

MVME8100

NXP® QorIQ® P5020 VME64x/VXS SBC

DATA SHEET

- NXP QorIQ P5020 1.8/2.0GHz
- Up to 8 GB DDR3-1333 MHz ECC Memory
- 512 KB FRAM
- 2 PMC/XMC sites
- Embedded NAND Flash (8GB eMMC)
- 2 x 4 PCIe or 2 x 4 SRIO connectivity to VXS backplane P0
- Up to 3 USB 2.0 ports
- Up to 5 Ethernet ports
- Up to 5 Serial ports
- 4 GPIO
- Extended temperature and conduction cooled variants

The SMART Embedded Computing MVME8100 is a high performance 6U VME/VXS SBC featuring the NXP QorIQ P5020 processor supporting high speed DDR3-1333 MHz with ECC. It offers expanded IO and memory features with PCIe and SRIO fabric connectivity and multiple USB, Serial and Ethernet ports. Memory includes up to 8 GB DDR3, 512 K FRAM non-volatile memory, and 8 GB eMMC NAND Flash.

The MVME8100 is offered in commercial and fully rugged variants for extreme environments with extended shock, vibration, temperatures and conduction cooling. It is designed for a range of high end industrial control such as SPE and photo lithography and C4ISR, including Radar/Sonar. It will provide technology insertion to prolong current programs while providing more computing performance and data throughput.

The MVME8100 supports a full range of BSPs including Linux, Wind River VxWorks, and Green Hills Integrity.



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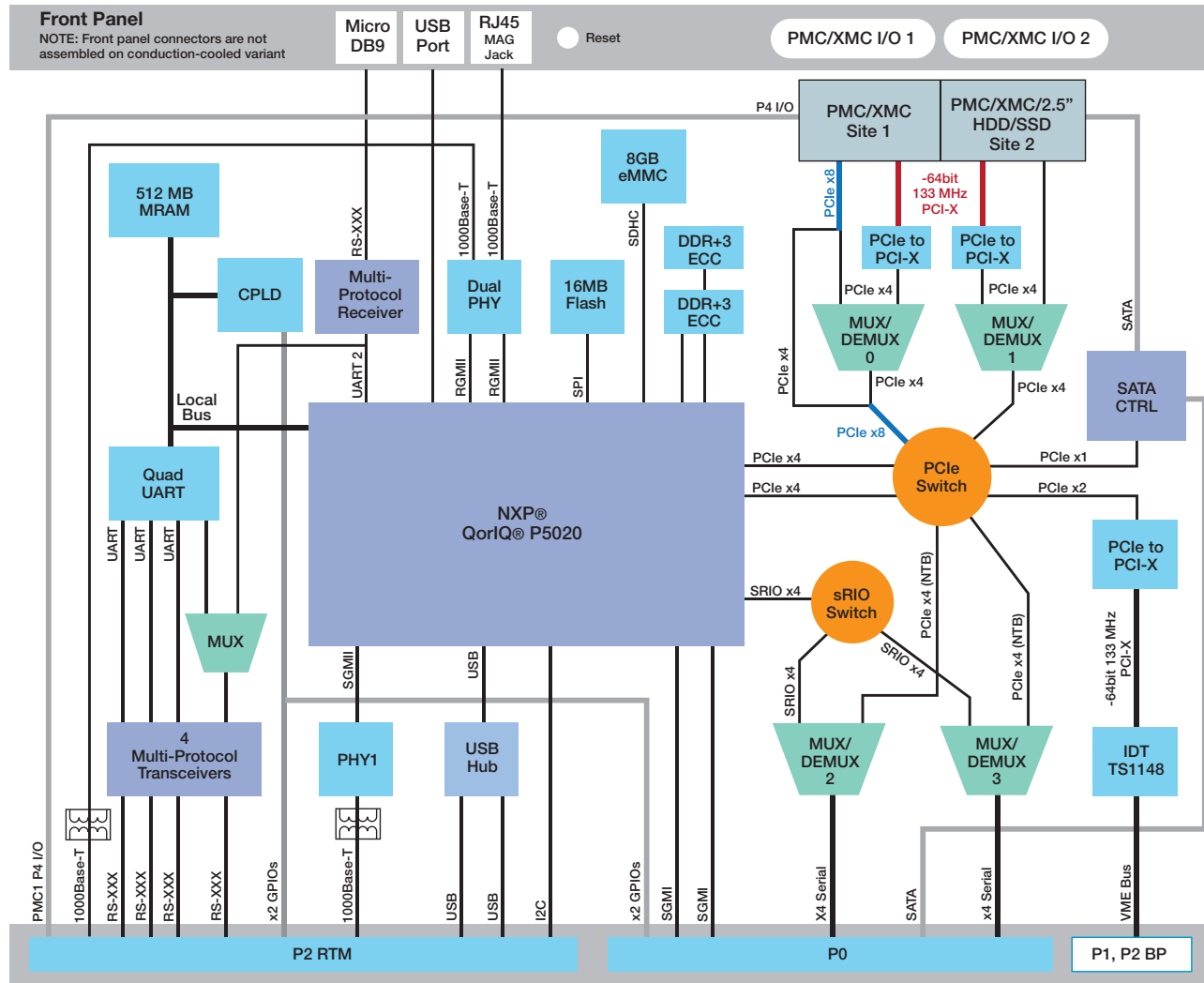
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 **SMART**
Embedded Computing

