



GAI-TRONICS®  
A HUBBELL COMPANY

# Industrial Communication System Hazardous Area Page/Party® Station

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GAI-TRONICS®  
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# Industrial Communication System Hazardous Area Page/Party® Station

## Confidentiality Notice

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## General Information

### Product Overview

The GAI-Tronics ICS (Industrial Communication System) Page/Party® station is a component of a modular industrial communication system. All stations are wired in parallel and additional stations can be added to the system at any time.

The standard configuration of the ICS Hazardous Area Page/Party® station is an outdoor, multi-party, handset/speaker amplifier station using ac power. They are constructed of cast aluminum and are extremely weatherproof and corrosion-resistant. A number of options are available to add to station capabilities (see the [Features](#) and [Options](#) sections).

The ICS Hazardous Area Page/Party® station is similar to and compatible with existing GAI-Tronics 700 series Page/Party® systems. ICS Hazardous Area Page/Party® stations can replace or be added to existing Page/Party® systems.

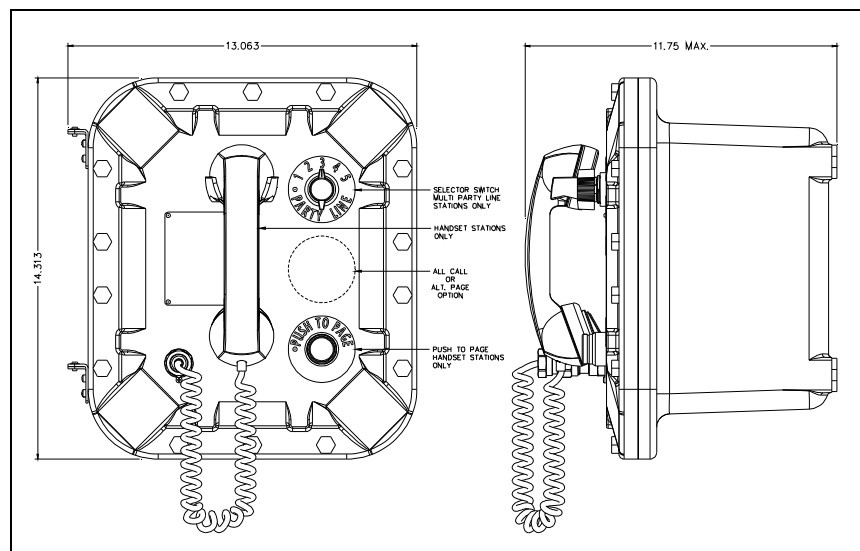


Figure 1. ICS Hazardous Area Station Front Panel with all options

## Features

- one-way page announcements over system speakers
- high efficiency (>80%) Class D paging amplifier provides up to 30 watts of speaker output
- full-duplex party line communication on five party lines
- universal ac power supply with power factor correction
- field upgradeable options
- durable weatherproof cast aluminum enclosure

## Options

- single party line operation
- speaker amplifier only (no handset)
- alternate page destination
- All-Call
- hazardous area approvals
- PVC or Hytrel handset cords in 6-, 15-, or 25-foot lengths
- conformal coating for PCBA
- 24 V dc power
- VLC (Volume Level Control) technology for alternate page volume
- SmartSeries® technology featuring ALS (Ambient Level Sensing) and available remote monitoring
- EPL (Emergency Party Line)
- RTU (Remote Terminal Unit) operation

## Installation

### Important Safety Instructions

- **Read, follow, and retain instructions**—All safety and operating instructions should be read and followed before operating the unit. Retain instructions for future reference.
- **Heed warnings**—Adhere to all warnings on the unit and in the operating instructions.
- **Attachments**—Attachments not recommended by the product manufacturer should not be used, as they may cause hazards.
- **Servicing**—Do not attempt to service this unit by yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

This permanently connected apparatus must have a UL Listed 15-amp circuit breaker incorporated in the electrical installation of the building.

**Specific Conditions of Use:** Flameproof joints are not to be repaired in the field. If the flame path is damaged, the enclosure is to be removed from service and replaced with a new properly working enclosure. The screws used for the body to cover must have a yield stress equal to or greater than 1100 MPa.

**USA and Canada** Consult the National Electrical Code (NFPA 70), Canadian Standards Association (CSA 22.1), and local codes for specific requirements regarding your installation. Class 2 circuit wiring must be performed in accordance with NEC 725.55.

**⚠ WARNING ⚠** —**24 V dc systems:** Under NO condition should this equipment be operated from a battery charger without the batteries connected.

In 24 V dc systems, most chargers have an unloaded output of 35 to 45 volts that can quickly damage the equipment designed for nominal 24 volts. The maximum battery voltage should never exceed the maximum specified input voltage.

These enclosures must be installed by trained, qualified, and competent personnel. Installation must comply with state and national regulations, as well as safety practices for this type of equipment.

**⚠ WARNING ⚠** —Do not install this equipment in hazardous areas other than those indicated on the approval listing in the Approvals section of this manual. Such installation may cause a safety hazard and consequent injury or property damage.

**⚠ WARNING ⚠** —Do not disconnect equipment while energized.  
Insure proper grounding to protective earthing.

When installing an add-on station, consult the appropriate system layout diagrams. These figures provide the information necessary to install additional Page/Party® stations when used in conjunction with the station installation information and cable layout guide.

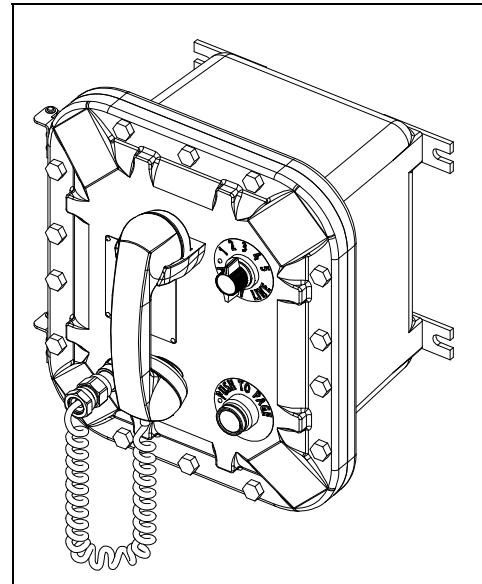


Figure 2. ICS Hazardous Area Multi-Party Station

## Front Cover Removal

**⚠ WARNING ⚠** —Remove all power from the station before performing any settings or adjustments.

**⚠ WARNING ⚠** —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to the right to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are exposed (see Figure 3).

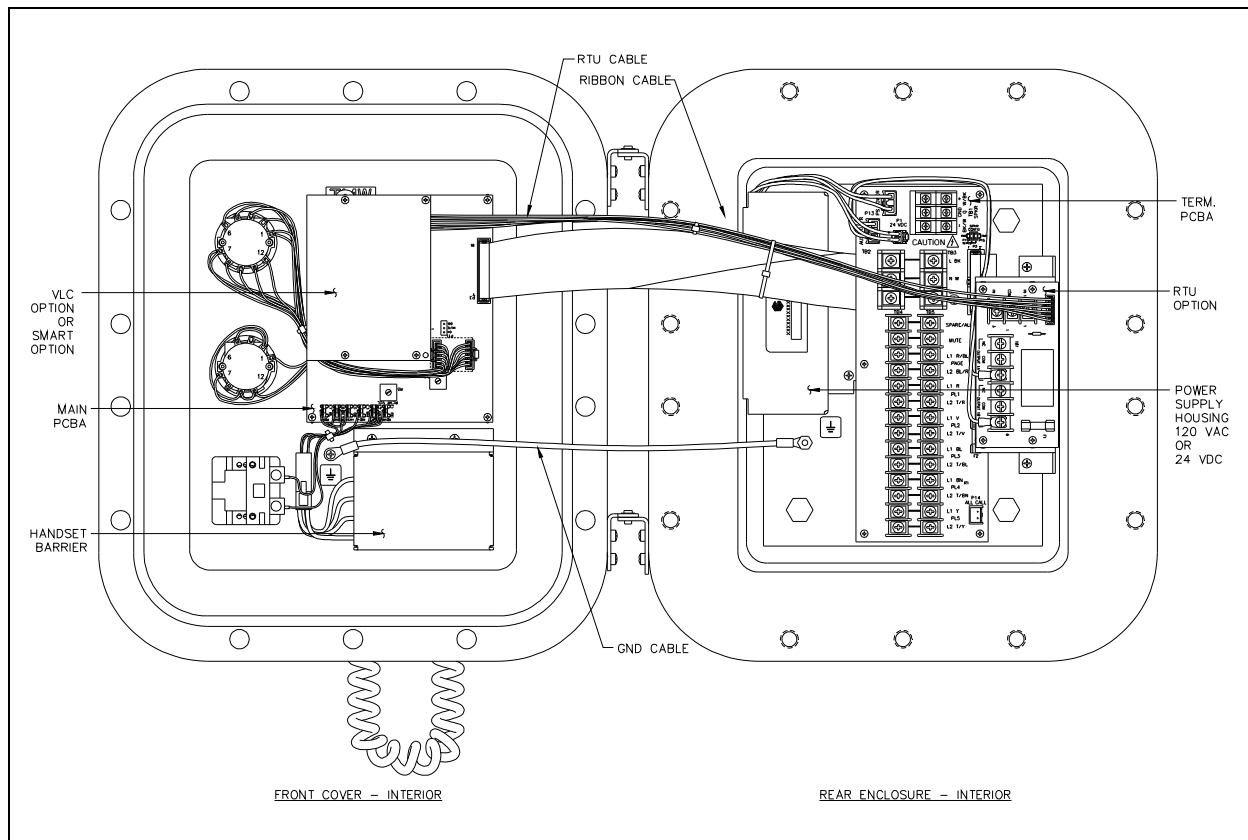


Figure 3. ICS Hazardous Area Page/Party® Station Interior View (AC Version shown)

## Cable Entries

- The enclosure is supplied with standard NPT conduit (see [Figure 4](#)) or metric cable gland entries (see [Figure 5](#)).
- All metric cable entry devices and blanking elements shall be certified in type of explosion protection flameproof enclosure “d” with an IP66 rating, suitable for conditions of use and correctly installed.
- Use field wiring suitable for the ambient temperature.
- Seal all unused openings with proper fittings per local standards.
- Any conduit NPT plugs (blanking elements) must be explosion-proof with a Type 4X rating.

