GENERAL MICRO SYSTEMS, INC.
TRUSTED AND DEPLOYED SINCE 1979

PHOENIX *VPX450*

Rugged, Ultra-High Performance, 6U VPX SBC with Dual Xeon® E5 CPU,1 TB RAM and 40 Gb Ethernet

Dual Intel® 22 Core
Xeon® E5
Up to 2.2 GHz

Up to
1024 GB
DDR4 DRAM w/ECC

Up to
80 Lanes
PCI Express

Operating Temperature Range
-20 to +75°C
Available in Rugged Level 1-3

SYSTEM HIGHLIGHTS

- Rugged, 6U VPX dual slot air-cooled module
- Dual 2.2 GHz Intel® Xeon® E5 each up to 22 cores
- Hyper-Threading on each core for up to 88 logical cores
- Supports up to 1024 GB of RAM with ECC up to 2133 MT/s
- 55 MB unified instruction/data cache for each CPU
- Up to 80 lanes of Gen 3 PCIe
- Two 40 Gigabit Ethernet ports with Fiber/Copper
- One Gigabit Ethernet port with TCP/IP offload engine
- Support for one Enterprise Class x4 PCIe SSD on XMC carrier
- Add-In Cards: PCIe-Mini, XMC, M.2
- OpenVPX profiles are optional (consult Sales)

SYSTEM OVERVIEW

The VPX450 "Phoenix" is a dual slot VPX module with front and rear I/O. Using Intel's most popular server processor, the CPU module supports dual Intel® Xeon® processors (E5-2699R v4), each with up to 22 physical cores with Hyper-Threading for a total of 88 logical cores operating at up to 2.2 GHz with the ability to TurboBoost up to 3.6 GHz. To harvest this incredible CPU performance, each CPU is coupled with up to 512 GB (1024 GB total) of RAM organized in a total of four banks. Each RAM bank consists of two DIMM arrays with Error Correcting Code (ECC). The ECC RAM provides 2-bit error detection with 1-bit of correction, and supports up to 2133 Mega Transfers per Second (MTS) between CPU and memory, resulting in an incredible peak memory transfer rate of over 80 GB/s.

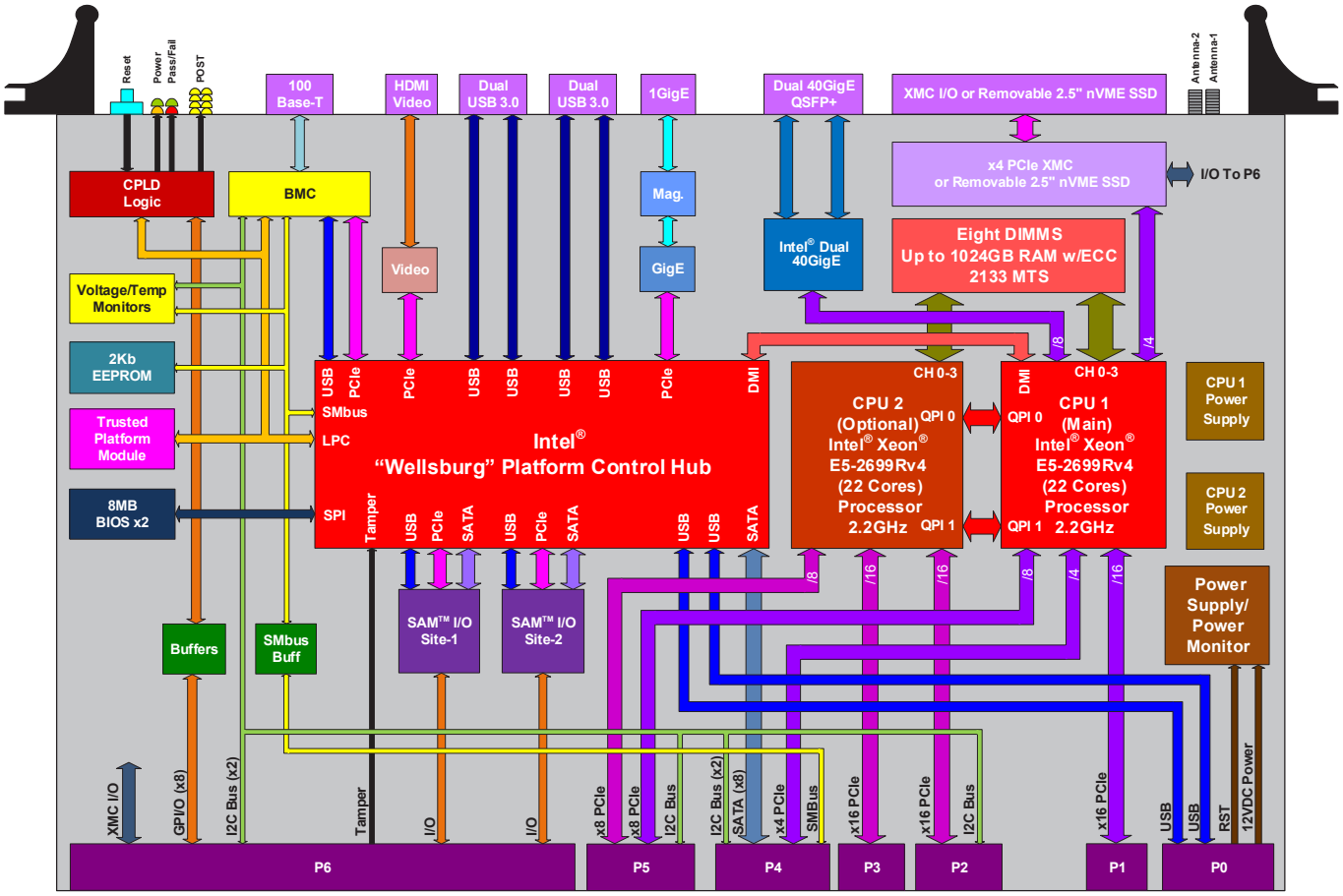
The CPU module also provides two 40 Gigabit Ethernet ports via QSPF+ connectors for Fiber or Copper support. Additionally, one Gigabit Ethernet port, four USB 3.0 ports, and one HDMI video port are provided on the CPU module's front panel. For custom I/O, the SBC provides one XMC site with x8 PCIe Gen 3 with front and rear panel I/O, or a 2.5-inch enterprise class SSD device (on M.2) that is removable from the front with up to 2.4 GB/s read and 1.2 GB/s write speeds.

