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MANUFACTURER: RITRON, INC.
505 West Carmel Drive
Carmel, IN 46032
MODELS: RQT-433-RCVR
TYPE OF UNIT: 433.92 MHz Keyfob Receiver
FCC ID: AIERIT32-433-RCVR
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Included in this exhibit is a draft copy of the User Manual for RITRON Model RQT-433-RCVR 433 MHz Keyfob Receiver.

This manual provides the end user with installation and operating instructions.

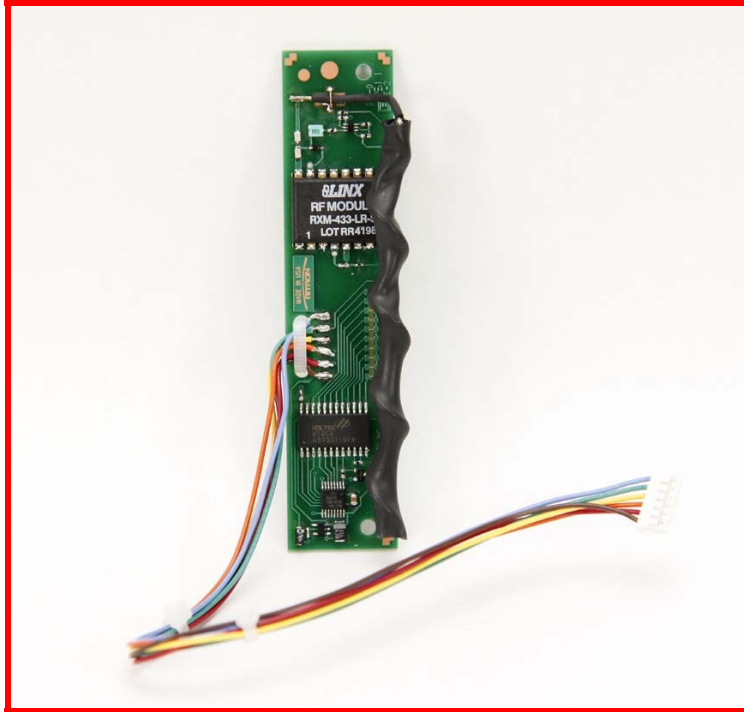
Signed:



Michael A. Pickard - Project Engineer

Go Beyond Normal Limits...SM

RITRON[®]
WIRELESS SOLUTIONS



RQT-433-RCVR

433.92 MHz Keyfob Receiver

Owner's Manual

Call 800-USA-1-USA for the right Wireless Solutions to your communication needs.

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RQT Models and Keyfobs

Ritron RQT Models with the RQT-433-RCVR installed:

RQT-151-RCVR	RQT-151M-RCVR	RQT-451-RCVR
RQT-152-RCVR	RQT-152M-RCVR	RQT-452-RCVR

Ritron Keyfob Transmitters:

RQT-KEYFOB-1	RQT-KEYFOB-2	RQT-KEYFOB-3
RQT-KEYFOB-4	RQT-KEYFOB-5	RQT-KEYFOB-6
RQT-KEYFOB-7	RQT-KEYFOB-8	

RQT-433-RCVR FCC Part 15 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. You can test that if this equipment does cause harmful interference to radio or television reception by turning the equipment off and on.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

General Information

The RQT-433-RCVR is a 433.92 MHz keyfob receiver designed for use with the Ritron RQT Series transmitter. When installed, the RQT-433-RCVR allows the user to activate RQT pre-recorded messages by pressing a small keyfob transmitter. Ritron model keyfobs are pre-set to activate 1 of 8 RQT messages. Simply record your desired voice message into the RQT Series transmitter using the RQT PC Programmer and you are ready to go.

RQT Radio Operation

For RQT models with an RQT-433-RCVR installed, any of the 4 RQT inputs can be programmed for “KEYFOB” operation. This will allow that input to operate on 2 pre-assigned Ritron keyfobs per the following chart:

<u>Input</u>	<u>Models</u>
Input 1	RQT-KEYFOB-1 RQT-KEYFOB-2
Input 2	RQT-KEYFOB-3 RQT-KEYFOB-4
Input 3	RQT-KEYFOB-5 RQT-KEYFOB-6
Input 4	RQT-KEYFOB-7 RQT-KEYFOB-8

Once an RQT input is set for “KEYFOB” operation it will no longer respond to switch closures or analog signals, the two Input messages can only be activated by the specific received keyfob codes assigned to that input.

Refer to the RQT Programming section of this manual for details of KEYFOB input programming and the associated programming options available.

Once the radio has been programmed and installed, Ritron model keyfobs can be used to activate the RQT transmitter and broadcast a unique, user recorded voice message associated with the specific keyfob.

