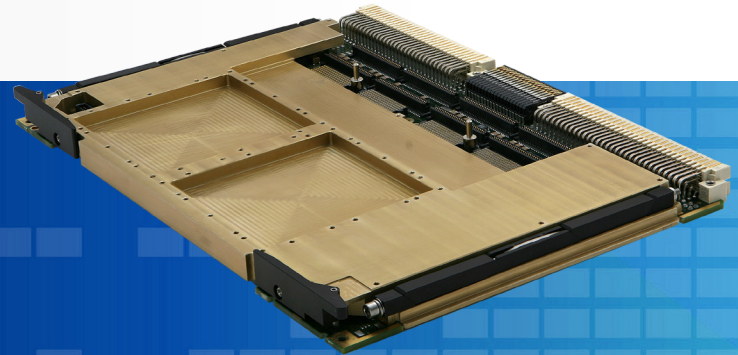


# BuiltSAFE™ RIO6-8096

*Freescale® QorIQ® P2 6U VME64x Single Board Computer (SBC)*

- Freescale® QorIQ® P2010 processor
- Xilinx Spartan®-6 LXT user-programmable FPGA
- Board Management Controller (BMC)
- Static routing module (FlexIO™)
- 2x PMC/XMC sites
- Rugged conduction-cooled packaging



Mercury's BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink comms processing save time and cost while decreasing risk.

The BuiltSAFE RIO6-8096 is a 6U, conduction-cooled VME64x Single Board Computer for airborne applications. It is specifically designed for the most demanding applications, combining very high compute and flight-worthiness capabilities within harsh environments.

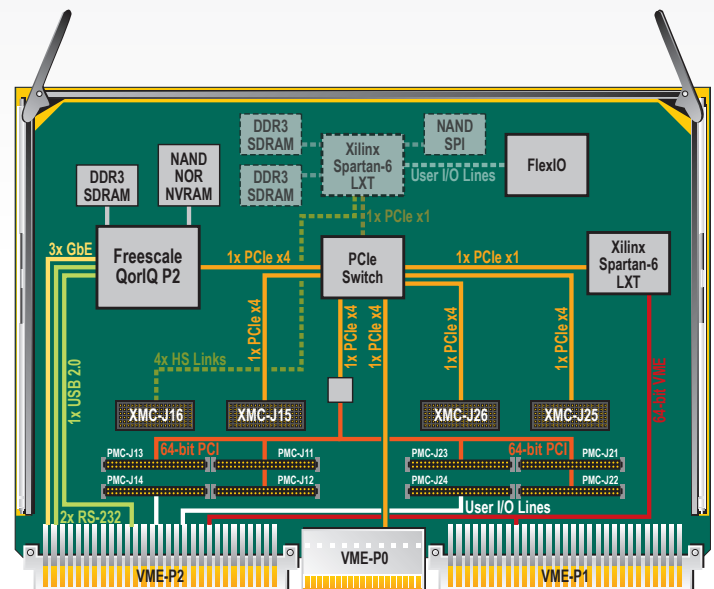
The BuiltSAFE RIO6 family is a sixth generation 6U VME64x PowerPC compute platform combining a fast dual-core processor with modern interconnect high-speed links and bridges (PCIe, Gigabit Ethernet).

The BuiltSAFE RIO6-8096 provides a PCIe x4 connection over the VME-P0 connection, allowing the insertion of modern interconnect technology into any system based on a VME64x backplane with a P0 connector.

For an easy configuration of the I/O pinout and support of legacy pin-outs a static routing module (FlexIO) is placed between the different I/O sources and the backplane. Combined with the onboard FPGA-based PCIe to VME bridge FlexIO makes the RIO6-8096 a versatile fit for legacy placements requiring additional compute performance.

## BuiltSAFE for Avionics

Mercury's expertise and experience in safety certifiable solutions has been built on successful execution of dozens of programs over three decades. This domain knowledge is the foundation of our BuiltSAFE portfolio of open architecture modules, systems and software for avionics, communications, video servers, and mission computing.



*Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.*



ACQUIRE



DIGITIZE



PROCESS



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EXPLOIT



DISSEMINATE

## Technical Specifications

### Compliance

Conduction-cooled 6U VME64x

### Power Consumption

25 Watts (typical)

### Processor

Freescale QorIQ P2010 (1 core)

### Memory

1/4 Gb DDR3 SDRAM at 6.4 GB/s peak with ECC protection

2 GB Flash (NAND)

128 MB Flash (NOR)

256 KB NVRAM

### FPGA/User-Programmable/User I/O Lines

Xilinx, Spartan-6 LX100T user-programmable FPGA with dual 128 MB DDR3 SDRAM and 8 MB Flash (SPI)

32 user-specific I/O lines on PMC-J14 to VME-P2

48 user-specific I/O lines on PMC-J24 to VME-P2

64 user-specific I/O lines on FPGA to CES FlexIO

### I/O Customization

1x CES FlexIO static routing module (interconnect between PMCs/XMCs, VME-P2 and user FPGA)

### Buses

1x 64-bit VME64x 2eSST bus on VME-P1/P2

1x 64-bit PCI 3.0 bus at 33/66 MHz on PMC-J11/J12/J13/J21/J22/J23

High-Speed Links/Connections

1x PCIe x4 on VME-P0

3x PCIe x4 on XMC-J15/J25/J26 (1x each) (VITA 42.3)

3x 10/100Base-TX/1000Base-T on VME-P2

1x USB 2.0 host on VME-P2

2x RS-232 on VME-P2

4 high-speed links on FPGA to XMC-J16<sup>(1)</sup>

<sup>(1)</sup> Depends on FPGA configuration

### Sites

2x PMC/XMC sites (VITA 42.3)

### Board Management Controller

Power management

Board start-up and voltage monitoring

Temperature monitoring (thermal sensors on critical positions)

Development/Debug

Onboard JTAG test port

Rear I/O transition module

Xilinx ChipScope Pro FPGA debugging tool

## Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
C4	Extended range CC	Conduction	-40°C to 85°C [CC4]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g <sup>2</sup> /Hz, 1000-2000Hz: decrease at 6 dB/octave	40g, 11ms saw-tooth, three axes

## Environmental Specifications

Condition	Limits, standards	Comments
Non-operating temperature	-55°C to 105°C [C4]	
Humidity	95%	
Altitude	-1,500 to 60,000 feet	May require conformal coating
Fungus resistance	No nutrient materials	
Workmanship	IPC-A-160 class 3	
Soldering	IPC J-STD-001 class 3	
PCB Manufacturing	IPC-A-600 class 3	
Conformal coating	IPC-CC-830	Optional
Materials	REACH compliant	ROHS variants as an option
Flammability	UL 94 Class V-0	
Quality	EN 9100:2008	

## Product Ordering

RIO6-8096AF	Conduction-cooled 6U VME SBC with QorIQ P2010 @ 1.0 GHz, 512 KB L2, 1 GB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM, Spartan-6 LXT
RIO6-8096EF	Conduction-cooled 6U VME SBC with QorIQ P2010 @ 1.0GHz, 512 KB L2, 4 GB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM, Spartan-6 LXT
OWW-30920B	VxWorks® BSP for RIO6-809x
OWW-30930E	VxWorks 653 BSP for RIO6-809x
OWX-30930D	Linux® Toolbox for RIO6-809x

## Related Hardware Products

BPA-6513A0	Passive blackplane adaptor for high-speed links (3 slots)
ISC-8422R0	Low-power, conduction-cooled 6U VME PMC/XMC carrier board for RIO6-8096
RTM-6290A0	Rear I/O Transition Module for RIO6-8096/97 (3x RJ45: 3x GbE, 2x µDB9: 2x RS-232, 6x µDB9: 6x RS-422/485, 1x DB9: service interface, 1x USB Type A: 1x USB 2.0, 5x Harting: 5x 16x GPIO)

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