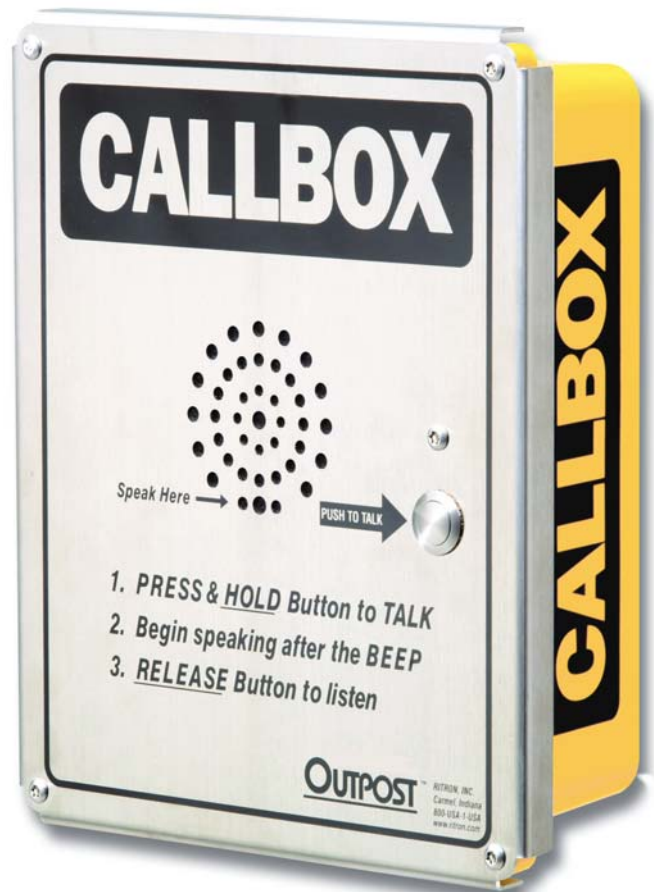


Go Beyond Normal Limits...<sup>SM</sup>



# “ 6 “ SERIES OUTPOST™ Wireless Callbox Owner's Manual



This manual covers the Basic and XT models



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06/04

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**THANK YOU FOR CHOOSING RITRON**

Congratulations on your purchase of the OUTPOST™ Callbox. Your new radio is the culmination of RITRON's 27 years of designing, manufacturing, and supplying reliable, professional wireless communication products. Ritron wireless products will improve the operation, safety, and profitability of any organization by providing instant voice communications between employees throughout the workplace.

## OUTPOST™ CALLBOX MODEL NUMBERS.....

### VHF MODELS

**RQX-156** ..... VHF Basic Callbox

**RQX-156-XT** .. VHF Vandal-Resistant XT Callbox

### UHF MODELS

**RQX-456** ..... UHF Basic Callbox

**RQX-456-XT** .. UHF Vandal-Resistant XT Callbox

The model number appears on the serial label located on the front of the basic Callbox enclosure, behind the removable faceplate. On XT models the standard enclosure is located inside the fiberglass reinforced vandal-resistant box.

**VHF** radios are designed to operate within the 15 MHz band between factory standard 150 and 165 MHz.

**UHF** radios are designed to operate within the 20 MHz band between factory standard 450 and 470 MHz.



Basic Callbox

XT Callbox

## ABOUT THE OUTPOST™ CALLBOX.....

The OUTPOST™ Callbox is a 2-way radio transceiver used to communicate directly with portable, mobile and stationary radios, or through radio repeaters. Each OUTPOST™ Callbox is equipped with the following features:

- **Field programming.** Field programming allows you to quickly program your radio in the field without the need for a PC programmer. Each radio can be field programmed to one of 26 VHF or 77 UHF channel table frequencies, and one of 51 QC or 104 DQC interference eliminator codes.
- **VHF “License Free” frequencies.** VHF models can be programmed from a list of 5 MURS frequencies that does not require FCC licensing.
- **QC (Quiet Call) interference eliminator codes.** The Callbox can be programmed from a list of 51 QC Sub-audible codes.
- **DQC (Digital Quiet Call) interference eliminator codes.** Each Callbox can be programmed from a list of 104 DQC Sub-audible codes.
- **2-Tone decoding.** The Callbox can be programmed to decode unique 2-tone codes for selective signaling of the Callbox or Switch Output activation in GateGuard™ applications.
- **Wide or narrow band operation.** The radio can be programmed for wide or narrow operation by selecting from a wide variety of field programmable table frequencies, or by PC programming.
- **Volume Level.** Field programmable for **HIGH** or **MEDIUM** and PC programmable to 2 – 100% volume level.
- **Battery powered.** The OUTPOST™ Callbox is powered by 6 Alkaline, D-cell batteries that can operate the radio for up to one year or 7,000 transmissions.
- **Low battery alert.** The Callbox will send a short beep at the end of each transmission when the batteries approach end-of-life. This allows the user plenty of time to replace the batteries and assure uninterrupted service.
- **Companded audio.** The radio can be field programmed to enable or disable audio companding. Companding will compress transmit audio before sending it, and expand receive audio before it is heard on the speaker to reduce the background noise common in radio communications.
- **Sensor input.** Each OUTPOST™ has a single sensor input that will cause the radio to send an alert tone when sensor input is detected.
- **Switch output.** The OUTPOST™ has a single 1-Amp switch output that can be activated when the Callbox decodes (receives) a unique 2-Tone encode; e.g. to **OPEN** a gate or to turn **ON** a light.
- **“Automatic Turn-Off” or “Intercom” operation.** The OUTPOST™ Callbox can operate in the standard “Automatic Turn-Off” mode, where the radio is normally **OFF** until the Call Button is pressed, or can be programmed for “Intercom” operation where the radio is always **ON**.
- **High / Low power output.** The OUTPOST™ can be field programmed for transmitter power output.
  - **VHF:** 1 Watt
  - **UHF:** 1 Watt or 2\* Watt

\*See “Special Note” on Page 3.

## OPERATING THE OUTPOST™ CALLBOX WITH FACTORY SETTINGS ..

The OUTPOST™ Callbox will not receive a call unless the OUTPOST™ first initiates a call.

**The OUTPOST™ automatically shuts off whenever there is inactivity for ten (10) seconds.**

### To Initiate a Call

Press and hold the **ON/PTT** Button on the unit, listen for the “beep”, then begin speaking into the MIC. For best communication, speak as closely as possible into the microphone. The OUTPOST™ has been designed for the caller to speak into the OUTPOST™ Callbox from a distance of 3 feet or less.

### To Receive a Response

1. When you have finished speaking, release the **ON/PTT** Button.
2. Any reply will be heard through the OUTPOST™ speaker. If a reply is not received within 10 seconds of releasing the **ON/PTT** Button, the unit sounds a low double tone and shuts off automatically.

3. To call again, press and hold the **ON/PTT** Button and begin speaking after the “beep”.

### Operation Notes

The OUTPOST™ must be powered with D-cell Alkaline batteries **ONLY**, or alternatively, with an external 12 VDC power supply. When using an external 12 VDC supply, Alkaline or NiCd batteries can be used as back-up.

If there has been no activity for 10 seconds, i.e. either the **ON/PTT** Button has not been pressed and released or a reply has not been received, the unit automatically shuts **OFF**. The automatic turn-off feature is designed to increase battery life.

### Low battery alert

The Callbox will send a short beep at the end of each transmission when the batteries approach end-of-life. This allows the user plenty of time to replace the batteries and assure uninterrupted service.

## EXPOSURE TO RADIO FREQUENCY ENERGY.....

These products generate radio frequency (RF) energy when the ON/PTT button on the front of the unit is depressed. These products have been evaluated for compliance with the maximum permissible exposure limits for RF energy at the maximum power rating of the unit when using antennas available from RITRON.

These products are not to be used by the general public in an uncontrolled environment unless compliance with the Uncontrolled / General Population limits for RF exposure can be assured.

Antennas other than those available from RITRON listed below have not been tested for compliance and may or may not meet the exposure limits at the distances given. Higher gain antennas are capable of generating higher fields in the strongest part of their field and would, therefore, require a greater separation from the antenna.

**RQX-456:** For both the AFB-1545 and RAM-1545 antennas, at the 20 cm (7.9 inches) minimum expected separation distance and greater, the maximum RF exposure is well below the General Population / Uncontrolled limits.

**RQX-156:** To comply with the General Population/Uncontrolled limits, all persons must be at least 7.9 inches (20 cm) from the AFB-1545 antenna which is supplied by RITRON to be attached directly to the top of the unit. For the RITRON RAM-1545 magnet mount antenna, which can be located away from the unit, all persons must be at least 10.8 inches (28 cm) from the antenna.

