

Wall-Mount Audio Messenger Interface

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Wall-Mount Audio Messenger Interface

Confidentiality Notice

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SmartSeries® Page/Party® ADVANCE SmartVolumeTM

General Information

The Model 10959-903 and 10959-904 Wall-Mount AMIs (Audio Messenger Interfaces) generate up to 125 pre-recorded tone/speech messages and broadcast live voice announcements. They communicate with GAI-Tronics' Model ACC2500 Audio Control Center Desk Set (via RS-232) for mass notification and general, public address applications. Access both models via telephone connection (extension or central office) for dial-up, live voice broadcasts.

Use the AMI's 600-ohm, 0-dBm output as a broadcast input to GAI-Tronics' addressable amplified speakers, stanchion broadcast products, central amplifier, radio base station, or to any device that accepts a telephone line level input.

The Model 10959-904 includes a 33-ohm audio output to interface to GAI-Tronics' Page/Party systems.

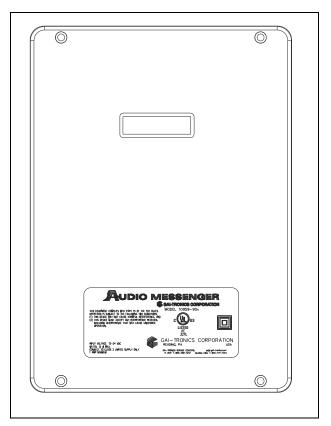


Figure 1. Model 10959-90x Wall-Mount AMI

The AMI includes the following components:

- AMI (audio messenger interface)
- CompactFlash® memory card
- ACT (AMI configuration tool) CD
- padded envelope including:
 - No. 12612-002 AMI-to-ACC2500 Interface Module
 - modular cord, four-conductor., 7-foot
 - P-Cord, Cat-5E, booted, 7-foot

Features

- record up to 125 tone and/or speech messages
- 600-ohm, 0 dBm, 1 V _{RMS} audio output
- scheduled events
- live or recorded speech messages
- dial-up telephone access
- direct communication with an ACC2500 Audio Control Desk Set via RS-232
- 33-ohm, 1.5 V_{RMS} audio output for page and party lines (Model 10959-904 only)

Functions

Use the ACT (AMI Configuration Tool) software, included with the AMI, to define and change the AMI's configuration. The AMI accesses a CompactFlash® memory card, pre-programmed with the Model 10959-903 or 10959-904 product configuration, to retrieve configurations and play audio messages.

Alarms

The ACT software includes pre-recorded tones suitable for most applications. The tones include typical emergency tones (i.e., a siren, slow whoop, etc.) and signaling or process tones (i.e., a gong, steady tone, etc.). The AMI stores all tones and speech messages in MP3 file format.

Use any tone stored in the MP3 file format for applications requiring custom tones. Record custom speech messages using commercially available audio editing software. Create speech-over-tone messages by recording live voice audio on one channel with a tone on the other channel.

Timed Events

The AMI can perform several functions based on the time of day. Schedule events to occur at any interval (hourly, daily, weekly, and monthly, etc.). Configure scheduled events using the ACT software.

Live Voice Messages

The AMI can broadcast live voice speech messages via a connected Model ACC2500 Audio Control Center Desk Set. Configure the desk set to any level of priority. Assign the highest priority (0), to configure the desk set for emergency voice broadcasts of live speech messages.

Telephone Operation

Connect the AMI's telephone interface to an analog station port of a PBX type telephone system or directly to a CO (Central Office) telephone line on a PSTN (public switch telephone network) to enable live speech broadcasting from a telephone.

Configure the AMI to require entry of a *remote access security code* (default programming does not include a password) to prevent unwanted callers from directly accessing the system via telephone.

Acoustic feedback, or *howling*, can be a problem when broadcasting from a telephone. This occurs when the telephone's microphone is too close to a speaker broadcasting the audio created by the microphone. The AMI includes an integral feedback eliminator circuit to prevent feedback. The AMI records and stores incoming telephone calls until the telephone connection terminates (caller hangs up) when configured to use the feedback eliminator. The AMI plays the saved broadcast after termination of the call. The delay between speech and playback eliminates the possibility of feedback.

