



# 6U VPX RADIATION TOLERANT COMPUTER

## OVERVIEW

The 6U VPX IDEAS-TEK Radiation Tolerant computer (IRTC) provides computing capabilities to space payloads and spacecraft targeting 5-year nominal lifetime missions. The IRTC integrates two PowerPC processors in a redundant or master/slave configuration, radiation tolerant (RT) DDR3, RT triple-modular redundant (TMR) flash memory, and a radiation hardened (RH) FPGA to offer system monitoring and high-performance computing for a wide range of space applications. The IRTC is implemented in a 6U x 220mm VPX form-factor with a 2mm clamshell that provides conduction cooling via the chassis side rails.

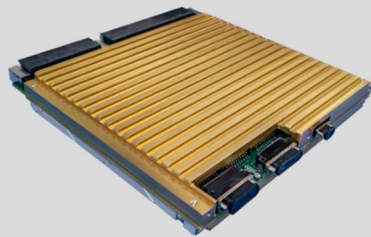
## COMPLIANCE

The IRTC is compliant to Open VPX (VITA 65) to facilitate re-use and interoperability during the implementation of fault-tolerant, high-performance systems for spacecraft and other high-availability applications.

## APPLICATIONS

The IRTC was designed with multi-processing in mind. It provides PCIe x1 lanes between the two processors as well as between the processors and FPGA. Along with multi-processing, the IRTC provides the following communication interfaces: SGMII ethernet ports to the backplane (two from each processor), Gigabit RGMII ethernet ports to the front-panel (1 for each processor), I2C, 96 LVDS pairs to the backplane, RS-485 interfaces (two for each processor), and is Spacewire-ready. The module is ideal for the following applications:

- Command and Data Handling
- Machine Learning
- Image Processing
- Data Processing
- Networking



## KEY FEATURES

### CPU Architecture

- Two Dual core PowerPC processors
- Up to 1GHz core operating frequency
- Integrated Security Engine

### FPGA Architecture

- Microsemi RH FPGA

### General

- Backplane connector family per TE Connectivity MULTIGIG RT-2
- IRTC module per VITA 46
- INTEGRITY RTOS, Linux, and VxWorks in development

### Environmental Resiliency

- -20°C to 50°C operating temperature

### Radiation Tolerance

- 50KRAD TID (estimated)
- SEL-free up to 55MeV (estimated)

### Power Supply

- +5 VDC (provided by VPX backplane)

### Flight Heritage

- TRL9

## DISCLAIMER

Product data is current as of the publication date. This document gives only a general description of the product and, except where expressly provided otherwise, shall not form any part of any contract. From time to time, changes may be made in the products or the conditions of supply.

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