NEW!

# Fast TX Attack Time

## for thousands less*

The new RRX-460 UHF Repeater from Ritron is a high performance machine. Its Fast TX Attack Time and high spec receiver will cost you thousands less than the competition*. Fast Attack Time and Low Distortion Digital Waveform provides you with optimum trunking handshake performance and maximum range...that means less busy signals and your customers get connected on *the first try.*

This repeater features a high spec receiver with 80 dB Intermodulation Rejection and 0.25 μV Sensitivity for better performance in high RF signal level environments. To enhance the performance of the repeater's ten poles of IF filtering, improvements to the already low noise oscillator were made along with careful attention to circuit topology and shielding. The oscillator uses a ceramic coaxial resonator for an ultra-low noise output spectrum, thus resulting in better adjacent channel rejection in wide or narrow band channel allocations. Plus, the new RRX-460 Repeater is Dual-Mode, Wide or Narrow, Selectable Bandwidth for maximum flexibility in trunking or conventional radio systems.

If you need a high performance repeater for your radio system and you want to save thousands of dollars in the process, call us today at **800-USA-1-USA**.


PATRIOT® RRX BY RITRON

- UHF Frequency Range: 450 - 470 MHz
- High spec receiver front-end with new double balanced mixer provides greater intermodulation rejection
- Dual Bandwidth Selectable, Narrow or Wide, configurations
- Frequency Stability: ± 1.5 ppm (-30⁰ C to +60⁰ C)
- Rugged and robust power supply provides over volt cut-off circuitry, or AC Mains fail, to DC back-up before regulator dropout, automatic back-up Battery Maintenance Charge
- Compact size 3.5" X 19.0" X 12.0" standard rack or desktop
- Excellent Trunking Exciter with fast TX Lock (15 ms)
- 110 or 220 VAC Selectable or 12 VDC
- Selectable fan options with cold temperature shut-off
- IC (Canada) type acceptance approval pending
- One year warranty
- Proudly designed, manufactured, and serviced in the USA


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* Comparison based upon published specifications as of 12/00
Specifications subject to change without notice.

MADE IN THE USA

## FEATURES/BENEFITS

### HIGH PERFORMANCE SPECIFICATIONS

Built to rigid standards, the RRX-460 delivers excellent intermodulation, sensitivity and selectivity specifications. A temperature compensation oscillator (TCXO) ensures 1.5 ppm frequency stability and accuracy during ambient temperature changes.

### SYNTHESIZED & PROGRAMMABLE

Synthesized technology makes repeater set-up fast and convenient. Programmable features include TX & RX Frequencies, Coded Signalling, Hang-Time Timer, Time-Out Timer, and Morse Code Station ID.

Note: Tuning of the duplexer and TX/RX module may be required.

### MODULAR DESIGN

The modular design of the internal electronics of the RRX-460 repeater allows for quick replacement and repair while on-site.

### RUGGED RACK STYLE DESIGN

Rugged, lightweight aluminum housing is perfect for equipment room installations or 19" rack mounting at a repeater site.

### SIGNALLING CAPABILITY

Standard signalling includes CTCSS or DCS encode/decode. Optional plug-in, dip switch programmable CTCSS tone modules increase the capability from one to four CTCSS tones. The RRX-460 accessory connector provides a convenient interface to an external tone panel. The RRX-460 is capable of separate CTCSS encode and decode tones by using the optional plug-in board and programming it to a separate tone frequency. DCS Signalling includes all standard and inverted digital codes.

### CONTINUOUS DUTY OPERATION

The RRX-460 is designed for continuous duty operation at 8 Watts and 50% duty cycle with the 30 Watt amplifier installed. A 12 VDC fan is standard.

### 12 VDC COOLING FAN

Internal 12 VDC fan keeps the electronics cool during operation. It may be programmed to run continuously or upon transmitter activation. **The cooling fan has selectable fan options with cold temperature shut-off.**

### BATTERY CHARGE & AUTOMATIC CUTOVER

Powered by a 110 or 240 VAC selectable power supply or a 12 VDC source, the RRX-460 is ideal for domestic or international applications. An emergency back-up battery can be trickle charged during normal AC operation and will immediately go on-line if power failure occurs, thus preventing downtime during power outages. Default failsafe to DC cutover.

### INTERNAL DUPLEXER

The standard RRX-460 includes an internal, four cavity, extruded aluminum, "notch type" duplexer. Built by Ritron, this duplexer is specifically designed for 50 Watt power levels or less. (May be deleted for special applications.