To limit exposure to RF energy to levels below the limit, please observe the following:

- Use only the antenna(s) available from RITRON for these models. **DO NOT** operate the radio without an antenna.
- Keep talk times as short and infrequent as possible. **DO NOT** depress the ON/PTT button when not actually wishing to transmit. These radios are equipped with an internal timer to limit continuous transmit times.
- When transmitting, make certain that the distance limits for the particular model in use are observed.
- **DO NOT** allow children to operate the radio.

When used as directed, this series of radios is designed to comply with the FCC’s RF exposure limits for “Uncontrolled / General Population”. In addition, they are designed to comply with the following Standards and Guidelines:

- FCC OET Bulletin 65, Edition 97-01, Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electro-magnetic Fields-RF and Microwave.

**APPLYING POWER TO THE OUTPOST™ CALLBOX .....**

The OUTPOST Callbox may be powered by six D-cell batteries, through an external source of +12 VDC, or by a combination of both. Powering the unit from internal batteries will allow for an installation that does not require wiring to an external source of power. To provide a useful amount of battery life, one of two battery saver options should also be used.

**Internal Batteries**

Six D-cell batteries may be installed in the internal battery holder for a no-wire installation. If internal batteries are used, a low battery alert signal will be transmitted when the battery voltage drops below a programmed value. When the low battery alert is sent from the Callbox the batteries should be replaced.

**! SPECIAL NOTE:** We recommend not operating the UHF model set to High Power when using Alkaline batteries. Due to the nature of alkaline batteries your transmit power output will decrease rapidly as the batteries are depleted.

**\* External +12 VDC**

The unit may be powered by an external source of +12 VDC. This source should be filtered, with minimum noise and hum, and capable of supplying at least 1 Ampere. Refer to optional **RPS-EXPO** 110 VAC to 12 VDC cube power supply.

**\* External +12 VDC with Battery Back-up**

It is recommended that if an external source of power is used, that the internal batteries be installed as a back-up against loss of power. If this option is chosen, the Callbox should be PC programmed for "External +12 VDC". If external +12 VDC is lost the Callbox will send a low battery alert signal at the end of each transmission to notify the listeners that the unit is no longer operating on external power.

\* If either of these options is used, an additional hole and strain relief or conduit will need to be installed into the callbox.

**POWER MANAGEMENT OPTIONS .....**

There are three power management options available the OUTPOST™ Callbox:

**Automatic Turn-Off**

In this mode, the unit will automatically turn itself off after a programmed period of inactivity (**no transmissions made and no calls received**) has occurred. Once the unit has turned itself off, it can only be turned back on by depressing the **On/PTT** Button. The programmed period of no activity necessary before the unit turns itself off is called the **RQX Reset Time**. RQX Reset Time and Automatic Turn-Off can both be programmed via the RITRON RQX Series PC Programmer. Automatic Turn-Off mode is the factory default mode for power management with an RQX Reset Time of 10 seconds.

**Battery Saver**

This mode is similar to the Automatic Turn-Off mode except that the unit does not turn itself off after the

RQX Rest Time has passed with no activity. Instead it reverts to a mode where the unit goes to sleep and periodically wakes up to test for receive activity on the channel. The time between wake up states can be set using the RITRON RQX Series Programmer to between 0.5 and 8 seconds. Longer times result in better battery life, but increase the chances that activity on the channel may be missed. The unit will come out of this mode when activity is detected during the wake-up state or the **On/PTT** button is depressed. The Automatic Turn-Off and Battery Saver modes cannot be used together.

**Neither Automatic Turn-Off nor Battery Saver Used**

If neither Automatic Turn-Off nor Battery Saver are used the unit will consume the largest amount of current, but is always ready to instantly receive messages. This mode should only be considered if an external source of +12 VDC is available (see above).

**CALLBOX CONTROLS AND CONNECTORS.....**

**Antenna Connector**

The antenna radiates radio signals. Before using the OUTPOST™ Callbox, make sure the antenna is securely fastened into the 50Ω BNC antenna connector. If the Outpost is to be used outdoors, see page 15 for instructions on properly sealing the antenna connector.

**RF Mating Connectors**

An internal cable from the antenna connector is terminated into a phono style connector for connection to the radio circuit board.

**Captive Plastic Case Screws**

A captive plastic case screw is located in each corner of the case front. These 4 screws are used to secure the case front containing the radio, to the case back that contains the batteries.

**Charge Jumper**

The charge jumper can be set to trickle charge rechargeable backup batteries.

**+12 VDC Input**

Two screw terminal style connectors are used for the “+” and “-” connection of an external +12 VDC input.

**Sensor Input**

Two screw terminal style connectors are used for the “+” and “-” connection of an external DC level sensor.

**Switch Output (Remote Control Output)**

Two screw terminal style connectors are used for the “+” and “-” connections of a 1A contact switch closure output.

**Speaker Connector**

The internal speaker is connected to the radio printed circuit board with a polarized connector.

**On/PTT Connector**

The On/PTT switch is connected to the radio printed circuit board with a polarized connector.

**Pre-Drilled Mounting Holes**

Mounting holes located in the 4 corners of the case back are pre-drilled for mounting to a plate, wall or post. Once mounted, the case front is secured to the case back through these same threaded holes.

**RJ-11 Program Cable Connector**

An RJ11 style connector is used to connect the cable from the PC programmer to the radio.

**Program Button**

A small, momentary pushbutton is used for field programming the OUTPOST™ Callbox.

**Program Display**

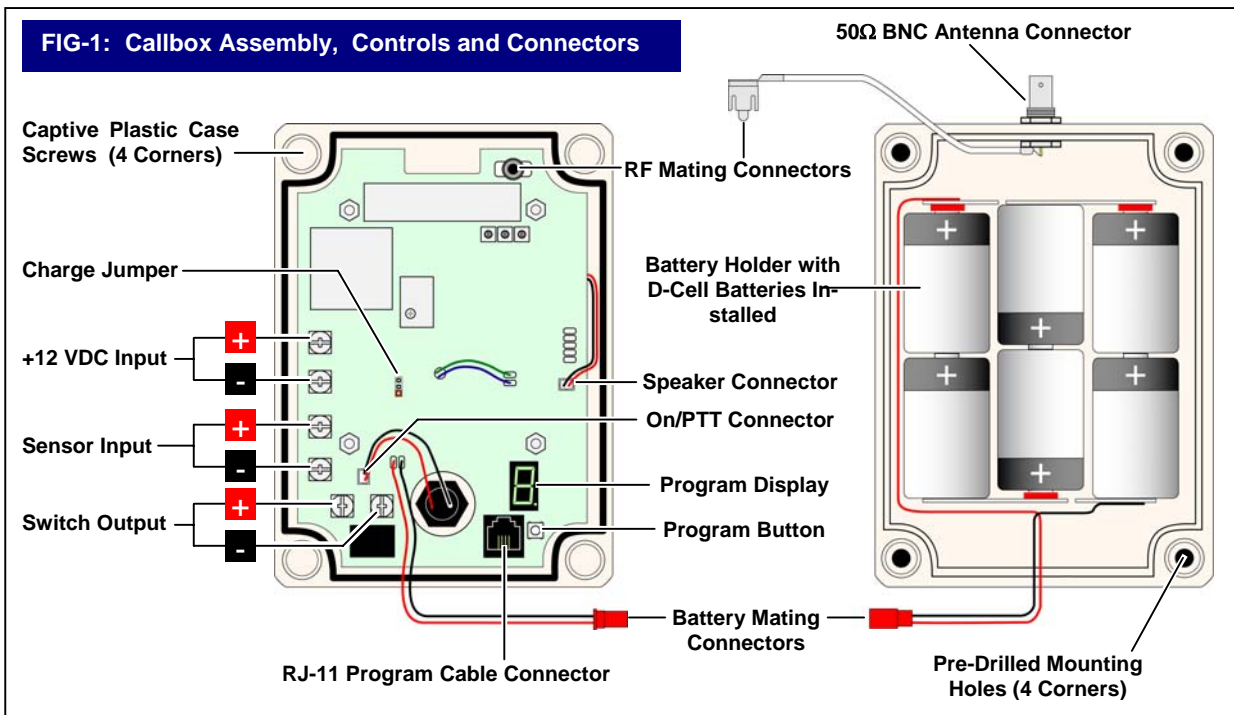
A single digit LED display is used during field programming of the radio.

**Battery Holder**

The battery holder inside the case back is used for the installation of 6 D-cell alkaline batteries. Refer to the diagram below, or the labels beneath the cells, for correct installation of the batteries.

**Battery Mating Connectors**

Polarized, 2-pin mating connectors are used to connect the batteries to the radio circuit board.



