Pub. 42004-730D

GAI-TRONICS®
A HUBBELL COMPANY

Industrial Communications System
Page/Party® AC Plug-in Amplifiers

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Confidentiality Notice

General Information

Product Overview

The GAI-Tronics ICS Page/Party system is a modular industrial communications system with two to hundreds of stations, all wired in parallel.

GAI-Tronics' ICS Page/Party plug-in amplifier is a key component in the 700 series Page/Party system. The handset/speaker amplifier mates directly with the 702, 703, 732, and 733 series amplifier enclosures and is suitable for indoor or outdoor use.

This manual covers the ICS Page/Party ac plug-in amplifiers that are direct replacements for existing 700 series ac amplifiers. Refer to the model chart below (see Table 1).

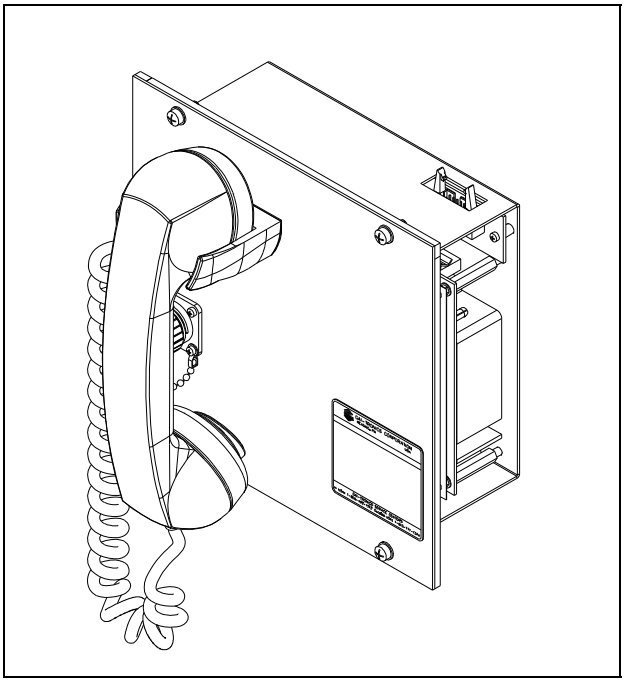

Figure 1. Model 701-304ICS Handset/Speaker Amplifier

GAI-TRONICS 3030 KUTZTOWN RD. READING, PA 19605 USA
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VISIT WWW.GAI-TRONICS.COM FOR PRODUCT LITERATURE AND MANUALS

Table 1. AC Amplifier Model Chart

ICS Page/Party Model	Description	Replacement for 700 Series:
751-001ICS	Speaker Amplifier	751-001
701-302ICS	Handset/Speaker Amplifier	701-302
701-304ICS	Handset/Speaker Amplifier with Auxiliary Jack	701-304
751-001ICSVC	Speaker Amplifier with VLC	751-001VC
701-302ICSVC	Handset/Speaker Amplifier with VLC	701-302VC
701-304ICSVC	Handset/Speaker Amplifier with Auxiliary Jack and VLC	701-304VC
751-901ICS	SmartSeries Speaker Amplifier	751-901
701-902ICS	SmartSeries Handset/Speaker Amplifier	701-902
701-904ICS	SmartSeries Handset/Speaker Amplifier with Auxiliary Jack	701-904
723-901ICS	SmartSeries Remote Handset/Speaker Amplifier	723-901

Features

- direct replacement for existing GAI-Tronics 700 Series plug-in amplifiers
- suitable for indoor or outdoor use
- single party or multi-party operation, (*enclosure dependent*)
- speaker volume adjustment
- line adjustment
- receiver volume adjustment
- conformal PCBA coating available
- Hytrel® or PVC coil cord available for handset models

Important Safety Instructions

- **Read, follow, and retain instructions**—Read and follow all safety and operating instructions before installing or operating the unit. Retain instructions for future reference.
- **Heed warnings**—Adhere to all warnings on the unit and in the operating instructions.
- **Attachments**—Do not use attachments not recommended by the product manufacturer, as they may cause hazards.
- **Servicing**—Do not service this unit yourself. Opening or removing covers may expose 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.

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. Install class 2 circuit wiring in accordance with the NEC.

Installation

⚠ **CAUTION** ⚠ —Do not install this equipment in hazardous areas other than those listed in the Approvals section. Such installation may cause a safety hazard and consequent injury or property damage.

ICS Page/Party ac plug-in amplifiers plug directly into the enclosure (see Figure 2). Use extra caution to prevent damage to the protruding latch wings of connector P6, located on the top right edge of the amplifier, during installation and removal.

Install the ICS Page/Party Plug-in Amplifier

1. Plug the amplifier directly into the enclosure.
2. Attach the amplifier to the enclosure with the provided hardware (see Figure 2).
3. Apply power to the station.