### ACCESSORY CONNECTOR

Allows the RRX-460 to be connected to and controlled by other devices such as, tone panels, trunking controllers, and control stations.

## OPTIONS

### DUPLEXER DELETE

For applications that require an external duplexer, amplifier, or combiner. Two N Type connectors are installed on the rear panel providing easy interface to external hardware.

### RSM-3X REMOTE SPEAKER MICROPHONE

Provides local PTT transmit and receive control allowing quick set-up and testing. The RSM-3X also enables PTT field programming of most RRX features.

### BAND PASS FILTER (RF-450)

Plug in cavity improves performance of the in areas concentrated with co-site users.

### 30 WATT AMPLIFIER

When extra power output is required, an optional internal amplifier boosts the output power to 30 Watts (into the duplexer). An internal 12 VDC fan is included to keep the electronics cool during operation.

### TELEPHONE INTERCONNECT MODULES

The RRX-460 accepts all Ritron interconnect modules. These include the RP-200 Interconnect with paging and the RW-4WA (4 wire) or RTLT-1 (2 wire) interface modules for wireless links to remote control stations. The RRX-460 may be configured as a Telenexus Phone Line Extender using the RTSU-1 and RTLT-1 modules.

# SPECIFICATIONS:

| GENERAL | WIDE BAND 25 kHz | NARROW BAND 12.5 kHz |
|---|---|---|
| Models: | RRX-460 | RRX-460 |
| FCC ID: | AIERIT05-452 | AIERIT05-452 |
| FCC Parts: | 22, 74 90, 95 | 22, 74 90, 95 |
| Dimensions: | 3.5"H x 19.0" W x 12.0" D, standard | 3.5"H x 19.0" W x 12.0" D, standard |
| Weight: | Standard model: 12 lbs. | Standard model: 12 lbs. |
| Emission Designators: | 11K2F3E, 11K0F2D, 16K0F3E | 11K2F3E, 11K0F2D, 16K0F3E |
| Operating Frequency Range: | 450-470 MHz | 450-470 MHz |
| Frequency Separation: | TX/RX: 4.5 to 5.5 MHz | TX/RX: 4.5 to 5.5 MHz |
| RF Channels: | (1) TX/RX Channel | (1) TX/RX Channel |
| Synthesized Steps: | 12.5 kHz | 12.5 kHz |
| Tone/Code Signalling: | QC™ (Quiet Call) or DQC (Digital Quiet Call) mode: (1) QC or (2) DQC codes standard. Up to (3) additional QC codes available (4 total) with optional RTS-6P modules. | |
| Power Requirements: | 110/240 VAC, 50-60 Hz, or External 11 to 15 VDC/2A | 110/240 VAC, 50-60 Hz, or External 11 to 15 VDC/2A |
| Power Consumption: | 60 Watts AC, 30 Watts DC | 60 Watts AC, 30 Watts DC |
| Local Audio Output: | ½ Watt into 8 Ohms | ½ Watt into 8 Ohms |
| Hang-Time Timer: | 0 to 8 seconds, programmable | 0 to 8 seconds, programmable |
| Squelch Tail Eliminator Timer: | 0 to 8 seconds, programmable | 0 to 8 seconds, programmable |
| Time-out Timer: | 0 to 30 minutes, programmable | 0 to 30 minutes, programmable |
| Auxiliary Equipment Connectors: | 10-pin female internal connector (std)<br>DB-25 female connector for external controller (optional)<br>8-pin internal male headers for RTS-6P modules<br>External telephone jacks with RP-200, RTLT-1, or RTSU-2 installed | 10-pin female internal connector (std)<br>DB-25 female connector for external controller (optional)<br>8-pin internal male headers for RTS-6P modules<br>External telephone jacks with RP-200, RTLT-1, or RTSU-2 installed |
| RF Connector: | N Type (2 N connectors when duplexer is deleted) | N Type (2 N connectors when duplexer is deleted) |
| AC Power Connector: | 3-pin, fused, power entry module on rear panel: 110/240 VAC externally selected | 3-pin, fused, power entry module on rear panel: 110/240 VAC externally sele selected |
| DC Power Connector: | 3-pin polarized socket-rear panel | 3-pin polarized socket-rear panel |
| Battery Charge Current: | Up to 0.7A maximum | Up to 0.7A maximum |
| AC Battery to Backup Transfer: | Automatic relay cutover (failsafe to DC) | Automatic relay cutover (failsafe to DC) |
| Test Speaker Microphone: | 2.5mm & 3.5 mm jacks for RSM-3X | 2.5mm & 3.5 mm jacks for RSM-3X |
| Antenna Impedence: | 50 Ohms | 50 Ohms |

