GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

69253-001
Audio Generator Interface PCBA

Confidentiality Notice

Introduction

The GT1000/5000 Emergency Notification and Communication System is designed for use in harsh industrial environments. The 69253-001 Audio Generator Interface (AGI) is an integral assembly in this system. The AGI is responsible for generating the tone messages that are broadcast over the system speakers during emergency conditions. The 69254 Series Master Control Unit (MCU) and the AGI maintain constant communication links. These links are continually supervised by both the MCU and the AGI to verify proper working condition.

How to Use the Assembly

The AGI contains four tone sources:

- Primary Alarm Generator
- Backup Tone Generator
- Fail-safe Tone Generator
- Supervisory Tone Generator

The AGI controls the Fail-safe Tone Generator. The Master Control Unit regulates the output of the Back-up and the Supervisory Tone Generators. The MCU also controls the Primary Alarm Generator. The following information defines the purpose of each tone generator.

Primary Alarm Generator

The Primary Alarm Generator produces alarms from a library of tones upon command from the MCU. If multiple alarms are activated, the Primary Alarm Generator plays the alarm tones in the order they are received according to their priority. The MCU communicates with the Primary Alarm Generator via the control rack backplane. The MCU uses this communication path to supervise the Primary Alarm Generator. The MCU performs this function by periodically commanding the Primary Alarm Generator to play a pre-determined tone.

The MCU monitors the output of the Primary Alarm Generator to detect the presence of this tone. Note that during this test, this tone is not connected to any backplane page resources. The Primary Alarm Generator may be connected to one of the two backplane page resources on MCU command. The Primary Alarm Generator can generate tones or playback digitally recorded and stored speech/audio messages with the optional flash card memory.

Backup Tone Generator

In the event that the Primary Alarm Generator fails to respond to an MCU command, the MCU switches the backplane page resource from the Primary Alarm Generator to the Backup Tone Generator. The Backup Tone Generator then assumes operation. This event is reported by a printer attached to the control unit or by an access panel containing a vacuum fluorescent display attached to the control unit. During normal conditions, the MCU regularly activates the Backup Tone Generator to test the communication link and ensure proper working order. However, during this test, the Backup Tone Generator audio is not switched to any backplane page resources.

Fail-safe Tone Generator

The Fail-safe Tone Generator can be activated by the AGI if communication with the MCU is disrupted. This occurs if the MCU is malfunctioning. The Fail-safe Tone Generator remains active until communication with the MCU is restored. This alerts personnel that a trouble condition exists between the MCU and the AGI. The Fail-safe Tone Generator is linked directly to the 10457 Series backplane, allowing the Fail-safe Tone Generator to operate without interference from the MCU.

Supervisory Tone Generator

The Supervisory Tone Generator produces a tone that is used by the MCU to survey central amplifiers and associated speaker runs. This health check is performed periodically at the command of the MCU. If this health check fails at any point, a message is reported by a printer attached to the control unit or by an access panel containing a vacuum fluorescent display attached to the control unit. The message identifies the speaker loop at which the failure was detected.

Additional Features

In addition to providing the tones above, the audio generator also provides the following features:

Feature	Benefit
One 600-ohm, 0-dBm (line-level) balanced input (transformer isolated)	Allows an additional input to the system from such devices as telephone interfaces, (e.g. TI984), radio interfaces and other 600 Ω, 0-dBm devices.
One 33-ohm/600-ohm (jumper selectable), 0-dBm (line-level) balanced input (transformer isolated)	Allows an additional input to the system from such devices as telephone interfaces (e.g. TI984), radio interfaces and other 600 Ω, 0-dBm devices or from a 33-ohm Page/Party® line.
One 600-ohm 0-dBm output (transformer isolated, adjustable volume)	Allows an output to other 600-ohm devices such as a logging recorder.
Three dry-contact closure inputs	Provides for control signals from such devices as radio interfaces or telephone interfaces (e.g. TI984).
Four relay contact outputs	To control auxiliary devices such as radio interfaces or telephone interfaces (e.g. TI984).

