



Pub. 43004-034G

GAI-TRONICS® CORPORATION

A HUBBELL COMPANY

Model 13353, 13363 and 13373 Addressable Amplified Speakers Installation and Operation Manual





GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Model 13353, 13363 and 13373 Addressable Amplified Speakers Installation and Operation Manual

TABLE OF CONTENTS

<i>Foreword</i>	1
Scope of Manual	1
Nomenclature	1
Ordering Replacement Parts	1
Service and Repair	1
Confidentiality Notice	2
FCC Licensing Information	2
Computer Software Copyrights	3
Warranty	3
Safety and General Information	4
Operational Cautions	5
Safe Handling of CMOS Integrated Circuit Devices	6
<i>Performance Specifications</i>	7
<i>General Information</i>	9
Product Overview	9
Features	9
Available Models	9
Replacement Parts and Kits	10
Programming Software and Cable	11
System Layout Considerations	11
<i>Operating Modes</i>	11
Generic Operation	11
DTMF Selective Operation	11
DTMF Selective with Manual Switch	12
DTMF Selective with Voice Switch	12
Two-Tone Selective	12
Feed-Thru Operation	13

Volume Adjustments	13
Remote Volume Adjustment	13
With Automatic Level Adjustment Disabled	13
With Automatic Level Adjustment Enabled	14
Local Volume Adjustment	14
Acoustic Feedback	14
Output Contact	15
Battery Monitor	15
Programming and Set Up	15
Required Programming Accessories	16
Opening the Addressable Amplified Speaker	16
LED Indicators	16
Card Suite Software	17
Installation	17
Connecting the Programming Cable	17
Programming the Addressable Amplified Speaker	18
Initial Setup and File Creation	18
Operating Modes.....	20
RF Programming Software	32
Installation	32
Connecting the Programming Cable	32
Programming the Radio	33
Installation	36
Safety and General Information	36
Outdoor Installation Product.....	36
Antenna Care	36
Electromagnetic Interference/Compatibility	36
Mechanical Receipt Inspection	36
Cable Installation Safety Considerations	36
Equipment Required	37
Programming	37
Tools	37
Mounting	37
Cable Installation	38
Power	38
Wire Connections	39
Typical Connection Scenarios	40
12506-001 Remote Volume Control Wiring Instructions	43
Hardware Configuration	44
Audio Line Termination Jumper	44
Fuses	44

Connectors	45
TB1 Wiring Connector	45
TB2 Wiring Connector	45
Radio Connector Pin-out.....	47
Terminal Strip Designations	48
<i>Field Installed Options</i>	48
Model SPK200 Solar Interface Kit	48
Model XB001 External Long-Life Battery Enclosure	48
Model BB133 Battery Backup Kit	49
Model 12506-001 Remote Volume Control Assembly	49
Model 190-002PS Weatherproof Power Supply Kit	49
<i>Definitions and Acronyms</i>	50
<i>Appendix A: Speaker Zoning Example</i>	51



GAI-TRONICS® CORPORATION
A HUBBELL COMPANY

Model 13353, 13363 and 13373 Addressable Amplified Speakers

Foreword

Scope of Manual

This manual offers descriptive data and service information for the Addressable Amplified Speaker Assemblies.

Nomenclature

The model number, located on the nameplate on top of the speaker, specifically identifies GAI-Tronics equipment.

Ordering Replacement Parts

When ordering replacement parts or requesting equipment information, please include the complete identification number. This applies to all components, kits, and chassis. If the component part number is not known, the order should include the number of the chassis or kit of which it is a part and sufficient description of the desired component to identify it. Order parts from:

Customer Service

GAI-Tronics Corporation

400 E. Wyomissing Ave.

Mohnton, PA 19540

US: 800-492-1212

Outside US: 610-777-1374

Service and Repair

Inoperative or malfunctioning equipment should be returned to the factory for repair. Please call **1-800-492-1212** or **610-777-1374** to obtain a Return Authorization number, published repair prices, and shipping instructions.

NOTE: A purchase order or credit card number is required prior to processing non-warranty repairs.

Confidentiality Notice

This manual is provided solely as an operational, installation, and maintenance guide and contains sensitive business and technical information that is confidential and proprietary to GAI-Tronics. GAI-Tronics retains all intellectual property and other rights in or to the information contained herein, and such information may only be used in connection with the operation of your GAI-Tronics product or system. This manual may not be disclosed in any form, in whole or in part, directly or indirectly, to any third party.

FCC Licensing Information

Your radio operates on General Mobile Radio Service (GMRS), Private Land Mobile Radio Service, Amateur Radio Service, Aeronautical Mobile, or Maritime Mobile Service frequencies and is subject to the Rules and Regulations of the Federal Communications Commission (FCC). The FCC requires that all operators using such frequencies obtain a radio license before operating their equipment. To obtain the FCC forms, go to <http://wireless.fcc.gov/services/personal/generalmobile/index.html> to obtain Forms **605** and **159**, which include all forms and instructions.

Changes or modifications not approved by GAI-Tronics Corporation may void the user's authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

NOTE: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Federal Communications Commission (FCC)

1-202-418-0177 1-800-418-FORM

1-800-418-3676

1-888-CALL-FCC

1-888-225-5322

Or: <http://www.fcc.gov>

Computer Software Copyrights

This product contains copyrighted computer programs stored in semiconductor memory. These programs are copyrighted by GAI-Tronics Corporation and may not be reproduced in any form without expressed written permission from GAI-Tronics.

Warranty

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, and the warranty period on any repaired or replacement equipment shall be 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. The applicability of any such third-party warranty will be determined solely 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, for a period of one (1) year from the date of completion, re-perform such services at no cost to the Buyer. 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 services provided hereunder.

Limitations/Exclusions. The warranty on any equipment supplied hereunder is subject to Customer's use in compliance with applicable FCC regulations and manufacturer specifications. 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 accident, misuse, abuse, neglect, system design, product modification, failure to follow instructions contained in the product manual, repair, or attempted repair by anyone not authorized by GAI-Tronics, improper installation, installation of parts that do not conform to the quality or specifications of the original parts or accessories, damage or loss occurred during shipment, or any unit which is not new when sold or upon which the serial number has been defaced, modified or removed. The warranty does not extend to damage incurred by natural causes including Force Majeure. The warranty does not cover microprocessors if failure is due to static damage or application of improper voltage. **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.**

Operational and Maintenance Procedures. Buyer acknowledges that any improper use, maintenance, or modification of the equipment provided hereunder, or use of unqualified maintenance or service technicians will severely impair the operational effectiveness of the entire communication system. Buyer hereby agrees to indemnify, defend and hold GAI-Tronics harmless from and against any and all third party claims arising, in any manner, out of: (a) Buyer's neglect of the equipment; (b) Buyer's use of technicians not authorized by GAI-Tronics to service the equipment; or (c) Buyer's improper use or modification of the equipment or failure to follow the operational and maintenance procedures provided with the equipment.

Limitation of Liability/Damages. In no event (even should circumstances cause the exclusive warranties and remedies set forth in the Warranty section to fail of their essential purpose) shall either party be liable for any indirect, incidental, special or consequential damages (including, but not limited to, loss of use, loss of anticipated profits, or damages arising from delay) whether such claims are alleged to have arisen out of breach of warranty, breach of contract, strict or absolute liability in tort, or other act, error or omission, or from any other cause whatsoever, or any combination of the foregoing.

Safety and General Information



Installation should only be performed by qualified service personnel in accordance with the National Electrical Code or applicable local codes.



Power Sources - Operate this unit only from the type of power source indicated on the label. If unsure of the type of power supply to use, contact qualified service personnel.

- For units intended to operate from battery power, refer to operating instructions.
- For units intended to operate with External Power Supplies, use only the recommended approved power supplies.
- For units intended to operate with a limited power source, this power source must comply with EN60950. Substitutions may damage the unit or cause fire or shock.

Outdoor Product:

Power Lines - An outdoor system should not be located in the vicinity of overhead power lines, electric lights, or power circuits, or where it may contact such power lines or circuits, as this contact might be fatal. Refer to the National Electrical Code Article 800 regarding installation.

User Instructions

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Exposure to Radio Frequency Energy

Your radio is designed to comply with the following standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy:

- FCC, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95.1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999

Antenna Care

Unauthorized antennas, modifications, or attachments could damage the radio and may violate FCC regulations.

Do NOT hold the antenna when the radio is IN USE. Holding the antenna affects the effective range.

Approved Accessories

Only use GAI-Tronics Corporation approved accessories. Please visit www.gai-tronics.com.

Electromagnetic Interference/Compatibility

Electronic equipment may be susceptible to electromagnetic interference. If you experience interference, visit the FCC website at <http://www.fcc.gov> for possible solutions.

Operational Cautions

Hospitals or Health Care Facilities

To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospital or health care facilities may be using equipment that is sensitive to external RF energy.

Aircraft/Airports

Airports may be using equipment that is sensitive to external RF energy. Any use of a radio must be in accordance with applicable regulations.

Medical Devices - Pacemakers

These recommendations are consistent with the independent research by, and recommendations of the U.S. Food and Drug Administration. Persons with pacemakers should:

- ALWAYS keep the radio more than six inches (15 cm) from their pacemaker when the radio is turned ON.
- Do NOT carry the radio in the breast pocket.
- Turn the radio OFF immediately if you have any reason to suspect that interference is taking place.

Blasting Caps and Areas

To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted: "Turn off two-way radio." Obey all signs and instructions.

Safe Handling of CMOS Integrated Circuit Devices

Many of the integrated circuit devices used in communications equipment are of the Complementary Metal Oxide Semiconductor (CMOS) type. Because of their high open circuit impedance, CMOS integrated circuits are vulnerable to damage from static charges. Care must be taken handling, shipping, and servicing them and the assemblies in which they are used.

Even though protection devices are provided in CMOS integrated circuit inputs, the protection is effective only against overvoltage in the hundreds of volts range such as is encountered in an operating system. In a system, circuit elements distribute static charges and load the CMOS circuits, decreasing the chance of damage. However, CMOS circuits can be damaged by improper handling of the modules, even in a system.

To avoid damage to circuits, observe the following handling, shipping, and servicing precautions:

1. Prior to and while servicing a circuit module, particularly after moving within the service area, momentarily touch both hands to a bare metal, earth-grounded surface. This will discharge any static charge that may have accumulated on the person doing the servicing.
NOTE: Wearing a conductive wrist strap will minimize static build-up during servicing.
2. Whenever possible, avoid touching any electrically conductive parts of the circuit module with your hands.
3. Power down the unit before installing or removing the circuit module.
4. When servicing a circuit module, avoid carpeted areas, dry environments, and certain types of clothing (silk, nylon, etc.) because they contribute to static build-up. Similarly, disconnect the test probe prior to removing the ground lead.
5. All electrically powered test equipment should be grounded. Apply the ground lead from the test equipment to the circuit module before connecting the test probe.
6. If a circuit module is removed from the system, it is desirable to lay it on a conductive surface (such as a sheet of aluminum foil) which is connected to ground through 100 k of resistance.
7. When soldering, be sure the soldering iron is grounded and has a grounded tip.
8. Prior to connecting jumpers, replacing circuit components, or touching CMOS pins (if this becomes necessary in the replacement of an integrated circuit device), be sure to discharge any static build-up as described in procedure 1. Since voltage differences can exist across the human body, it is recommended that only one hand be used if it is necessary to touch pins on the CMOS device and associated board wiring.
9. When replacing a CMOS integrated circuit device, leave the device in its conductive rail container or conductive foam until it is to be inserted into the printed circuit module.
10. All low impedance test equipment (such as pulse generators, etc.) should be connected to CMOS device inputs after power is applied to the CMOS circuitry. Similarly, such low impedance equipment should be disconnected before power is turned off.
11. Replacement modules shipped separately from the factory will be packaged in a conductive material. Any modules being transported from one area to another should be wrapped in a similar material (aluminum foil may be used). **Never use non-conductive material** for packaging these modules.

Performance Specifications

Electronic

Output power	4 mW to 8 W (default 16 mW)
Current draw @ full output (8 watts).....	1 amp
Sound pressure level	107 dB SPL, 1 watt at 1 meter
Nominal coverage when surface-mounted to wall (ref. -6 dB)	
Vertical.....	Upward: 40° Downward: 60°
Horizontal	90°
600 Ω audio input level.....	775 mVrms
Audio speaker volume adjustment range	83–116 dB SPL
Audio speaker volume	Factory set @ nominal 89 dB SPL at a distance of 1 meter
Frequency response.....	450–3000 Hz +/-5 dB

Power Requirements

Plug-In Power Supply (included)

Input voltage	100 to 240 V ac/50/60 Hz
Output voltage	15 V dc
Rated output current.....	1.6 amps
Rated output power	24 watts

Accessory Power Options

Model BB133 Battery Back-up Kit

Voltage.....	12 V dc
Capacity	2.8 Ah
Battery life	120 minutes at full output

Model XB001 External Long-Life Battery Kit (with 40201-008 battery)

Voltage.....	12 V dc
Capacity	18 Ah
Battery life	13 hours at full output

Model 190-002PS Kit (Includes 40404-060 DC Power Supply)

Output voltage (adjustable).....	13.2–15.0 V dc (Set to 15.0 V for battery trickle charge)
Rated output current.....	2.1 amps
Rated output power	25 watts
Input voltage	85–264 V ac, 50–60 Hz
Input current.....	0.7 A/115 V ac; 0.4 A/230 V ac

Solar panel output (at charge controller module)

Voltage (trickle charge)	12 V dc
--------------------------------	---------

Mechanical

Physical dimensions.....	8.02 × 8.12 × 9.52 inches
Enclosure material	Glass-reinforced polyester, 0.20 inch thick
Hardware.....	Urethane gaskets, stainless steel hardware
Color	Black
Shipping weights	
Model 13353.....	6.6 lbs.
Model 13363 /13373	7.3 lbs.

Environmental

Temperature range	-20° C to +60° C
Weatherproof rating	Rainproof
Humidity	95% non-condensing

RF Receiver Module (Models 13363 /13373 only)

General

Frequency range.....	VHF: 136–174 MHz UHF: 450–470 MHz
Antenna impedance.....	50 Ω
Operating voltage.....	9–18 V dc, 12 V dc nominal
Decoder	CTCSS/CDCSS

NOTE: Receiver measurement procedures made per ANSI/TIA/EIA-603

Sensitivity (12 dB SINAD).....	0.25 μV
Inter-modulation	65 dB
Spurious response	55 dB
Audio output	900 mVrms 3.5 kHz deviated signal

Approvals

FCC Identifier	VHF: AIERIT 17-145R UHF: AIERIT 17-445R
----------------------	--

FCC Compliance..... Part 15

VHF Antenna

Mounting.....	BNC connector
Impedance	50 Ω

UHF Antenna

Mounting.....	BNC connector
Impedance	50 Ω

General Information

Product Overview

The GAI-Tronics Model 13353, 13363 and 13373 Addressable Amplified Speaker Assemblies are designed for remote paging in temporary or permanent applications such as campuses, public gathering locations, construction sites, or amusement parks.

Features

- Hardwired (600-ohm) and RF audio delivery to speaker amplifier.
- One-way public address broadcasts.
- A high-efficiency (>80%) Class D amplifier to provide up to 8 watts into an 8-ohm load (116 dB SPL, measured at 1 meter on axis).
- Generic Operation - (common broadcast) using input contact closure.
- Selective Operation - addressability for individual unit, group/zone, or system-wide broadcasts using DTMF or 2-Tone signaling access.
- Remote volume control using DTMF signaling.
- Automatic Level Adjustment automatically adjusts volume during varying levels of ambient noise.
- Universal ac input power supply provided.
- Battery trickle charge during normal operation (battery optional).
- Programmable output control for strobe activation.
- PC programmable using the CARD Suite Programming Software Application.

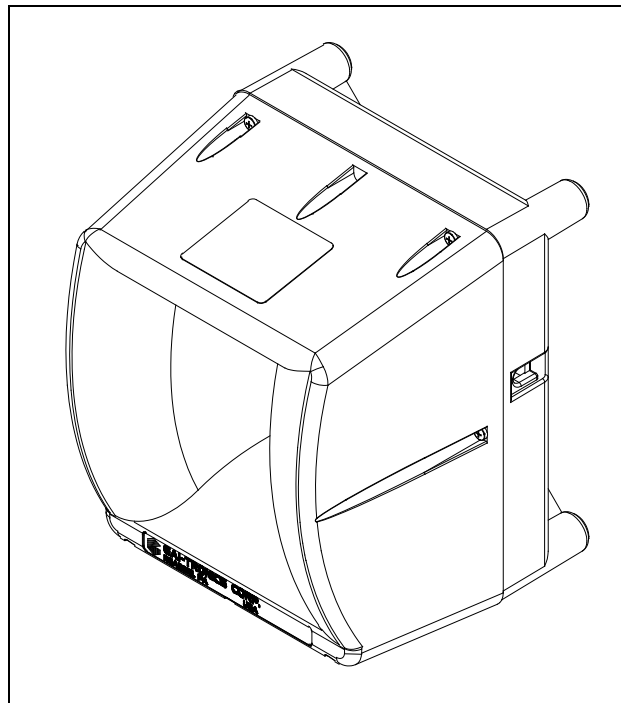


Figure 1. Addressable Amplified Speaker Assembly

Available Models

Part No.	Description
13353	Hardwired 600-ohm audio input
13363	Hardwired 600-ohm input and/or VHF radio receiver input (136–174 MHz)
13373	Hardwired 600-ohm input and/or UHF radio receiver input (450–470 MHz)

Replacement Parts and Kits

Part No.	Description	13353	13363	13373
61512-029	Wiring Harness, Weatherproof Amplified Speaker	■	■	■
13327-021	Speaker	■	■	■
19101-043	VHF Radio, 136–174 MHz		■	
19101-042	UHF Radio, 450–470 MHz			■
19502-014	VHF Antenna, 150–162 MHz		■	
19502-009	UHF Antenna, 432–468 MHz			■
61213-008	Cable, DB15 male to 8-pin (RF module to PCBA)		■	■
69834-101	PCBA, Weatherproof Amplified Speaker	■	■	■
BB133	Battery Backup Kit	■	■	■
40201-010	Repl. Battery, 2.8 Ah, 12 V dc (included in BB133)	■	■	■
XB001	External Weatherproof Long-life Battery Enclosure	■	■	■
40201-008	Battery, 18 Ah, 12 V dc for XB001	■	■	■
SPK200	Solar Power Interface Kit	■	■	■
12506-001	Remote Volume Control L-Pad	■	■	■
GTRFP7784-108	Solar Panel Array, 30 W	■	■	■
190-002PS	Weatherproof Power Supply Kit, 15 V dc, 85–265 V ac, 50/60 Hz	■	■	■
40408-009	Battery Charger for 40201-010	■	■	■
40408-011	Battery Charger for 40201-008	■	■	■
51809-019	3A Slo-Blo Fuse	■	■	■
GTRFP6432-006	Free Standing Tripod	■	■	■
TPD001	Tripod Mounting Kit	■	■	■
40419-015	Power Supply, 100–240 V ac, 50/60 Hz input, 15 V dc output	■	■	■
40420-001	Power Supply Interchangeable Prongs (Europe)	■	■	■
40420-002	Power Supply Interchangeable Prongs (UK)	■	■	■
40420-003	Power Supply Interchangeable Prongs (Australia)	■	■	■
40420-004	Power Supply Interchangeable Prongs (Korea)	■	■	■

Programming Software and Cable

Part No.	Description	13353	13363	13373
19101-024	RF Module Programming Kit (software & cable)		■	■
XAC4000B	Programming Bundle	■	■	■
XAC0004A	Programming Cable (for speaker)	■	■	■

System Layout Considerations

The installer must consider the system layout to assure proper audio delivery to the Addressable Amplified Speakers.