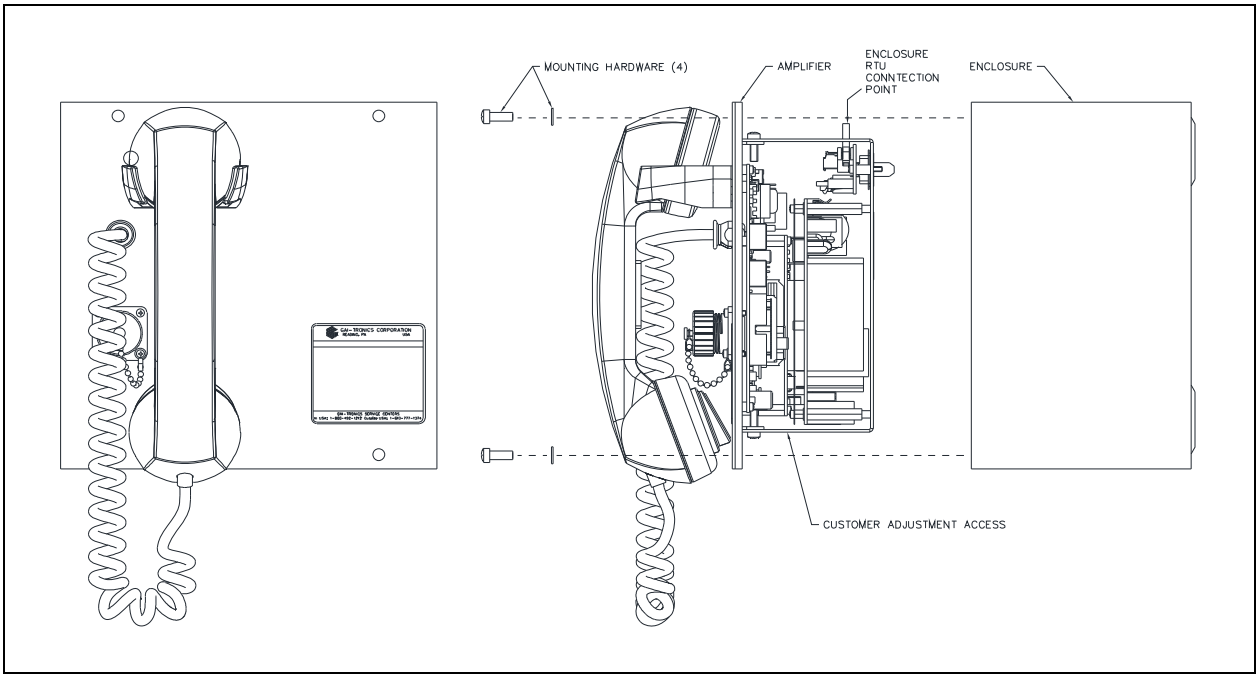

Figure 2. Installation Detail

Enclosure RTU Connection (if applicable)

RTU enclosures provide one double-pole form C relay and one fuse-protected contact. The RTU PCBA includes a ribbon cable that connects to the VLC or SmartSeries PCBA. If an RTU PCBA is present in the enclosure, connect the ribbon cable to the receptacle on the top side of the amplifier.

NOTE: When a SmartSeries PCBA has an ADVANCE head end connection, the RTU provides input status monitoring (to trigger action in the ADVANCE head end), a double-pole form C relay output contact (*with optional output cable supervision*), and one fuse-protected contact.

Configuration

Settings and adjustments vary by model number. Refer to the appropriate section in this manual for instructions for the applicable model.

Open and Close the Amplifier (All models)

Open the amplifier to gain access to the internal PCBAs, when necessary. Open and close the amplifier as follows:

1. Place the amplifier on a flat surface and loosen (*do not remove*) the two sets of rear cover screws, located on the top and bottom L-shaped slots (see Figure 6, Figure 10, and Figure 14)).
2. Slide the front panel, with the screws, sideways and then pull up to separate the front panel from the rear section.

   A ribbon cable connects the two sections.
3. Lay the rear section to the left and the front section to the right with the PCBAs facing upward for access to the applicable adjustments.
4. After completing all settings and adjustments, slide the rear cover L-shaped slots over the top and bottom screws and tighten the screws.

   Do not pinch any cables.

Models 751-001ICS, 701-302ICS & 701-304ICS (ICS Page/Party ac plug-in amplifiers).

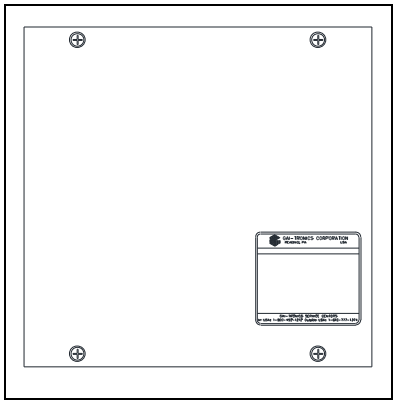

Figure 3. Model 751-001ICS Speaker Amplifier

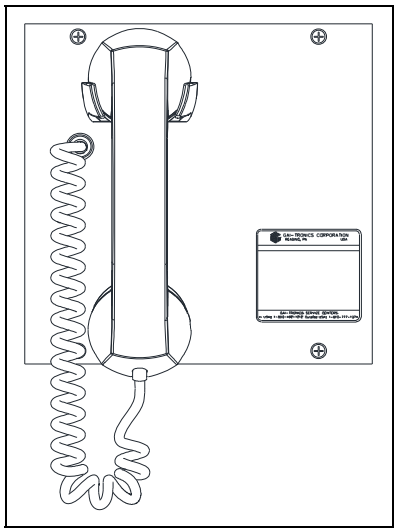

Figure 4. Model 701-302ICS Handset/Speaker Amplifier

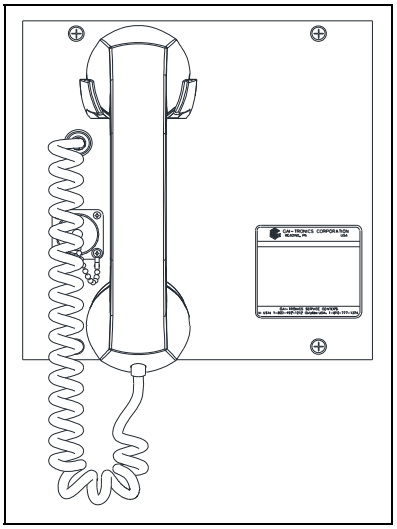

Figure 5. Model 701-304ICS Handset/Speaker Amplifier with Auxiliary Jack

Speaker Configuration and Adjustment

GAI-Tronics recommends using a No. 10440-002 Maintenance Cable (*purchased separately*) to perform the following adjustments (see Figure 6 for component locations).

