**GAI-TRONICS®**
A HUBBELL COMPANY

# Rackmount Audio Messenger Interface

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# Rackmount Audio Messenger Interface

## Confidentiality Notice

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## General Information

The Model 10959-906 and 10959-908 Rackmount 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.

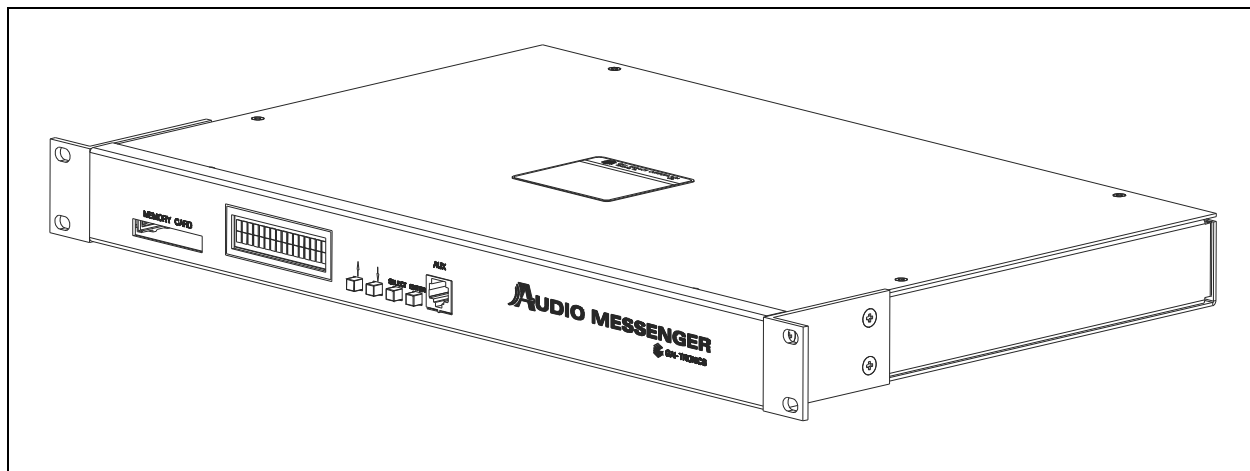The Model 10959-908 includes a 33-ohm audio output to interface to GAI-Tronics' Page/Party systems.



Figure 1.  Model 10959-90*x* Rackmount 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, CAT5E, 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 10959-908 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 10959-906 or 10959-908 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 tone and speech messages in the 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.

Configure the operational mode of the telephone interface with the ACT application.  The operational modes are as follows:

### Model 10959-906

- **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 10959-908

- **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 10959-908 only*)

The Model 10959-908 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 that signal VLC-equipped Page/Party stations to change the volume of the message/alarm.

- 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 Telephone Operation section) when interfacing a Model 10959-908 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

⚠—**Power Disconnect**—The power cord is the main power disconnect for all units.

⚠—**Disjontion de l'alimentation**—Le cordon d'alimentation est la disjonction d'alimentation principale tous les appareils.

⚠—**Para Desconectar la Alimentación**—El cable de alimentación es el medio principal de desconexión del equipo.

⚠—**Netzanschluß**—Wenn man das Netzkabel aus der Steckdose zieht, dann ist die Spannungszuführung zum Gerät vollkommen unterbrochen.

⚠**CAUTION** ⚠—To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

⚠**ATTENTION** ⚠—Pour réduire le risque d'incendie, utiliser uniquement des conducteurs de télécommunications 26 AWG ou de section supérieure.

⚠**PRECAUCIÓN** ⚠—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.

# Mounting

Place the Model 10959-906 and 10959-908 Rackmount AMI units on a table or desk or mount them in a standard EIA 19-inch electronic equipment rack.  The AMI requires 1U (1.75 inches) in a standard 19-inch rack.

## Desktop installation

1.  Install the five stabilizing feet if placing the AMI on a table or desk.

2.  use the four #4 countersunk toothed washers when attaching the top to the base.