The front bezel of the AGI includes the following LEDs:

LED	Indication
On Line	Indicates that the audio generator is powered and acknowledged by the MCU
Primary	Lights when the Primary Alarm Generator is active
Backup	Lights when the Backup Tone Generator is active
Failsafe	Lights if the MCU fails to communicate with the AGI
Fault	Lights on any trouble condition detected by the MCU that is related to the AGI such as a Primary Alarm Generator Failure or a Backup Tone Generator Failure.

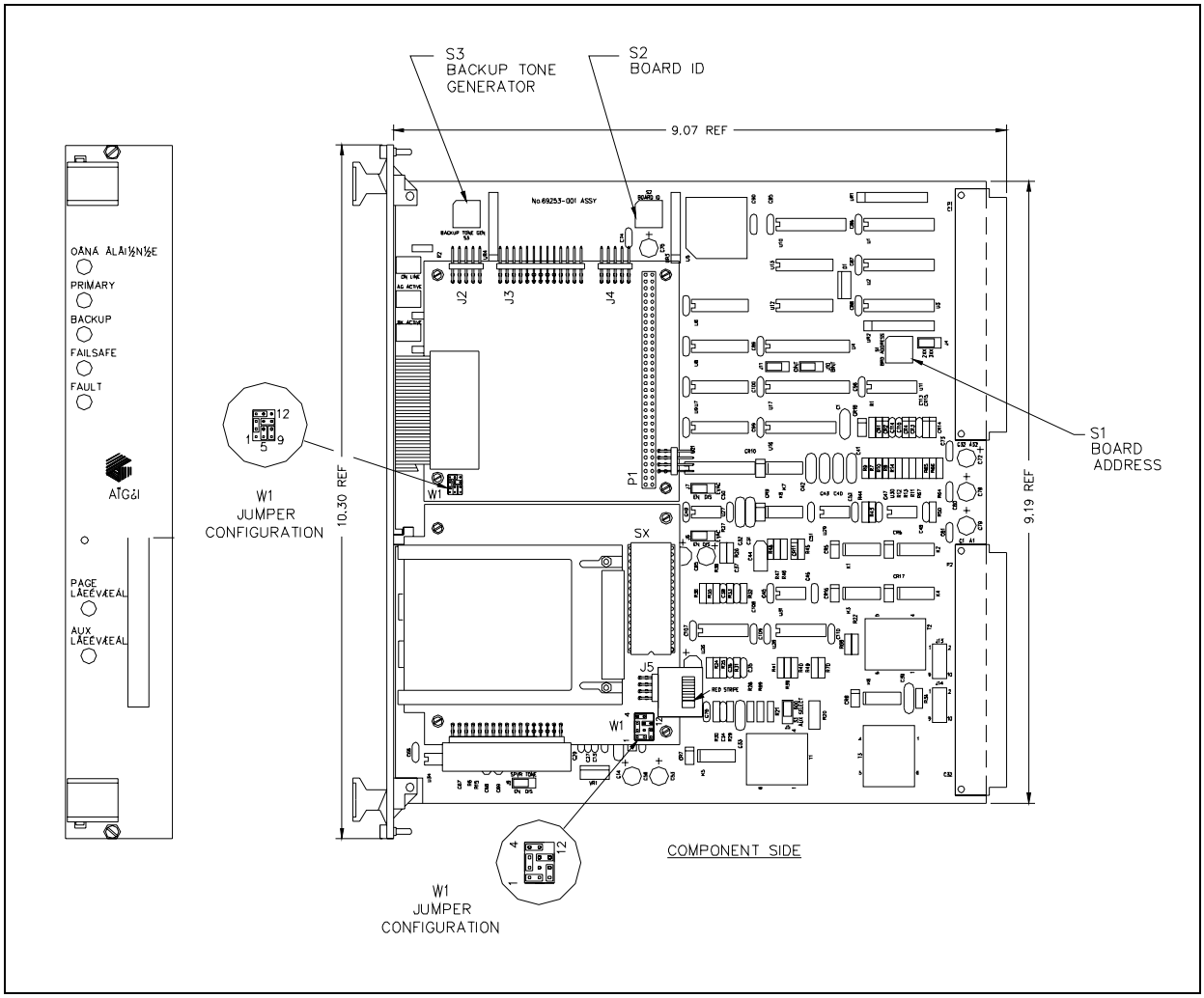

Figure 1. Hardware Configuration for 69253-001 PCBA

Interfaces

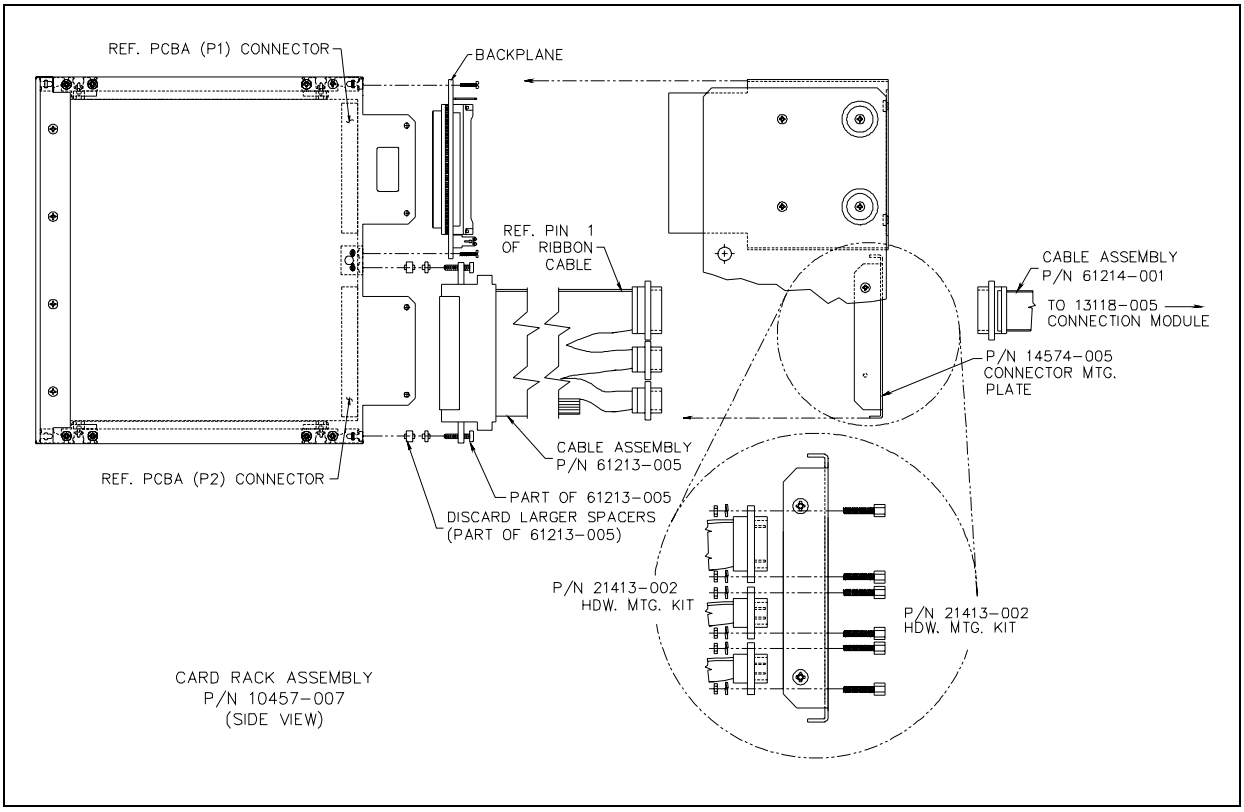

Figure 2. 69253-001 Interfaces

P1 connections: I/O bus; Page audio bus; Fail-safe path; Supervisory path

P2 connections: All of the external inputs and outputs to the 69253-001 PCBA are connected via P2. A cable assembly, GAI-Tronics part number 61213-005, is required to break out from P2.

