

# MULTIFUNCTION RF ELECTRONICS UNIT & ON-BOARD PROCESSOR

*A complete SDR, processor and data storage unit built on Trident's VPX modules suitable for a wide range of mission applications. Built with an EMI/EMC hardened chassis, integrated power supplies and flexible I/O, it is modular and customizable; the ideal solution for modern space applications.*

## Highly Integrated

The MFREU combines Trident's xDRT modules with support modules for a complete unit-level solution. Based on our powerful, flexible multifunction processing architecture, programmability over all key RF/Processing features is available in a very small size, weight, and power footprint. SpaceVPX compatibility and customization provides modularity, scalability and simplifies integration into space payloads.

## Balanced Reliability

TRL9 on several LEO programs, a proven Radiation Effects Mitigated architecture, coupled with radiation-tolerant components, redundancy and a robust mechanical design, provide a low C-SWaP, high reliability platform for operation in harsh orbital and interplanetary environments.



Several Standard Configurations  
With Customization Available

# High Performance MFREU and Processor

*C-SWaP Optimized High Performance Solutions for Modern Space Programs  
Hardware, Software and Firmware customization available*

## Multi-Function RF Unit and Storage

- Up to 8 TX & RX channels per card
- Up to 4 xDRT modules per PSU
- 12-to-14-Bit DAC/ADC Options
- Interleaved Operation to >6 GSps
- DC - 8 GHz+ without RF Converter
- Internal/External RF Converter Options
- Card Synchronization
- Internal or External Ref/Sample CLK
- Up to 4 TB Storage per slot
- Redundant or Single String
- Customization Available



## On-Board Processor and Storage

- Up to 4 xDRTs modules per PSU
- FPGA/GPP expandable to GPUs
- 1/10/40 GigE interfaces
- DDR4 SDRAM, NAND, NOR
- Dynamic Reconfigurability
- Built-In-Test and HW Monitoring
- FW/SW Deployment Options
- Redundant or Single String
- Up to 4 TB Storage per slot
- Customization Available



## Typical Specifications

- Mission Areas
  - Trident Modules
  - Compatibility
  - Card Positions
  - SWaP
  - Power Supply
  - Temperature
  - Reliability
- SAR/GMTI Radar, EO/IR Imaging, Tactical ISR, On-Board Edge Processing, Custom RF SQDRT (Virtex5), UDRT (Xilinx MPSoC), RDRT (Xilinx RFSoc) and VDRT (Xilinx Versal AI)
- OpenVPX and SpaceVPX compatibility for 3rd party SBCs, GPUs, and GPPs
- Scalable; 3 to 7 slots typical; high-speed backplane inter-module connectivity
- 11" x 12" (baseplate) x 6" Typical, < 15 kg, 50 to 200W+ with low power modes
- +28 VDC MIL-STD-704 and MIL-STD-461E Filtered. Primary and redundant options
- 20' C to + 55' C Operation (at baseplate) configuration dependent
- TID: 100 kRad unit level (TYP), No DSEL for LET <= 37 MeV-cm<sup>2</sup>/mg

## Interfaces

- High speed data
  - Control & low speed data
  - General Purpose I/O
  - Discrete Enables
  - RF
  - Reference & Sample Clocks
  - Synchronization
  - Backplane Interface
  - Power
- SERDES, 1/10/40 GigE, Copper & Fiber
- GigE/UDP, SpaceWire, CAN bus, Custom
- RS-422, LVDS, LVTTTL, Custom
- PSU Select/Enable, Module Select/Enable
- 50 ohm single ended, high-density
- Internal or External
- 1 PPS
- SpaceVPX/OpenVPX per VITA 78/65
- Isolated, Filtered MIL-DTL 38999

## Multifunction Reconfigurability

- Multiple FPGA/Processor boot load options
- Primary/Redundant NOR Flash
- Dynamically Reconfigurable
- On-orbit re-programmability

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