RITRON®
WIRELESS SOLUTIONS

User Manual

LM-600Analog

LoudMouth® Wireless PA Receiver System

- **1 Channel, Dual Band Receiver, VHF/UHF, Configurable Supports:**
  - **VHF and UHF Business Band**
  - **VHF MURS USA**
  - **VHF and UHF Business Band CANADA**
  - **UHF GMRS CANADA**
- **NOAA Weather Radio Alert**
- **Relay Trigger Feature for Optional Strobe Light**
- **Delay Message Playback Feature**
- **Repeat Message Playback Feature**
- **Switch Input w/ pre-recorded message**

Strobe light (pn R-STROBE-DC) and relay cable assembly (pn 60201136) are optional accessories, not included as standard.

MADE IN THE USA

Ritron Pub. 14500097 Rev. D 01/20

Call 800-872-1872
For the right Wireless for your communication needs.

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1 Getting Started

The Loudmouth® is a radio receiver that allows you to use your portable, base station or mobile 2-way radio to deliver voice messages directly to a PA speaker up to 2 miles away. The receiver and PA speaker is the ideal solution where hard-wired PA installation is simply impossible, too expensive, or temporary.

Your Loudmouth® receiver and PA speaker has been designed so that you can set it up quickly and start using it right away.

1.1 Loudmouth® receiver and PA speaker equipment

Check to be sure you received all the equipment necessary to install the Loudmouth® receiver and PA horn speaker.

List of items included with your Loudmouth® receiver and PA speaker:

LM-600Analog.....Loudmouth® Radio Receiver with 5W audio amplifier
05500040 .....Horn Speaker with RCA phono plug and 25 ft. cable
RPS-1B .....Power Cube, 1.5A with 2.1mm coaxial DC connector
AFB-1545.....Dual-Band Antenna with BNC connector
RK-RQX-Q-MB .....Mounting Brackets
25107400 .....T-25 Torx Security Bit

Need replacement items?
Contact your Ritron dealer, or Ritron directly at
800-872-1872

Optional Items you can use with your Loudmouth® receiver

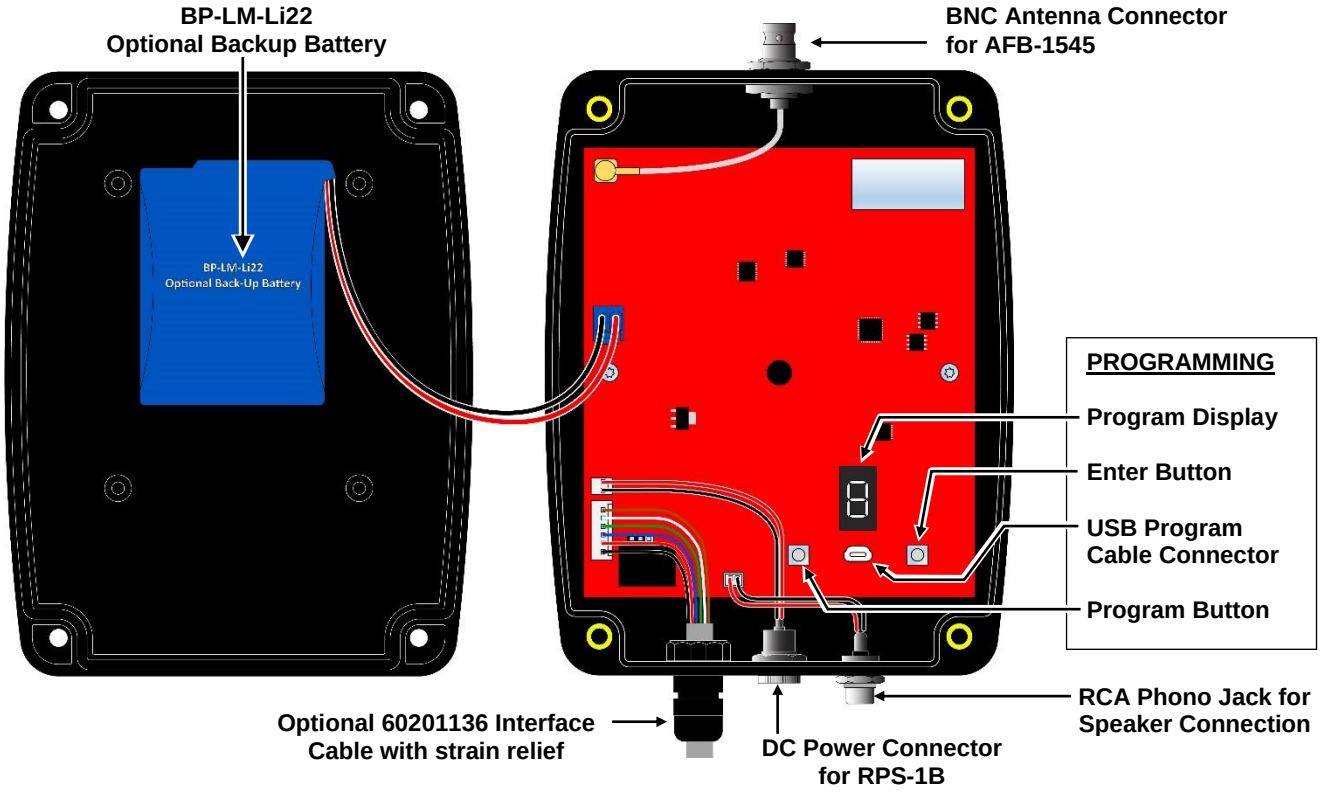
RYCONN.....“Y” Adapter Connect, Allows 2 PA Speakers (#05500040) to be attached to 1 LM Receiver
BP-LM-Li22.....Backup Battery, Rechargeable, 11.1V Li-Ion, 2200mAH

* Ritron portable JMX-446D is also included when ordering the LM-U450SYSTEM, and the JMX-144D portable is included when ordering the LM-V150SYSTEM.

1.2 Loudmouth® receiver assembly

The Loudmouth® receiver and PA speaker is on any time power is applied to the receiver.

The Loudmouth® receiver must be opened to connect an optional BP-LM-Li22 battery or to program the Loudmouth®.



1. Loosen the 4 screws in the front corners of the case using the T-25 Torx security bit included with the radio. These screws are retained to the housing with rubber O-rings, **DO NOT** remove the screws from the housing.
2. Separate the case front from the case back.
3. **Connect an optional BP-LM-Li22 backup battery** to the Loudmouth® receiver using the blue mating connectors shown above. The BP-LM-Li22 is secured to the case front with interlocking mushroom-head fastener strips. Press firmly on the battery to interlock the strips, snapping it into position as shown.
4. **Program the Loudmouth® receiver** per the instructions in the Programming section of this manual, leaving the RPS-1B power supply or BP-LM-Li22 backup battery connected to the radio. Press the **Enter** button twice before re-assembling the case to be sure the Loudmouth® is reset and ready for operation.
5. Carefully position the case front onto the case back. Secure the case halves by tightening the 4 screws in the front corners of the case.

Install the Mounting Brackets

Install the RK-RQX-Q-MB mounting brackets included with the product to the Loudmouth® case back. Installation can be with the brackets on each side as shown, or with the brackets top and bottom.

1.3 Paging the Loudmouth® receiver and PA speaker

The Loudmouth® receiver and PA speaker can be paged with 2-way radios programmed for Quiet Call (CTCSS), Digital Quiet Call (DCS), 2-Tone Paging, DTMF, or Selcall paging formats. Each format offers a unique method of paging the Loudmouth® receiver and PA speaker.

Refer to the Programming section of this manual for specific instructions on programming your Loudmouth® receiver and PA speaker to one of these selective signaling formats.

Ritron strongly recommends operation of the Loudmouth® receiver and PA speaker with one of the following selective signaling formats enabled.

Paging the Loudmouth® with Quiet Call (CTCSS) only:

- To page the loudspeaker a user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel.
- Your 2-way radio must be programmed for a channel dedicated to Loudmouth® operation. Only those radios programmed with the Loudmouth® channel will be able to access the loudspeaker.
- The 2-way radio's Loudmouth® channel and the Loudmouth® receiver must be programmed for the same QC code. All Ritron radios offer 50 different field-programmable QC codes from which to choose.

Paging the Loudmouth® with Digital Quiet Call (DCS) only:

- To page the loudspeaker a user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel.
- Your 2-way radio must be programmed for a channel dedicated to Loudmouth® operation. Only those radios programmed with the Loudmouth® channel will be able to access the loudspeaker.
- The 2-way radio's Loudmouth® channel and the Loudmouth® receiver must be programmed for the same DQC code. All Ritron radios offer 104 different field-programmable DQC codes from which to choose.

Paging the Loudmouth® with 2-Tone Paging:

- To page the Loudmouth® the 2-way radio must first send the correct 2-Tone Paging code. Once access to the loudspeaker is accomplished, the user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel. After a period of inactivity the Loudmouth® is automatically reset, and will then require the correct 2-Tone Paging code to re-gain access.
- Only 2-way radios programmed to send the correct 2-Tone code on the Loudmouth® channel can access the Loudmouth® wireless PA speaker. However, once access is gained, any 2-way radio that operates on the Loudmouth® channel can access the loudspeaker up until the time that the Loudmouth® has automatically reset.
- Can be used in conjunction with QC or DQC for added security. The 2-way radio and the Loudmouth® receiver must be programmed for the same QC or DQC code.

Paging the Loudmouth® with DTMF or Selcall:

- To page the Loudmouth® the 2-way radio must first send the correct 3-7 digit DTMF or Selcall code. Once access to the loudspeaker is accomplished, the user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel. After a period of inactivity the Loudmouth® is automatically reset, and will require the DTMF or Selcall code to re-gain access.
- Only 2-way radios programmed to send the correct 3-7 digit DTMF or Selcall code on the Loudmouth® channel can access the Loudmouth® wireless PA speaker.
- Can be used in conjunction with QC or DQC for added security. The 2-way radio and the Loudmouth® receiver must be programmed for the same QC or DQC code.

Ritron recommends the use of a dedicated channel frequency for Loudmouth® operation.

When operating on unique frequencies dedicated to loudspeaker operation:

- Your 2-way radios must be programmed for a channel dedicated to loudspeaker operation.
- Loudspeaker operation is limited to radios programmed with the dedicated Loudmouth® channel.
- The use of 2-tone, DTMF, or Selcall paging to address the Loudmouth® is not required, but can still be used if additional access security is desired.
- Without 2-tone, DTMF, or Selcall paging the loudspeaker can be addressed by simply selecting the Loudmouth® channel on your 2-way radio and pressing the PTT button to talk.
- You may need to license additional frequencies for your 2-way radios (not necessary when programmed for MURS frequencies, see Table F in the Programming section).

When operating on your normal 2-way communication frequencies:

- Messages broadcast on the Loudmouth® are also heard on your 2-way radios.
- Loudspeaker messages are not possible when the channel is being used for 2-way communications.
- The use of 2-tone, DTMF, or Selcall paging is required to address the Loudmouth®, otherwise all 2-way communication is heard on the loudspeaker.
- Any user on your 2-way channel can broadcast over the loudspeaker once it is activated, even if their 2-way radio is not programmed with the correct 2-tone, DTMF or Selcall paging code.
- There is no need to license additional frequencies.

1.4 Compatibility with other RITRON model radios

The Loudmouth® model LM-600Analog receiver and PA speaker can operate on both VHF and UHF business band frequencies. Loudmouth® can be accessed with radios programmed for Quiet Call (CTCSS), Digital Quiet Call (DCS), 2-Tone Paging, DTMF, or Selcall paging formats. The following chart can be used to determine compatibility with existing Ritron radios.

VHF models

Model	Type	QC	DQC	2-Tone	Selcall	DTMF
JMX-141D	Portable	√				
JMX-144D	Portable	√	√	√		
JMX-146D	Portable	√				
JBS-146D	Base	√	√	√		
JBS-147D	Base	√	√	√	√	√
JBS-147M	Base	√	√	√	√	√
* JV-110	Portable	√	√	√		
RPM-160	Mobile	√	√	√	√	
RQX-111	Callbox	√	√		√	√
RQX-117	Callbox	√	√		√	√
RQX-151	Callbox	√	√			
RQX-156	Callbox	√	√		√	
RQX-157	Callbox	√	√		√	
RQX-127-XT	Callbox	√	√		√	√
RQX-127M-XT	Callbox	√	√		√	√
PT-150	Portable	√	√	√	√	√
PT-150M	Portable		√	√	√	√
NT-174	Portable	√	√	√	√	√
** NT-174M	Portable	√	√	√	√	√

UHF models

Model	Type	QC	DQC	2-Tone	Selcall	DTMF
JMX-441D	Portable	√				
JMX-444D	Portable	√	√	√		
JMX-446D	Portable	√	√	√		
JBS-446D	Base	√	√	√		
JBS-447D	Base	√	√	√	√	√
* JU-410	Portable	√	√	√		
RPM-460	Mobile	√	√	√	√	
RQX-411	Callbox	√	√		√	√
RQX-417	Callbox	√	√		√	√
RQX-451	Callbox	√	√			
RQX-456	Callbox	√	√		√	
RQX-457	Callbox	√	√		√	
RQX-427-XT	Callbox	√	√		√	√
PT-450	Portable	√	√	√	√	√
PT-450-S	Portable	√	√	√	√	√
NT-470	Portable	√	√	√	√	√

* 2-Tone paging available with Rev 6.0 or greater Firmware Only. See label inside radio battery compartment for firmware revision.

** Pending

1.5 Determine the volume setting

Selecting the correct volume level is critical to the performance of the Loudmouth® receiver and PA speaker. Carefully consider the following before deciding on the appropriate volume setting. Refer to the Programming section of this manual for specific instructions on programming the Volume Level.

Ambient noise level should be considered first when selecting the volume level.