The 69253-001 AGI is capable of supporting an optional PCMCIA flash memory card. The PCMICIA card is used for additional memory to store speech messages or special tones that are not produced normally by the audio generator. Access to the PCMCIA drive is through the front bezel of the unit.

The 69253-001 is capable of supporting the following inputs:

- One 600-ohm, 0-dBm (line-level) balanced input
- One 33-ohm/600-ohm (jumper selectable), 0-dBm (line-level) balanced input
- Three dry-contact closure inputs

The 69253-001 is capable of supporting the following outputs:

- One 600-ohm, 0-dBm output (transformer-isolated, adjustable volume)
- Four relay contact outputs

Installation

Warnings: Please observe the following warnings, or damage to the equipment may result.

WARNING **Disconnect power to the card rack prior to installation.**

Warning: Observe precautions for handling electrostatic sensitive devices.

Remove the 69253-001 from its carton. Ensure that power is disconnected to the card rack prior to installation. Before installing, complete the following jumpers and switch settings on the main PCBA:

Jumper and Switch Settings		
Reference Designator	Description	Valid Settings
S1	PCBA Address (lower)[1]	∅-F (hex)
S2	PCBA Identification[2]	1-E (hex)
S3	Backup Tone Selection	1: Backup Tone 1 - Steady tone (700 Hz) 2: Backup Tone 2 - Alternating tone (800 Hz and 600 Hz-1 second per tone) 3: Backup Tone 3 - Sweep tone (500 Hz to 1 kHz) 4: Backup Tone 4 - Siren tone (500 Hz to 1 kHz) 5: Backup Tone 5 - Slow siren (500 Hz to 1 kHz) 6: Backup Tone 6 - Steady tone (500 Hz) 7: Backup Tone 7 - Steady tone (1 kHz)
J4	PCBA Address (upper)[1]	Pins 1 and 2 shorted: Address 2XX selected* Pins 2 and 3 shorted: Address 3XX selected
J5	Auxiliary Input Select	Pins 1 and 2 shorted: 33-ohm input selected Pins 2 and 3 shorted: 600-ohm input selected*
J6	Fail-safe Tone (BP_EVAC+) Enable/Disable[3]	Pins 1 and 2 shorted: Fail-safe tone enabled* Pins 2 and 3 shorted: Fail-safe tone disabled
J7	Fail-safe Tone (BP_EVAC-) Enable/Disable[3]	Pins 1 and 2 shorted: Fail-safe tone enabled* Pins 2 and 3 shorted: Fail-safe tone disabled
J8	Supervisory Tone (BP_SPVR+) Enable/Disable[4]	Pins 1 and 2 shorted: Supervisory tone enabled* Pins 2 and 3 shorted: Supervisory tone disabled
J9	Supervisory Tone (BP_SPVR-) Enable/Disable[4]	Pins 1 and 2 shorted: Supervisory tone enabled* Pins 2 and 3 shorted: Supervisory tone disabled
J10	Interrupt Select (from MCU)[5]	Pins 1 and 2 shorted: AMP IRQ5* Pins 2 and 3 shorted: AMP IRQ11
J11	Interrupt Select (from contact-closure inputs)[5]	Pins 1 and 2 shorted: AMP IRQ7* Pins 2 and 3 shorted: AMP IRQ15
J12	Interrupt Select (from DSP)[5]	Pins 1 and 2 shorted: AMP IRQ3* Pins 2 and 3 shorted: AMP IRQ10

* = Factory default settings

NOTES:
1. PCBA address (set by S1 in conjunction with J4) must be set to a unique value (a value not used by any other PCBA in the card rack).
2. PCBA identification (set by S2) must be set to a value not used by any other AGI in the card rack.
3. J6 and J7 must be set in the same position.
4. J8 and J9 must be set in the same position.
5. J10, J11, and J12 should not be moved from their factory default settings.