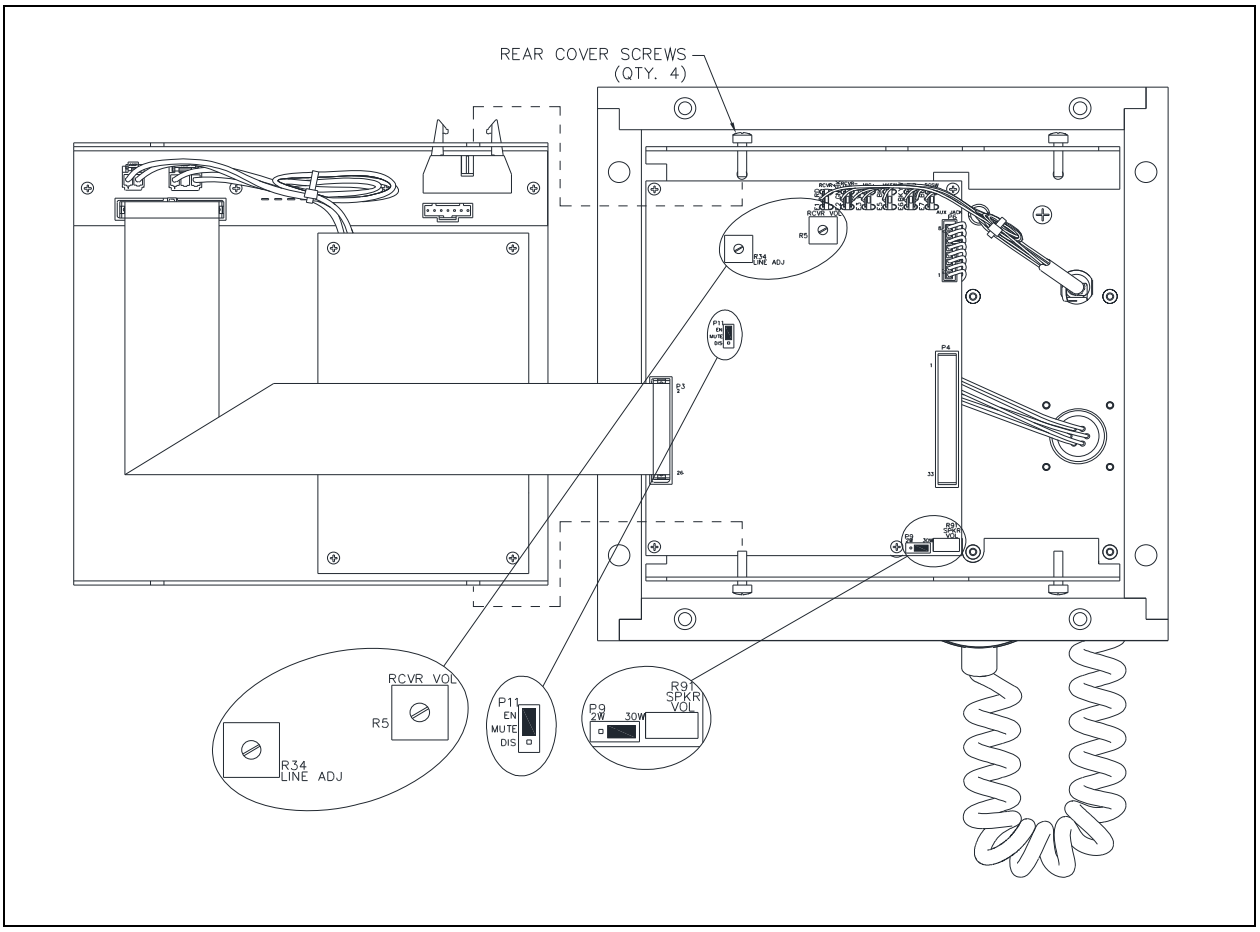

Figure 6. ICS Page/Party Amplifier—Open for Settings and Adjustments

Speaker Volume

Use the speaker volume potentiometer, R91, to adjust the signal level to the speaker from the page line.

- There is no need to open the amplifier to make this adjustment.
- The adjustment is accessible through a small hole in the bottom of the amplifier.
- The default setting is 4 watts for an 8-ohm speaker and 2 watts for a 16-ohm speaker.

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

Speaker Mute

The amplifier can mute its connected speaker during page operation to eliminate feedback. To mute the connected speaker:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
    - Jumper P11 in the EN position (*default*), on the main PCBA, mutes the speaker during page activation.
    - Jumper P11 in the DIS position broadcasts to the speaker during paging.

Speaker Gain

Jumper P9, on the main PCBA, limits the maximum speaker output level. To change the speaker gain:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
   - Jumper P9, in the 30W position (*default*), represents a 30-watt maximum output.
   - Jumper P9 in the 2W position, represents a 2-watt maximum output.

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

Handset Levels (Models 701-302ICS & 701-304ICS Only) (see Figure 6).

Transmit Level

To adjust the signal level from the handset to the page or party lines:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. Adjust the LINE ADJ potentiometer, R34, on the main PCBA, to change the transmit level.

Receiver Volume

To adjust the receiver volume:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. The receiver volume potentiometer, R5, on the main PCBA, adjusts the signal level to the handset receiver from the page or party lines.

NOTE: The receiver volume potentiometer, R5, does not adjust the signal level to the Model 701-304ICS auxiliary headset.

Models 701-302ICSVC, 701-304ICSVC, and 751-001ICSVC, (ICS Page/Party ac plug-in amplifiers with VLC)

The VLC (volume level control) PCBA allows the amplifier to remotely control the local speaker volume level. A remote device transmits a 50 kHz signal over the page line to activate VLC. The station detects the 50 kHz signal and switches to an alternate speaker volume setting.

VLC provides an *alternate* speaker volume setting; activated by receiving a 50-kHz signal on the page line. Examples of its use are muting office or crew quarter's speakers until a high priority message or alarm broadcasts and/or reducing outdoor speaker volume at night. VLC can prevent local handset paging during emergency conditions, and can also provide a relay output, which requires an RTU configuration.