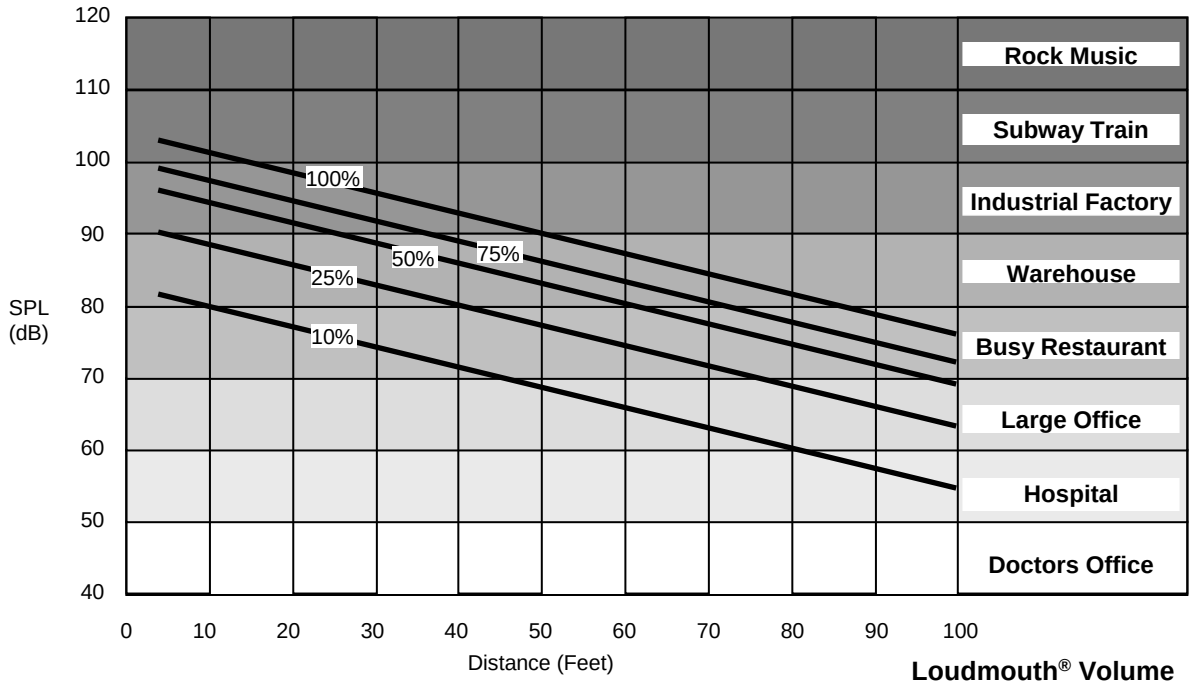
Increasing the volume level in an effort to cover a wider area will result in:

- Undesirably high volume when near the speaker.
- Low volume at the outer edges of the coverage area.
- A calling radio must be a greater distance from the Loudmouth® speaker to prevent feedback. (Feedback is the result of Loudmouth® speaker audio getting into the calling radio's microphone.)

When coverage of a large area is required, additional Loudmouth® speakers may be necessary for satisfactory performance. See the Installation section of this manual for details on how to install 2 speakers using a single Loudmouth® receiver, or multiple receivers and speakers.

1. Refer to the horizontal shaded bars on the chart below to determine the sound level that best represents your location. This should be the ambient, or average sound level. We will consider the maximum sound level when we locate the speaker.
2. Estimate the maximum distance (in feet) that the loudspeaker must be heard. Locate that distance on the chart below and follow it up to find the line that is in the middle of your shaded bar. This line indicates the optimum Loudmouth® volume level setting.

EXAMPLE: In the Ritron factory we need to cover a maximum distance of 50 feet on the factory floor with an ambient sound level similar to a warehouse. I find the vertical line at the bottom of the chart indicating 50 feet, and follow it up to the shaded bar indicating Warehouse. The 50% and 75% lines are in the middle of the Warehouse bar, indicating a required Loudmouth® volume setting between 50 - 75%.



1.6 Operating Conditions and Limitations

FCC Part 15

The Ritron Model LM-600Analog receiver has been tested according to FCC requirements, and found compliant with FCC Part 15 Subpart B Unintentional Radiator. Changes or modifications not expressly approved by Ritron, Inc. could void the user's authority to operate the equipment.

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Unique Identifier: Ritron Model LM-600Analog

Responsible Party – U.S. Manufacturer

Ritron, Inc.
505 W. Carmel Dr.
Carmel, IN 46032
(317) 846-1201
www.ritron.com

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

CAN RSS-Gen/CNR-Gen

Ritron model LM-600Analog is stand-alone receiver that operates in the bands 150-174MHz and 450-470MHz. The LM-600Analog complies with the limits for receiver–spurious emissions and AC power-line emissions set out in RSS-GEN section 7, therefore equipment certification is not required. Each unit shall bear the label “CAN RSS-Gen/CNR-Gen”.

This device contains a license-exempt receiver that complies with Innovation, Science and Economic Development Canada’s license-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

2013 FCC Narrowband Mandate

On January 1, 2013, pursuant to the FCC Narrowband mandate, you will no longer be allowed to operate wideband transmitters (25 kHz) in the frequency bands from 150 MHz to 512 MHz.

Ritron will begin manufacturing narrowband compatible Loudmouth® starting in December 2012. At that time, customer orders will begin to be filled with radios manufactured for FCC narrowband compatibility. Specifically, table frequencies will be converted to narrowband. Since Part 15 receivers are not subject to the narrowband mandate, you will still be able to set the Loudmouth® for wideband operation via field programming (See Section 3.6 – Field Program Advanced Feature Codes), or by using the PC Programmer. These radios will be clearly marked as “FCC Narrowband Compatible”.

For a complete list of all Ritron radios capable of narrowband operation; a Ritron FAQ on the subject, and various links on the FCC website dealing with Narrowbanding go to:

www.ritron.com/narrowband

If you have any questions contact us at 1-800-872-1872.

2 Installation

Proper installation of the Loudmouth® wireless PA speaker is critical to the performance and overall satisfaction with your system. With careful consideration and planning Loudmouth® can cover up to 7500 square feet with a single speaker, and can cover an even wider range with multiple speakers and receivers. The actual coverage area is subject to factors such as ambient noise level, obstructions and radio range. This section will help you plan an installation that is best suited for your environment.

2.1 Selecting the PA speaker location

Speaker location is critical to the performance of the Loudmouth® receiver and PA speaker. Consider the following factors before selecting a speaker location.

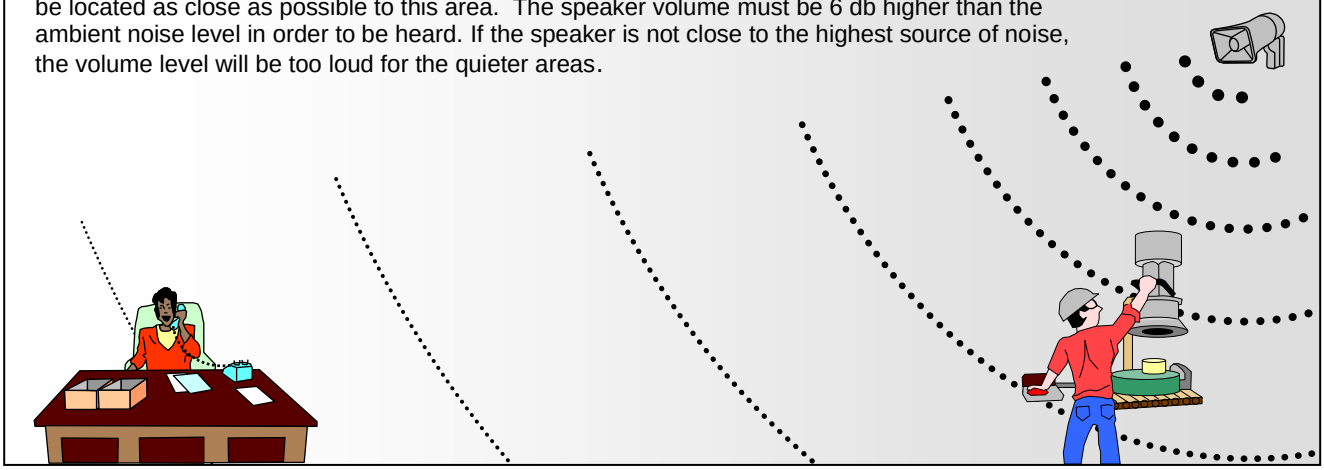
- The speaker can be installed either indoors or outdoors.
- Be sure there is a convenient source of 110VAC power for the RPS-1B power cube and that the radio receiver box can be located inside, out of the elements. The speaker has a 25 ft. cable, if you need more a standard RCA phono cable extension can be used (ie. Radio Shack Catalog #: 4202362).
- The speaker should not be in an area where the 2-way radio user addressing the speaker will typically be located. If the radio user is too close to the Loudmouth® speaker, feedback can occur due to loudspeaker audio getting into the radio microphone. This is a problem related to the 2-way radio, not the Loudmouth® speaker. The use of the Record & Play feature will eliminate this problem.

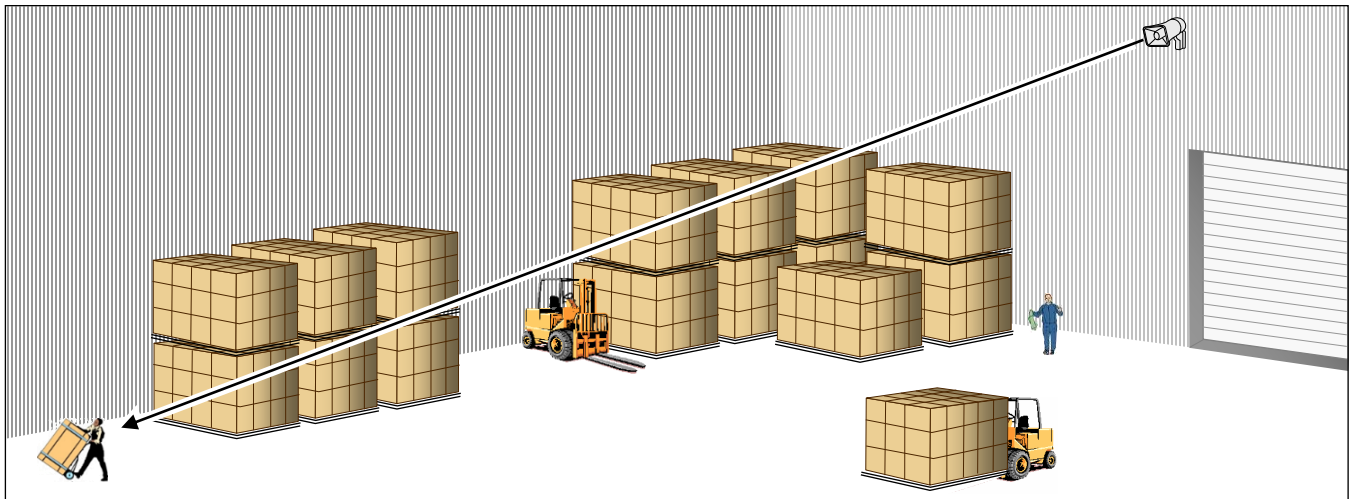
The speaker must be located at least 10 feet above head level.

At near range the Loudmouth® speaker is capable of sound levels that can cause permanent hearing loss and should never be installed in a location where a person could be directly in front of the speaker.

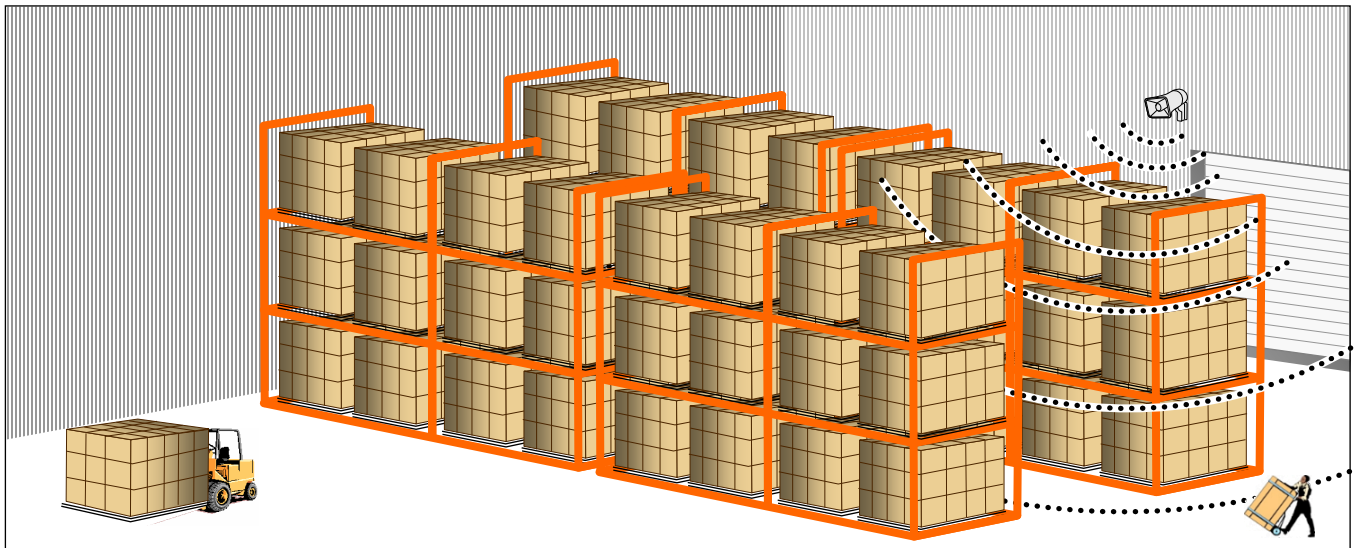
Install the Loudmouth® speaker close to the noisiest area you plan to cover.

If there is an area with a significantly higher ambient noise level, the Loudmouth® speaker should be located as close as possible to this area. The speaker volume must be 6 db higher than the ambient noise level in order to be heard. If the speaker is not close to the highest source of noise, the volume level will be too loud for the quieter areas.





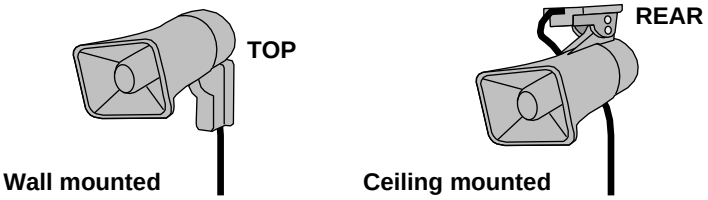
The Loudmouth® speaker should be mounted as high as practical and pointed toward the farthest location you need to cover.