    These washers help to provide good contact between the two to ensure adequate grounding.
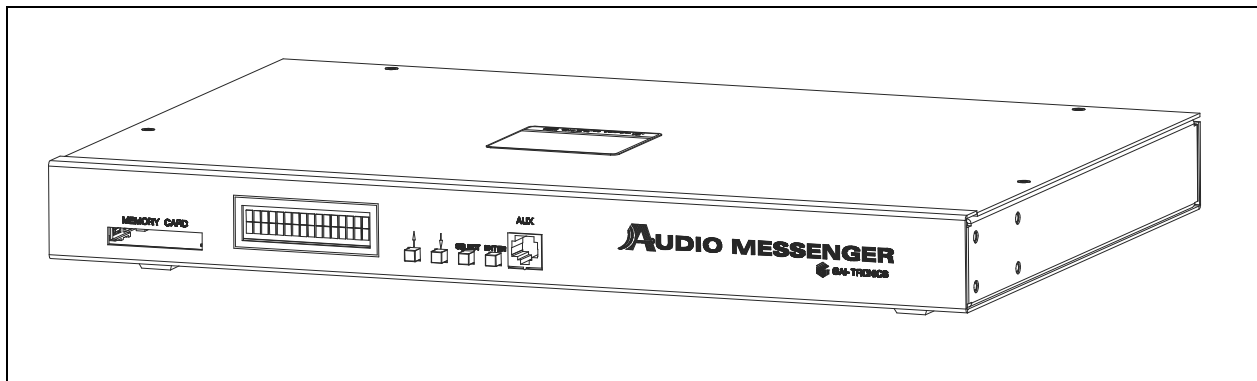