**BASIC OUTPOST™ INSTALLATION INSTRUCTIONS .....**

The basic OUTPOST™ can be mounted to virtually any surface with four (4) #6 panhead screws. Choose a type of screw thread and screw length which will hold firmly in the surface to which the unit will be mounted.

MOUNTING the OUTPOST™: (Refer to FIG-1)

1. Loosen the (4) captive screws in the front corners of the case and separate the case front from the case back. These screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.
2. Install 6 D-cell alkaline batteries into the battery holder. Refer to FIG-1, or the labels beneath the cells, for correct installation of the batteries.
3. If required, program the radio. Refer to the programming section of this manual for details.
4. Disconnect the RF mating connectors and the battery mating connectors. Set the case front containing the radio circuit board aside.
5. Insert a #6 panhead screw into each of the four (4) corner holes in the OUTPOST™ case back. Position the case back in the chosen installation location and secure it in place with the four screws.

- CAUTION** Do not drill or penetrate the OUTPOST™ case with any additional holes. Use only the pre-drilled mounting holes.
6. Re-connect the RF mating connectors and the battery mating connectors between the case front and case back.
  7. Fasten the case front to the case back with the four( 4) captive screws. Do not over-tighten the plastic screws to prevent damage.
  8. Insert, rotate and lock the antenna onto the antenna connector. Orient the antenna vertically.
  9. If the OUTPOST™ is to be used outdoors, it is imperative that the antenna connector be sealed with sealing tape after the antenna has been installed. Use Grainger #2A-459, Radio Shack #278-1647, or equivalent. Refer to “Sealing the Antenna” instructions in this manual.
  10. To install the message placard, align the center of the hole over the **ON/PTT** Button, and the mushroom-head fastener strips on the back of the placard with the strips on the front of the OUTPOST™ case. Press firmly to interlock the strips, snapping the panel into position.

**COVERAGE**

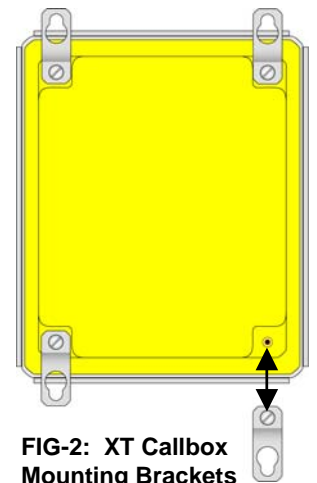
Depending on the unit location and installation, the OUTPOST™ set for 1 Watt can cover up to 1 mile line of sight. To increase range, use an external antenna that is mounted higher. Contact RITRON for a RAM-1545 Magnet Mounted Antenna. Refer to Special Note on page 3.

**XT OUTPOST™ INSTALLATION INSTRUCTIONS .....**

The XT OUTPOST™ can be mounted to virtually any surface with four (4) ¼” diameter fasteners, not included. Choose a type of screw thread and screw length which will hold firmly in the surface to which the unit will be mounted.

MOUNTING the XT OUTPOST™: ( Refer to FIG-2 and FIG-4)

1. Remove the front faceplate from the XT Callbox. The faceplate is secured to the case with 4 vandal-resistant buttonhead, Torx screws. Use the T-25 Torx bit included with the radio to remove these screws.
2. Remove the “Mounting Bracket” kit secured to the inside of the XT Callbox case.
3. Loosen the (4) captive screws in the front corners of the internal Callbox case and separate the case front from the case back. The screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.
4. Install 6 D-cell alkaline batteries into the battery holder. Refer to FIG-4, or the labels beneath the cells, for correct installation of the batteries.
5. If required, program the radio. Refer to the programming section of this manual for details.
6. Fasten the internal case front to the case back with the four (4) captive screws. To prevent damage, do not over-tighten the plastic screws.
7. Re-fasten the front faceplate to the radio with the 4 buttonhead Torx screws.
8. Install the 4 mounting brackets to the back of the XT Callbox case as shown in FIG-2 with the #10-32 bolts provided. The mounting brackets can be installed vertically, as shown, or horizontally.
9. Position the XT Callbox in the chosen installation location and secure it in place with four screws through the mounting brackets.



**FIG-2: XT Callbox Mounting Brackets**

## HOW TO READOUT CURRENT RADIO FREQUENCY & TONE CODES.

- Loosen the (4) captive screws in the front corners of the case. These screws are captive to the housing; to prevent damaging them, DO NOT remove the screws from the housing.
- Separate the case front from the case back, leaving the battery connected to the radio. Make sure the unit has batteries installed. **NOTE:** The voltage of the batteries must be greater than 6 VDC to program properly.
- Press and release the **ON/PTT** button on the front of the Callbox to turn the radio on.
- Press and release the Program button (See FIG-1 on page 4 for location). The radio will begin to display a series of four digits; with each digit separated by a hyphen.
- Write down the four digits. The first two digits indicate the frequency code and the last two digits the tone code; see [Table 1](#) and [Table 2](#) on pages 10 and 11. In this example an RQX-456 is programmed to operate on the "Brown Dot" frequency of 464.500 MHz (Frequency code "04") with 100.0 Hz tone (Tone code "12").



FREQUENCY CODE

TONE CODE

- If a 5<sup>th</sup> digit is displayed, the channel has been programmed for DQC and the last three digits indicate the DQC code; see [Table 3](#) on page 11. In this example an RQX-456 was programmed to operate on the "Brown Dot" frequency of 464.500 MHz (Frequency code "04") with a DQC code of "723".



FREQUENCY CODE

DQC CODE

- If more than 5 digits are displayed, the radio has been programmed for 2-Tone Paging Decode. The frequency and tone codes will be displayed, followed by a "C", then the radio will display the 2-Tone paging code; see [Table 4](#) on page 11. In this example an RQX-456 was programmed to operate on the "Brown Dot" frequency of 464.500 MHz (Frequency code "04") with 100.0 Hz tone (Tone code "12") and 2-tone paging decode frequencies of 330.5 Hz and 569.1 Hz (2-Tone code "91")



FREQUENCY CODE

TONE CODE

PAGING CODE

- If the channel is PC programmed with any frequency or tone not listed in [Table 1](#), [Table 2](#) or [Table 3](#) on pages 10 and 11, the radio will sound the error tone on contents read out and display an "E". The PC programmer will be required to readout the radios frequency and tone programming.



- Normal radio operation resumes after the programming information has been displayed.



## HOW TO FIELD PROGRAM FREQUENCY & TONE CODES .....

To match other radios, the owner can select Frequency, Tone and DQC Codes from [Table 1](#), [Table 2](#) and [Table 3](#) on pages 10 and 11. In our example, we will program an RQX-456 to operate on the "Brown Dot" frequency of 464.500 MHz with 100.0 Hz tone.

**04** 1. Refer to [Table 1](#) on page 10 to determine the two-digit frequency code and write it down.

**12** 2. Refer to [Table 2](#) on page 11 to determine the two-digit tone code for 100.0 Hz and write it down.

3. Loosen the (4) captive screws in the front corners of the case. These screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.

4. Separate the case front from the case back, leaving the battery connected to the radio. Make sure the unit has batteries installed.  
**NOTE:** The voltage of the batteries must be greater than 6 VDC to program properly.

5. Press and release the **ON/PTT** button on the front of the unit to turn the radio on.



6. Press and hold the Program Button (See FIG-1 on page 4 for location). A "P" will appear on the program display as you enter program mode and the radio will beep rapidly.

7. Release the program button after the beeping has stopped. The radio will display a series of six characters for Radio Identification, with each character separated by a hyphen.

The 1<sup>st</sup> two characters indicate the model number, the 3<sup>rd</sup> and 4<sup>th</sup> characters indicate the radio type, and the 5<sup>th</sup> and 6<sup>th</sup> characters indicate the firmware revision.



MODEL NUMBER

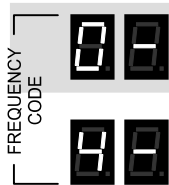


RADIO TYPE



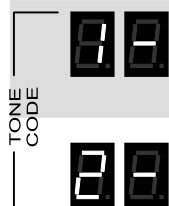
FIRMWARE REVISION

8. After the Radio Identification has been displayed the radio will emit a triple beep indicating that the radio is in program mode.



9. Enter the 1<sup>st</sup> digit of the frequency code by clicking the Program button until the program display shows the desired number. 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 the next digit.

10. Enter the 2<sup>nd</sup> digit of the frequency code by clicking the Program button until the program display shows the desired number. Pause—the radio sounds a low tone and will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.