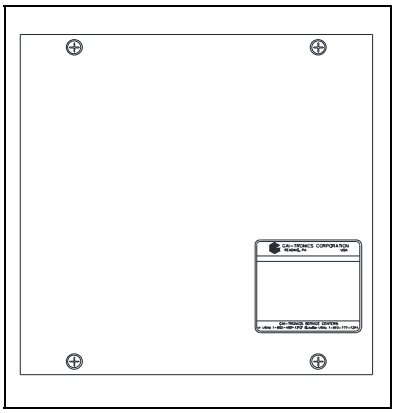

Figure 7. Model 751-001ICSVC Speaker Amplifier

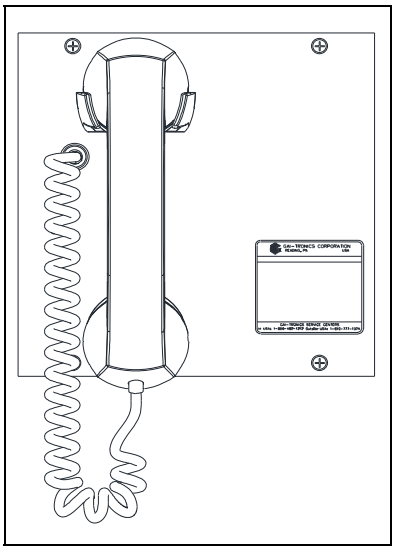

Figure 8. Model 701-302ICSVC Handset/Speaker Amplifier

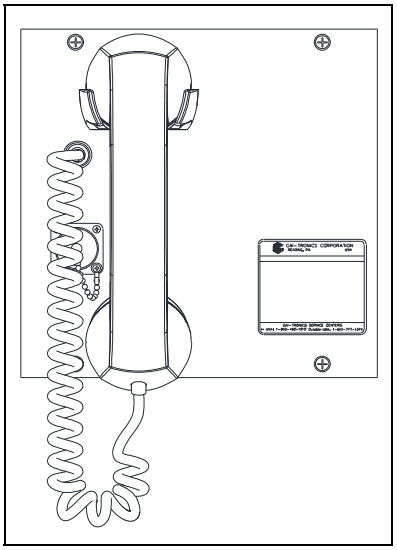

Figure 9. Model 701-304ICSVC Handset/Speaker Amplifier with Auxiliary Jack

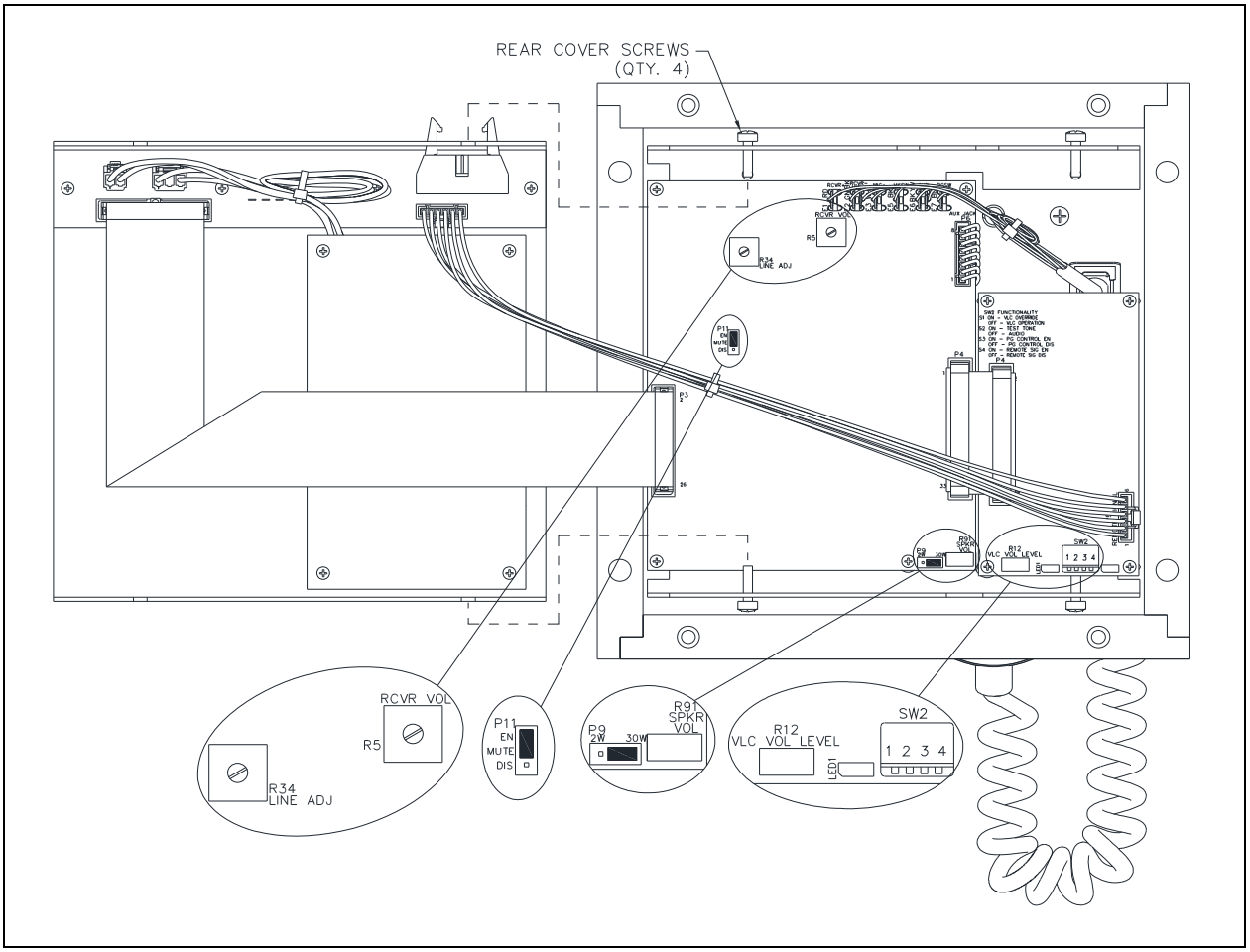

Figure 10. ICSVC Amplifier—Open for Settings and Adjustments

Speaker Configuration and Adjustment

GAI-Tronics recommends using a No. 10440-002 Maintenance Cable (*purchased separately*) to perform the following adjustments (see Figure 10 for locations).

Speaker Volume

The speaker volume potentiometer, R91, adjusts the signal level to the speaker from the page line.

- There is no need to open the amplifier to make this adjustment.
- The adjustment is accessible through a small hole in the bottom of the amplifier.
- The default setting is 4 watts for an 8-ohm speaker and 2 watts for a 16-ohm speaker.

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

Speaker Mute

The amplifier can mute its connected speaker during page operation to eliminate feedback. To mute the connected speaker:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
    - Jumper P11, in the EN position (*default*), on the main PCBA, mutes the speaker during page activation.
    - Jumper P11, in the DIS position, broadcasts to the speaker during paging.

Speaker Gain

Jumper P9, on the main PCBA, limits the maximum speaker output level. To change the speaker gain:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
    - Jumper P9, in the 30W position (*default*), represents a 30-watt maximum output.
    - Jumper P9, in the 2W position, represents a 2-watt maximum output.

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

Handset Levels (Models 701-302ICSVC & 701-304ICSVC Only)

GAI-Tronics recommends using a No. 10440-002 Maintenance Cable (*purchased separately*) to perform the following adjustments (see Figure 10 for component locations).

Transmit Level

To adjust the signal level from the handset to the page or party lines:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. Adjust the LINE ADJ potentiometer, R34, on the main PCBA, to change the transmit level.

Receiver Volume

To adjust the receiver volume:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. The receiver volume potentiometer, R5, on the main PCBA, adjusts the signal level to the handset receiver from the page or party lines.

NOTE: The receiver volume potentiometer, R5, does not adjust the signal level to the Model 701-304ICSVC auxiliary headset.

Audio Alignment

Set the normal speaker output level using a small screwdriver to make the adjustments through the access hole, on the bottom of the amplifier (see Figure 10):

1. Set DIP switch SW2-1 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 10).
4. Turn the speaker volume potentiometer, R91, fully counterclockwise to mute the audio.

NOTE: The station will not allow the adjustment if LED2 on the VLC PCBA is on; indicating the system VLC tone is present.

To set the VLC controlled speaker output level (see Figure 10):

1. Set SW2-1 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 the 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 10) 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 10) to the on position to activate the RTU relay when the system VLC tone is present.

