GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Model WCB104 Wireless Call Box
Installation Guide

Confidentiality Notice

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General Information

The Model WCB104 Wireless Call Box with Handset is a highway emergency telephone pre-programmed with telephone numbers for police, ambulance, and other roadside assistance.

The call box is designed to be mounted to an existing nominal 4-inch O.D. steel pole using the Model 238 Pole-Mounting Bracket Kit and the Model RFP7783-003 Pole Cap Assembly Kit, which provides weather-resistant cable entry and includes a solar panel.

Model RFP7783-001 External Ringer Kit with Stainless Steel Ringer Bracket and Model RFP7783-002 Antenna Kit are also required. As an option, signs can be mounted onto the pole using an additional Model 238 Pole-Mounting Bracket Kit.
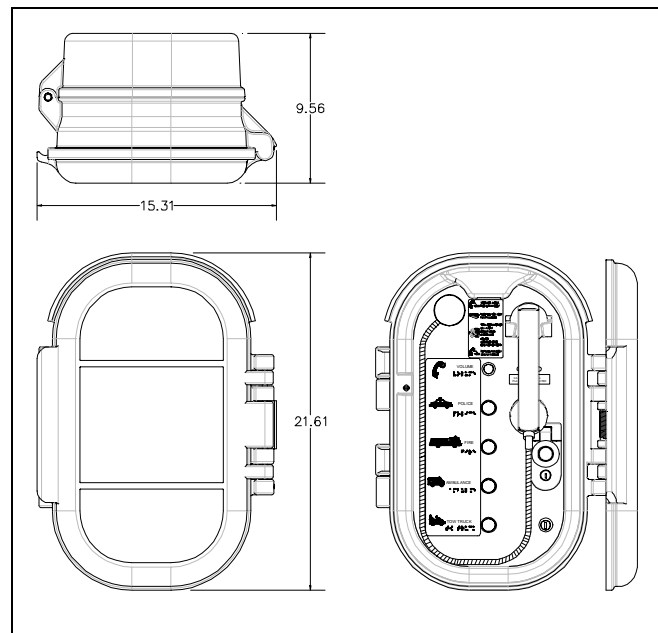
The call box consists of a 3-section hinged aluminum enclosure. It is designed to be vandal-resistant and meet the requirements of the Americans with Disabilities Act (ADA-compliant). Refer to Figure 1. The call box auto-dial phone is battery powered with solar panel recharging. The antenna provides wireless communication access. A pole-mounted external ringer is also available.

Figure 1. WCB104 Call Box Outline with Front Panel View

The Model 238 Pole-Mounting Bracket Kit is required in order to install the call box on a nominal 4-inch O.D. metal pole. Refer to GTC Publication 42003-187 for mounting instructions.

The Model RFP7783-003 Pole Cap Assembly Kit is required for installation of the solar panel, cellular antenna, and external ringer. The solar panel is included with the kit. The antenna and ringer must be purchased separately. Refer to GTC Publication 42003-188 for complete assembly instructions.

Installation

The 4-inch O.D. pole must be installed in accordance with the applicable state highway regulations for emergency access equipment. Figure 2 on page 3 shows a pole with the finished installation including the call box with mounting bracket, the signs with mounting bracket, the pole cap, antenna, and solar panel.

Pole Mounting

Assemble the following required materials and tools:

- Model 238 Pole-Mounting Bracket Kit
  (Quantity of 2)
- Model RFP7791-001 External Ringer Kit with Stainless Steel Ringer Bracket
- Model RFP7783-002 Antenna Kit
- Model RFP7783-003 Pole Cap Assembly Kit
- Identification signs and mounting hardware, as appropriate for location
- Drill, with 1-inch bit
- Torque wrench
- ¾-inch socket with ratchet
- Crimp tool for TNC coaxial connector
- Wire cutters
- Coaxial cable stripper

Install the Pole-Mounting Bracket for the Call Box

Mount the required Model 238 Pole-Mounting Bracket for the call box in accordance with the instructions given in GTC Publication 42003-187, which is included with the kit.

Install the Pole-Mounting Mounting Bracket for the Signs

Mount the second Model 238 Pole-Mounting Bracket for the identification signs in accordance with GTC Publication 42003-187, which is included with the kit.