11. Enter the 1<sup>st</sup> digit of the tone code (or 1<sup>st</sup> digit of the DQC code) by clicking the Program button until the program display shows the desired number. Pause—the radio sounds a low tone and 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 tone code (or 2<sup>nd</sup> digit of the DQC code) by clicking the Program button until the program display shows the desired number. Pause—the radio sounds a low tone and will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.

13. **FOR DQC CODES ONLY** – Enter the 3<sup>rd</sup> digit of the DQC code by clicking the Program button until the program display shows the desired number. Pause—the radio sounds a low tone and will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.



14. Press and release the **ON/PTT** button to save your programming. A triple beep will sound to indicate that programming was successful and the radio will turn off.  
**NOTE:** An error tone will sound if you attempt to save an incorrect code, an "E" will appear on the display and the radio will turn off. Check the digits you are attempting to enter, then start over.

15. Turn the radio back on for normal operation.

## HOW TO FIELD PROGRAM 2-TONE DECODE (RECEIVE) CODES ....

For special applications, it is desirable to program the Callbox for 2-Tone decode (receive) operation. The user is able to field program the radio for one of the 9 pre-determined tone pairs specified in **Table 4 on page 11**. These tone pairs correspond to field programmable 2-Tone encode (transmit) codes available in other RITRON portable and base radios. In our example we will program an RQX-456 to operate with 2-Tone decode (receive) frequencies of 389.0 and 669.9 Hz.

**NOTE:** Field programming frequency and tone codes will remove all 2-Tone decode programming. If 2-Tone decode operation is required, the 2-tone code must be re-programmed after field programming of the frequency and tone codes.

**94**

1. Refer to [Table 4](#) on page 11 to determine the two-digit code for 2-tone decode on 389.0 and 669.9 Hz and write it down.
2. Loosen the (4) captive screws in the front corners of the case. These screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.
3. Separate the case front from the case back, leaving the battery connected to the radio. Make sure the unit has batteries installed.  
**NOTE:** The voltage of the batteries must be greater than 6 VDC to program properly.
4. Press and release the ON/PTT button on the front of the unit to turn the radio on.



5. Press and hold the Program Button (See FIG-1 on page 4 for location). A "P" will appear on the program display as you enter program mode and the radio will beep rapidly.
  6. Release the program button after the beeping has stopped. The radio will display a series of six characters for Radio Identification, with each character separated by a hyphen.
- The 1<sup>st</sup> two characters indicate the model number, the 3<sup>rd</sup> and 4<sup>th</sup> characters indicate the radio type, and the 5<sup>th</sup> and 6<sup>th</sup> characters indicate the firmware revision.



MODEL NUMBER

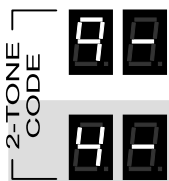


RADIO TYPE



FIRMWARE REVISION

7. After the Radio Identification has been displayed the radio will emit a triple beep indicating that the radio is in program mode.



8. Enter the 1<sup>st</sup> digit of the 2-Tone code by clicking the Program button until the program display shows the desired number. 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 the next digit.



9. Enter the 2<sup>nd</sup> digit of the 2-Tone code by clicking the Program button until the program display shows the desired number. Pause—the radio sounds a low tone and will show a hyphen across the center of the display to indicate that it is ready to accept the next digit.



10. Press and release the **ON/PTT** button to save your programming. A triple beep will sound to indicate that programming was successful and the radio will turn off.  
**NOTE:** An error tone will sound if you attempt to save an incorrect code, an "E" will appear on the display and the radio will turn off. Check the digits you are attempting to enter, then start over.

11. Turn the radio back on for normal operation.

**HOW TO FIELD PROGRAM RADIO FEATURES .....**

The OUTPOST™ Callbox can be field programmed for a specific number of features that include companding, GateGuard™, and speaker volume level. Refer to **Table 5 on page 11** for the single digit codes available for field programming. In our example we will program an RQX-456 for GateGuard™ operation.

NOTE: Field programming frequency and tone codes will turn companding and GateGuard™ **OFF**. If companding or GateGuard™ operation is required, the single-digit Radio Feature code must be re-programmed after field programming of the frequency and tone codes.

- 5** 1. Refer to [Table 5](#) on page 11 to determine the single-digit code used to enable GateGuard™.
- 2. Loosen the (4) captive screws in the front corners of the case. These screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.

- 3. Separate the case front from the case back, leaving the battery connected to the radio. Make sure the unit has batteries installed.  
**NOTE:** The voltage of the batteries must be greater than 6 VDC to program properly.

- 4. Press and release the **ON/PTT** button on the front of the unit to turn the radio on.



- 5. Press and hold the Program Button (See FIG-1 on page 4 for location). A "P" will appear on the program display as you enter program mode and the radio will beep rapidly.
- 6. Release the program button after the beeping has stopped. The radio will display a series of six characters for Radio Identification, with each character separated by a hyphen.

The 1<sup>st</sup> two characters indicate the model number, the 3<sup>rd</sup> and 4<sup>th</sup> characters indicate the radio type, and the 5<sup>th</sup> and 6<sup>th</sup> characters indicate the firmware revision.



- 7. After the Radio Identification has been displayed the radio will emit a triple beep indicating that the radio is in program mode.



- 8. Enter the single-digit code by clicking the Program button until the program display shows the desired number. 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 the next digit.



- 9. Press and release the **ON/PTT** button to save your programming. A triple beep will sound to indicate that programming was successful and the radio will turn off.  
NOTE: An error tone will sound if you attempt to save an incorrect code, an "E" will appear on the display and the radio will turn off. Check the digits you are attempting to enter, then start over.

- 10. Turn the radio back on for normal operation.

**TABLE 1: PROGRAMMABLE FREQUENCY CODES .....**

<b>UHF Business Band</b>				<b>UHF Business Band</b>				<b>VHF Business Band</b>			
Code	Frequency	Color Dot	BW	Code	Frequency	Color Dot	BW	Code	Frequency	Color Dot	BW
01	467.7625	J	25	40	461.2875		12.5	03	151.625	Red Dot	25
02	467.8125	K	25	41	461.3125		12.5	04	151.955	Purple Dot	25
03	464.5500	Yellow Dot	25	42	461.3375		12.5	05	151.925		25
04	464.5000	Brown Dot	25	43	461.3625		12.5	06	154.540		25
05	467.8500	Silver Star	25	44	462.7625		12.5	07	154.515		25
06	467.8750	Gold Star	25	45	462.7875		12.5	08	154.655		25
07	467.9000	Red Star	25	46	462.8125		12.5	09	151.685		25
08	467.9250	Blue Star	25	47	462.8375		12.5	10	151.715		25
09	469.2625		25	48	462.8625		12.5	11	151.775		25
10	462.5750	White Dot	25	49	462.8875		12.5	12	151.805		25
11	462.6250	Black Dot	25	50	462.9125		12.5	13	151.835		25
12	462.6750	Orange Dot	25	51	464.4875		12.5	14	151.895		25
13	464.3250		25	52	464.5125		12.5	15	154.490		25
14	464.8250		25	53	464.5375		12.5	16	151.655		25
15	469.5000		25	54	464.5625		12.5	17	151.745		25
16	469.5500		25	55	466.0375		12.5	18	151.865		25
17	463.2625		25	56	466.0625		12.5	24	151.700		12.5
18	464.9125		25	57	466.0875		12.5	25	151.760		12.5
19	464.6000		25	58	466.1125		12.5	26	152.700		25
20	464.7000		25	59	466.1375		12.5				
21	462.7250		25	60	466.1625		12.5				
22	464.5000		12.5	61	466.1875		12.5				
23	464.5500		12.5	62	466.2125		12.5				
24	467.7625		12.5	63	466.2375		12.5				
25	467.8125		12.5	64	466.2625		12.5				
26	467.8500		12.5	65	466.2875		12.5				
27	467.8750		12.5	66	466.3125		12.5				
28	467.9000		12.5	67	466.3375		12.5				
29	467.9250		12.5	68	466.3625		12.5				
30	461.0375		12.5	69	467.7875		12.5				
31	461.0625		12.5	70	467.8375		12.5				
32	461.0875		12.5	71	467.8625		12.5				
33	461.1125		12.5	72	467.8875		12.5				
34	461.1375		12.5	73	467.9125		12.5				
35	461.1625		12.5	74	469.4875		12.5				
36	461.1875		12.5	75	469.5125		12.5				
37	461.2125		12.5	76	469.5375		12.5				
38	461.2375		12.5	77	469.5625		12.5				
39	461.2625		12.5								

<b>VHF MURS**</b>			
Code	Frequency	Color Dot	BW
01	154.600	Green Dot	25
02	154.570	Blue Dot	25
19	151.820	MURS	12.5
20	151.880	MURS	12.5
21	151.940	MURS	12.5
22	154.600	MURS	12.5
23	154.570	MURS	12.5

<b>Notes</b>			
** MURS frequencies do not require an FCC license. All other frequencies require an FCC license.			
• BW is the bandwidth in kHz.			
• 12.5 kHz indicates a narrow band channel, 25 kHz indicates a wide band channel.			

