounting the telephone.**
3. *Recommendation*—Use silicone sealant or equivalent around the telephone gasket and the mounting surface for an effective perimeter seal. This is particularly important if the mounting surface is uneven.
4. Install the telephone line suppressor (customer-supplied) on the telephone line, if applicable.
5. Connect the USOC RJ11C modular connector of the 7-foot supplied telephone cord to the incoming subscriber line or the telephone line suppressor (if applicable) using the appropriate mating connector.
6. Attach the telephone's front panel to the mounting flanges of the Model 236 Surface-Mount Enclosure using the six supplied #10 tamper-resistant screws and the six black flat washers. A Model 233-001 Tamper-Resistant Screwdriver (sold separately) is required for installing the tamper-resistant screws.

Maintenance

Service

If your telephone requires service, contact your GAI-Tronics Regional Service Center for a return authorization number (RA#). Equipment should be shipped prepaid to GAI-Tronics with a return authorization number and a purchase order number. If the equipment is under warranty, repairs will be made without charge. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts.

Call 800-492-1212 inside the USA or 610-777-1374 outside the USA for help identifying the Regional Service Center closest to you.

Preventive Maintenance for Model 276-001

Stainless steel does not 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 your Model 276-001.

Cleaning

- For general cleaning, wipe the surface with a cleanser or a 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 magnesium oxide, ammonia, and water paste. Wipe clean with 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 reformation of the chromium oxide layer.

Do NOT use steel wool, sandpaper, mineral acids, bleaches, or chlorine cleansers on the stainless surface.

Operation

1. Lift the handset to place a call.
2. The handset receiver volume control, which is located on the handset, can be adjusted to the desired level by pressing the handset pressbar.

NOTE: Pressing the handset pressbar increases the volume in 3-dB increments. The volume starts at 0 dB and increases to a maximum volume of 18 dB. Pressing the pressbar a seventh time will return the volume to 0 dB.

3. Dial the desired number.
4. After completion of the call, place the handset on-hook.

Volume Control Jumper Setting

The handset receiver volume control is factory set to default to its original setting (0 dB) when the telephone is hung up. To save the volume control setting, jumper **J4**, which is factory set at positions **2** and **3**, must be moved to positions **1** and **2**. Refer to Figure 9 for the location of **J4**.

Auxiliary Output

Each telephone includes one isolated solid state switch capable of switching a maximum of 48 V dc, 125 mA or 28 V_{RMS} ac, 80 mA_{RMS}. TB2 (AUX OUT) on the industrial telephone PCBA provides the connections for the auxiliary output. Refer to Figure 9 for location of TB2.

The auxiliary output allows peripheral equipment, such as beacons, video cameras, and alarm generators, to be activated when the handset is off hook. The relay remains energized for the duration of the call.