Figure 2.  AMI with feet for tabletop

## Rack Installation

1.  Install the mounting brackets with the eight 8–32 × 3/8-inch screws provided.

2.  Mount the AMI in the rack using four 10–32 × ¾-inch screws provided.

## Field Connections
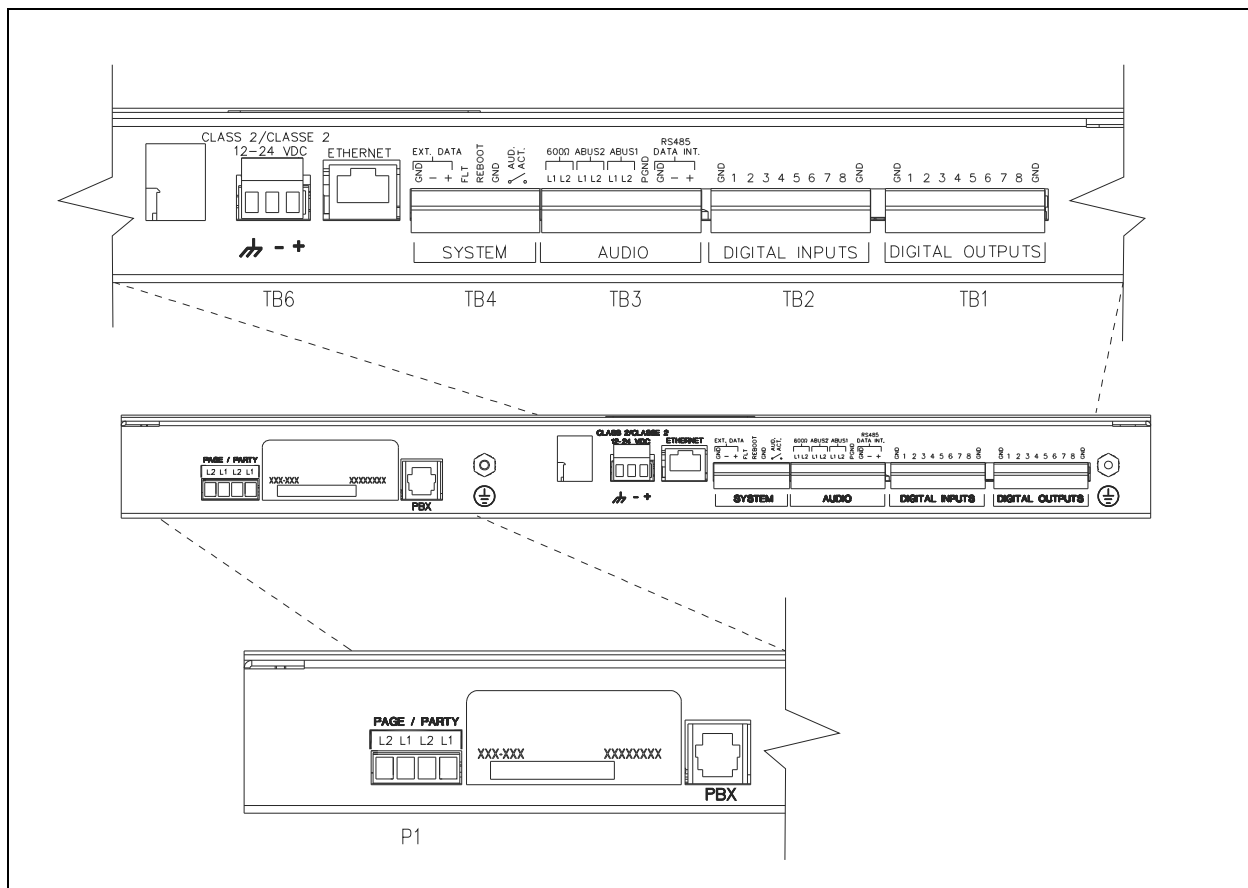


Figure 3.  Rear of Audio Messenger Interface with Connections Labeled

### Telephone Line

Connect the AMI to a standard PBX analog station port or directly to a CO (Central Office) telephone line.  Connect the incoming telephone line to the tip (E1) and ring (E2) on the telephone interface PCBA.  The AMI includes a telephone line cord with modular RJ-11 plug.

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

### Audio Output

Connect a 600-ohm balanced audio amplified speaker system to terminal block **TB3**, labeled AUDIO (see Figure 3).  *Recommended*:  Use shielded pair conductors when connecting audio to public address system component.

Table 1.  Audio Output Connection

| Label | Terminal | Function or ACT Description |
|---|---|---|
| 600-OHM L1 | TB3-1 | 600-ohm audio pair to distribution amplifier cabinet, Stanchion Broadcast electronics module, Addressable Amplified Speaker, or other 600-ohm compatible devices. |
| 600-OHM L2 | TB3-2 | |
| AUDBUS2 L1 | TB3-3 | No connection |
| AUDBUS2 L2 | TB3-4 | |
| AUDBUS1 L1 | TB3-5 | No connection |
| AUDBUS1 L2 | TB3-6 | |
| PGND | TB3-7 | No connection |
| RS485 INT GND | TB3-8 | No connection |
| RS485 INT− | TB3-9 | |
| RS485 INT+ | TB3-10 | |

## Control Output

Connect the public address system (central amplifier input, amplified addressable speaker input, etc.) input activation contact to terminal block **TB4**, labeled SYSTEM (see Figure 3).

Table 2.  System Assignment

| 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 broadcast On resistance = 30 ohms |
| AUD ACT 2 | TB4-8 | |

**NOTE:**  The Model 10959-906 and 10959-908 AMIs do not use the following connections:

- Digital outputs (**TB1**)

- Digital inputs (**TB2**)

- Auxiliary Audio (**TB5**)

ACC2500 Audio Control Center Desk Set

1.  Connect the AMI to the ACC2500 Desk Set with the Model 12612-002 Interface and two modular cables (included with the AMI).