**CANADIAN FREQUENCY CODES .....**

<b>Canada Models UHF Business Band</b>				<b>Canada Models VHF Business Band</b>				<b>British Columbia Models VHF Business Band</b>			
Code	Frequency	Color Dot	BW	Code	Frequency	Color Dot	BW	Code	Frequency	Color Dot	BW
01	458.6625		25	01	151.055		25	01	154.100		25
02	469.2625		25	02	151.115		25	02	158.940		25

**TABLE 2: INTERFERENCE ELIMINATOR PROGRAMMABLE QC TONE CODES.....**

Code	Frequency	Code	Frequency	Code	Frequency	Code	Frequency
01	67.0	14	107.2	27	167.9	40	159.8
02	71.9	15	110.9	28	173.8	41	165.5
03	74.4	16	114.8	29	179.9	42	171.3
04	77.0	17	118.8	30	186.2	43	177.3
05	79.7	18	123.0	31	192.8	44	No Tone
06	82.5	19	127.3	32	203.5	45	183.5
07	85.4	20	131.8	33	210.7	46	189.9
08	88.5	21	136.5	34	218.1	47	196.6
09	91.5	22	141.3	35	225.7	48	199.5
10	94.8	23	146.2	36	233.6	49	206.5
11	97.4	24	151.4	37	241.8	50	229.1
12	100.0	25	156.7	38	250.3	51	254.1
13	103.5	26	162.2	39	69.4		

**TABLE 3: DIGITAL INTERFERENCE ELIMINATOR PROGRAMMABLE DQC TONE CODES .....**

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

**TABLE 4: PROGRAMMABLE 2-TONE DECODE (RECEIVE) CODES**

Code	Tone 1	Tone 2
90	*	*
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

**TABLE 5: PROGRAMMABLE RADIO FEATURES**

Code	Feature
1	Companding ON
2	Companding OFF ✓
3	Volume Level - Medium ✓
4	Volume Level - High
5	Gate Guard ON
6	Gate Guard OFF ✓
7	Transmit Low Power (1 Watt) ✓
8	Transmit High Power (2 Watt) **
9	

\* If the Callbox displays 2-Tone Code "90" on readout it has been PC programmed for custom frequencies.

\*\* Refer to Special Note on page 3 regarding **Alkaline** battery usage.

✓ The Callbox is set from the factory with these options enabled.

**NOTE:** Companding will compress transmit audio before sending it, and expand receive audio before it is heard on the speaker to reduce the background noise common in radio communications. Companding is not recommended unless all radios in the system are companded.

**PC PROGRAMMABLE OUTPOST™ CALLBOX FEATURES .....**

Requires programming by dealer using RITRON RQX Series PC Programmer version 10.0.1 or higher.

**Glossary of Terms**

**Intercom Mode** – The Automatic Turn-Off feature has been disabled and the Callbox is able to receive calls at any time.

**Standby** – The radio has sent or received a message and is waiting for additional communications.

**Sleep** – If Automatic Turn-Off is disabled and Battery Saver is enabled the Callbox will go into a low current sleep state when it is not being used, waking up periodically to check for a received message. Pressing the **ON/PTT** button will wake-up the radio immediately.

**Wake-Up** – When Battery Saver is enabled and the Callbox has entered the low current Sleep state, the radio will wake-up periodically to check for a received message. The time between Wake-Up states is set by the Battery Saver Off Time.

**Inactivity Time** – A continuous period of time where the Callbox is not sending or receiving a message.

**External +12 VDC**

The Callbox can be programmed to operate on an external +12 VDC supply connected to the +12 VDC Input terminals. Should there be an interruption in the external supply the Callbox will automatically operate from the internal batteries and send a “low battery” alert tone at the end of each transmission to notify the users that external power is unavailable.

**Automatic Turn-Off**

The Callbox is programmed for Automatic Turn-Off as it is shipped from the factory. If set, the radio will turn-off after an Inactivity Time that exceeds the RQX Reset Time and can only be turned back on when the **ON/PTT** button is pressed. This is the recommended mode of operation for all battery-powered applications.

If the Automatic Turn-Off feature is not selected the automatic shut-off is disabled and the Callbox will operate in Standby mode, allowing the Callbox to receive calls at any time.

Operating the Callbox with Automatic Turn-Off disabled significantly increases the battery drain, and is therefore not recommended for battery powered applications. Refer to the “XT GateGuard™ Installation Instructions” on page 16 of this manual. If battery powered operation is required, battery drain can be reduced with the Battery Saver feature detailed in this section.

**Send Call Tone**

The OUTPOST™ can be programmed to transmit a Call Tone if the Reset Time has expired and the **ON/PTT** button is pressed. This will alert system users that the call is originating from the OUTPOST™ Callbox.

**Busy Channel TX Inhibit**

If another user on the same frequency but, on a different tone code is transmitting on your frequency, the Callbox will not be allowed to transmit. The Callbox will beep a series of long, low tones (like a busy signal) while the **ON/PTT** button is held down.

**Field Programming Enable**

This option is set in the factory, and enables all field programming of the Callbox as described in this manual. If not selected the radio can only be programmed with the RITRON RQX Series PC programmer.

**Battery Saver Enable**

When the OUTPOST™ Callbox is programmed to operate with Automatic Turn-Off disabled, Battery Saver can increase battery life in both internal or external battery powered applications.

With Battery Saver Enable set, the Callbox will periodically Wake-Up and listen for a received signal before returning to a low current Sleep state. The time between Wake-Up states can be PC programmed between 0.5 - 8 seconds with the Battery Saver Off Time setting. A longer time between Wake-Up states will result in increased battery life.

The Callbox immediately leaves Battery Saver mode any time the **ON/PTT** Button is pressed or a signal is received, and will not return to Battery Saver until there is an Inactivity Time that exceeds the RQX Reset Time.

**RQX Reset Time**

Set from the factory for 10 seconds, the RQX Reset Time can be PC programmed for 1-255 seconds. A shorter RQX Reset Time will result in increased battery life. In standard Automatic Turn-Off operation a longer RQX Reset Time will allow more time for a response before the Callbox turns off.

RQX Reset Time defines the Inactivity Time allowed before the Callbox:

- Turns off if Automatic Turn-Off is set
- Enters Battery Power Saver mode if Battery Power Saver is set.
- Resets 2-Tone Paging decode.
- Automatically opens the Switch output.

**TX Time Out Time**

Set from the factory for 60 seconds, the TX Time Out Time can be programmed for 1-255 seconds. This sets the length of time the Callbox can transmit continuously. If the **ON/PTT** button is held down longer than the TX Time Out Time will allow, the radio will stop transmitting and a “Busy Signal” will be heard in the speaker until the button is released.

**Speaker Volume**

The Callbox speaker volume can be set to any level desired between 2 - 100%. A lower speaker volume reduces audio distortion and provides a more natural sound. For best performance, do not set the volume any higher than is necessary for your application.

## PC PROGRAMMABLE OUTPOST CALLBOX™ FEATURES (CONTINUED)

### Transmit Beep Enable

This feature is turned on from the factory to provide a short beep in the Callbox speaker any time the **ON/PTT** button is pressed. This assures the Callbox user that the radio has turned on and is ready to transmit their message. With this feature disabled the Callbox will only beep when the radio is first turned on.

### RX Courtesy Beep Enable

In high noise environments it is sometimes difficult to determine when a received message has ended. With the RX Courtesy Beep enabled the Callbox will sound a short beep on the speaker at the end of each received transmission.

### Sensor Input

The Callbox will send a warning tone when a change in the Sensor Input is detected. The Sensor Input will respond to an **OPEN** or **CLOSED** switch.

### Narrowband

The OUTPOST™ Callbox can be programmed to operate wide or narrow band on any programmable frequency within the specified range.

### Companding

The radio can be programmed to enable or disable audio companding. Companding will compress transmit audio before sending it, and expand receive audio before it is heard on the speaker to reduce the background noise common in radio communications.

### High / Low Power

The Callbox can be set to transmit at high (2-Watt) or low (1-Watt) power. Low power is recommended in battery powered installations.

**!** Refer to Special Note on page 3 regarding **Alkaline** battery use.

## SWITCH OUTPUT OPTIONS –ALLOWS CONTROL OF AN EXTERNAL DEVICE.....

The switch output is a simple 1-Amp relay contact closure that can be used to **OPEN** and **CLOSE** a gate, switch on a light, sound an alarm or any other application where remote control of an ON/OFF switch is required. The OUTPOST Callbox can be PC programmed to **OPEN** and **CLOSE** the Switch Output when one of the following programmed conditions is met.

