



# User Manual

# RIB-700DMR Digital

# Radio-To-Intercom Bridge™

# Wireless PA Receiver Interface System

The RIB-700DMR Radio-To-Intercom Bridge receiver is designed to interface to an existing wired Public Address Intercom system and allow PA or intercom announcements using your DMR digital two-way radio. Each model can operate on VHF LMR business band or UHF LMR business band 2-way radios, and can work through radio repeaters.

- 1 Channel, DMR Digital, Dual Band Receiver, VHF/UHF, Supports:
  - VHF or UHF Business Band
  - VHF or UHF Business Band CANADA
- Stored Voice Messages – Up to 4 Messages
- Relay Feature for Optional Strobe Light
- Delay Message Playback Feature
- Repeat Message Playback Feature
- Switch Input w/ pre-recorded message
- Provides interconnection to the Public Address amplifier through a high impedance, unbalanced AUX input OR a 600Ω, balanced MIC input.



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# 1

# Getting Started

The RIB-700DMR receiver is designed for interface to existing wired Public Address Intercom systems to allow PA announcements using VHF or UHF business band DMR digital portable radios.

## 1.1 Overview

The RIB-700DMR receiver allows all the wired speakers in a PA/Intercom system to be immediately accessible via a 2-way radio/base station/etc. The RIB-700DMR receiver can be connected to an existing wired system. An LM-700DMR and RIB-700DMR receiver system can be used side-by-side on the same frequency.

### What is the difference between the LM-700DMR Loudmouth® receiver and the RIB-700DMR receiver?

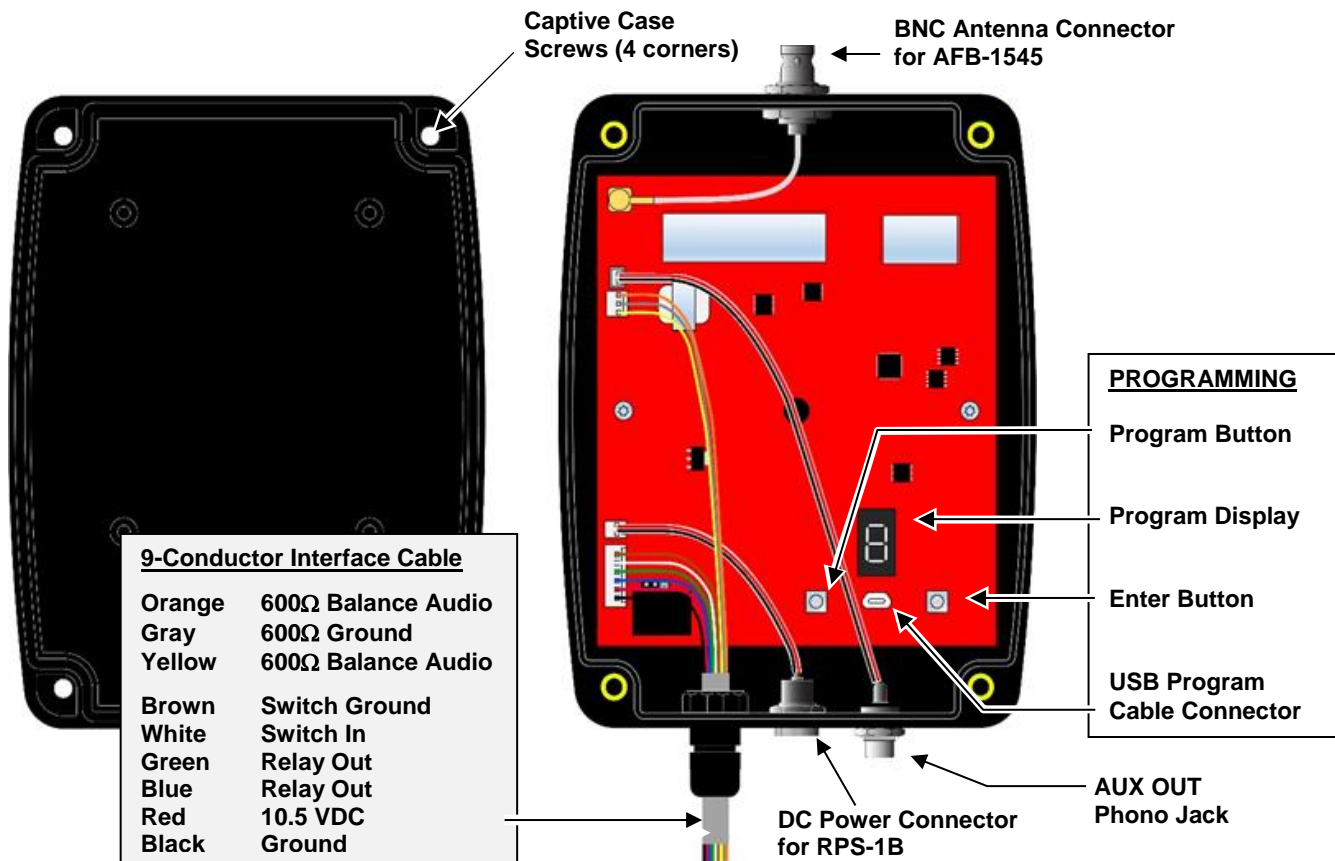
- The LM-700DMR Loudmouth® has a built-in audio amplifier. The built-in audio amplifier allows the LM-700DMR receiver by itself to drive up to 2 Ritron PA horn speakers. The LM-700DMR receiver and an included PA Horn speaker is what we call a stand-alone wireless PA system.
- The RIB-700DMR does not have a built-in PA amplifier. The RIB-700DMR receiver is designed to be connected to an existing PA/intercom system with its own PA amplifier and wired speakers.
- The RIB-700DMR Receiver does not include a back-up battery since it is merely a component of a larger system usually powered by AC and its own battery back-up system.

### Features and Benefits

- The RIB-700DMR is designed to operate in both VHF (150-170 MHz) and UHF (450-470MHz) frequency bands. Provides compatibility with business band 2-way radios, License-FREE VHF business band radios (MURS), Family Radio Service and GMRS DMR radios.
- Provides interconnection to the Public Address amplifier through a high impedance, unbalanced AUX input **OR** a 600Ω, balanced MIC input. Allows personnel to remain mobile while providing access via 2-way radio access to existing PA speakers located throughout the facility.
- “Record and Play” allows use of radios in close proximity to PA speakers without feedback. The RIB-700DMR records/buffers received messages up to 70 seconds in length, then plays them over the PA immediately after releasing the PTT button on the radio.
- Provides a relay switch closure whenever the RIB-700DMR receives a valid incoming message. This can be used to trigger or “key” the PA/Intercom amplifier.
- Provides a Switch Input that will play a pre-recorded voice message when a change in the Switch Input is detected.
- Programmable audio level control adjusts audio output level, and allows custom adjustment for most applications.
- Easy “Plug and Play” installation.
- Pre-announce tone (similar to existing PA systems) with programmable on/off and audio level.
- Field or PC programmable to frequencies within the respective band (i.e. 150-165 MHz, 450-470 MHz).
- The RIB-700DMR is for interface only to an existing PA system, it cannot drive a loudspeaker by itself.
- The RIB-700DMR is for indoor use ONLY.

## 1.2 RIB-700DMR receiver assembly

The RIB-700DMR receiver is on any time power is applied. The receiver case must be opened to program the RIB-700DMR receiver.



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. **Program the RIB-700DMR receiver** per the instructions in the Programming section of this manual, leaving the RPS-1B power supply connected to the radio. Press the **Enter** button twice before re-assembling the case to be sure the RIB-700DMR receiver is reset and ready for operation.
4. Carefully position the case front onto the case back. Secure the case halves by tightening the 4 captive 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 RIB-700DMR case back. The recommended installation is with the brackets on each side as shown, installing the brackets top and bottom may reduce radio range.

## 1.3 Paging the RIB-700DMR receiver and PA speaker

The RIB-700DMR receiver can be used with virtually any other brand of DMR Digital 2-way radios, operating in VHF or UHF frequency band.

### Ritron recommends the use of a dedicated channel frequency for RIB-700DMR operation.

#### When operating on unique frequencies dedicated to RIB-700DMR operation:

- Your 2-way radios must be programmed for a channel dedicated to RIB-700DMR operation.
- Operation is limited to radios programmed with the dedicated RIB-700DMR channel.
- You may need to license additional frequencies for your 2-way radios.

#### Be Advised! When operating on your normal 2-way communication frequencies:

- Messages broadcast on the RIB-700DMR may also be heard on your 2-way radios.
- Receiver messages are not possible when the channel is being used for 2-way communications.
- Any user on your 2-way channel can broadcast over the loudspeaker if it has the same configurations as the RIB-700DMR, such as Color Code and address.
- There is no need to license additional frequencies.

## 1.4 Operating Conditions and Limitations

### FCC Part 15

The Ritron Model RIB-700DMR 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 RIB-700DMR

#### 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 RIB-700DMR is stand-alone receiver that operates in the bands 150-174MHz and 450-470MHz. The RIB-700DMR 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.