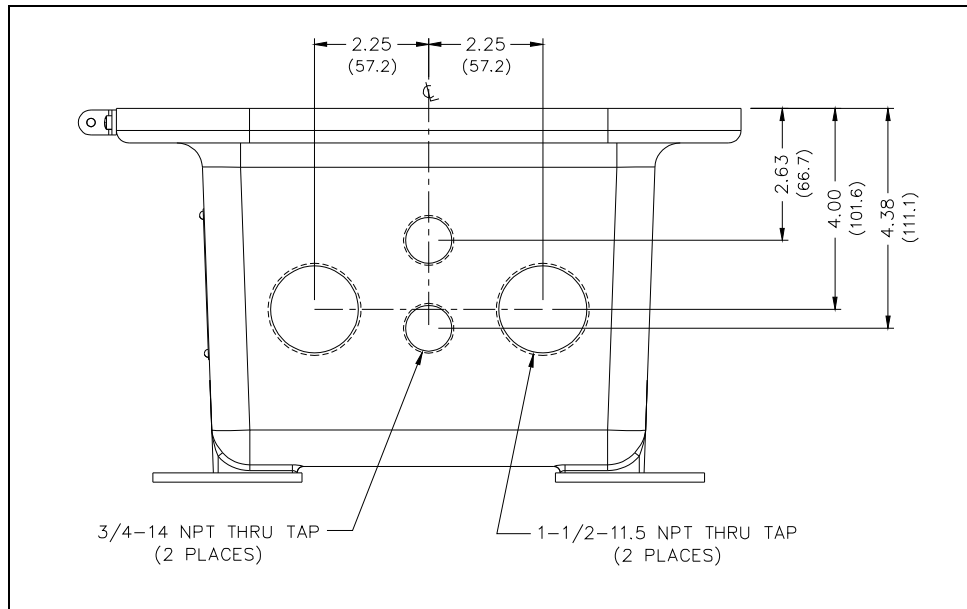


Figure 4. Standard NPT Conduit Entries

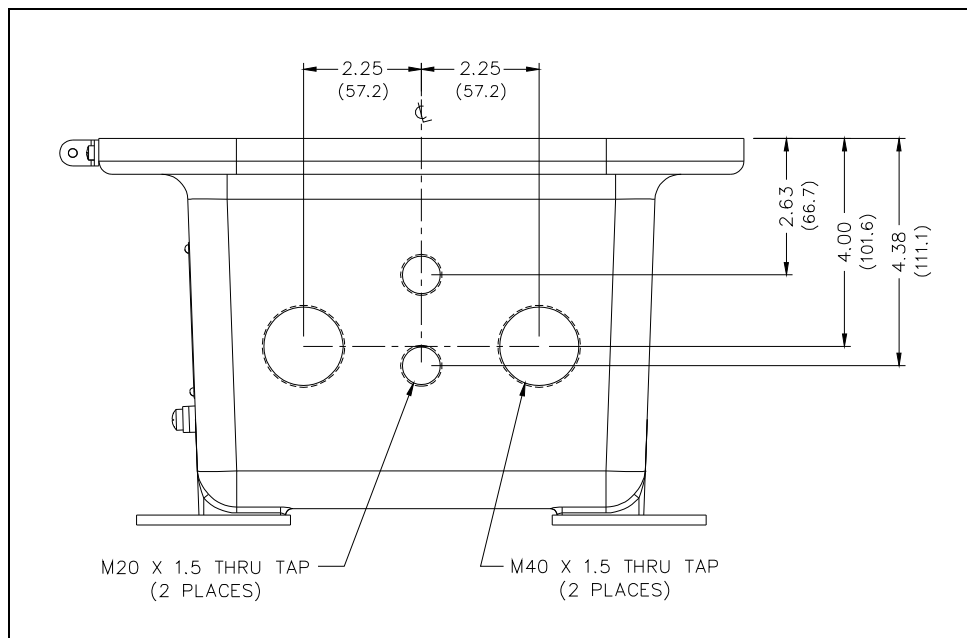


Figure 5. Standard Metric Cable Gland Entries



## Enclosure Installation

The mounting location must be flat and provide proper clearance, rigidity, and strength to support the enclosure and all contained devices (see the Specifications section). The enclosures are equipped with factory-installed hinges. The enclosures must be mounted with the hinges on the left.

**⚠ WARNING ⚠** — **Do not** mount the enclosure with hinges on the top or bottom side.

The suggested mounting height for all station enclosures is 48 inches (1219 mm) to the bottom of the enclosure.

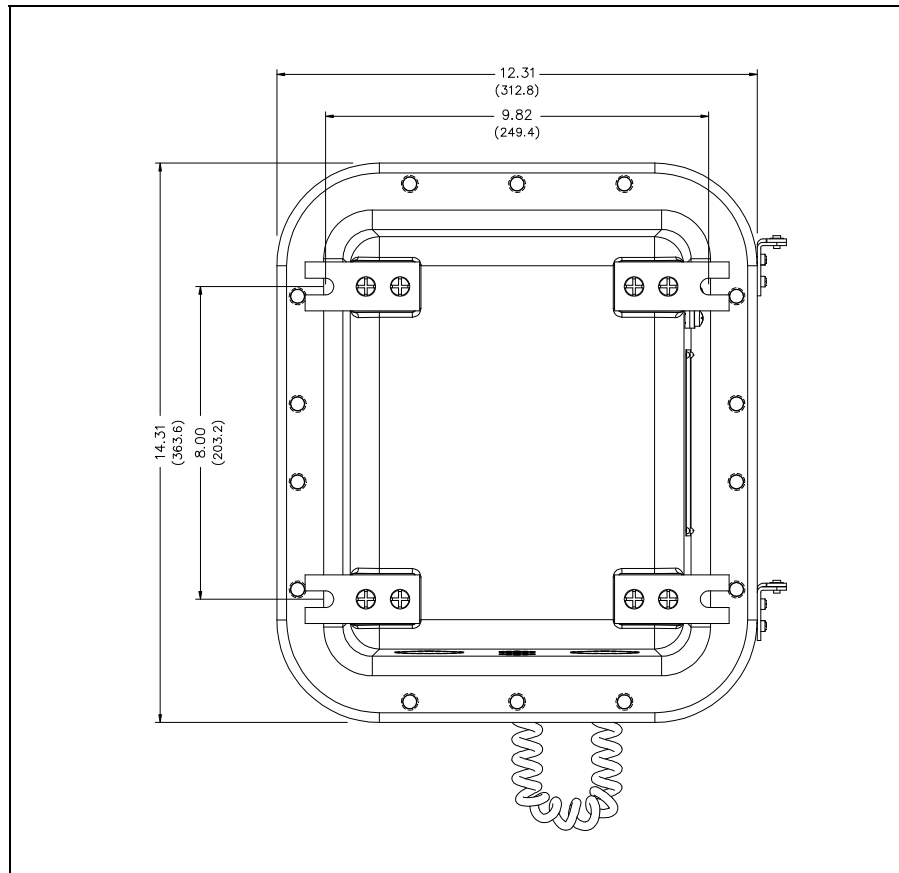


Figure 6. Enclosure Mounting Details

Fasten the enclosure to the mounting surface with 3/8-inch (10mm) diameter steel mounting bolts with washers or washer-head bolts located on all four mounting feet.

Stainless steel hardware is recommended in outdoor applications.

**NOTE:** Refer to the Killark Installation, Operation, and Maintenance Data Sheet enclosed with the unit for additional information.

## Field Wiring

The ICS Page/Party® Station provides terminal blocks for field wiring. Two sets of terminals are provided for each connection of the system cable for daisy-chain wiring. The terminal blocks on the termination PCBA are labeled to coincide with the color coding used on GAI-Tronics No. 60029 series multi-party cable or No. 60038 series single party cable (see Figure 7).

1. Attach #6 ring lugs to the power conductors of the No 60029 series or No. 60038 series system cable.
2. Attach #6 spade lugs to all the remaining conductors of the system cable.
3. Connect the wires to the terminal blocks.
4. Torque the terminal block screws to 8 to 10 lb-in (0.90 to 1.13 N·m).

Paging audio may induce feedback in certain circumstances. Muting the speakers of two or more local stations during a page, referred to as *mutual muting*, can eliminate these feedback problems. If paging audio induces feedback:

5. Mute the speakers of the affected stations by connecting the spare orange wire between the stations to terminal block TB4-2 or TB5-2.

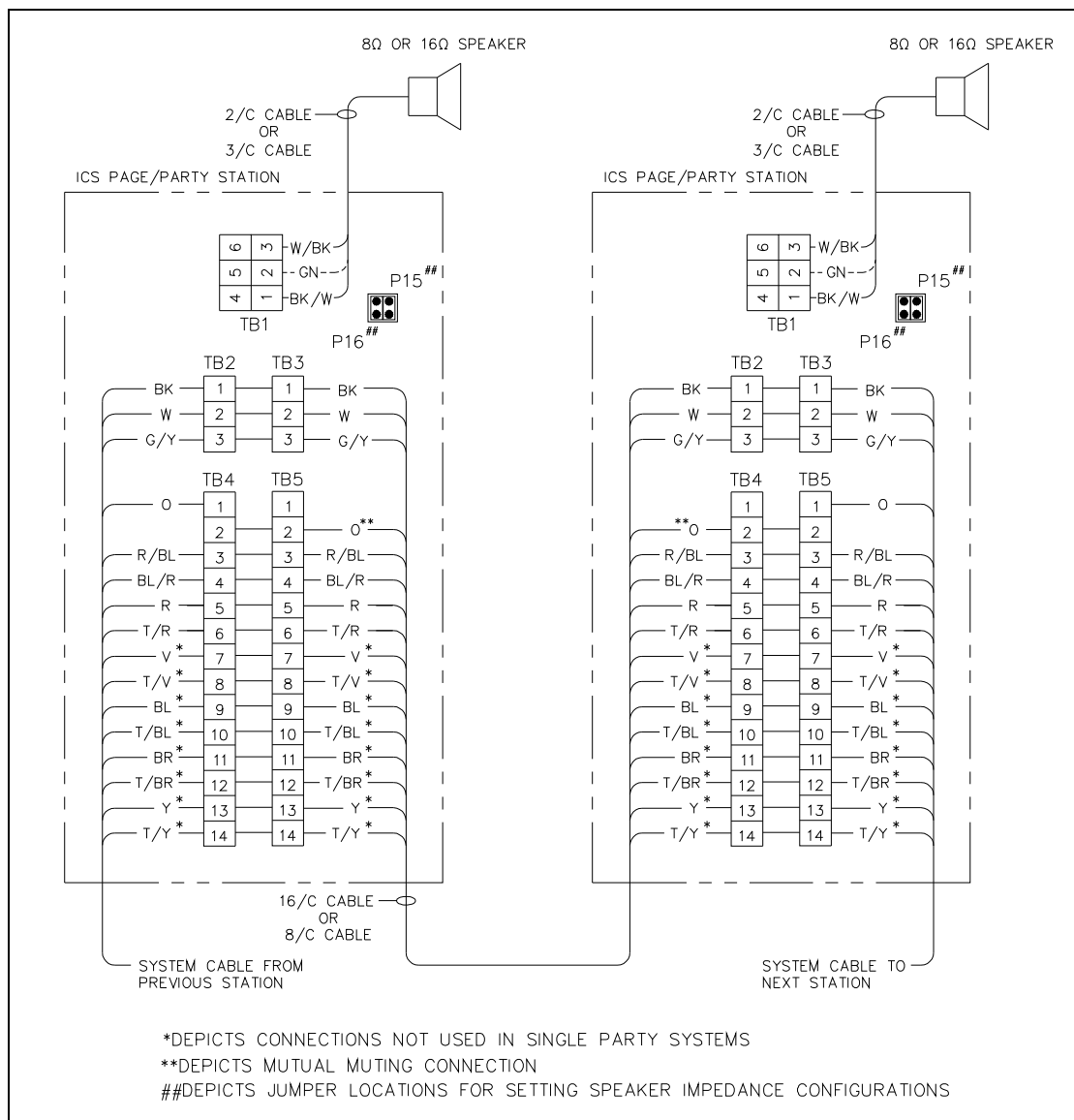


Figure 7. Typical Page/Party® ICS Station Wiring Diagram

# Speaker Impedance Configuration

Configure jumpers P15 and P16 for 8-ohm or 16-ohm speaker impedance (see Figure 8).