MVME8100

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MVME8100 Block Diagram





Hardware Specifications

PROCESSOR

- NXP QorIQ P5020
- 1.8GHz: ENP4 variant
- 2.0GHz: ENP1 variants

MEMORY

- Designed for 8GB of 64 bit DDR3-1333 ECC SDRAM soldered down
- 16MB SPI ROM for boot code (in 1+1 redundant 8MB banks/devices)
- 512 kB MRAM for data storage
- 8GB NAND Flash with SD/EMMC interface

BACKPLANE I/O

- P0
 - Two SERDES GbE (VITA 41.6) (dedicated)
 - Up to two SRIO x4 links (VITA 41.2)
 - Up to two PCIe x4 links (VITA 41.4); root or end-point
 - One SATA 6 GB
 - Two GPIO
- P1
 - VME64x & 2eSST
- P2
 - PMC1 I/O (64 signals)
 - Two USB 2.0
 - VME64x & 2eSST
 - Four RS232/422/485
 - Two 10/100/1000BaseT Ethernet
 - Two GPIO

OTHER FEATURES

- Real Time Clock with battery backup
- Real time counters
- Watchdog

EXPANSION MODULE

- Site 1 supports PMC or XMC (PCI-X/PCIe x8)
- Site 2 supports PMC or XMC (PCI-X/PCIe x4) or alternatively supports a mounting kit for a 2.5" SATA HDD or SSD A: Contact SMART EC or consult installation/use manual for requirements for rugged (ENP4) SSD modules.

FRONT PANEL CONNECTIVITY

- One GbE (RJ-45)
- One RS232/422/485 console (Micro-BD9)
- One USB 2.0 (Type A)

POWER REQUIREMENTS

- ENP1: 38 W idle, 42 W typical, 54 W max
- ENP4: 65 W @ 85 °C card edge

Software and Firmware Specifications

BOOT

- UBoot binary and source code

BOARD SUPPORT PACKAGES

- VxWorks available through Wind River
- Linux



Estimated MTBF

MTBF estimated per Telcordia SR-332, issue 2, ground fixed, controlled environment, unit ambient air temperature of 40 °C is 564,000 hours (ENP1 version), 577,000 hours (ENP4 version) at 60% confidence level. Contact SMART EC for alternative environments or temperatures.

All Modules

ENVIRONMENTAL

Ruggedization Level 3	ENP1	ENP4
Cooling Method	Forced Air	Conduction
Operating Temperature	0 °C to +55 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C	-55 °C to +105 °C ³
Vibration Sine (10min/axis)	2G, 5 - 500 Hz	10G, 15 to 2000 Hz
Vibration Random (1hr/axis)	.002 g2/Hz, 15 to 2000 Hz ¹	0.1 g2/Hz, 15 to 2000 Hz (12 GRMS) ²
Shock	20 g/11 mS	40 g/11 mS
Humidity	to 95% RH	to 100% RH
Conformal Coating	No	Acrylic

Note 1: Flat 15-1000 Hz, -6 db/octave 1000 Hz – 2000 Hz [MIL-STD 810F Figure 514.5C-17]

Note 2: +3 db/octave 15-300 Hz, Flat .1g2 300-1000Hz, -6 db/octave 1000 Hz – 2000 Hz [MIL-STD 810F Figure 514.5C-8]

Note 3: ENP4 storage temperatures exceed NAND flash limits of -40° to -85°C. Data degradation can occur.

RoHS (reduction of hazardous substances) status— ENP1: RoHS II, ENP4: RoHS 5/6 lead solder

ELECTROMAGNETIC COMPATIBILITY (EMC)

- SMART EC board products are tested in a representative system to the following standards:
 - U.S.: FCC Part 15, Subpart B, Class A (non-residential)
 - Canada: ICES-003, Class A (non-residential)
 - CE Mark per European EMC Directive 2004/108/EC with Amendments; Emissions: EN55022 Class A; Immunity: EN55024
 - KCC Mark (ENP1)

DOCUMENTATION

- Installation and Use Manuals
- Programmers Reference Manual
- Release Notes
- OS Release Notes and User Guide

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Ordering Information

Part Number	Description
Boards	
MVME8100-202200401E	P05020 2.0GHz, 4GB DDR3, 2PMC/XMC, ENP1 IEEE
MVME8100-04CC	P05020 1.8GHz, 4GB DDR3, 2PMC/XMC, ENP4, conformal coated
Accessories	
SERIAL-MINI-D2	Serial cable - Micro D sub connector to standard DB-9
ACC/CABLE/SER/DTE/6E	Serial cable, RD 009, 2M, 2 DTE MD/D, RJ45 to DB9

SOLUTION SERVICES

SMART Embedded Computing provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include worldwide technical support. Renewal services enable product longevity and technology refresh.

CONTACT DETAILS

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