NOTE: The party line for telephone operation is hardwired in the system and cannot be changed by the caller or with the AMI configuration tool.

Configure the operational mode of the telephone interface with the ACT application. The telephone interface has the following operational modes:

Model 10959-903

- **Record Page**—Records a message and delivers it to the audio line output.
- Live Page Mode—Delivers a live voice message (not pre-recorded) to the audio line output.
- Manual/Disabled—Do not use.

Model 10959-904

- **Page/Party**—Delivers live voice pages (not pre-recorded) to the page line output and holds the party line open following the page.
- **Record Page**—Records each page before delivery to the page line output.
- **Mixed Mode**—Records a page, delivers it to the page line output, and holds the party line open following the page.
- **Live Page Mode**—Delivers a live voice page (not pre-recorded) to the page line output. The party line is not open following the page.
- Ring Mode—Plays a preconfigured message on the page line to signal an incoming call.
- **Manual/Disabled**—The telephone interface does not automatically answer a phone call. However, an input configured for *manual access* allows an attendant to manually answer the phone and transfer calls to a party line.

The telephone interface supports two temporal modes of operation: *day mode* and *night mode*. Configure the day and night modes independently of each other. As an example of different day and night modes; the day mode may be configured to allow callers to page and wait for a subsequent party line communication, while the night mode is configured to play a tone over the paging system alerting personnel of an incoming call. Answer the call at any Page/Party station in this mode.

Radio Operation

The AMI can access a mobile or base radio for wireless broadcasting. Connect the AMI's audio output and control output terminals to the transmit audio and PTT inputs of the radio's accessory connector to enable broadcast of live speech and alarm tones/messages over RF (radio frequency) airwaves from the Model ACC2500 desk set.

NOTE: Radio audio levels vary between manufacturers. The AMI's audio level output is 1 V _{RMS}. Please contact our Service Department at 1-800-492-1212, prompt #2, to obtain an attenuation circuit if this level overdrives the radio input.

Page/Party Operation (Model 10959-904 only)

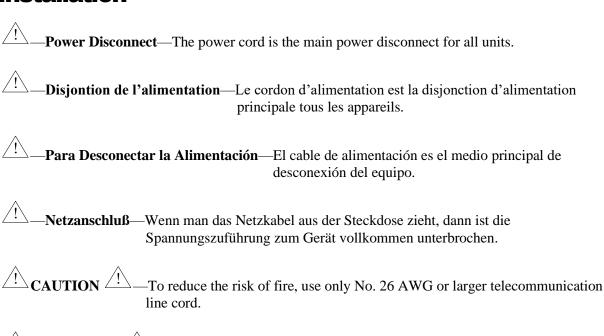
The Model 10959-904 AMI has a PPI (Page/Party interface) PCBA that allows it to:

- plays messages/alarms
- connect telephone calls to a Page/Party system
- generate a VLC (volume level control) tone during message/alarm broadcasts—signals VLC-equipped Page/Party stations to change the volume of the message/alarm played.
- party hot dial—allows a Page/Party system user to initiate a call.

Configure party hot dial with the ACT software. The AMI recognizes when a station goes off-hook on the designated party line. The AMI connects that party line to the telephone interface and automatically dials a preprogrammed telephone number. The call terminates, after a *hang-up delay*, after the station is back on-hook.

The operation of the telephone interface includes all page modes (see the <u>Telephone Operation</u> section) when interfacing a Model 10959-904 AMI to a Page/Party system. The selected party line is hardwired in the system and cannot be changed by the caller or the AMI configuration tool.

Installation



télécommunications 26 AWG ou de section supérieure.

Pour réduire le risque d'incendie, utiliser uniquement des conducteurs de



—Para aminorar la posibilidad de incendios, utilice solamente cable de telecomunicaciones de calibre 26 (sistema AWG americano) o mayor.