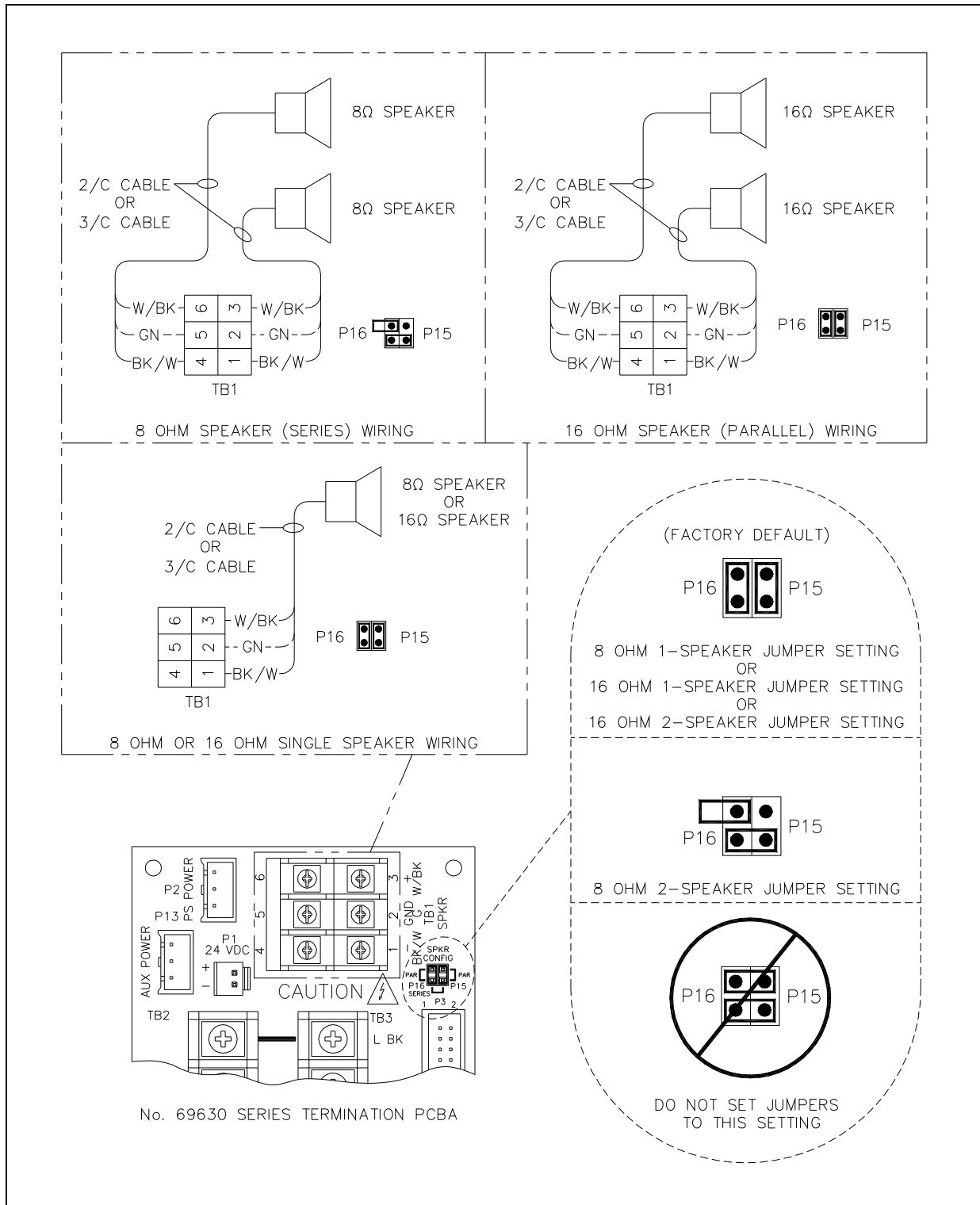


Figure 8. Jumper Configuration for 8-ohm or 16-ohm Speaker Impedance

## Front Cover Installation

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.  
Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.
2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb·ft.



Do not omit any cover bolts. Use only those bolts supplied with the enclosure.



It may become necessary to re-terminate some or all of the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.

## Configuration

### Front Cover Removal

 **WARNING**  —Remove all power from the station before performing any settings or adjustments.

 **WARNING**  —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are exposed (see [Figure 3](#)).

## Jumper Configuration

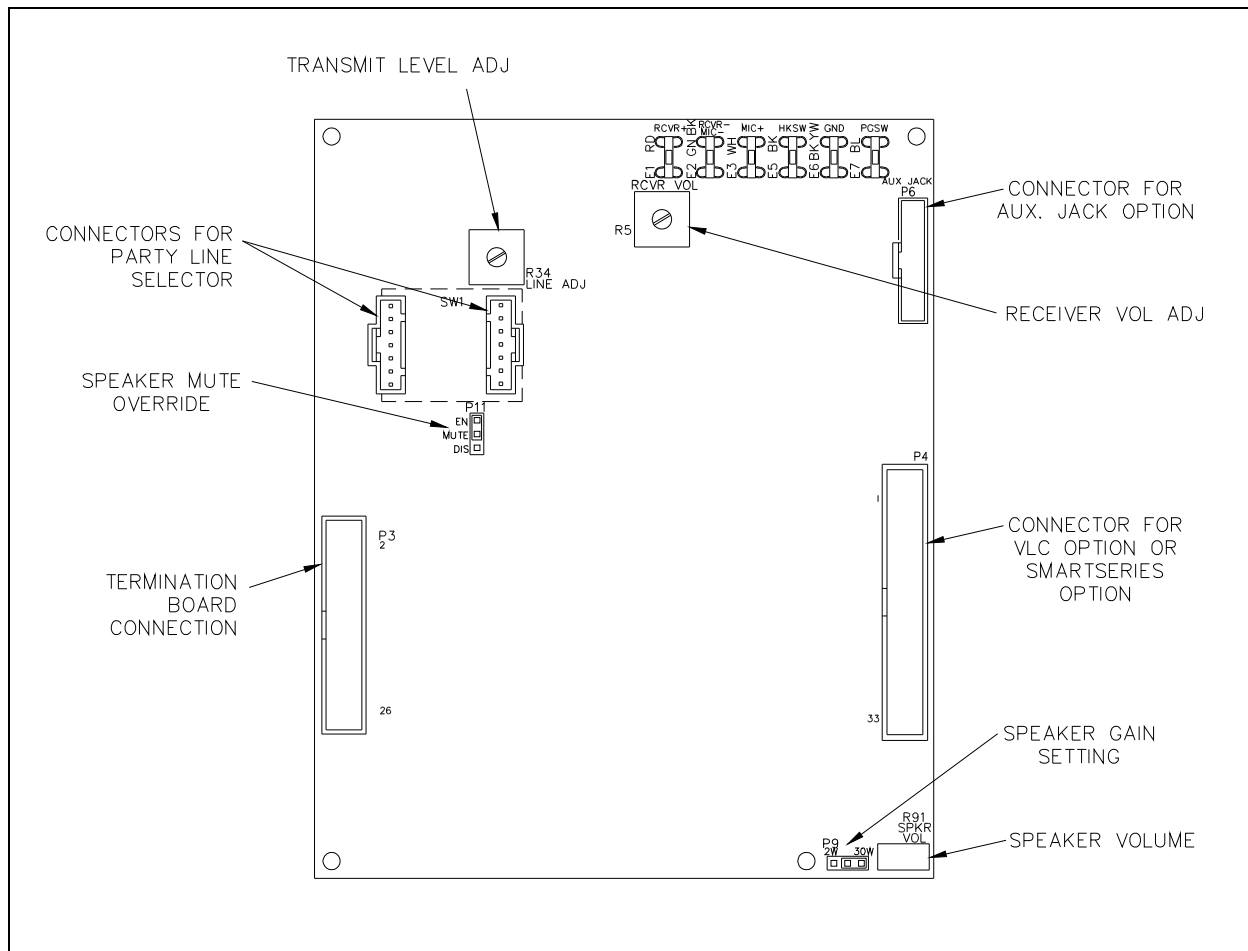


Figure 9. No. 69557 Series Main PCBA

### Speaker Mute

The station can mute the speaker amplifier during page operation to eliminate feedback. Adjust jumper P11, if necessary, to mute the local speaker when paging from that station (see Figure 9)

- P11 in the **EN** position (default) mutes the speaker during page activation.
- P11 in the **DIS** position allows broadcast to the speaker during paging.

### Speaker Gain

P9 sets the maximum speaker output level (see Figure 9).

- P9 in the **HI** position (default) represents a 30-watt maximum output.
- P9 in the **LO** position represents a 2-watt maximum output.

**⚠ WARNING ⚠** —Maximum output power may exceed rated speaker wattage resulting in speaker damage.

## Level Adjustments

### Transmit Level

Use the transmit-level potentiometer, R34, to adjust the signal level from the handset or optional auxiliary headset microphone to the page or party lines (see [Figure 9](#)).

### Receiver Volume

Use the receiver volume potentiometer, R5, to adjust the signal level to the handset receiver from the page or party lines (see [Figure 9](#)). This does not adjust the signal level to the optional auxiliary headset.

### Speaker Volume

Use the speaker volume potentiometer, R91, to adjust the signal level to the speaker from the page line (see [Figure 9](#)). The default setting is 4 watts for an 8-ohm speaker and 2 watts for a 16-ohm speaker.



1. Turn the speaker volume potentiometer, R91, (on the main PCBA) fully counterclockwise (see [Figure 9](#)).
2. Listen for a single beep from the speaker indicating the speaker amplifier is in the minimum level adjustment mode.

*If the page line is in use immediately after the beep tone is heard:* the page signal should be used to make the minimum level adjustment.

*If the page line is inactive following the beep tone:* a continuous tone is activated to make the minimum level adjustment. After the tone is activated, all page line activity is ignored until completion of the adjustment. This test tone is used as a reference to adjust the speaker amplifier output level to the desired volume.