Models 701-902ICS, 701-904ICS, 723-901ICS, and 751-901ICS (ICS SmartSeries ac plug-in amplifiers)

The SmartSeries PCBA adds microprocessor control to the Page/Party station, providing additional sensor and monitoring capabilities, such as:

- ALS (ambient level sensing) circuitry that changes the local speaker's paging volume in response to varying background noise.
- Off-hook timeout—prevents the introduction of noise on a party line by electronically placing the handset *on-hook* after eight minutes,
- Page timeout—limits a single page broadcast to two minutes, freeing the page line for emergencies.

When used with ADVANCE head-end equipment, the amplifier monitors key components (including the handset, amplifier, and local speaker). This provides fast notification of any station faults. In addition, it accepts supervised contact closure inputs and provides a supervised relay output (requires RTU option).

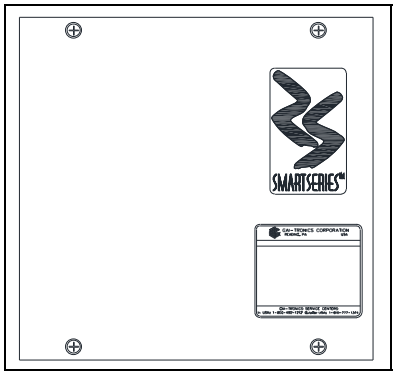

Figure 11. Model 723-901ICS SmartSeries Remote and 751-901ICS SmartSeries Speaker Amplifier

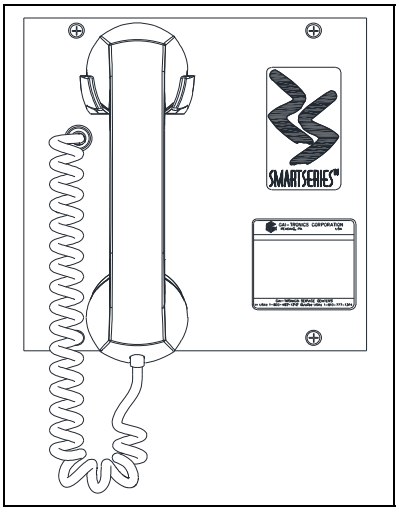

Figure 12. Model 701-902ICS SmartSeries Handset/Speaker Amplifier

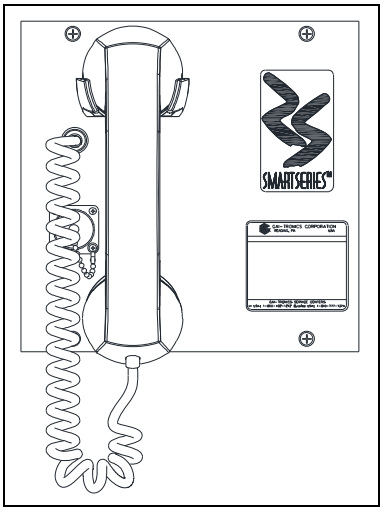

Figure 13. Model 701-904ICS SmartSeries Handset/Speaker Amplifier with Auxiliary Jack