- For hardwired installations, each speaker requires a balanced 600-ohm, 0 dBm input audio signal. A contact closure may be required depending on the selected operating mode. Cabling (telephone cable, cat-5/6, etc.) must be distributed appropriately to attain the necessary audio level and balance. Audio distribution apparatus may be necessary to accomplish this task.
- For RF installations, each speaker must be located within line of site of the RF transmitting device (repeater, base, or mobile radio).

Operating Modes

The Addressable Amplified Speakers can operate in three different modes, Generic, DTMF Selective, and Two-Tone Selective. The mode of operation determines if the speakers will broadcast all audio transmissions or only “selective” audio transmissions. Each operating mode is described in the following sections.

Generic Operation

Generic Mode requires an external control input to activate (wake up) the Addressable Amplified Speaker. Once active, the unit will broadcast any audio received from the transmitting device. Removal of the activation input returns the speaker to the inactive (sleep) mode.

- For hardwired installations, the control input activation must be in the form of a voltage-free (dry) contact closure.
- For RF installations, the control input activation is provided from the “RF carrier detect” control circuit of the integral radio receiver. This simply means that audio (carrier) must be received on the appropriately programmed radio frequency and PL code.

All Addressable Amplified Speakers are factory programmed for Generic Operation.

DTMF Selective Operation

Selective operation allows “addressable” access to each Addressable Amplified Speaker using DTMF signaling (DTMF Selective) or Two-Tone signaling (Two-Tone Selective). Each speaker can be programmed with up to eight different addresses. Upon receiving a valid DTMF or Two-Tone code, the speaker becomes active and will broadcast any audio received from the transmitting device. The speaker returns to the inactive (sleep) mode when the transmission is complete and a pre-programmed hold time expires.

By assigning a combination of addresses to each Addressable Amplified Speaker, the overall system can be segregated into multiple broadcast zones. In a typical multi-zone system, three access codes might be assigned to each module.

- Address 1 – is always a unique address assigned to only that addressable amplified speaker. By using this access code, an individual addressable amplified speaker is activated.
- Address 2 – could be an address assigned to a group of addressable amplified speakers located in the same speaker broadcast area. When received, the group of Addressable Amplified Speakers is activated simultaneously. This access method is used when an audio broadcast is required to a particular broadcast zone.
- Address 3 – could be an address assigned to all Addressable Amplified Speakers in the system. By using this access code, all speakers are activated simultaneously when a system-wide audio broadcast is required.

DTMF Selective with Manual Switch

This mode is typically used in an RF application or in a hardwired application requiring additional security to prevent unauthorized access. The DTMF Selective with Manual Switch mode requires an external control input to activate (wake up) the Addressable Amplified Speaker. Once active, the unit must receive a valid DTMF address. Upon receiving a valid address, the speaker will broadcast any audio received from the transmitting device. Removal of the activation input returns the speaker to the inactive (sleep) mode.

- For RF installations (Models 13363 & 13373), the control input activation is provided from the RF carrier detect control circuit of the integral radio receiver. This simply means that audio (carrier) must be received on the appropriately programmed radio frequency and PL code and the appropriate DTMF address must be received.
- For hardwired installations (Model 13353), the control input activation must be in the form of a voltage-free (dry) contact closure (additional wire pair).

GAI-Tronics CARD Suite Programming Software is used to assign the operating mode and DTMF addresses. Valid DTMF addresses can contain two to eight digits followed by the “#” symbol. DTMF digits 0–9, *, and A, B, C, and D are permitted.

DTMF Selective with Voice Switch

This mode is used for hardwired installation where a contact closure is not available from the transmitting device. In this case, the Addressable Amplified Speaker constantly monitors the audio line for a valid DTMF address. Upon receiving a valid address, the speaker will broadcast any subsequent audio received from the transmitting device. The speaker returns to the inactive (sleep) mode after audio from the transmitting device stops for a programmable amount of time.

Two-Tone Selective

GAI-Tronics CARD Suite Programming Software can also be used to assign Two-Tone access codes instead of DTMF access codes. Valid access codes contain two frequencies in the 400–2700 Hz range. Each Addressable Amplified Speaker can be programmed with up to eight different codes. By assigning a combination of access codes to each device, the overall system can be segregated into different speaker broadcast zones as described above for DTMF signaling. Two-Tone signaling is only applicable for RF installations. Contact the Service Center at 1-800-492-1212 for instructions in using CARD Suite to program Two-Tone Selective operation.

Feed-Thru Operation

The Addressable Amplified Speaker can be programmed to perform as a Lead unit or as a Slave unit in a speaker grouping. This function is referred to as “Feed-Thru” operation and can be activated via the CARD Suite Programming Software. This operation is primarily used in an RF installation and allows the Lead Addressable Amplified Speaker to receive the source audio signal via the RF airwaves and provide hardwired, 600-ohm redistribution of the audio (and page control, if required) to one or more speakers within a grouping. This configuration could greatly reduce system costs by limiting the number of RF speakers required.

When in Individual operation, the Lead speaker simply acts as a receiving point for the Slave speaker(s), allowing the Slave speaker(s) to be addressed individually without activation of the Lead or other Slaves. When in Follow-me operation, the Slave speaker(s) will activate upon activation of the Lead speaker. This access includes adjusting volume control settings.

Refer to page 26 for detailed information.

Volume Adjustments

Each speaker assembly’s output volume can be adjusted via four different methods:

- Remotely, using DTMF signaling
- Programmed prior to installation using CARD Suite
- Locally using the optional Model 12506-001 L-pad
- Automatically, utilizing the ALA (Automatic Level Adjustment) feature. This feature would be used if steady high noise levels sometimes occur but are not present continuously.

Remote Volume Adjustment

With Automatic Level Adjustment Disabled

To adjust the speaker output volume with the Addressable Amplified Speaker programmed for DTMF selective operation, begin a broadcast using the speaker’s local address (Address 1) followed by a “#” symbol. When the speaker becomes “active”, transmit a DTMF “*” symbol. Upon receiving the “*”, the speaker will broadcast a test tone for a programmable amount of time. During this tone, transmit a “*” to increase the volume or transmit a “#” to decrease the volume. Each press of the “*” will increase the volume one level and each press of the “#” will decrease the volume one level. The speaker will broadcast a test tone at the new volume level each time it is changed. Volume can be increased or decreased between minimum and maximum in 11 steps. A low frequency warning will be broadcast when the volume has reached either its upper or lower volume limit.

If the speaker under test is programmed for Generic Operation, it will have provisions for programming a DTMF volume control address via the CARD Suite Programming Software. When properly programmed, the speaker can be accessed for volume control by simply transmitting its volume control address and changing the volume as described in the previous paragraph.

CARD Suite includes a test tone duration setting that is programmable between .5 and 6.0 seconds in .5 second increments. This test tone will automatically extinguish at the end of the pre-programmed duration time or can be manually extinguished by sending a DTMF digit other than “*” or “#.” The speaker stores its volume setting when the test tone ends.

With Automatic Level Adjustment Enabled

The Automatic Level Adjustment (ALA) allows the speaker to automatically adjust its output to broadcast at a pre-programmed level above the average ambient noise. Usually an offset of 10 dB is appropriate. The speaker calculates the average ambient noise level every 5 seconds while it is not broadcasting. The output level is then adjusted to compensate for the background noise. The first update to the calculated ambient level will be at most 10 seconds after the standby time expires at the end of a broadcast.

Four settings are available for the ALA feature; Disabled, 5 dB Offset, 10 dB Offset, and 15 dB Offset. To activate the ALA feature, select one of the three offset levels. The Offset Level is the level of audio (in dB SPL) above the average ambient noise level, at which the speaker will broadcast.

With ALA enabled, the speaker will adjust its output, based on the steady background noise level in the vicinity of the speaker, to some level between its maximum output (8 watts) and a programmed minimum output level. To set this minimum output level, use CARD Suite or adjust the level remotely as described in the previous section (ALA Disabled). As the background noise level decreases, the speaker output will also decrease, but the speaker output will not drop below this minimum programmed setting, even when the background noise drops to a very low level. This setting in CARD Suite is labeled as “Min. Volume Level.”

Local Volume Adjustment

Local Volume Adjustment is achievable through the use of an L-pad volume control connected to the speaker assembly (Model 12506-001). No test tone is generated during this adjustment as the user must generate audio for this test while adjusting the L-pad.

This is a passive adjustment. The maximum output level is defined by the CARD Suite program. Since the Local Volume Adjustment can only adjust the output level lower than the maximum programmed level, it is recommended that the Addressable Amplified Speaker is programmed for maximum volume level (8 watts).

Do not connect an L-pad if the Automatic Level Adjustment is enabled as the automatic adjustment may be ineffective.

Acoustic Feedback

An audio broadcast command originating too close to an installed speaker (such as from telephones or portable radios) may create acoustic feedback, depending on the volume level setting of the speaker. To prevent feedback from occurring, originating distance from the speaker and orientation to the speaker (do not position in front of the speaker) should be considered.

If the originating position with respect to the speaker's location requires close proximity, the speaker can be muted via a “shutdown” closure input. The shutdown closure input could be from a handset hookswitch, relay, or other similar device.

Output Contact

The Addressable Amplified Speaker is capable of providing a low current output contact designed for activating a GAI-Tronics Model 530-001 Strobe or other peripheral devices. The Output Contact Function and its associated Hold Time are programmable via the CARD Suite Software Application and can be enabled on all or selected DTMF addresses when in DTMF Selective mode. It is also available for use in Generic mode. If enabled, the contact will activate when the speaker assembly begins to broadcast audio. The contact will be deactivated either at the end of the audio broadcast (within a few seconds) or after a selectable Hold Time (if applicable). Hold time can be programmed from 1 second to 30 minutes. The output contact can be configured as either Normally Open or Normally Closed.

The output contact's maximum current capability is 100 mA. To use with loads requiring higher current, an interposing control relay will be required between the speaker assembly's output contact and the actual device.

NOTE: The output contact will remain in the "open" state when unit power is removed.

Battery Monitor

If the installed Addressable Amplified Speaker utilizes either the BB133 Battery Backup Kit or the XB001/40201-008 Long-life Battery (usually used in solar power configuration), the speaker assembly can be programmed to generate an alert tone when the battery charge falls below the factory-set limit. Using CARD Suite, enable the Battery Checking feature under the Low Battery Alert section. The volume of the Low Battery Alert Tone can be adjusted to one of three settings; 50%, 75%, or 100% of the speaker volume setting. The alert tone will sound every four minutes (factory default setting) until the battery is charged to a level above the Low Battery Alarm Limit.

NOTE: To avoid hearing an alert tone during initial power up after installation (assuming Battery Checking has been selected in CARD Suite), it is recommended that the battery be fully charged prior to installation. Battery charger No. 40408-009 can be used for the BB133 Kit (2.8 Ah) and charger No. 40408-011 can be used for the 40201-008 Battery (18 Ah). If a backup or long-life battery is not installed, keep this Battery Checking feature disabled (factory default setting).

Programming and Set Up

The Addressable Amplified Speaker requires software configuration to set the operating parameters. **It is highly recommended to program and bench-test the unit prior to field installation.**

A computer with a COM port (RS-232) and Windows95 or newer operating system is required to program the Addressable Amplified Speaker. Windows NT operating system is not supported. If the PC contains only USB ports, a USB-to-RS-232 converter is also required. Programming accessories are sold separately. They are as described below:

The No. XAC4000B Programming Bundle with CARD Suite Programming Software (Version 4.3.2 or newer) and No. XAC0004A programming cable are used to program the operating parameters of all Addressable Amplified Speaker models.

The Model 13363 and 13373 RF Addressable Amplified Speakers also require the radio receiver to be programmed. The No. 19101-024 RF Programming Kit includes the software and cable for programming the desired frequency and optional PL code into the radio receiver.

Required Programming Accessories

Part No.	Description
XAC4000B	Programming Bundle with CARD Suite Programming Software - Version 4.3.2 or newer (needed for all models)
XAC0004A	Programming Cable (needed for all models)
19101-024	RF Module Programming Kit (needed for Models 13363 and 13373 only) consists of: <ul style="list-style-type: none"> • Ritron DTX L-Series Programming CD • 9/RTC-PAS Cable • DTXP-PAC Cable Adaptor • 2147C001 9-pin to 25-pin Sub D Adaptor

Opening the Addressable Amplified Speaker

The Addressable Amplified Speaker must be opened for programming and installation. Remove the speaker from the carton and position on a flat surface with the front of the speaker facing up. Although the front section attaches to the rear section with six Phillips screws, only two screws have been secured during the production process. Back out the two screws on the left and right side of the speaker. All screws are captive and will remain in the front section. Lift the front section straight up and flip to the left-hand side of the rear section. Refer to Figure 2.

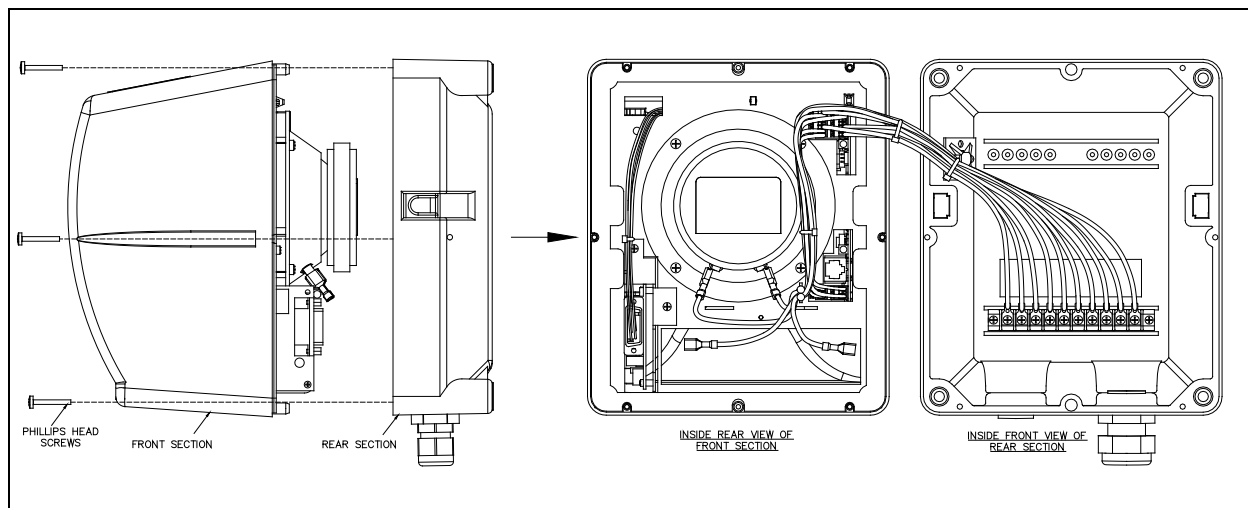


Figure 2. Addressable Amplified Speaker.

LED Indicators

Two LED indicators are located on the speaker amplifier PCBA, but are visible only when the module is opened. The Power LED is activated when the unit is powered. The Programming LED indicates when the unit is properly connected to a programming computer using CARD Suite Programming Software. Refer to Figure 18 on page 44 and Figure 19 on page 46 for LED locations.

Card Suite Software

Installation

Exit all other programs that are running until the installation is complete.

Place the flash drive in the computer USB port.



If the installation does not start up automatically, it can be run from the **Start** menu. Select the **Start** button; then select **Run**. At the prompt, type **x:\Software Select Menu.exe** where *x* represents the drive letter that is associated with your flash drive. A CARD Suite icon should appear on the desktop display after successful installation.

Connecting the Programming Cable

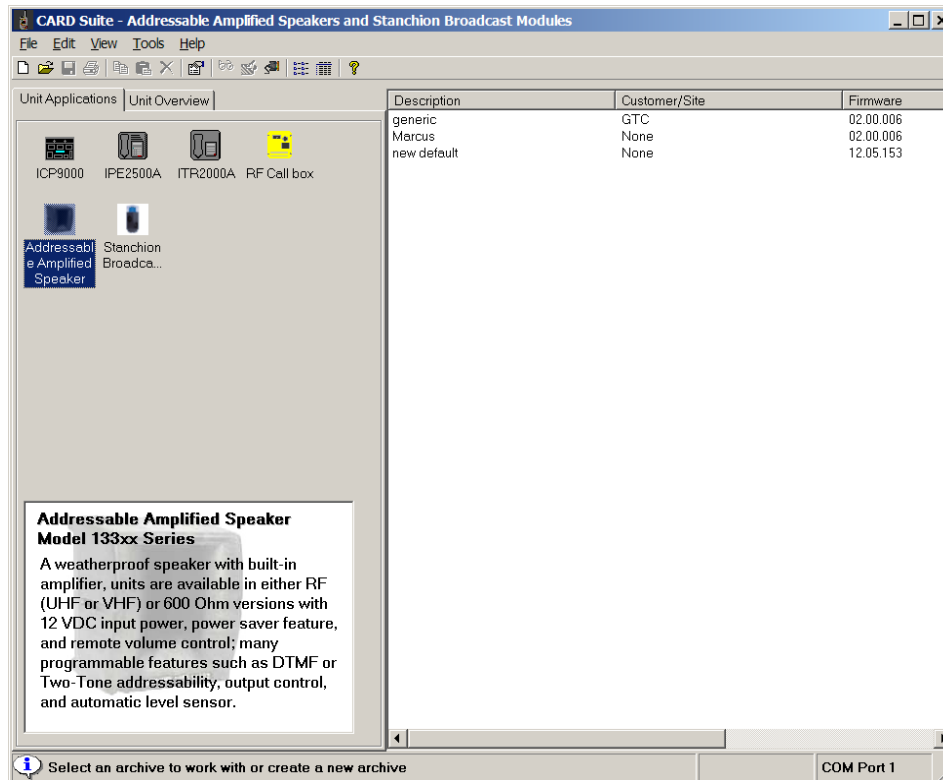
1. Attach the programming cable to an available COM serial port connector on the computer using the 9-pin adaptor supplied with the cable (CARD Suite supports COM1–COM8).
NOTE: If using a USB-to-RS-232 converter, connect the converter to the computer's USB port and then connect the programming cable to the 9-pin mating receptacle on the converter.
2. After opening the Addressable Amplified Speaker (as previously described), plug the programming cable into the programming connector J1 on the speaker amplifier PCBA. Refer to Figure 18 on page 44 or Figure 19 on page 46.
3. Connect a 12–15 V dc power source to the terminal block labeled **BATTERY**, located on the front section of the Addressable Amplified Speaker assembly or connect the 12–15 V dc power supply provided with the speaker and plug into a 120 V ac source. Be sure to observe the voltage polarity in both cases. **Failure to observe polarity will result in circuit damage.**
4. Verify the Programming LED illuminates on the speaker amplifier PCBA. The LED is located next to the J1 programming connector. This illumination verifies the unit is under power and the computer and programming cable are connected properly.