2.  Connect a (customer provided) up to 45-foot long, 8-conductor, Cat5 Ethernet cable from the No. 12612-002 Interface to Ethernet connector J1 on the AMI (see Figure 4).
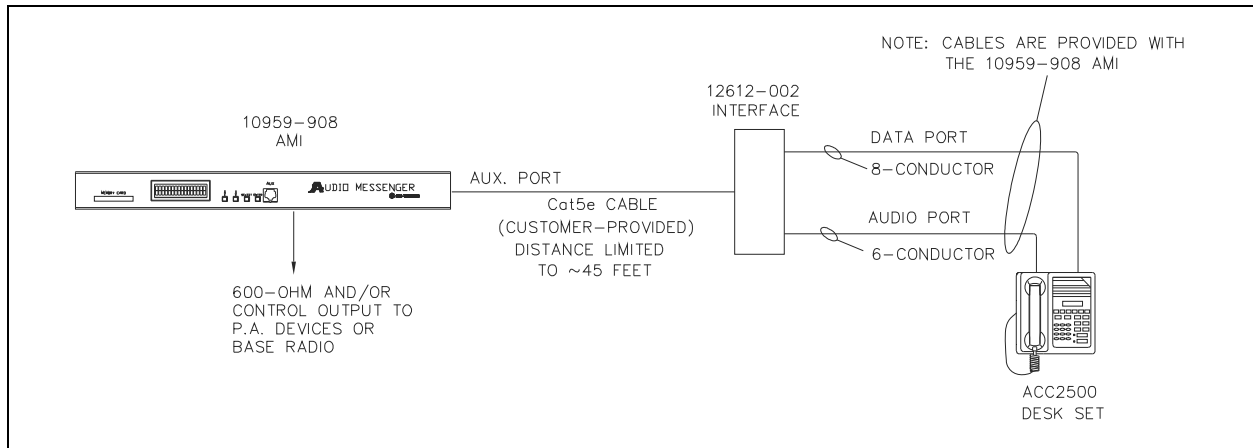


Figure 4.  Typical ACC2500 Connection Diagram

For additional information pertaining to system setup, refer to the ACC2500 Installation and Operation manual, publication 42004-417.

Power

Connect a 12 to 24 V dc power source to terminal block, **TB6**, labeled CLASS 2 12–24 VDC (see Figure 3).

Table 3.  Power Assignment

| 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 |

Page/Party (*Model 10959-908 Only*)

Connect a Page/Party system to connector P1, on the Page/Party interface PCBA (see Figure 3).

Table 4.  Page/Party Assignment

| Label | Terminal | Function or ACT Description |
|-------|----------|---------------------------|
| PARTY L1 | P1-1 | The 33-ohm line interface to GAI-Tronics party line. Internal 33-ohm termination. |
| PARTY L2 | P1-2 | |
| PAGE L1 | P1-3 | The 33-ohm line interface to GAI-Tronics page line. External 33-ohm termination is required. |
| PAGE L2 | P1-4 | |

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

## Configuration

### Open the AMI

1.  Loosen the four screws on the front cover.

2.  Swing the enclosure's cover to the left.



Figure 5.  Model 10959-908 AMI without cover (all boards installed)