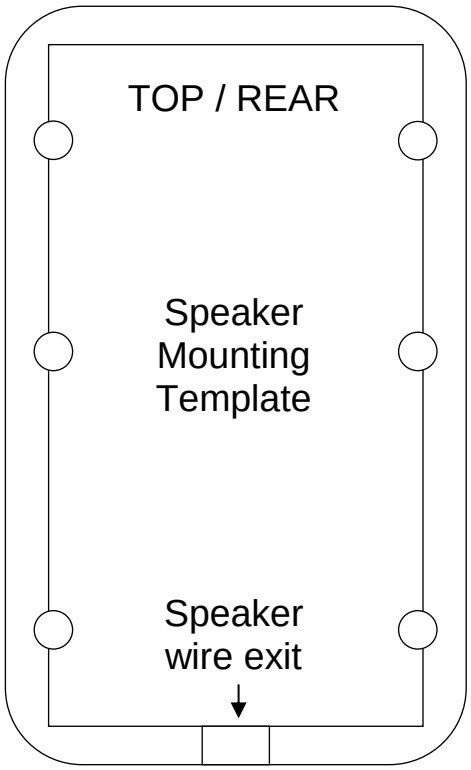


Large obstructions will significantly reduce the coverage area.
Do not place the speaker behind large, tall objects.

2.2 PA Speaker installation

The speaker mount can be installed vertically on a wall, flat post or support column; or can be mounted horizontally from a ceiling or rafter beam.





Once the speaker location has been determined the Speaker Mounting Template may be used to mark the mounting surface. When using the Speaker Mounting Template keep in mind that the speaker wire exit is toward the floor on a wall mounted installation, and toward the front of the speaker in a ceiling mounted installation.

The Loudmouth® speaker may be secured to a variety of surfaces, with each installation presenting unique requirements for mounting hardware. With this in mind, mounting screws or hardware are not included with the Loudmouth®.

Guidelines for mounting the Loudmouth® speaker:

- The Loudmouth® speaker can be safely mounted to concrete, metal or wood surfaces. Other surfaces are possible provided they can support the weight of the speaker. If mounting to a drywall or concrete surface the use of expansion anchors is recommended.
- Secure the speaker tightly to the mounting surface, using all 6 mounting holes if possible. At high audio output levels the speaker can generate significant vibration and must be rigidly secured. This is particularly critical with drywall surfaces, which are highly susceptible to vibration damage.
- Be sure the speaker wire exits cleanly from under the speaker mounting bracket through the wire exit tunnel provided. Pinching the speaker wires could cause a short that will destroy the Loudmouth® receiver audio amplifier.
- Route the speaker wire closely against a wall or support beam. Speaker wire hanging in free space is easily snagged and could be pulled from the Loudmouth® receiver or worse yet, pulled from the speaker itself causing permanent damage.
- 1 inch long, #8 or #10 round-head screws should be used to mount the speaker. Wood screws, sheet metal screws, machine screws with nuts, or drywall anchors and screws will all work well depending on your specific requirements. Pan-head screws should not be used to prevent damage to the mounting bracket due to over-tightening.

Wood Screw

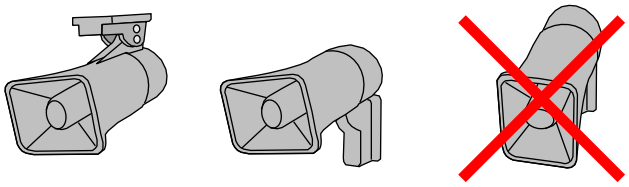
Sheet Metal Screw

Machine Screw with Nut

Drywall Anchor and Screw

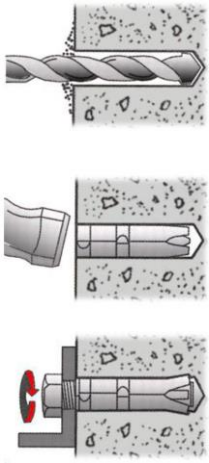
The Loudmouth® speaker should be mounted horizontally for the widest coverage

When mounted horizontally the Loudmouth® speaker will provide 90° horizontal and 60° vertical coverage without significant loss of sound level. Refer to the SPL chart on page 29 for typical sound levels at full volume.



Installing Concrete Expansion Anchors

1. Drill hole of recommended diameter, see chart below, into the base material to a depth equal to, or slightly deeper than the length of the expansion shield. Clean out the hole of all dust and cuttings.
2. Place the Single Expansion anchor, nut end first, into the hole. The top end of the anchor should be flush or slightly below the base material surface.
3. Place the object to be fastened over the anchor in the base material and bolt into place. The bolt should engage 2/3 of the threads of the anchor.



2.3 Loudmouth® radio receiver installation

Installation of the Loudmouth® receiver is critical to the effective radio coverage of the radio loudspeaker system. Without proper installation the maximum possible distance between the calling radio and the Loudmouth® receiver will be significantly reduced.

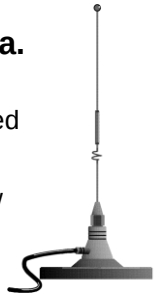
Guidelines for installing the Loudmouth® receiver:

- The radio receiver box must be located inside, out of the elements.
- Be sure there is a convenient source of 110VAC power for the RPS-1B power cube.
- The Loudmouth® receiver should be installed in a central location and as high up as possible for best radio coverage.
- For maximum radio coverage the antenna should be in a vertical orientation and should not be touching or surrounded by large metal objects. The receiver box can be mounted horizontally as long as the antenna is in a vertical position.
- Do not install the Loudmouth® receiver in a high traffic location with the possibility that the receiver box would be struck, become unplugged, or the speaker be disconnected.
- Do not wind, loop or otherwise allow the power cord from the RPS-1B power cube to contact the antenna. The power cord should be routed away from the antenna.

Radio range can be extended with the use of an external antenna.

The antenna can be installed at a higher elevation than is possible with the attached antenna.

The Ritron RAM-1545 VHF/UHF magnet-mount antenna has a 25 ft. cable to allow optimum antenna location.



2.4 Installing two PA speakers with a single Loudmouth® receiver

Many locations may require the installation of two speakers with a single Loudmouth® receiver. Two speakers are used when:

- Coverage is required over a large area.
- Large obstructions limit the effective range of a single speaker.
- A wall separates two coverage areas.
- The ambient noise level is low and individual speaker volume must be reduced (i.e. Hospital).
- The calling radio is in the area where the speakers are located and speaker volume must be reduced to prevent feedback.

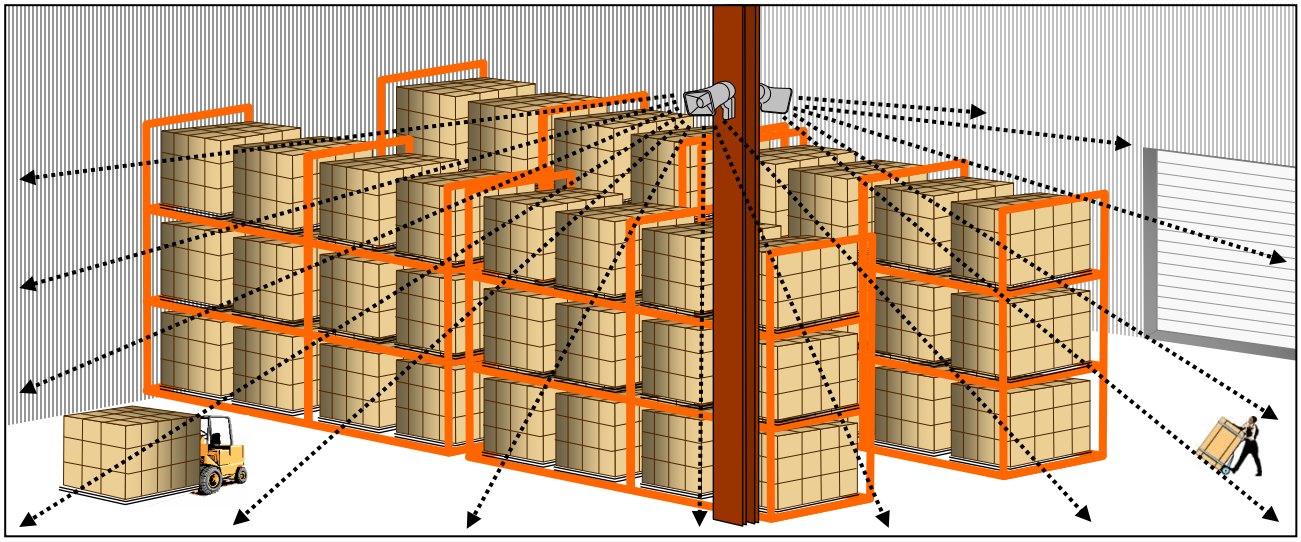
You can connect 2 speakers to a single Loudmouth® receiver using the Ritron model RYCONN RCA Male to 2 RCA Female Y-Adapter.

Optional 2nd PA speaker with 25 ft. cord and RCA phono connector. (Ritron PN# 05500040)

In some installations a single Loudmouth® receiver can be used to drive two speakers, while others will require a separate receiver for each speaker.

To cover a large area, or an area with large obstructions, place 2 speakers back-to-back in a central location.

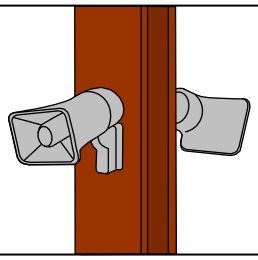
- The speakers should be mounted as high as possible and pointing away from each other.
- The 2 speakers can be driven by a single Loudmouth® receiver.
- Volume level may be reduced compared to a single speaker, making the system less susceptible to feedback.
-



Use 2 Speakers to reduce volume level

Surprisingly, the use of 2 speakers powered by a single Loudmouth® receiver can allow you to reduce the volume level in a quiet environment.

By covering an area with 2 centrally located speakers, installed back-to-back, the volume level can be cut in half.



2.5 Installing multiple Loudmouth® receivers and PA speakers

Many locations may require the installation of multiple Loudmouth® receivers and PA speakers. Multiple receivers and PA speakers are used when:

- Paging separate buildings is required.
- The coverage area is too large for a single receiver and PA speaker.
- Zone paging is required.
- Paging is required in more than one location.

Zone paging, or paging in more than one location requires a separate Loudmouth® receiver for each area.

- With zone paging all radios can operate on the same Loudmouth® radio frequency.
- Each Loudmouth® receiver can be programmed for a unique paging code, allowing selective paging to each zone.
- The Loudmouth® receivers can be programmed for an All Call* code that allows paging of all zones at once, or Group Call* to page more than one zone.
- Zone paging allows for volume levels that are programmed to the specific needs of that area.
- If zone paging is not necessary, all Loudmouth® receivers can be programmed for the same paging code.

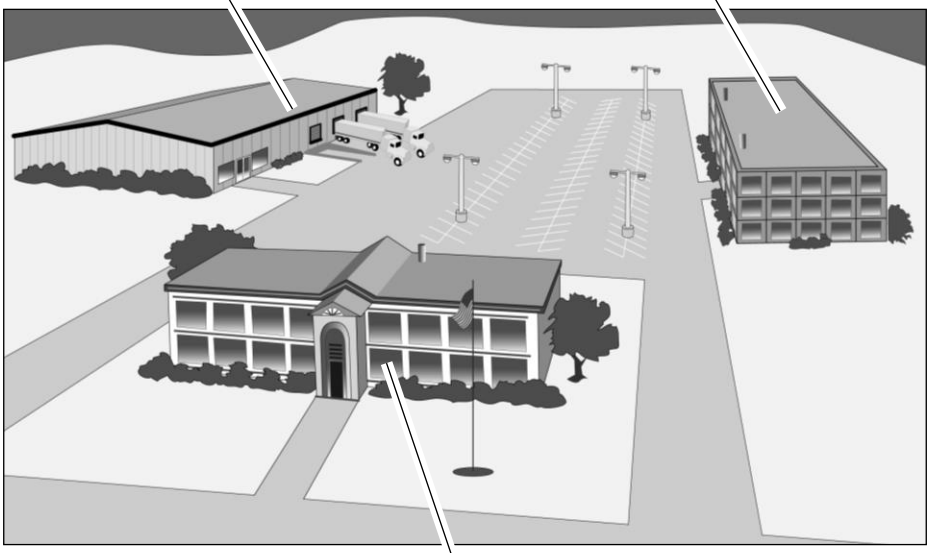
* All Call and Group Call code programming requires the Ritron Loudmouth® PC Programmer.

Zone 1 – Warehouse and loading dock

- Single Loudmouth® receiver with 2 speakers.
- One speaker is located inside the warehouse and the other is located outside for the loading dock.
- Speaker volume is set to 50% for the warehouse environment.

Zone 2 – Cafeteria

- Single Loudmouth® receiver with 1 speaker.
- The speaker is located inside the cafeteria area.
- Speaker volume is set to 25% for the restaurant environment.



Zone 3 – Sales office

- Single Loudmouth® receiver with 1 speaker.
- The speaker is located inside the Sales office.
- Speaker volume is set to 10% for the office environment.

Example of Zone paging

2.6 Vehicular installation

The Loudmouth® receiver can be powered with an optional Ritron model CCL-M cigarette lighter adapter for use in mobile applications.

- Route the CCL-M power cord away from the antenna and speaker wires.

CCL-M

> When the speaker is mounted on the roof of a vehicle at head level the volume level should be reduced to 50% or less to prevent hearing damage.

2.7 Temporary outdoor installation

The Loudmouth® receiver can be temporarily installed outdoor with the use of weatherproof enclosures.

LMH-100

The Ritron model LMH-100 is a weatherproof, fiberglass reinforced polyester enclosure designed to house the Loudmouth® receiver and antenna. Speaker and power connections are routed from the bottom of the enclosure through electrical conduit.

The LMH-100 includes:

- Dual stainless steel, pad lockable latches
- Nema 3 weatherproof, fiberglass reinforced polyester enclosure
- Mounting flanges for flat surface
- Dimensions: 13”H x 10.5”W x 5.5”D Weight: 8 lbs.

RSS-200

Ritron model RSS-200 20W solar panel kit can be used to power the Loudmouth® receiver without the need for the RPS-1B power supply in locations where AC power is not available.

The RSS-200 includes:

- 20-Watt solar panel with mounting bracket
- 35AH sealed rechargeable battery
- Solar charge controller
- Nema 3 weatherproof, fiberglass enclosure
- Mounting flanges for flat surface
- Dimensions: 12”H x 10.25”W x 6.25”D Weight: 10 lbs.