Attach the Completed Pole Cap Assembly

The Model RFP7783-003 Pole Cap Assembly Kit contains the materials required to install the solar panel, cellular antenna, and the external ringer onto the pole. The solar panel is included with the pole cap assembly kit. The antenna and ringer are purchased separately. Assemble the kit and install on the pole in accordance with GTC Publication 42003-188, which is included with the kit.
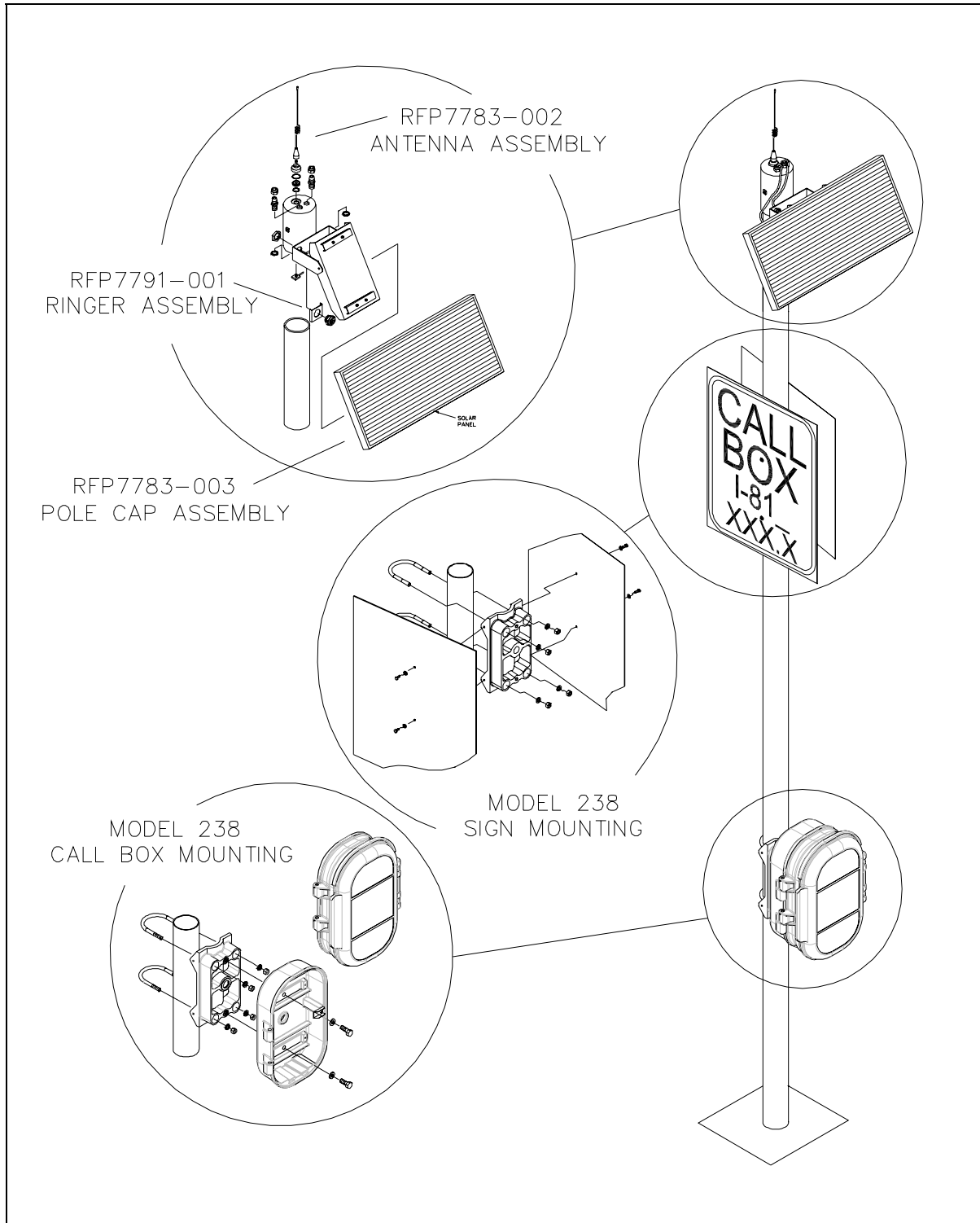
RFP7783-002
ANTENNA ASSEMBLY

RFP7791-001
RINGER ASSEMBLY

SOLAR
PANEL

RFP7783-003
POLE CAP ASSEMBLY

CALL
BOX
I-81
XXX.X

MODEL 238
SIGN MOUNTING

MODEL 238
CALL BOX MOUNTING

Figure 2. Completed Installation with Call Box, Signs, Solar Panel, Antenna, and Pole Cap

Mounting the Call Box

1. Prior to installation of call box, complete the mounting bracket installation as outlined in GTC Pub. 42003-187 and the pole cap assembly installation as outlined in GTC Pub. 42003-188.

