

XCalibur4545

End of Life

5th Gen Intel® Core™ i7 Broadwell-H Processor-Based Conduction- or Air-Cooled 6U VPX Module with Quad 40 Gigabit Ethernet **Please contact X-ES Sales**

- › Supports 5th generation (Broadwell-H) and 4th generation (Haswell) Intel® Core™ i7 processors
- › Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- › Microsemi SmartFusion@2 SoC with 1 GB DDR3 ECC SDRAM and 32 MB SPI Flash
- › 6U VPX (VITA 46) module
- › VITA 46.11 Tier 1 and Tier 2 IPMI Controller (IPMC)
- › Compatible with multiple OpenVPX™ (VITA 65) profiles
- › Ruggedized Enhanced Design Implementation (REDI) per VITA 48
- › Conduction or air cooling
- › Up to 16 GB of DDR3 ECC SDRAM in two channels
- › Up to 64 GB of SLC SATA NAND flash
- › Four 40 Gigabit Ethernet ports or up to eight 10 Gigabit Ethernet ports
- › Four Gigabit Ethernet ports
- › Four x4 or two x8 PCI Express Gen3 interfaces to backplane
- › Two XMC sites each with x8 PCI Express Gen3 interfaces
- › One graphics port
- › Three SATA ports and two USB 2.0 ports
- › Four RS-232/422/485 serial ports
- › Wind River VxWorks BSP
- › X-ES Enterprise Linux (XEL) BSP
- › Microsoft Windows drivers
- › Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs



XCalibur4545

The XCalibur4545 is a secure, high-performance, 6U VPX-REDI, single board computer with a 5th generation Intel® Core™ i7 (Broadwell-H) processor. The XCalibur4545 is ideal for ruggedized systems requiring high-bandwidth processing and I/O. The integrated SecureCOTS™ technology can protect critical data from being modified or observed and provides an ideal solution where stringent security capabilities are required.

The XCalibur4545 includes a customizable Microsemi SmartFusion@2 security SoC with 1 GB of ECC DDR3 to implement the SecureCOTS™ features. It can host many types of custom functions, such as data encryption, and additionally supports the ability to control, intercept, and monitor the Core™ i7 subsystem, implement penalties, and interface to the system through I/O directly connected to the VPX backplane. Optional Two-Level Maintenance (2LM) metalwork provides added protection to the physical hardware.

The XCalibur4545 maximizes network performance with up to four 40 Gigabit or eight 10 Gigabit Ethernet ports, and sixteen lanes of PCI Express Gen3-capable interfaces to deliver high bandwidth I/O for today's demanding computing applications. It accommodates up to 16 GB of DDR3 ECC SDRAM in two channels and up to 64 GB of SLC SATA NAND flash in addition to other I/O ports, including USB, SATA, and four configurable RS-232/422/485 serial ports through the backplane connectors.

The XCalibur4545 supports additional expansion from two XMC sites, each of which includes a x8 PCIe connection to the Intel® Core™ i7 processor and mezzanine I/O mapped directly to the VPX backplane. The XCalibur4545 can also leverage Intel® Iris™ Pro graphics for graphics-intensive tasks and serves as a general-purpose GPU for demanding data processing applications.

The XCalibur4545 is a powerful, feature-rich solution for the next generation of compute-intensive embedded applications. Wind River VxWorks and X-ES Enterprise Linux (XEL) Board Support Packages (BSPs) are available, as well as Microsoft Windows drivers.

X-ES

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...Always Fast

Extreme Engineering Solutions

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Processor

- 5th generation Intel® Core™ i7 (Broadwell-H)
- 4th generation Intel® Core™ i7 (Haswell)
- Integrated high-performance 3D graphics controller
- Up to Intel® Iris™ Pro Graphics 6200

Memory

- Up to 16 GB of DDR3 ECC SDRAM in two channels
- Up to 64 GB of SLC NAND flash
- 32 MB NOR boot flash
- 64 kB EEPROM

OpenVPX™

- VITA 46.11 (System Management on VPX)
- Compatible with multiple OpenVPX™ (VITA 65) profiles
- Four 40GBASE-KR4 Ethernet ports or up to eight 10GBASE-KR Ethernet ports to P1
- Configurable x16 PCI Express Gen3-capable interface to P2
- Two 10/100/1000BASE-T Ethernet ports to P4
- Two 1000BASE-BX Ethernet ports to P4
- XMC I/O per VITA 46.9 X38s+X12d+X8d, or P64s+X12d+X8d

XMC

- x8 PCI Express Gen3 interface per site
- Six SmartFusion@2 GPIO per site

Security and Management

- Microsemi SmartFusion@2 security FPGA with 1 GB DDR3 ECC SDRAM and 32 MB SPI flash
- Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- SmartFusion@2 with embedded memory, random number generator, crypto-cores, PUF, and supports complete zeroization
- System voltage monitor, power-on/reset control, non-volatile write-protection control
- Environmental sensors (see product manual)
- Trusted Platform Module (TPM) 1.2 or 2.0 (optional)