Programming the Addressable Amplified Speaker

Initial Setup and File Creation

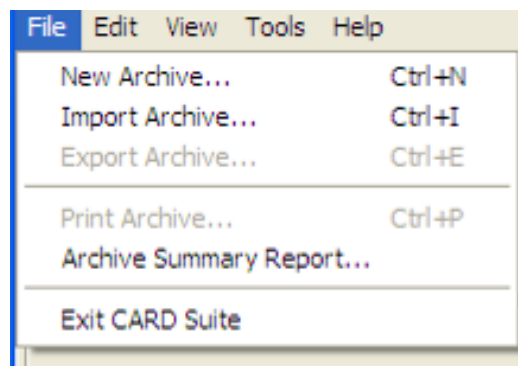
Run the CARD Suite Programming Software on the PC. The following screen will appear:

Select the **Addressable Amplified Speaker** icon on the left pane of the screen.

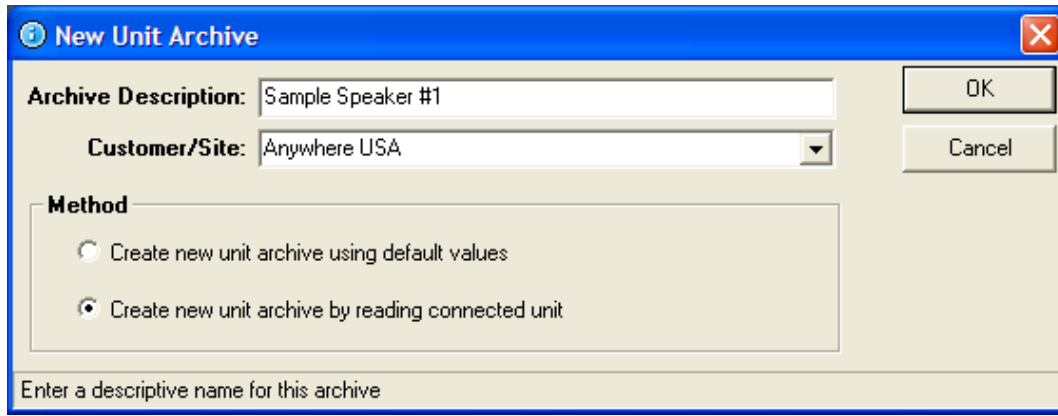


Any existing speaker archives that are stored in CARD Suite on this PC are shown in the pane on the right side of the screen. These archives can be modified by double-clicking the archive entry in the right pane.

To add a new speaker archive, select **File → New Archive** from the tool bar as shown below. One archive is required for each Addressable Amplified Speaker in the system, if DTMF or Two-Tone Selective are programmed. A common archive can be used for speakers programmed in Generic mode.



The following screen will be displayed when adding a new archive:



New Unit Archive

Archive Description: Sample Speaker #1

Customer/Site: Anywhere USA

Method

Create new unit archive using default values

Create new unit archive by reading connected unit

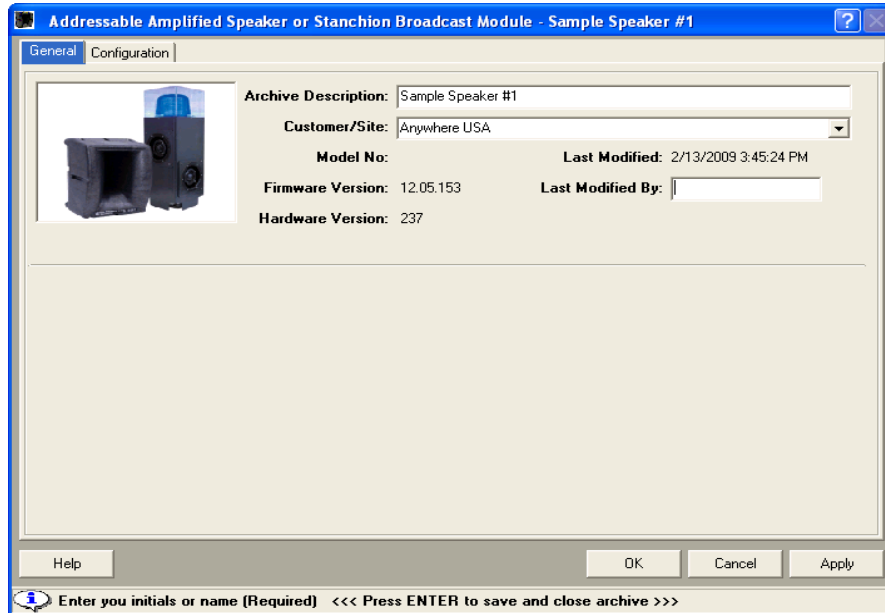
Enter a descriptive name for this archive

1. Enter an **Archive Description** for the paging module archive as shown above. The description is generally the device's location within the end-user's facility or a tag number identification assigned by the system installer.
2. Enter the **Customer/Site** description. This is generally the facility name. This entry is useful when managing speakers at multiple facilities. It will allow the system administrator to easily sort the speaker entries when making changes or updates to the speaker programming.
3. Select the archive creation **Method** using the radio buttons. To upload an existing configuration from the connected speaker, select **Create new unit archive by reading connected unit**. When programming an older series Addressable Amplified Speaker (Models 13352, 13362, 13372) using Card Suite Version 4.2.0 or newer, a new archive should be created only by first reading the connected speaker. Using the default values setting will display programming features that do not exist in old series models.

If a speaker is not connected or the programmer wants to create a new archive starting with default values, select: **Create new unit archive using default values**.

4. Select **OK**. The archive will be created and then opened for editing. (The "reading connected unit" creation requires about 15 seconds.)

- The following screen will be displayed when the archive (new or existing) is opened. Enter a name or initials in **Last Modified By** field (optional). This is a method to track programming changes by date and user.

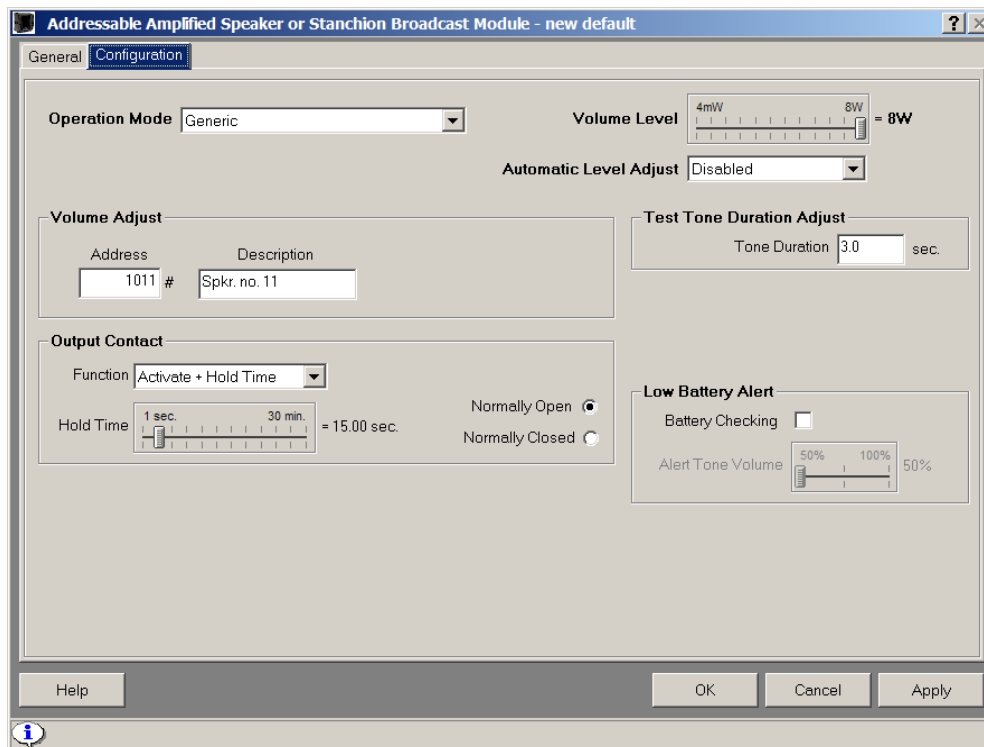


- Select the Configuration tab to display the main Configuration screen where the majority of the Addressable Amplified Speaker operation parameters are set.

Operating Modes

Select the **Operation Mode** from the pull-down menu. The screen will change appearance based on the selection made. Each selection is shown in the following screen shots.

Generic Mode



Volume Level – Select the speaker output level using the slide bar. The valid range is 4 mW to 8 W in doubling increments (4 mW, 8 mW, 16 mW, etc.).

Automatic Level Adjust – Enable this feature if steady high noise is sometimes present near the speaker, but is not present continuously. With the ALA feature disabled, the speaker output volume will follow the exact level setting on the volume control slide. This feature is enabled by selecting one of the three available offset levels; 5 dB Offset, 10 dB Offset, or 15 dB Offset. The Offset Level is the level of audio (measured as dB SPL) above the average ambient noise level, at which the speaker will broadcast. The maximum audio output power attainable, with or without ALA enabled, is 8 watts.

NOTE: ALA can be used in a Feed-Thru configuration. If the Addressable Amplified Speakers are programmed for Follow-Me operation, the Lead speaker will be programmed for ALA functionality and the Slave speakers will not. They will follow the level of the Lead speaker. If the Addressable Amplified Speakers are programmed for Individual operation, both the Lead and the Slave speakers operate independently and each can be programmed for ALA functionality.

Volume Adjust Address – Enter the DTMF Address code to be used for making volume changes from a remote touch-tone device. The address should be a code unique to the unit being programmed. This address code may include digits 0–9 as well as the extended DTMF digits A, B, C, and D. It can contain two to eight digits. By using one or more of the DTMF digits A, B, C, or D, broadcast access will be restricted to equipment capable of generating these DTMF digits, providing additional access security.

Test Tone Duration Adjust – The speaker will generate a tone at the current volume setting when it enters the test tone mode (volume control). This entry starts the duration of the test tone. When the volume is adjusted (in test tone mode), the speaker will generate a tone at the newly selected level. The test tone duration's valid range is 0.5–6.0 seconds in 0.5-second increments with a default setting of 3.0 seconds.

Output Contact – These settings control the activation of the Addressable Amplified Speaker's contact closure output. The settings are in effect only when the paging module is activated. Use the pull-down menu to make one of the following selections:

- **No Change** – The output contact will be unaffected when the corresponding DTMF address is received.
- **Activate** – The output contact will change state when the input control contact is received and the module becomes active. The output contact returns to the normal state when the input contact opens.
- **Activate + Hold** – The output contact will change state when the input control contact is received. The output contact returns to the normal state after the input contact opens and the Hold Time duration expires.

Use the slide bar to set the **Hold Time**. Valid range is 1 second to 30 minutes.

Using the radio button, select the normal state of the relay contact with power applied to the paging module. When power is removed, the contact will always be in the OPEN state.

- **Normally Open** – relay contact is OPEN when the unit is inactive and CLOSED when active.
- **Normally Closed** – relay contact is CLOSED when the unit is inactive and OPEN when active.

Low Battery Alert

- **Battery Checking** – Select this checkbox to set the unit to test the battery voltage (default is every 4 minutes). If the battery voltage is low when the battery test occurs, the unit will broadcast a short alert tone. The factory default “low battery” threshold is 11.5 V. If a backup battery is not connected to the Paging Module, do not enable the **Battery Checking**.
- **Alert Tone Volume** – Selects the volume of the “low” alert tone as a fraction of the unit’s speaker output level (50%, 75% or 100%). The factory default setting is 50%.

DTMF with Manual Switch Mode

The screenshot shows the configuration window for an Addressable Amplified Speaker or Stanchion Broadcast Module. The window is titled "Addressable Amplified Speaker or Stanchion Broadcast Module - new default" and has tabs for "General" and "Configuration".

Operation Mode: DTMF Selective with Manual Switch

Min. Volume Level: A slider bar ranging from 4mW to 8W, currently set at 8W.

Automatic Level Adjust: 10dB Offset

DTMF Address Table:

Address	Description	Output Contact Function
1. 9732 #	Library	Activate
2. 97444 #	North Zone	Activate
3. 999 #	All Call	Activate + Hold Time
4. #		No Change
5. #		No Change
6. #		No Change
7. #		No Change
8. #		No Change

Test Tone Duration Adjust: Tone Duration 3.0 sec.

Voice Switch: Silence Limit 3.0 sec. to 10.5 sec., currently set at 5.0 sec.

Low Battery Alert: Battery Checking Alert Tone Volume 50%

Output Contact: Hold Time 1 sec. to 30 min., currently set at 15.00 sec. Normally Open Normally Closed

Buttons: Help, OK, Cancel, Apply

Volume Level – Select the speaker output level using the slide bar. The valid range is 4 mW to 8 W in doubling increments (4 mW, 8 mW, 16 mW, etc.).

Automatic Level Adjust – Enable this feature if steady high noise is sometimes present near the speaker, but is not present continuously. With the ALA feature disabled, the speaker output volume will follow the exact level setting on the volume control slide. This feature is enabled by selecting one of the three available offset levels; 5 dB Offset, 10 dB Offset, or 15 dB Offset. The Offset Level is the level of audio (measured as dB SPL) above the average ambient noise level, at which the speaker will broadcast. The maximum audio output power attainable, with or without ALA enabled, is 8 watts.

NOTE: ALA can be used in a Feed-Thru configuration. If the Addressable Amplified Speakers are programmed for Follow-Me operation, the Lead speaker will be programmed for ALA functionality and the Slave speakers will not. They will follow the level of the Lead speaker. If the Addressable Amplified Speakers are programmed for Individual Operation, both the Lead and the Slave speakers operate independently and each can be programmed for ALA functionality.

Test Tone Duration Adjust – The speaker will generate a tone at the current volume setting when it enters the test tone mode (volume control). This entry starts the duration of the test tone. When the volume is adjusted (in test tone mode), the speaker will generate a tone at the newly selected level. The test tone duration's valid range is 0.5–6.0 seconds in 0.5-second increments with a default setting of 3.0 seconds.

DTMF Address & Description 1–8

Enter the DTMF addresses required to activate the Addressable Amplified Speaker. A description of up to 12 characters can be entered for each address. Each address can contain two to eight digits. The “#” symbol is automatically inserted into the address by the programming software and is not a required programmable entry. Up to eight different addresses can be programmed.

Address 1 is always a unique address assigned only to the Addressable Amplified Speaker being programmed. It is used for individual speaker access, and speaker volume control using additional DTMF commands. Refer to Volume Adjustment section.

Addresses 2 through 8 are typically assigned to groups of speakers to create broadcast groups or zones throughout the system. Addressable Amplified Speakers assigned to the same group or zone address will activate simultaneously when that address is received.

A typical programming scenario is to use one address for individual access, two to six addresses for zone access, and one address for system-wide (all-call) access. The all-call address would be programmed into every paging module.

Each address code may include digits 0–9, *, as well as the extended DTMF digits A, B, C, D. It can contain up to eight digits. By using one or more of the DTMF digits A, B, C, or D, broadcast access will be restricted to equipment capable of generating these extended DTMF digits, providing greater access security.

Output Contact Function

These settings control the activation of the Addressable Amplified Speaker's contact closure output for each DTMF address. The settings are in effect only when the specific DTMF address is received. Use the pull-down menu to make one of the following selections:

- **No Change** – The output contact will be unaffected when the corresponding DTMF address is received.
- **Activate** – The output contact will change state when the corresponding DTMF address is received. The output contact returns to the normal state when the Standby Time duration (3 seconds) expires.
- **Activate + Hold Time** – The output contact will change state when the corresponding DTMF address is received. The output contact returns to the normal state when the Standby Time and the Hold Time durations expire.
- **De-Activate** – If active, the relay will reset to its normal state immediately after receiving the corresponding DTMF address. This is a function used to override the Standby Time and Hold Time assigned to other DTMF addresses.

Use the slide bar to set the **Hold Time**. Valid range is 1 second to 30 minutes.

In the **Output Contact section** at the bottom of the screen, select the normal state of the relay contact. This will be the relay state when power is applied to the Addressable Amplified Speaker. When power is removed, the contact will always be in the OPEN state.

- **Normally Open** – Relay contact is OPEN when the unit is inactive and CLOSED when active.
- **Normally Closed** - Relay contact is CLOSED when the unit is inactive and OPEN when active.

Low Battery Alert

- **Battery Checking** – Select this checkbox to set the unit to test the battery voltage (default is every 4 minutes). If the battery voltage is low when the battery test occurs, the unit will broadcast a short alert tone. The factory default “low battery” threshold is 11.5 V. If a backup battery is not connected to the Paging Module, do not enable the **Battery Checking**.
- **Alert Tone Volume** – Selects the volume of the “low” alert tone as a fraction of the unit’s speaker output level (50%, 75% or 100%). The factory default setting is 50%.

DTMF with Voice Switch Mode

The screenshot shows the configuration window for an Addressable Amplified Speaker or Stanchion Broadcast Module. The window is titled "Addressable Amplified Speaker or Stanchion Broadcast Module - new default" and has tabs for "General" and "Configuration".

Operation Mode: DTMF Selective with Voice Switch

Volume Level: A slider bar ranging from 4mW to 8W, currently set at 250mW.

Automatic Level Adjust: Disabled

DTMF Address: A table with 8 rows, each with an Address, Description, and Output Contact Function.

Address	Description	Output Contact Function
1. 9732 #	Library	Activate
2. 97444 #	North Zone	Activate
3. 999 #	All Call	Activate + Hold Time
4. #		No Change
5. #		No Change
6. #		No Change
7. #		No Change
8. #		No Change

Test Tone Duration Adjust: Tone Duration 3.0 sec.

Voice Switch: Silence Limit 3.0 sec. to 10.5 sec., currently set at 5.0 sec.

Low Battery Alert: Battery Checking . Alert Tone Volume 50% to 100%, currently set at 50%.