2. Disassemble the call-box assembly by opening the rear section and lifting. To open the rear section, turn the key and push the button to actuate the lever latch assembly. If necessary, disconnect the GN/YW ground wire on the left side of the battery bracket. Place the front and middle sections in a secure area to prevent damage until installation of rear section is complete.

3. Pull the cables and wires through the 1-inch hole drilled previously in the pole and through the mounting bracket.

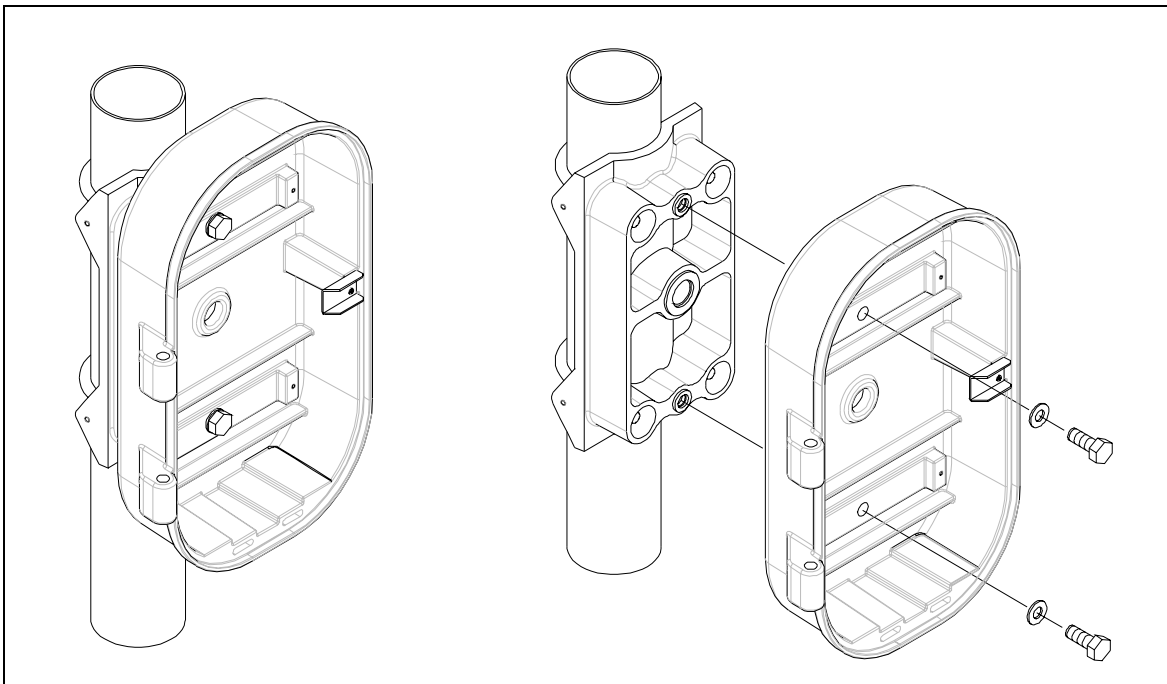4. Pull the cables and wire through the rear section of the call box.

Figure 3. Mounting Call Box to Pole Mounting Bracket

5. Mount the call box rear section using the two bolts provided to mate the call box to the mounting bracket holes. Refer to Figure 3 above. Tighten the bolts to a torque of 20 foot-pounds.

6. Install battery as shown in Figure 4. Install the earth ground wire and the rear-to-middle ground wire on the left side of the battery bracket.

7. Install the front and center sections of the call box by lining up the hinge pins while in the open position and lowering into place.