3. Adjust the speaker volume potentiometer, R91, to the desired output (see [Figure 9](#)).

The test tone automatically shuts off 5 seconds after the last adjustment.

 **WARNING**  —Maximum output power may exceed rated speaker wattage resulting in speaker damage.

## Front Cover Installation

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.  
Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.
2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb-ft.

Do not omit any cover bolts. Use only those bolts supplied with the enclosure.

It may become necessary to re-terminate some or all of the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.

## Operation

For paging and subsequent party line conversation:

1. Lift the handset.
2. Select a free party line using the five-position rotary selector switch (if equipped).
3. Press the PUSH-TO-PAGE switch.
4. Page the desired individual, designating the party line that the individual should respond on.
5. Place the handset back on hook after the conversation is complete or after paging if no party line conversation is necessary.

To respond to a page:

1. Approach the nearest ICS Page/Party® station.
2. Select the appropriate party line.
3. Lift the handset or connect a headset.

Full-duplex communication can take place on the party line without broadcasting over the speakers.

4. Place the handset back on hook or disconnect the headset after the conversation is complete.

### NOTES:

- The ICS Page/Party® station incorporates a noise-canceling microphone to reduce transmitted ambient noise. This requires the user to place their mouth as close to the microphone as possible.
- The alternate page destination option enables selection of additional programmed page zones using the alternate page selector switch. Alternate page destinations must be software configured in the central control cabinet of a GAI-Tronics ADVANCE system.

## Options

The ICS SmartSeries®, VLC (Volume Level Control), and RTU (Remote Terminal Unit) station options can be factory or field installed. All other options are factory installed.

### ICS SmartSeries®

#### General

The No. 69552 SmartSeries® PCBA (see [Figure 10](#)) adds microprocessor control to the ICS Page/Party® station, providing additional sensor and monitoring capabilities.

**NOTE:** SmartSeries® and VLC PCBA's cannot be installed in the same station.

#### Installation

##### Features

When used with or without ADVANCE head-end equipment:

- ALS (Ambient Level Sensing) circuitry—automatically changes the local speaker's paging volume in response to varying background noise
- off-hook timeout—prevents noise from being introduced to a party line by electronically placing the handset *on-hook* after 8 minutes
- page timeout—limits a single page broadcast to two minutes, freeing the page line for emergencies

When used with ADVANCE head-end equipment:

- station monitoring of key components (including handset, amplifier, and local speaker)—provides fast notification of any faults
- ability to accept supervised contact closure inputs and provide a supervised relay output (requires RTU option)

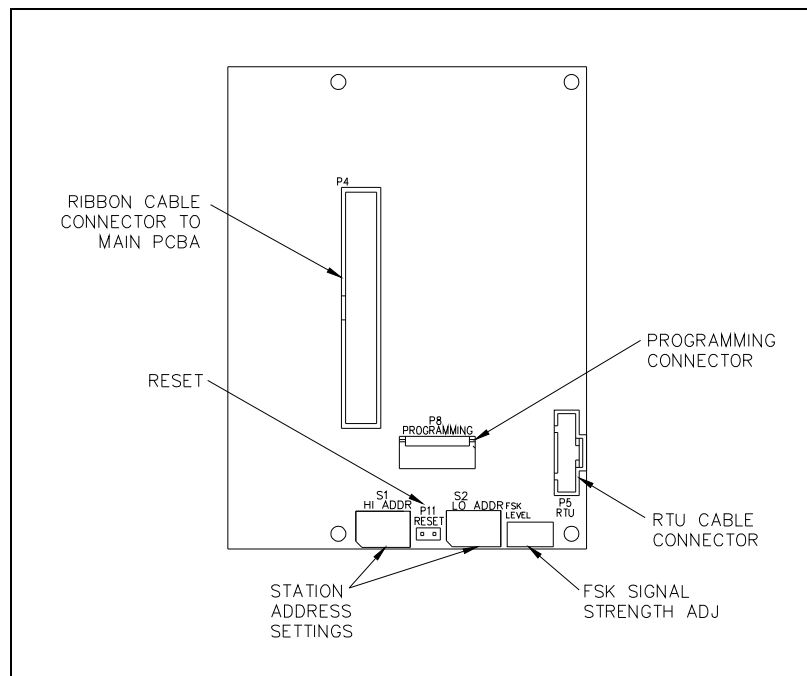






Figure 10. No. 69552 SmartSeries PCBA



## Front Cover Removal

 **WARNING**  —Remove all power from the station before performing any settings or adjustments.

 **WARNING**  —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are exposed (see [Figure 3](#)).

## SmartSeries® PCBA Installation

1. Remove power from the station.
2. Remove all jumpers on the main PCBA P4 connector (see [Figure 9](#)).
3. Align the SmartSeries® PCBA with the four mounting holes to the right of the main PCBA with the edge of the SmartSeries® board under the main PCBA.
4. Secure the SmartSeries® PCBA with the four screws provided.
5. Install the provided 34-pin ribbon cable from P4 of main PCBA to P4 of SmartSeries® PCBA.
6. Apply the included upgrade sticker to the power supply housing.
7. Reapply power to the station.

## Configuration

### Station Address

SmartSeries® stations in ADVANCE systems must be assigned a unique address using the hexadecimal switches, S1 (Hi Address) and S2 (Lo Address) for the SmartSeries® option to function properly (see [Figure 10](#)).

- Each switch contains 16 settings, labeled 0–F. A small arrow on each switch indicates the setting.
- The station address is determined by the high address setting followed by the low address setting.  
For example, to assign an address of 05, the high station address switch, S1, is set to 0 and the low address switch, S2, is set to 5.
- Valid address settings are 05 to FE.
- Record the address assigned to each station in the system.
- Set the address to 04 (default) if the SmartSeries® PCBA is installed in a system without an ADVANCE head end.

### ALS Minimum Level

The ALS minimum level is the lowest speaker output level that the station will maintain. The factory default setting for minimum level is 4.0 watts nominal into an 8-ohm load. To set the ALS minimum level:

1. Turn the speaker volume potentiometer, R91, (on the main PCBA) fully counterclockwise (see [Figure 9](#)).



2. Listen for a single beep from the speaker indicating the speaker amplifier is in the minimum level adjustment mode.

*If the page line is in use immediately after the beep tone is heard:* the page signal should be used to make the minimum level adjustment.

*If the page line is inactive following the beep tone:* a continuous tone is activated to make the minimum level adjustment. After the tone is activated, all page line activity is ignored until completion of the adjustment. This test tone is used as a reference to adjust the speaker amplifier output level to the desired volume.

3. Adjust the speaker volume potentiometer, R91, to the desired output (see [Figure 9](#))

The test tone automatically shuts off 5 seconds after the last adjustment.

 **WARNING**  —Maximum output power may exceed rated speaker wattage resulting in speaker damage.

### ALS Offset Level

The ALS offset level allows the output of the speaker amplifier to maintain a set difference or *offset* between the ambient noise level and the speaker output level. To set the ALS offset level:

1. Turn the speaker volume potentiometer, R91 (on the main PCBA), fully clockwise (see [Figure 9](#)).
2. Listen for two beep tones indicating that the station is in the offset adjustment mode.

*If the page line is in use immediately after hearing the two beep tones:* use the page signal to make the offset level adjustment.

*If the page line is inactive immediately following the beep tones:* a continuous tone activates to make the offset level adjustment. After the tone activates, the station ignores all page line activity until completion of the adjustment.

3. Adjust the speaker volume potentiometer, R91, to the desired offset level.

**NOTE:** Make this adjustment under maximum ambient noise level. The ALS offset level must always be set higher than the ALS minimum level setting.

### SmartSeries® VLC Level

When activated, the VLC overrides the ALS minimum level setting allowing the speaker volume to change to a preset level during an emergency page. To adjust the VLC Level:

1. Force the station into the VLC mode by executing a page from a station programmed by the MCU to activate the VLC function.
2. During the page, turn the speaker volume potentiometer, R91 (on the main PCBA), fully counterclockwise (see [Figure 9](#)).
3. Listen for two beep tones through the page speaker that indicate the VLC adjustment mode is active.
4. After the two beep tones, turn the speaker volume potentiometer, R91, to the desired speaker level using the live paging signal to adjust the level.

The station automatically exits the VLC adjustment mode and reverts to normal operation 5 seconds after the last potentiometer adjustment.

**NOTE:** The system must be equipped with an ADVANCE head end to activate the VLC function.

### Speaker Impedance Supervision

Speaker impedance supervision enables an ICS station to supervise the connected speaker line for changes in the speaker line impedance.

- The station must be calibrated for the impedance of the attached speaker(s) to perform this function.
- A station that has never been calibrated will report a speaker fault within 15 minutes of being configured for this feature in the ADVANCE system.
- Stations can be calibrated either *locally* at the station or *remotely* by a system command from the ADVANCE head end. See the ADVANCE System Programming Manual for instructions on performing *remote* calibration.

#### To perform a *local* calibration:

1. Configure the station for speaker impedance supervision.
2. Set the station's address to **0x02**.
3. Wait until you hear a single-beep tone at the attached speaker.

This should occur within 20 seconds.

The single beep tone indicates that a successful calibration was performed. A double-beep tone indicates that the station attempted to calibrate but was unsuccessful (the attached impedance is out-of-range). If no tone is heard, the station may not be configured for speaker impedance supervision or there is an open connection to the speaker.

4. Set the address back to its original value to resume normal station operation with the new calibration value after hearing the single beep tone.

**NOTE:** Jumper P9 on the main PCBA must be in the HI (default) position if this feature is used.

### FSK (Frequency Shift Keying) Signal Gain

The FSK signal gain potentiometer, R13, adjusts the FSK transmit signal strength. This setting is factory configured and must not be adjusted by the installer.

### Front Cover Installation

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.  
Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.
2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb·ft.

Do not omit any cover bolts. Use only those bolts supplied with the enclosure.

It may become necessary to re-terminate some or all of the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.

## Operation

### Paging with ADVANCE Head End

Paging and party line operation with the ICS SmartSeries® option is similar to standard station operation with the following differences:

- A steady *page-confirmation* tone will be heard in the handset/headset earpiece when the handset pressbar or the headset page switch is pressed.
- A *page pre-announcement* tone, if programmed, will sound when the page-confirmation tone ends, and the operator can make a page.
- A *busy* tone heard in the handset/headset earpiece indicates that the system is busy, and the page is denied.

### Paging without ADVANCE Head End

Paging and party line operation is the same as standard station operation (see the Operation section).

### Station Time-out Features

The ICS SmartSeries® option supports a *page-duration* limit that sets the maximum duration of each page.

- A page will terminate if the page is still active when the page duration limit is reached.
- The page duration limit is fixed at 2 minutes when used without an ADVANCE head end.

The ICS SmartSeries® option supports an *off-hook* limit that sets the maximum duration that the station may be kept off hook.