Output Contact: Hold Time 1 sec. to 30 min., currently set at 15.00 sec. Normally Open . Normally Closed .

Buttons: Help, OK, Cancel, Apply.

Volume Level – Select the speaker output level using the slide bar. The valid range is 4 mW to 8 W in doubling increments (4 mW, 8 mW, 16 mW, etc.).

Automatic Level Adjust – Enable this feature if steady high noise is sometimes present near the speaker, but is not present continuously. With the ALA feature disabled, the speaker output volume will follow the exact level setting on the volume control slide. This feature is enabled by selecting one of the three available offset levels; 5 dB Offset, 10 dB Offset, or 15 dB Offset. The Offset Level is the level of audio (measured as dB SPL) above the average ambient noise level, at which the speaker will broadcast. The maximum audio output power attainable, with or without ALA enabled, is 8 watts.

NOTE: ALA can be used in a Feed-Thru configuration. If the Addressable Amplified Speakers are programmed for Follow-Me operation, the Lead speaker will be programmed for ALA functionality and the Slave speakers will not. They will follow the level of the Lead speaker. If the Addressable Amplified Speakers are programmed for Individual Operation, both the Lead and the Slave speakers operate independently and each can be programmed for ALA functionality.

Test Tone Duration Adjust – The speaker will generate a tone at the current volume setting when it enters the test tone mode (volume control). This entry starts the duration of the test tone. When the volume is adjusted (in test tone mode), the speaker will generate a tone at the newly selected level. The test tone duration's valid range is 0.5–6.0 seconds in 0.5-second increments with a default setting of 3.0 seconds.

Voice Switch – Select the silence limit using the slide bar. The unit will return to inactive (sleep) mode if audio is not received in this amount of time. The valid range is 3–10.5 seconds in 0.5 second increments.

DTMF Address & Description 1–8

Enter the DTMF addresses required to activate the Addressable Amplified Speaker. A description of up to 12 characters can be entered for each address. Each address can contain two to eight digits. The “#” symbol is automatically inserted into the address by the programming software and is not a required programmable entry. Up to eight different addresses can be programmed.

Address 1 is always a unique address assigned only to the Addressable Amplified Speaker being programmed. It is used for individual speaker access, and speaker volume control using additional DTMF commands. Refer to Volume Adjustment section.

Addresses 2 through 8 are typically assigned to groups of speakers to create broadcast groups or zones throughout the system. Addressable Amplified Speakers assigned to the same group or zone address will activate simultaneously when that address is received.

A typical programming scenario is to use one address for individual access, two to six addresses for zone access, and one address for system-wide (all-call) access. The all-call address would be programmed into every Addressable Amplified Speaker.

Each address code may include digits 0–9, *, as well as the extended DTMF digits A, B, C, D. It can contain up to eight digits. By using one or more of the DTMF digits A, B, C, or D, broadcast access will be restricted to equipment capable of generating these extended DTMF digits, providing greater access security.

Output Contact Function

These settings control the activation of the Addressable Amplified Speaker's contact closure output for each DTMF address. The settings are in effect only when the specific DTMF address is received. Use the pull-down menu to make one of the following selections:

- **No Change** – The output contact will be unaffected when the corresponding DTMF address is received.
- **Activate** – The output contact will change state when the corresponding DTMF address is received. The output contact returns to the normal state when the Standby Time duration (3 seconds) expires.
- **Activate + Hold Time** – The output contact will change state when the corresponding DTMF address is received. The output contact returns to the normal state when the Standby Time and the Hold Time durations expire.
- **De-Activate** – If active, the relay will reset to its normal state immediately after receiving the corresponding DTMF address. This is a function used to override the Standby Time and Hold Time assigned to other DTMF addresses.

Use the slide bar to set the **Hold Time**. Valid range is 1 second to 30 minutes.

In the **Output Contact section** at the bottom of the screen, select the normal state of the relay contact. This will be the relay state when power is applied to the Addressable Amplified Speaker. When power is removed, the contact will always be in the OPEN state.

- **Normally Open** – Relay contact is OPEN when the unit is inactive and CLOSED when active.
- **Normally Closed** - Relay contact is CLOSED when the unit is inactive and OPEN when active.

Low Battery Alert

- **Battery Checking** – Select this checkbox to set the unit to test the battery voltage (default is every 4 minutes). If the battery voltage is low when the battery test occurs, the unit will broadcast a short alert tone. The factory default “low battery” threshold is 11.5 V. If a backup battery is not connected to the Paging Module, do not enable the **Battery Checking**.
- **Alert Tone Volume** – Selects the volume of the “low” alert tone as a fraction of the unit's speaker output level (50%, 75% or 100%). The factory default setting is 50%.

Feed Thru Operation

As previously stated, the Addressable Amplified Speaker can be programmed to allow a single speaker to perform as a Lead unit or as a Slave unit within a speaker grouping. This is particularly useful and most commonly used in an RF to hardwire transition. It allows an RF controlled speaker to serve as a Lead unit with one or more 600-ohm speaker(s) hardwired to it as “Slaves”. Each speaker must be specifically programmed to perform its function within the group. There are two basic modes of operation; Follow-Me or Individual. The desired operation will determine the CARD Suite settings.

Follow-Me Operation

Follow-Me operation instructs all Slave speakers to track the exact functionality of the Lead speaker. This allows a single DTMF or Two-Tone address received at the RF speaker to activate all speakers within a grouping. This grouping could be considered a zone, building, floor, or some other specific yet common area. In this operating mode, all slave speakers must be connected to the Lead speaker or another Slave speaker via an audio pair and a control pair (two twisted pairs between speakers), as indicated in Figure 3.

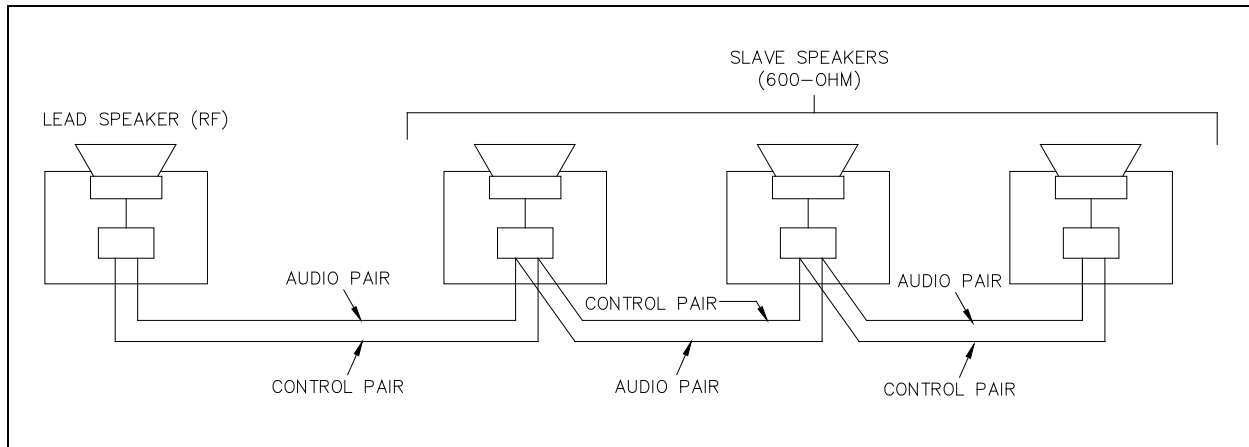
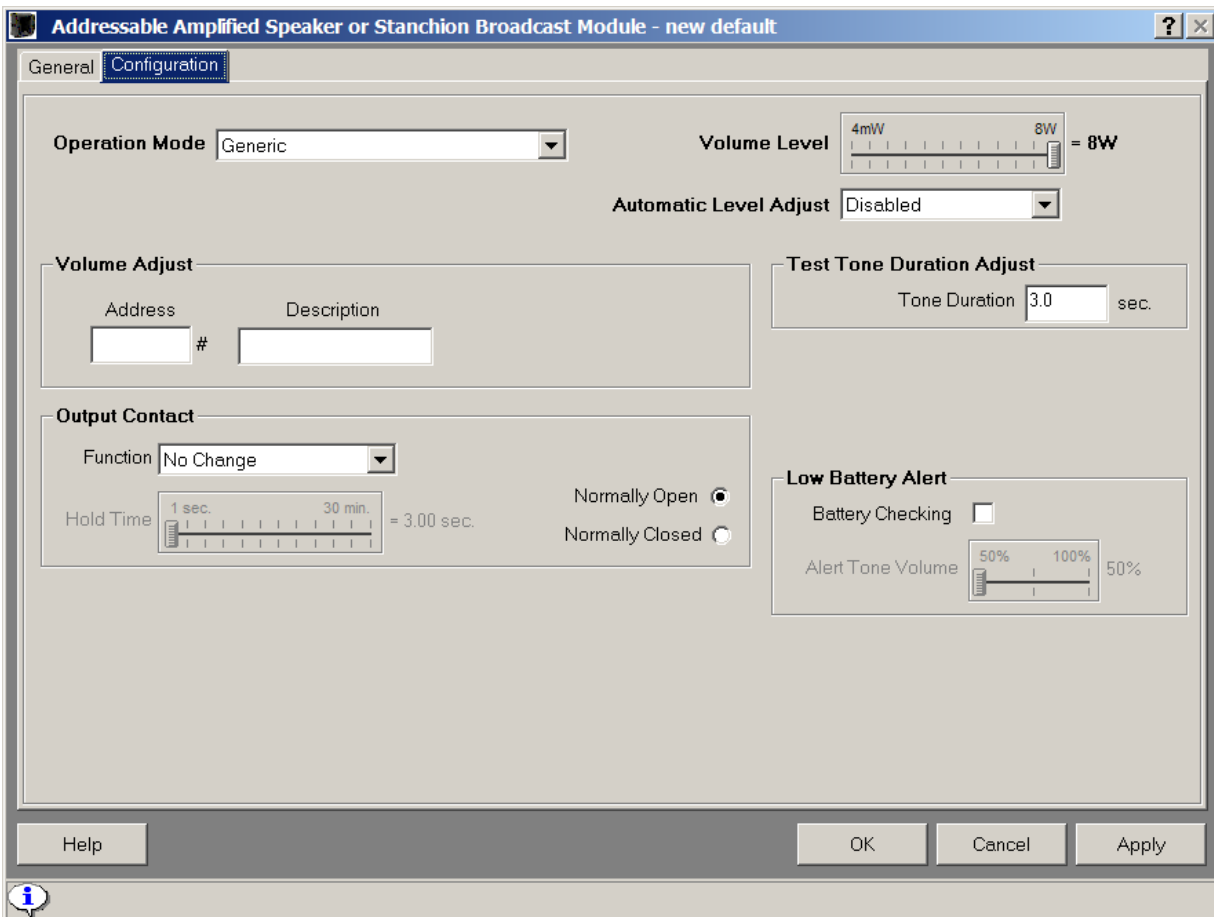
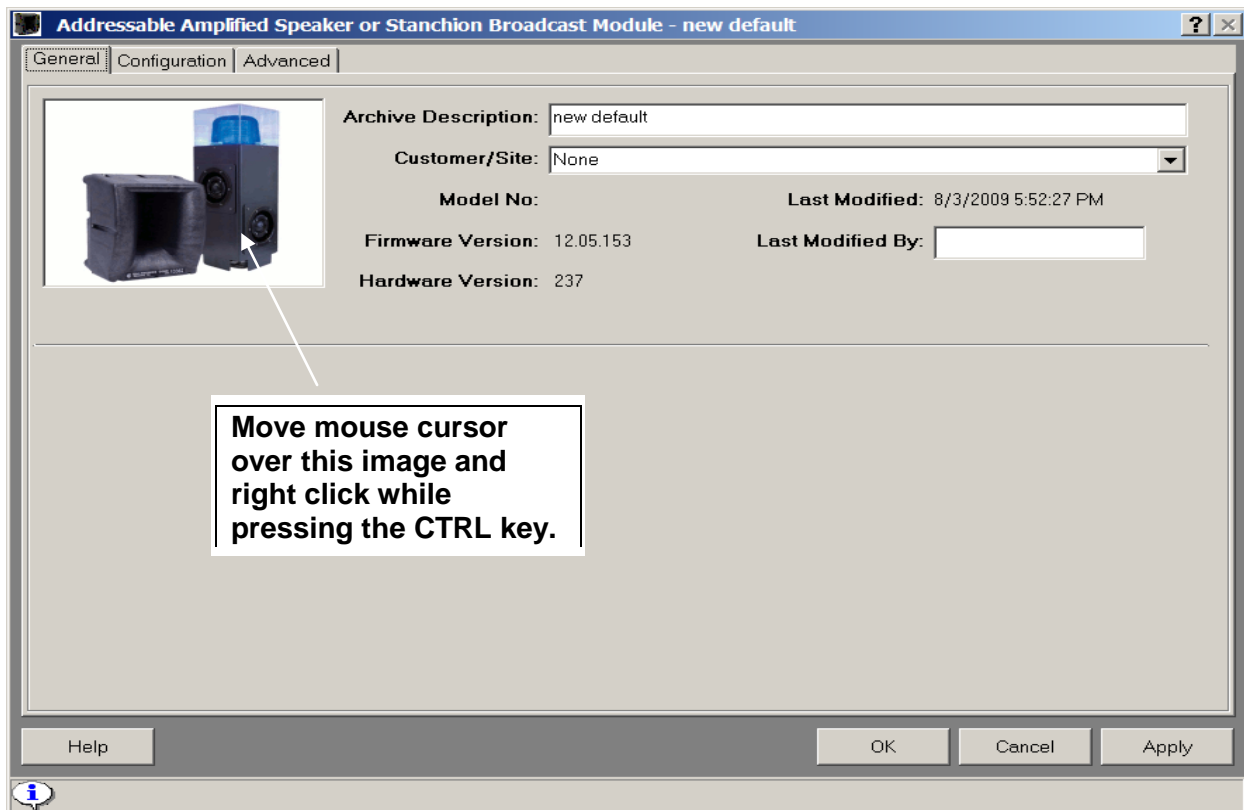


Figure 3.

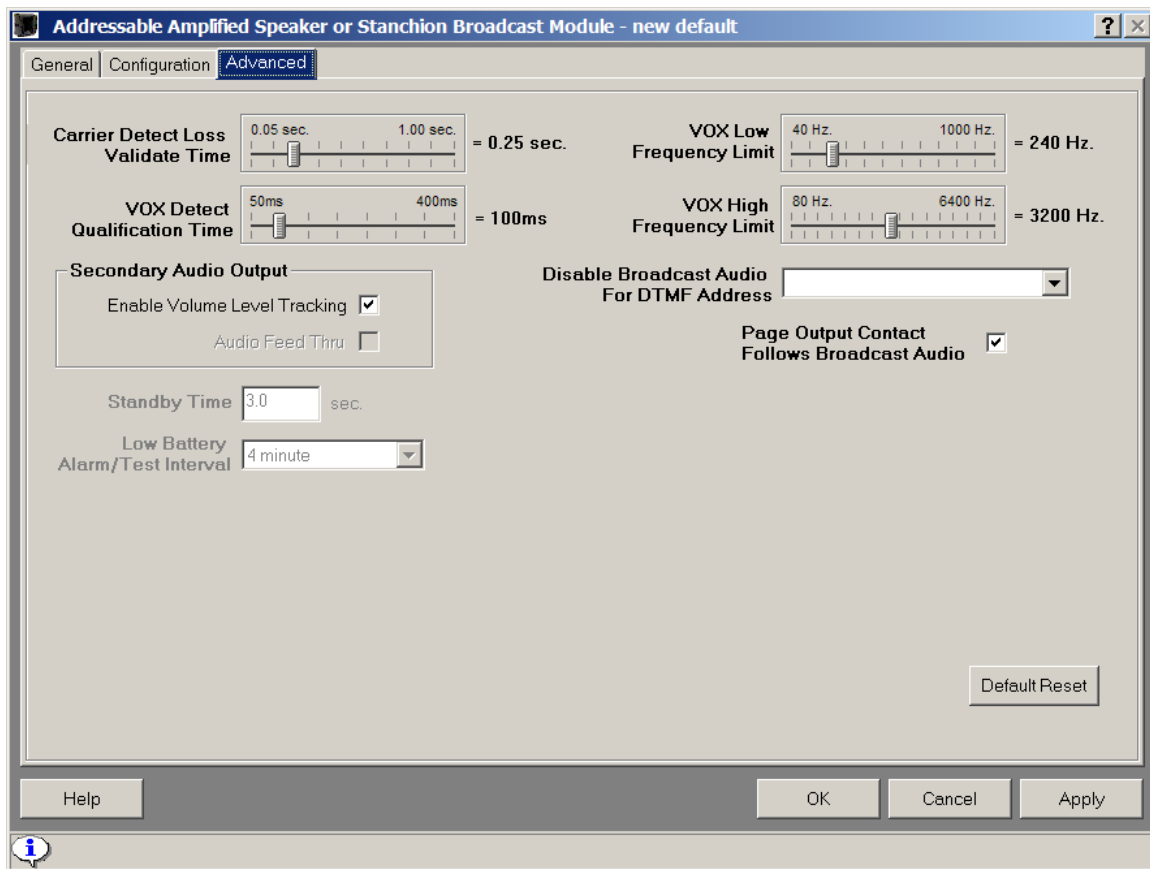
The Lead speaker can be programmed for either Generic or Selective (DTMF or Two-Tone) mode of operation. However, the Slave speaker(s) must be programmed for Generic operating mode and their speaker volume must be programmed for maximum volume as shown in the following screen. In Follow-Me mode, adjusting the volume of the Lead speaker will also adjust the volume of the Slave speaker(s). The control pair is required to activate each Slave speaker.



Additional programming for Follow-Me operation is required under the CARD Suite Advanced tab. To view the Advanced Tab, access an existing or create a new archive. While in the archive, select the General tab and move the mouse cursor over the image of the speaker/stanchion module and right click while pressing the **Ctrl** key. The Advanced tab will appear as shown below.



In the Advanced Tab screen, locate the **Secondary Audio Output** section. The **Enable Volume Level Tracking** box must be selected for the Lead speaker only. Additionally, the **Page Output Contact Follows Broadcast Audio** box must be checked. This configuration is noted on the following screen.