# 2

## Installation

Proper installation of the RIB-700DMR receiver is critical to the performance and overall satisfaction with your system. With careful consideration and planning the RIB-700DMR can receive a radio signal from up to a mile away and broadcast it over your wired PA system. This section will help you plan an installation that is best suited for your environment.

### 2.1 Radio coverage site survey

Ritron recommends that you do a “radio coverage site survey” before permanently installing the RIB-700DMR receiver.

**This will require 2 people and 2 charged portable radios.**

Every building is different, and therefore, no “single” rule applies when it comes to where to install the RIB-700DMR receiver and antenna for optimal coverage. Ideally, you would like to install the RIB-700DMR receiver in close proximity to the wired PA amplifier for easy installation. Begin your site survey by locating person #1 at the wired PA amplifier to see if a simple installation is possible. If that is not possible, an alternative site must be found where:

1. AC power is available for the RIB-700DMR receiver.
2. A shielded, twisted pair cable can be routed from the RIB-700DMR receiver to the PA amplifier.

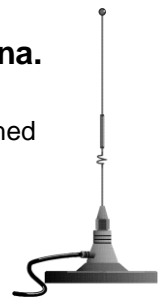
In general, the antenna of the RIB-700DMR receiver is the “pivot” point for all communication. We’re trying to optimize the location of the antenna in order to reduce the obstructions and distance the radio signal must travel in order to get from any point in the desired coverage area to the antenna connected to the RIB-700DMR receiver. By attempting to install the ANTENNA for the RIB-700DMR receiver “in the center” of the desired coverage area, we reduce the distance the radio signal must travel by ½. If you’re attempting to cover a high rise building (e.g. 15 floors), go to a location half way up (e.g. 7th floor), and in the center of the building.



#### **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.



#### **Preparing for the radio coverage site survey:**

1. Charge the radio batteries for at least 12 hours.
2. When charged, make sure both radios are set to the same channel.

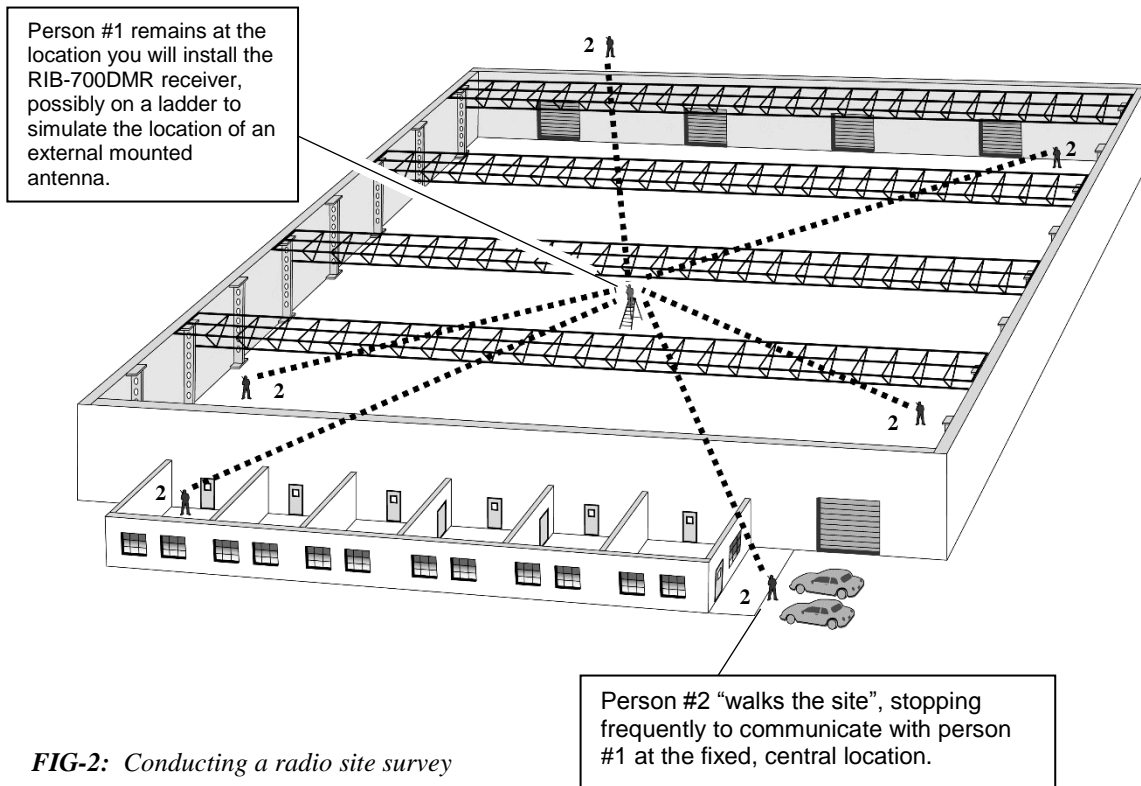
**Note:** If you do not intend to route RIB-700DMR communications through a repeater, the portable radios should be set to a channel programmed for direct radio-to-radio communication, NOT through the repeater.

**Conducting the radio coverage site survey:**

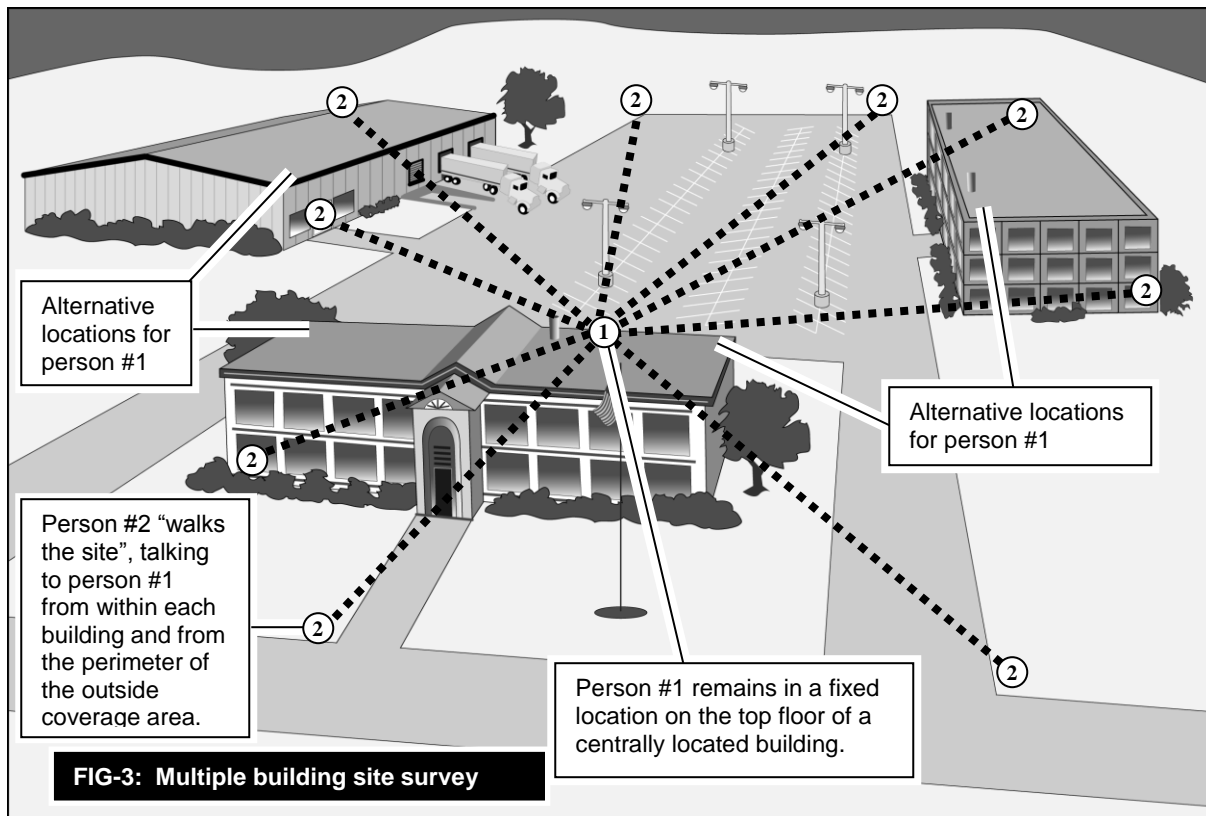
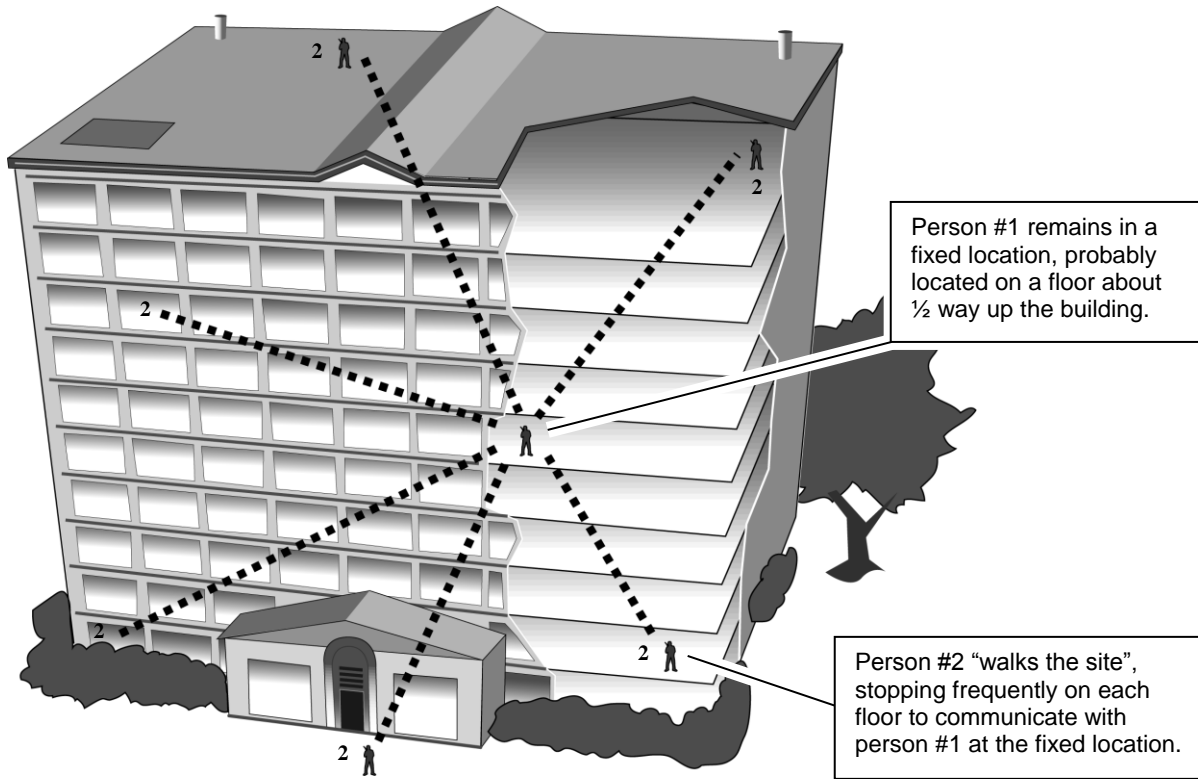
1. Person #1 will take one portable radio and go to the location you would “most likely” install the antenna for the RIB-700DMR receiver (see FIG-2). This person will “simulate” the type of coverage you can expect, IF, the antenna for the RIB-700DMR receiver was installed in this location. If necessary, position this person on a ladder to more accurately mimic the height you intend to mount the antenna.  
BE ADVISED – you may have to try several heights and/or locations before settling on the best location.
2. While person #1 remains stationary, person #2 will take the second radio and “walk the site”. While “walking the site” person #2 must attempt to maintain radio contact periodically with person #1. This survey process will reveal whether or not radio coverage is acceptable IF you install the antenna at the person #1 location. Generally speaking, coverage will be slightly better when the RIB-700DMR receiver and antenna are permanently installed.
3. If coverage is inadequate, Person #1 will need to relocate to a new location and repeat the process until range and coverage are optimized.