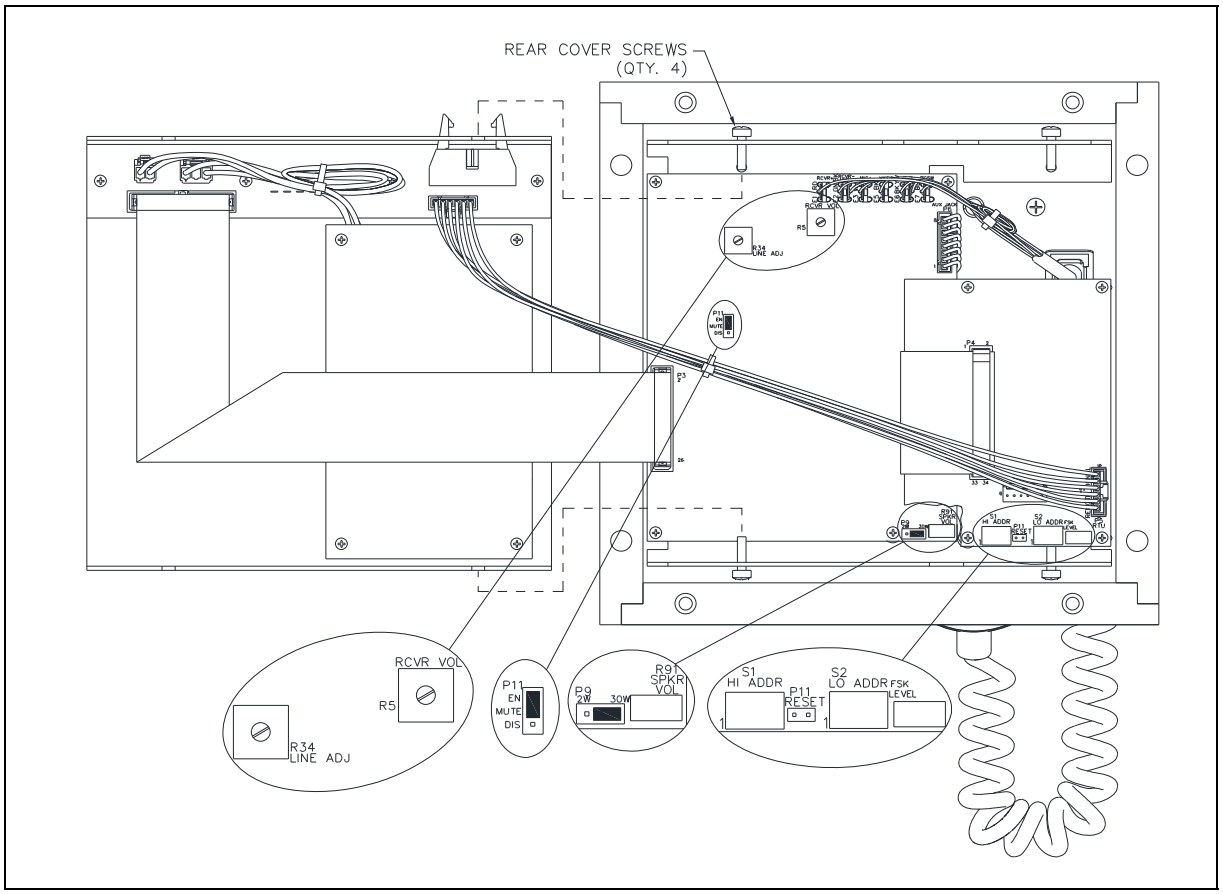

Figure 14. SmartSeries Amplifier—Open for Settings and Adjustments

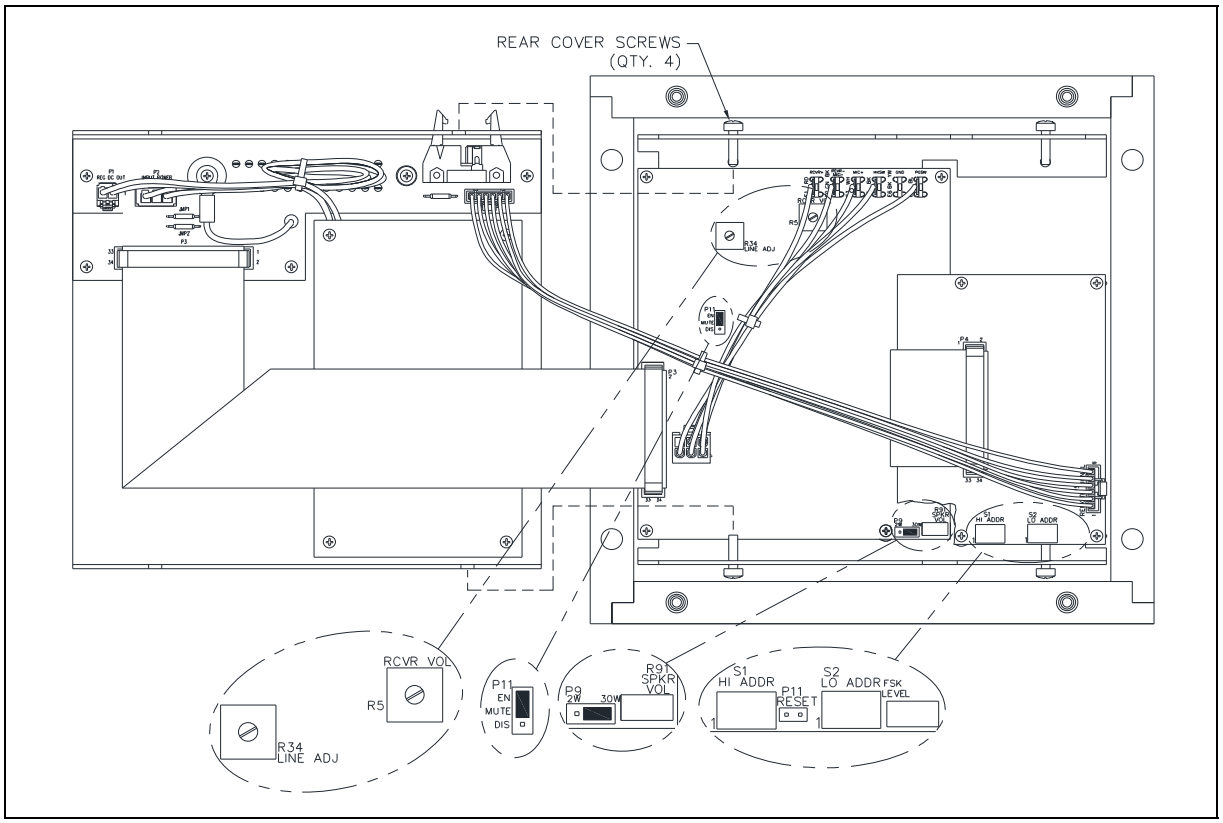

Figure 15. SmartSeries Remote Amplifier—Open for Settings and Adjustments

Set the Address

Assign SmartSeries stations in ADVANCE systems a unique address using the hexadecimal switches, S1 (Hi Address) and S2 (Lo Address), for the SmartSeries option to function properly.

- Each switch contains 16 settings, labeled 0–F. A small arrow on each switch indicates the setting.
- The station address is 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.
- Access the address settings through holes in the bottom of the ICS SmartSeries amplifier.
- Record the address assigned to each station in the system.
- *When replacing an amplifier*: Note the address of the existing amplifier and use the same address for the replacement amplifier.
- *In a system without an ADVANCE head end*: Set the SmartSeries station address to 04 (*default*).

Level Adjustments

GAI-Tronics recommends using a No. 10440-002 Maintenance Cable (*purchased separately*) to perform the following adjustments (see Figure 14 for component locations).

Speaker Mute

The amplifier can mute the associated speaker during page operation to eliminate feedback. To mute the associated speaker:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier as previously described.
   - P11 on the Main PCBA mutes the speaker during page activation when in the EN position (default).
   - P11 in the DIS position allows broadcast to the speaker during paging.

Speaker Gain

Jumper P9, on the main PCBA, limits the maximum speaker output level. To change the speaker gain:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
   - Jumper P9, in the 30W position (*default*), represents a 30-watt maximum output.
   - Jumper P9, in the 2W position, represents a 2-watt maximum output.

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

NOTE: Transmit level and receiver volume settings are for Models 701-902ICS and 701-904ICS only.

Transmit Level

To adjust the signal level from the handset to the page or party lines:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. Adjust the LINE ADJ potentiometer, R34, on the main PCBA, to change the transmit level.

Receiver Volume

To adjust the receiver volume:

1. Remove the amplifier from the enclosure and place it on a stable surface.
2. Open the amplifier (see the Open and Close the Amplifier section).
3. The receiver volume potentiometer, R5, on the main PCBA, adjusts the signal level to the handset receiver from the page or party lines.

NOTE: It does not adjust the signal level to the Model 701-904ICS auxiliary headset.

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. Remove the amplifier from the enclosure and place it on a stable surface.
2. Connect the No. 10440-002 Maintenance Cable (*purchased separately*).
3. Turn the speaker volume potentiometer, R91, on the main PCBA, fully counterclockwise (see Figure 14).
4. 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 hearing the beep tone: Use the page signal as the reference to adjust the speaker volume minimum level.

   If the page line is inactive following the beep tone: A continuous tone activates to make the minimum level adjustment. Once the tone activates, the amplifier ignores all page line activity until completion of the adjustment.
5. Use the test tone as a reference to adjust the speaker volume potentiometer, R91, to the desired output.

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

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. Remove the amplifier from the enclosure and place it on a stable surface.
2. Connect the No. 10440-002 Maintenance Cable (*purchased separately*).
3. Turn the speaker volume potentiometer, R91, (on the main PCBA) fully clockwise (see Figure 14).
4. Listen for two beep tones, indicating the amplifier 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. Once the tone activates, the amplifier ignores all page line activity until completion of the adjustment.