Back Panel I/O

- Four 40GBASE-KR4 Ethernet ports or up to eight 10GBASE-KR Ethernet ports
- Two configurable x8 PCI Express Gen3 interfaces
- Two 10/100/1000BASE-T Gigabit Ethernet ports
- Two 1000BASE-BX Gigabit Ethernet ports
- Three SATA ports capable of 6 Gb/s
- Two USB 2.0 ports
- One HDMI/DVI-D or Dual-Mode DisplayPort interface
- Four RS-232/422/485 serial ports
- Pn4 and Pn6 I/O per VITA 46.9
- Eight SmartFusion@2 GPIO

Additional Features

- VITA 46.11 Tier 1 and Tier 2 IPMI Controller (IPMC)
- IEEE 1588 support (optional)

Software Support

- Wind River VxWorks BSP
- X-ES Enterprise Linux (XEL) BSP
- Microsoft Windows drivers
- Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs

Physical Characteristics

- 6U VPX-REDI conduction- or air-cooled form factor
- Dimensions: 233 mm x 160 mm
- 0.8 in. pitch
- 1.0 in. pitch is compliant to the VITA 48.2 Type 1, Two-Level Maintenance (2LM) standard (optional)

Environmental Requirements

Contact factory for appropriate board configuration based on environmental requirements.

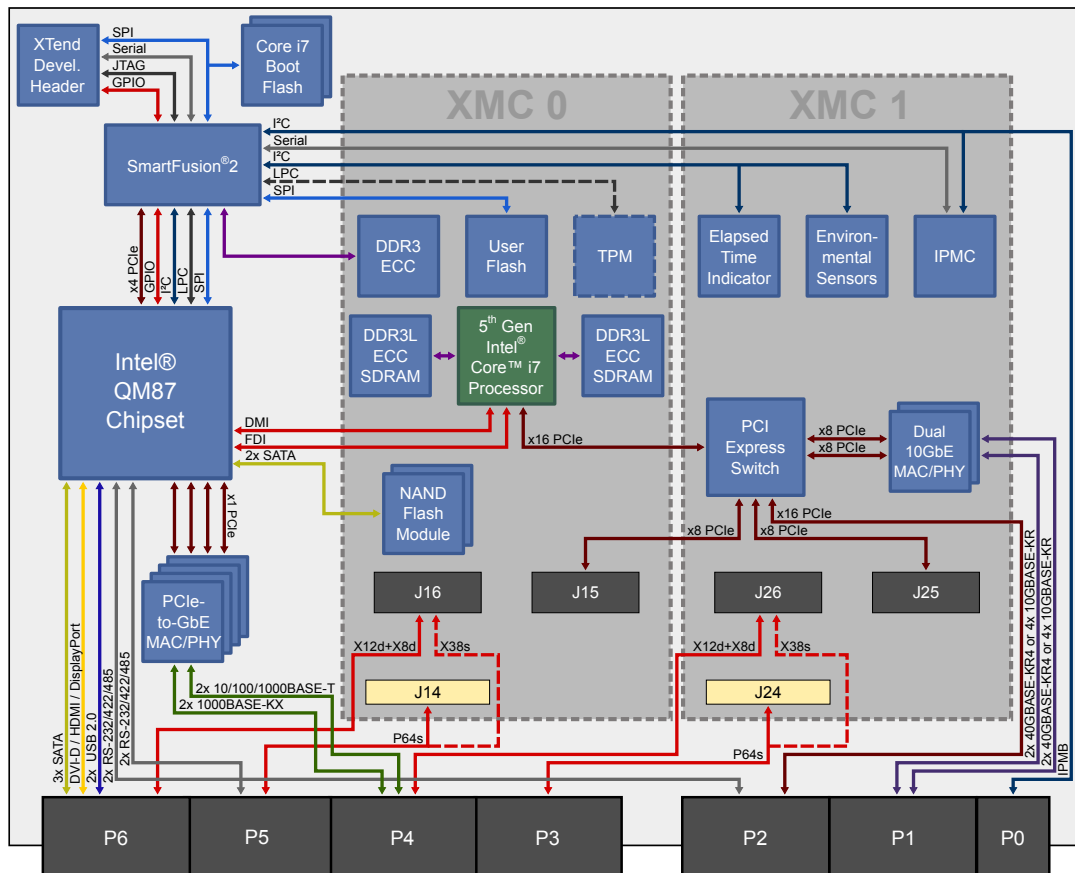
- Supported ruggedization levels (see chart below): 3, 5
- Conformal coating available as an ordering option
- Thermal performance will vary based on CPU frequency and application

Power Requirements

- Power will vary based on configuration and usage. Please consult factory.

Ruggedization Level	Level 3	Level 5
Cooling Method	Rugged Air-Cooled	Conduction-Cooled
Operating Temperature	-40 to +70°C ambient †	-40 to +85°C (board rail surface)
Storage Temperature	-55 to +105°C ambient	-55 to +105°C (maximum)
Vibration	0.04 g ² /Hz (maximum), 5 to 2000 Hz	0.1 g ² /Hz (maximum), 5 to 2000 Hz
Shock	30 g, 11 ms sawtooth	40 g, 11 ms sawtooth
Humidity	Up to 95% non-condensing	Up to 95% non-condensing

† Contact factory for airflow rate details.



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