| TRANSMITTER | | |
|---|---|---|
| RF Output: | 1-8 Watts @ 12.6 VDC, adjustable to 5 Watts @ duplexer antenna port | 1-8 Watts @ 12.6 VDC, adjustable to 5 Watts @ duplexer antenna port |
| Frequency Stability: | +/- 1.5 PPM (-30° C to +60° C) | +/- 1.5 PPM (-30° C to +60° C) |
| Modulation: | Direct FM | Direct FM |
| Deviation: | 0 to +/- 5 kHz, adjustable | 0 to +/- 2.5 kHz, adjustable |
| Spurious & Harmonics: | < -60 dBc | < -60 dBc |
| Audio Response: | 10 to 3000 Hz (+/- 3 dB) | 10 to 3000 Hz (+/- 3 dB) |
| Power Requirements: | +11 to +15 VDC, 1.5 A nominal | +11 to +15 VDC, 1.5 A nominal |
| FM Hum & Noise: | -60 dB | -60 dB |
| Audio or FSK Data Input: | Pre-emphasized; Impedence: 10K nominal; Frequency Range: 5 to 3000 Hz; Signal Level: 500mV p-p for +/- 3 kHz of deviation | Pre-emphasized; Impedence: 10K nominal; Frequency Range: 5 to 3000 Hz; Signal Level: 500mV p-p for +/- 3 kHz of deviation |

| RECEIVER | | |
|---|---|---|
| Receiving System: | Fixed Tuned, Dual Conversion Superheterodyne | Fixed Tuned, Dual Conversion Superheterodyne |
| IF System: | 21.4 MHz/455 kHz | 21.4 MHz/455 kHz |
| Local Oscillator: | Low Side Injection | Low Side Injection |
| Sensativity (12 dB SINAD): | .25 µV, .35 µV through duplexer | .25 µV, .35 µV through duplexer |
| Selectivity (EIA): | -85 dB @ +/- 25 kHz | -75 dB @ +/- 12.5 kHz |
| Spurious Rejection (EIA): | -80 dB | -80 dB |
| Image Rejection (EIA): | -75 dB | -75 dB |
| Intermodulation Rejection (EIA): | -80 dB | -80 dB |
| Frequency Stability: | +/- 1.5 PPM (-30° C to +60° C) | +/- 1.5 PPM (-30° C to +60° C) |
| Noise Squelch Sensativity: | .2 to 8 µV, adjustable - factory set to open @ 12 dB SINAD | .2 to 8 µV, adjustable - factory set to open @ 12 dB SINAD |
| Audio Frequency: | 10 to 3 kHz | 10 to 3 kHz |
| Audio or FSK Output: | 10 Hz to 3 kHz/P502, Position A<br>300 to 3 kHz/P502, Position B<br>2 k Ohm Minimum Load Impedence<br>A received 1 kHz tone @ 3 kHz deviation, set to produce 2.1 V p-p @ J401, pin 1 set to produce 2.1 V p-p | 10 Hz to 3 kHz/P502, Position A<br>300 to 3 kHz/P502, Position B<br>2 k Ohm Minimum Load Impedence<br>A received 1 kHz tone @ 3 kHz deviation, set to produce 2.1 V p-p @ J401, pin 1 set to produce 2.1 V p-p |
| Power Requirements: | 200 mA standby plus battery charge charge current | 200 mA standby plus battery charge charge current |

| DUPLEXER | | |
|---|---|---|
| High Pass Insertion Loss: | 1.5 dB typical | 1.5 dB typical |
| Low Pass Insertion Loss: | 1.8 dB typical | 1.8 dB typical |
| TX Noise Suppression @ RX Frequency: | 63 dB | 63 dB |
| RX Noise Isolation @ TX Frequency: | 73 dB | 73 dB |
| TX/RX Separation (450-470 MHz): | Typical 5 MHz (std.), 4.5 to 10 MHz (opt.) | Typical 5 MHz (std.), 4.5 to 10 MHz (opt.) |
| Connectors: | N Type (Antenna Port) | N Type (Antenna Port) |
| Impedence: | 50 Ohms | 50 Ohms |

YOUR RITRON DEALER IS:

MADE IN THE USA

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