MM420

The RPS-1B power cube can be temporarily plugged into an outdoor outlet with a large in-use weatherproof cover such as the TayMac model MM420 (available in Lowe’s Hardware stores nationwide).

2.8 Installation of Optional Interface Cable Assembly 60201136

Interface Cable Assembly 60201136

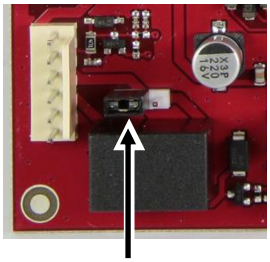
Optional Ritron cable assembly 60201136 (6-Conductor Cable, Loudmouth® Interface) is used to connect the Loudmouth® relay switch to an optional strobe light, or any other device where a simple switch closure is desired. The cable assembly also provides input for the Switch Input closure.

The 60201136 cable assembly includes:

- 6-conductor cable with a mating connector to the Loudmouth® for easy installation.
- Heyco strain relief used to retain the 6-conductor cable to the Loudmouth® case and provide a weather seal.

The 6-conductor cable assembly connections provide:

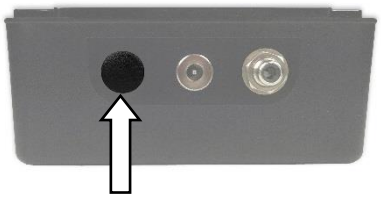
Black	Ground connection for 10.5VDC
Red	10.5VDC (400mA MAX) output used to power an external device such as a strobe light
Blue	Relay Switch Output provides a normally-open switch that closes whenever a valid message is received. The relay switch output can be configured as a normally-closed switch that opens whenever a valid message is received (see Relay Polarity Jumper at right)
Green	Relay Switch Output second switch connection used with Blue wire
White	Switch Input connection will cause the Loudmouth® to play a pre-recorded "Switch On" message when pulled to ground (closed) and "Switch Off" message when released from ground
Brown	Switch Input ground connection



Relay Polarity Jumper shown in the normally-open position

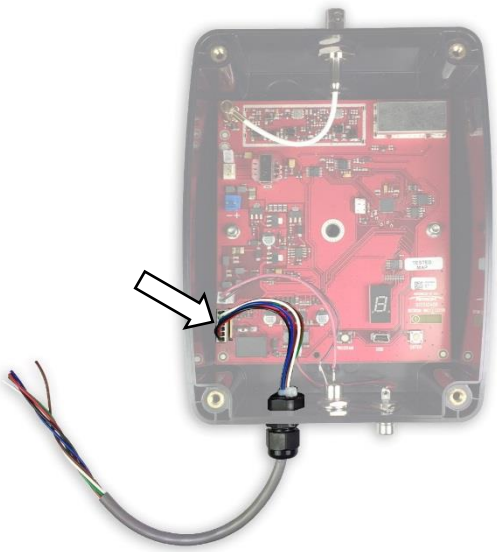
Interface Cable Assembly 60201136 Installation

1. Loosen the 4 screws in the front corners of the case. These screws are retained to the housing with rubber O-rings, DO NOT remove the screws from the housing.
2. Separate the case front from the case back.
3. Disconnect the RPS-1B power supply and BP-LM-Li22 backup battery connected to the radio.



4. Remove the plug from the case bottom to expose the ½" hole used for the Heyco strain relief.

5. Install the Heyco strain relief included with cable assembly 60201136. Do not tighten the sealing nut at this time.



6. Pull cable assembly 60201136 through the strain relief from the inside as shown. Plug the cable assembly into the pcb connector and tighten the sealing nut.

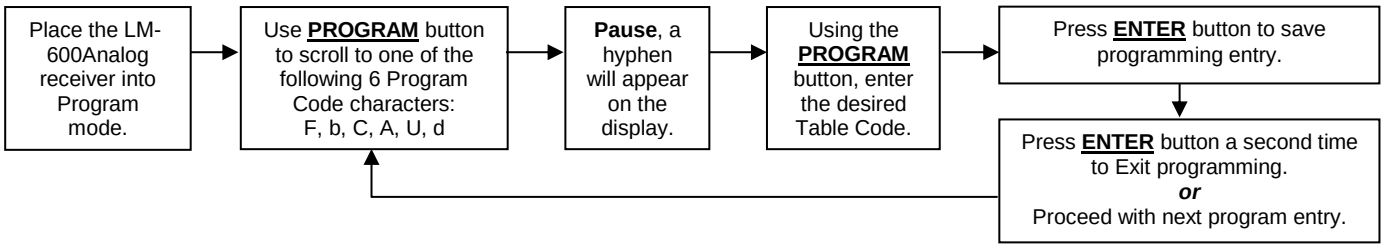
3 Programming

For some installations the Loudmouth® can be programmed in the field without the need for the Ritron PC Programmer LM-PCPS (LM-PCPK-USB kit with cable). Field programming is accomplished in 3 easy steps. First, the radio frequency and tone codes are entered. Second, the selective signaling code is entered (if used). Third, the Loudmouth® options and volume setting are entered.

3.1 PC Programming Software LM-PCPS

While most LM-600Analog programming can be accomplished via Field Programming, the Ritron PC Programming Software (LM-PCPS) can also be used. The PC Programmer allows viewing of all programmed attributes at once. It also permits you to save a programming profile you can use to easily program other LM-600Analog radios to the same settings. Ritron PC Programming kit LM-PCPK-USB includes the LM-PCPS programming software and a USB Programming cable.

3.2 Loudmouth® Field Programming Overview



Program Codes	Table Codes
F	Readout Frequency programming ***or*** Enter a Frequency code from **TABLE F: PROGRAMMABLE FREQUENCY TABLE** ***or*** Enter any valid frequency from 150-174 MHz, or from 450-470 MHz
b	Readout QC or DQC Tone programming ***or*** Enter a 2-digit Quiet Call code from **TABLE b: PROGRAMMABLE QC TONE TABLE** ***or*** Enter a 3-digit Digital Quiet Call code from **TABLE b: PROGRAMMABLE DIGITAL DQC TONE TABLE**
C	Readout 2-Tone, Selcall or DTMF decode programming ***or*** Enter a 2-digit, 2-Tone Paging code from **TABLE C: PROGRAMMABLE 2-TONE, DTMF AND SELCALL CODES** ***or*** Enter **1** plus any 3–7 digit DTMF Code ***or*** Enter **2** plus any 3–7 digit Selcall Code
A	Enter a 2-digit or 3-digit Loudmouth® Feature code from **TABLE A: ADVANCED FEATURE CODES** to: • Enable or disable a Pre-Announce Tone • Set a Record and Play delay time • Set to repeat a Record and Play message • Enable or disable Weather Alert feature • Set Battery Powered Options • Set the Loudmouth® for wideband operation • Enable or disable Relay operation • Set a minimum Relay activation time • Reset Loudmouth® to Factory default programming • Set the Loudmouth® to play a pre-recoded Switch ON and/or Switch OFF message on Switch Input detection
U	Readout the programmed Speaker Volume level ***or*** Enter the desired Speaker Volume Level as a 2-digit number from 05-99%.
d	Readout the programmed NOAA Weather Frequency code ***or*** Enter the 1-digit NOAA Weather Frequency code from **TABLE d: NOAA WEATHER FREQUENCY CODES** **NOTE:** This only programs the NOAA weather frequency, the Weather Alert feature must be enabled using the code in **TABLE A: ADVANCED FEATURE CODES**

3.3 Readout and Field Program Frequency Codes

To match other radios, the owner can select Frequency Codes from Table F or can program the radio frequency directly. Table F is divided into sections 2-6 to correspond with the frequency tables of other Ritron radios. Table frequency codes set both frequency and bandwidth.

Section	Ritron Table
2	VHF Business Band and VHF MURS for USA
3	CANADA GMRS
4	UHF Business Band for USA
5	UHF Business Band for CANADA
6	VHF Business band for CANADA

For direct frequency entry a section number of 1 is entered, followed by the 8-digit frequency. The Loudmouth® can be programmed for frequencies of 150-174MHz and 450-470MHz. Direct frequency entry sets the bandwidth for narrowband operation.

In the following examples, the Loudmouth® is programmed to operate on the Section 4 "Silver Star" frequency of 467.8500 MHz.

To enter a frequency code from the Programmable Frequency Table:

26

1. Refer to Table F - Section 4 to determine the 2 or 3-digit frequency code and write it down.

2. **Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A “P” will appear on the display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.

3. Click the **PROGRAM** button until the program display shows the Program Code “F”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the Frequency code from Table F.

4. Enter the desired Section number from Table F by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

FREQUENCY CODE

5. Enter the 1st digit of the frequency code by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

6. Enter the 2nd digit of the frequency code by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

7. If necessary, enter the 3rd digit of the frequency code by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

8. Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry.

   NOTE: If you attempt to save an incorrect code, an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.

9. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

To enter the frequency directly:

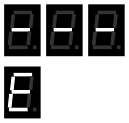
1. With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code “F”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the Frequency programming.

2. Enter Section number 1 by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

3. Enter the 8-digit frequency by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

FREQUENCY

NOTE: Trailing zeros (0) do not have to be entered.



4. Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry.

   NOTE: If you attempt to save an incorrect code an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.

5. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

To readout frequency programming:

1. With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code “F”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the Frequency programming.

2. Press and release the **ENTER** button. The display will show the Section number of Table F, followed by the 2 or 3-digit frequency code. Each digit is separated by a hyphen.

   SECTION FREQUENCY CODE

   If the radio frequency has been entered without using the Programmable Frequency Table, the display will show Section number 1 followed by the 8-digit frequency.

   SECTION FREQUENCY (Example 467.8500MHz)

3. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

Table F - Programmable Frequency Table

Section 2: VHF Business Band

Section-Code	Frequency	Color Dot	BW
2-03	151.6250	Red Dot	12.5 †
2-04	151.9550	Purple Dot	12.5 †
2-05	151.9250		12.5 †
2-06	154.5400		12.5 †
2-07	154.5150		12.5 †
2-08	154.6550		12.5 †
2-09	151.6850		12.5 †
2-10	151.7150		12.5 †
2-11	151.7750		12.5 †
2-12	151.8050		12.5 †
2-13	151.8350		12.5 †
2-14	151.8950		12.5 †
2-15	154.4900		12.5 †
2-16	151.6550		12.5 †
2-17	151.7450		12.5 †
2-18	151.8650		12.5 †
2-24	151.7000		12.5
2-25	151.7600		12.5
2-26	152.7000		12.5 †
2-27	152.8850		12.5
2-28	152.9150		12.5
2-29	152.9450		12.5
2-30	151.5125		12.5
2-31	154.5275		12.5
2-32	153.0050		12.5
2-33	158.4000		12.5
2-34	158.4075		12.5

Section 2: MURS

Section-Code	Frequency	Color Dot	BW
2-01	154.600	Green Dot	25.0
2-02	154.570	Blue Dot	25.0
2-19	151.820	MURS	12.5
2-20	151.880	MURS	12.5
2-21	151.940	MURS	12.5
2-22	154.600	MURS	12.5
2-23	154.570	MURS	12.5

Section 3: CANADA-GMRS/FRS

Section-Code	Frequency	Color Dot	BW
3-01	462.5625	GMRS/FRS	12.5
3-02	462.5875	GMRS/FRS	12.5
3-03	462.6125	GMRS/FRS	12.5
3-04	462.6375	GMRS/FRS	12.5
3-05	462.6625	GMRS/FRS	12.5
3-06	462.6875	GMRS/FRS	12.5
3-07	462.7125	GMRS/FRS	12.5
3-08	467.5625	FRS	12.5
3-09	467.5875	FRS	12.5
3-10	467.6125	FRS	12.5
3-11	467.6375	FRS	12.5
3-12	467.6625	FRS	12.5
3-13	467.6875	FRS	12.5
3-14	467.7125	FRS	12.5
3-15	462.5500	GMRS	12.5
3-16	462.5750	GMRS	12.5
3-17	462.6000	GMRS	12.5
3-18	462.6250	GMRS	12.5
3-19	462.6500	GMRS	12.5
3-20	462.6750	GMRS	12.5
3-21	462.7000	GMRS	12.5
3-22	462.7250	GMRS	12.5

Section 4: UHF Business Band

Section-Code	Frequency	Color Dot	BW
4-09	469.2625		12.5 †
4-10	462.5750	White Dot	12.5 †
4-11	462.6250	Black Dot	12.5 †
4-12	462.6750	Orange Dot	12.5 †
4-13	464.3250		12.5 †
4-14	464.8250		12.5 †
4-15	469.5000		12.5 †
4-16	469.5500		12.5 †
4-17	463.2625		12.5 †
4-18	464.9125		12.5 †
4-19	464.6000		12.5 †
4-20	464.7000		12.5 †
4-21	462.7250		12.5 †
4-22	464.5000	Brown Dot	12.5
4-23	464.5500	Yellow Dot	12.5
4-24	467.7625	J	12.5
4-25	467.8125	K	12.5
4-26	467.8500	Silver Star	12.5
4-27	467.8750	Gold Star	12.5
4-28	467.9000	Red Star	12.5
4-29	467.9250	Blue Star	12.5
4-30	461.0375		12.5
4-31	461.0625		12.5
4-32	461.0875		12.5
4-33	461.1125		12.5
4-34	461.1375		12.5
4-35	461.1625		12.5
4-36	461.1875		12.5
4-37	461.2125		12.5
4-38	461.2375		12.5
4-39	461.2625		12.5
4-40	461.2875		12.5
4-41	461.3125		12.5
4-42	461.3375		12.5
4-43	461.3625		12.5
4-44	462.7625		12.5
4-45	462.7875		12.5
4-46	462.8125		12.5
4-47	462.8375		12.5
4-48	462.8625		12.5
4-49	462.8875		12.5
4-50	462.9125		12.5
4-51	464.4875		12.5
4-52	464.5125		12.5
4-53	464.5375		12.5
4-54	464.5625		12.5
4-55	466.0375		12.5
4-56	466.0625		12.5
4-57	466.0875		12.5
4-58	466.1125		12.5
4-59	466.1375		12.5
4-60	466.1625		12.5
4-61	466.1875		12.5
4-62	466.2125		12.5
4-63	466.2375		12.5
4-64	466.2625		12.5
4-65	466.2875		12.5
4-66	466.3125		12.5
4-67	466.3375		12.5
4-68	466.3625		12.5
4-69	467.7875		12.5
4-70	467.8375		12.5
4-71	467.8625		12.5
4-72	467.8875		12.5
4-73	467.9125		12.5
4-74	469.4875		12.5
4-75	469.5125		12.5

Section 4: UHF Business Band

Section-Code	Frequency	Color Dot	BW
4-76	469.5375		12.5
4-77	469.5625		12.5
4-78	462.1875		12.5
4-79	462.4625		12.5
4-80	462.4875		12.5
4-81	462.5125		12.5
4-82	467.1875		12.5
4-83	467.4625		12.5
4-84	467.4875		12.5
4-85	467.5125		12.5
4-86	451.1875		12.5
4-87	451.2375		12.5
4-88	451.2875		12.5
4-89	451.3375		12.5
4-90	451.4375		12.5
4-91	451.5375		12.5
4-92	451.6375		12.5
4-93	452.3125		12.5
4-94	452.5375		12.5
4-95	452.4125		12.5
4-96	452.5125		12.5
4-97	452.7625		12.5
4-98	452.8625		12.5
4-99	456.1875		12.5
4-100	456.2375		12.5
4-101	456.2875		12.5
4-102	468.2125		12.5
4-103	468.2625		12.5
4-104	468.3125		12.5
4-105	468.3625		12.5
4-106	468.4125		12.5
4-107	468.4625		12.5
4-108	468.5125		12.5
4-109	468.5625		12.5
4-110	468.6125		12.5
4-111	468.6625		12.5
4-112	456.3375		12.5
4-113	456.4375		12.5
4-114	456.5375		12.5
4-115	456.6375		12.5
4-116	457.3125		12.5
4-117	457.4125		12.5
4-118	457.5125		12.5
4-119	457.7625		12.5
4-120	457.8625		12.5
4-121	461.3175		12.5
4-122	464.8375		12.5

Section 5: Canada UHF Business Band

Section-Code	Frequency	Color Dot	BW
5-01	458.6625		25.0
5-02	469.2625		25.0

Section 6: Canada VHF Business Band

Section-Code	Frequency	Color Dot	BW
6-01	151.055		25.0
6-02	151.115		25.0

Notes

† Frequency code was 25 kHz BW prior to the 2013 FCC Narrowband Mandate.