**Hints:** Typically, the higher the antenna the better but, NOT always. Every site is different. Thick, reinforced concrete, steel walls and vertical fire panels in ceilings can work to block the penetration of radio signals creating dead spots. You may want to gradually lower the height of the antenna and/or its location and repeat your site survey to see if coverage improves. It is best to change one variable at a time e.g. antenna height, location and then repeat the process.

4. For sites where coverage is desired in multiple buildings, such as an office complex, an external mounted antenna may be required. Before considering an external installation of the antenna, a site survey should be attempted with person #1 positioned inside a centrally located building at the highest possible elevation (see FIG-3). Person #2 will “walk the site”, communicating with person #1 from inside all buildings and at all outside areas where radio coverage is desired.



**FIG-2:** Conducting a radio site survey





## Installing a Magnetic Mount Antenna for the RIB-700DMR Receiver

A magnetic mount antenna should be installed in a location, which is at, or as close as possible to the best location as determined by the site survey. The antenna's magnetic base must be attached to a piece of metal (i.e. steel or iron). The antenna comes with 12 feet of attached co-axial cable\* so you can remotely locate the antenna up to 12 feet away from the RIB-700DMR receiver. The antenna cable MUST run directly away from the RIB-700DMR receiver.

\* Do NOT attempt to cut, shorten or splice this cable in any way.

For best performance the magnetic mount antenna must be:

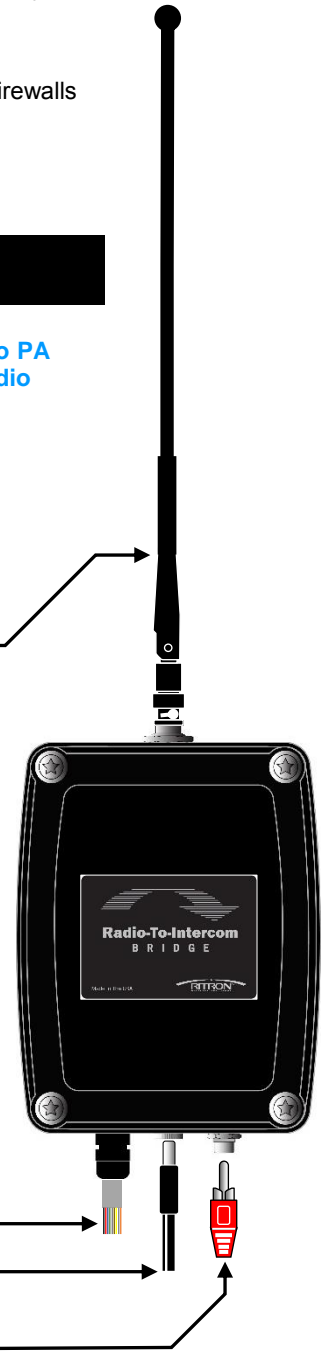
- Mounted on a metal surface e.g. steel or iron. This metal mounting surface MUST be at least 2 feet square with the antenna positioned in the center. The antenna's internal magnet will secure it to the surface. Do NOT place adhesives between the bottom of the antenna mounting surface and the metal mounting surface itself.
- Orient the antenna so that the element itself is vertical. The antenna can be mounted upside down with no effect on performance. Just make sure the antenna element is vertical.
- Mounted away from other metal objects, walls, and structures. Avoid surrounding the antenna or "shielding" it by locating it too closely to metal walls, inside an elevator shaft, in recessed girders, firewalls or ceilings.

## 2.2 RIB-700DMR radio receiver installation

Installation of the RIB-700DMR receiver is critical to the effective radio coverage of the radio PA system. Without proper installation the maximum possible distance between the calling radio and the RIB-700DMR receiver will be significantly reduced.

### Guidelines for installing the RIB-700DMR receiver:

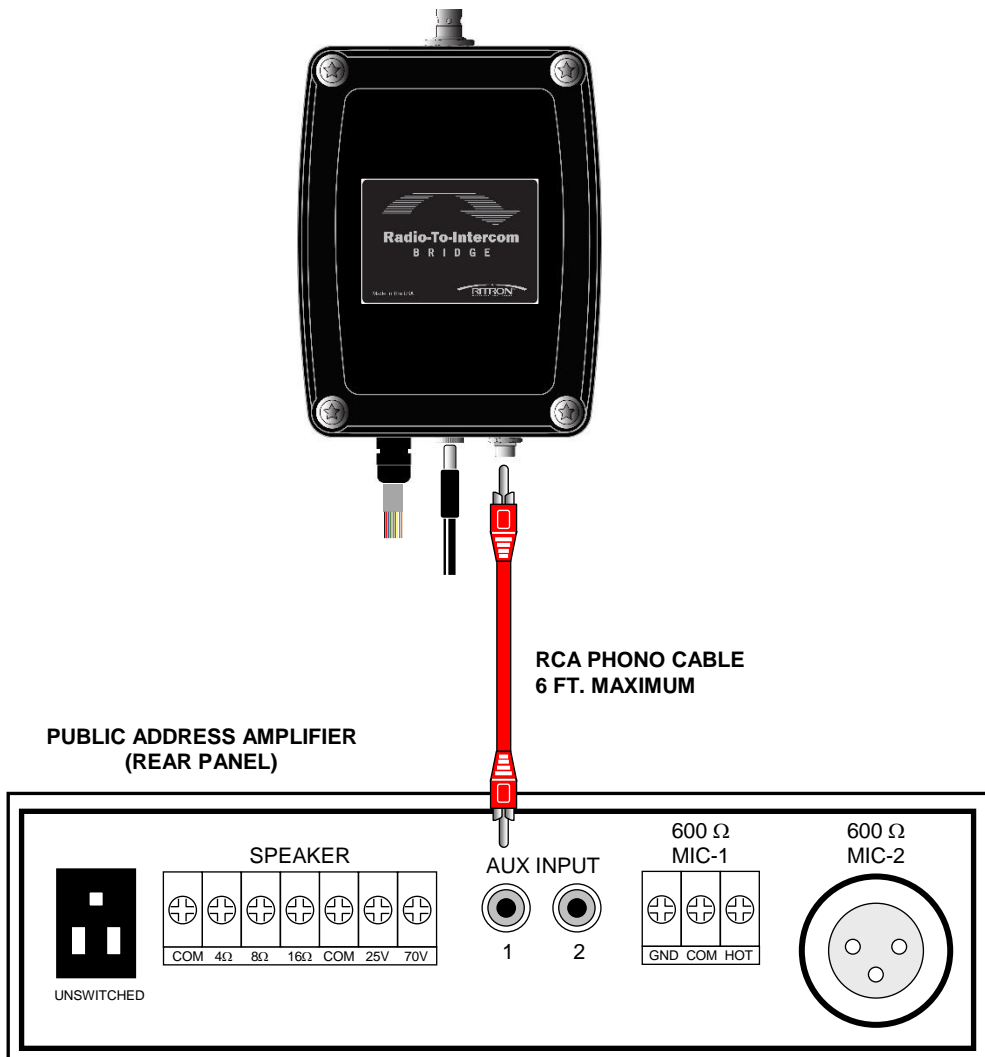
- The radio receiver box must be located inside, out of the elements.
  - For best radio coverage the RIB-700DMR receiver should be installed in a central location and as high up as possible.
  - For maximum radio coverage the antenna should be in a vertical orientation and should not be touching or 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 RIB-700DMR receiver in a high traffic location with the possibility that the receiver box would be struck, become unplugged, or disconnected from the PA amplifier.
- 
- Relay and Switch connections are made via the 9-Conductor Interface cable.
  - Connections to the PA amplifier 600Ω balanced input are made via the 9-Conductor Interface cable.
  - Be sure there is a convenient source of 110VAC power for the RPS-1B power cube.
  - 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.
  - If connection to the PA amplifier is via it's AUX IN, the RIB-700DMR receiver must be within 6 ft. of the PA amplifier.