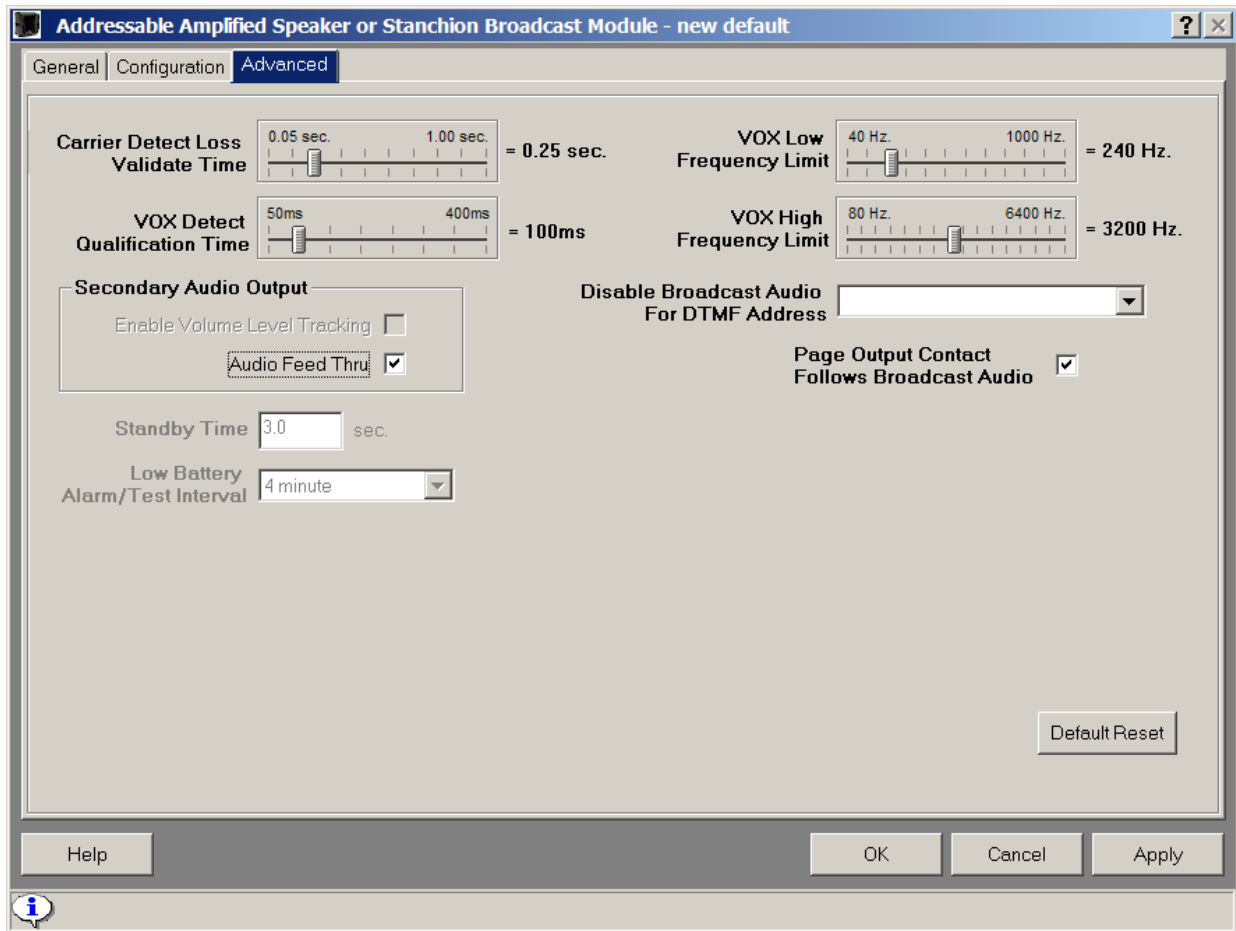


Lead Speaker/Follow-Thru Operation

If only a single Slave speaker is connected to the Lead speaker in Follow-Me operation, both check boxes in the **Secondary Audio Output** section of the Slave should remain unselected (default setting). If multiple Slave speakers are connected to each other, as indicated in Figure 3, each Slave speaker must have the **Audio Feed Thru** box selected and the **Page Output Contact Follows Broadcast Audio** box must be checked, as indicated in the following screen.

NOTES:

1. The **Page Output Contact Follows Broadcast Audio** box is to be checked (enabled) only in Follow-Me operation and when a downstream slave speaker is connected (Lead or Slave speaker programming).
2. The **Enable Volume Level Tracking** and **Audio Feed Thru** boxes under Secondary Audio Output are mutually exclusive. This means that only one can be enabled (checked) at a time. To switch between the two boxes requires the checked box to be un-checked (disabled) first.
3. The **Default Reset** button in the lower right-hand corner of the Advanced screen, when pressed, will reset all values on that screen to the factory default settings.



Slave Speaker/Follow-Thru Operation

Selecting the **Audio Feed Thru** box in a Slave speaker allows the scaled audio of the Lead unit’s speaker to be passed through to each connected Slave speaker, keeping all speakers within the grouping at the same audio level. Even though this audio is connected from one speaker to the next, it is perceived that the audio from the Lead speaker is sent to each Slave speaker directly. This concept is depicted in Figure 4.

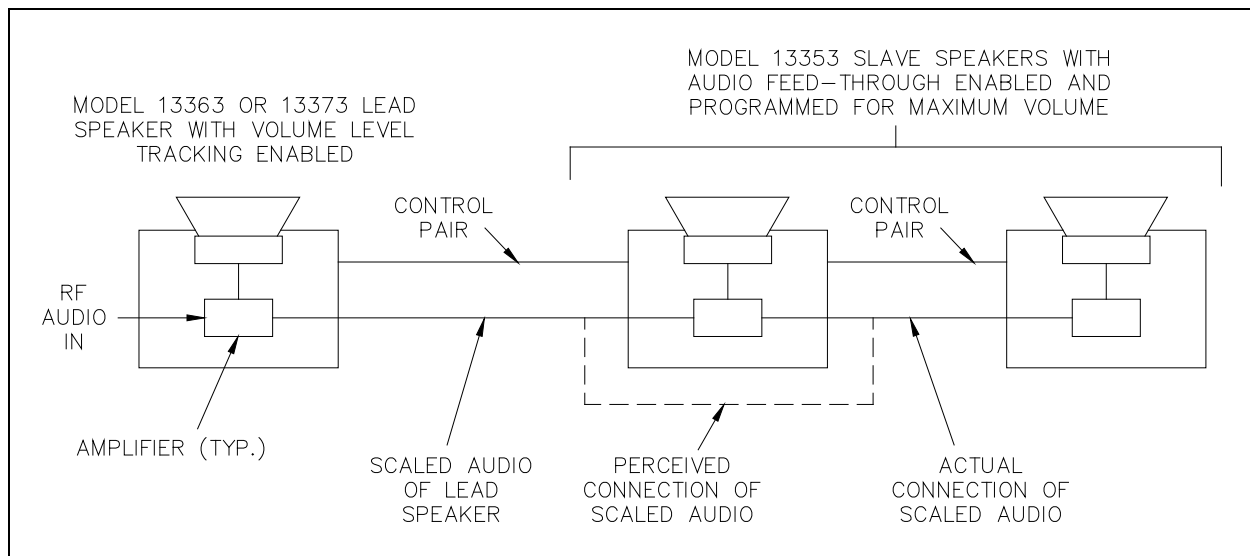


Figure 4.

Individual Operation

Individual operation allows each 600-ohm Slave speaker to be accessed via its own dedicated address, even though it is electrically connected to a Lead RF speaker. This configuration allows the use of the lower cost Model 13353 600-Ohm Speaker but still allows each speaker to be programmed and addressed separately from all other interconnected speakers. This approach would typically be used for buildings with limited RF access or to simply reduce project costs. This operation allows the use of a single audio pair between the Slave and Lead speaker and between each Slave speaker. No control pair is required because each speaker will be activated when an appropriate DTMF or Two-Tone code is received. See Figure 5.

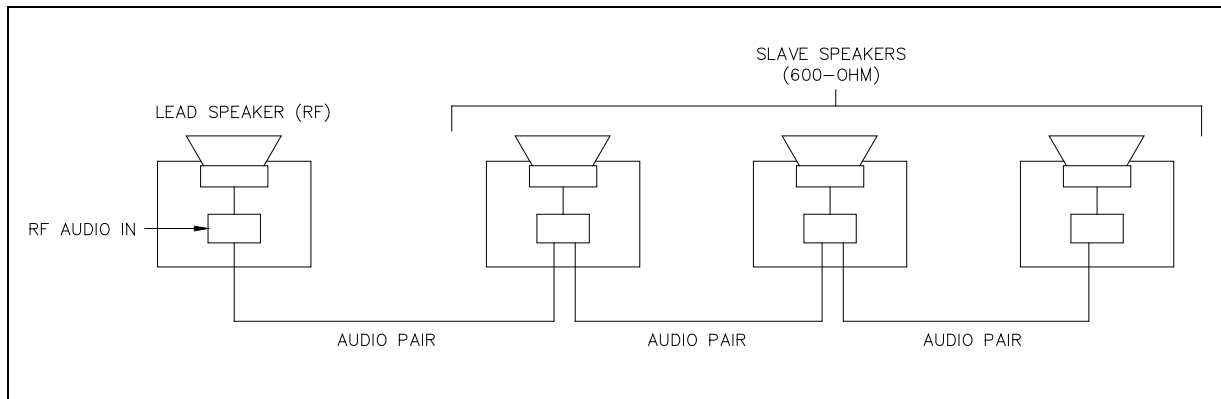


Figure 5.

Individual operation requires that both the Lead speaker and the Slave speaker(s) are programmed with the **Audio Feed Thru** box enabled on the Advance screen, as previously shown. Individual operation allows the volume of each speaker to be adjusted independently. See page 13.

Individual operation allows the source audio received at the Lead speaker to be duplicated or passed through to the next speaker. This same signal is then passed through from one Slave speaker to the next, allowing each one to be activated individually without activation of the other connected speakers. They may also be activated as a group if they are programmed with the same DTMF or Two-Tone address. This concept is depicted in Figure 6.

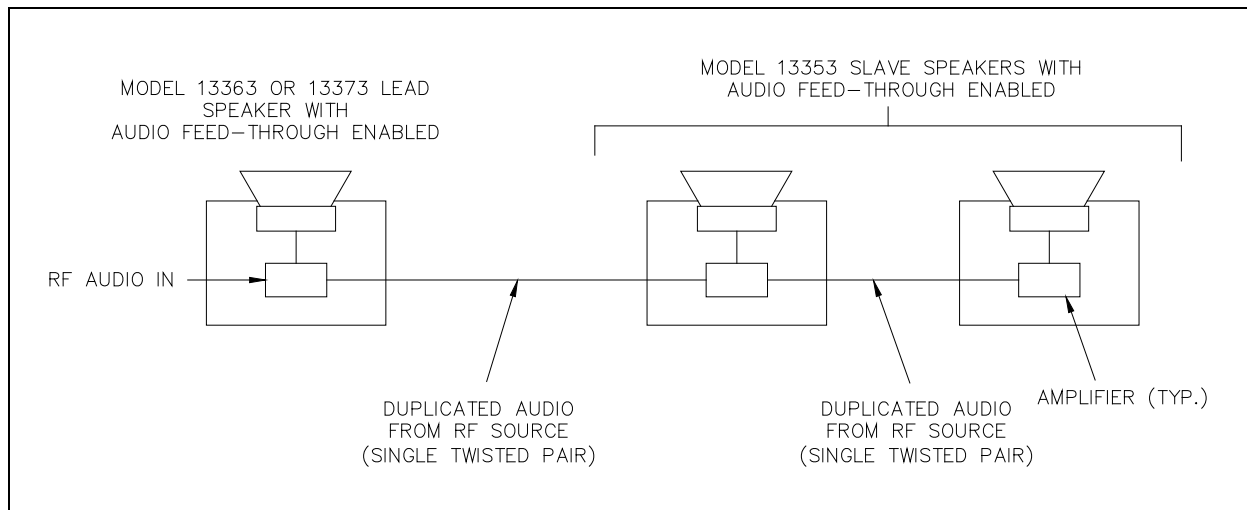


Figure 6.

RF Programming Software

NOTE: Required only for Models 13363 and 13373 (Part of Kit No. 19101-024)

Installation

Exit all other programs that are running until the installation is complete.

Place the CD in the computer CD-ROM drive. If the “auto-run” feature on your CD-ROM drive is enabled, the Ritron DTXL_PCPS set-up screen should appear within a few seconds.

If the installation does not start up automatically, it can be run from the **Start** menu. Select the **Start** button; then select **Run**. At the prompt, type **x:\fscommand\setup.exe** where *x* represents the drive letter that is associated with your CD-ROM drive. A DTXL_PCPS icon should appear on the desktop display after successful installation.

Connecting the Programming Cable

1. Unplug the Addressable Amplified Speaker’s 15-pin D-connector from the radio.
2. Connect the DTXP-PAC cable assembly’s 15-pin D-connector into the radio.
3. Connect the RJ11-style plug of the 9/RTC-PAS cable into the mating receptacle on DTXP-PAC cable.
4. Connect the DB-9 to DB-25 adaptor to the other end of the 9/RTC-PAS cable.
5. Connect the DB-9 connector of the cable assembly to the computer serial port.

NOTE: If using a USB-to-RS-232 converter, connect the converter to the computer’s USB port and then connect the cable to the 9-pin mating receptacle on the converter.

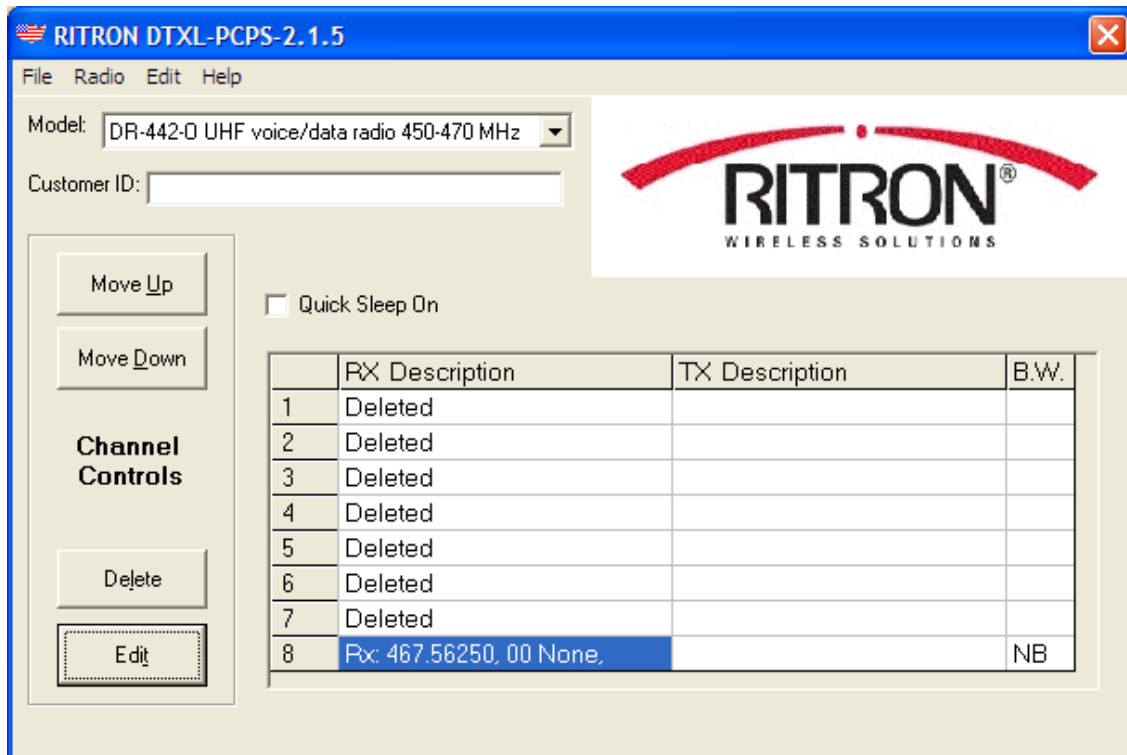
6. Connect the red and black leads of the DTXP-PAC cable to a 12–15 V dc source (battery or power supply), observing the polarity (red +, black-).

Programming the Radio

1. Make sure the radio to be programmed is powered and connected to the PC (as described above) before starting the programming software on the PC.

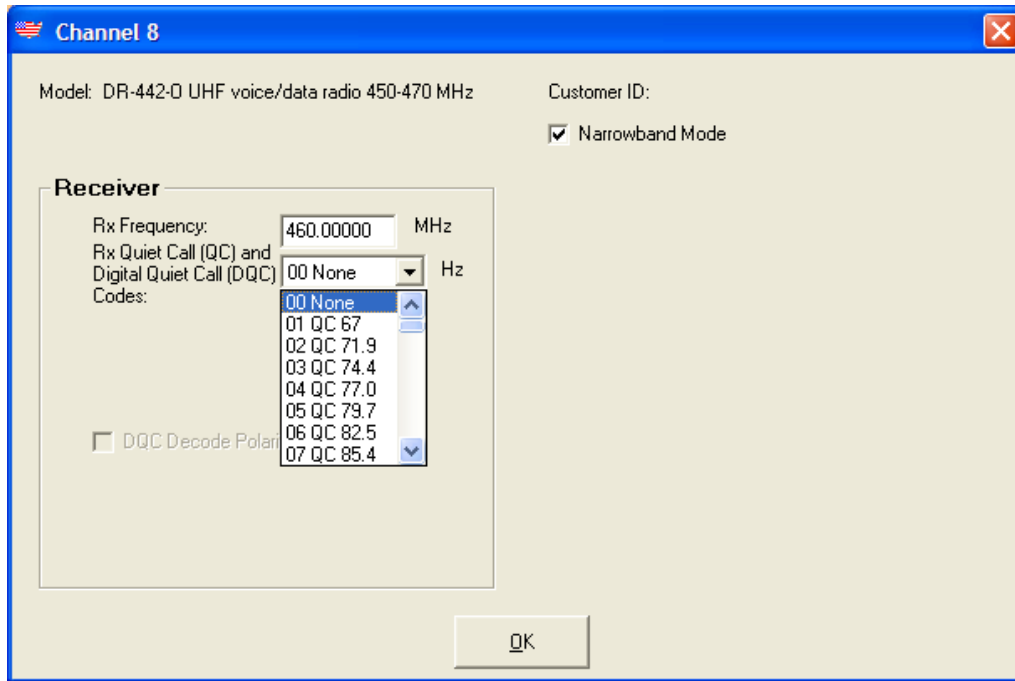
NOTE: If the Ritron software does not read the type of the connected radio, unplug the programming cable and re-insert.