Align the PCBA into the upper and lower tracks for the slot. Slide the PCBA towards the rear of the card rack until the PCBA comes in contact with a connector on the backplane. Firmly press on the front bezel until the PCBA is seated. Secure the PCBA to the card rack by tightening the two screws located on the front bezel.

Optional PCMCIA Memory Card Installation

The PCMCIA memory card may be used for adding optional speech messages. If the PCMCIA is being installed for the first time or if the speech messages are being changed, complete the following instructions.

The 69253-001 AGI does not need to be powered down for insertion or removal of the PCMCIA memory card. Insert the memory card through the rectangular cut-out of the AGI bezel, ensuring that the label on the top of the memory card faces to the right. Slide it until fully seated in the PCMCIA socket. Once fully seated, the memory card should protrude approximately ¼ inch from the AGI bezel. **Note:** The memory card and its socket are polarized for proper insertion – *do not force card into socket.*

The AGI senses the insertion of the PCMCIA memory card and resets the AGI's CPU. The PCMCIA memory card is then read by the AGI's CPU. The MCU's software configuration must be configured, if not previously done, so that the AGI can recognize the speech files loaded into the PCMCIA memory card.

If new or additional alarm messages are desired for your particular system, then the PCMCIA memory card must be updated. In addition, the MUC must be reconfigured. Please contact GAI-Tronics for assistance.

To remove the PCMCIA memory card, simply grasp the card and pull it out from the AGI. The audio generator's CPU resets, and upon restart, it recognizes that the card has been removed and defaults to tone-only alarms. If an alarm message is being broadcast when the PCMCIA memory card is removed, the speech message is canceled and the audio generator resets and defaults to tone-only for the alarm.

Operation

Configuration - The AGI tones and messages are configured by the MCU software configuration package. Refer to the system manual for all operating details.

Specification

Electrical

Power requirements..... +5 V dc, +12 V dc, -12 V dc from backplane

Current draw (nominal).....@ 5 V, 520 mA alarm off; 530 mA alarm on
@ 12 V, 110 mA alarm off; 120 mA alarm on
@ -12 V, 46 mA alarm off; 460 mA alarm on

Connections.....2 × 64-pin DIN connectors

External inputs .....Three dry contact closures
One 600 Ω $1V_{RMS}$ maximum
One 33/600 Ω $1V_{RMS}$ maximum

External outputs ..... Four contact outputs rated 300 mA maximum
One 600 Ω output

Microprocessor..... 80C88

Memory..... Optional PCMCIA card
20 Mbytes maximum capacity

Front bezel LED indicators: ..... On Line
Primary
Backup
Failsafe
Fault

Front bezel controls .....Page Level
Aux Level

Environmental

Temperature range (operating/storage) ..... 32° F to 122° F (0° C to 50° C)

Humidity .....95% non-condensing relative humidity

Mechanical

Unit dimensions .....10.30 H × 1.58 W × 9.07 D inches

Unit Weight.....1.8 lbs. max.

Replacement Parts

Model Number:	Description:
49100-001-*code #*	PCMCIA Memory Card, 4 Mb
49100-002-*code #*	PCMCIA Memory Card, 10 Mb

NOTE: When placing an order, please provide the model number followed by the code number that is specific to your equipment.

Reference Material

Published By	Title	GAI-Tronics Ref. No.
GAI-Tronics	Audio Generator Interface PCBA Assembly Drawing	71926

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.