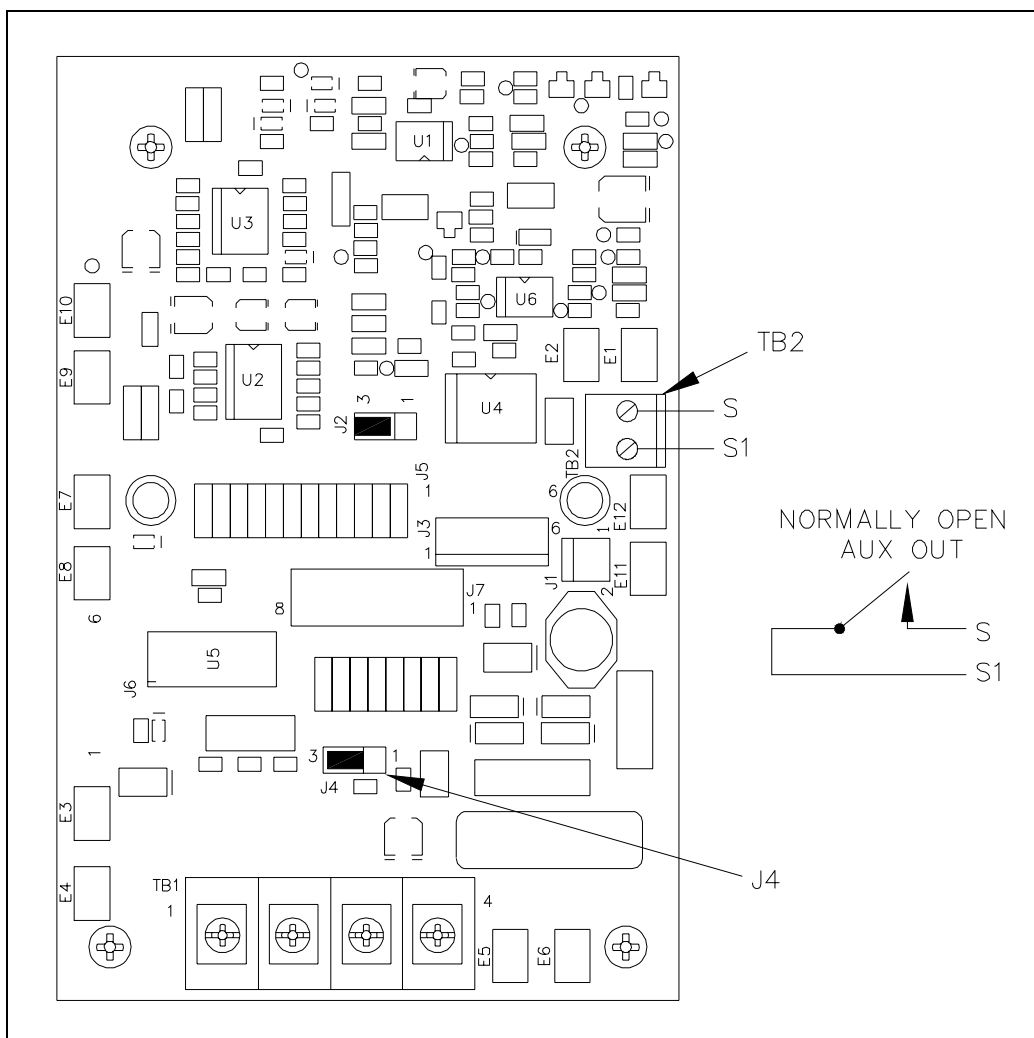


Figure 9.

Specifications

Electrical (Typical)

Frequency response	300 to 3,000 Hz
Inter-digit pause	100 ms
Minimum loop current.....	20 mA
Signaling tone (DTMF)	100 ms Tone Duration
Supervisory dc current.....	Minimum 20 mA dc; maximum 60 mA dc
Supervisory dc voltage	24 V dc to 60 V dc (not polarity sensitive)
Network interface.....	Loop Start
Auxiliary output (isolated solid state switch).....	48 V dc @ 125 mA 28 V _{RMS} ac @ 80 mA _{RMS}
Network signaling	DTMF

Environmental

Operating temperature	-40 °F to +140 °F (-40 °C to +60 °C)
Humidity	90% non-condensing

Model 226-001 - Mechanical

Construction

Enclosure	Thick-walled cast aluminum with protective gray coating
Panel.....	0.125-inch brushed aluminum
Finish.....	Gray polyurethane enamel
Handset/Cord	“G” style with armored cord and volume switch
Dial pad	Chrome-plated zinc
Front panel.....	0.125-inch brushed anodized aluminum
Hookswitch.....	Chrome-plated zinc, Stationary switching mechanism

Models 246-001 and 256-001 - Mechanical

Enclosure	High-impact, glass-reinforced polyester
Handset Cord	“G” style handset/Hytrel® 6-foot extended length (standard) and volume switch
Connections	6.5-foot (1.98 m) modular line cord
Dimensions, Outside.....	Model 246-001 8 W × 9.5 H × 6.9 D inches (204 × 242 × 174 mm) Model 256-001 9.4 W × 13.2 H × 7.4 D inches (239 × 344 × 188 mm)
Mounting	Four (4) 0.280-inch diameter holes
Weight	Model 246-001 6.0 lbs. (2.7 kg) Model 256-001 8.2 lbs. (3.72 kg)