VORSICHT — Um die Brandgefahr zu verringern, verwenden Sie bitte nur Fernmeldekabel der Stärke Nr. 26 AWG oder höher.

Open the AMI



Warning: Observe precautions for handling electrostatic sensitive devices.

- 1. Loosen the four screws on the front cover.
- 2. Open the enclosure's hinged front cover and turn it to the left.

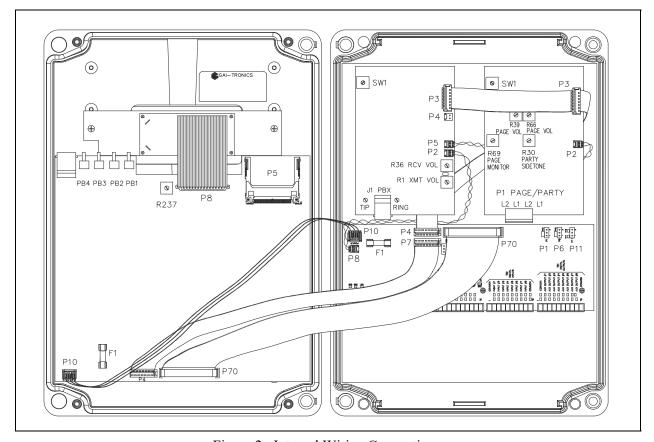


Figure 2. Internal Wiring Connections

Mounting and Cable Entries

- 1. Remove the cable connections between the front cover and the rear enclosure.
- 2. Pull the front cover of the enclosure up on the left side until the hinge pins pull loose to separate the front and rear sections. Set the front half of the enclosure aside.
- Determine the conduit or cable gland location on the rear enclosure.
 The enclosure has drill spots on the top and bottom for use with either a chassis punch or hole saw.
- 4. Cut or punch the appropriate size hole(s) in the enclosure.

- 5. Secure the rear enclosure to the wall with screws or appropriate fasteners.
 - The enclosure mounting holes are 0.280-inches in diameter.
- 6. Use Myers[™] ST-4 (1.25-inch) Scru-Tite[®] hubs or equivalent.
 - Use reducers for smaller conduit sizes to ensure proper contact with the supplied grounding plates.
 - Connect Hub(s) to the conduit before connecting them to the enclosure.

Wiring Termination

- 1. Route all necessary cabling through conduit(s) and into the enclosure.
 - Allow adequate cable lengths to reach the terminal blocks.
- 2. Terminate all field wiring following the instructions in the following subsections.

Audio Output

Terminal block **TB3**, labeled AUDIO, on the termination PCBA, provides 600-ohm balanced audio output to a public address system (central amplifier input, amplified addressable speaker input, etc.).

Connect the 600-ohm balanced audio output to terminals TB3-1 and TB3-2.

Use shielded pair conductors when connecting audio to any public address system component.

Label	Terminal	Function or ACT Description
600-онм L1	TB3-1	600-ohm audio pair to distribution amplifier cabinet,
600-онм L2	TB3-2	stanchion broadcast electronics module, addressable amplified speaker, or any other 600-ohm compatible device
AUDBUS2 L1	TB3-3	
AUDBUS2 L2	TB3-4	no connection
AUDBUS1 L1	TB3-5	
AUDBUS1 L2	TB3-6	no connection
PGND	TB3-7	no connection
RS485 INT GND	TB3-8	no connection
RS485 INT-	TB3-9	
RS485 INT+	TB3-10	

Table 1. Audio Output Connection

Control Output

Terminal block **TB4**, labeled **SYSTEM**, on the termination PCBA, provides termination for the addressable amplified speaker or stanchion broadcast module page control input.

Connect the addressable amplified speaker or stanchion broadcast module's input control to the contact closure output terminals TB4-7 and TB4-8.