- BW is the bandwidth in kHz.
- 12.5 kHz indicates narrow band channel, 25 kHz indicates wide band channel

3.4 Readout and Field Program QC or DQC Tone Codes

The Loudmouth® can be field programmed for a 2-digit QC tone code (CTCSS) or a 3-digit DQC tone code (DCS) from Table b. In the following example the radio is programmed for a 100Hz QC tone.

To enter a QC or DQC Tone Code:

TONE CODE

12	1. Refer to the Table b to determine the 2-digit QC Tone code or 3-digit DQC Tone code and write it down.
	2. **Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A “P” will appear on the display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.
	3. Click the **PROGRAM** button until the program display shows the Program Code “b”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the 2-digit Quiet-Call code or 3-digit Digital Quiet-Call code.
	4. Enter the 1st digit of the tone code (or 1st digit of the DQC code) by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	5. Enter the 2nd digit of the tone code (or 2nd digit of the DQC code) by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	6. **FOR DQC CODES ONLY** – Enter the 3rd digit of the DQC code by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	7. Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry. **NOTE:** If you attempt to save an incorrect code an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.
	8. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

To readout QC or DQC Tone programming:

	1. With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code “b”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the 2-digit Quiet-Call code or 3-digit Digital Quiet-Call code.
	2. Press and release the **ENTER** button. The display will show the 2-digit QC tone code or 3-digit DQC tone code. Each digit is separated by a hyphen.  QC TONE CODE
	3. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

Table b - Programmable QC Tone Table

Code	Frequency
01	67.0
02	71.9
03	74.4
04	77.0
05	79.7
06	82.5
07	85.4
08	88.5
09	91.5
10	94.8
11	97.4

Code	Frequency
12	100.0
13	103.5
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3

Code	Frequency
23	146.2
24	151.4
25	156.7
26	162.2
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7

Code	Frequency
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3
39	69.4
40	159.8
41	165.5
42	171.3
43	177.3
44	No Tone

Code	Frequency
45	183.5
46	189.9
47	196.6
48	199.5
49	206.5
50	229.1
51	254.1
00	No Tone

Table b - Programmable Digital DQC Tone Table

Code	Code	Code	Code	Code	Code	Code	Code	Code
023	071	143	225	266	356	446	523	645
025	072	145	226	271	364	452	532	654
026	073	152	243	274	365	454	546	664
031	074	155	244	306	371	455	565	703
032	114	156	245	311	411	462	606	712
036	115	162	246	315	412	464	662	723
043	116	165	251	325	413	465	612	731
047	122	172	252	331	423	466	624	732
051	125	174	255	332	431	503	627	734
053	131	205	261	343	432	506	631	743
054	132	212	263	346	445	516	632	754
065	134	223	265	351				

Table C - Programmable 2-Tone, DTMF and Selcall Codes

Code	Feature		Default	Description
Remove 2-Tone, DTMF or Selcall Programming				
0	Delete		√	Remove all 2-Tone, DTMF or Selcall programming
2-Tone Codes				
90	See Note	See Note		• If the radio displays 2-Tone Code “90” on readout it has been programmed for custom frequencies. • When the radio is programmed for 2-Tone Decode operation, it is recommended that you do NOT use QC Tone Codes greater than “23” (146.2 Hz).
91	330.5	569.1		
92	349.0	600.9		
93	368.5	634.5		
94	389.0	669.9		
95	410.8	707.3		
96	433.7	746.8		
97	457.9	788.5		
98	483.5	832.5		
99	330.5	600.9		
DTMF and Selcall Codes				
1 + xxx	DTMF			Enter “1” and 3-7 DTMF digits for Primary Decode (0123456789)
2 + xxx	Selcall			Enter “2” and 3-7 Selcall digits for Primary Decode (0123456789)
Additional options				
3 + xxx	Decode Reset Time (seconds)		10	After decoding 2-Tone, DTMF or Selcall normal reception is possible without the need for the 2-tone, DTMF or Selcall code. Paging Decode will be reset after the programmed Decode Reset Time. Decode Reset Time can be programmed for 0-255 seconds, and can be entered as a 1, 2 or 3 digit entry.
41	Decode with subtone enable			2-Tone, DTMF and Selcall decode requires correct subtone to decode.
42	Decode with subtone disabled		√	2-Tone, DTMF and Selcall decode does not require correct subtone to decode

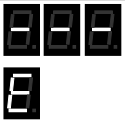
3.5 Readout and Field Program 2-Tone, DTMF or Selcall Decode Operation

For special applications, it is desirable to program the Loudmouth® for 2-Tone, DTMF or Selcall decode operation. The user is able to field program the radio for one of the 9 pre-determined 2-Tone pairs specified in Table C, or for any 3-7 digit DTMF or Selcall sequence. The 2-Tone codes correspond to field programmable 2-Tone encode (transmit) codes available in other RITRON products.

2-Tone, DTMF or Selcall decode can be used to selectively call the radio in a system where multiple radios operate on a single frequency. When the radio is programmed for a 2-Tone, DTMF or Selcall Paging Decode code, no call will be heard unless the code has been successfully decoded. After decoding, normal reception is possible without the need for the 2-tone, DTMF or Selcall code. Paging Decode will be automatically reset after a programmable period of inactivity.

In the following example we will program for paging operation with 2-Tone Decode Code 94 frequencies of 389.0 and 669.9 Hz.

To enter a 2-Tone, DTMF or Selcall decode code:

94	1.	Write down the desired 2-Tone, DTMF or Selcall ANI code.
	2.	**Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A "P" will appear on the display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.
	3.	Click the **PROGRAM** button until the program display shows the Program Code "C". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept a 2-digit 2-Tone code, or a 3 to 7-digit DTMF or Selcall decode sequence.
	4.	**TO REMOVE 2-TONE, DTMF OR SELCALL PROGRAMMING** – Enter a "0" using the **PROGRAM** button. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit. Proceed to Step 10 to save this programming change.
	5.	**FOR DTMF CODES ONLY** – Enter a "1" using the **PROGRAM** button. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	6.	**FOR SELCALL CODES ONLY** – Enter a "2" using the **PROGRAM** button. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	7.	Enter the 1st digit of the 2-Tone code (or 1st digit of the DTMF or Selcall code) by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	8.	Enter the 2nd digit of the 2-Tone code (or 2nd digit of the DTMF or Selcall code) by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	9.	**FOR DTMF OR SELCALL CODES ONLY** – Enter the 3rd digit of the DTMF or Selcall decode sequence. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit. Continue entering up to seven digits.
	10.	Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry. **NOTE:** If you attempt to save an incorrect code, an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.
	11.	Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

2-TONE, DTMF OR SELCALL CODE

To readout a 2-Tone, DTMF or Selcall decode programming:

	1.	With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code "C". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the 2-Tone, DTMF or Selcall programming.
	2.	Press and release the **ENTER** button. The display will show a 2-digit 2-Tone code, a 1 followed by the 3 to 7-digit DTMF code, or a 2 followed by 3 to 7-digit Selcall code. Each digit is separated by a hyphen.  2-TONE CODE **NOTE:** A zero (0) indicates that there is no 2-Tone, DTMF or Selcall decode programming.
	3.	Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

3.6 Field Program Advanced Feature Codes

The Loudmouth® can be field programmed for a variety of additional features. Refer to Table A for the codes available for field programming. In our example we will program the radio for Record and Play delay operation of 2 seconds. The Loudmouth® is set from the factory with these √ options **enabled.**

To enter an Advanced Feature Code:

622	1. Refer to Table A to determine the 3-digit feature code and write it down.
	2. **Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A "P" will appear on the LED display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.
	3. Scroll to the character "A" by clicking the **PROGRAM** button until the program display shows the correct character. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the first digit of the Feature code.
FEATURE CODE 	4. Enter the 1st digit of the feature code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	5. Enter the 2nd digit of the feature code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	6. If necessary, enter the 3rd digit of the feature code by clicking the **PROGRAM** button until the program display shows the desired number. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
	7. Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry. **NOTE:** If you attempt to save an incorrect code, an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.
	8. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

Table A - Advanced Feature Codes

Code	Feature	Default	Description
	Pre-Announce Tone		
231	Pre-Announce Tone – On	√	Enable this feature to play a short tone over the Loudmouth® speaker whenever it receives a signal.
232	Pre-Announce Tone – Off		Disable Pre-Announce Tone
23xx	Pre-Announce Tone Volume	25	Enter the 2-digit Pre-Announce Tone Volume between 03-99%
	Interrupt Mode		
241	Interrupt Mode enable		Enable this feature to allow new incoming messages to interrupt playback of recorded messages or Weather Alert messages. **NOTE:** If the Loudmouth® is in the process of receiving a message it cannot be interrupted.
242	Interrupt Mode disable	√	Disable Interrupt Mode
	Battery Powered Operation		
251	Battery Saver – On		Enable Battery Saver operation for battery powered Loudmouth®.
252	Battery Saver – Off	√	Disable Battery Saver operation for RPS-1B powered Loudmouth®.
253	Solar Powered Low Battery Alert		Enable for Low Battery Alert when Solar powered. A short tone will be heard at the end of each broadcast to indicate that the solar battery is nearly discharged. This will disable Battery Back-Up Low Battery Alert.
254	Battery Back-Up Low Battery Alert		Enable for Low Battery Alert when using BP-LM-Li22 battery back-up. A short tone will be heard at the end of each broadcast to indicate that the back-up battery is nearly discharged. This will disable Solar Powered Low Battery Alert.
255	Low Battery Alert – Off	√	Disable Low Battery Alert tone

Table A - Advanced Feature Codes

	Weather Alert Operation		
261	Weather Alert – On		Enable this feature to receive local NOAA weather radio emergency broadcasts from the National Weather Service and play them over the Loudmouth® speaker.
262	Weather Alert – Off	√	Disable Weather Alert
263	Weather Alert - On with Relay Operation		Enable relay activation when a Weather Alert is received.
26xx	Weather Alert Timeout	60	Set the time that the Weather emergency broadcast will heard from 10-255 seconds.
	Bandwidth		
281	Wideband Operation		When set the Loudmouth® is forced into wideband operation. This option must be programmed after Frequency has been programmed.
282	Narrowband Operation	√	When set the Loudmouth® is forced into narrowband operation. This option must be programmed after Frequency has been programmed.
	Switch Input Operation		
291	Switch On Only		Radio will play the pre-recorded Switch On message when the switch input is pulled to ground.
292	Switch Off Only		Radio will play the pre-recorded Switch Off message when the switch input is released from ground.
293	Switch On and Off		Radio will play the pre-recorded Switch On message when the switch input is pulled to ground, and will play the pre-recorded Switch Off message when the switch input is released from ground.
294	Switch Input Disable	√	Disable all Switch Input operation
31	Record Switch On Message		After entering the code the radio will record the next received message (6 seconds max). The recorded message will playback after recording to allow review of the message.
32	Record Switch Off Message		After entering the code the radio will record the next received message (6 seconds max). The recorded message will playback after recording to allow review of the message.
41	Play Switch On Message		Plays the recorded Switch On message
42	Play Switch Off Message		Plays the recorded Switch Off message
	Relay Operation		
511	Relay operation – Disable	√	Disable relay operation.
512	Relay operation – Enable		Set this option for relay closure when the Loudmouth® receives a valid signal or on Switch Input detection. The relay will remain closed as long as a signal is received. If Record and Play is enabled, the relay will close as soon as a signal is received and remain closed throughout any Record and Play Delay and Recorded Message Replay.
52xxx	Minimum Relay time –sec.	√	Once the relay is activated on a valid received signal, this sets a minimum time it will remain active. (Relay must be enabled with code 512) Minimum Relay time can be set between 0-255 seconds. Seconds can be entered as a 1, 2 or 3 digit entry.
	Message Playback Options		
62	Live Message Playback	√	Incoming messages are not recorded and are heard over the speaker in real time. If the Pre-Announce Tone option is enabled you will miss the incoming message while the tone is heard.
62xxx	Delay Message Playback – Sec.		Incoming messages are recorded and playback starts after the programmed delay time, even if the radio is still receiving. Seconds can be entered as a 1, 2 or 3-digit entry. If the Pre-Announce Tone option is enabled the entire incoming message will play after the tone is heard.
61	No Repeat Message Playback	√	Incoming messages are not repeated.
61x	Repeat Message Playback – # times		Incoming messages are recorded and repeated concurrently for the number of times programmed, with 3 seconds between each repeat. The number of repeats can be 1-9.
632	Record and Play Enable		Playback of Recorded messages occurs after radio has finished receiving or after Recorded Message Delay time, whichever is longer.
	Special Features		
21	Reset to Factory Defaults		Resets Wireless Speaker to Factory default programming.
22	Display Radio Revision		Loudmouth® will display a sequence of 6 digits to identify operating code revision. This is helpful when troubleshooting the radio.

