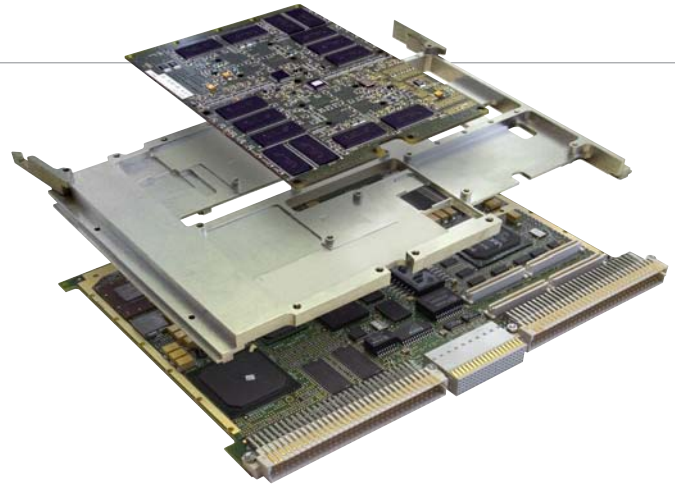


MYRIAD-4130 VME64 Host and Carrier

- Half-slot host
- PMC and compute node on one 6U VME
- RACE++ transfers at >500 MB/s
- Native Gigabit Ethernet
- Native MIL-1553
- Conduction-cooled



The RACE++® Series MYRIAD™-4130 host and carrier board provides one 64-bit PMC site, one Mercury J-style daughtercard site, and two RACE++ interfaces on a single 6U conduction-cooled board. The PMC site can accept a variety of PCI mezzanine cards, including front-panel data port (FPDP) and Fibre Channel I/O interfaces. The J-style daughtercard site accommodates a compute node (CN) daughtercard. Two RACE++ connections support low-latency, high-bandwidth data transfers between the MYRIAD-4130 and the RACE++ switch fabric.

Value and Flexibility

The MYRIAD-4130 system also features a 600 MHz Freescale™ MPC8540 processor, which can act as the host processor in a RACE++ Series VME multicomputing system. This flexibility makes the MYRIAD-4130 ideal for many data acquisition applications, where an I/O subsystem with high throughput capability is essential. The combination of a site for a compute node daughtercard and hosting capability in a single slot gives the MYRIAD-4130 the value of a "half-slot host." It also gives users direct RACE++ connectivity between the host processor and CNs.

On-board Freescale MPC8540 Processor

At the heart of the MYRIAD-4130 is the Freescale MPC8540 microprocessor, a member of the PowerQUICC™ 3 family. Featuring both floating point and vector processing, the MPC8540 also provides two Ethernet controllers (10/100/1000T and 10/100T). It has a 32-bit, dual-issue, superscalar, 7-stage pipeline core with 64 KB of L1 cache and 256 KB of L2 cache. On the MYRIAD-4130, the MPC8540 is augmented by up to 1 GB of Flash memory (512 MB standard on the 4130) and 256 MB of RAM. Running VxWorks®, it provides full MCOE™ API support for DMA transfers to and from the CNs over the RACE++ switch fabric.

Direct Low-Latency Transfer to RACE++ Fabric

A RACE/PCI/Memory (RPM) bridge on the MYRIAD-4130 provides a RACE++ interface for the PMC site and for the MPC8540. The RPM bridge connects to 256 MB of on-board RAM at

640 MB/s. The RPM design has two distinct advantages: it eliminates the bottleneck when memory must be accessed via RACEway; and it offloads this traffic from RACEway to improve overall system performance. RACE++ devices elsewhere in the system can also master memory transfers to and from the RPM memory. Two RACE++ ports between the board and the switch fabric allow sustained data transfer rates greater than 500 MB/s.

Abundant I/O

PMC I/O uses the P0 connector. I/O through the PMC site crosses a 64-bit, 33 MHz PCI bus segment to the RPM bridge.

The board also provides native I/O capabilities such as Gigabit Ethernet, RS-232/422/485 serial communication, and general-purpose I/O. These interfaces are routed through the P0 pins of the VME connector. Users select their application-specific set of interfaces during board configuration.

J-Style Site

A Mercury J-style daughtercard site provides two RACE++ connections between the daughtercard and the RACE++ switch fabric. If more processing power is needed, the J-Style site can be equipped with a compute node daughtercard, supporting dual PowerPC® processors.