Label	Terminal	Function or ACT Description
EXT DATA GND	TB4-1	no connection
EXT DATA -	TB4-2	no connection
EXT DATA +	TB4-3	
FLT	TB4-4	no connection
REBOOT	TB4-5	no connection
GND	TB4-6	no connection
AUD ACT 1	TB4-7	isolated solid-state relay, closed during AMI broadcas On resistance = 30 ohms
AUD ACT 2	TB4-8	

Table 2. Control Output Connection

Telephone Line

The Model 10959-903 and 10959-904 AMIs have a telephone interface PCBA. Make a connection from a standard PBX analog station port or CO telephone line to the AMI' telephone interface PCBA, **PBX** jack J1, with an RJ-11 plug-in connector or screw the wires to the appropriate terminals; tip (green), and ring (red). The AMI includes a telephone line cord with modular RJ-11 plugs.

NOTE: Telephone interface operation requires a minimum loop current of 25 mA.

ACC2500 Audio Control Center Desk Set

The Model ACC2500 Desk Set connection requires a No. 12612-002 Interface and two modular cables (included with the AMI). Connect an 8-conductor, Cat 5 Ethernet cable (customer provided) from the No. 12612-002 Interface to Ethernet connector J1 (on the main PCBA) in the AMI (see <u>Figure 3</u> and <u>Figure 4</u>).

NOTE: maximum Cat 5 cable length is 45-feet

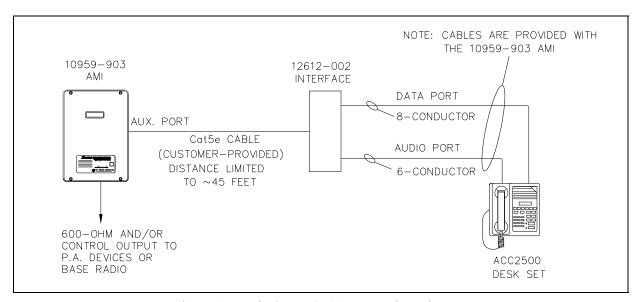


Figure 3. Typical ACC2500 Connection Diagram

Page/Party (*Model 10959-904 Only*)

Connector P1, located on the PPI (Page/Party interface) PCBA, provides connectivity to a Page/Party system.

Table 3. Page/Party Connections

Label	Terminal	Function or ACT Description
PARTY L1	P1-1	33-ohm line interface to GAI-TRONICS party line internal 33-ohm termination
PARTY L2	P1-2	
Page L1	P1-3	33-ohm line interface to GAI-TRONICS page line
PAGE L2	P1-4	external 33-ohm termination required

NOTE: Pin 1 on this connector is on the right side.

Power

Terminal block, **TB6**, labeled CLASS 2 12–24 VDC, is located on the termination PCBA. It provides the required 12-24 V dc power connection to the AMI.

Table 4. Input Power Connection

Label	Terminal	Function or ACT Description
+	TB6-1	positive terminal of external power supply (black wire with white stripe from power supply)
-	TB6-2	negative terminal of external power supply (solid black wire from power supply)
GND	TB6-3	frame ground

No Connections

The Model 10959-903 and 10959-904 AMIs do not use the following connections on the termination PCBA. Make no connections to these terminals.

- digital outputs (TB1)
- digital inputs (TB2)
- auxiliary audio (J1)

Close the AMI

1. Reconnect the front cover to the rear enclosure by pushing the hinge pins on the front cover into the rear enclosure.

The hinge pins click when fully seated in the front cover.

- 2. Re-install the cable connections between the front cover and the rear enclosure.
- 3. Rotate the front cover to close the enclosure.
- 4. tighten the four screws on the front cover.

Configuration

Open the AMI

- 1. Loosen the four screws on the front cover.
- 2. Open the hinged front cover of the enclosure and turn it to the left.