## 2.3 RIB-700DMR AUX IN installation

The RIB-700DMR receiver can connect to the AUX INPUT of a public address amplifier if the receiver is installed in close proximity to the PA amplifier.

- The RCA phono cable required for interconnection should be no longer than 6 feet. Installations requiring an RIB-700DMR receiver location greater than 6 feet from the PA amplifier must use the 600 $\Omega$  balanced output.
- When using the PA amplifier AUX INPUT it is important to remember that received messages from the RIB-700DMR receiver will be treated exactly the same way any other audio device connected to the AUX INPUT. On many PA amplifiers the AUX INPUT audio is automatically muted whenever audio is present on the MIC INPUT. Check the owner's manual for the PA amplifier to determine AUX INPUT operation and the effect it will have on RIB-700DMR operation.

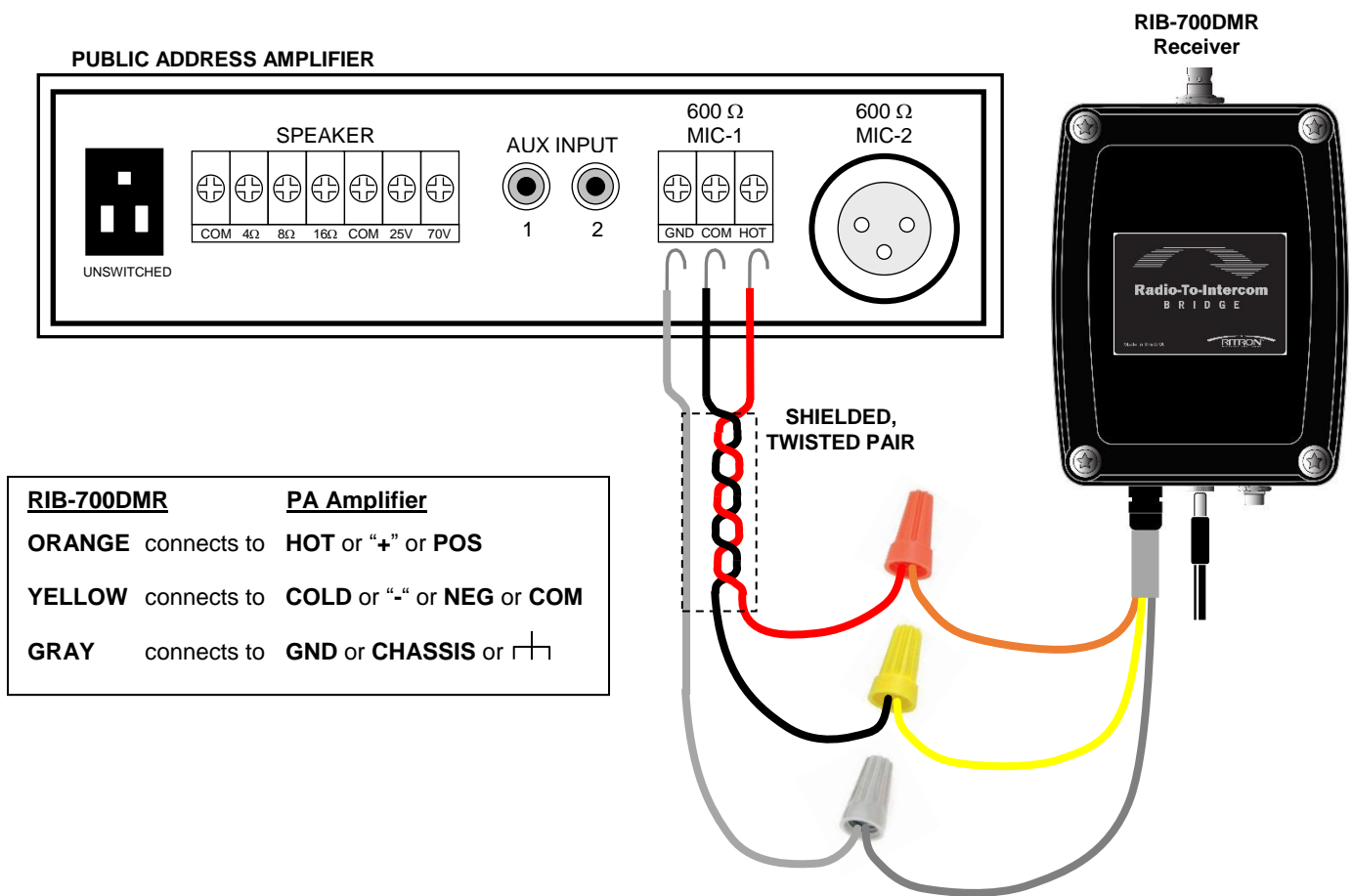


## 2.4 RIB-700DMR 600Ω BALANCED installation

The RIB-700DMR receiver can be connected to the 600Ω balanced MIC INPUT of a public address amplifier when the receiver is not located close to the PA amplifier.

- When an RIB-700DMR radio message is received, the RIB-700DMR receiver will send the audio to the 600Ω microphone input of the PA amplifier.
- A typical balanced cable contains two identical wires, which are twisted together and then wrapped with a third conductor (foil or braid) that acts as a shield. The wires are twisted together, to reduce interference from electromagnetic induction. Twisting makes the loop area between the conductors as small as possible, and ensures that a magnetic field that passes equally through adjacent loops will induce equal but opposite currents, which cancel out. The separate shield of a balanced audio connection also yields a noise rejection advantage over an unbalanced two-conductor arrangement (such as AUX IN) where the shield must also act as the signal return wire. Any noise currents induced into a balanced audio shield will not therefore be directly modulated onto the signal, whereas in a two-conductor system they will be. This also prevents ground loop problems, by separating the shield/chassis from signal ground.
- Connections to the PA amplifier are through the Orange, Yellow, and Gray wires from the RIB-700DMR Interface cable per the table below. Connections between the shielded, twisted pair and the RIB-700DMR Interface cable can be made using 22AWG wire nuts.

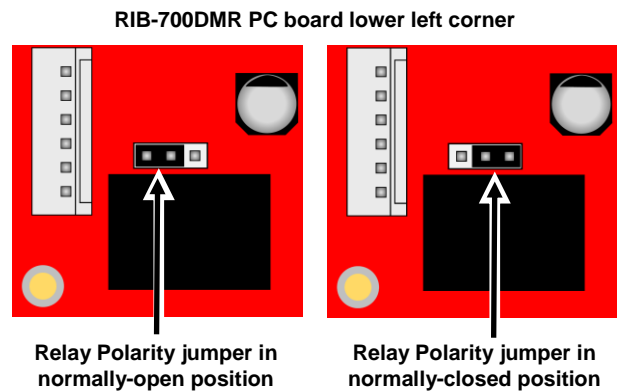
**NOTE:** To minimize noise it is often necessary to connect the ground shield at only one end of the cable.



## 2.5 RIB-700DMR RELAY installation

The RIB-700DMR receiver can be set to provide a relay switch closure any time a valid message is received.

- RELAY connections are made through the RIB-700DMR Interface cable.
- RELAY connections 1 and 2 provide a normally-open SPST switch. When an RIB-700DMR radio message is received, the RELAY switch is closed with connections 1 and 2 shorted.
- RELAY switch connections 1 and 2 can be used to provide a “Priority”, “Override” or “Emergency” signal to the PA amplifier.
- RELAY switch connections are through the **Green** and **Blue** wires from the RIB-700DMR Interface cable. The **Red** and **Black** wires are also used for specific relay applications as detailed below.
- The RIB-700DMR receiver can be set so RELAY switch connections 1 and 2 are normally-closed, and will open when an RIB-700DMR radio message is received. Move the Relay Polarity Jumper as shown at right.