2. The radio’s current programming will be displayed. Below is an example:

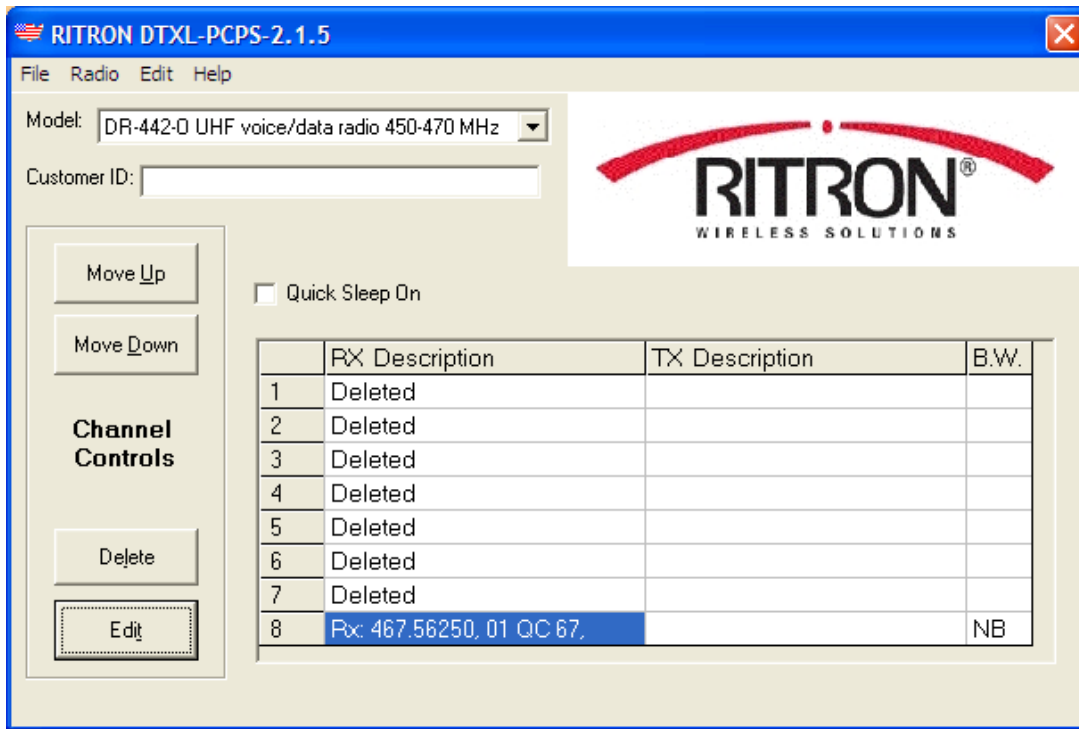


NOTE: The RF Module is capable of being programmed for channels 1–8; however, the Addressable Amplified Speaker uses only the frequency programmed for channel 8. Be sure to program channel 8 with the licensed frequency.

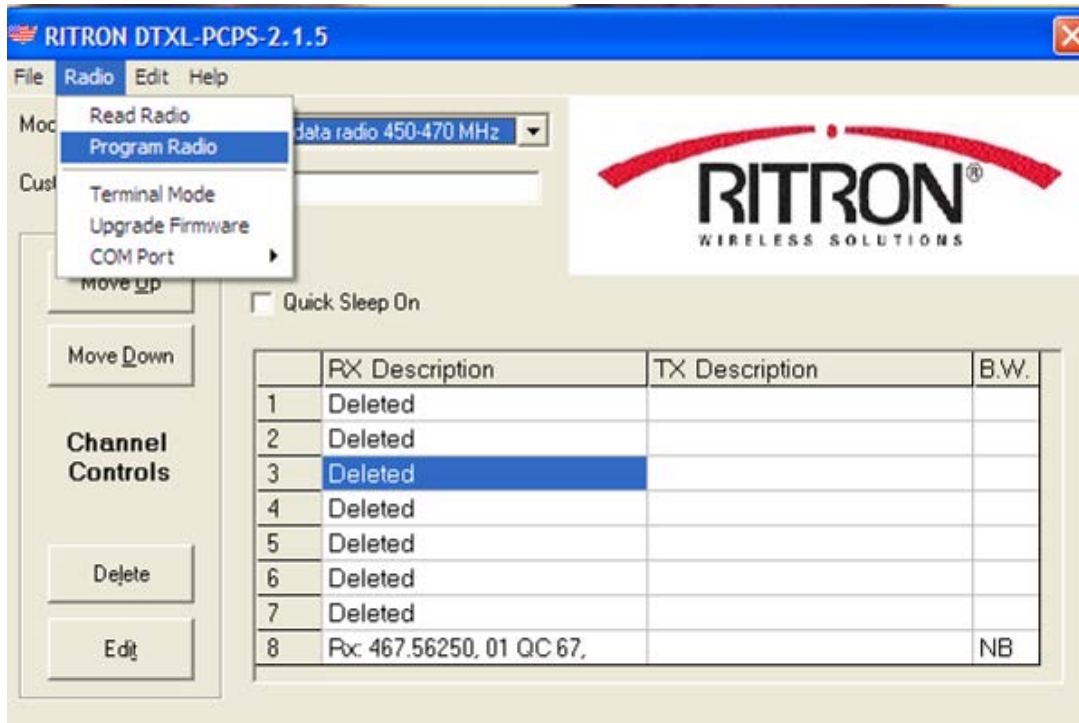
- Enter the Receive (Rx) frequency into channel 8. This is the only frequency that must be programmed. To enter the frequency, select channel 8 then the **Edit** button on the left to display the following screen:



- Enter the **Rx Frequency**, and select a **Quiet Call (QC)** frequency (TPL) or **Digital Quiet Call (DQC)** code (DPL), if desired.



- After entering the frequency and optional QC or DQC, program the radio by selecting **Radio > Program Radio** from the tool bar.



- After the radio is programmed (time bar will disappear), disconnect the programming cable and reconnect the DB-15 cable from the speaker amplifier PCBA.

Installation

Safety and General Information

Installation should only be performed by qualified service personnel in accordance with the National Electrical Code or applicable local codes.

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 an ALL-POLE MAINS switch with a contact separation of at least 3mm in each pole incorporated in the electrical installation of the building.

Outdoor Installation Product

Power lines - An outdoor system should not be located in the vicinity of overhead power lines, electric lights, or power circuits, where it may contact such power lines or circuits, as this contact might be fatal. Refer to the National Electrical Code Article 800 regarding installation.

Antenna Care

Unauthorized antennas, modifications, or attachments could damage the radio and may violate FCC regulations.

Electromagnetic Interference/Compatibility

Electronic equipment may be susceptible to electromagnetic interference. If you experience interference, visit the FCC website at <http://www.fcc.gov> for possible solutions.

Mechanical Receipt Inspection

The Addressable Amplified Speaker is shipped in a cardboard container, protected from movement and distress by a self-forming packaging material. Thoroughly inspect it as soon as possible after delivery. In-transit damage should be immediately reported to the transportation company.

Cable Installation Safety Considerations

Interconnecting, communications, and Class 2 dc power cables should be separated from electrical light or other Class 1 circuits by at least 2 inches. The exception is where Class 1 wiring or power circuits are run in a raceway, or are metal-sheathed or metal-clad, or are permanently separated from the conductors of the other circuitry by a continuous and firmly fixed nonconductor such as porcelain tubes or flexible tubing in addition to the insulation on the wire. Communications cables and in-building wiring should be listed and marked for the purpose according to NEC Article 800.

Equipment Required

Programming

- PC with Windows 95 or newer operating system.
NOTE: CARD Suite is not compatible with Windows NT.
- XAC4000B Programming Bundle with CARD Suite Programming Software (all models)
- XAC0004A Programming Cable (all models)
- 19101-024 RF Programming Kit (Models 13363 and 13373 only)

Tools

- #1 Phillips screwdriver
- 1/16-inch flat blade screwdriver (for TB101, TB1 and TB2 connections only)

Mounting

1. Open the Addressable Amplified Speaker as explained on page 16.
2. After opening the Addressable Amplified Speaker, untwist the nylon tie used for wire management. Unplug the quick-connect fastons from the speaker and unplug the dual 7-point connectors (TB1) and dual 3-point connectors (TB2) from the PCBA. The front section can now be completely separated from the rear section. See Figure 7.
3. Mount the rear section to any flat surface using 1/4-inch diameter customer-provided screws in each of the four 0.280-inch mounting holes in the corners of the rear section. Refer to Figure 7 for mounting hole pattern dimensions. A Model 231-001 Pole Mounting Kit can also be used for pole or surface mounting. Two customer-provided mounting screws are required to surface mount this kit. The kit includes four mounting screws needed to secure the speaker to the kit's bracket.

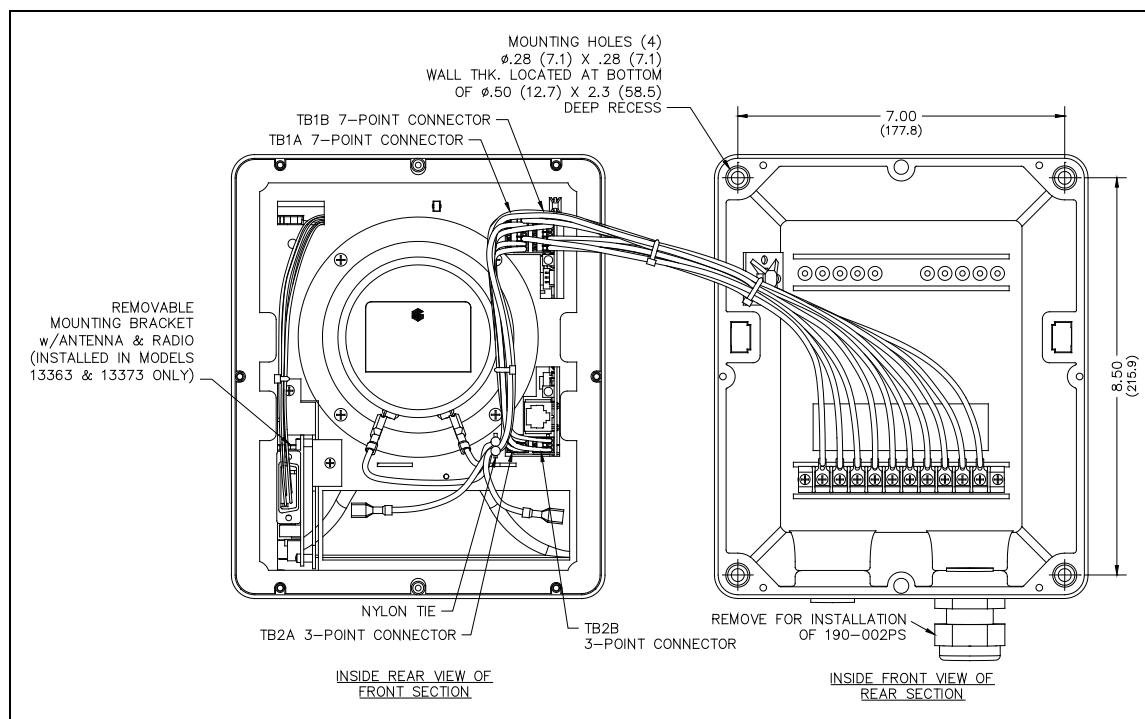


Figure 7. Mounting Detail

Cable Installation

Each of the speaker assemblies is designed for bottom cable entry, where two $\frac{3}{4}$ -inch conduit entries are located. Field wiring can enter the speaker housing using the installed $\frac{3}{4}$ -inch NPT cable bushing (bottom right), or with rigid or flexible conduit by removing the installed bushing. The $\frac{3}{4}$ -inch male conduit plug (bottom left) can be removed for additional conduit connections. Refer to Figure 8. When conduit entries are closed and sealed, the speaker is completely rain-tight.

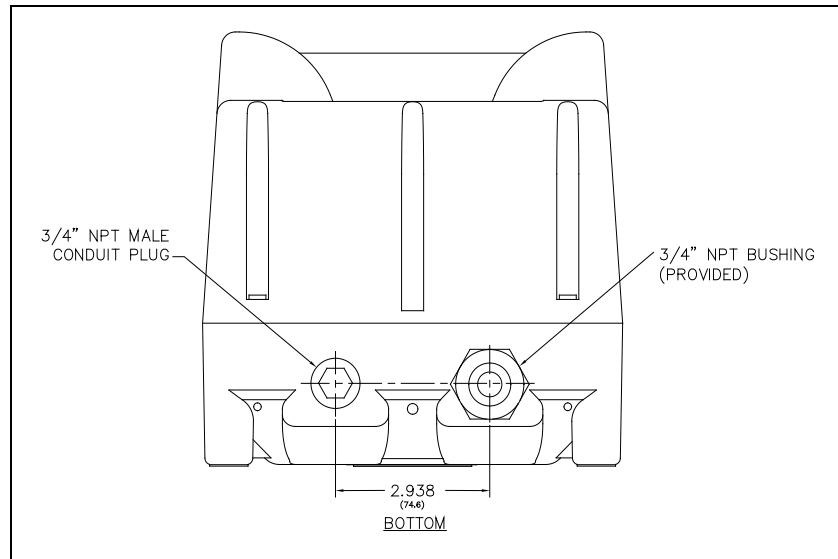


Figure 8. Bottom view of speaker assembly

Install the necessary cable for wiring the speaker. Two pairs are required for wiring to the audio input terminals for the Model 13353 (one audio, one page closure) in Generic or DTMF/Manual Switch modes. Two conductors are required for supplying external 15 V dc power to all three models of the speaker. A minimum No. 22 AWG-conductor is recommended for audio and page control and a minimum No. 20 AWG-conductor is recommended for 15 V dc power.

Power

The Addressable Amplified Speaker requires 15 V dc for operation, which can be supplied through the power supply provided with each speaker or the use of a weatherproof power supply, Model 190-002PS. The Model XB001 External Battery Enclosure with 40201-008 Battery and the internal Model BB133 Battery Backup Kit are also available for providing a 15 V dc source. These options are discussed in greater detail in the Field Installed Option section of this manual, beginning on page 48.

Wire Connections

The Addressable Amplified Speaker provides terminal blocks inside the rear portion of the housing for most field wiring. Each terminal block is labeled to indicate the functionality. Refer to Figure 9.

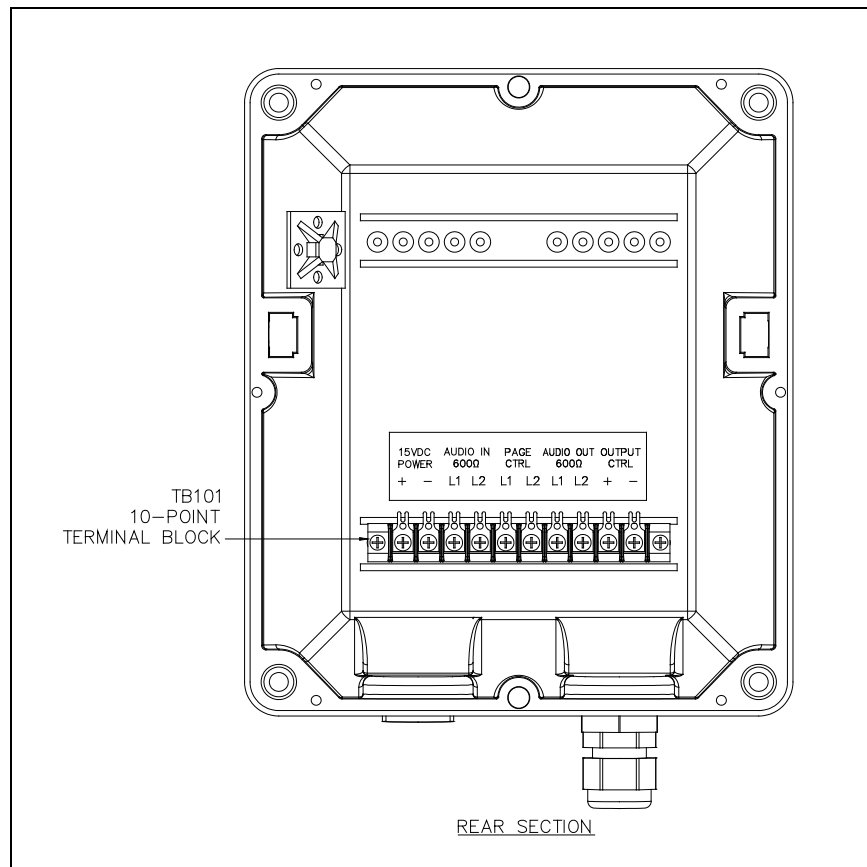


Figure 9.

After routing all necessary cable wires into the Addressable Amplified Speaker, make required wire terminations at TB101, TB1, and/or TB2 (TB1 and TB2 are located on the rear of the front section, next to the speaker. Refer to Figure 7 and Figure 19. When connecting to TB101 it is recommended that spade or ring lug connectors are used.

The following section offers some typical field wiring connection scenarios.

Typical Connection Scenarios

600-ohm Audio, Generic Mode or DTMF Selective with Manual Switch Mode

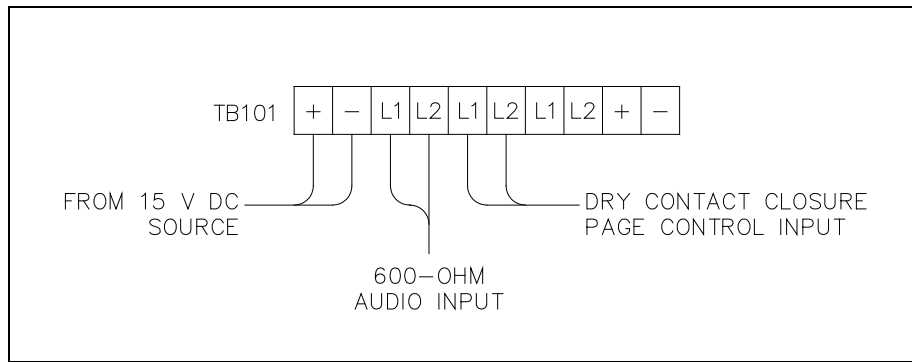


Figure 10.

600-ohm Audio, DTMF Selective with Voice Mode and Output Control

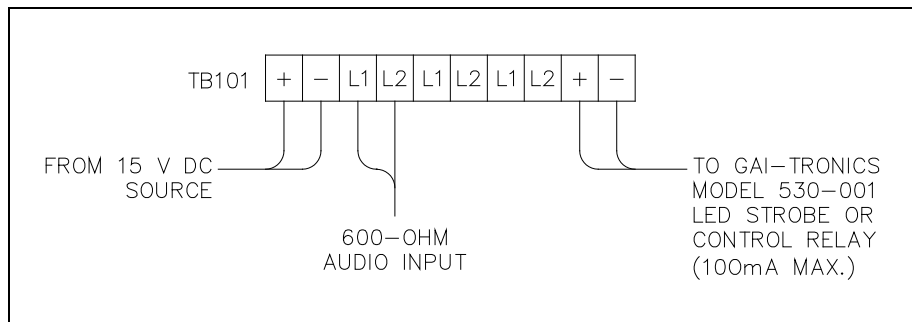


Figure 11.