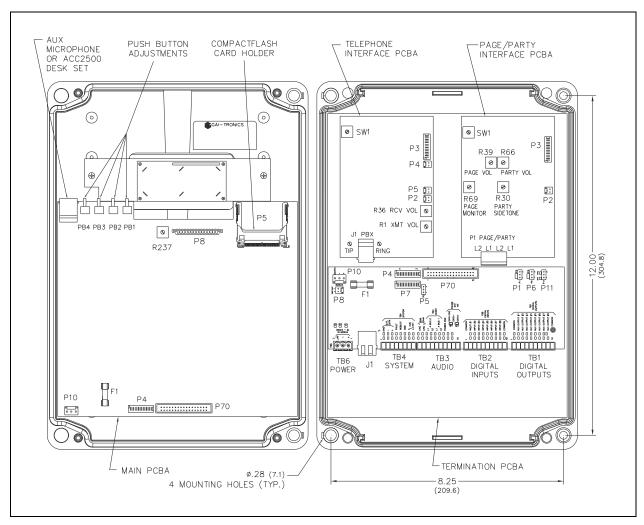


Figure 4. AMI (open with connections, adjustments, and PCBAs labeled)

600-Ohm Line Termination Jumper Setting

Configure jumper P5, on the termination PCBA, to terminate the 600-ohm audio output for impedance matching:

- position 1–2—terminates the line with 600 Ω .
- position 2–3—(*default*) no line termination installed.

Adjustments

Display Brightness

Adjust potentiometer R237, on the main PCBA, to change the brightness of the LCD on the front of the assembly.

Telephone Line Levels

Two potentiometers, on the optional telephone interface PCBA, adjust the telephone audio levels:

- Volume level from telephone line—Adjust the receiver volume potentiometer, R36.
- **Volume to telephone line**—Adjust the transmit volume potentiometer, R1.

Party Line Levels (Model 10959-904 Only)

Two potentiometers on the PPI PCBA adjust the party line audio levels:

- Volume level to party line—Adjust the party volume potentiometer, R66.
- Sidetone level from party line—Adjust the party sidetone potentiometer, R30.

Page Line Levels (Model 10959-904 Only)

Two potentiometers on the PPI PCBA adjust the page line audio levels:

- Volume level to the page line—Adjust the page volume potentiometer, R39.
- Page line audio monitor level—Adjust the page monitor potentiometer, R69.

Date and Time Set Up

Date Set Up

Use the push buttons located on the top edge of the main PCBA to set the date (see <u>Figure 4</u> for the locations of the push buttons). Complete the following procedure to set the date:

- 1. Press **<ENTER>**, PB4, to enter the menu system.
- 2. Press **SELECT**>, PB3, to scroll to the DATE: display.
- 3. Press **ENTER**>, PB4, to enter the DATE set up.
- 4. Press **ENTER**>, PB4, to confirm choice.
- 5. Press **<UP>**, PB1 or **<DOWN>**, PB2 to select the desired day.
- 6. Press **SELECT**>, PB3, to scroll to the month.
- 7. Press **UP**>, PB1 or **DOWN**>, PB2 to select the desired month.
- 8. Press **SELECT**>, PB3, to scroll to the year.
- 9. Press <**UP**>, PB1 or <**DOWN**>, PB2 to select the desired year.
- 10. Press **ENTER**>, PB4, to accept the DATE setting.

Time Set Up

Use the push buttons located on the top edge of the main PCBA to set the time. Complete the following procedure to set the time:

- 1. Press **<ENTER>**, PB4, to enter the menu system.
- 2. Press **SELECT**>, PB3, to scroll to the TIME: display.
- 3. Press **<ENTER>**, PB4, to enter the TIME: set up.
- 4. Press **ENTER**>, PB4, to confirm choice.
- 5. Press <UP>, PB1 or <DOWN>, PB2 to select the desired hour.
- 6. Press **SELECT**>, PB3, to scroll to the minute.
- 7. Press **<UP>**, **PB1** or **<DOWN>**, **PB2** to select the desired minute.
- 8. Press **<ENTER>**, PB4, to accept the TIME: setting.