EARTH GROUND WIRE
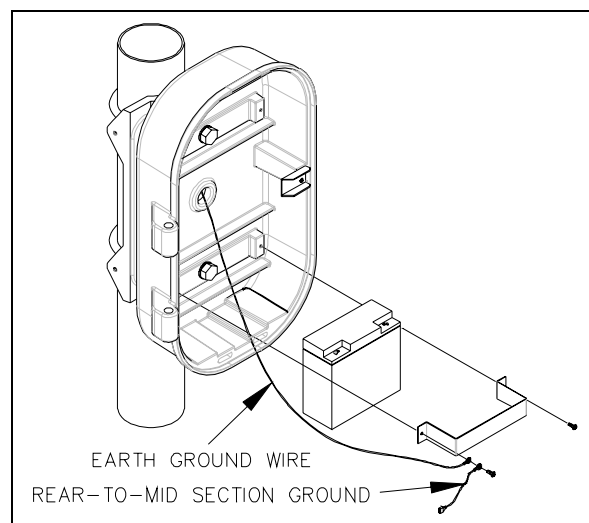REAR—TO—MID SECTION GROUND

Figure 4. Battery Installation
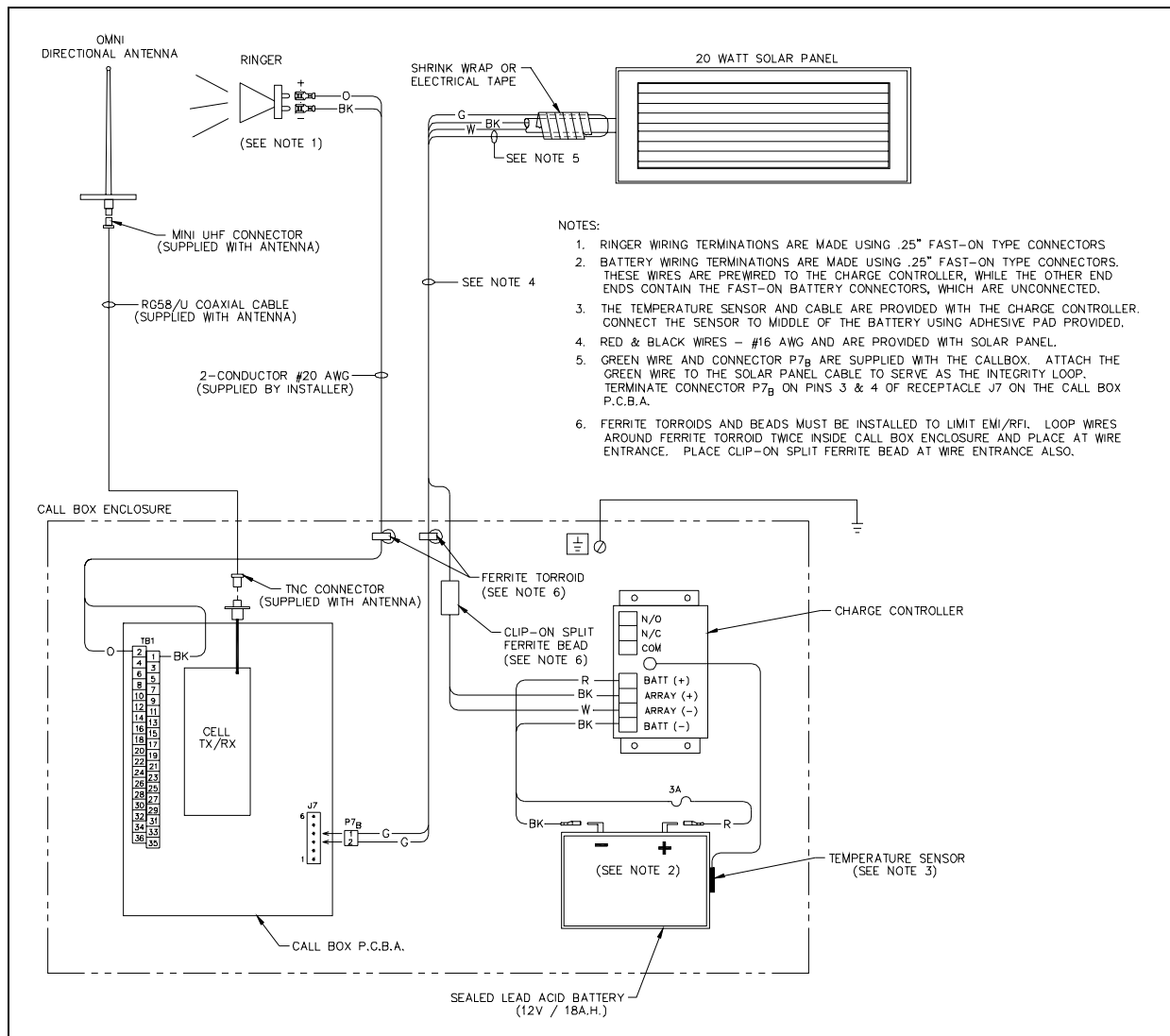
Wiring

Refer to Figure 5 below:

Figure 5. View of Call-Box PCBA and Connector Locations

1. Terminate the supplied TNC coaxial connector on the RG-58 coaxial cable as outlined in the antenna installation guide provided with antenna. Plug into the TNC socket connector.

2. Terminate the ringer wiring onto the ringer using 0.25-inch fast-on connectors.
    Observe polarity:
    *   (+) Orange
    *   (−) Black
    Apply protective coating (RTV, or equivalent) to terminals to protect against the environment.

3. Insert a 18011-001 Ferrite Bead over the OR and BK ringer wires. Slide the bead to the point at which the wires enter the enclosure. Loop the OR and BK wires through the bead 2 times. Terminate ringer wiring to TB1-1 (-) and TB1-2 (+) on the call box PCBA.

4. Insert a 18011-001 Ferrite Bead over the G and G solar panel integrity loop wires. Slide the bead to the point at which the wires enter the enclosure. Loop the G and G wires through the bead 2 times. Terminate the green integrity loop wire to connector J7-3, 4 of the controller board inside the call box.

5. Connect the GN/YW ground wire from the middle section to the GN/YW ground wire on the rear section.

6. Place the temperature sensor against the left side of the battery. Remove the paper backing from the foam pad. Place the foam pad over the temperature sensor to hold it in place.

7. Verify the correct hardware settings are enabled on the call box PCBA. Refer to the Hardware Settings Table below.

Hardware Settings Table

Jumper	Function	Default	User
J6	Handset or H/F Mic	Handset	
J9	Lamp or LED Lamp	LED Lamp	
J12	Configuration Enable/Disable	Disable	

8. Prior to connecting the battery, place the keyswitch in the ACCESS position (CCW) to prevent unauthorized access call-ins. Install the battery cables as follows:
    - RD - battery (+)
    - BK - battery (-)

    The call box has now been activated. Do not connect if the unit will not be activated.

9. Terminate the solar panel wires to the charge controller terminals inside the call box:
    - BK - array (+)
    - WH - array (-)