With the Relay polarity jumper in the normally-open position, use the **Green** wire and **Blue** wire for a normally-open switch that closes when the RIB-700DMR receives a message.



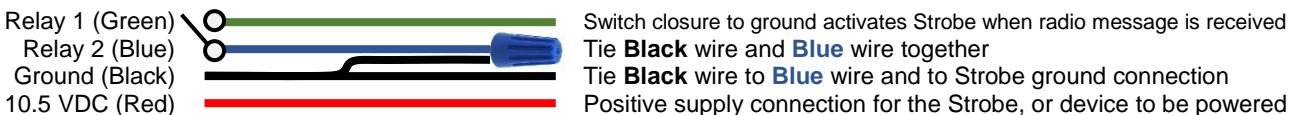
With the Relay polarity jumper in the normally-open position, tie the **Blue** and **Black** wires together, then use the **Green** wire for a switch closure to ground when the RIB-700DMR receives a message.



With the Relay polarity jumper in the normally-open position, tie the **Blue** and **Red** wires together, then use the **Green** wire and **Black** wire to apply 10.5VDC from the RIB-700DMR to a Strobe Light when the RIB-700DMR receives a message.



With the Relay polarity jumper in the normally-open position, power a Strobe Light with the Red wire and Black wire, tie the **Blue** and **Black** wires together, then use the **Green** wire to activate the Strobe Light with a switch closure to ground when the RIB-700DMR receives a message.



# 3

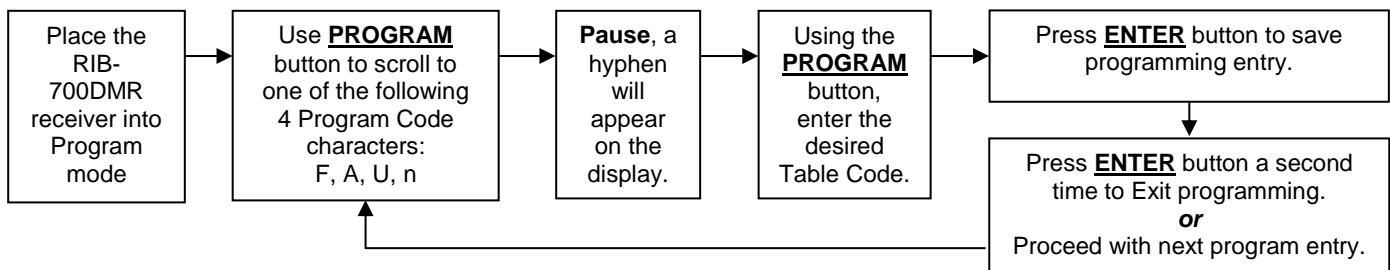
## Programming

For most installations the RIB-700DMR can be programmed in the field without the need for Ritron PC Programmer LM-DMR-PCPS (LM-DMR-PCPK-USB kit with cable). Field programming is accomplished in 3 easy steps. First, the radio frequency is entered. Second, the ID code and Color code are entered (if used). Third, the RIB-700DMR options and audio level setting are entered. If you intend to use the Stored Message features, Stored Message operation must first be “enabled” using the PC Programming Software.

### 3.1 PC Programming Software LM-DMR-PCPS

While most RIB-700DMR programming can be accomplished via Field Programming, the Ritron PC Programming Software (LM-DMR-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 or clone other RIB-700DMR radios to the same settings. Ritron PC Programming kit LM-DMR-PCPK-USB includes the LM-DMR-PCPS programming software and a USB Programming cable.

### 3.2 RIB-700DMR Field Programming Overview



#### Program Codes

#### Table Codes



Readout Frequency programming *or*  
 Enter a Frequency code from **TABLE F: PROGRAMMABLE FREQUENCY TABLE** *or*  
 Enter any valid frequency from 150-170 MHz, or from 450-470 MHz



Enter a 2-digit or 3-digit RIB-700DMR 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 Relay operation
- Set a minimum Relay activation time
- Reset RIB-700DMR to Factory default programming
- Set the RIB-700DMR to play a pre-recorded Switch ON and/or Switch OFF message on switch detection



Readout the programmed Audio level *or*  
 Enter the desired Audio Level as a 2-digit number from 05-99%.



Enter 1 to 9 to write the desired DMR function then the 1 to 8 digit ID code from **Table n**





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 9-digit frequency.





SECTION FREQUENCY (Example 467.85000MHz)

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


Section 5: Canada UHF Business Band 		
Section-Code	Frequency	Color/Dot
5-01	458.6625	
5-02	469.2625	

Section 6: Canada VHF Business Band 		
Section-Code	Frequency	Color/Dot
6-01	151.055	
6-02	151.115	

**Notes**

- BW is the bandwidth in kHz.
- For DMR, BW is 12.5 kHz for all Table Frequencies

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

Section 4: UHF Business Band 		
Section-Code	Frequency	Color/Dot
4-67	466.3375	
4-68	466.3625	
4-69	467.7875	
4-70	467.8375	
4-71	467.8625	
4-72	467.8875	
4-73	467.9125	
4-74	469.4875	
4-75	469.5125	
4-76	469.5375	
4-77	469.5625	
4-78	462.1875	
4-79	462.4625	
4-80	462.4875	
4-81	462.5125	
4-82	467.1875	
4-83	467.4625	
4-84	467.4875	
4-85	467.5125	
4-86	451.1875	
4-87	451.2375	
4-88	451.2875	
4-89	451.3375	
4-90	451.4375	
4-91	451.5375	
4-92	451.6375	
4-93	452.3125	
4-94	452.5375	
4-95	452.4125	
4-96	452.5125	
4-97	452.7625	
4-98	452.8625	
4-99	456.1875	
4-100	456.2375	
4-101	456.2875	
4-102	468.2125	
4-103	468.2625	
4-104	468.3125	
4-105	468.3625	
4-106	468.4125	
4-107	468.4625	
4-108	468.5125	
4-109	468.5625	
4-110	468.6125	
4-111	468.6625	
4-112	456.3375	
4-113	456.4375	
4-114	456.5375	
4-115	456.6375	
4-116	457.3125	
4-117	457.4125	
4-118	457.5125	
4-119	457.7625	
4-120	457.8625	
4-121	461.3175	
4-122	464.8375	



## 3.4 Field Program Advanced Feature Codes

The RIB-700DMR can be field programmed for a variety of additional features. Refer to [Table A](#) for the 2 or 3-digit codes available for field programming. In our example we will program the radio for Record and Play delay operation of 2 seconds. The RIB-700DMR is set from the factory with these  $\checkmark$  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.
  4. Enter the 1<sup>st</sup> 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 2<sup>nd</sup> 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 3<sup>rd</sup> 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
<b>Special Features</b>			
21	Reset to Factory Defaults		Resets RIB-700DMR to Factory default programming.
22	Display Radio Revision		RIB-700DMR will display a sequence of 6 digits to identify operating code revision. This is helpful when troubleshooting the radio.
<b>Pre-Announce Tone</b>			
231	Pre-Announce Tone – On	$\checkmark$	Enable this feature to play a short tone from the RIB-700DMR whenever it receives a signal.
232	Pre-Announce Tone – Off		Disable Pre-Announce Tone
23xx	Pre-Announce Tone Audio Level	25	Enter the 2-digit Pre-Announce Tone Audio Level between 03-99%
<b>Interrupt Mode</b>			
241	Interrupt Mode enable		Enable this feature to allow new incoming messages to interrupt playback of recorded messages. <b>NOTE:</b> If the RIB-700DMR is in the process of <u>receiving</u> a message it cannot be interrupted.
242	Interrupt Mode disable	$\checkmark$	Disable Interrupt Mode

**Table A - Advanced Feature Codes**

<b>Switch and Stored Message operation</b>		
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 Switch 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 Disable	√ Disable all Switch operation
31	Record Switch On Message	After entering the code the radio will record the next received message (45 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 (45 seconds max). The recorded message will playback after recording to allow review of the message.
33	Record Stored Message 1	After entering the code the radio will record the next received message (45 seconds max). The recorded message will playback after recording to allow review of the message.
34	Record Stored Message 2	After entering the code the radio will record the next received message (45 seconds max). The recorded message will playback after recording to allow review of the message.
35	Record Stored Message 3	After entering the code the radio will record the next received message (45 seconds max). The recorded message will playback after recording to allow review of the message.
36	Record Stored Message 4	After entering the code the radio will record the next received message (45 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
43	Play Stored Message 1	Plays the recorded message 1
44	Play Stored Message 2	Plays the recorded message 2
45	Play Stored Message 3	Plays the recorded message 3
46	Play Stored Message 4	Plays the recorded message 4
<b>Relay Operation</b>		
511	Relay operation – Disable	√ Disable relay operation.
512	Relay operation – Enable	Set this option for relay closure when the RIB-700DMR receives a valid signal or on Switch 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.
<b>Record and Play Operation</b>		
61	Recorded Message Replay – 0 times	√ Recorded messages are repeated concurrently for the number of times programmed, with 3 seconds between each repeat. The number of replays can be 1-9.
61x	Recorded Message Replay – # times	
62	Record and Play Disable	√ Record and Play operation is disabled.
62xxx	Record and Play Delay – Sec.	Playback of a recorded received message is delayed for the programmed time whenever a valid incoming message is received. Seconds can be entered as a 1, 2 or 3-digit entry.
631	Playback while Receiving Enable	Allows playback of Recorded messages at programmed Delay time, even if radio is still receiving.
632	Playback while Receiving Disable	√ Playback of Recoded messages can only occur after radio has finished receiving.