## Jumper Setting—600-Ohm Line Termination

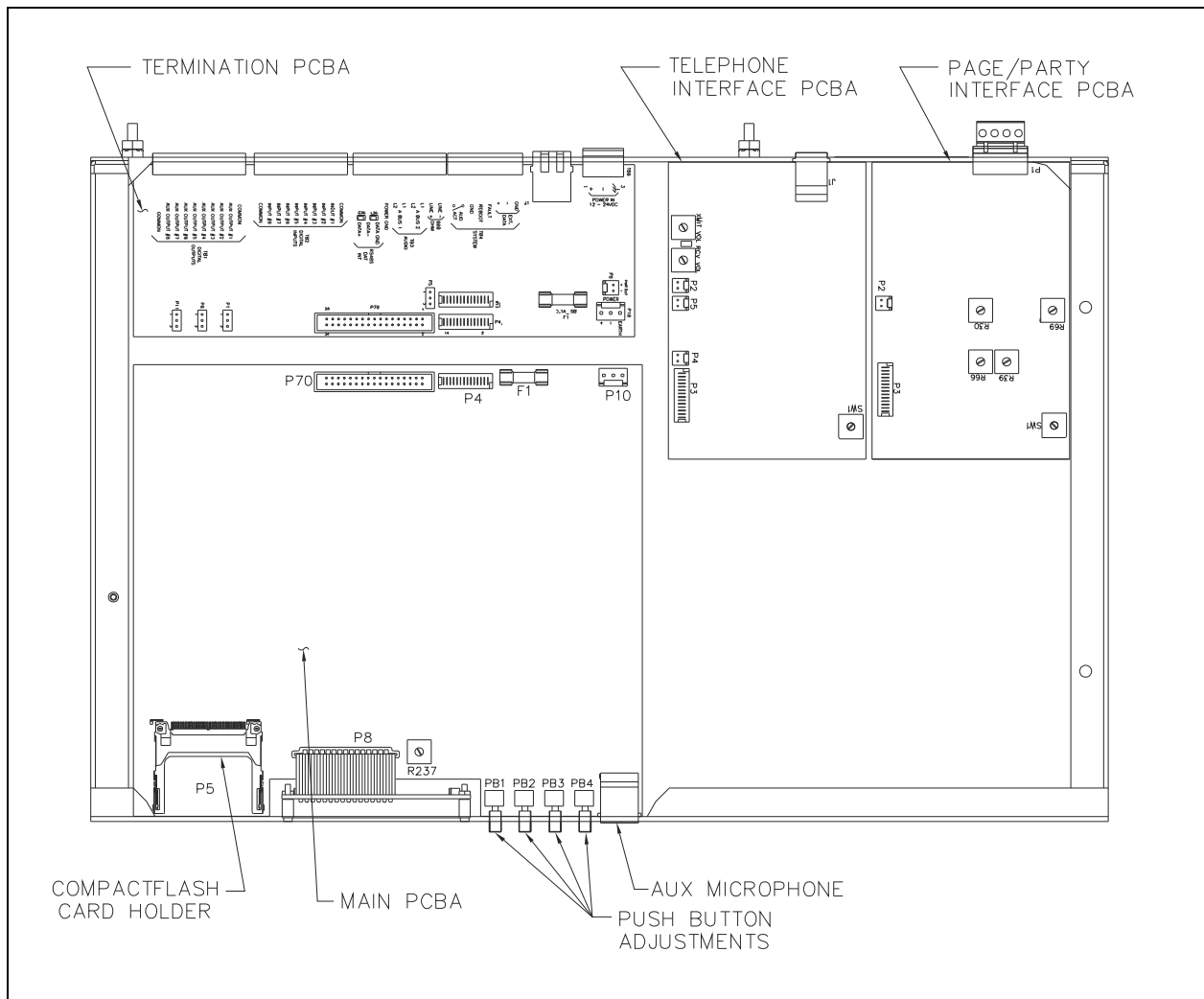Configure jumper P5, on the termination PCBA, to terminate the 600-ohm audio output for impedance matching:

- 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 panel.

### 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 10959-908 Only*)

Two potentiometers, on the Page/Party interface 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 10959-908 Only*)

Two potentiometers on the Page/Party interface 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, on the front of the AMI (see Figure 5), to set the date.  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, on the front of the AMI (see Figure 5), 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 to retrieve the configuration and play audio messages.  Each AMI ships with a CompactFlash® card pre-programmed with the **AMI Factory Default** configuration.

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.

### Parameters 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.  Define the content of each message by selecting the fragment(s) to incorporate in the message.  Other message parameters include:

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

**Event Scheduling**

Use the event-scheduling feature to set 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

- paging mode (live or recorded)

- page delay, if recorded

- maximum page duration

- greeting message played to the caller

- pre-announcement tone played to the PA system

## CompactFlash®

A CompactFlash® memory card stores the system configuration, speech messages, and alarm tones.  To install the memory card:

1. Insert the memory card through the rectangular MEMORY CARD slot on the AMI main PCBA with the label on the memory card facing up.

2. Slide the memory card in until it 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.

**Formatting**

Format new CompactFlash® memory cards for use with the AMI.  Format the memory card using the following DOS-format command from the Windows command prompt.