3.7 Readout and Field Program Loudmouth® Speaker Volume

The wireless speaker can be field programmed for any volume level between 05-99% by entering the volume level as a 2-digit code. Field programming Speaker Volume Level sets the voice volume levels.

In our example we will program the radio for 25% Speaker Volume Level. The Loudmouth® is set from the factory with a 50% volume setting**.**

To enter the Volume setting:

25

1. Refer to Section 1.5 - Determine the volume setting and write down the desired volume.

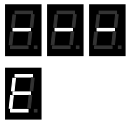
2. **Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A “P” will appear on the display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.

3. Scroll to the character “U” by clicking the **PROGRAM** button until the program display shows the correct character. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the first digit of the volume setting.

SPEAKER VOLUME

4. Enter the 1st digit of the volume setting by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

5. Enter the 2nd digit of the volume setting by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.



6. Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry.

   NOTE: If you attempt to save an incorrect code, an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.

7. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

IMPORTANT NOTE: Volume setting below 10% are entered as a 2-digit code with a first digit “0”.

To readout the Volume setting:

1. With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code “U”. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the Volume setting.

2. Press and release the **ENTER** button. The display will show the 2-digit Volume setting, followed by a hyphen.

VOLUME SETTING 25%

3. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

3.8 Readout and Field Program the NOAA Weather Frequency

The Loudmouth® can be programmed to play severe weather warnings originating from the National Weather service that are broadcast on one of seven NOAA weather frequencies. The Loudmouth® is shipped from the factory without a NOAA weather frequency selected. Before the Weather Alert feature can be used you must first select the local NOAA frequency. In this example the local NOAA weather frequency is 162.550 MHz.

To enter the NOAA Weather Frequency:

	1. **Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A "P" will appear on the LED display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.
	2. Scroll to the character "d" by clicking the **PROGRAM** button until the program display shows the correct character. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to program the NOAA Weather Frequency code.
	3. Press and release the **ENTER** button to begin searching for the local NOAA weather frequency. If the radio has not been programmed for a NOAA weather frequency a "1" will appear on the display indicating that the Loudmouth® is receiving on NOAA frequency 1 per Table d below.
	4. Press and release the **PROGRAM** button to step through the 7 NOAA weather frequencies. Pause on each frequency to listen for the NOAA weather broadcast on the Loudmouth® speaker.
	5. When you hear the NOAA weather broadcast, press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry.
	6. Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

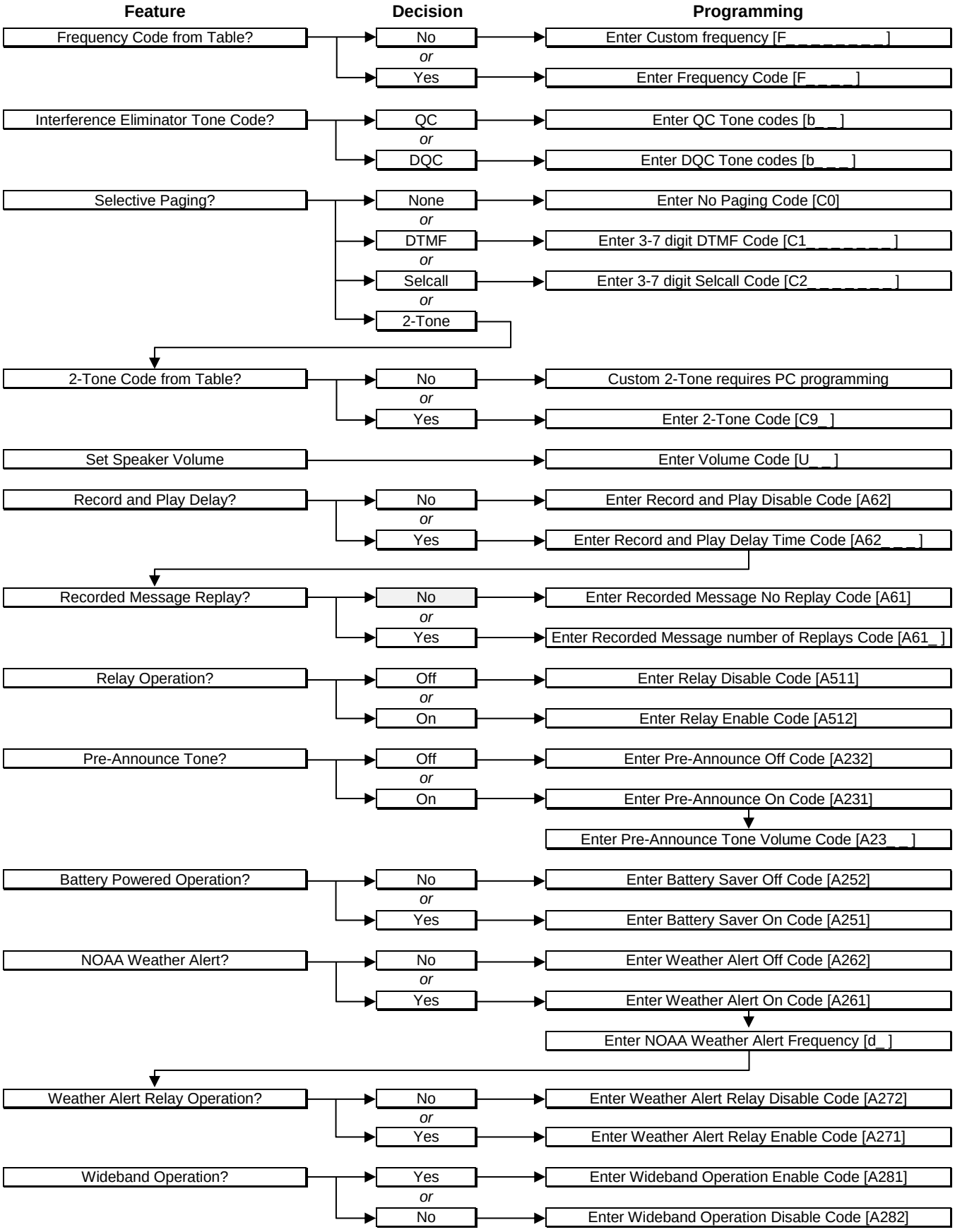
To readout and verify NOAA Weather Frequency programming:

	1. With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code "d". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the NOAA Weather frequency programming.
	2. Press and release the **ENTER** button. The display will show the single digit NOAA Weather Frequency code from Table d and the NOAA weather broadcast will be heard on the speaker.
	3. Press the **ENTER** button to return to program mode, press the **ENTER** button a second time to exit program mode.

Table d – NOAA Weather Frequency Codes

Code	Frequency	NOTE
1	162.400 MHz	A complete list of NOAA weather frequencies available in your area can be found at:
2	162.425 MHz	http://www.nws.noaa.gov/nwr/coverage/station_listing.html
3	162.450 MHz	
4	162.475 MHz	
5	162.500 MHz	
6	162.525 MHz	
7	162.550 MHz	

3.9 Field Programming Flow Chart



4 Operation

Once installed, operating the Loudmouth® radio receiver requires no human contact. Portable, base station or mobile 2-way radios can deliver voice messages to a PA speaker with a simple press of the PTT button for either live or recorded playback. This section describes the subtle differences in operation for various Loudmouth® options and installations.

4.1 Basic Operation

Basic operation is defined as a Loudmouth® receiver programmed on a dedicated radio frequency with a QC or DQC code. The receiver is also programmed for 50% volume and a pre-announce tone.

1. Move to an area that is away from the Loudmouth® speaker to prevent feedback.
2. Be sure the microphone on the calling radio is pointed away from the Loudmouth® speaker.
3. Set the portable, base station, or mobile radio to the Loudmouth® channel.
4. Monitor the channel before transmitting to be sure there are no other radio users on the Loudmouth® frequency.
5. Press and hold the PTT button and pause for about 1 second, allowing the pre-announce tone to be heard.
6. Speak into the radio microphone to broadcast your message over the Loudmouth® speaker. If other radios are operating on the Loudmouth® channel they will also hear your message.
7. Release the PTT button when your message is complete.
8. Return the portable, base station, or mobile radio to the normal operating channel.

4.2 DTMF and Selcall Paging

To access the Loudmouth® the 2-way radio must first send the correct DTMF or Selcall code. Once access to the loudspeaker is accomplished, the user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel. After a period of inactivity the Loudmouth® will automatically reset, and will then require the correct DTMF or Selcall code to re-gain access.

1. Move to an area that is away from the Loudmouth® speaker to prevent feedback.
2. Be sure the microphone on the calling radio is pointed away from the Loudmouth® speaker.
3. Set the portable, base station, or mobile radio to the Loudmouth® channel.
4. Monitor the channel before transmitting to be sure there are no other radio users on the Loudmouth® frequency.
5. Press and hold the PTT button.
6. Wait until the entire DTMF or Selcall code has been sent, and then an additional 1 second for the pre-announce tone.
7. Speak into the radio microphone to broadcast your message over the Loudmouth® speaker. If other radios are operating on the Loudmouth® channel they will also hear your message.
8. Release the PTT button when your message is complete.
9. Return the portable, base station, or mobile radio to the normal operating channel.

With DTMF or Selcall Paging operation:

- Once Loudmouth® receiver has decoded the correct DTMF or Selcall code any radio on the Loudmouth® channel can talk over the speaker without the need for DTMF or Selcall paging.
- After a DTMF or Selcall code has been successfully decoded, the programmable Paging Reset Time sets the length of time the Loudmouth® receiver can go without receiving a signal before DTMF or Selcall is once again required for access. Factory default Paging Reset Time is 10 seconds.
- DTMF or Selcall paging can be used in conjunction with QC or DQC for added security. The 2-way radio and the Loudmouth® receiver must be programmed for the same QC or DQC code.

4.3 2-Tone Paging

To access the Loudmouth® the 2-way radio must first send the correct 2-Tone Paging code. Once access to the loudspeaker is accomplished, the user simply presses the 2-way radio's PTT and speaks while on the Loudmouth® channel. After a period of inactivity the Loudmouth® will automatically reset, and will then require the correct 2-Tone Paging code to re-gain access.

1. Move to an area that is away from the Loudmouth® speaker to prevent feedback.
2. Be sure the microphone on the calling radio is pointed away from the Loudmouth® speaker.
3. Set the portable, base station, or mobile radio to the Loudmouth® channel.
4. Monitor the channel before transmitting to be sure there are no other radio users on the Loudmouth® frequency.
5. Send the correct 2-Tone Paging code. Refer to your 2-way radio's user manual to determine how you send 2-tone paging codes.
6. Wait until the entire 2-tone code has been sent.
7. Press and hold the PTT button and pause for about 1 second, allowing the pre-announce tone to be heard.
8. Speak into the radio microphone to broadcast your message over the Loudmouth® speaker. If other radios are operating on the Loudmouth® channel they will also hear your message.
9. Release the PTT button when your message is complete.
10. If the radio PTT is pressed again before the Loudmouth® receiver has reset, the message will be heard on the speaker without the need for a 2-tone Paging code.
11. Return the portable, base station, or mobile radio to the normal operating channel.

With 2-Tone Paging operation:

- Once Loudmouth® receiver has decoded the correct 2-tone code any radio on the Loudmouth® channel can talk over the speaker without the need for 2-tone paging.
- After a 2-tone code has been successfully decoded, the programmable Paging Reset Time sets the length of time the Loudmouth® receiver can go without receiving a signal before 2-tone is once again required for access. Factory default Paging Reset Time is 10 seconds.
- Can be used in conjunction with QC or DQC for added security. The 2-way radio and the Loudmouth® receiver must be programmed for the same QC or DQC code**.**

4.4 Record and Play (20 seconds of record time MAXIMUM)

When 2-way radios are used in the same area as the Loudmouth® speaker, feedback may result that can render the system unusable. For those applications the Loudmouth® can be programmed to record the incoming messages and play them back over the speaker. Set the portable, base station, or mobile radio to the Loudmouth® channel.

1. Monitor the channel before transmitting to be sure there are no other radio users on the Loudmouth® frequency.
2. Press and hold the PTT button on your 2-way radio.
3. Speak into the radio microphone to record your message into the Loudmouth® receiver. If other radios are operating on the Loudmouth® channel they will hear your message as you record it.
4. Release the PTT button when your message is complete.
5. The pre-announce tone will be heard and the Loudmouth® speaker will begin playing your recorded message.
6. When finished, return the portable, base station, or mobile radio to the normal operating channel.

With Record and Play operation:

- Recorded messages are limited to a maximum of 20 seconds.
- Any of the selective signaling options can be used in conjunction with Record and Play.
- The Loudmouth® can be programmed to delay the playback of a recorded message. This is useful when using the Relay option for activation a strobe light to indicate that a speaker message is imminent.
- The Loudmouth® can be programmed to repeat a recorded message concurrently for the number of times programmed with 3 seconds between each repeat. The pre-announce tone will only be heard once, before the start of the recorded message playback.

4.5 Weather Alert

The Loudmouth® can automatically play emergency weather warnings from the National Weather Service that is broadcast on one of the seven NOAA weather frequencies. The Loudmouth® will listen for emergency weather broadcasts any time it is not being used. To use this feature the Loudmouth® must first be programmed for your local NOAA weather frequency.

With Weather Alert operation:

- Your local NOAA weather frequency must be programmed into the Loudmouth® and the Weather Alert feature must be ON per the instructions in the Programming section of this manual.
- If a severe weather notification from NOAA weather service occurs while the Loudmouth® is in use the Weather Alert operation will not be activated.
- When a severe weather notification from NOAA weather service activates Weather Alert operation, the Loudmouth® will broadcast the NOAA weather alert message non-stop for a factory default time of 1 minute.
- A Weather Alert message can be interrupted by an incoming message from your 2-way radio. While playing a Weather Alert message the Loudmouth® checks your normal radio channel every 4 seconds for incoming messages. If an incoming message is detected the Loudmouth® immediately leaves the Weather Alert broadcast and reverts to the incoming message.
- The maximum Weather Alert Time is set at the factory for 1 minute, but is Field and PC programmable from 10 seconds to 255 seconds (4.25 minutes)

The Loudmouth® receiver and PA speaker is not intended for use as a stand-alone weather receiver.