The Callbox can be PC programmed to alternately **OPEN** and **CLOSE** the switch using a single 2-tone code, or can be PC programmed for separate **OPEN** and **CLOSE** 2-tone codes. Field programming offers nine 2-tone codes that correspond to field programmable 2-tone codes available in select RITRON portable and base radios.

### No Switch

Select this option for no switch operation.

### Switch On When Called

With this option selected the switch will **CLOSE** when the Callbox first receives a call. The switch will remain **CLOSED** until the **ON/PTT** button is pressed or the RQX Reset Time expires. This option is not applicable if the Callbox is programmed for Automatic Turn-Off.

### Switch On When Callbox in Use

This option will **CLOSE** the switch when the Callbox first sends or receives a call. The switch will remain closed until the RQX Reset Time expires, which also turns the radio off if it is programmed for Automatic Turn-Off.

### Switch On When Active with Turn-Off Code

This option operates the same as Switch On When Callbox in Use with the added ability to **OPEN** the switch when a unique 2-Tone Turn-Off Code is re-

ceived. Unlike the Switch On When Callbox in Use feature, the switch will not **OPEN** when the RQX Reset Time expires unless the Callbox is programmed for Automatic Turn-Off. See the 2-Tone Decode Setting section on page 14 of this manual for details on programming a 2-Tone Turn-Off code.

### GateGuard™ – Momentary for 1 sec.

With this option selected the switch will momentarily **CLOSE** when a unique 2-Tone code is received. The switch will remain **CLOSED** for the programmed period of time, programmable for 1-255 seconds. See the 2-Tone Decode Setting section of this manual for details on programming a 2-Tone code. Field programming the Callbox for GateGuard™ operation places the radio into this momentary mode.

### GateGuard™ – Toggle

With this option selected the switch will alternately **OPEN** and **CLOSE** when it receives a unique 2-Tone code. After the 2-tone code is received the Callbox will transmit a **SINGLE BEEP** if the switch has been **OPENED** and a **DOUBLE BEEP** if the switch has been **CLOSED**. The switch will open when the Callbox turns off if it is programmed for Automatic Turn-Off. See the 2-Tone Decode Setting section of this manual for details on programming a 2-Tone code.

### GateGuard™ – On Code / Off Code

When this option is selected the switch will **CLOSE** when a unique 2-Tone code is received, and **OPEN** when the 2-Tone Turn-Off code is received. The switch will **OPEN** when the Callbox turns off if it is programmed for Automatic Turn-Off. See the 2-Tone Decode Setting section of this manual for details on programming a 2-Tone code and a 2-Tone Turn-Off code.

## 2-TONE DECODE (RECEIVE) SETTINGS .....

2-Tone decode can be used to selectively call the Callbox in a system where multiple radios operate on a single frequency. Alternatively, 2-Tone decode can also be used to operate the Switch Output built into every Callbox.

When the radio is programmed for 2-Tone Paging decode, no call will be heard unless the 2-tone code has been successfully decoded or the On/PTT button has been pressed. After decoding, normal 2-way conversation is possible without the need for the 2-tone code. 2-Tone Paging Decode is automatically reset when the RQX Reset Time expires.

When the Callbox is programmed for Switch Output operation with 2-Tone decode, regular voice communication is unaffected by the 2-tone code. If the Switch Output Option uses 2-tone decode it cannot be used for 2-Tone Paging Decode.

### 2-Tone Table #

The OUTPOST™ Calbox comes equipped with 9 pre-determined 2-Tone codes that correspond to table codes that certain RITRON portable and base radios can send. Use of the 2-Tone Table codes allows programming without the need for the PC programmer.

#### 1st Tone decoded for sec.

You can custom program the 1<sup>st</sup> tone of the 2-tone code to any frequency between 300-1500 Hz. The 1st tone must be decoded for the programmed period of time before the radio looks for the 2nd tone.

#### 2nd Tone decoded for sec.

You can custom program the 2nd tone of the 2-tone code to any frequency between 300-1500 Hz. The 2nd tone must be decoded for the programmed period of time after the 1st tone has been decoded.

#### All Call decoded for sec.

With 2-Tone All Call enabled you can custom program an All Call tone to any frequency between 300-1500 Hz. The All Call tone must be decoded for the programmed period of time.

### Ring Tone Enable

With this feature enabled the Callbox will sound a ring signal in the speaker, similar to a telephone ring, any time the 2-Tone code, Group Call or All Call code is decoded.

### 2-Tone Transpond

2-Tone Transpond transmits a tone after the 2-Tone code, Group Call or All Call code has been received to alert the calling radio that the 2-Tone code was successfully decoded.

### 2-Tone Group Call

When this option is set, 2-tone decode is achieved if the radio receives the 1st tone for the programmed All Call time. If this option is selected the All Call time must be longer than the 1st Tone time or the Callbox will always decode on the 1st tone, ignoring the 2nd tone altogether.

### 2-Tone Monitor Trip

With this option selected the Callbox will be in carrier squelch mode any time the 2-Tone code is decoded, regardless of any QC or DQC code programmed in the radio. The radio reverts back to tone code decode if the **ON/PTT** button is pressed and reverts back to 2-tone decode after the RQX Reset Time has expired.

### Turn-Off Code

In certain Switch Output applications a separate 2-tone turn-off code is required. This code can not be the same as the 2-Tone Code

## INTERCOM (ALWAYS ON) PROGRAMMING .....

The XT OUTPOST™ can be PC programmed to operate as a two-way intercom. When operating as an intercom the Automatic Turn-Off is disabled and the radio will remain on in a “stand-by” mode, allowing it to receive a call from another radio at any time. The higher current requirements of Intercom operation make it undesirable in battery powered installations.

### Required Programming:

#### Automatic Turn-Off

This must be disabled for the Callbox to remain turned on at all times.

### Optional Programming:

#### Battery Saver

Battery Saver can be used to reduce battery drain on a battery powered installation. With Battery Saver

activated, the Callbox will periodically “wake-up” and listen for a received signal before returning to a low current “sleep” state. The time between “wake-up” states can be PC programmed between 0.5 - 8 seconds. A longer time between “Wake-up” states will result in increased battery life.

### Busy Channel TX Inhibit

This will not allow you to transmit when another user is already transmitting on your radio frequency, even if they are using a different tone code. The radio will beep a series of long, low tones while the **ON/PTT** button is held down (like a busy signal). When the Callbox is programmed for 2-Tone paging Decode, or is used in a system with multiple QC or DQC codes, this prevents the Callbox from interfering with other users on the radio channel.



**INTERCOM (ALWAYS ON) PROGRAMMING (CONTINUED) .....**

**Programming for Selective Calling:**

**2-Tone Paging Decode**

This allows selective calling to a Callbox in a radio system where there is more than one Callbox. When the Callbox is programmed for 2-tone decode in Intercom (Always-On) mode it will sound an alert tone on the Callbox speaker, similar to a telephone ring tone, whenever 2-tone has been successfully decoded. This will alert any users in the immediate area that there is an incoming call on the Callbox.

**Ring Tone**

Ring Tone must be set to sound the alert tone on the Callbox speaker when a 2-Tone Page is successfully decoded.

**2-Tone Monitor Trip**

This can be set when used with 2-Tone decode to allow the Callbox to hear all radio traffic on the channel after it has successfully decoded the correct 2-tone code, regardless of QC or DQC programming. Normal conversation will follow after the 2-tone code is decoded and the radio will automatically reset back to 2-tone decode after the RQX Reset Time has expired.

**Switch Output Programming:**

**Switch on When Called**

This will close the internal Switch Output whenever the radio receives a call after an Inactivity Time that exceeds the RQX Reset Time. The switch will remain closed until the **ON/PTT** button is pressed or the RQX Reset Time expires. The Switch Output could be used to turn on a light or activate an alarm to notify users in the area that an incoming call was present.

**HOW TO SEAL THE ANTENNA .....**

If the OUTPOST™ Callbox is to be used outdoors it is imperative that the entire antenna connection be sealed with seal tape to provide proper operation and prevent voiding warranty.

Seal tape can be purchased at most Industrial Supply Stores, Hardware and Home Center Stores, or Electronic Supply Stores.