EXAMPLE:

RQT Input 1 is set for “KEYFOB” operation with “Assistance needed in classroom 111” recorded for RQT-KEYFOB-1 and “Assistance needed in classroom 112” recorded for RQT-KEYFOB-2. Ritron keyfobs RQT-KEYFOB-1 and RQT-KEYFOB-2 can now activate these two recorded messages respectively.

Effect on RQT Radio Battery Life

In order for the RQT-433-RCVR receiver to reliably decode signals from the keyfob transmitters, RQT radio models with the RQT-433-RCVR keyfob receiver installed have increased current requirements and do not operate in the low current “standby” mode. Therefore, battery life is severely reduced and it is recommended that the RQT be externally powered. Where battery life of an RQT radio would normally be about 1 year, it drops to about 2 weeks with the RQT-433-RCVR installed.

RQT-KEYFOB Operation

When operating a keyfob transmitter the best performance is achieved with the keyfob held between the thumb and forefinger, with the top of the keyfob uncovered and vertical (as shown)



It is important to understand that only one keyfob transmitter at a time can be activated within a reception area. While the transmitted signal consists of encoded digital data, only one carrier of any particular frequency can occupy airspace without contention at any given time. If two transmitters are activated in the same area at the same time, then the signals will interfere with each other and the decoder will not see a valid transmission, so it will not take any action.

The effective range of a Ritron keyfob is similar to that of a garage door opener. Range will be affected by obstructions, if the keyfob is in your pocket, or how the keyfob is held.

The location of the RQT transmitter can help extend the range of the RQT-433-RCVR.

RQT-KEYFOB Battery Replacement

The keyfob utilizes a standard CR2032 lithium button cell. In normal use, it can provide up to 1 year of operation.

Access for replacement is accomplished by gently prying apart the two halves of the keyfob at the seam (fingernails will do for this).

Once the unit is open, remove the battery by sliding it out from beneath the retainer.

There may be the risk of explosion if the battery is replaced by the wrong type. Replace it with the same type of battery while observing the polarity shown in the adjacent figure.



RQT-KEYFOB FCC Part 15 Instructions

This device complies with Part 15 of the FCC Rules.

Operation of this device 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

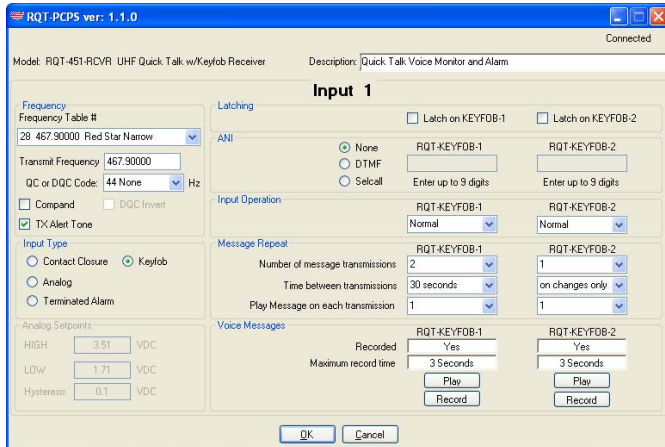
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to FCC Rules. In order to maintain compliance with

FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

RQT Radio Programming

Programming an RQT transmitter (equipped with the RQT-433-RCVR) for keyfob operation requires Ritron PC Programmer RQT-PCPS or RQT-BASIC-PCPS revision 1.1.0 or higher. A programmer update to this revision is available at www.ritron.com.



1. Connect the RQT radio your computer via the USB port and using the Ritron PC Programmer, read out the radio programming. If the model indicated is not on the following list, your radio is not equipped with the RQT-433-RCVR keyfob receiver and cannot be programmed for keyfob operation.

Ritron Models with the RQT-433-RCVR installed:

RQT-151-RCVR RQT-151M-RCVR
RQT-152-RCVR RQT-152M-RCVR
RQT-451-RCVR
RQT-452-RCVR

2. Select the input you would like to program for Keyfob operation. The input you select will depend on the specific Ritron keyfobs you use. Check to see which model keyfob you have and program the input per the following list.

<u>Input</u>	<u>Models</u>	
Input 1	RQT-KEYFOB-1	RQT-KEYFOB-2
Input 2	RQT-KEYFOB-3	RQT-KEYFOB-4
Input 3	RQT-KEYFOB-5	RQT-KEYFOB-6
Input 4	RQT-KEYFOB-7	RQT-KEYFOB-8

3. From the left column of Input programming screen, set the Input Type to Keyfob.
4. Press the Record button and record a unique message for the Ritron keyfob indicated. Repeat the process if a second keyfob is to be used.
5. Program the various attributes available on the Input programming screen to customize how the RQT transmitter will respond to the keyfob.