Model 276-001 - Mechanical

Enclosure construction: Front panel..... 14-gauge (0.075 inch) type 304 brushed stainless steel
 Enclosure construction: back box..... 16-gauge (0.060 inch) cold-rolled steel with black polyester finish
 Dimensions: Front panel..... 12.00 H × 10.00 W inches (305 × 254 mm)
 Dimensions: Back box..... 10.06 H × 8.43 W × 2.44 D inches (256 × 214 × 62 mm)
 Dimensions: Back box (depth from mounting surface)..... 2.38 inches (60 mm)
 Dimensions: Back box (cutout required for mounting) 10.13 H × 7.63 W inches (257 × 194 mm)
 Weight 6.5 lbs. (3.0 kg)
 Handset/cord “G” style with armored cord and volume switch
 Dial pad Chrome plated zinc
 Hookswitch Chrome plated zinc; stationary switching mechanism

Approvals

Safety of Information Technology Equipment..... UL 60950 and CAN/CSA-C22.2 NO. 60950-00
 Enclosures for Electrical Equipment UL 50 TYPE 3R/NEMA 3R

FCC Information

FCC Registration Number US: ADGTE10A-46048HAC
 Ringer Equivalence Number (REN)..... 1.0A/1.3B
 Network Connection (USOC)..... RJ11
 Meets hearing aid compatibility magnetic field intensity and volume control technical standards per FCC Sections 68.316 and 68.317.

IC Information (Canada)

IC Certification Number 82211754
 Ringer Equivalence Number (REN)..... 1.0A/1.3B
 Connecting Method CA11A

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.

This equipment complies with Part 68 of the FCC rules. Located on the equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company. The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's contact the telephone company to determine the maximum REN for the calling area. This equipment cannot be used on the telephone company-provided coin service. Connection to Party Line Service is subject to State Tariffs. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact:

GAI-Tronics Corporation
P.O. Box 1060
Reading, PA 19607-1060 USA
800-492-1212 or 610-777-1374

If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved. This equipment uses the following USOC jacks: RJ11C It is recommended that the customer install an ac surge arrester in the ac outlet to which this device is connected. This is to avoid damaging the equipment caused by local lightning strikes and other electrical surges. This equipment is Hearing-Aid Compatible (HAC). The telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

User Instructions (Canada) CP-01, Issue 8, Part I: Section 14.1

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document (s). The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

CP-01, Issue 8, Part I: Section 14.2

NOTICE: The **Ringer Equivalence Number (REN)** assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Model 226-001 Replacement Parts & Accessories

Part No.	Description
12512-002	Hookswitch/Cradle Kit
10117-001	Handset assembly, 15-inch Armored Cord
51035-005	Replacement Keypad
61504-048	Keypad Cable Assembly
13707-004	Replacement Ringer
28299-007	Tamperproof Screws
69147-104	PCBA Replacement
Accessories	
233-001	Tamper-Resistant Screwdriver
232-001	Pole Mounting Kit

Model 246-001 and 256-001 Replacement Parts

Part No.	Description	246-001	256-001	256-001SK
12512-001	Proximity-Detecting Hookswitch Assembly	■	■	■
12513-002	Mid/Rear Section		■	■
12513-003	Interior Hinge Plugs		■	■
12513-006	Door Replacement Kit		■	■
12573-001	Spring Kit		■	■
10111-101	Hytel Cord, 6-foot with volume control and noise-canceling microphone	■	■	■
69147-104	PCBA Replacement Kit	■	■	■
13707-004	Ringer	■	■	■
Accessories				
230-001	Pole Mounting Kit	■	■	■
231-001	Pole Mounting Kit	■		
51035-005	PCBA Keypad	■	■	■
61504-048	Cable Assembly	■	■	■

Model 276-001 Replacement Parts

Part No.	Description
10117-003	Replacement Handset Assembly (AC) including 29-inch cord with volume control and noise canceling microphone
13707-004	Ringer
14560-013	Back Box
28299-007	Tamperproof Screws
51035-005	PCBA, Keypad
61504-048	Cable Assembly
69147-104	PCBA Replacement Kit
12512-002	Handset Cradle
Accessories	
233-001	Tamper-Resistant Screwdriver
12512-002	Hookswitch/Cradle Kit

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.