The SBC provides two Special Application Module (SAM™) PCIe-mini sites, which support two mSATA SSD devices that may be used to boot the operating system (OS) with RAID functions. Additional SAM I/O devices such as GPS, MIL-STD-1553, CANBus, or other PCI Express-Mini cards may be used as well. Other I/O functions of the CPU module include: Baseboard Management Controller (BMC) for health monitoring and reporting via a dedicated Ethernet port, Trusted Platform Module (TPM), eight GPI/O lines, 16 MB BIOS Flash, 2 Kb of Field Replacement Unit (FRU) for configuration data, Real Time Clock (RTC) with field replaceable battery, and voltage/temperature monitoring.

Zeroize (sanitize) support is included via optional front panel switch and built-in via BMC control. This function starts the Secure Erase process that removes data from non-volatile storage in all drives plus the BIOS.

The CPU module also provides an incredible 68 lanes of PCIe Gen 3 support for I/O expansion via its VPX P1-P5.

BLOCK DIAGRAM



ENVIRONMENTAL SPECS

SWaP-E:	Greatest computing density in one 6U VPX card
Size:	6U VPX; Designed to VITA 46, VITA 48
Weight:	5 lbs.
Power:	As low as 110 W
MIL-STD:	MIL-STD-810G, MIL-S-901D, MIL-STD-461F and DO-160D
Temperature:	Operates up to extended temp -20°C to +75°C (Optional)
Ruggedness:	Available in ruggedization levels R1-R3

I/O AND EXPANSION OPTIONS

- Dual QSFP+ for 10/40 GbE Ethernet
- One 1 GbE Ethernet service port
- 68 PCIe Gen 3 lanes to backplane
- x8 SATA III to backplane via P4
- Support for one x8 XMC site (omit removable SSD)
- Four USB 3.0 ports, eight GPI/O lines and HDMI video
- Baseboard Management Controller for system diagnostics and out-of-band management via IPMI 2.0
- Two SAM™ I/O sites (MIL-STD-1553, Wi-Fi/BT, GPS, etc.)
- 16 MB BIOS Flash and 2 Kb EEPROM for FRU information
- Support for Trusted Platform Module (TPM) and Secure Erase
- Intel® Virtualization Technology
- Trusted Execution Technology (TXT)
- Active Management Technology (AMT) for remote KVM
- Converged Platform Power Management (CPPM)
- Voltage and temperature monitoring, plus reporting

RUGGEDIZATION LEVELS

	TEMP	SHOCK	VIBRATION	MAX IP LEVEL
RUGGED 1	0° - 55°C	20G	.0001 g²/Hz	54
RUGGED 2	-20° - 55°C	20G	.0008 g²/Hz	64
RUGGED 3	-20° - 75°C	52G	.003 g²/Hz	64

* Vibration frequency for systems tested between 5Hz – 2000Hz

GMS COMPUTING ENGINES

All General Micro Systems, Inc. products are proudly designed and manufactured in the U.S.A.