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

NOTE: Make this adjustment under maximum ambient noise level conditions. Always set the ALS offset level 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. Remove the amplifier from the enclosure and place it on a stable surface.
2. Connect the No. 10440-002 Maintenance Cable (*purchased separately*).
3. Force the station into the VLC mode by executing a page from a station programmed by the MCU to activate the VLC function.
4. During the page, turn the speaker volume potentiometer, R91, fully counterclockwise (see Figure 14).
5. Listen for two beep tones through the page speaker, indicating the amplifier is in the VLC adjustment mode.
6. After hearing 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 five seconds after the last potentiometer adjustment.

NOTE: The system must have an ADVANCE head end to activate the VLC function.

FSK Signal Gain

The FSK signal gain potentiometer, R13, on the SmartSeries PCBA, adjusts the FSK transmit signal strength. This setting is set at the factory. Do NOT adjust this setting.

Operation

After installing the ICS Page/Party plug-in amplifier in the appropriate 702, 703, 732 or 733 series enclosure, Single party operation is as follows (multi-party operation in parentheses).

NOTE: Use the Model 10401-201 Headset and 10416-103 Extension Cord (*purchased separately*) at ICS plug-in amplifiers, with an auxiliary jack, to be hands-free and mobile while maintaining communication. Connecting a headset disables the handset microphone.

For paging and subsequent party line conversation:

1. Lift the handset or connect a headset. (Select a free party line using the five-position rotary switch.)
2. Press the handset pressbar or headset switch
3. Page the desired individual (indicate the selected party line)
4. Release the pressbar or headset switch.

To reply:

1. The paged individual (selects the party line and) lifts the handset or plugs in a headset.

   Full-duplex communication takes place on the party line. The system does not broadcast party line conversations over the speakers.

2. After the conversation is complete, all parties place their handsets back on-hook/disconnect headsets.

NOTE: The ICS Page/Party station incorporates a noise-canceling microphone to reduce transmitted ambient noise. This requires the user to place the microphone as close as possible to their mouth.

Paging with ADVANCE Head End (SmartSeries® Amplifiers)

Paging and party line operation with the ICS SmartSeries option is the same as standard station operation with the following differences:

- The operator hears a steady *page-confirmation* tone in the handset/headset earpiece when they press the handset pressbar or the headset page switch.
- A page *pre-announcement* tone, if programmed, will sound when the page-confirmation tone ends, and the operator can make a page.
- Hearing a *busy* tone in the handset/headset earpiece indicates the system is busy and it rejects the page.

Paging without ADVANCE Head End

Paging and party line operation is the same as standard station operation.

Station Time-out Features

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

- Reaching the page-duration limit terminates the page.
- 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 off-hook duration for the station.

- Reaching the limit places the station electrically on hook.
- Momentarily place the handset on-hook to reset the timeout condition.
- The off-hook limit is 8 minutes when an ADVANCE head end is not present.

Troubleshooting

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

Table 2. Troubleshooting for All Models (Except as Noted)

Problem	Potential Cause
Station not functional	• Verify incoming supply voltage at TB2 or TB3 on the termination PCBA. • Verify regulated 24 V dc at P1 of termination PCBA. Caution! Supply voltage present at P2.
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.	• Inspect the Page/Party lines for proper line terminations, shorts, and grounds. • Inspect the party line connections for crossing of the cable pairs.
Feedback occurs during page.	• Check location and orientation of speakers in the area. • Refer to the Speaker Mute section for the applicable model.
Squeal in handset receiver. (Not applicable to speaker amplifier models.)	• Verify proper termination on Page/Party lines. • Verify connection of system line balance.
Speaker level is too low/loud.	• Improperly adjusted speaker volume potentiometer. • Verify the nominal page line level is correct. • Replace the speaker or driver.
Cannot make a page (Not applicable to speaker amplifier models.)	• Check handset (or headset) connections. • Check proper cable terminations between termination and main PCBA. • Check jumper settings or cable connections at P4. • Replace handset.
Handset microphone audio is too low/loud (Not applicable to speaker amplifier models.)	• Disconnect headset, if connected (auxiliary jack models only). • Adjust the LINE ADJ on the main PCBA. • Check jumper settings or cable connections at P4 on the main PCBA. • Ensure proper termination of Page/Party lines. • Check handset connections. • Check proper cable terminations between termination and main PCBAs. • Check operation of hookswitch. • Replace handset.
Handset receiver audio is too low/loud. (Not applicable to speaker amplifier models.)	• Adjust the receiver volume potentiometer on main PCBA. • Check jumper settings or cable connections at P4. • Ensure proper termination of Page/Party lines. • Check handset connections. • Check proper cable terminations between termination and main PCBAs. • Check operation of hookswitch. • Replace handset.

Table 3. Additional Troubleshooting
(VLC Models 701-302ICSVC, 701-304ICSVC, 723-901ICS, and 751-001ICSVC)

Problem	Potential Cause
Speaker volume is too low/loud.	• Refer to the Audio Alignment section for the specific VLC model. • Ensure the nominal page line level is correct.
Cannot place a page.	Refer to Audio Alignment and Page Disable Control sections for the specific VLC model.
RTU output is not functional.	• Refer to Remote Output Switching (Available with RTU Only) section for the specific VLC model. • Check fuse F1 on RTU PCBA. • Check the cable connection at P5 on the RTU and VLC PCBA. • Check RTU terminal connections on TB7 on the RTU PCBA in the enclosure. • Check operation of connected device.
RTU input does not function.	Inputs are only available with SmartSeries models.

Table 4. Additional Troubleshooting
(SmartSeries Models 701-902ICS, 701-904ICS and 751-901ICS)

Problem	Potential Cause
Speaker volume is too low/loud.	• Refer to the ALS Minimum Level, ALS Offset Level and SmartSeries VLC Level sections for the specific model. • Check cable connection at P4. • Verify the nominal page line level is correct.
Page/Party operation does not function.	Refer to the Set the Address section for the specific model.
RTU output is not functional.	• For supervised output, verify no monitored output faults exist. • Check fuse F1, on the RTU PCBA. • Check the cable connection at P5 on the RTU and SmartSeries PCBAs. • Check the RTU terminal connections on TB6 and TB7 on the RTU PCBA, in the enclosure. • Check operation of connected device.
RTU input does not function.	• For supervised input, ensure no monitored input faults exist. • Check the cable connection at P5 on the RTU and SmartSeries PCBAs. • Check RTU terminal connections on TB6 on the RTU PCBA in the enclosure. • Check operation of connected device.