ACT (AMI Configuration Tool)

Overview

Use the ACT software to define and change the AMI's configuration. All AMI models include the software. The AMI accesses a CompactFlash® card that is pre-programmed with the 10959-903 or 10959-904 product configuration to retrieve the configuration and play audio messages.

Please refer to the ACT software online help for specific instructions.

System Requirements

Install the ACT software on a Windows PC (Windows® XP/7/10) equipped with a USB port. Connect a CompactFlash® memory card reader/writer to the USB port. The AMI does not include the CompactFlash® reader/writer.

Parameter Configuration

Fragments

A CompactFlash® card stores all digitally recorded tones and voice messages as audio fragments in MP3 files.

Messages

Each message is a collection of fragments. The content of each message must be defined by selecting the fragment(s) to be incorporated into the message. Other message parameters include:

- message title
- priority
- volume
- play mode and repeat interval

Event Scheduling

Use the event-scheduling feature to set up messages to automatically play at certain dates and times. Set the following parameters when scheduling events:

- start and stop times
- start and stop dates
- event duration and intervals

Telephone Interface

Configure the following parameters if using the telephone interface:

- number of rings before answer
- message mode (live or recorded)
- message delay, if recorded
- maximum message duration
- selection of a greeting message to be played to the caller
- selection of a pre-announcement tone to be played to the PA system

Page/Party[®] Interface (Model 10959-904 Only)

Set the following parameters for the Model 10959-904 Page/Party interface:

- VLC activation
- party hot dial

Refer to Pub. 42004-417, Model ACC2500 Audio Control Center User and Installation Manual for additional information pertaining to system setup.

CompactFlash®

The CompactFlash® memory card stores the system configuration, speech messages, and alarm tones. Complete the following instructions to install the memory card:

- 1. Insert the memory card through the rectangular MEMORY CARD slot on the AMI main board with the label on the memory card facing up.
- 2. Slide the memory card in until it fully seats in the slot.

When seated properly, the card protrudes approximately ¼ inch from the front of the socket.

NOTE: The memory card and its socket are keyed for proper insertion—do not force the card into the socket.

3. Reboot the system so the AMI unit can read the memory card.

Operation

The AMI operates based on system inputs and outputs or by manual operation after the programming and installing the CompactFlash® in the unit.

LCD Display at Initial Power Up

The AMI completes a self-diagnostic of its settings at initial power up. The LCD display cycles through the following messages:

- AMI firmware version
- boot DSP
- media detected
- **EEPROM** firmware version
- DSP firmware version
- progress bar/LOAD CONFIG
- configuration version
- configuration date and time
- configuration file name
- HIO (I/O control module) board firmware version or HIO NOT INSTALLED.
- ASM (Zone Interface Module) board firmware version or ASM NOT INSTALLED.
- Page/Party® board firmware version
- AMI main board firmware version
- telephone interface mode (if telephone interface installed)
- telephone interface board firmware version or TELEPHONE INTERFACE NOT INSTALLED.
- telephone interface greeting file name (if recording a new greeting)
- AMI ready
- time, page symbol/date

LCD Display during Operation

The LCD uses various symbols to indicate AMI activity:

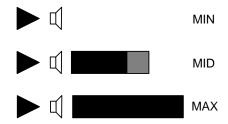
• The VU meter indicates the volume of a page playing.



• Mute indicates the page audio is muted.



• Progress bar indicates remaining time for the party line connection timeout.



• Telephone handset indicates the AMI unit is being accessed via a telephone connection.



• Microphone indicates a page from the auxiliary jack.



• Off hook indicates that a digital input designated as party line off hook is active.



• Right/left arrows indicate transmit and receive activity on the auxiliary jack or external RS-485.





- Text display (scrolling) displays current system status, such as the name of the current message playing, telephone connection status, and party connection status.
- Rotating slash, when visible, indicates the AMI has a lower priority message pending, ready to be played.



Push-Button Operation

Front panel push buttons provide menu access for various control features including, play a message, stop a message, and firmware update.