Programmable RQT Radio Attributes

Latch On - When Latch On is selected, the RQT will ignore decoded signals from the keyfob until after the transmission schedule have been completed. If not set, the RQT will transmit the recorded message every time it receives the correct code.

EXAMPLE:

RQT-KEYFOB-1 is scheduled for 2 transmissions, 30 seconds between transmissions. When RQT-KEYFOB-1 has been decoded the recorded message will be transmitted twice with 30 seconds in between, and any additional signals from RQT-KEYFOB-1 will be ignored until 30 seconds after the message is sent the 2nd time. Signals from other keyfobs will still be heard, only RQT-KEYFOB-1 will be ignored.

Input Operation - can be set for 1 of 3 different modes:

Normal operation considers the RQT-KEYFOB code as it is received.

Dwell operation requires the keyfob code to be present continuously for a specified period of time before considering.

Holdoff operation requires that the keyfob code is not present for a specified period of time before it is considered.

EXAMPLE:

RQT-KEYFOB-2 set for 1 min. holdoff. When the RQT-KEYFOB-2 code is received the recorded message will play. Any additional signals from RQT-KEYFOB-2 will be ignored until after 1 minute has elapsed.

Number of Message Transmissions - specifies the number of times a recorded message will be transmitted after an RQT-KEYFOB code has been received.

Time between Transmissions specifies the length of time between scheduled transmissions. If it is set to "No Message", the recorded message will not play. If it is set to "On Changes Only", the recorded message will only play when the keyfob code is decoded.

Play Message on each Transmission specifies the number of times the recorded message will be repeated on each transmission.

EXAMPLE:

RQT-KEYFOB-1 is scheduled for 2 transmissions, 30 seconds between transmissions, 2 messages per transmission. When RQT-KEYFOB-1 has been decoded the recorded message will be transmitted twice, wait 30 seconds, then the message is transmitted twice again.

Changing the Address

For convenience, the RQT-433-RCVR keyfob receiver and all Ritron keyfobs come from the factory set to the same address. This establishes a relationship between a single RQT-433-RCVR receiver and multiple keyfobs with different codes. For the vast majority of users the address does not need to be changed. Occasionally the user may want to change the address to:

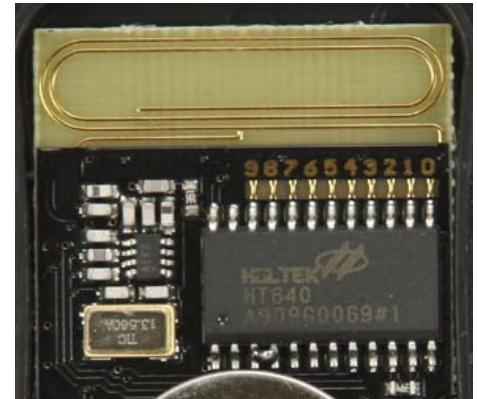
- Install two or more RQT-433-RCVR keyfob receivers in the same location.
- Avoid interference with another transmitter using the same address.
- Create a more secure “non-standard” address.

The RQT-433-RCVR receiver and RQT-KEYFOB transmitters allow the selection of one of 1,024 unique addresses. To avoid contention with other units or to create unique relationships, the address can be changed. This is accomplished by cutting PCB traces with a sharp object, such as an X-Acto knife.

On the RQT-KEYFOB keyfob the traces are accessed by removing the rear cover. If the trace is intact, the address line is connected to ground, otherwise it is floating. The RQT-433-RCVR receiver address must match exactly in order for the units to communicate.

EXAMPLE:

Both the RQT-KEYFOB and the RQT-433-RCVR can be programmed with the same unique address by cutting the PCB traces at positions 2 and 4. They now have a unique relationship that allows them to communicate only with each other.



RQT-KEYFOB



RQT-433-RCVR

Specifications

RQT-433-RCVR

Receive Frequency	433.92 MHz
Center Frequency Accuracy	+/- 50 kHz
Sensitivity	-112dBm typical
Modulation Type	OOK
Antenna	Helical wound ¼ wave
FCC Part	15B
FCC ID	AIERIT32-433-RCVR
Input Voltage	6-12 VDC
Operating Voltage	5.0 VDC
Input and Output Logic	0-5 VDC
Interconnection	+V in Ground Valid Decode Out Clock In Antenna Disable In Data Out
Current - Standby	5.9 mA
Current – w/Antenna Disable	14.1 mA
Temperature	-30°C to +60°C

RQT-KEYFOB

Transmit Frequency	433.92 MHz
Center Frequency Accuracy	+/- 50 kHz
Radiated Power	< 200µV/m per FCC Part 15.209
Modulation Type	OOK
Antenna	Loop trace
FCC Part	15C, 15.231
FCC ID	OJM-CMD-KEYX-XXXXA
Input Voltage	3V
Battery	CR2032 Lithium cell