- The station is placed electrically on hook if the off-hook limit is reached.
- The handset must be physically placed on hook momentarily to reset the timeout condition.
- The off-hook limit is fixed at 8 minutes when used without an ADVANCE head end.

### All-Call Paging Utilizing a Merge/Isolate Cabinet

M/I (Merge/Isolate) cabinets contain switching relays that are energized by a control signal from Page/Party® stations. The relays merge (connect together) the page lines of multiple Page/Party® systems when energized. This allows voice pages to be broadcast from all of the systems connected to the M/I cabinet. ICS handset stations with the All-Call feature contain a push-button switch on the front panel to activate an M/I cabinet (see [Figure 11](#)).

### SmartSeries® Dual Page All-Call Utilizing ADVANCE Head End

A monitored dual page zone can be utilized for the All-Call push button for stations with the *Dual Page All-Call* option. The Dual Page All-Call option must be software configured in the central control cabinet of a GAI-Tronics ADVANCE system (see [Figure 11](#)).

### EPL (Emergency Party Line)

The EPL option enables ICS SmartSeries® Stations connected to an ADVANCE control cabinet to automatically report the following information when the handset is taken off-hook:

- zone number
- station address
- party line (one or two)

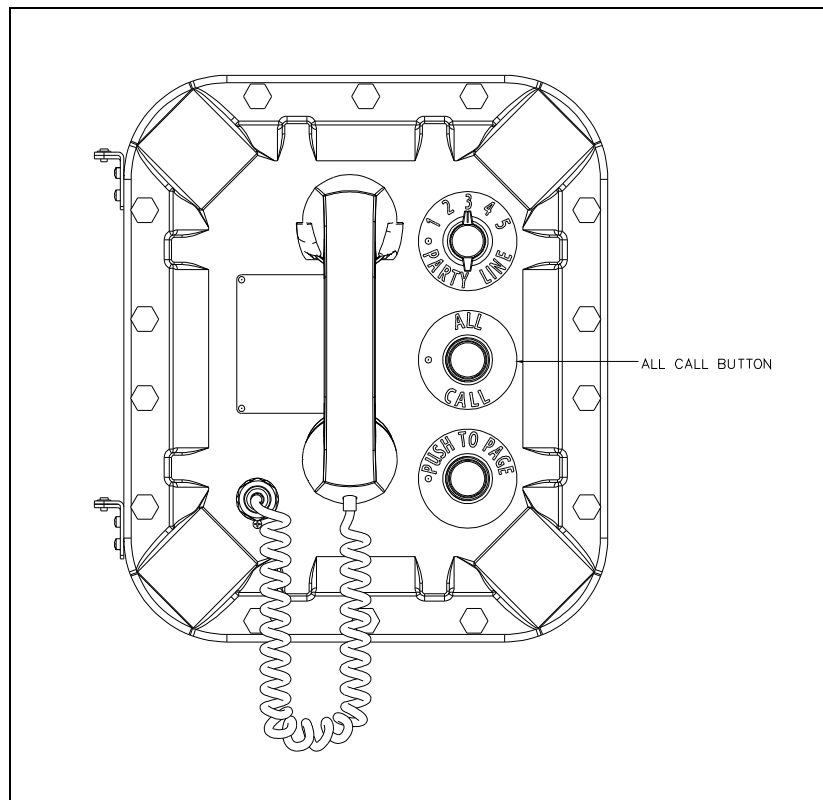


Figure 11. All-Call Selector Switch Location

#### Paging with Alternate Page Destination Utilizing ADVANCE Head End

Additional programmed page zones can be used with the alternate page selector switch on stations with the alternate page destination option (see Figure 12). The alternate page destinations must be software configured in the central control cabinet of a GAI-Tronics ADVANCE system.

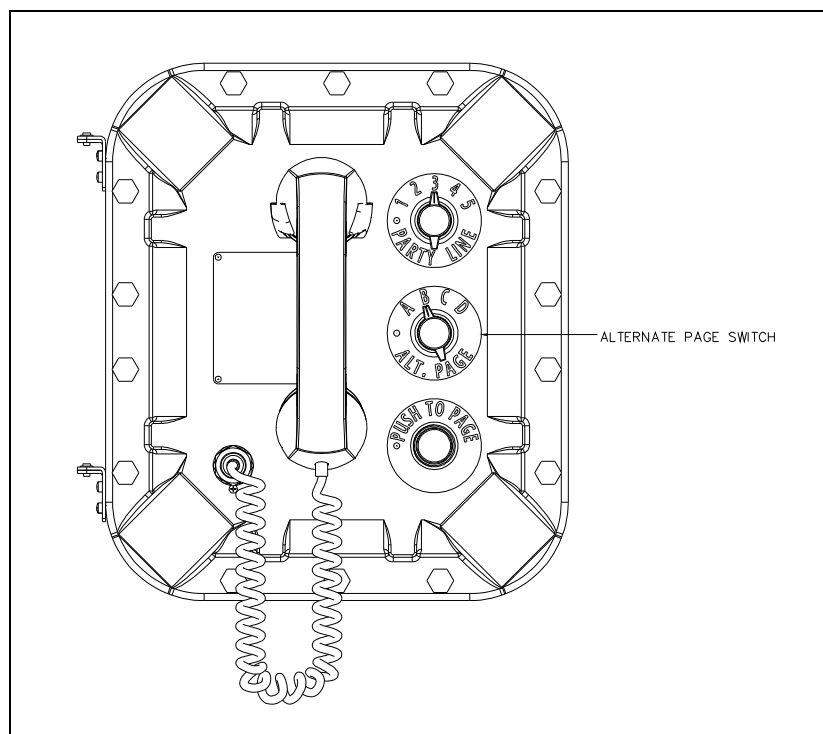


Figure 12. Alternate Page Selector Switch Location

## VLC

### General

The No. 69553 VLC (Volume Level Control) PCBA (see Figure 13) adds the capability to remotely control the local speaker volume level. A remote device transmits a 50 kHz signal over the page line when VLC is active. The station detects the 50 kHz signal and switches to an alternate speaker volume setting.

**NOTE:** VLC and SmartSeries® options cannot be used in the same station.

### Features

- *alternate* speaker volume activated by reception of a 50 kHz signal on the page line
- muting of office or crew quarter's speakers until a high priority message or alarm is broadcast
- prevention of local handset paging during emergency situations
- optional reduction of outdoor speaker volume at night
- two relay outputs (requires RTU option)

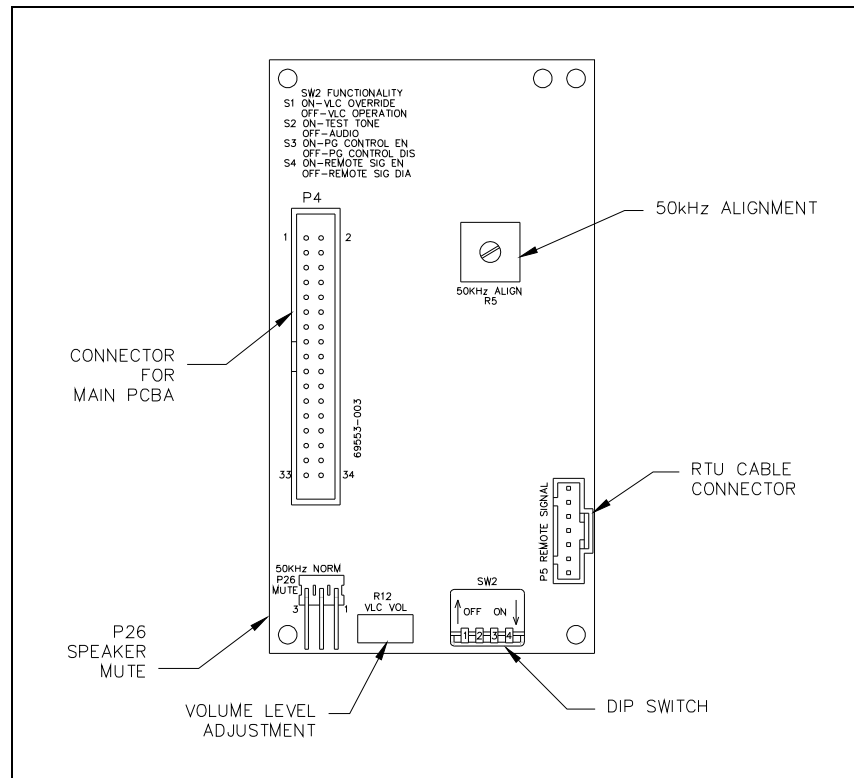






Figure 13. No. 69553 Series VLC PCBA

## Installation

### Front Cover Removal

 **WARNING**  —Remove all power from the station before performing any settings or adjustments.

 **WARNING**  —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are now exposed (see [Figure 3](#)).

### VLC PCBA Installation

1. Remove power from the station.
2. Remove all jumpers on the Main PCBA P4 connector (see [Figure 9](#)).
3. Align the VLC PCBA with the four mounting holes to the right of the main PCBA board.
4. Secure the VLC PCBA with the four screws provided.
5. Install the provided 34-pin ribbon cable from P4 of main PCBA to P4 of VLC PCBA.
6. Apply the included upgrade sticker to the power supply housing.
7. Reapply power to the station.

## Configuration

### 50 kHz Alignment

The 50 kHz alignment potentiometer, R5, adjusts the receiver's frequency for VLC operation. It is set at the factory and must not be adjusted by the installer.

### Speaker Mute

Jumper P26 (see [Figure 13](#)) enables muting the speaker audio during VLC or normal operation:

- Install jumper P26 in the **50kHz** position to mute audio during a VLC broadcast.
- Install jumper P26 in the **NORM** position to mute audio during normal operation.
- Remove jumper P26 to operate the unit without muting.

### Audio Alignment

To set the normal speaker output level:

1. Set DIP switch SW2-1 (see [Figure 13](#)) to the off position.
2. Set DIP switch SW2-2 to the on position to enable a reference test tone.
3. Adjust the speaker volume potentiometer, R91, on the Main PCBA to the desired audio level (see [Figure 9](#)).
4. Turn the speaker volume potentiometer, R91, fully counterclockwise to mute the audio.

**NOTE:** The adjustment cannot be made if LED2 on the VLC PCBA is on; indicating the system VLC tone is present.

To set the VLC controlled speaker output level:

1. Set SW2-1 (see [Figure 13](#)) to the on position.
2. Set SW2-2 to the on position to enable a reference test tone.
3. Adjust the VLC volume level potentiometer, R12, on the VLC PCBA to the desired audio level.
4. Turn VLC volume level potentiometer, R12, fully counterclockwise to mute the audio.
5. Set SW2-1 and SW2-2 to the off position to return to normal system operation.

#### **Page Disable Control**

Set SW2-3 (see [Figure 13](#)) to the on position to disable local paging when the system VLC tone is present.

