

# MYRIAD-4050 VME64 Host and Carrier

## Half-Slot Host

- Abundant I/O with high throughput
- Ideal for data acquisition applications
- Low-latency transfers for better system performance
- Flexible PMC options



The RACE++® Series MYRIAD™-4050 host and carrier board from Mercury Computer Systems provides one 64-bit PMC site, one Mercury J-style daughtercard site, and two RACE++ interfaces on a single 6U air-cooled board. The PMC site can accept a variety of PCI mezzanine cards. The J-style daughtercard site accommodates a compute node (CN) daughtercard. Two RACE++ connections support low-latency, high-bandwidth data transfers between the MYRIAD-4050 and the RACE++ switch fabric.

### Value and Flexibility

The MYRIAD-4050 system features a 667 MHz Freescale™ MPC8540 processor, which can act as the host processor in a RACE++ Series VME multicomputing system. This flexibility makes the MYRIAD-4050 ideal for many data acquisition applications, where an I/O subsystem with high throughput capability is essential. The combination of a site for a CN daughtercard and hosting capability in a single slot gives the MYRIAD-4050 the value of a "half-slot host." It also gives users direct RACE++ connectivity between the host processor and CNs.

### Onboard MPC8540 Processor

At the heart of the MYRIAD-4050 is the MPC8540 microprocessor, a member of the PowerQUICC™ III 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-4050, the MPC8540 is augmented by up to 1 GB of flash memory and 256 MB of RAM. Running VxWorks® software, 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-4050 provides a RACE++ interface for the PMC site and for the MPC8540. The RPM bridge connects to 256 MB of onboard 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 CN daughtercard, supporting dual PowerPC® processors.

### Rugged

The MYRIAD-4050 is carefully designed and tested to ensure compliance with Mercury's Level 1 published rugged specifications.

## PMC Options

The MYRIAD-4050 can be purchased with turnkey I/O integrated into MCOE with native MCOE drivers. Alternatively, customers can purchase the MYRIAD-4050 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
910-18241	MYRIAD-4050/00/00/00	VME64/RACE++ PMC/J-style hybrid carrier, rugged TVH
910-18242	MYRIAD-4050/00/00/00-01	VME64/RACE++ PMC/J-style hybrid carrier with MIL-1553, rugged TVH
910-18243	MYRIAD-4050/00/01/00-01	VME64/RACE++ PMC/J-style hybrid carrier, MIL-1553 & P2J256J-Q1 dual CN, 256 MB, 3V, 400 MHz 7410 with L2 cache, rugged TVH

## Specifications

### Hardware

Processor	Freescall MPC8540 at 667 MHz, 1388 MIPS
SDRAM	512 MB
Flash	512 MB standard, 1 GB optional
Daughtercard sites	
1 PMC site	
1 Mercury J-style site	
Input/output (P0 connector)	
1x 10/100/1000 Ethernet 8 leads	
1x 10/100 Ethernet 4 leads	
1x Serial A (console) 3 leads	
1x Serial B (auxiliary) 9 leads	
1x Serial C (auxiliary) 3 leads	
2x MIL-1553 (TxA, TxB)	
1x PMC I/O 24 leads	
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	

### Air-Cooled Environmental Specifications

Temperature	
Operating	-25°C to +55°C inlet air temperature
Storage	-55°C to +85°C
Rate of change	5°C /min
Humidity	5% to 95% non-condensing
Vibration	
Random	0.04g <sup>2</sup> /Hz, 20 to 2000 Hz, 1 hr/axis
Shock	z-axis: 30g, x and y axes: 50g, 11 ms, half-sine pulse
Altitude	
Operating	0 to 30,000 ft
Storage	0 to 50,000 ft
Salt-fog	Per special test
Power	
5V	1.5A (nominal), 2.5A (maximum)
3.3V	3.5A (nominal), 5.0A (maximum)

RACE Series and RACE++ are registered trademarks, and MYRIAD, MCOE, and Challenges Drive Innovation are trademarks of Mercury Computer Systems, Inc. All other products mentioned may be trademarks or registered trademarks of their respective holders. Mercury Computer Systems, Inc. believes this information is accurate as of its publication date and is not responsible for any inadvertent errors. The information contained herein is subject to change without notice.

Copyright © 2006 Mercury Computer Systems, Inc.

529.00E-0306-DS-myr4050



### Corporate Headquarters

199 Riverneck Road  
Chelmsford, MA 01824-2820 USA  
+1 (978) 967-1401 • +1 (866) 627-6951  
Fax +1 (978) 256-3599  
www.mc.com

### Worldwide Locations

Mercury Computer Systems has R&D, support and sales locations in France, Germany, Japan, the United Kingdom and the United States.

For office locations and contact information, please call the corporate headquarters or visit our Web site at [www.mc.com](http://www.mc.com).