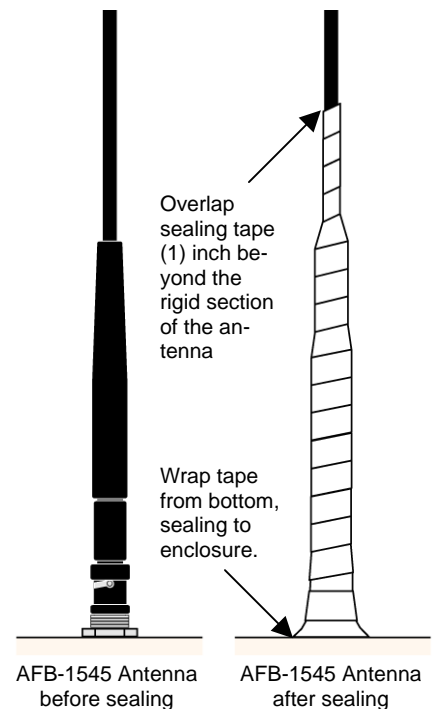
Regardless of the antenna used, it is always best to weatherproof the antenna connection using seal tape.

**NOTICE**

Failure to follow these instructions will cause damage to the product, prevent proper sealing of the enclosure and will void the Manufacturers Warranty.

**Applying Seal Tape:**

1. Attach the antenna to the 50Ω BNC connector on the OUTPOST™ Callbox enclosure.
2. Begin wrapping seal tape at the base of the antenna connector such that it is sealed to the enclosure top.
3. Overlap the seal tape as you tightly wrap upward around the connector and antenna. Continue to overlap seal tape around the connector base, past the articulated portion of the antenna and several inches up the thin, shiny section of the antenna.



**XT GATEGUARD™ INSTALLATION INSTRUCTIONS** .....

The XT OUTPOST™ can be mounted to virtually any surface with four (4) ¼” panhead screws. Choose a type of screw thread and screw length which will hold firmly in the surface to which the unit will be mounted.

MOUNTING the XT OUTPOST™: ( Refer to FIG-4)

1. Remove the front faceplate from the XT Callbox. The faceplate is secured to the case with 4 vandal-resistant buttonhead, Torx screws. Use the T-25 Torx bit included with the radio to remove these screws.
2. Remove the “Mounting Bracket” kit secured to the inside of the XT Callbox case.

**!**

3. Due to the wide variety of installation possibilities, RITRON does not provide the cables or hardware required to bring external connections into the XT Callbox. When selecting your cable hardware be sure it will adequately seal the cable to the case.

Carefully study the internal construction of the XT Callbox and determine the location on the outside case where the external supply and GateGuard™ hook-up will be brought in. Consider clearance with your desired hardware.

4. Remove the 4 flathead screws securing the internal mounting plate and remove entire internal case assembly. The front faceplate will be attached to the internal case assembly, handle with care.
5. Carefully drill the hole in the XT Callbox case required for your external hook-up cable installation.
6. Install the 4 mounting brackets to the back of the XT Callbox case shown in FIG-2 on page 5. The mounting brackets can be installed vertically, as shown, or horizontally.
7. **CONNECTING the GATEGUARD™ to an EXTERNAL DEVICE**

Thread your external hookup cable from the external device you wish to control through the hole with approximately 6 inches of cable inside the case. Your external cable will be connected to the XT Callbox 6-conductor interface cable with wirenuts, dress your external wires accordingly (Refer to Table 6). With your selected hardware, secure and seal the conduit to ensure moisture and vandal resistant functions to the XT Callbox case.

Consult the manufacturer of the external device you are attempting to control for the recommended wire gauge.

Confirm that your application will **NOT** exceed the maximum rating of the on-board relay of 120 VAC @ 1 amp.

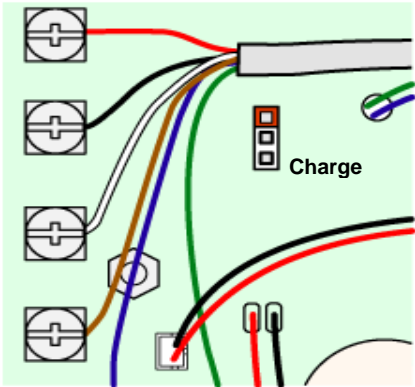
Make sure all power to the equipment is turned **OFF** or disconnected.

**!** **CAUTION:** The interface cable and wirenuts should be positioned on the right side of the case opposite the antenna (See FIG-4 on page 17)

8. Position the XT Callbox case in the chosen installation location and secure it in place with four screws through the mounting brackets.
9. If programming is required, loosen the (4) captive screws in the front corners of the internal Callbox case and separate the case front from the case back. These screws are captive to the housing; to prevent damaging them, **DO NOT** remove the screws from the housing.
10. Program the radio, if required. Refer to the programming section of this manual for details. To program the radio you must first apply +12VDC external power, or alkaline batteries.
11. If rechargeable NiCd batteries are used for battery backup the “Charge Jumper” must be placed into the “charge” position as shown.

**!! CAUTION !!**

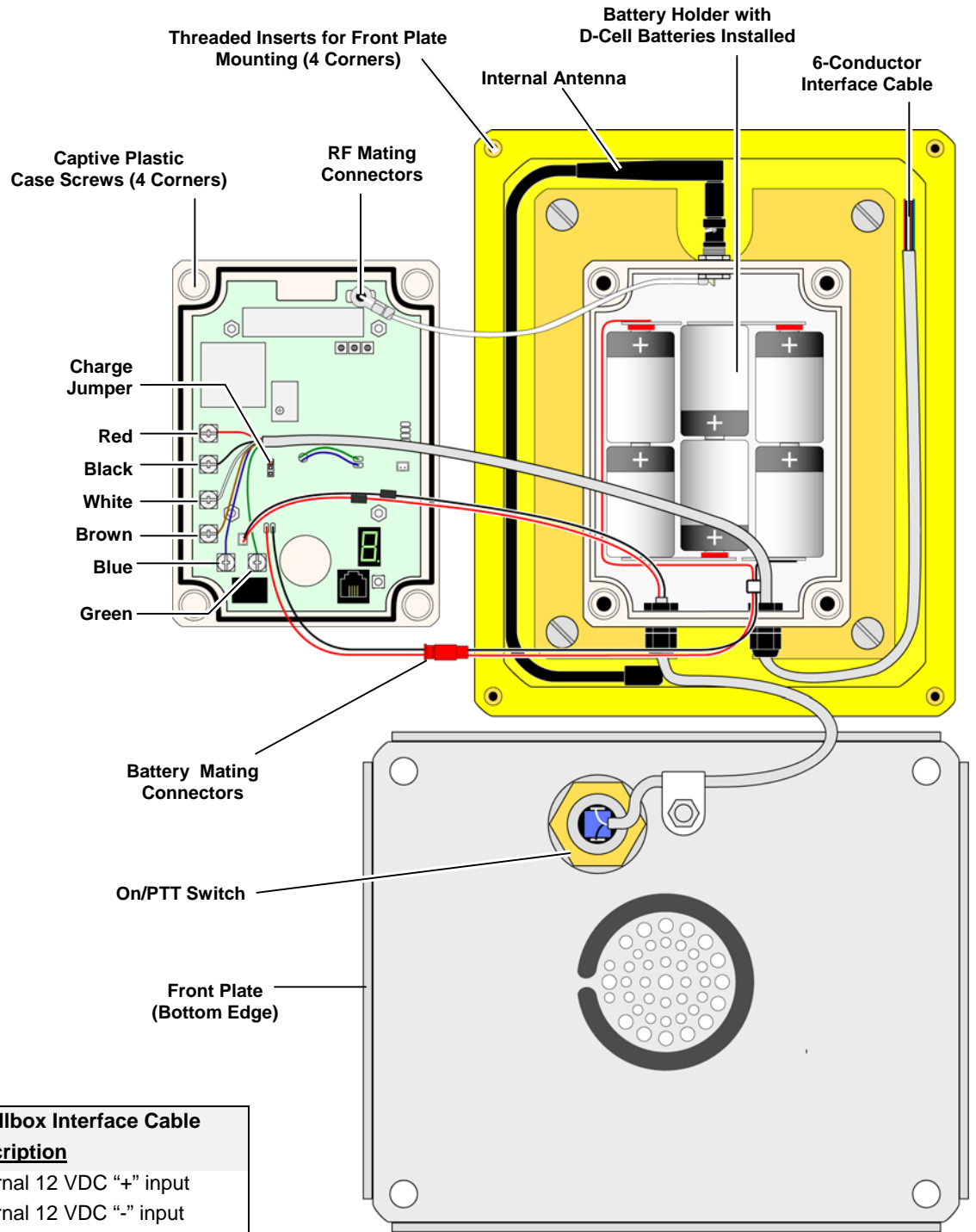
If rechargeable batteries are NOT used for battery backup, be sure the “Charge Jumper” is NOT in the “charge position. Charging alkaline batteries will damage the cells and reduce battery life!