#### **Remote Output Switching (Available with RTU Only)**

Set SW2-4 (see [Figure 13](#)) to the on position to activate the RTU relay when the system VLC tone is present.

#### **Front Cover Installation**

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.  
Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.
2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb-ft.

Do not omit any cover bolts. Use only those bolts supplied with the enclosure.

It may become necessary to re-terminate some or all of the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.



## RTU

### General

The No. 69627 RTU (Remote Terminal Unit) PCBA (see Figure 14) adds two remotely controlled dry relay contact outputs to an ICS Page/Party® station equipped with either a VLC PCBA or a SmartSeries® PCBA in conjunction with an ADVANCE head end. Two supervised inputs are also available when installed with a SmartSeries® PCBA in conjunction with an ADVANCE head end.

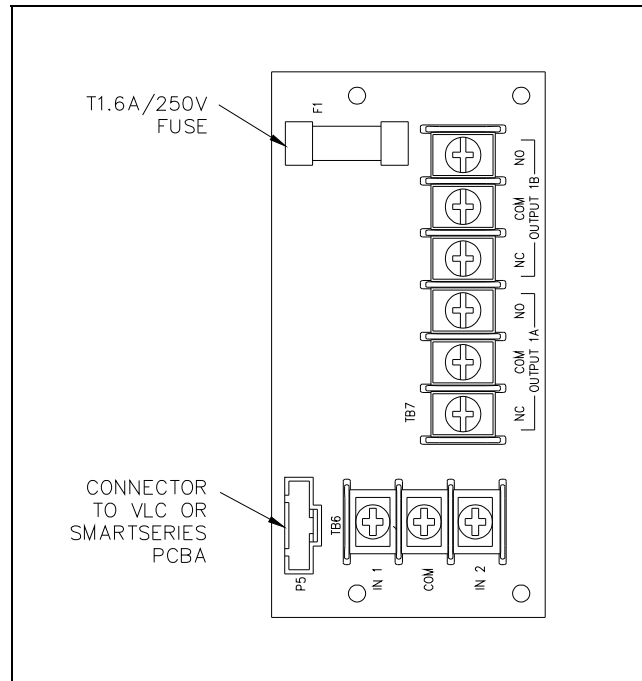


Figure 14. No. 69627 Series RTU PCBA

### Features

#### With SmartSeries® PCBA and ADVANCE Head End

- two dry-contact input circuits (input cable supervision is optional) for 69627 Series RTU PCBA
- input status is monitored to trigger an action in the ADVANCE head end
- double pole, Form C relay contact (output cable supervision is available)
- one fuse-protected relay contact

#### With SmartSeries® PCBA and Dual Page All-Call with ADVANCE Head End



- one dry-contact input circuit
- input status is monitored to trigger action in the ADVANCE head end
- double pole, Form C relay contact (output cable supervision is available)
- one fuse-protected relay contact



#### With VLC PCBA

- double-pole, Form C relay contacts
- one fuse-protected relay contact

## Installation

### Front Cover Removal

 **WARNING**  —Remove all power from the station before performing any settings or adjustments.

 **WARNING**  —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are now exposed (see [Figure 3](#)).

### RTU PCBA Installation

1. Remove power from the station.
2. Install the four provided standoffs onto the four studs located adjacent to the power supply.
3. Align the RTU PCBA over the four standoffs with TB7 oriented toward the termination PCBA (see [Figure 3](#)).
4. Secure the RTU PCBA with the four screws provided.
5. Install the provided 6-conductor harness from P5 on the SmartSeries® or VLC PCBA to P5 on the RTU PCBA.
6. Apply the included upgrade sticker to the power supply housing.
7. Reapply power to the station.

### Field Wiring

The RTU PCBA provides terminal blocks for field wiring. Attach spade lugs to the wires before attachment to the terminal blocks for the most secure connection.

OUTPUT 1A and OUTPUT 1B are activated by either the VLC or SmartSeries PCBA. OUTPUT 1B is fused on the normally open (N. O.) contact with a T1.6-amp fuse.

**Non-supervised Output Wiring Configuration**

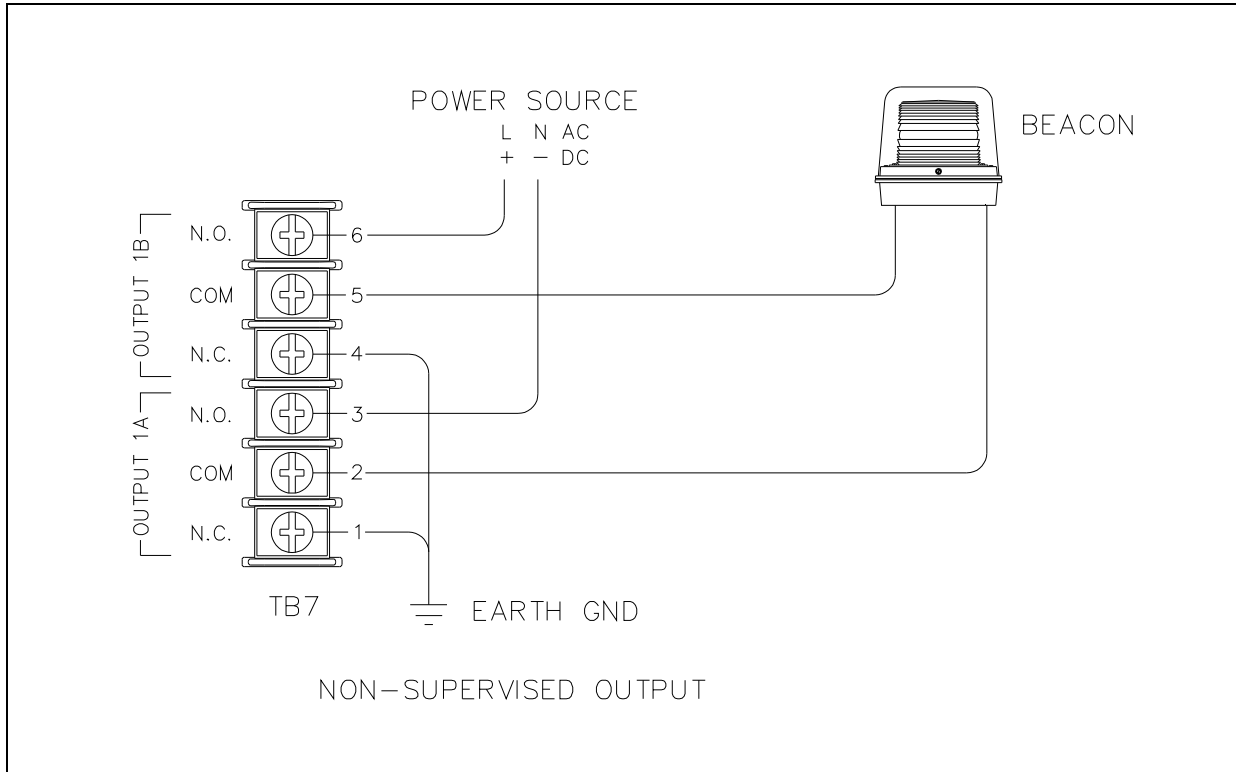


Figure 15. Non-supervised Output with the VLC or SmartSeries® Option

**Supervised Output Wiring Configurations with SmartSeries® Option**

**⚠ WARNING ⚠** — Installation of this component shall be carried out by suitably trained personnel in accordance with the applicable code of practice concerning equipment and protective systems intended for use in potentially explosive atmospheres. This component must be in a suitable enclosure for the potentially explosive atmosphere. During normal operation at 230 V this component can support a temperature code of T4. This component shall be installed at a location acceptable to the authority having jurisdiction.

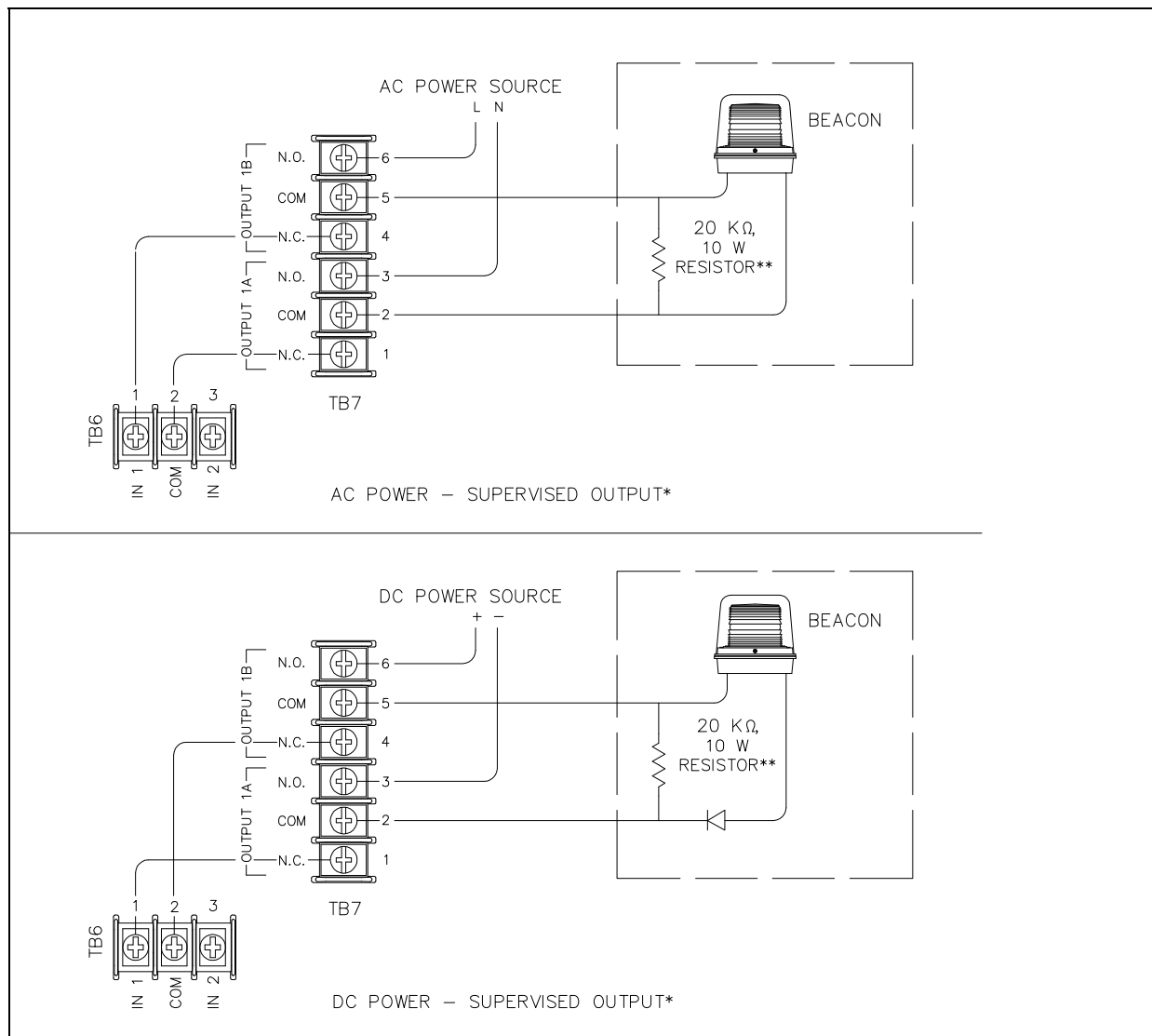


Figure 16. Supervised Output Wiring with SmartSeries® Option

**NOTES:**

- \*Input one is used to monitor output one and is not available for other functions.
- \*\*20-kilohm, 10-watt supervision resistor

