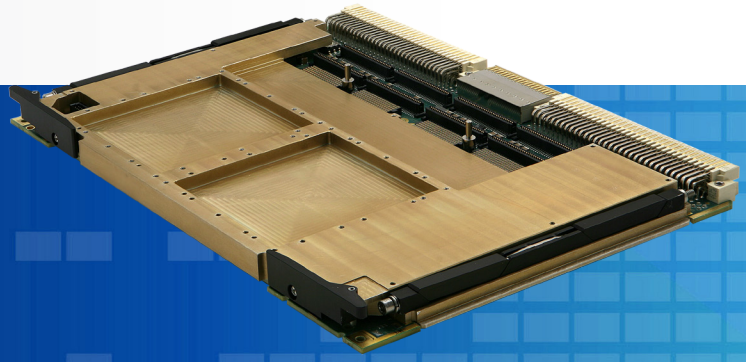
DATASHEET

BuiltSAFE™ RIO6-8092

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



- **Board Management Controller (BMC)**
- **Freescale® QorIQ® P2020 processor**
- **Xilinx Spartan®-6 LXT user-programmable FPGA**
- **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 RIO6-8092 is a 6U, conduction-cooled VME Single Board Computer for airborne applications. It is specifically designed for the most demanding applications, which require high compute capabilities.

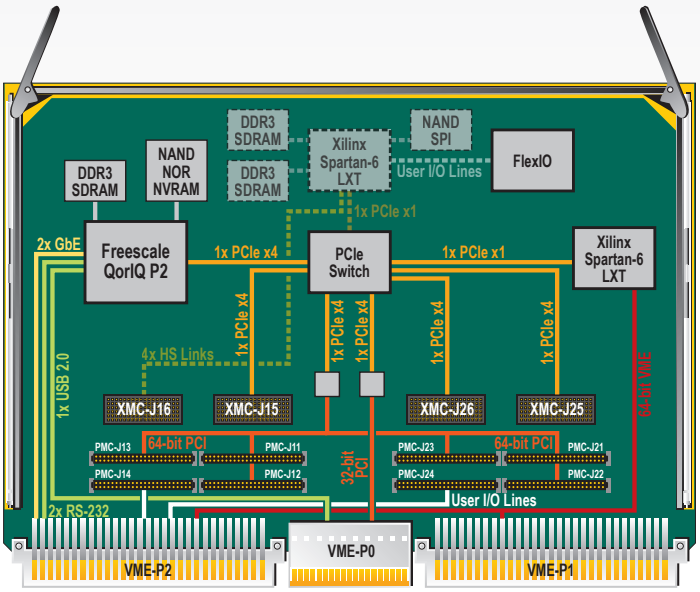
The BuiltSAFE RIO6-8092 is a sixth generation 6U VME PowerPC compute platform. It combines a fast dual-core processor with modern interconnect high-speed links and bridges (PCIe, Gigabit Ethernet) and a user-programmable FPGA for application development.

The BuiltSAFE RIO6-8092 provides a PCI connection over the VME-P0 connector. This additional bus routed on the backplane enables VMEbus offload for operations such as splitting the data plane from the control plane.

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 RIO6-8092 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.

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Technical Specifications

Compliance

Conduction-cooled 6U VME64x

Power Consumption

25 Watts (typical)

Processor

Freescale QorIQ P2020 (2 cores) @ 1.0 GHz

Memory

1 GB DDR3 SDRAM @ 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 FPGA with dual 128 MB DDR3 SDRAM, 4 GB Flash (NAND) and 8 MB Flash (SPI)

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

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

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

IO 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 32-bit PCI 3.0 bus at 33/66 MHz on VME-P0

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

High-Speed Link Connections

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

2x 10/100Base-TX / 1000Base-T on VME-P2

1x USB 2.0 host on VME-P0

2x RS-232 on VME-P2

4 high-speed links on FPGA to XMC-J16 (optional)

Sites

2 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

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^2/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

RIO6-8092AF	Conduction-cooled 6U VME SBC with QorIQ P2020 @ 1.0 GHz, 512 KB L2, 1 GB DDR3, 2 GB NAND, 128 MB NOR, 256 KB NVRAM, Spartan-6 LXT (VME-P0: 32-bit PCI)
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

DBG-6206A0	Rear I/O debugging board for RIO3-8066/RIO6-8092 (1x RJ45: 1x FETH, 2x µDB9: 2x RS-232) [1]

(1) For other rear I/O configuration please contact Mercury

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