Stop Message

This menu item halts the currently playing message. The button sequence is:

- 1. Press **<ENTER>**, PB4, to enter the menu system.
- 2. Press **<ENTER>**, PB4, to select the STOP: item.
- 3. Press **ENTER**>, PB4, to confirm the selection.

Play Message

This menu item plays a specific message. Messages are grouped by priority (1 through 7). The button sequence allows the user to select a message to be played from a specific priority group:

- 1. Press **ENTER**>, PB4, to enter the menu system.
- 2. Press **SELECT**>, PB3, to scroll to the PLAY: item.
- 3. Press **ENTER**>, PB4, to enter the PLAY: item.
- 4. Press **SELECT**>, PB3, to scroll to the message.
- 5. Press **<ENTER>**, PB4, to play the selected message.

Firmware Update

This menu item facilitates updating the firmware of the AMI main board. The button sequence used is:

- 1. Press **<ENTER>**, PB4, to enter the menu system.
- 2. Press **SELECT**>, PB3, to scroll the menu to the FIRMWARE UPDATE: item.
- 3. Press **ENTER**>, PB4, to select the FIRMWARE UPDATE: item.
- 4. Press **ENTER**>, PB4, to confirm the selection.

Reset AMI

Complete the following menu sequence to restart the AMI:

- 1. Press **ENTER**>, PB4, to enter the menu system.
- 2. Press **SELECT**>, PB3, to scroll the menu to the SYSTEM REBOOT: item.
- 3. Press **ENTER**>, PB4, to select the SYSTEM REboot: item.
- 4. Press **<ENTER>**, PB4, to confirm the selection.

Return

Select this menu item to return the system to normal operation mode:

- 1. Press **ENTER**>, PB4, to enter the menu system
- 2. Press **SELECT**>, PB3, to scroll the menu to the RETURN item
- 3. Press **ENTER**>, PB4, to select the RETURN menu item and return to normal operating mode.

Maintenance

Service

Contact a regional service center for a return authorization number (RA#) if the equipment requires service. Ship equipment prepaid to GAI-Tronics with an RA# and a purchase order number. Repairs or a replacement are made in accordance with GAI-Tronics' warranty policy, if the equipment is under warranty. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts. Call 800-492-1212 inside the USA or 610-777-1374 outside the USA for help with identifying the closest regional service center.

Replacement Parts

Table 5. Replacement Parts

Model Number	Description
69517-204	Termination PCBA
69462-001	Telephone Interface PCBA
69449-101	AMI Main PCBA
69463-001	Page/Party® Interface PCBA (Model 10959-004 only)
49100-007	CompactFlash® Card (blank)

Specifications

Power Supply (No. 3308-50008-00, UL listed, provided with AMI)

Voltage input	120 V ac
Voltage output	
Current	
Audio	
Speech capacity	500 minutes with 512 Mb CompactFlash® card
Frequency response	
Distortion	
Audio and Telephone Line Levels	
600-ohm audio output	1 V _{RMS} nominal
600-ohm audio output	adjustable, 0 dBm nominal
Telephone line input	adjustable, 0 dBm nominal
Telephone line loop current requirement	25 mA minimum
33-ohm page line input/output (Model 10959-904 only)	
33-ohm party line input/output (Model 10959-904 only)	
Output Control (present with 600-ohm audio outpu	rt)
Solid state relay output	dry contact rated at 125 mA

Mechanical

Mounting	high-impact, glass-reinforced polyester, graywall mounting; four 0.28 mounting holesfour drill spots for location of conduit
Dimensions	13.00 H \times 9.25 W \times 4.00 D in; (330 \times 235 \times 102 mm)
Weight Environmental	5 lb (2.27 kg)
•	+32 °F to +122 °F (0 °C to +50 °C)
FCC Information	
Complies with CFR47, Part 15	

Approvals

Safety of Information Technology Equipment......UL 60950, CAN/CSA-C22.2 No. 60950-00, IEC 60950

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 reperform 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.

<u>Warranty Periods.</u> 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.

<u>Limitations / Exclusions.</u> 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.