**Input 1 or 2 Wiring Configuration with the SmartSeries® Option**

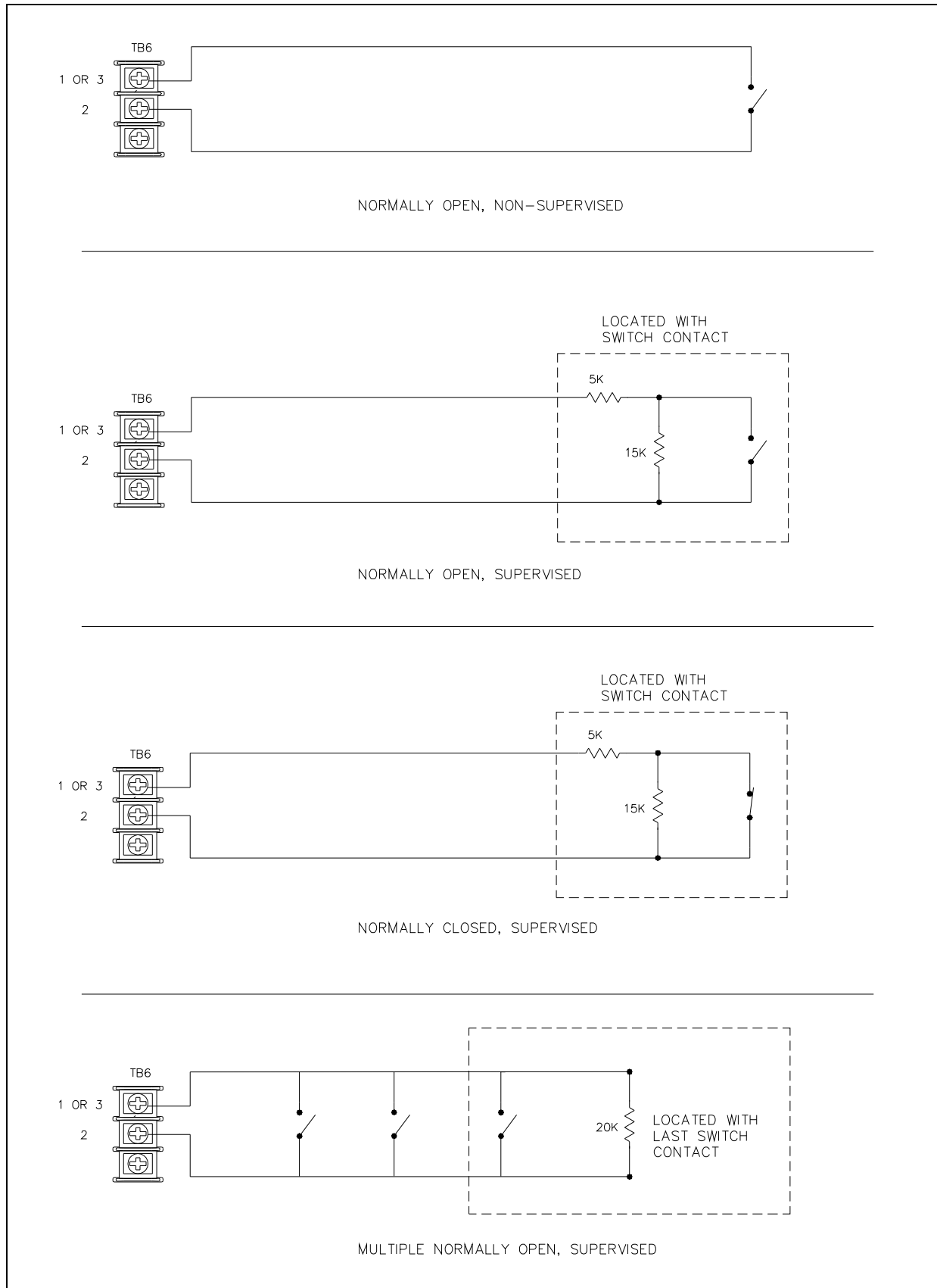


Figure 17. Input 1 or 2 Wiring Configuration with the SmartSeries® Option

## Front Cover Installation

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.

Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.

2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb·ft.



Do not omit any cover bolts. Use only those bolts supplied with the enclosure.



It may become necessary to re-terminate some or all the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.

## Troubleshooting

### Front Cover Removal

 **WARNING**  —Remove all power from the station before performing any settings or adjustments.

 **WARNING**  —To reduce the risk of hazardous atmospheres, disconnect the equipment from the supply circuit before making any adjustments to the amplifier's handset level.

1. Remove all cover bolts from the enclosure.
2. Swing the front door open to access the internal PCBAs.

Keep all wiring and the ribbon cable connected. The front cover and back box interiors are now exposed (see Figure 3).

## P4 Standard Jumper Configuration

ICS stations without options require the default installation of jumper P4 for proper operation (see Figure 18).

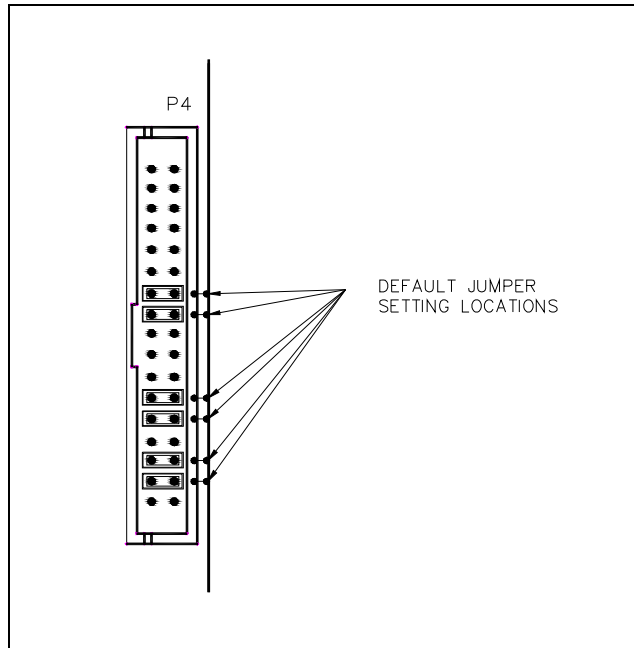


Figure 18. P4 Jumper Default Settings

The following tables provide aid to qualified service personnel in troubleshooting problems with the ICS Page/Party® Station.

Table 1. General Troubleshooting



<b>Problem</b>	<b>Potential Cause</b>
station not functional	<ul style="list-style-type: none"> <li>• See the <u>Field Wiring</u> section for proper terminations.</li> <li>• Verify incoming supply voltage at TB2 or TB3 on the termination PCBA.</li> <li>• Verify regulated 24 V dc at P1 on the termination PCBA.</li> </ul> <p style="text-align: center;"> <b>CAUTION</b>  —Supply voltage is present at P2.</p>
excessive hum or buzz during station operation	Inspect the Page/Party® lines for proper line terminations, shorts, and grounds.
crosstalk occurs between Page/Party® lines	<ul style="list-style-type: none"> <li>• Inspect the Page/Party® lines for proper line terminations, shorts, and grounds.</li> <li>• Inspect the Page/Party® line connections for crossing of the cable pairs.</li> </ul>
feedback occurs during page	<ul style="list-style-type: none"> <li>• Check the location and orientation of the speakers in the area.</li> <li>• See the <u>Field Wiring</u> section, Step 5, mutual muting.</li> <li>• See the <u>Speaker Mute</u> section.</li> </ul>
squeal in handset receiver	<ul style="list-style-type: none"> <li>• Verify proper termination of the Page/Party® lines.</li> <li>• Verify the system line balance is connected.</li> </ul>
handset microphone audio too low/loud	<ul style="list-style-type: none"> <li>• Disconnect the headset, if connected.</li> <li>• See the <u>Transmit Level</u> section.</li> <li>• Check jumper settings or cable connections at P4.</li> <li>• Verify proper termination of the Page/Party® lines.</li> <li>• Check handset connections.</li> <li>• Check for proper cable terminations between the termination and main PCBAs.</li> <li>• Check the operation of the hookswitch.</li> <li>• Replace the handset.</li> </ul>
handset receiver audio too low/loud	<ul style="list-style-type: none"> <li>• See the <u>Receiver Volume</u> section.</li> <li>• Check the jumper settings or cable connections at P4.</li> <li>• Verify proper termination of the Page/Party® lines.</li> <li>• Check the handset connections.</li> <li>• Check for proper cable terminations between the termination and main PCBAs.</li> <li>• Check the operation of the hookswitch.</li> <li>• Replace the handset.</li> </ul>



Table 2. Troubleshooting Standard/VLC Configurations

<b>Problem</b>	<b>Potential Cause</b>
speaker volume too low/loud	<ul style="list-style-type: none"> <li>• See the <a href="#">Speaker Volume</a> section; or for VLC, the <a href="#">Audio Alignment</a> section.</li> <li>• Verify P15 and P16 are in the correct position for the application.</li> <li>• Verify the speaker wiring configuration is correct.</li> <li>• Verify the nominal page line level is correct.</li> <li>• Replace the speaker or driver.</li> </ul>
cannot place a page	<ul style="list-style-type: none"> <li>• For VLC, see the <a href="#">Audio Alignment</a> and <a href="#">Page Disable Control</a> sections.</li> <li>• Check the handset connections.</li> <li>• Check for proper cable terminations between the termination and main PCBAs.</li> <li>• Check the jumper settings or cable connection at P4.</li> <li>• Replace the handset.</li> </ul>
RTU output not functional	<ul style="list-style-type: none"> <li>• Verify the VLC PCBA is installed and operational. See the <a href="#">Remote Output Switching (Available with RTU Only)</a> section.</li> <li>• Check fuse F1 on the RTU PCBA.</li> <li>• Check the cable connection at P5 on the RTU and VLC PCBAs.</li> <li>• Check the RTU terminal connections at TB7. See <a href="#">Figure 15</a>.</li> <li>• Check the operation of the connected device.</li> </ul>
RTU input not functional	Inputs are only available with the SmartSeries® option.