4.6 Battery Powered Operation

The Loudmouth® receiver can be equipped with an optional BP-LM-Li22 emergency backup battery that will temporarily power the radio if primary power from the RPS-1B is interrupted. The BP-LM-Li22 is a 2200mAH rechargeable battery pack that is charged by the Loudmouth® receiver and is not intended to operate the radio for an extended period of time. For applications where AC power for the RPS-1B is not available, the Loudmouth® receiver must be powered by an external +12 VDC battery. The Loudmouth® can then be configured for battery powered operation to maximize battery life.

Battery Saver

Enable this feature whenever the Loudmouth® is battery powered to extend battery life. When enabled the Loudmouth® receiver is in a low current "sleep" state the majority of the time, waking up periodically to see if there is an incoming message to be broadcast.

- Depending on usage, this may double the battery life.
- The length of time the Loudmouth® can "sleep" before it checks for a message is PC programmable from .5 to 8 seconds.
- With Battery Saver enabled the caller must wait approximately 2 second before speaking to allow the radio to wake up.

Low Battery Alert Tone

Enable this feature whenever the Loudmouth® is battery powered and a short tone will be heard at the end of each broadcast to indicate that the batteries need replacement or recharging.

- The Low Battery Alert Tone can be set for operation with either the BP-LM-Li22 battery back-up or for solar powered operation.
- When using the BP-LM-Li22 battery back-up the Low Battery Alert Tone will not be heard when the external +12 VDC is present, regardless of the battery condition.

4.7 Loudmouth® Options

Certain Loudmouth® options affect operation as follows:

Pre-Announce Tone
With this feature enabled the Loudmouth® will sound a short tone prior to each broadcast to notify listeners that a page is forthcoming.

Relay Enable
Set this option for relay closure when the Loudmouth® receives a valid signal. The relay will remain closed as long as a signal is received. If Record and Play is enabled, the relay will close as soon as a signal is received and remain closed throughout any Delay Message Playback and Repeat Message Playback. The relay can also be enabled whenever a NOAA Weather Alert is received.

Delay Message Playback
The playback of a received, recorded message is delayed for the Delay Message Playback time whenever a valid incoming message is received. Loudmouth® can also be set to start playback as soon as the received incoming message is complete by setting Record and Play.

Repeat Message Playback
Recorded messages are repeated concurrently for the number of times programmed with 3 seconds between each playback.

Field Programming Enable
With this feature enabled the radio can be programmed via the display and buttons on the radio, without the need for the PC programmer software. Disable this feature to prevent programming in the field and allow only PC programming.

4.8 How to Minimize Feedback

Feedback is the result of the Loudmouth® speaker audio getting back into the microphone of the radio being used to access the Loudmouth®. This is a problem with the calling radio, not the Loudmouth® receiver. Although the Loudmouth® is not intended to be used in the same area as the calling radio, steps can be taken to minimize the feedback effect.

Reduce Loudmouth® speaker volume
Do not set the Loudmouth® volume any higher than is necessary to cover the intended area.

Use multiple speakers
The use of multiple speakers means you don't have to cover as large an area with each speaker, consequently, speaker volume can be reduced.

Maintain distance between the calling radio and the Loudmouth® speaker
In general, the calling radio should be at least 50 feet away from the speaker when the Loudmouth® is set for 50% volume. The necessary distance increases if the volume is turned up and decreases if the volume is turned down.

Make sure the radio microphone is turned away from the speaker
You do not want the speaker pointing directly into the microphone. Using your hand to shield the microphone can also reduce feedback.

Use a noise canceling microphone
Equip your calling radio with an optional noise-canceling microphone.

Record and Play feature eliminates feedback

The Record and Play feature completely eliminates feedback by recording your message and playing it back after you have finished sending it to the Loudmouth® receiver. See Section 3.6 Field Program Advanced Feature Codes to enable the Record and Play operation.

The calling radio is not transmitting while the message is broadcast, so speaker audio cannot get into the calling radio microphone.

4.9 Switch Input Operation

The Loudmouth® will play a a pre-recorded voice message when a change in the Switch Input is detected. Optional Ritron cable assembly 60201136 (6-Conductor Cable, Loudmouth® Interface) is used to connect the Loudmouth® Switch Input to a door switch, or any other device where switch closure detection is desired. The cable assembly also provides connection to the Relay Switch closure output.

Using the Switch Input to Test your System

The Ritron model RPB-1AG pushbutton is available for use with Switch Input Operation. When programmed for "Switch On Only" operation, simply press the pushbutton to play the pre-recorded Switch On message over your Loudmouth® speaker to test for activation, volume, or any other programmed attribute. A separate test should also be performed using a radio to transmit to the LM-600Analog receiver.

Switch Message Operation

- The Switch On Message is played when the Switch Input is pulled low.
- The Switch Off Message is played when the Switch Input is released from ground.
- Switch Input messages will not be played if the radio channel is busy, but instead will wait for the channel to clear before playing.
- Switch Input messages are played after the Pre-announce tone if the radio is programmed for this feature.
- If the Loudmouth® is programmed for Record and Play Delay or Recorded Message Repeat the Switch Input message will be delayed and repeated the same as an incoming message.
- Switch Input messages can be up to 6 seconds long.

To record a Switch Input Message:

In the following example we will program the Loudmouth® to operate with a Switch On message only.

291	1.	Refer to Table A – Switch Input Operation and write down the code to enable the Switch On Message Only.
31	2.	Refer to Table A – Switch Input Operation and write down the code to record the Switch On message.
P-	3.	**Place the radio into Program / Readout Mode** by pressing and holding the **PROGRAM** button. A "P" will appear on the display. Release the **PROGRAM** button when a hyphen appears and the radio is ready to accept the first digit of your program entry.
A-	4.	Scroll to the character "A" by clicking the **PROGRAM** button until the program display shows the correct character. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the first digit of the Enable Switch On Message Only code.
2-	5.	Enter the 1st digit of the Switch On Message Only code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
9-	6.	Enter the 2nd digit of the Switch On Message Only code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
1-	7.	Enter the 3rd digit of the Switch On Message Only code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
---	8.	Press and release the **ENTER** button to save your programming. A hyphen will flash 3 times on the program display to indicate that programming was successful. The radio is now ready for another program entry.
E		**NOTE:** If you attempt to save an incorrect code, an "E" will appear on the display. Check the digits you are attempting to enter, then re-enter.
A-	9.	Scroll to the character "A" by clicking the **PROGRAM** button until the program display shows the correct character. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the first digit of the Record Switch On Message code.
3-	10.	Enter the 1st digit of the Record Switch On Message code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
1-	11.	Enter the 2nd digit of the Record Switch On Message code by clicking the **PROGRAM** button until the program display shows the desired number. **Pause**—the radio will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.
-	12.	Press and release the **ENTER** button to place the radio into record mode. A hyphen will appear on the program display.
	13.	Using your portable or base radio, transmit the Switch On Message to the Loudmouth. When the PTT is released the Loudmouth® will playback the recorded Switch On Message for review.
	14.	Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

Switch On Only Code

Record Switch On Code

4.10 Relay Operation

Radios are equipped with a relay that can be set for relay switch closure when the Loudmouth® receives a valid signal. The relay can be used to enable an optional strobe light for visual indication that a Loudmouth® speaker message is in process.

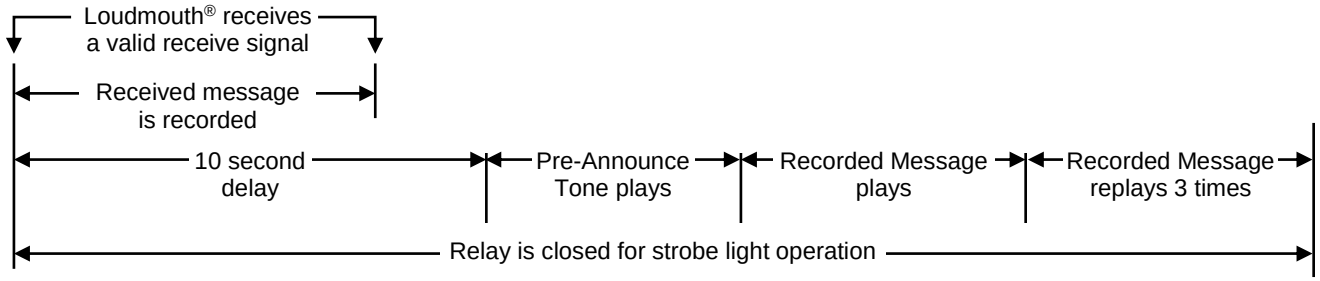
With the Relay Option enabled:

If Record and Play is disabled	The relay switch will close as soon as a valid signal is received, and will remain closed as long as the signal is present.
If Record and Play is enabled	The relay switch will close as soon as a valid signal is received and will remain closed until the recorded message has finished playing.
If Delay Message Playback is programmed	The relay switch will close as soon as a valid signal is received, and will remain closed for the delay time and until the recorded message has finished playing.
If Replay Message Playback is programmed	The relay switch will close as soon as a valid signal is received, will remain closed for any Delay Message Playback time and until the recorded message has been repeated in it's entirety.

Radio Operation Timeline

The following timeline explains operation for Loudmouth® radios. In this example the Loudmouth® is programmed for:

- Record and Play
- Delay Message Playback of 10 seconds
- Repeat Message Playback 3 times
- Relay Operation Enabled
- Pre-Announce Tone Enabled



Strobe Light Operation

The Loudmouth® relay can be used to operate a strobe light in a number of configurations with the addition of the optional Ritron cable assembly 60201136 (6-Conductor Cable, Loudmouth® Interface). The cable can provide:

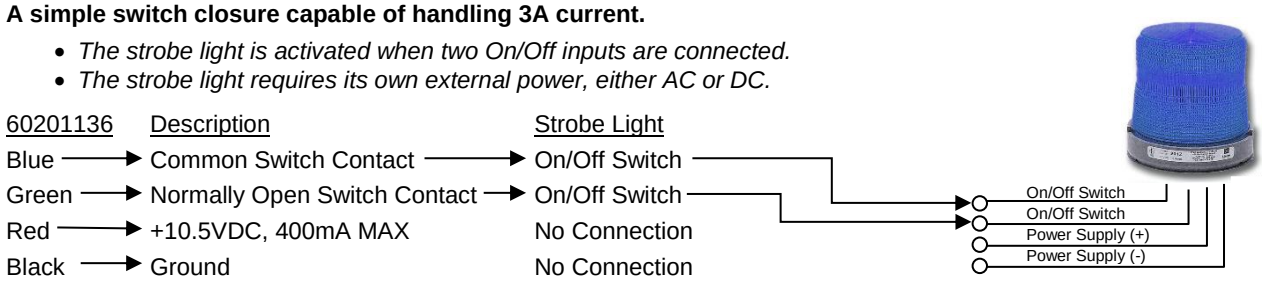
- A normally open relay switch that closes on a received signal. The relay switch can handle up to 3A when used to connect power to a strobe light.
- A normally closed relay switch that opens on a received signal.
- A +10.5VDC supply that can be used to power an LED strobe light rated at 400mA or less.
- A ground connection that can be used to provide a switch closure to ground.

Refer to section 2.8 Installation of Optional Interface Cable Assembly 60201136 for cable installation instruction.

Connecting the Relay Switch to a Strobe Light

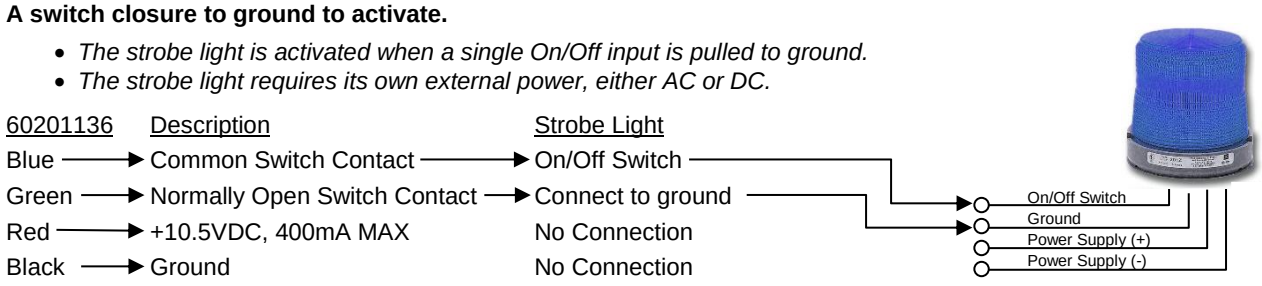
1. A simple switch closure capable of handling 3A current.

- *The strobe light is activated when two On/Off inputs are connected.*
- *The strobe light requires its own external power, either AC or DC.*



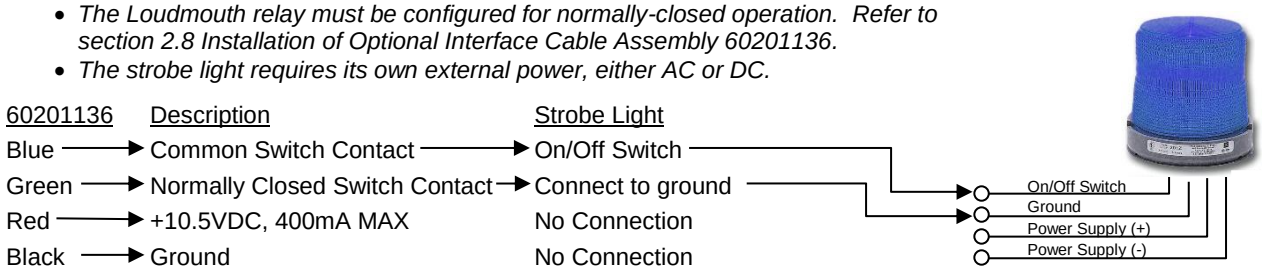
2. A switch closure to ground to activate.