Conduction-Cooled

For operation at extreme altitudes or in other environments where conventional air cooling is not possible, the conduction-cooled MYRIAD-4130 is ideal. It includes an IEEE 1101.2-standard mechanical core for conduction cooling. This added cooling plate transfers thermal energy from hot components to the board's edge, where the chassis' cooling system carries it away. Other design features that enhance system reliability and quality include reduced parts count, and lowest-wattage-available versions of components.

Rugged

The MYRIAD-4130 is carefully designed and tested to ensure compliance with Mercury's Level 3 published rugged specifications. The central cooling plate adds significant structural stiffening to the board,

and wedgelocks are used to clamp the board assembly into ATR-type rugged enclosure wall slots. The board has urethane conformal coating to protect against high humidity, chemicals, and fungus, and metal surfaces are treated to protect them against salt-fog intrusion.

Two Versions

Two primary versions of the host and carrier board are available. The MYRIAD-4130 provides a MIL-1553 interface. The MYRIAD-4135 omits that interface along with an Ethernet link, but features a standard, 1 GB of Flash memory. The two versions are otherwise identical.

PMC Options

The MYRIAD-4130 can be purchased with turnkey I/O integrated into MCOE with native MCOE drivers. Alternatively, customers can purchase the MYRIAD-4130 with a bare PMC site and configure it with commercial off-the-shelf (COTS) or custom-designed PMC modules using the DX Developer's Kit. Mercury's comprehensive VxWorks BSP makes it easy for users to create custom control applications.

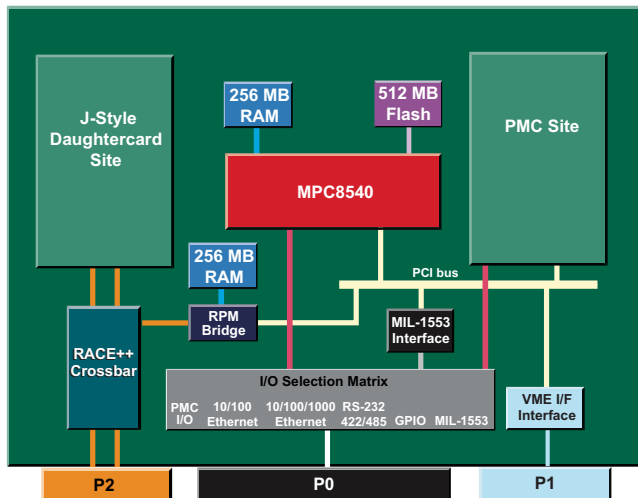
Various PMC options that do not require front panel I/O are available to enhance performance, increase throughput, reduce latency, and increase functionality. PMC implementations can include Fibre Channel, video, Gigabit Ethernet, SCSI, or IEEE-1394 (FireWire®) interfaces.

Part and Model Numbers

Part	Model	Description
910-18155	MYRIAD-4130/00/00/00	
910-18168	MYRIAD-4130/00/01/00	With one Dual MPC7410,400 MHz T3VH
910-18201	MYRIAD-4135/00/00/00-S	With 1 GB Flash, Special

Notes:

1. All models: VME64/RACE++ PMC/J hybrid carrier T3VH.
2. The 4135 is a 4130 minus the 1553 chip and equipped with 1 GB Flash (which is an option on the 4130).



MYRIAD-4130 architecture

Specifications

Hardware Specifications

Processor	Freescalar MPC8540 at 667 MHz, 1388 MIPS
SDRAM	512 MB
Flash	512 MB standard, 1 GB optional (1 GB standard on MYRIAD-4135)
Daughtercard sites	1 PMC site 1 Mercury J-style site
Input/output (P0 connector)	1x 10/100/1000 Ethernet 1x 10/100 Ethernet 1x serial (console) 3 leads 1x serial (auxiliary) 9 leads 1x serial (auxiliary) 3 leads 2x MIL-1553 (TxA, TxB)
General-purpose input/output (P0 connector default settings)	8x single-ended TTL in/out 8x differential RS-422/485 in 8x differential RS-422/485 out

Conduction-Cooled Environmental Specifications

Temperature	Operating -40°C to +71°C card-edge temperature Storage -55°C to +125°C
Rate of change	10°C /min
Humidity	100% condensing
Vibration	Random 0.1 g ² /Hz, 5 to 2000 Hz, 1 hr/axis Sine 10g peak, 5 to 2000 Hz, 1 hr/axis Shock 50g z-axis, 80g x-/y-axes, 11 ms, half-sine pulse
Altitude	Operating 0 to 70,000 ft Storage 0 to 100,000 ft
Salt-fog	Designed to 10% NaCl
Power	+5V 1.5A (nominal), 2.5A (maximum) +3.3V 3.5A (nominal), 5.0A (maximum)

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