    Clamp the split ferrite bead over the solar panel wires and place the bead at the wire entrance to the enclosure.

10. Inspect the activated LED on the charge controller. The activated LED should be OFF.
    Warning: *If an undercharged battery is installed, the Low Voltage Detection "Activated" LED will remain ON.* The quiescent current draw from the battery will increase by 40 mA. Refer to the Automatic Sequencing Charger ASC Manual for details on disabling this output.

11. The call box does not contain default phone numbers or call-in numbers. If the unit is already been configured, continue with final assembly. If the unit has not been configured or needs configuration changes, refer to the GTC Wireless Call Box Configuration Application Publication 42004-663L2.

Final Assembly

1. Close the middle section while the front door remains open. Close the lever latch while pushing on the operator's front panel and lock using the key. Return the keyswitch to the NORMAL position (center position).

2. Allow the spring-loaded front door to close.

Operational Check

Outbound Calls

1. Open the front door and verify the illumination LEDs are ON.

2. Remove the handset from the cradle and verify dial tone is present in the receiver.

3. Depress the POLICE autodial button.
   - Ringing will broadcast in the receiver.
   - The CALL PLACED LED flashes until communication with the network is established. At that point, the CALL PLACED LED will be lit steadily.

4. Once the Call Center has answered, the ANI and Button ID Number will be transmitted (this will be audible in the handset receiver).

5. When the CALL CONNECTED LED illuminates, communication with an operator will be enabled.

6. Return the handset to the cradle to terminate the call.

7. Perform steps 2 through 6 for autodial buttons FIRE, AMBULANCE, and TOW TRUCK.

Inbound Calls

1. Place a call to the Call Center and request a call back from the operator.

2. The ringer will sound.

3. Remove the handset from the cradle.

4. Communication with an operator will be enabled.

5. Depress the volume control. The receiver volume increases with each depression. On the 5th depression, the receiver volume returns to the default setting.