600-ohm Audio, DTMF Selective with Voice Mode and Shutdown (Mute) Control

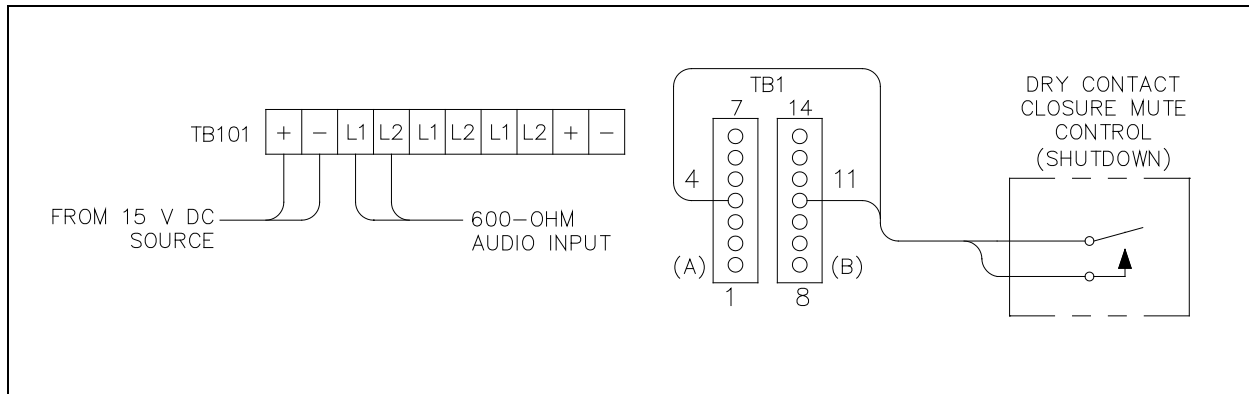


Figure 12.

RF Audio (Generic, DTMF, or Two-Tone) with Output Control

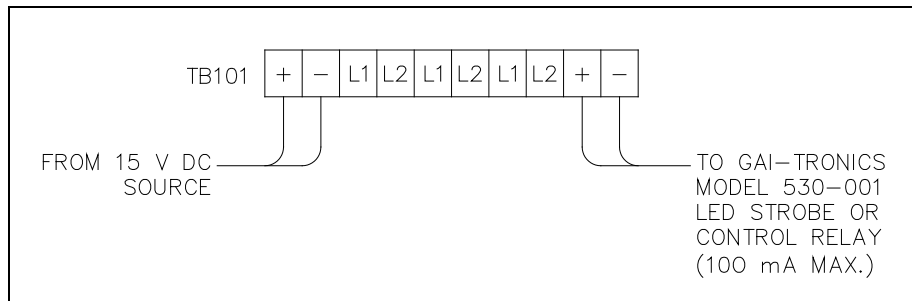


Figure 13.

RF Audio (Generic, DTMF, or Two-Tone) with Single-Slave Feed Thru/DTMF Selective (Individual)

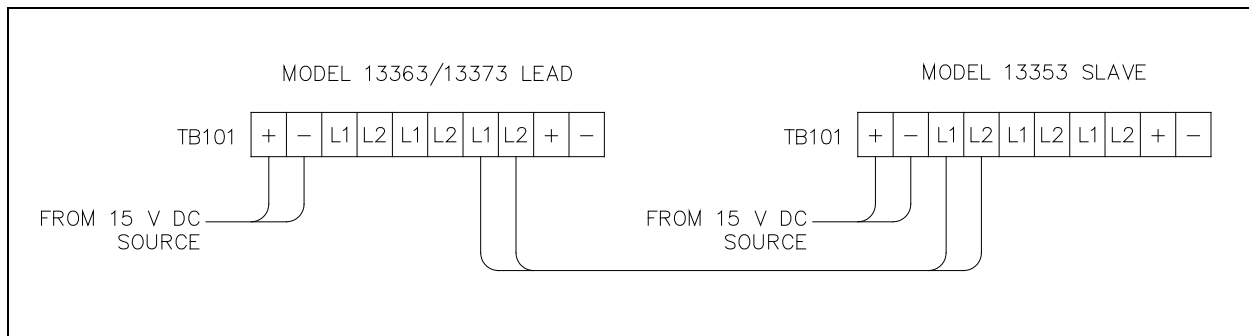


Figure 14.

RF Audio (Generic, DTMF, or Two-Tone) with Single-Slave Feed-Thru/Manual Page Control

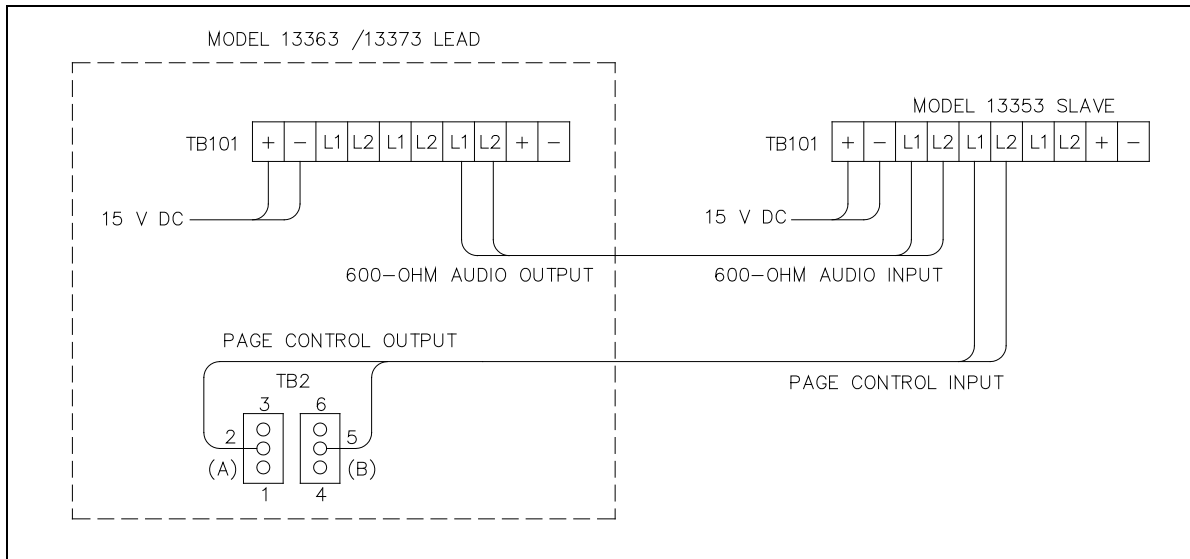


Figure 15.

RF Audio (Generic, DTMF, or Two-Tone) with Multi-Slave Feed-Thru/DTMF or Two-Tone Selective Slaves

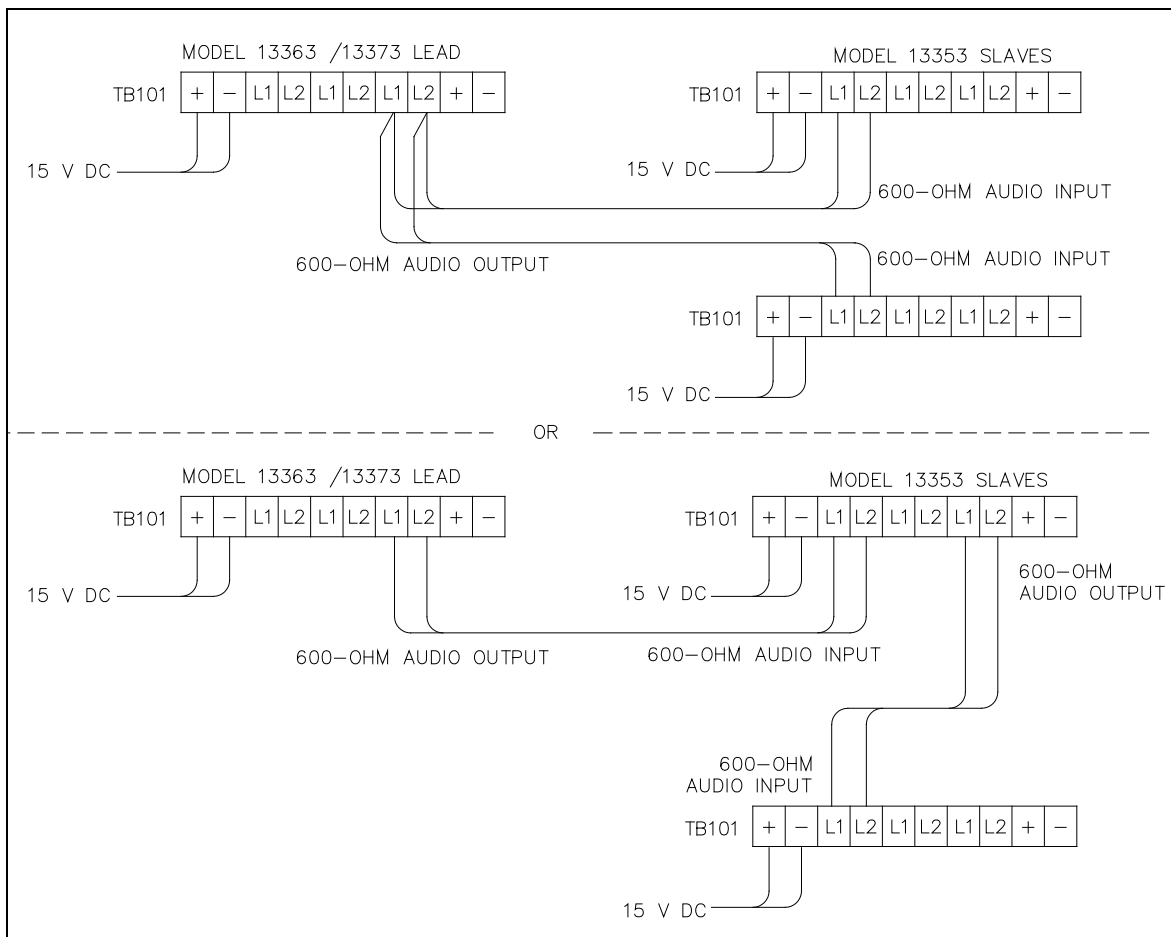


Figure 16.

12506-001 Remote Volume Control Wiring Instructions

If the speaker requires local mechanical control of the output volume, an 8-ohm L-Pad volume control (Part No. 12506-001) can be installed. The 12506-001 Remote Volume Control assembly is designed for indoor installation but can easily be installed in a single gang outlet box, mounted inside a weatherproof enclosure. Note that for full output volume range, the amplified speaker should be programmed for full audio output power using the CARD Suite Software Application. Figure 17 shows the wiring configuration needed for the use of the L-Pad connection for local volume adjustment.

Refer to Figure 7 or Figure 19 to locate TB1, the dual, 7-point connector. The “A” portion of the connector (to the left while facing the speaker’s front section from the rear) includes the speaker wire connections. This connector numbering begins with position 1 at the bottom and ends with position 7 at the top.

1. Refer to the Mounting section on page 37 to open the speaker, separate the front section from the rear section, and mount the rear of the speaker.
2. With the rear section securely mounted and field wiring in place, remove the white wire from TB1-2 and reroute the wire to TB1-5.
3. Connect the yellow wire from L-Pad to TB1-2.
4. Connect the orange wire from L-Pad to TB1-5.
5. Connect the black wire from L-Pad to TB1-1.

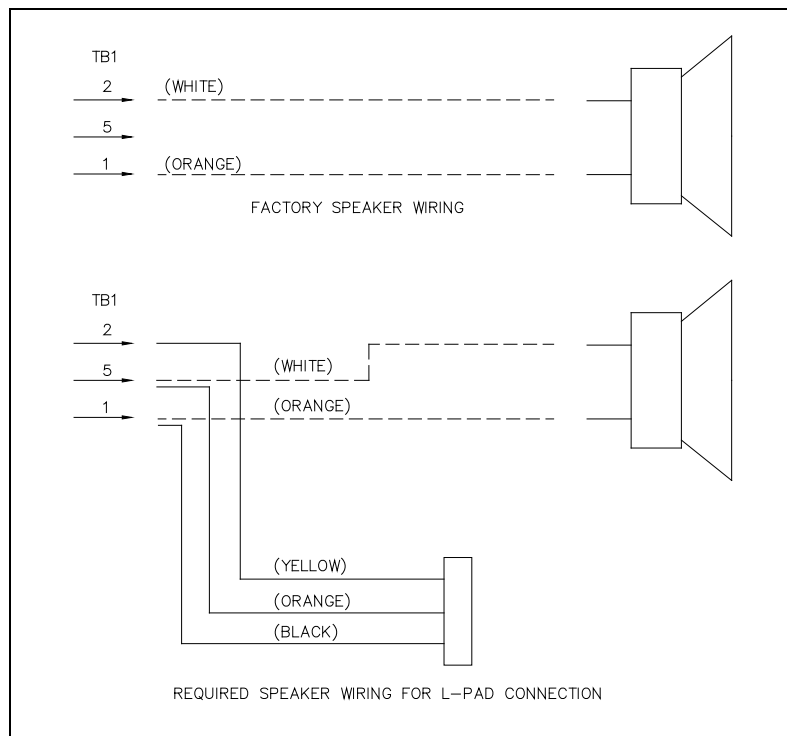


Figure 17.

When wire terminations have been completed, reconnect the dual, 7-point and dual 3-point connectors to the PCBA and route the wires through both nylon ties. Refer to Figure 19 for connector orientation. Retwist the nylon ties to secure the wires. Refer to Figure 7 for wire routing. Assemble the speaker sections and tighten front panel screws to 16 to 20 in-lbs. of torque.

NOTE: Be careful not to pinch wiring between the front and rear speaker sections when securing them together.

Hardware Configuration

Audio Line Termination Jumper

For hardwired installations the Addressable Amplified Speaker's circuit board contains a jumper to terminate the audio line to maintain an appropriate balance. Jumper P2 on the speaker amplifier PCBA configures the unit for 600-ohm or 15k-ohm line termination. Shorting P2 pins 1 and 2 sets the line termination to 15k ohms (default setting). Shorting pins 2 and 3 (P2) sets the line termination to 600 ohms. The settings options are labeled next to the jumper on the PCBA. This jumper is accessible by separating the rear section of the speaker from the front section. Refer to Figure 18 for location of P2.

This jumper has no function in an RF operation.

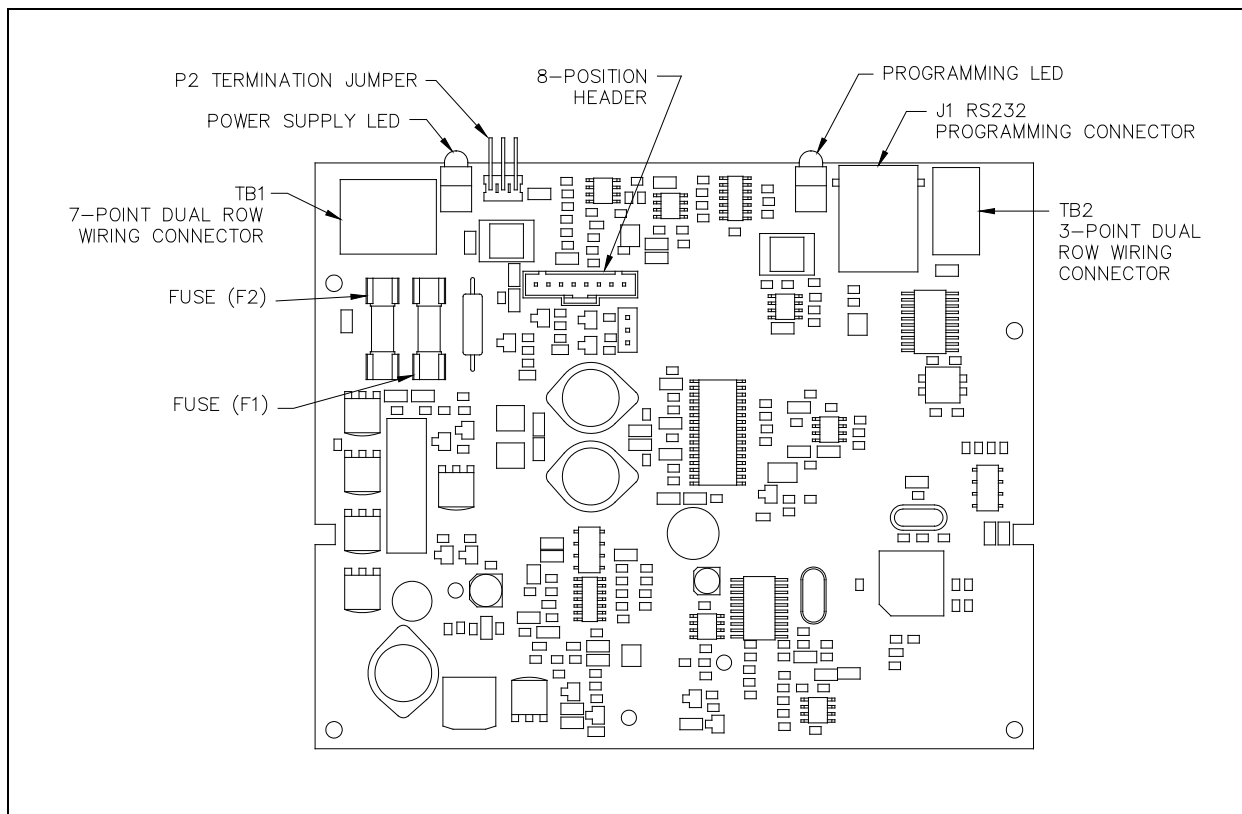


Figure 18. Amplified Speaker Assembly PCBA (Model 69834)

Fuses

There are two fuses (F1 and F2) located on the speaker amplifier PCBA.

Fuse F1 is a 3-amp fuse that limits the current draw from the 15 V dc power supply. Replace F1 with Littelfuse (3 amp) 5 × 20 mm or Cooper Bussman (3 amp) 5 × 20 mm fuses only.

Fuse F2 is a 5-amp fuse that limits the current draw from the 15 V dc battery. Replace F2 with Littelfuse (5 amp) 5 × 20 mm or Cooper Bussman (5 amp) 5 × 20 mm fuses only.

Connectors

TB1 Wiring Connector

The pin-out for the dual, 7-point wiring connector (14 points total) on the front section of the speaker assembly is described below. The numbering orientation is shown in Figure 19.

Pin No.	Pin Name	Function
1	SPKR- C	Negative output connection to speaker
2	SPKR+ 8 (white)	Positive output connection to speaker
3	PAGE CONTROL	Active low signal to initiate speaker during Generic Mode/600-ohm operation
4	SHDN CONTROL	Shutdown Control to mute speaker output (dry contact closure; field connection only)
5		Used as termination point only for L-Pad installation
6	15 VDC +	Internal battery (positive)
7	15 VDC +	External power source (positive)
8	600Ω AUDIO L1	Positive audio input for 600 Ohm operation
9	600Ω AUDIO L2	Negative audio input for 600 Ohm operation
10	PAGE CONTROL COMMON	Ground reference for PAGE CONTROL L1
11	SHDN CONTROL COMMON	Ground reference for SHDN CONTROL L1 (field connection only)
12		No connection
13	15 VDC -	Ground reference for internal battery (negative)
14	15 VDC -	Ground reference for external power source (negative)

TB2 Wiring Connector

The pin-out for the dual, 3-point wiring connector (6 points total) on the front section of the speaker assembly is described below. The numbering orientation is shown in Figure 19.

