



SBC3612D

Rugged 3U VPX Single Board Computer with Intel® Xeon® D-2700 Processor

The SBC3612D Rugged Single Board Computer (SBC) from Abaco Systems features the new high performance, highly integrated Xeon D-2700 HCC processor (formerly known as Ice Lake-D) from Intel.

High performance, high reliability

The new Xeon D combines up to sixteen 10th Generation Core technology processing cores with AVX-512 and a rich IO mix including up to 100Gb integrated Ethernet and PCIe gen 4.0, all with the backing of Intel's Embedded Use Conditions – ideal for long term, high reliability applications.

The SBC3612D offers memory resources including 64 GB of high speed DDR4 SDRAM and 480 GB NAND Flash (NVMe), plus a high-throughput Data and Expansion Plane.

Date Plane fabric connectivity is via an integrated 100Gb capable Ethernet Fat Pipe and a 10/25G capable Ethernet Ultra-Thin Pipe, with a Gen4 capable PCIe Fat Pipe providing the Expansion Plane. Control Plane connectivity on the backplane is a 10/25G capable Ethernet Ultra-Thin Pipe.

Available in a range of air- and conduction cooled build levels with extended temperature capability, the SBC3612D is designed to meet the requirements of a wide range of applications from industrial through to fully rugged defense and aerospace programs.

Enhanced security features

The SBC3612D incorporates a range of security features designed to assist with user defined Anti-Tamper and Information Assurance strategies. These include an inherently secure FPGA solution (Xilinx® Zynq® UltraScale+™), and support for Intel's Trusted Execution Technology. The FPGA can be utilized to instantiate a range of Abaco defined security features, or by the customer to embed application specific features.

Rich range of software options

- A variety of Bootloaders are available (UEFI and Slim Bootloader)
- Open Linux® (Fedora), Red Hat® Enterprise Linux®, CentOS (Linux) and Wind River® Linux
- Comprehensive Deployed Test Software: FSP* enabled BIT (PBIT function), and CIBIT (CBIT and IBIT function)
- AXIS environment for app optimization over many nodes / many channels, and including signal processing / vector math libraries
- Hardware Development Kit (HDK) allows development of unallocated FPGA resources on boards, maximizing flexibility and performance
- The Health Toolkit continually monitors the health of all components in your system identifying issues with high granularity

Examples and assistance are also available for integrating 'chain of trust' operation (from power-up to application start), plus Wind River's FSP* enabled VxWorks® Boot Loader, into system scenarios. Other Operating System support is available on request.

[*FSP = Intel Firmware Support Package].

FEATURES:

- Single slot 3U VPX Single Board Computer
- Xeon D 2775TE with AVX-512
- Two channels of soldered DDR4 SDRAM with ECC up to 64 GB
- 480 GB NAND Flash (NVMe)
- Rear IO:
 - 1x 100G and 1x 10/25G Ethernet Data Plane with RDMA
 - RoCEv2
 - iWARP
 - x8 or x16 PCIe Gen4 Expansion Plane
 - 10/25G Ethernet Control Plane
 - IPMI Management Plane
 - GPIO
 - SOSA aligned profiles:
 - SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-0 or
 - SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-0
 - Convection and conduction cooling variants
 - AXIS, Hardware Development Kit, Health Toolkit, and Deployed Test Software
 - Windows® and Linux® OS support

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Specifications

Processor

- Xeon D-2775TE HCC CPU
- 16-cores at 2 GHz with AVX-512
- 97W TDP

SDRAM

- 64 GB DDR4-2666 SDRAM (dual channel) soldered with ECC

Non-Volatile RAM

- 2 MB FRAM (BIT / User)
- On-board NVMe Solid State Disk Drive (SSD) Up to 480 GB

BIOS

- 2x 16 MB SPI Flash for BIT and BIOS plus 1x 16 MB SPI Flash for Recovery

Data Plane

- 40/100GBase-KR4 with RDMA (iWARP and RoCEv2)
- 10GBase-KR (path to 25GBase-KR)

