

T400RR

Range Receiver

The RT Logic T400 Range Receiver System (T400RR) is a modular, firmware-defined receiver and digital processing unit, designed for both flight test and launch ranges. The standard 2U configuration includes two FPGA-based receivers, optionally configurable as a dual channel combiner system. The full range of legacy and current ARTM waveforms are supported.

The standard packaging is a modular 19-inch, rack-mount unit capable of hosting multiple downconverters, upconverters, and demodulator card(s). Two enclosure options 2U (standard) and 5U (optional) provide the ideal combination of rack density, fault tolerance, flexibility, and cost to meet your needs.

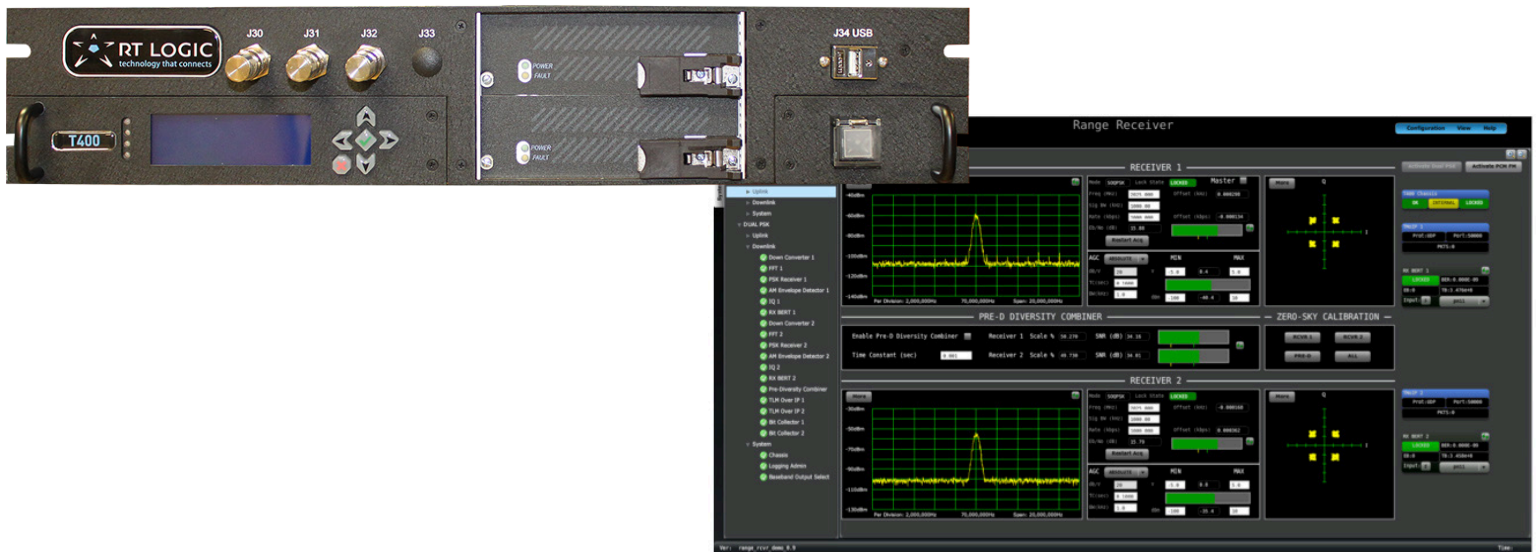
The T400RR is controlled via the local Graphical User Interface (GUI), the same GUI over the Wide Area Network (WAN), or by your application using a standard Application Programming Interface (API). Data connectivity is also a strength of the T400RR, with standard serial and IP network outputs. Support for standard TMOIP protocol is included.

Cyber security is a growing concern in all DoD areas – the Linux-based T400RR meets that threat by being factory-hardened with optional quarterly IA hardening updates. Additionally, the T400RR's built-in Integrated Spectrum Analyzer provides key RF situational awareness.

With a view to the future, the T400RR is field-upgradable to digest VITA-49 IP packets containing RF spectrum, enabling an RF-over-IP architecture migration for ranges looking to consolidate signal processing equipment at a central location while reducing equipment footprint (and setup/maintenance requirements) at remote antenna sites.