## 3.5 Readout and Field Program RIB-700DMR Audio Level

The RIB-700DMR can be field programmed for any audio level between 05-99% by entering the audio level as a 2-digit code.

In our example we will program the radio for 25% Audio Level. The RIB-700DMR is set from the factory with a 50% audio level setting.

### To enter the Audio Level setting:

25

1. Write down the desired audio level.



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 audio level setting.



4. Enter the 1<sup>st</sup> digit of the audio level 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 2<sup>nd</sup> digit of the audio level 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:** Audio level setting below 10% are entered as a 2-digit code with a first digit "0".

### To readout the Audio Level 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 Audio Level setting.

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



AUDIO LEVEL SETTING 25%

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

## 3.6 DMR ID and Color Codes Overview

### DMR ID and Color Codes

Communication between any two DMR digital radios will include the following three codes (combined with Squelch Type):

Color Code	A Color Code from 0 to 15. Color Codes work much like QC/DQC codes in Analog mode. A Color Code is often used in conjunction with a Unit ID or Group ID code to screen-out other unwanted calls on the same radio frequency and to uniquely identify the transmitting radio. Default Color Code is set to 10.
SUID	The Subscriber Unit ID Code is the individual ID for the RIB-700DMR receiver, and can be set to any unique number from 1 to 16,776,415. This can be used to selectively call the RIB-700DMR receiver only. When a transmitting radio on the same frequency as the RIB-700DMR sends an Individual Destination ID message that matches the SUID, the message will be received. By default, the SUID of an RIB-700DMR receiver is set to 1.
Group ID	A Group ID code determines which call-group the RIB-700DMR receiver belongs to, and can be set to a number from 1 to 16,776,415. By default, Group ID is disabled by setting it to a Group ID of 0. The RIB-700DMR can be set to an All-Call Group ID (16,777,215) and will accept all Group ID messages transmitted on the same radio frequency.

### Receive Operation with Squelch Types

The RIB-700DMR can be set to one of four Squelch Types using the Ritron® PC programmer:









OFF	Not recommended	The RIB-700DMR receiver will receive all valid on-frequency DMR voice calls, with no Color Code, SUID, or Group ID code required. Squelch Type OFF is similar to carrier squelch operation in an analog radio.
Color Code	Good	The RIB-700DMR receiver will receive all calls with the programmed Color Code. Squelch Type Color Code is similar to using QC/DQC codes in an analog radio.
ID	Better	The RIB-700DMR receiver will only receive calls with its programmed SUID code, programmed Group Call code, or the All Call code. Squelch Type ID is similar to using 2-Tone, DTMF or Selcall to selectively call the radio in an analog radio.
Color Code + ID	Best	The RIB-700DMR receiver will only receive calls with the programmed Color Code <u>AND</u> with its programmed SUID code, programmed Group Call code, or the All Call code. Squelch Type Color Code + ID is similar to using QC/DQC and 2-Tone, DTMF or Selcall to selectively call the radio in an analog radio.

## 3.7 How to Field Program DMR ID and Color Code







It is strongly recommended that you do not use the OFF squelch type in the RIB-700DMR receiver. Each RIB-700DMR receiver can be programmed with Color Codes, and Group ID code. Refer to Table n for DMR ID and Color Codes. Each RIB-700DMR receiver can be uniquely identified by programming a DMR 1-8 digit SUID code using the digits from 1 to 16,776,415.

In our example we will program the RIB-700DMR to operate with an SUID Code 547, a Color Code 12, and a Group ID code 631.






1. Write down the desired SUID code, Color Code, and Group code.
- 1-8 Digit SUID Code









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. Click the Program button until the program display shows the Program Code "n". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready for DMR ID code programming.
  4. Click the Program button until the program display shows the Table Code "4". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept a 1 to 8-digit SUID code.
  5. Enter the 1<sup>st</sup> digit of the SUID 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 2<sup>nd</sup> digit of the SUID 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. Enter the 3<sup>rd</sup> digit of the SUID sequence 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. Continue entering up to eight digits.
  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.
- 2-Digit Color Code







9. Click the Program button until the program display shows the Program Code "n". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready for DMR ID code programming.
  10. Click the Program button until the program display shows the Table Code "3". Pause—the radio will sound a low tone and show a hyphen across the center of the display to indicate that it is ready to accept a 2-digit Color Code.
  11. Enter the 1<sup>st</sup> digit of the Color 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. Enter the 2<sup>nd</sup> digit of the Color 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.
  13. 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.
- 1-8 Digit Group ID Code






14. Click the Program button until the program display shows the Program Code "n". Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to accept DMR ID code programming.
  15. Click the Program button until the program display shows the Table Code "5". Pause—the radio shows a hyphen across the center of the display to indicate that it is ready to accept a 1 to 8 digit Group ID code
  16. Enter the 1<sup>st</sup> digit of the Group ID 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.
  17. Enter the 2<sup>nd</sup> digit of the Group ID 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.
  18. Enter the 3<sup>rd</sup> digit of the Group ID sequence 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. Continue entering up to eight digits.



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

### To readout DMR ID and Color Codes:



- With the radio in program mode, click the **PROGRAM** button until the program display shows the Program Code "n". 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 DMR code to be readout.



- Click the Program button until the program display shows the first digit of the DMR code to be readout. Pause—the radio will show a hyphen across the center of the display to indicate that it is ready to readout the DMR ID or Color Code. (Refer to Table n for the first digit of the DMR code)

- Press and release the **ENTER** button. In this example the display will show the 3-digit SUID code, followed by a hyphen.



3-Digit SUID Code

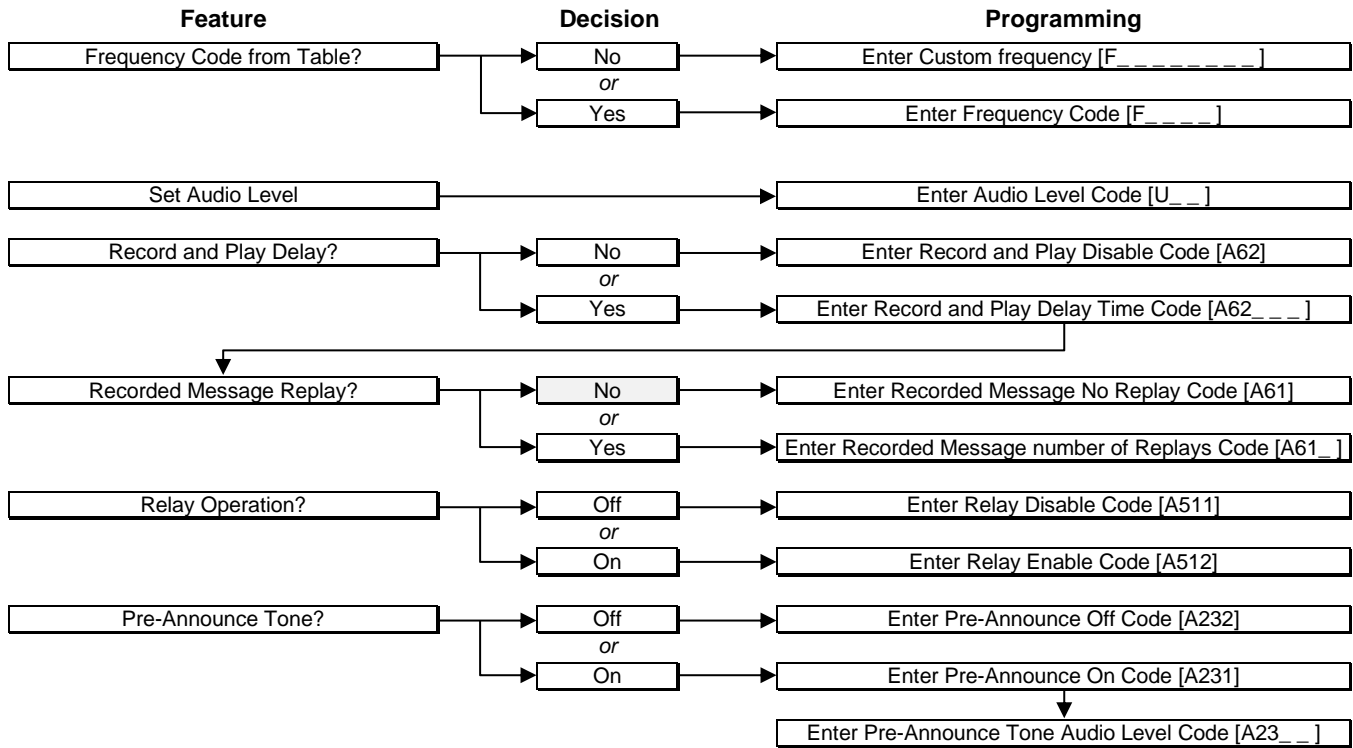
- Press the **PROGRAM** button to continue programming, or press the **ENTER** button to exit program mode.