Specifications

Power Requirements

AC Input

Input Voltage .....90 to 140 V ac, 50/60 Hz, 120 V ac nominal

Power Consumed (8-ohm load)	120 V AC
Idle	70 mA/8.4 VA
4-watt output (default setting)	120 mA/14.4 VA
12-watt output	200 mA/24.0 VA
30-watt output	400 mA/48.0 VA
Maximum Current Consumption (8-ohm load)	**90 V AC**
30-watt output	520 mA/46.5 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 Amplifiers

Output level (compression controlled).....1.5 V_{RMS} nominal into 33-Ω load
adjustable 0 to 2.1 V_{RMS}
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_{RMS}, nominal
.....adjustable 150 to 400 mV_{RMS}

Speaker Amplifiers

Maximum output:
8-ohm speaker*.....30 W into 8-Ω load with 1.5 V_{RMS} 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_{RMS} 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..... 50,000 Ω
16 kΩ with SmartSeries option
Model 751-001ICS only—SmartSeries offset level adjustment range ..... 0 to 30 dB
*See Figure 16 on Page 21.

VLC Specifications

VLC minimum input level ..... 50 mV (RMS)
VLC tolerance ..... 50 kHz +/−4%

RTU Specifications

RTU Input Control (with SmartSeries Models)

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

Mechanical

Material/finish ..... 16-gauge cold rolled steel/textured gray powder coat
Dimensions ..... 8.1 H × 8.1 W × 3.0 D in (20.6 × 20.6 × 7.6 cm)
Handset/Speaker Amplifier
Net weight ..... 5.25 lb (2.4 kg)
Shipping weight ..... 6.25 lb (2.8 kg)
Speaker Amplifier
Net weight ..... 4.25 lb (1.9 kg)
Shipping weight ..... 5.25 lb (2.4 kg)
Environmental
Temperature range (operation and storage) ..... −22 ºF to 158 ºF (−30 ºC to 70 ºC)
Humidity ..... 95% non-condensing

Approvals

Table 5. Approvals by Model and Enclosure

Amplifier Model	Enclosure: 702/703 Series	Enclosure: 733/7335 Series	Enclosure: 732, 7325, 733, 7335, 758 Series	Enclosure: 7245 Series
701-302ICS	See Note 1	N/A	See Note 2	N/A
701-302ICSVC		N/A		N/A
701-304ICS		N/A		N/A
701-304ICSVC		N/A		N/A
751-001ICS		N/A		N/A
751-001ICSVC		N/A		N/A
701-902ICS	N/A	See Note 1		N/A
701-904ICS	N/A			N/A
751-901ICS	N/A			N/A
723-901ICS	N/A	N/A	N/A	See Note 3

NOTE 1: Class I, Div. 2, Groups A, B, C and D

NOTE 2: Class I, Div. 2, Groups A, B, C and D;
Class II, Div. 2, Groups F and G;
Class III, Division 2

NOTE 3: UL/CSA 60950

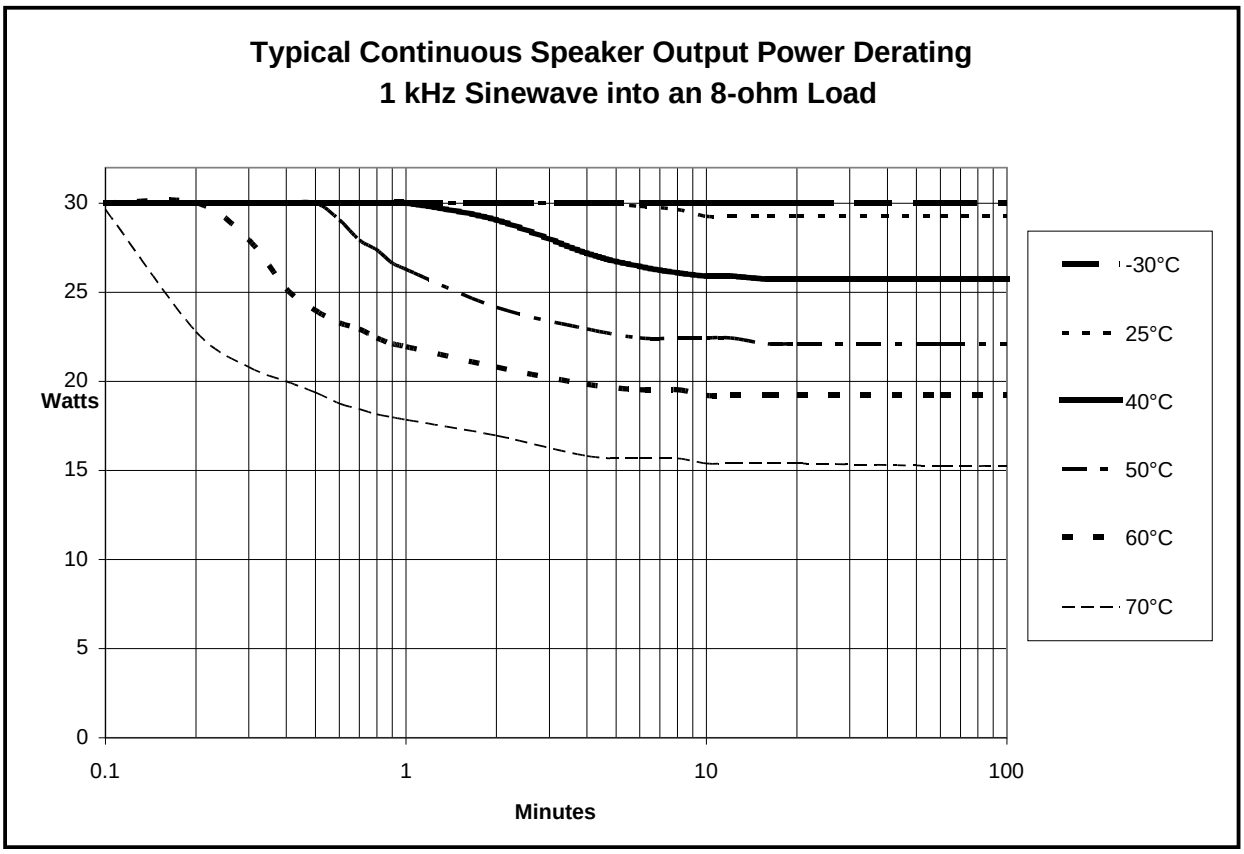

Figure 16. Typical Continuous Speaker Output Power Derating
1 kHz Sine Wave into an 8-ohm Load

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.