

Smallsat Radar, Comms, and More
For the International Market

TRIDENT SYSTEMS' **Multifunction RF Electronics Unit (MFREU) for Export**

The complete digital solution for flexible high-bandwidth programmable RF system needs in space, enabling rapid implementation of radar, communications, and other advanced programmable multifunction RF capabilities in a compact form factor.



Highly Integrated.

The MFREU combines Trident's high-performance space RF transceiver with supporting telemetry and control processing in a very small size, weight, and power footprint. SpaceVPX compatibility provides modularity and simplifies integration of peripherals and additional capability. A proven library of software and firmware modules accelerates high-speed RF application development and deployment.

Highly Reliable.

A Single Event Effects aware FPGA architecture, coupled with radiation-tolerant components and a robust mechanical design, provide a high-reliability platform for operation in harsh orbital and interplanetary environments.

TRIDENT RAPTOR

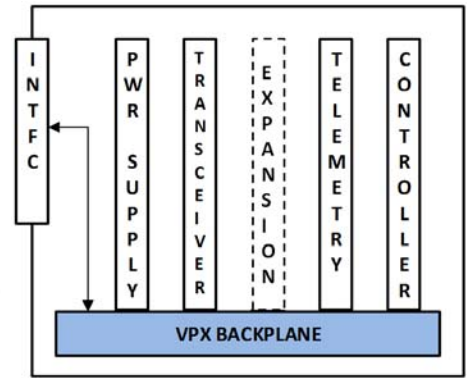
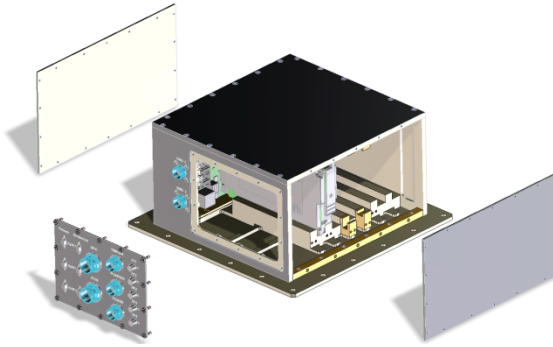
Space Qualifiable MFREU

Programmable radar features:

- On-orbit re-programmability
- Waveform (pulse-to-pulse)
- Pulse length & chirp rate
- Pulse repetition interval
- Range gates position and size
- Block adaptive quantization

Multifunction Reconfigurability:

- Multiple FPGA boot load options
- Dynamically reconfigurable



Specifications:

- Number of Channels 1 Transmit, 2 Simultaneous Receive
- Digital Converters 12 bits transmit, 12 bits receive; synchronization across multiple transceivers
- Sample Clock Range programmable up to 3.2 Gsamples/sec
- Instantaneous BW programmable up to 200MHz
- FPGA Xilinx Virtex-5QV
- Power < 85W (FPGA mode & duty cycle dependent; flexible low-power/standby modes)
- Weight < 13kg
- Shock/Vibration packaging, materials, construction per NASA and DoD test methods
- Temperature -20° C to +40 °C Operation (at thermal interface)
- Memory 1Gbyte SDRAM, 16MB QDR II+ SRAM (with EDAC)
500GByte high speed nonvolatile flash storage
- Form Factor 10.7" x 10.7" (baseplate dimensions), 5.5" height
- Radiation tolerance All components selected for high latchup immunity and total dose
- Fault Tolerance TMR program flow
SEU/SEFI fault detection/recovery
Configurable scrubbing
- Parts/Materials/Processes Exceeds requirements for targeted missions; contact Trident for details
- Base Transceiver Card Trident Space Qualifiable Digital RF Transceiver (SQDRT)
- Expansion Slot OpenVPX Specification, SRIO and SpaceWire connectivity, accepts SQDRT card
- Telemetry Dedicated card collects and manages both in-chassis and external telemetry data
- System Controller PowerQUICC III based system controller with 512MB onboard DDR1 memory

Interfaces:

- High-speed data Serial RapidIO
- Control & low-speed data Dual-Redundant SpaceWire Interfaces
- General Purpose I/O LVTTTL and LVDS
- RF 50 ohm single ended
- Reference & Sample Clocks Internal or External
- Backplane Interface SpaceVPX/OpenVPX per VITA 78/65
- Power 28VDC

**Form-Factor Engineering Development Models/Rapid Response Flight Units
-- Spring 2017**

Hardware & FPGA firmware customization available

Contact Us: rs@tridsys.com

Because we are constantly improving our products, these specifications are subject to change without notice.
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