### Table n - DMR ID AND COLOR CODES

Table Code	Feature	Description
<b>Other DMR Codes</b>		
0x	Response to All-call ID	0= Enabled 1=Disabled
1x	Squelch type	1=off 2=Color Code 3=ID 4=ID + Color Code
2x	Repeater Slot	1 or 2 (Only applicable when used with a repeater)
3xx	Color Code	The RIB-700DMR can be set for Color Code of 00-15. Programming Color Code will have no effect without first setting squelch type for Color Code or ID + Color Code.
<b>DMR ID Codes</b>		
4xxxxxxx	Subscriber Unit ID (SUID) code	The RIB-700DMR can be programmed for a 1-8 digit SUID code for unique identification.
5xxxxxxx	RX Group ID code	The RIB-700DMR can be programmed for a 1-8 digit Group ID code. Programming an Group ID code will have no effect without first setting squelch type for ID or ID + Color Code.

**NOTES:** 8-digit ID codes must be in the 1 to 16,776,415 range. If the RIB-700DMR is to only receive messages targeted for it, the Squelch Type must be set for "ID" or "ID + Color Code". If Squelch Type is set to "off" all traffic will be heard.

## 3.8 Field Programming Flow Chart



# 4 Operation

Once installed, operating the RIB-700DMR radio receiver requires no human contact. Portable, base station or mobile 2-way radios can deliver voice messages directly to a PA system with a simple press of the PTT button for either live or recorded playback. This section describes the subtle differences in operation for various RIB-700DMR options and installations.

## 4.1 Basic Operation

Basic operation is defined as the RIB-700DMR receiver programmed on a dedicated radio frequency using DMR protocol. The receiver is also programmed for 50% Audio Level and a pre-announce tone.

1. Move to an area that is away from any PA system speaker to prevent feedback.
2. Be sure the microphone on the calling radio is pointed away from any PA system speaker.
3. Set the portable, base station, or mobile radio to the RIB-700DMR channel.
4. Monitor the channel before transmitting to be sure there are no other radio users on the RIB-700DMR 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 PA system speakers. If other radios are operating on the RIB-700DMR 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 Record and Play

When 2-way radios are used in the same area as the PA system speakers, feedback may result that can render the system unusable. For those applications the RIB-700DMR receiver can be programmed to record the incoming messages and play them back over the PA system speakers. Set the portable, base station, or mobile radio to the RIB-700DMR channel.

1. Monitor the channel before transmitting to be sure there are no other radio users on the RIB-700DMR 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 RIB-700DMR receiver. If other radios are operating on the RIB-700DMR 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 PA system speakers 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 70 seconds.
- The RIB-700DMR 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 RIB-700DMR 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.



## 4.3 RIB-700DMR Options

Certain RIB-700DMR options affect operation as follows:

### **Pre-Announce Tone**

With this feature enabled the RIB-700DMR 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 RIB-700DMR 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 Record and Play Delay and Recorded Message Replay.

### **Record and Play Delay**

The playback of a received recorded message is delayed for the Record and Play Delay time whenever a valid incoming message is received. Record and Play is enabled any time a Record and Play Delay is programmed. The RIB-700DMR can also be set to start playback as soon as the received incoming message is complete.

### **Recorded Message Replay**

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.

## 4.4 How to Minimize Feedback

Feedback is the result of the PA system speaker audio getting back into the microphone of the radio being used to access the RIB-700DMR receiver. This is a problem with the calling radio, not the RIB-700DMR receiver. Although the RIB-700DMR receiver is not intended to be used in the same area as the calling radio, steps can be taken to minimize the feedback effect.

### **Reduce RIB-700DMR receiver audio level**

Do not set the RIB-700DMR receiver audio level any higher than is necessary to clearly hear the PA messages.

### **Maintain distance between the calling radio and the PA system speakers**

In general, the calling radio should be at least 50 feet away from the speaker when the RIB-700DMR receiver 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 immediately after you have finished sending it to the RIB-700DMR receiver. See Section 3.4 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.

## 4.5 Switch Input Operation

The RIB-700DMR will play a pre-recorded voice message when a change in the Switch Input is detected. The RIB-700DMR Interface cable is used to connect the RIB-700DMR 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 PA system to test for PA activation, volume, or any other programmed attribute. A separate test should also be performed using a radio to transmit to the RIB-700DMR receiver.











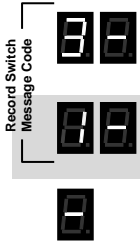
### Switch Message Operation

- The Switch Detect On Message is automatically played when the Switch Input is pulled low.
- The Switch Detect Off Message is automatically played when the Switch Input is released from ground.
- Switch Messages will ONLY played over the RIB-700DMR receiver/speaker that the switch is directly connected to, there is no wireless connection to other RIB-700DMR or LM-700DMR receivers. If a switch is directly connected to two different receivers, the Switch Message will then play over both receivers.
- Switch messages will not be played if the radio channel is busy, but instead will wait for the channel to clear before playing.
- Switch messages are played after the Pre-announce tone if the radio is programmed for this features.
- Switch messages can be programmed for Play Delay or Repeats.
- Switch messages can be up to 45 seconds long.

### To record a Switch Input Message:

In the following example we will program the RIB-700DMR to operate with a Switch On message only.

- |   |   |
|---|---|
| <b>291</b>  | 1. Refer to <a href="#">Table A – Switch Operation</a> and write down the code to enable the Switch On Message Only.  |
| <b>31</b>   | 2. Refer to <a href="#">Table A – Switch Operation</a> and write down the code to record the Switch On message.   |
|  | 3. <b>Place the radio into Program / Readout Mode</b> by pressing and holding the <b>PROGRAM</b> button. A "P" will appear on the display. Release the <b>PROGRAM</b> button when a hyphen appears and the radio is ready to accept the first digit of your program entry.                                |
|  | 4. Scroll to the character "A" by clicking the <b>PROGRAM</b> button until the program display shows the correct character. <b>Pause</b> —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. |
|  | 5. Enter the 1 <sup>st</sup> digit of the Enable Switch On Message Only code by clicking the <b>PROGRAM</b> button until the program display shows the desired number. <b>Pause</b> —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 2 <sup>nd</sup> digit of the Enable Switch On Message Only code by clicking the <b>PROGRAM</b> button until the program display shows the desired number. <b>Pause</b> —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 3 <sup>rd</sup> digit of the Enable Switch On Message Only code by clicking the <b>PROGRAM</b> button until the program display shows the desired number. <b>Pause</b> —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 <b>ENTER</b> 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.  |
|  | <b>NOTE:</b> 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. Scroll to the character "A" by clicking the <b>PROGRAM</b> button until the program display shows the correct character. <b>Pause</b> —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.      |



10. Enter the 1<sup>st</sup> 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.
11. Enter the 2<sup>nd</sup> 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 Message to the RIB-700DMR. When the PTT is released the RIB-700DMR will playback the recorded Switch Message for review..
14. Press the **PROGRAM** button to continue programming or press the **ENTER** button to exit program mode.

## 4.6 Relay Operation

Radios are equipped with a relay that can be set for a relay switch closure when the RIB-700DMR receives a valid signal. The relay can be used to provide a “Priority”, “Override” or “Emergency” switch closure to the PA amplifier, enabling the received signal to play over the PA system. The Blue and Green wires on the 9-Conductor Interface Cable are used to connect the relay switch.

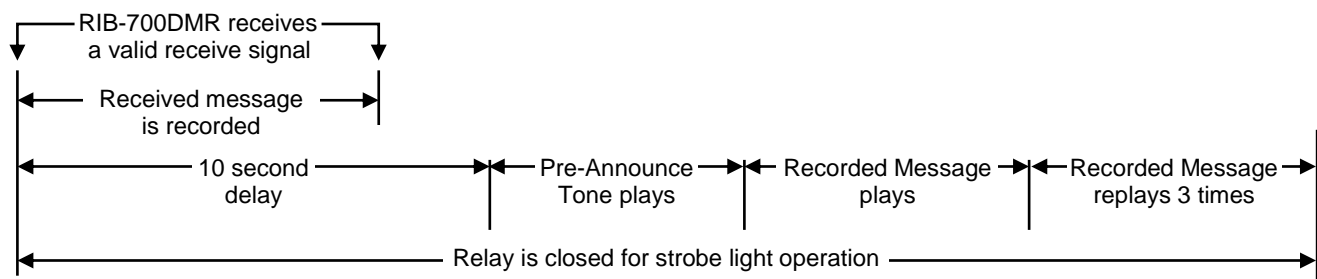
### With the Relay Option enabled:

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 Record and Play Delay 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 Recorded Message Replay is programmed	The relay switch will close as soon as a valid signal is received, will remain closed for any Record and Play Delay time and until the recorded message has been repeated in it’s entirety.