- *The strobe light is activated when a single On/Off input is pulled to ground.*
- *The strobe light requires its own external power, either AC or DC.*



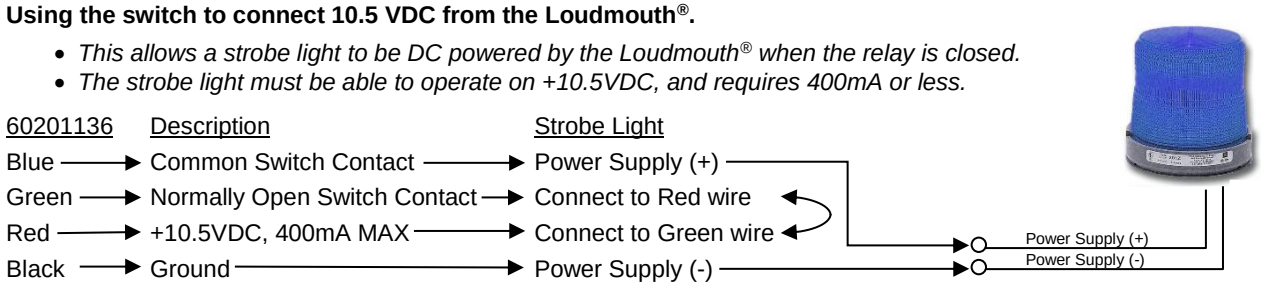
3. A switch opens to release from ground to activate.

- *The strobe light is activated when a single On/Off input is released from ground.*
- *The Loudmouth relay must be configured for normally-closed operation. Refer to section 2.8 Installation of Optional Interface Cable Assembly 60201136.*
- *The strobe light requires its own external power, either AC or DC.*



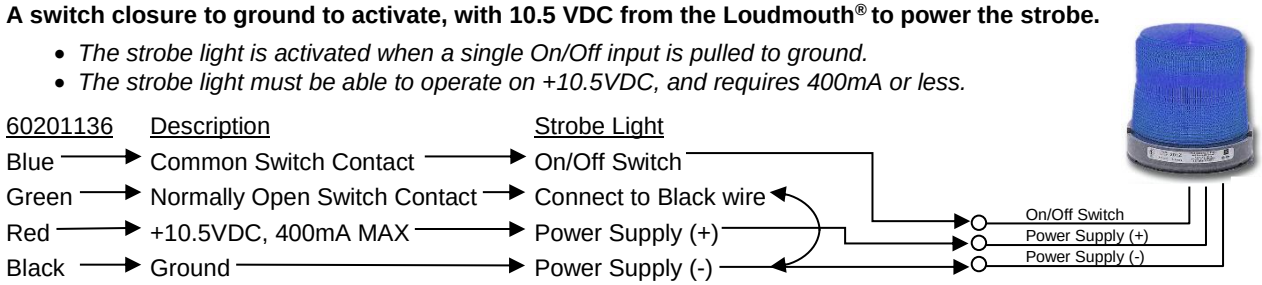
4. Using the switch to connect 10.5 VDC from the Loudmouth®.

- *This allows a strobe light to be DC powered by the Loudmouth® when the relay is closed.*
- *The strobe light must be able to operate on +10.5VDC, and requires 400mA or less.*



5. A switch closure to ground to activate, with 10.5 VDC from the Loudmouth® to power the strobe.

- *The strobe light is activated when a single On/Off input is pulled to ground.*
- *The strobe light must be able to operate on +10.5VDC, and requires 400mA or less.*

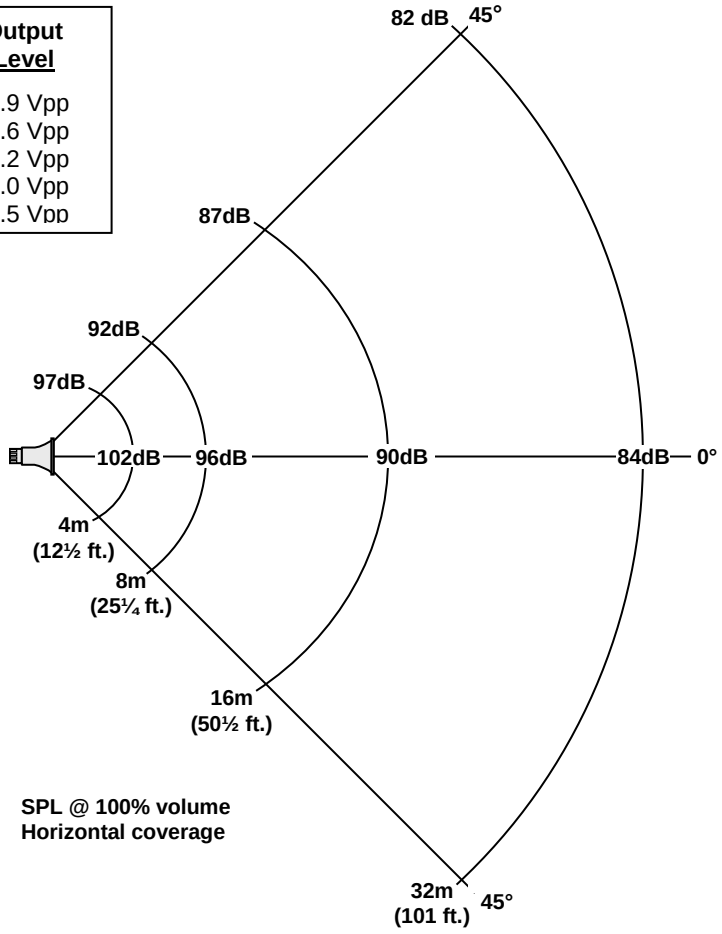


5 Specifications

5.1 Audio Output

Output power	60mW - 5.35W RMS adjustable
Sound pressure level	(see chart below)
Nominal coverage when wall-mounted	Vertical.....+/- 50°
(reference at 0° -5 dB)	Horizontal .....+/- 45°
Audio input level to power amplifier	180 mVPP
Audio output level	1.9 – 18.5 VPP
Audio speaker volume adjustment	10 – 100%
Frequency response	500 – 3000 Hz +/-5dB

Volume Setting	Power Output	SPL@ 16m	Output Level
10%	0.06 W	71 dB	1.9 Vpp
25%	0.33 W	78 dB	4.6 Vpp
50%	1.32 W	84 dB	9.2 Vpp
75%	3.06 W	87 dB	14.0 Vpp
100%	5.35 W	90 dB	18.5 Vpp



SPL @ 100% volume
Horizontal coverage

5.2 Power Requirements

STANDARD OPERATION

Operating Voltage	12 VDC	
Maximum operating current	1.2 A	
Standby current	85 mA	
Typical operating current (8Ω load)	10% volume.....140 mA	75% volume ..... 885 mA
	25% volume.....260 mA	100% volume ..... 885 mA
	50% volume.....680 mA	

BATTERY OPERATION

Standby current	80 mA
Battery Saver sleep current	25 mA
Battery Saver sleep time	programmable, 0.5 – 8 seconds

BP-LM-Li22 EMERGENCY BACKUP BATTERY (optional)

BP-LM-Li22 voltage	11.1 VDC
BP-LM-Li22 capacity	2200 mAH
BP-LM-Li22 charge current	550 mA maximum with battery fully discharged, < 10 mA maintenance charge
BP-LM-Li22 charge time	4 hours for 50% of capacity with battery fully discharged, 90% charged after 24 hours
BP-LM-Li22 battery life	2 hours of continuous talk time at 100% volume, 19 hours of standby time
Maximum current at 11.1 VDC	1.0 A for 1 speaker, 1.6A for 2 speakers

5.3 Loudmouth® Speaker

Speaker impedance	8Ω
Speaker power handling	30W
Speaker physical dimensions	horn diameter = 4” x 6” Overall length = 8”
Speaker enclosure material	ABS plastic
Speaker color	Gray (RAL# 7035)
Speaker weight	26.4 oz.
Speaker mounting	100° pivot mounted to plastic bracket.
Speaker environmental	indoor/outdoor
Speaker connector	RCA Phono plug molded to speaker wire
Speaker wire	25 feet, #20 AWG

WARNING! Audio output to speaker is bridge tied load (BTL). Grounding either connection to the speaker will result in failure of the Loudmouth® audio amplifier.

5.4 RPS-1B Power Cube

RPS-1B physical dimensions	2.93” L (74.5 mm) x 1.97” W (50 mm) x 1.14” H (29 mm)
RPS-1B mounting	Wall-mounted via 120 VAC plug.
RPS-1B connector	2.1mm coaxial DC plug molded to wire, center conductor = positive
RPS-1B environmental	indoor use only
RPS-1B input voltage	120 VAC, 60 Hz
RPS-1B output voltage	12 VDC @ 1.5A

5.5 Loudmouth® Receiver

Receiver physical dimensions	7.125”H x 5.5”W x 3.0”D
Receiver enclosure material	Hi- Impact Polycarbonate Thermoplastic
Receiver color	Black
Receiver weight	1.65 lb. (with AFB-1545 antenna and BP-LM-Li22 battery)
Receiver mounting	2 aluminum brackets to side of radio
Receiver environmental	indoor use only
Audio output connector	RCA phono jack
DC power connector	2.1mm coaxial DC jack (size M)
Antenna connector	50Ω BNC
Antenna	AFB-1545 dual-band (150-170 MHz, 450-470 MHz)
Selective signaling decode capability	• CTCSS (Quiet Call) • Digital Coded Squelch (Digital Quiet Call) • DTMF • Selcall • 2-Tone Paging Decode
Noise squelch sensitivity	Programmable, factory set for 12 dB SINAD
Frequency response	300 - 3000 Hz, de-emphasized
QC/DQC decode time	per EIA Standards
2-Tone decode frequency range	300 – 1500 Hz
Selcall decode standard	EEA tone set, 3-7 digits
DTMF decode standard	3-7 digits
FCC Qualification	FCC Part 15 SDoC
Canada Qualification	RSS-Gen/CNR-Gen

	UHF		VHF / VHF MURS	
Frequency range	450 - 470 MHz		150 – 165 MHz	
Channel steps	6.25 kHz		2.5 kHz	
Frequency stability	+/-1.5 PPM (-30° to +60° C)		+/-1.5 PPM (-30° to +60° C)	
Typical sensitivity (12 dB SINAD)	wide narrow	0.15 µV (-123 dBm) 0.19 µV (-121 dBm)	wide narrow	0.16 µV (-123 dBm) 0.18 µV (-122 dBm)
Adjacent Channel (EIA)	wide narrow	-70 dB -60 dB	wide narrow	-70 dB -60 dB
Spurious rejection	wide narrow	-70 dB -60 dB	wide narrow	-70 dB -60 dB
Image rejection (EIA)	wide narrow	-60 dB -60 dB	wide narrow	-60 dB -60 dB
Intermodulation (EIA)	wide narrow	-65 dB -65 dB	wide narrow	-65 dB -65 dB
QC/DQC decode deviation requirement	wide narrow	500 – 850 Hz 350 – 500 Hz	wide narrow	500 – 850 Hz 350 – 500 Hz
2-Tone decode deviation requirement	wide narrow	2.5 – 3.5 kHz 1.5 – 2.5 kHz	wide narrow	2.5 – 3.5 kHz 1.5 – 2.5 kHz

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.

6 Warranty

WHAT THIS WARRANTY COVERS:

RITRON, INC. ("RITRON") provides the following warranty against defects in materials and/or workmanship in **RITRON Radios and Accessories** under normal use and service during the applicable warranty period (as stated below). "Accessories" means antennas, power cubes, and items contained in the programming and programming/service kits.

WHAT IS COVERED	FOR HOW LONG	WHAT RITRON WILL DO
Loudmouth® Radio Receiver	1 year*****	During the first year after date of purchase, RITRON will repair or replace the defective product, at RITRON's option, parts and labor included at no charge.
Loudmouth® PA Horn Speaker	1 year*	
Accessories	90 days*****	*******After date of purchase*

WHAT THIS WARRANTY DOES NOT COVER:

- Any technical information provided with the covered product or any other RITRON products;
- Installation, maintenance or service of the product, unless this is covered by a separate written agreement with RITRON;
- Any products not furnished by RITRON which are attached or used with the covered product, or defects or damage from the use of the covered product with equipment that is not covered (such as defects or damage from the charging or use of batteries other than with covered product);
- Defects or damage, including broken antennas, resulting from:
  - misuse, abuse, improper maintenance, alteration, modification, neglect, accident or act of God,
  - the use of covered products other than in normal and customary manner or,
  - improper testing or installation;
- Defects or damages from unauthorized disassembly, repair or modification, or where unauthorized disassembly, repair or modification prevents inspection and testing necessary to validate warranty claims;
- Defects or damages in which the serial number has been removed, altered or defaced.
- Batteries if any of the seals are not intact.

IMPORTANT: This warranty sets forth the full extent of RITRON's express responsibilities regarding the covered products, and is given in lieu of all other express warranties. What RITRON has agreed to do above is your sole and exclusive remedy. No person is authorized to make any other warranty to you on behalf of RITRON. Warranties implied by state law, such as implied warranties of merchantability and fitness for a particular purpose, are limited to the duration of this limited warranty as it applies to the covered product. Incidental and consequential damages are not recoverable under this warranty (this includes loss of use or time, inconvenience, business interruption, commercial loss, lost profits or savings). Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. Because each covered product system is unique, RITRON disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

WHO IS COVERED BY THIS WARRANTY: This warranty is given only to the purchaser or lessee of covered products when acquired for use, not resale. This warranty is not assignable or transferable.

HOW TO GET WARRANTY SERVICE: To receive warranty service, you must deliver or send the defective product, delivery costs and insurance prepaid, within the applicable warranty period, to **RITRON, INC., 505 West Carmel Drive, Carmel, Indiana 46032, Attention: Warranty Department.** Please point out the nature of the defect in as much detail as you can. You must retain your sales or lease receipt (or other written evidence of the date of purchase) and deliver it along with the product. If RITRON chooses to repair or replace a defective product, RITRON may replace the product or any part or component with reconditioned product, parts or components. Replacements are covered for the balance of the original applicable warranty period. All replaced covered products, parts or components become RITRON's property.

RIGHTS TO SOFTWARE RETAINED : Title and all rights or licenses to patents, copyrights, trademarks and trade secrets in any RITRON software contained in covered products are and shall remain in RITRON. RITRON nevertheless grants you a limited non-exclusive, transferable right to use the RITRON software only in conjunction with covered products. No other license or right to the RITRON software is granted or permitted.

YOUR RIGHTS UNDER STATE LAW: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Where This Warranty Is Valid: This warranty is valid only within the United States, the District of Columbia and Puerto Rico.