

quantum Mission Receiver

Small Sat Earth Observation

KRATOS



Overview

The Kratos 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' 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, 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.



RT Logic quantum Mission Receiver

Key Features

- Optimized for Smallsats
- Dual Receiver Chains
- Tunable, Independent IFs
- Direct-PSK and DVB-S2
- BPSK, QPSK, OQPSK, 8PSK, 16QAM, 16/32 APSK, MSK, GMSK
- DVB-S2 CCM and VCM

Applications

- Remote Sensing
- DVB-S2 Reception
- Earth Imaging
- System Test
- Lights out operation

Platform Benefits

- >40K MTBF
- Dual 1GbE & 10GbE
- Redundant Power Supplies
- Hardened OS
- CE Compliant

Optional Features

- Test Modulator
- CCSDS LDPC
- Error Vector Magnitude
- Telemetry Archiving

For more information please email us at:
smallsats-sales@kratosdefense.com

www.kratostts.com/solutions/satellite-and-space/smallsats

Product Description

The quantum Mission Receiver supports downlink processing of BPSK, QPSK, 8PSK, 16/32APSK, 16QAM, MSK and GMSK signals. Symbol rates from 10 Msps to 600 Msps for direct PSK modulation and 10 Msps to 250 Msps for DVB-S2 signals 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 both CCSDS and DVB-S2 standards. Output from the unit is available as 1GbE and 10GbE IP packets over Ethernet.

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 Compass Software Suite for enterprise control.

Modem Specifications

Waveform Processing

- Dual, Independent Channel Processing Chains
- Tunable IF Frequency: 720 +/- 200 MHz; 1200MHz +/- 325 MHz
- Modulation Capabilities: BPSK, QPSK, SQPSK, 8PSK, 16/32 APSK, 16QAM, MSK, GMSK
- Symbol Rates:
 - PSK: 10Msps to 600Msps x 2 channels
 - DVB-S2: 10Msps to 250Msps x 2 channels
- FEC Capabilities:
 - Convolutional: Single, Dual (I&Q), Stacked (Parallel) up to 8, Convolutional Interleaving
 - Reed-Solomon: CCSDS, Block Interleaving, Randomization up to 8, and unlimited Virtual-Fill
 - DVB-S2 LDPC (All MODCODS) and CCSDS LDPC*
- 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 (VCDU/APID)*
- SAS Hard drive Archiving*

Baseband Data Interfaces

- 1GbE Output Data (VITA-49 Packets), RJ45
- 10GbE-T Output Data (VITA-49 Packets)

Control and Status Interfaces

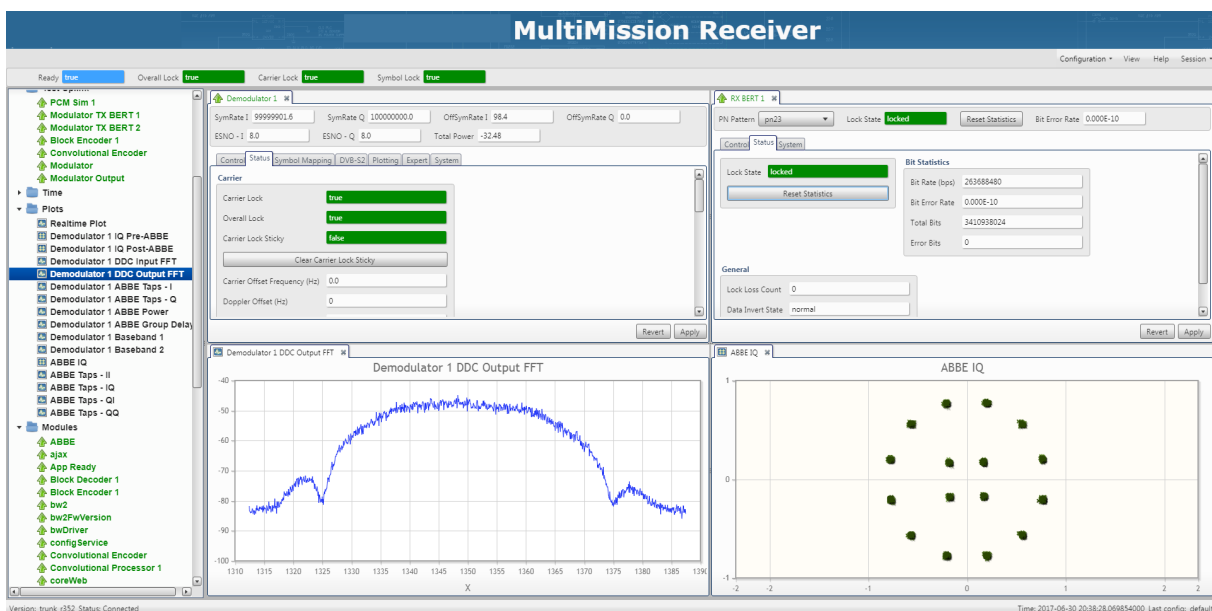
- Web-Based (HTML-5) GUI
- TCP/IP interface GEMS, REST via 1GbE
- Chassis Health and Status (Fans, Power-Supply)

General System and Hardware

- Linux Operating System (Cent OS)
- Hot-swappable, Redundant Power Supplies for Easy Sustainment
- 2U Chassis (19 x 5.25 x 29)

IA and Cyber

- STIG, DISA, NIST OS Hardening Available*



Consult factory for options

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