Expansion Plane

- Eight lanes of Gen 4 capable PCI-Express to P1
- Eight lanes of Gen 4 capable PCI-Express to P2A
- X8 lanes can be combined to 16 lanes

Control Plane (UTP)

- 10GBase-KR (path to 25GBase-KR)
- Management Plane
- Intelligent Platform Management Controller (IPMC) in accordance with VITA 46.11

Other

- 1000Base-X Ethernet (CPU to FPGA)

Serial Ports

- Two 16C550 compatible async serial ports are available on P1
- COM1 can be configured as a 2-wire RS-232 port or LVCMOS. COM1 is the Maintenance port (MP01)
- COM2 can be configured as a 2-wire RS-232 port or LVCMOS. COM2 is the Maintenance port (MP02)

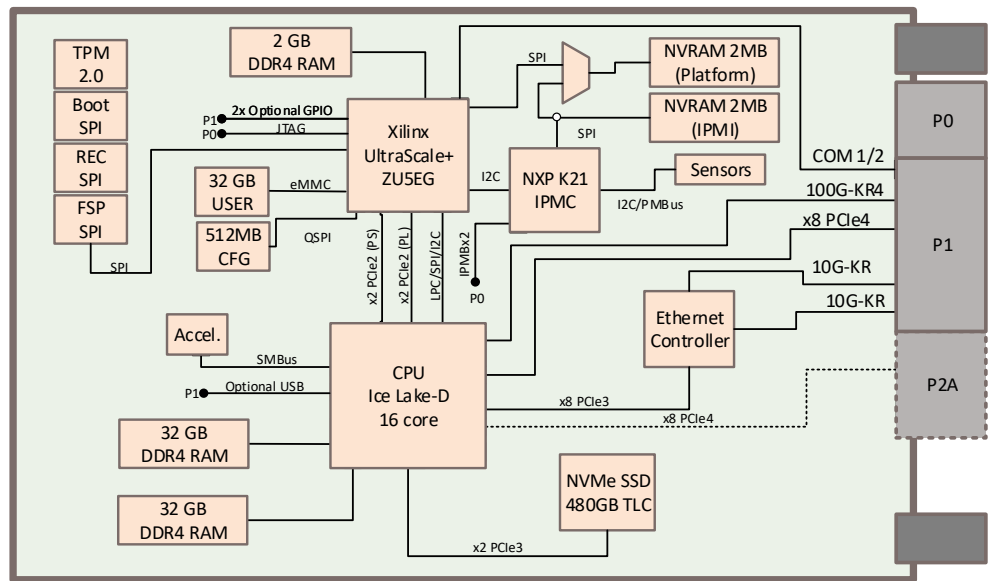
SOSA aligned/OpenVPX Profiles

- SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-0 or
- SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-0

GPIO

- Two GPIO pins (electricals per VITA 65)
- GPIOs are mux'd with MP02

Block diagram



Power Requirements

- +12V (Vs1)
- +3.3V for P3V3_AUX is required

Watchdog/ Timers/ TPM/ ETI

- Software programmable watchdog in FPGA
- Timers in FPGA (SW programmable)
- TPM 2.0 (Trusted Platform Module)
- ETI (Elapsed Time Indicator)

Temperature Sensor

- PCB and FPGA temperature sensors

FPGA

- Xilinx Zynq UltraScale+ FPGA with advanced security features
 - Enhanced Anti-Tamper features
 - Encryption
 - Physically unclonable functions (PUF)
 - Zeroization

Other HW Feature

- Hardware Write Protection



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Abaco Systems is a global leader in commercial open architecture computing and rugged embedded electronics. With more than 30 years of experience in aerospace & defense, industrial, energy, medical, communications and other critical sectors, Abaco's innovative solutions align with open standards to accelerate customer success.

Abaco Systems is a subsidiary of AMETEK, Inc., a leading global manufacturer of electronic instruments and electromechanical devices with 2020 sales of more than \$4.5 billion.