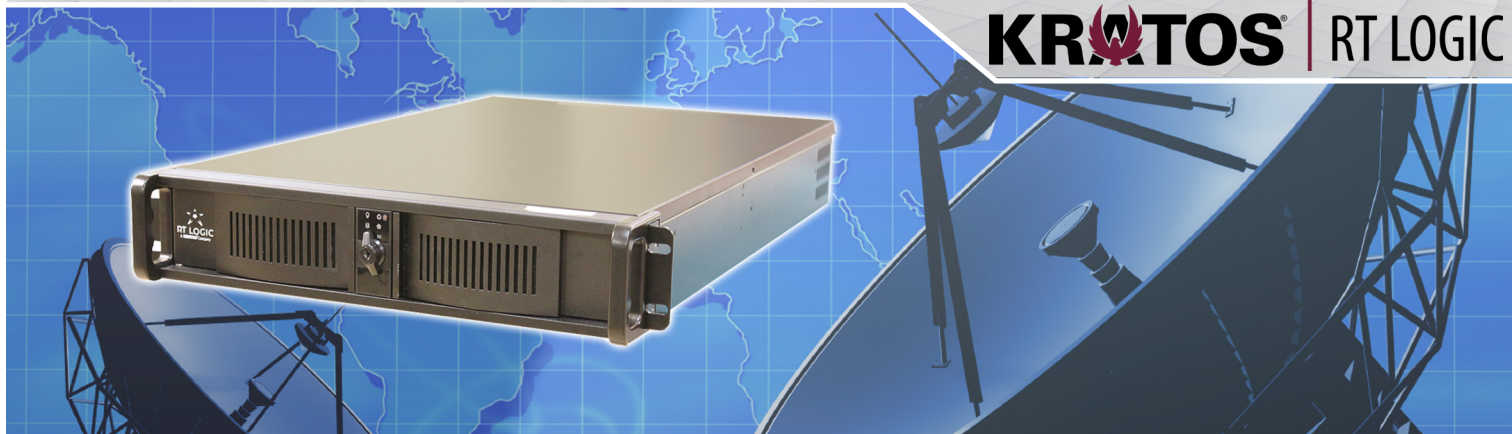


Mission Receiver for Small Satellites

quantumMR

KRATOS | RT LOGIC



Overview

The Kratos RT Logic quantum Mission Receiver™ is a payload data receiver specifically designed for high demand Small Sat applications. The quantum Mission Receiver is a complete Software Defined Modem with an all-digital processing chain for high performance and pass-to-pass configurability. Based on Kratos RT Logics' legacy Multi Mission Receiver platform, it includes the best capabilities of our tailored product offering and brings them into a robust, full featured COTS product.

These capabilities include:

- Ability to support standard carrier tracking, demodulation, bit synchronization and digital processing of dual, independent Intermediate Frequency (IF) signal inputs at transmission rates adjustable up to 1.5 Gbps.
- Digital signal processing implementation for flexibility to support different demodulation and processing schemes, and unlike legacy analog implementations, requires no calibration.
- Soft-programmable implementation allows support for new features without need to return to factory.

You can select from a rich feature set for single missions or span a wide range of Science, Remote Sensing, or commercial communication applications with the support of industry standards like DVB-S2 and CCSDS.

Product Description

The quantum Mission Receiver supports downlink processing of BPSK, SQPSK, QPSK, 8PSK, 16/32APSK, MSK, and 16QAM signals. Symbol rates range from 5 MSym/s to 500 MSym/s for direct PSK modulation symbol rates range from 5 MSym/s to 250 MSym/s for DVB-S2 modulation using CCM and VCM schemes.

The demodulation processing is supplemented by bit synchronization, Pulse Code Modulation (PCM) code conversion, digital filtering, and adaptive signal equalization for transmission optimization. Multiple Forward Error Correction (FEC) options are currently supported including Viterbi, Reed-Solomon (RS), and Low Density Parity Check (LDPC) using DVB-S2 standards. Output from the unit is 1GbE and 10GbE IP packets over Ethernet.

Key Features

- Independent, dual channel receiver
- IF Input 720 MHz or 1200 MHz (Tunable)
- Matched filtering and adaptive baseband equalization for correction of cable/channel distortions
- 1GbE and 10GbE-T data Up to 500 MSym/s output
- Direct PSK and QAM
 - BPSK, QPSK, SQPSK, 8PSK, MSK, 16QAM
 - Reed-Solomon
 - Viterbi (up to 200 Mbps)
 - DVB-S2 up to 250 MSym/s
 - All MODCODS

Applications

- Remote Sensing
- DVB-S2 Reception
- Earth Imaging
- System Test
- Lights-Out Operation

Platform Benefits

- MTBF > 50k hours
- Redundant Power Supplies
- CE, FCC, NRTL, RCM Compliant
- Hardened OS Available
- Low Lead-Time

The quantum Mission Receiver is based on industry standard modular architecture technology. This allows for field upgradability via software download. Every quantum Mission Receiver comes with a user friendly GUI hosted on any commercial browser avoiding heavy client software. Beyond GUIs, the quantum Mission Receiver comes with TCP/IP interfaces for monitor and control and interoperability with the Kratos Compass Software Suite for enterprise control.

Modem Specifications

Waveform Processing

- Dual, independent channel processing chains
- Tunable IF Frequency: 720 +/- 200 MHz; 1200MHz +/- 300 MHz
- Modulation capabilities: BPSK, QPSK, SQPSK, 8PSK, 16/32 APSK, MSK, 16QAM
- Symbol rates:
 - PSK: 5 MSym/s to 500 MSym/s x 2 channels
 - DVB-S2: 5 MSym/s to 250 MSym/s x 2 channels
- FEC capabilities:
 - Convolutional: single, dual (I&Q), convolutional interleaving
 - Reed-Solomon
 - DVB-S2 LDPC (All MODCODS)
 - 4D-8PSK-TCM
- Matched filtering
 - Raised cosine, root raised cosine (0.2 to 1.0)
- Fully complex adaptive base band equalization (ABBE)

Data Processing

- Programmable frame syncs for independent channels
- CCSDS frame processing (VCUDU/APIID)*
- SAS hard drive archiving*

**Consult factory for options*

Baseband Data Interfaces

- 1GbE output data (VITA-49 packets), RJ45
- 10GbE-T output data (VITA-49 packets)

Control and Status Interfaces

- Web-based (HTML-5) GUI
- TCP/IP interface GEMS, REST via 1GbE
- Chassis health and status (fans, power-supply, temperature, ect)

General System and Hardware

- Linux Operating System (Cent OS)
- Hot-swappable, redundant power supplies for easy sustainment
- 2U chassis (19 x 3.5 x 27.9)
- CE, NRTL, FCC and RCM Certified

IA and Cyber

- STIG, DISA, NIST OS hardening available*