**FIG-3: Charge Jumper in Charge Position**

12. Fasten the internal case front to the case back with the four (4) captive screws. Do not over-tighten the plastic screws to prevent damage.
13. Secure the internal case assembly to the XT Callbox with the 4 flathead screws through the internal mounting plate. Refer to FIG-4 for correct orientation and location of the antenna and cables. The front faceplate is attached to the internal case assembly, handle with care.
14. Re-fasten the front faceplate to the radio with the 4 buttonhead Torx screws.

**FIG: 4 XT CALLBOX ASSEMBLY** .....



<b>Wire</b>	<b>Description</b>
Red	External 12 VDC "+" input
Black	External 12 VDC "-" input
White	Sensor Input "+" connection
Brown	Sensor Input "-" ground
Blue	Switch Output "+" connection
Green	Switch Output "-" connection

## HOW TO FIELD PROGRAM THE GATEGUARD™ FEATURE .....

The XT OUTPOST™ can be field programmed for basic GateGuard™ operation, or PC programmed to suit your unique requirements. **These instructions are for factory programmed radios ONLY.** If the PC programmer has been used to set 2-Tone decode (receive) or GateGuard™ features, operation may not be as described here.

### Field Programming the GateGuard™ Feature:

1. Program the frequency and tone codes per the “How to Field Program Frequency and Tone Codes” instructions on page 7.
2. Program the 2-Tone decode (receive) code per the “How to Field Program 2-Tone Codes” instructions on page 8.
3. Program the Callbox for GateGuard™ operation per the “How to Field Program Radio Features” instructions on page 9.

The XT OUTPOST™ Callbox will now operate in GateGuard mode as follows:

- The Callbox will be in “Automatic Turn-Off” mode. The **ON/PTT** button must first be pressed as described in “Operating the OUTPOST™ Callbox” section on page 2 before normal two-way communications can be established.
- If the Callbox does not send or receive a signal for more than 10 seconds the Callbox will automatically turn off. The **ON/PTT** button must be pressed to turn the Callbox back on and receive a call.
- When the Callbox receives and decodes the correct 2-Tone code the Callbox Switch Output will momentarily **CLOSE** the switch for 1 second. The Callbox will also automatically transmit a confirmation tone back to the senders radio notifying them that the correct 2-tone code has been decoded at the OUTPOST™ Callbox.

## GATEGUARD™ REMOTE CONTROL PROGRAMMING .....

The XT OUTPOST™ can be PC programmed to customize GateGuard™ operation.

**Automatic Turn-Off** can be disabled to leave the Callbox turned **ON** at all times, allowing GateGuard™ operation even if there is no one at the Callbox. The higher current requirements of Intercom mode make it undesirable in battery powered installations.

**Battery Saver** can be used to reduce battery drain when Intercom operation is required on a battery powered installation. With Battery Saver activated, the Callbox will periodically “wake-up” and listen for a received signal before returning to a low current “sleep” state. The time between “wake-up” states can be PC programmed between .5 - 8 seconds. A longer time between “wake-up” states will result in increased battery life.

**Ring Tone** will sound an alert tone on the Callbox speaker, similar to a telephone ring tone, whenever the correct 2-tone code has been successfully decoded. This feature is used to alert the Callbox user that the gate is being **opened** or **closed**.

**RQX Reset Time** is set from the factory for 10 seconds, but can be PC programmed for 1-255 seconds. A shorter RQX Reset Time will result in increased battery life. In standard Automatic Turn-Off operation a longer inactivity timer will allow more time for a response before the Callbox turns **off**.

**GateGuard™ – Toggle** will alternately open and close the Switch Output when it receives a unique 2-Tone code. After the 2-tone decode (receive) code is re-

ceived the Callbox will transmit a single beep if the switch has been **opened** and a double beep if the switch has been **closed**. The switch will open when the Callbox turns off if is programmed for Automatic Turn-Off.

**GateGuard™ On Code / Off Code** operation allows programming of separate **ON** and **OFF** 2-tone decode (receive) codes. The Outpost will **CLOSE** the Switch Output upon receiving the **ON** code, and **OPEN** the Switch Output upon receiving the **OFF** code.

When reading out the radio programming as described in the “How to Readout Current Radio Programming” section, the **ON** code will be displayed.

**Sensor Input** can be programmed to detect a logic level and transmit an Alert tone when a change in logic level is detected. Separate alert tones are used for **OPEN** (logic level high) and **CLOSED** (logic level low).

**External +12 VDC** is used in installations with an external 12 VDC power supply and an internal battery back-up. The OUTPOST™ will send an alert tone at the end of each transmission when the unit is operating on the back-up battery, and once an hour if Automatic Turn-Off is not used.

**Busy Channel TX Inhibit** will not allow you to transmit when another user is already transmitting on your radio frequency, even if they are using a different tone code. The radio will beep a series of long, low tones (like a busy signal) while the **ON/PTT** button is held down.

## OUTPOST Wireless Callbox

### FCC Licensing

The FCC requires the owners of the radios to obtain a station license before using them.

The station licensee is responsible for ensuring that transmitter power, frequency and deviation are within the limits specified by the station license. The station licensee is also responsible for proper operation and maintenance of the radio equipment. This includes checking the transmitter frequency and deviation periodically, using appropriate methods.

To get an FCC license for VHF or UHF frequencies, submit FCC application Form 600. Your Ritron dealer can help you with this process.

### How to Obtain an FCC Radio License

Because your Ritron radio operates on Private Land Mobile frequencies, it is subject to the Rules and Regulations of the FCC, which requires all operators of these frequencies to obtain a station license before operating their equipment. Make application for your FCC license on FCC Forms 600 and 159.

To have forms and instructions faxed to you by the FCC, call the FCC Fax-On-Demand system at **202-418-0177** from your fax machine; request Document 000600 & Form 159.

To have Document 000600 & Form 159 mailed to you, call the FCC Forms Hotline at **800-418-FORM (800-418-3676)**.

For help with questions concerning the license application, contact the FCC at **888-CALL-FCC (888-225-5322)**.

You must decide which radio frequency(ies) you can operate on before filling out your application.

For help determining your frequencies, call Ritron at **800-USA-1-USA (800-872-1872)**.

### Safety Standards

The FCC (with its action in General Docket 79-144, March 13, 1985) has adopted a safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated equipment. Ritron observes these guidelines and recommends that you do also:

- DO NOT hold the radio so that the antenna is very close to or touching exposed parts of the body, especially the face or eyes, while transmitting. Keep the radio vertical, four inches away while talking into the front panel.
- DO NOT press the Push-To-Talk except when you intend to transmit.
- DO NOT operate radio equipment near electrical blasting caps or in an explosive atmosphere.
- DO NOT allow children to play with any radio equipment that contains a transmitting device.
- Repair of Ritron products should be performed only by Ritron authorized personnel.

### INDUSTRY CANADA Regulations

## Licensing

Industry Canada requires the owners of the radios to obtain a radio license before using them.

Application forms can be obtained from the nearest Industry Canada District office.

### INDUSTRY CANADA License Application

1. Fill in the items per the instructions. If you need additional space for any item, use the reverse side of the application.
2. Use a typewriter or print legibly.
3. Make a copy for your files.
4. Prepare a check or money order to "Receiver General for Canada", for the amount listed on the following schedule for each radio purchased. (Licenses are renewed annually on April 1st. Refer to the following schedule for application fees for each month.)
5. Mail the completed application, along with your check or money order, to the closest Industry Canada District Office.

Month of Application	Initial Fee	Month of Application	Initial Fee
April .....	\$52	October .....	\$33
May .....	\$50	November .....	\$29
June .....	\$46	December .....	\$26
July .....	\$43	January .....	\$23
August .....	\$40	February .....	\$20
September .....	\$36	March .....	\$16

Notes: Fees are subject to change without notice.  
The annual renewal fee is \$41

### Service

Federal law prohibits you from making any internal adjustments to the transmitter, and/ or from changing transmit frequencies unless you are specifically designated by the licensee.

If your radio equipment fails to operate properly, or you wish to have the radio programmed, contact your authorized dealer or Ritron.

#### U.S. Manufacturer:

RITRON, INC.  
Repair Department  
505 West Carmel Drive  
Carmel, IN 46032 USA

Phone: 317-846-1201  
FAX: 317-846-4978

#### Canadian Representative:

Lenbrook Communications  
633 Granite Court  
Pickering, ON L1W 3K1

Phone: 905-831-6555  
FAX: 905-831-6936

**RITRON, INC. LIMITED 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, holsters, chargers, earphones, speaker/microphones 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>
OUTPOST™ Callboxes	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.
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 re-conditioned 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.