Pin No.	Pin Name	Function
1	OUTPUT CONTROL	Output control to Model 530-001 Strobe or control relay
2	PAGE CONTROL	Page control output to connected amplified speaker during feed-through operation (field connection only)
3	600Ω AUDIO L1	Positive audio output for feed-through operation
4	OUTPUT CONTROL COMMON	Ground reference for output control
5	PAGE CONTROL COMMON	Ground reference for page control output (field connection only)
6	600Ω AUDIO L2	Negative audio output for feed-through operation

Refer to Figure 19 for TB1 and TB2 connections and orientation.

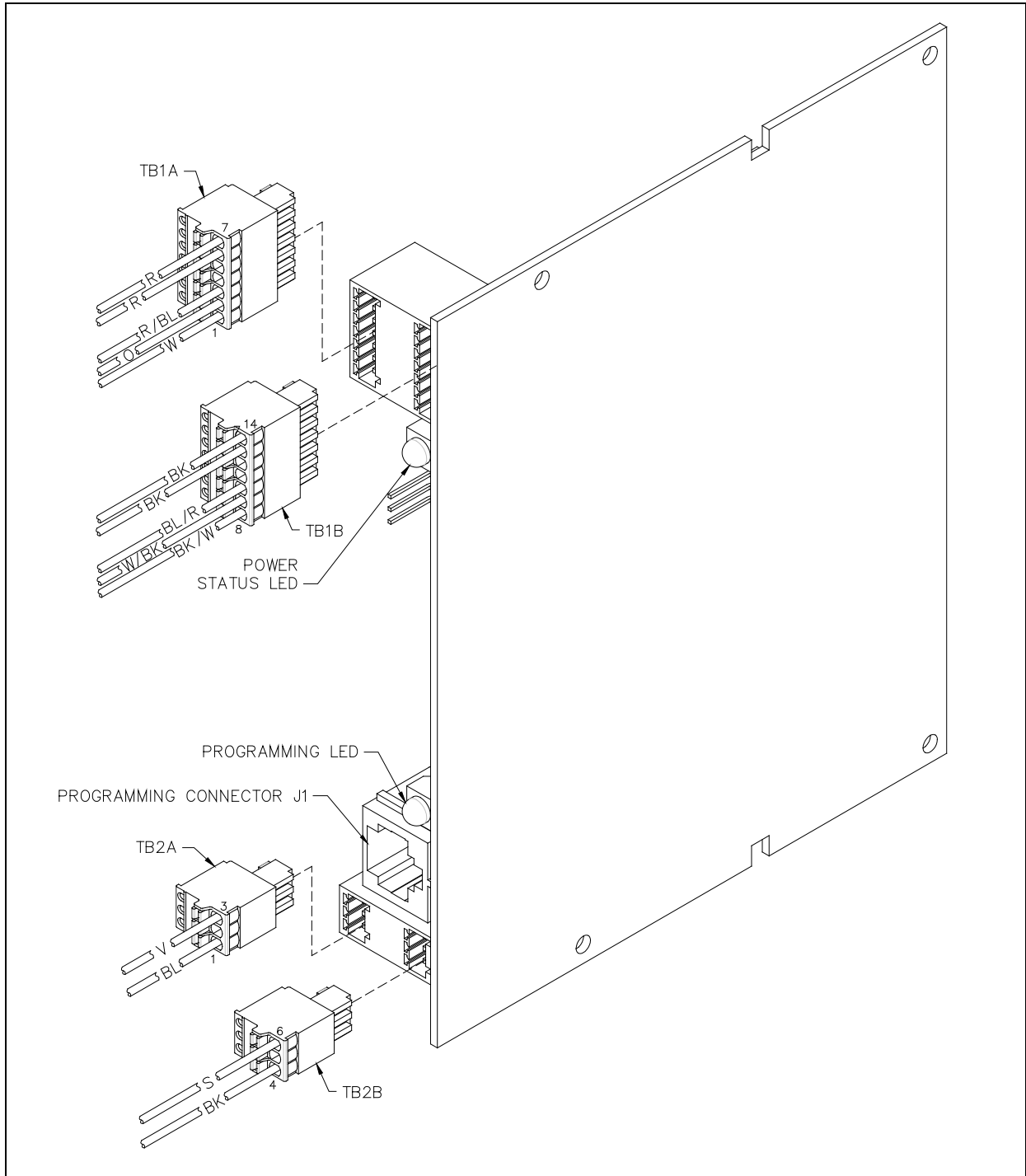


Figure 19. TB1 (A & B) and TB2 (A & B) Connector Orientation Diagram

Radio Connector Pin-out

The pin-out for the radio connector on the speaker half of the assembly is described below.

Addressable Amplified Speaker’s Radio Connector Pin-Out

Radio DB15 Connector	69384 PCBA 8-Pos. Header	Color	Radio Reference
Pin 1			
Pin 2			
Pin 3			
Pin 4			
Pin 5			
Pin 6	Pin 5	Black	Power
Pin 7			
Pin 8			
Pin 9			
Pin 10			
Pin 11	Pin 6	Black	Monitor I/O
Pin 12	Pin 2	Black	Audio
Pin 13			
Pin 14			
Pin 15	Pin 4	Black	Ground

Terminal Strip Designations

The wiring terminal strip, TB101, is located on the rear section of the speaker assembly. The screw terminal designations for all models are as shown below. Refer also to Figure 9.

Terminal Strip Label	Function
15 VDC POWER +	External power source (positive)
15 VDC POWER –	Ground reference
AUDIO IN 600 Ω L1	Positive audio input
AUDIO IN 600 Ω L2	Negative audio input
PAGE CTRL L1	Active low signal to activate speaker assembly
PAGE CTRL L2	Ground reference
AUDIO OUT 600 Ω L1	Positive audio output
AUDIO OUT 600 Ω L2	Negative audio output
OUTPUT CTRL +	Output control to the Model 530-001 Strobe or control relay
OUTPUT CTRL –	Ground reference

Field Installed Options

Model SPK200 Solar Interface Kit

The Model SPK200 Solar Interface Kit provides battery recharging when an external power source is not available. This option is supplied with a terminal block, battery charge regulator module, solar mounting bracket, wiring harness, and the necessary mounting hardware for the components. This option provides a complete solar charging system when purchased with the GAI-Tronics Model RFP7784-108 Solar Panel. Refer to Pub. 43003-039 for solar panel installation details. This kit must be used in conjunction with the XB001 External Long-Life Battery Enclosure and the 40201-008 18 Ah battery.

Model XB001 External Long-Life Battery Enclosure

The Model XB001 External Long-Life Battery Enclosure includes a NEMA 4 weatherproof enclosure with battery mounting bracket, a sealed 15 V dc external receptacle, and mating speaker power connection cable. The required Model 40201-008 18 Ah battery is purchased separately.

This assembly allows the Addressable Amplified Speaker to be installed within two feet of the weatherproof enclosure for true battery-powered operation. Combining this kit with the Model SPK200 Solar Panel Interface Kit and Model RFP7784-108 Solar Panel can provide a completely wireless operation (if RF operation is used). If the application is only temporary, the speaker can easily be “unplugged” from the battery enclosure and relocated or stored. Refer to Pub. 43003-037 for installation details.

Model BB133 Battery Backup Kit

The Model BB133 Battery Backup Kit provides up to 2 hours of continuous output (full power) if main power is lost or disconnected. The kit includes a bracket, Model 40201-010 2.8 Ah battery, and a single mounting screw. Refer to Pub. 43003-036 for installation details.

Model 12506-001 Remote Volume Control Assembly

The Model 12506-001 Remote Volume Control Assembly allows local, mechanical control of the speaker's output volume. As previously stated, this is a passive adjustment. In this application, the maximum output level is defined by the CARD Suite program. The Local Volume Adjustment can only adjust the output level lower than the maximum programmed level. Refer to page 43 for installation instructions.

Model 190-002PS Weatherproof Power Supply Kit

The Model 190-002PS Weatherproof Power Supply Kit is designed for mounting to the bottom of an Addressable Amplified Speaker. The kit includes a 2-gang weatherproof electrical box, 15 V dc power supply (adjustable), mounting bracket, 3-inch pipe nipple, 1/2-inch NPT conduit hub, tamper-resistant hardware, and security bit (T15 Torx). Refer to Figure 20 and Figure 21 and Pub. 43003-045 for installation details.

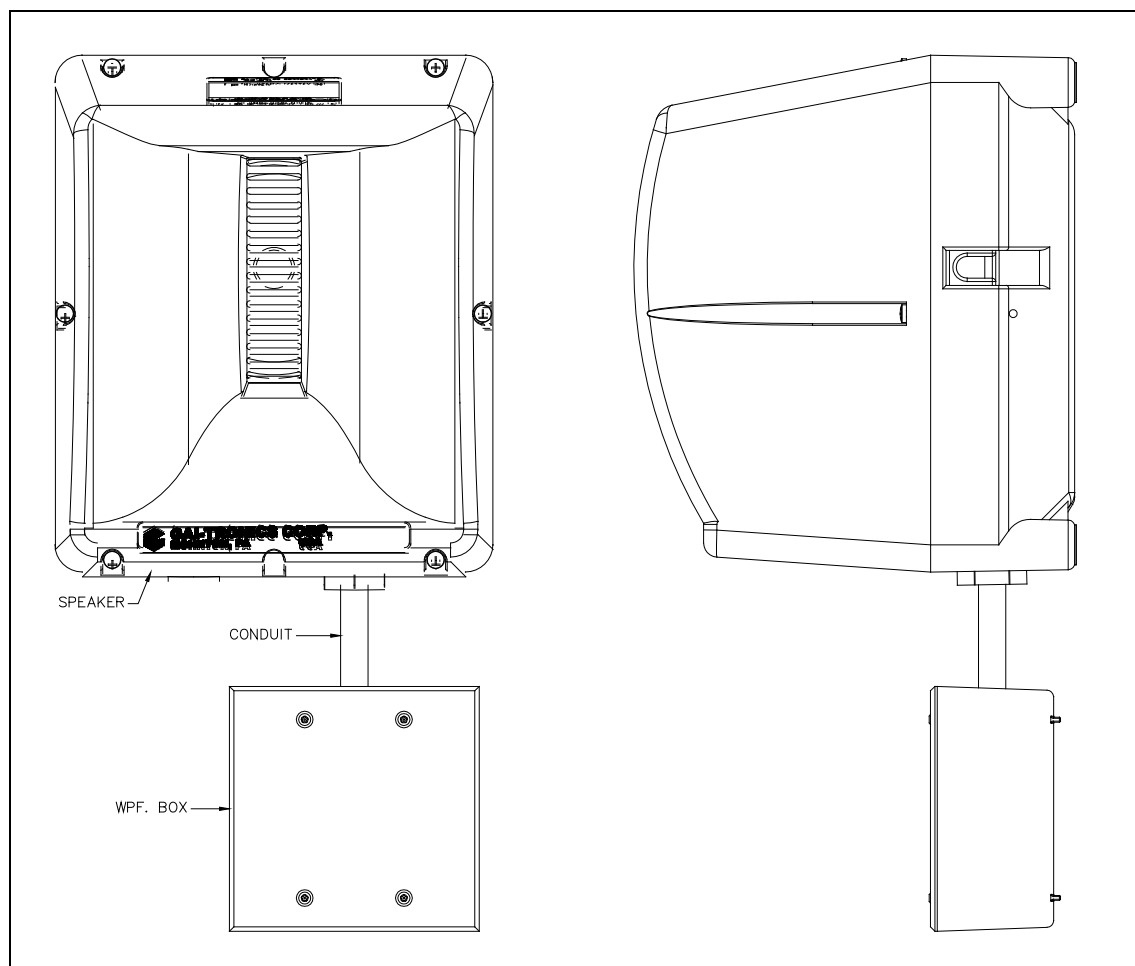


Figure 20. 190-002PS Mounting Details

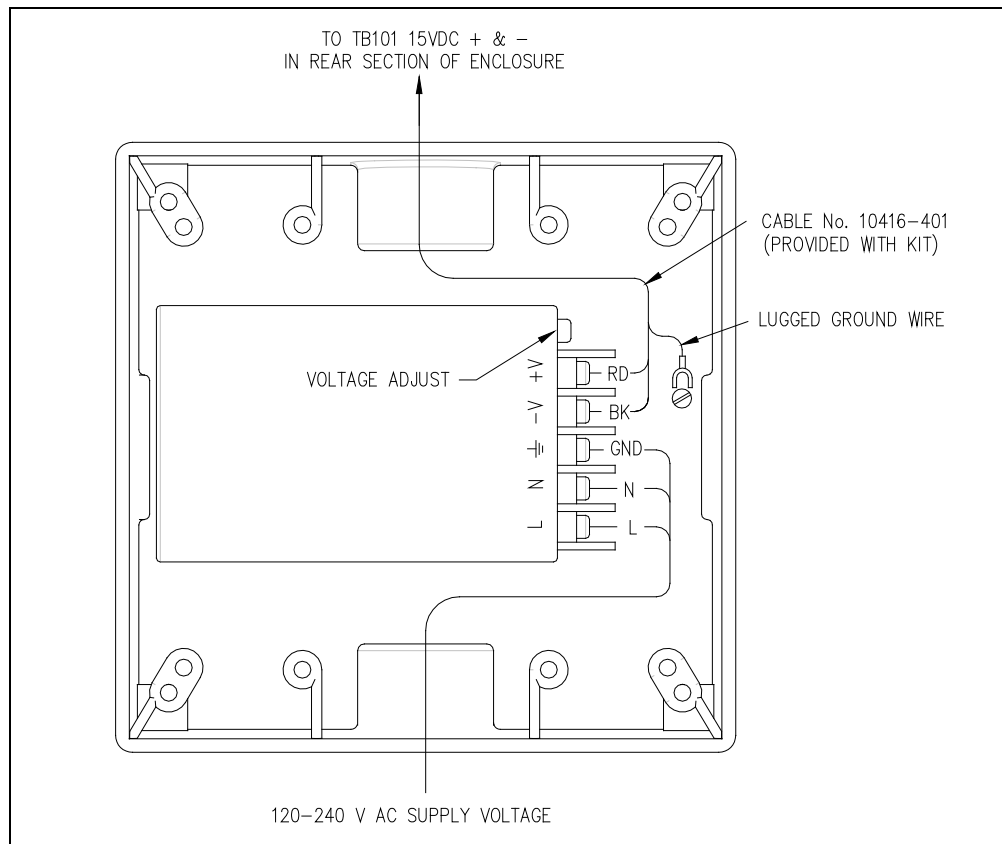


Figure 21. 190-002PS Wiring Details

Definitions and Acronyms

Term	Definition
CSQ	Carrier squelch
TPL	Tone Private Line - A means of grouping users of a common radio channel. Sub-audible tones are transmitted with audio; a particular radio's speaker (or the speakers of a group of radios) will unmute to broadcast a transmission only if the associated sub-audible tone identifies it as belonging to the radio's user group.
DPL	Digital Private Line - A system analogous to TPL but using low speed digital signaling instead of sub-audible tones.
dBm	A measurement of signal power in decibels referenced to 1 mW.
Ah	Ampere-hour is the unit quantity of electricity carried past any circuit point in one hour by a steady current of one ampere.

Appendix A: Speaker Zoning Example

This is an example of a typical 4-zone system containing a total of eight Addressable Amplified Speakers (AAS).

Each Addressable Amplified Speaker has a unique address for individual broadcasts and volume control, a zone address for group broadcasts, and an all zone address for system-wide broadcasting.

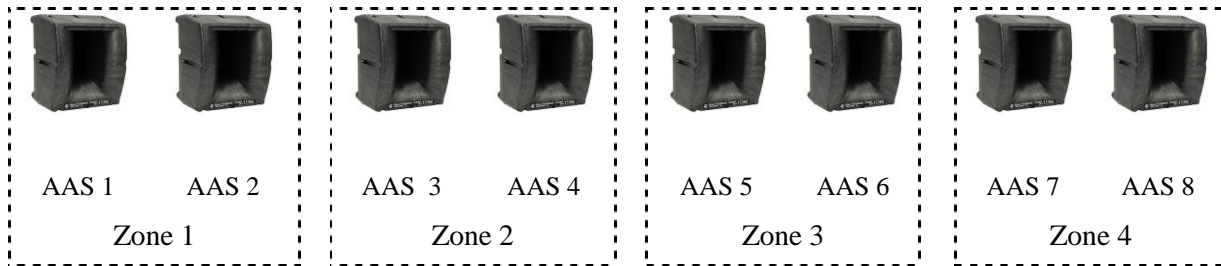


Figure 22. System Layout

Table 1. - Address Allocation

Module Access Address						
AAS No.	Speaker Address	Zone 1 Address	Zone 2 Address	Zone 3 Address	Zone 4 Address	All Zone Address
1	101	111				99
2	102	111				99
3	103		112			99
4	104		112	113		99
5	105			113		99
6	106			113		99
7	107				114	99
8	108				114	99

CARD Suite Information for Addressable Amplified Speaker No. 4:

The screenshot shows the configuration window for an Addressable Amplified Speaker. The 'Configuration' tab is active. The 'Operation Mode' is set to 'DTMF Selective with Voice Switch'. The 'Volume Level' is set to 128mW. 'Automatic Level Adjust' is disabled. The 'DTMF Address' table is as follows:

Address	Description	Output Contact Function
1. 104 #	Speaker 4	Activate
2. 112 #	East Campus	Activate
3. 113 #	Dorm Zone	Activate
4. 99 #	All Call	Activate + Hold Time
5. #		No Change
6. #		No Change
7. #		No Change
8. #		No Change

The 'Test Tone Duration Adjust' is set to 3.0 sec. The 'Voice Switch' Silence Limit is set to 5.0 sec. 'Low Battery Alert' is not activated. The 'Output Contact' Hold Time is set to 3.00 sec, and it is configured as 'Normally Open'.

Help: Enter up to 8 characters (Valid Range = 0-9, A, B, C, D)

In this example, Addressable Amplified Speaker No. 4 is part of the East Campus and Dorm Zone areas and can be accessed via addresses 104#, 112#, 113# and 99#. If any other code is entered, Speaker 4 will remain inactive. Other notable programmed parameters for this speaker are:

- Addresses 104, 112, and 113 will provide a contact closure output when active, but it will deactivate within a few seconds after the broadcast has ceased.
- Address 99 (All Call) will also provide a contact closure output when active, but the closure will remain active for 3.00 seconds after the broadcast has ceased.
- Low Battery Alert is not activated.
- It is programmed for Voice Switch Mode with a voice switch silence limit programmed for 5 seconds.
- Automatic Level Adjustment is disabled.