Key Features

- ✓ ARTM and Legacy Waveforms
- ✓ Dual Channel Combiner in 2U Chassis
- ✓ Analog Baseband Video Outputs
- ✓ AM and AGC antenna tracking
- ✓ Serial and IP data output
- ✓ Constellation and Eye Diagrams
- ✓ Integrated Spectrum Analyzer (ISA)
- ✓ Standard GEMS control API
- ✓ Optional 5U version for increased channel density
- ✓ Front Panel Test Points
- ✓ Web-based Interface, Enabling Local/Remote Access
- ✓ TMOIP compatible
- ✓ Optional Advance FEC, Including LDPC
- ✓ Factory IA Hardened – optional quarterly updates



Standard Configuration

- Two receivers (2U)
- Dual combiner
- Local or remote control via Ethernet
- 70 MHz - 6GHz, L, S, C-band
- PM, BPSK, and A/U/S/O/QPSK, PM/PSK Subcarrier Demodulation
- Multi-symbol PCM/FM, trellis SOQPSK, SOQPSK-TG, SOQPSK-MIL, Multi-H CPM

Specifications

- Frequency Bands
 - 70 MHz - 6GHz
- Operating Environment Controls
 - RT Logic Telemetry Software, Flash or HTML5 GUI Support, via Ethernet or Remote Control
- Diversity Combiner
 - Pre-detect selection based on SNR
 - CH1/CH2 Balance feature; > 2.5 dB improvement with equal signal input
- Dynamic Range
 - 0 dBm to Threshold
- Noise Figure
 - < 8 dB (nominal)
- Phase Noise
 - IRIG 106-13 Tier II Phase Mask Compliant
- Max Safe Input Level
 - +2.5 dBm
- Image/Spurious Signal Rejection
 - > 50 dB
- Tuner Resolution
 - <0.1 Hz
- Pre-d (70 MHz) Outputs
 - Linear -10 +/- 2 dBm; 1 output per channel
- AGC Time Constants (mS)
 - Software selectable based off symbol rate
- AGC Outputs per Channel
 - 2 Scalable AGC outputs (programmable up to 50 dB/V); Scale and polarity are programmable
- AM Outputs per Channel
 - Normal and Inverted 2 Vpp into 75 ohms @ 50% amplitude modulation
- Baseband (Video) Outputs
 - 4 programmable video outputs, 75 ohms, 0 - 3 VP-P
- Constellation diagrams
- Eye diagrams
- Analog baseband outputs
- AM and scalable AGC antenna tracking outputs
- GEMS programming interface
- Integrated Spectrum Analyzer (ISA)
- Viterbi Decoding (k=7 rate =1/2)
- Telemetry over Internet Protocol (TMoIP)
- Acquisition Tracking
 - +/- 1 MHz with FFT acquisition aid
- Demodulator Operating Modes
 - PCM/FM, PM, BPSK, QPSK, SQPSK, OQPSK, A/UQPSK, SOQPSK-TG, SOQPSK-MIL, and Multi-H CPM; PM/PSK Subcarrier
- Maximum Data Rates
 - Up to 40 Msps SOQPSK
 - Up to 30 Msps PCMFm
 - Up to 20 Msps Multi-H-CPM
- Embedded Bit Synchronizer
 - NRZ-L/S/M/Bi-Phase; de-randomizer; manual/auto select loop bandwidths; user-selectable clock and data polarity
- Adaptive BaseBand Equalization (ABBE)
 - ABBE option mitigates harsh multi-path environments
- Power
 - Power Input
 - ♦ 90-264 VAC; 47-63 Hz; Auto-ranging; 300W PS
- Physical and Environmental
 - Dimensions and Weight
 - ♦ 17" W x 3.5" H x 24" D (19" Rack Mount); <60 lbs. fully configured
- Operating Temperature
 - 0 to 50 degrees C
- Storage Temperature
 - -20 to +70 degrees C
- Humidity
 - Up to 95% non-condensing
- Altitude
 - Up to 30,000 ft
- EMI
 - Designed to meet MIL-STD-461