

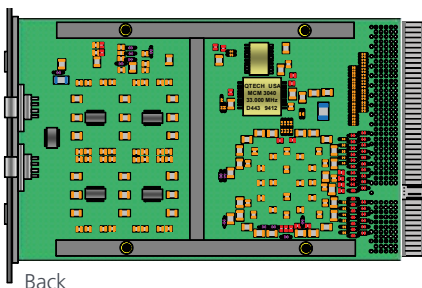
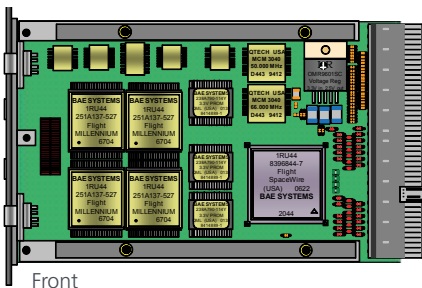
3U-160 CompactPCI[®] SpaceWire interface board

The new 3U-160 CompactPCI SpaceWire board, available in engineering and flight versions, provides the ability to interface between a 32-bit, 33 MHz PCI bus and a four-port SpaceWire router. The board architecture includes on-board processing and memory capabilities with up to 8 MB of error-corrected SRAM. The 3U-160 CompactPCI SpaceWire board can be obtained in either two or four SpaceWire port versions, where the four SpaceWire port version has a wider front panel header that covers more than one slot of a standard CompactPCI backplane.

Based on the successful insertion of SpaceWire into current missions, such as the Lunar Reconnaissance Orbiter and future networking requirements of our customers, this board is the first of an expanded set of planned offerings of SpaceWire products (boards, boxes, software and support) to address a wider variety of applications and improve the infrastructure of the network.

The 3U-160 CompactPCI SpaceWire board can operate as a stand-alone board or integrate with host processors, such as the RAD750[®] single board computer. In addition to the base support software accompanying the board, BAE Systems offers additional software for utilizing the embedded microcontroller on this board either as a remote assistant to other processors on the PCI bus, or as a standalone microcontroller taking advantage of the memory on this board.

The CompactPCI interface employs Hypertronics connectors. With minor limitations, it is compatible with 64-bit CompactPCI backplanes. The PCI interface is also capable of acting as the PCI central resource.



Specifications and features

Form factor

CompactPCI 3U (100 mm by 160 mm)

Weight: 500 grams (TBR)

Temperature range

-55 to +70 degrees Celsius (TBR)

Radiation hardness

Total dose: > 100 Krads (Si)

SEU: <8e-4 errors/card-day with 8 MB SRAM

Latchup: immune

Power dissipation

< 5 W typical

2.9 A maximum operational current

Power supply

3.3V +/- 10 percent

2.5V generated on card

Interface performance

Up to 4 SpaceWire links at 264 MHz max.

32-bit, 33 MHz 3.3 V PCI: 132 MB/s burst

Memory (selectable)

Error corrected start-up memory (256 KB EEPROM or 64 KB PROM)

Error corrected SRAM (up to 8 MB)

Software features

C Compiler, assembler, linker, and simulator available for embedded microcontroller

Example start-up ROM and VxWorks board support package provided

Green Hills Software's INTEGRITY real-time operating system can serve as alternate board-support package

User guide provided

Optional available middleware layer for SpaceWire network discovery, management, and performance monitoring

Not Just a SpaceWire Router

The 3U-160 CompactPCI SpaceWire board can stand alone or integrate with other CompactPCI Boards, such as the 3U RAD750 single board computer. In either case, the board-processing function can easily be extended by taking advantage of the on-board embedded microcontroller.