Table 3. Troubleshooting SmartSeries® Configurations

<b>Problem</b>	<b>Potential Cause</b>
speaker volume too low/loud	<ul style="list-style-type: none"> <li>• See the ADVANCE System Programming manual, Pub. 42004-700L2, for station configuration.</li> <li>• Refer to the <u>ALS Minimum Level</u>, <u>ALS Offset Level</u> , and <u>SmartSeries® VLC Level</u> sections.</li> <li>• Check cable connection at P4.</li> <li>• Verify P15 and P16 are in the correct position for the application.</li> <li>• Verify the speaker wiring configuration is correct.</li> <li>• Verify the nominal page line level is correct.</li> <li>• Replace the speaker or driver.</li> </ul>
Page/Party® operation not functional	<ul style="list-style-type: none"> <li>• See the Station Address section.</li> <li>• Check cable connection at P4.</li> <li>• Check proper cable terminations between Termination and Main PCBAs.</li> <li>• Ensure proper termination on Page/Party® lines.</li> </ul>
RTU output not functional	<ul style="list-style-type: none"> <li>• For supervised output, ensure no monitored output faults exist.</li> <li>• Check fuse, F1, on the RTU PCBA.</li> <li>• Check the cable connection at P5 on the RTU and SmartSeries® PCBAs.</li> <li>• Check RTU terminal connections at TB6 and TB7 (see <u>Figure 15</u> and <u>Figure 16</u>).</li> <li>• Check operation of connected device.</li> </ul>
RTU input not functional	<ul style="list-style-type: none"> <li>• For supervised input, verify no monitored input faults exist.</li> <li>• Check the cable connection at P5 on the RTU and SmartSeries® PCBAs.</li> <li>• Check RTU terminal connections at TB6 (see <u>Figure 17</u>).</li> <li>• Check for operation of connected device.</li> </ul>

## Front Cover Installation

After all wiring, cable connections, and configuration are complete:

1. Inspect and clean the machined flange joint surfaces of both the cover and box.

Surfaces must be smooth, free of nicks, scratches, dirt, or any foreign particle build-up that would prevent a proper seal. Surfaces must seat fully against each other to provide a proper explosion-proof joint.

2. Clean surfaces by wiping with a clean lint-free cloth.
3. Apply a light coat of Killark LUBG lubricant to flange surfaces and close the cover.
4. Install and tighten all cover bolts to 30 lb·ft.

Do not omit any cover bolts. Use only those bolts supplied with the enclosure.

It may become necessary to re-terminate some or all the enclosures in a system. If so, strip the wires back to clean copper and connect only one wire to each connector to allow for easier future troubleshooting.

**NOTE:** Refer to the Killark installation, operation, and maintenance data sheet enclosed with the unit for additional information.

## Service and Spare Parts

If the equipment requires service or spare parts, contact your Regional Service Center for assistance. If service is required, a return authorization number (RA#) will be issued. 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 GAI-Tronics' warranty policy. 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 Regional Service Center closest to you.

# Specifications

## Power Requirements

### AC/DC Input

#### AC Power Supply

Input voltage ..... 90 to 264 V ac (operating), 50/60 Hz

Power factor @ nominal 120 V ac ..... 0.98

#### DC Power Supply

Input voltage ..... 24 V dc +/-20%

#### Current/Power requirements (+/-10%)

<b>Power Consumed (8-ohm load)</b>	<b>24 V DC</b>	<b>120 V AC</b>	<b>230 V AC</b>
Idle	165 mA/4.0 W	70 mA/8.4 VA	90 mA/20.7 VA
4-watt output (default setting)	460 mA/11.0 W	120 mA/14.4 VA	110 mA/25.3 VA
12-watt output	900 mA/21.6 W	200 mA/24.0 VA	160 mA/36.8 VA
30-watt output	1.95 A/46.8 W	400 mA/48.0 VA	220 mA/50.6 VA
<b>Maximum Current Consumption (8-ohm load)</b>	<b>19.2 V DC</b>	<b>90 V AC</b>	<b>253 V AC</b>
30-watt output	2.44 A/46.8 W	520 mA/46.5 VA	230 mA/61.0 VA

## Handset

Microphone ..... dynamic, noise-canceling

Receiver ..... dynamic, hearing aid compatible

Cord ..... retractile, 6-foot extended, PVC

Material ..... ABS

External control ..... push-to-page handset pressbar

## Handset Amplifier

Output level (compression controlled) ..... 1.5 V<sub>RMS</sub> nominal into 33 Ω load  
adjustable 0 to 2.1 V<sub>RMS</sub>

Frequency response ..... 250 to 6,500 Hz, +0/-3 dB reference to 1 kHz

Distortion ..... <1.5% THD @ 1 kHz (below compression level)

Receiver level ..... 200 mV<sub>RMS</sub>, nominal  
adjustable 150-400 mV<sub>RMS</sub>

## Speaker Amplifier

### Maximum output:

8-ohm speaker\* ..... 30 W into 8 Ω load with 1.5 V<sub>RMS</sub> input page level  
adjustable to 30 W; default: 4 W @ 8 Ω

16-ohm speaker ..... 15 W into 16 Ω load with 1.5 V<sub>RMS</sub> input page level  
adjustable to 15 W; default: 2 W @ 16 Ω

Frequency response ..... 250 to 6,500 Hz, +0/-3 dB reference to 1 kHz

Distortion .....	<1% THD @1 kHz to 24 W <3% THD @ 1 kHz to 30 W
Input impedance.....	50 kΩ 16 kΩ with SmartSeries® option
SmartSeries offset level adjustment range .....	0 to 30 dB

\*See Figure 19.

### Enclosure Specifications

Construction/finish.....	cast aluminum/gray epoxy powder coat
Mounting.....	wall or column, four 3/8 in (10 mm) mounting feet with slots
Connections.....	screw-type barrier terminal blocks
Dimensions .....	14.31 H × 13.06 W × 11.68 D in (363.6 × 331.8 × 296.6 mm)
Shipping weight .....	49 lb (22.2 kg)
Net weight.....	47 lb (21.3 kg)

### VLC Option Specifications

VLC minimum input level .....	50 mV <sub>RMS</sub>
VLC tolerance.....	50 kHz +/-4%

### All-Call Option Specifications

All-Call control output.....	sink 50 mA maximum to circuit common pulled up to 24 V dc maximum
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### RTU Option Specifications

#### Output Relay

Maximum load current.....	8 A OUTPUT 1A (unfused) 1.6 A OUTPUT 1B (fused)
Maximum voltage .....	250 V ac

#### RTU Input Control (with SmartSeries Option)

Switch type.....	NO (normally open) or NC (normally closed) dry contacts
End-of-line termination.....	20 kΩ, or 15 kΩ + 5.1 kΩ
Cable resistance .....	100 Ω maximum loop resistance
Contact closure resistance.....	1 kΩ maximum
Open fault detection.....	>65 kΩ
Short fault detection.....	<200 Ω

### Environmental

Temperature range (operating and storage) .....	(-4 °F to +140 °F) -20 °C to +60 °C
Humidity .....	95% non-condensing
Enclosure .....	IP66/Type 4X

# Approvals

NRTL listed  
(USA and Canada)

Hazardous locations Class I, Div. 1, Groups B, C, & D;  
Class II, Div. 1, Groups F & G;  
Class III, Div. 1  
T6, Type 4X

International Certification

DEMKO 09 ATEX 0909372X (ATEX)

Ⓔ II 2 G db [ib] IIB + H<sub>2</sub> T6 Gb

CENELEC EN 60079-0:2012 + All:2013, CENELEC EN 60079-1:2014, and CENLEC EN 60079-11:2012.

IECEX UL 09.0009X (IECEX)

Ex db [ib] IIB + H<sub>2</sub> T6 Gb

IEC 60079-0:2011, 6<sup>th</sup> Edition, IEC 60079-1:2014, 7<sup>th</sup> Edition, IEC 60079-11:2011, 6<sup>th</sup> Edition.

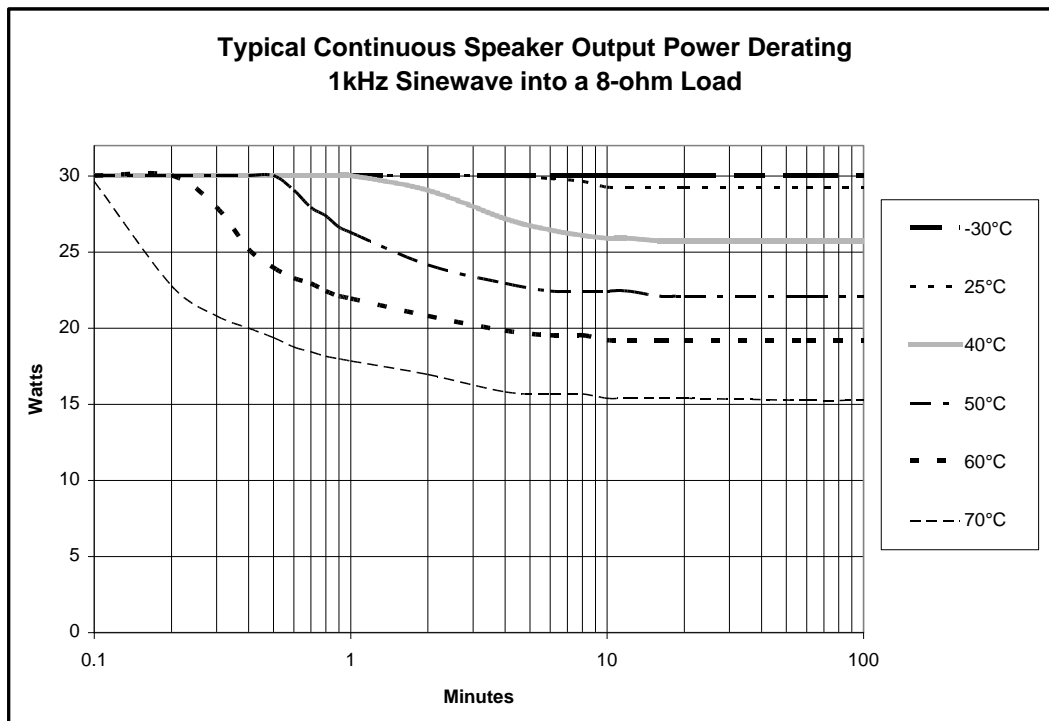


Figure 19. Typical Continuous Speaker Output Power Derating 1 kHz Sine Wave into an 8-ohm Load

## Tabulation of Additional Previous Editions Applied

The following additional previous editions of Standards noted under the “Standards” section of this Certificate were applied to integral Components as itemized below. There are no significant safety related changes between these previous editions and the editions noted under the “Standards” section.	
EXB-8106 N34 empty enclosures, manufactured by Killark	IEC 60079-0:2004 IEC 60079-1:2003
Model Nos. GO1-13-N34 and GO1-KX1C-N34, manufactured by Killark	IEC 60079-0:2004 IEC 60079-1:2003

# Warranty

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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

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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.