**Format <drive>:/a: 16K**, where <drive> is the drive letter of the PC's CompactFlash®.

**NOTE:**  Only Windows 2000 and Windows XP workstations successfully format a CompactFlash® card.

**Card Installation**

To install the memory card:

1. Insert the memory card through the rectangular MEMORY CARD slot on the AMI's main PCBA.

2. Ensure the label on the memory card faces up.

3. Slide the memory card in until it fully seats in the slot.

   The card protrudes approximately ¼ inch from the front of the socket when properly seated.

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

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

# Operation

After programming and installing the CompactFlash® card, the AMI operates from system inputs and outputs or by manual operation.

## LCD Power Up Display

The AMI completes a self-diagnostic of its settings during power up.  The LCD 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 not installed."

- "ASM not installed."

- Page/Party PCBA firmware version

- AMI main PCBA firmware version

- telephone interface mode

- telephone interface PCBA firmware version

- telephone interface greeting file name (if recording a new greeting)

- AMI ready

- time, page symbol/date

## LCD Display During Operation

The LCD displays various symbols to indicate AMI activity:

The VU meter indicates the volume of the current page.

MIN

MAX

Mute indicates muting of the page audio.

A progress bar indicates the time remaining before party line connection timeout.

MIN

MID

MAX
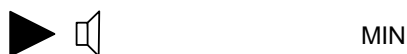
A telephone handset indicates an active telephone connection to the AMI.

A 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 play.

## Push-Button Operation

The front panel push buttons allow for various control features including, play a message, stop a message, and firmware update.

### Stop Message

This function 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

Select this menu item to play a specific message.  Messages are grouped by priority (1 through 7).  This button sequence allows the user to select a message to be play 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

Complete this sequence to update the AMI's main PCBA firmware:

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 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

This sequence returns 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.

## Major Components

The AMI contains the following PCBAs (see Figure 5):

- **69449-xxx AMI main PCBA**—contains the CompactFlash® memory card reader, four user push buttons, and the audio accessory jack.

- **69517-xxx termination PCBA**—contains six plug-in connectors accessible through the rear panel and an internal power terminal strip.

- **69462-xxx telephone interface PCBA** provides telephone callers access to the public address system.

- **69463-xxx Page/Party interface PCBA** (*Model 10959-908 only*) provides access to the Page/Party system.

## Replacement Parts

Table 5.  Replacement Parts

| Model Number | Description |
|---|---|
| 69517-203 | Termination PCBA |
| 69462-001 | Telephone interface PCBA |
| 69449-101 | AMI main PCBA |
| 69463-001 | Page/Party interface PCBA (*Model 10959-908 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 .................................................................................................................................... 12 V dc

Current .................................................................................................................................... 1.0 A (maximum)

**Audio**

Speech capacity ................................................................... 500 minutes with 512 Mb CompactFlash® card

Frequency response ........................................................... 250–6500 Hz, +0/−3 dB ref. to 1 kHz

Distortion ............................................................................ <1% THD @ 1 kHz @ nominal settings

**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 10959-908 only*) ..................................................... 1.5 V $_{RMS}$ nominal

33-ohm party line input/output (*Model 10959-908 only*) ..................................................... 1.5 V $_{RMS}$ nominal

**Output Control (present with 600-ohm audio output)**

Solid state relay output.......................................................................................dry contact rated at 125 mA

**Mechanical**

Material .................................................... steel body with aluminum cover; black, fine-textured paint finish

Mounting.........................................................................................................1 U in standard 19-inch rack

Connections..................................................................................screw-type terminal blocks, phone jack

Dimensions .............................................................17.00 W × 11.18 D × 1.72 H in; (432 × 284 × 44 mm)

Weight................................................................................................................. 8.5 lb (3.86 kg)

**Environmental**

Temperature range ............................................................................ +32 ºF to +122 ºF (0 ºC to +50 ºC)

# Approvals

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

**FCC Information**

Complies with CFR47, Part 15 ........................................................................................................Class A

# 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.