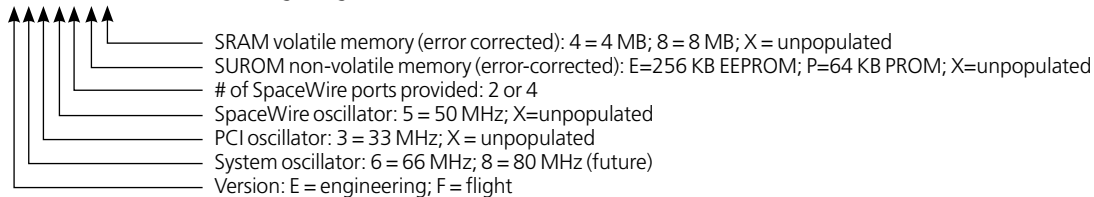
A memory subsystem on the 3U-160 CompactPCI SpaceWire Board, comprised of non-volatile start-up ROM and volatile SRAM, is provided for local code or data storage. The CompactPCI connector set provides the means to interface with other system components across the PCI Bus.

Flexibility

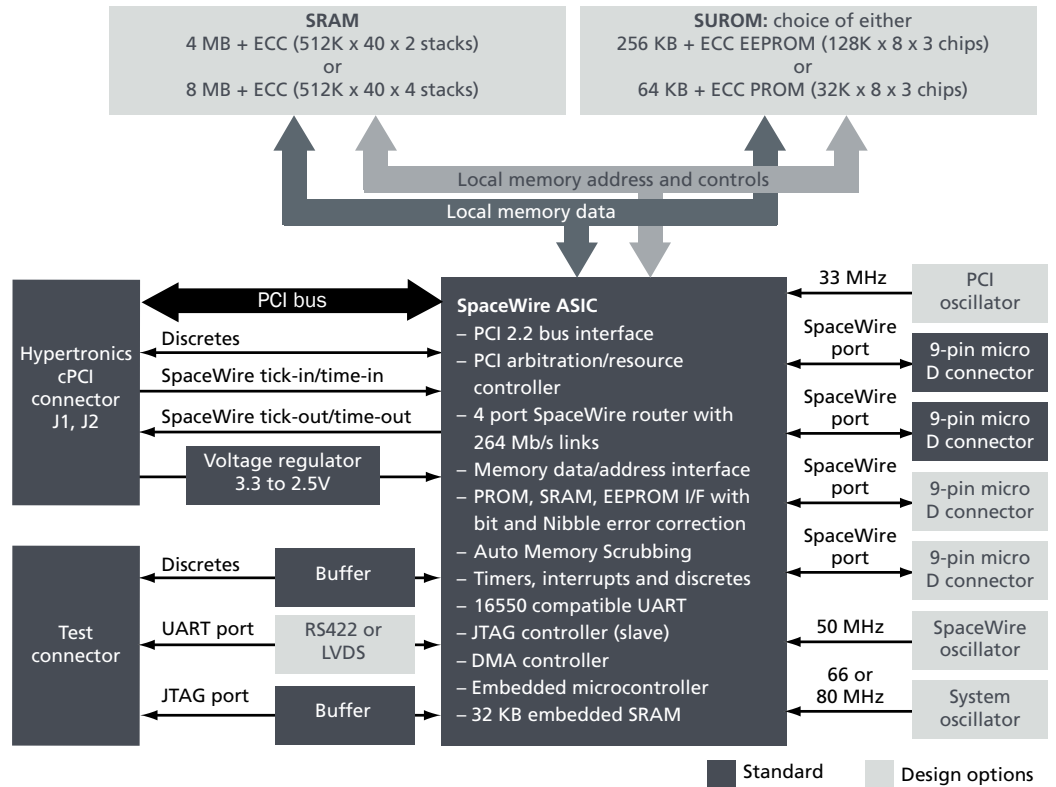
The 3U-160 CompactPCI SpaceWire Board supports the installation of up to three oscillators to clock the "system" logic, PCI Bus logic and SpaceWire logic respectively. The system oscillator, along with the installation of the appropriate jumpers and the SpaceWire ASIC, can be used to clock the entire Board. The other two oscillators, for clocking the PCI Bus logic and SpaceWire logic, can be optionally installed if other frequencies are desired.

Product ordering information

8451580-ZZZZZZZZ ← UART signaling levels: L = LVDS; R = RS-422



Hardware block diagram



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