6. Return the handset to the cradle to terminate the call.

Maintenance

Troubleshooting the Installation

Problem	Reason	Solution
Solar panel troubles		Refer to Automatic Sequencing Charger ASC Manual for details.
Charger troubles and status information		Refer to Automatic Sequencing Charger ASC Manual for details.
Battery troubles		Refer to Automatic Sequencing Charger ASC Manual for details.
Battery is fully charged, but phone does not operate.	1. Battery-to-charger fuse is blown.	Replace the fuse.
	2. Call box PCBA fuse is blown.	Replace the fuse.
LED Illumination Lamp does not light.	1. Power failure.	Check power to the unit.
	2. Supervision Select jumper J9 installed incorrectly.	Move J9 from LAMP to LED LAMP
	3. Outer Door Sensor failure	Check operation of the Outer Door Sensor. The sensor should measure: • Door closed = 1.0 ohm or less • Door open = infinite Replace the sensor if failed.
	4. LED lamp failure	The LED lamp should measure: Door open – TB1-9 and TB1–10 = 6.7 V dc Replace LED lamp assembly if failed.
	5. Other	Depress Reset button S2.
No dialtone.	1. Power failure	Check power to the unit.
	2. Configuration jumper error	Place Config jumper J12 in Disable position.
	3. Hookswitch failure	Check operation of the Hookswitch Sensor. The hookswitch should measure: • On-Hook = 1.0 ohm or less • Off-Hook = infinite Replace hookswitch if failed.
	4. Handset failure	Replace handset with a known good unit.
	5. Other	Depress Reset button S2.
Dialtone, but no ringing.	Push button failure	Check operation of the push button. The push button should measure: • Active = 1.0 ohm or less • Inactive = infinite Replace push button if failed.

Problem	Reason	Solution
No microphone audio.	1. Other	Depress Reset button S2.
	2. Handset failure	Replace the handset with a known good unit.
Ringing, but CALL PLACED LED does not flash.	CALL PLACED LED failure	During ringing, the CALL PLACED LED should measure: TB1-3 and TB1-4 = 1.7 V dc Replace LED lamp assembly if failed.
CALL PLACED LED flashes, but does not turn on steadily.	Unable to establish communication with the cellular network.	1. Place handset back on hook and try to establish call again. 2. Depress Reset button S2. 3. Check antenna connections. 4. Replace cellular module with a known good unit.
CALL CONNECTED LED doesn't light when operator answers.	CALL ANSWERED LED failure	Once the operator speaks, the CALL ANSWERED LED should measure: TB1-5 and TB1-6 = 1.7 V dc Replace LED lamp assembly if failed.
Receiver volume does not increase.	Push button failure	Check operation of the push button. The push button should measure: Incoming Call = 11.0 V dc or greater during (2s - ON, 4s – OFF) Replace push button if failed.
Ringer does not sound.	Ringer failure	Check operation of the ringer. The ringer should measure: • Active = 1.0 ohm or less • Inactive = infinite Replace ringer if failed.
Solar Panel Integrity Loop Failure reported, but integrity loop is intact.	Integrity Loop failure	Check operation continuity of the loop. The loop should measure 1.0 ohm or less. Re-terminate connector if necessary.
Unit does not call-in when tilted.	Tilt Sensor failure	Check operation of the tilt sensor. The sensor should measure: • Inactive = 1.0 ohm or less • Active = infinite Replace sensor if failed.
Handset Integrity Loop failure reported, but integrity loop is intact.	Integrity Loop failure	Check operation continuity of the loop. The loop should measure 1.0 ohm or less. Re-terminate connector if necessary.
Unit does not call-in.	1. Power failure	Check power to the unit.
	2. Call-in failure	Depress Call-in switch.
	3. Other	Depress Reset button S2.

Specifications

Enclosure material and coating .... Cast aluminum with yellow polyurethane finish

U-bolt material ....304 stainless steel

Dimensions

Call Box, overall ....21.61 × 15.31 × 9.56 inches

Weight (without battery)...46 lbs.

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.