### Radio Operation Timeline

The following timeline explains operation for the RIB-700DMR receiver. In this example the RIB-700DMR 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

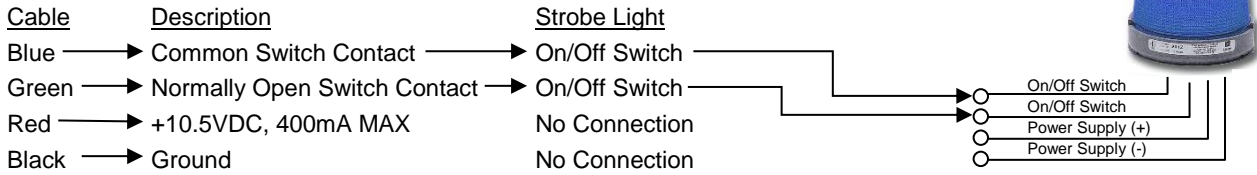
The RIB-700DMR relay can be used to operate a strobe light in a number of configurations using the 9-conductor interface cable. The cable can provide:

- 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.

## Connecting the Relay Switch to a Strobe Light

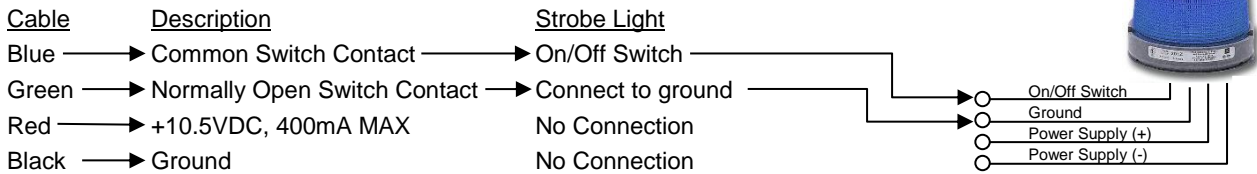
### 1. A simple switch closure capable of handling 3A current.

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



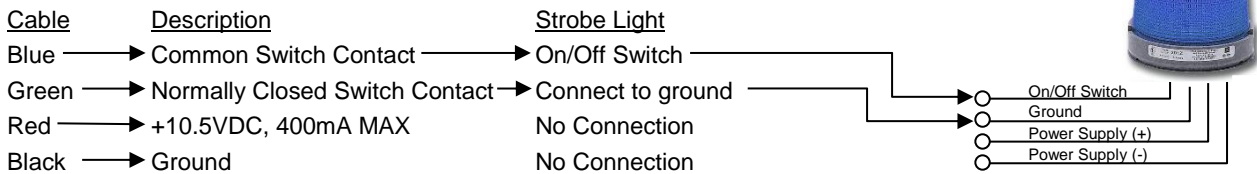
### 2. A switch closure to ground to activate.

- 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.



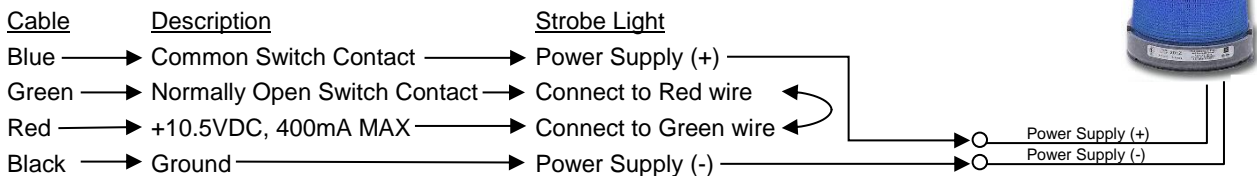
### 3. A switch opens to release from ground to activate.

- The strobe light is activated when a single On/Off input is released from ground.
- The RIB-700DMR relay must be configured for normally-closed operation. Refer to section 2.5 RIB-700DMR RELAY installation.
- The strobe light requires its own external power, either AC or DC.



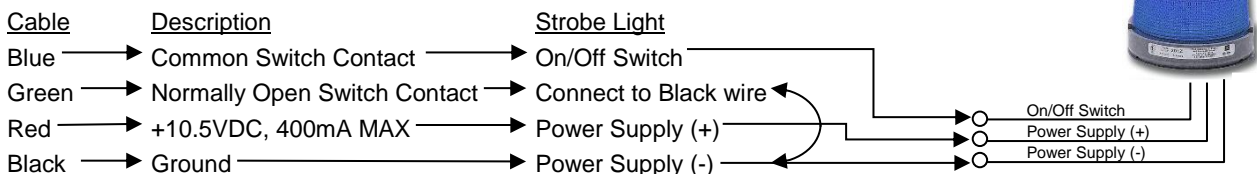
### 4. Using the switch to connect 10.5 VDC from the RIB-700DMR.

- This allows a strobe light to be DC powered by the RIB-700DMR 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 RIB-700DMR 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.



## 4.7 Stored Message Operation

**Note:** To enable and configure the Stored Message feature you will need the LM-DMR-PCPS PC Programming Software.

The RIB-700DMR receiver can be programmed to selectively play up to 4 different pre-recorded voice messages. Each pre-recorded message is activated when the RIB-700DMR receives an identical matching signal transmitted from a companion DMR 2-way radio (i.e. a portable radio).

- Each of the 4 Stored Messages must be programmed with a unique Color Code and/or ID Code, and must be different than normal “Live” operation.
- The 4 Stored Messages will operate on the same radio frequency as normal “Live” operation. The RIB-700DMR receiver can only receive 1 radio frequency.
- The Stored Message is automatically played when the matching DMR signal is received.
- When the matching Stored Message DMR signal is received, incoming voice audio from the companion DMR 2-way radio will not be heard through the RIB-700DMR, instead the Stored Message will be played.
- The matching Stored Message transmission from the companion 2-way radio can be brief, just long enough for the RIB-700DMR receiver to recognize the signal.
- Each of the 4 Stored Messages can be configured individually with its own Pre-Announce Tone, Message Replay, Message Delay, and Relay Operation.
- Stored Messages can be up to 45 seconds long.
- When recording a Stored Message over-the-air, as long as the DMR 2-way radio frequency matches the RIB-700DMR radio frequency the Stored Message can be recorded into the RIB-700DMR receiver, regardless of Color Code, SUID, Group ID and Squelch Type.
- The Stored Messages can be recorded using the LM-DMR-PCPS PC Programming software, or via Field Programming. However, the LM-DMR-PCPS PC Programming Software is required to enable and configure the RIB-700DMR for the Stored Message feature.
- Using the PC Programmer, the Stored Messages in any RIB-700DMR can be saved and then recorded into another RIB-700DMR receiver.
- Stored Messages do not necessarily have to be voice, in some applications a “buzzer”, “whistle” or other alert tone may be desirable.

For more details, refer to section 3.6 DMR ID and Color Codes Overview and RITRON LM DMR Series Programmer User Manual.

### To record a Stored Message:

In the following example we will record Message 1.

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1. Refer to [Table A](#) and write down the code to Record Stored Message 1.

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 “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 Stored Message code.

4. Enter the 1<sup>st</sup> digit of the Record Stored 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.

5. Enter the 2<sup>nd</sup> digit of the Record Stored 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.

6. Press and release the **ENTER** button to place the radio into record mode. A hyphen will appear on the program display.

7. Using your portable or base radio, transmit the Record Stored Message to the RIB-700DMR. When the PTT is released the RIB-700DMR will playback the recorded Record Stored Message for review.

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

# 5

# Specifications

## 5.1 General

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 lb. 15 oz. (with AFB-1545 antenna)	
Receiver mounting	2 aluminum brackets to side of radio	
Receiver environmental	indoor use only	
RELAY	Connection Output	RIB-700DMR Interface cable - Green, Blue Switch closure on received signal
AUX	Connector Maximum Output Output Impedance	RCA Phono jack 1.35 VAC peak (RIB-700DMR received audio is adjustable) 100Ω, unbalanced
600Ω MIC OUT	Connection Maximum Output Output Impedance	RIB-700DMR Interface cable Yellow (COLD), Orange (HOT), Gray (ground) 200mVAC peak 600Ω, balanced
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)	

## 5.2 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

## 5.3 RIB-700DMR Receiver

FCC Qualification	FCC Part 15 SDoC	
IC ID	CAN RSS-Gen/CNR-Gen	
	<b>UHF</b>	<b>VHF</b>
Frequency range	450 - 470 MHz	150 – 170 MHz
Channel steps	3.125 kHz	2.5 kHz and 3.125kHz
Frequency stability	+/-1.5 PPM (-30° to +60° C)	+/-1.5 PPM (-30° to +60° C)
Typical RF Front-End sensitivity (12 dB SINAD)	-120dBm	-120 dBm

**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.

<u>WHAT IS COVERED</u>	<u>FOR HOW LONG</u>	<u>WHAT RITRON WILL DO</u>
RIB-700DMR 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
Accessories	90 days*	<i>*After date of purchase</i>

## 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.**