



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.

Data 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)
- Red Hat Enterprise Linux, Rocky Linux, Ubuntu Linux, Real-Time Ubuntu Linux are supported
- Hardware Development Kit (HDK) allows development of unallocated FPGA resources on boards, maximizing flexibility and performance
- Comprehensive Deployed Test Software: FSP* enabled BIT (PBIT function), and CIBIT (CBIT and IBIT function)

[*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
- Hardware Development Kit, and Deployed Test Software
- 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

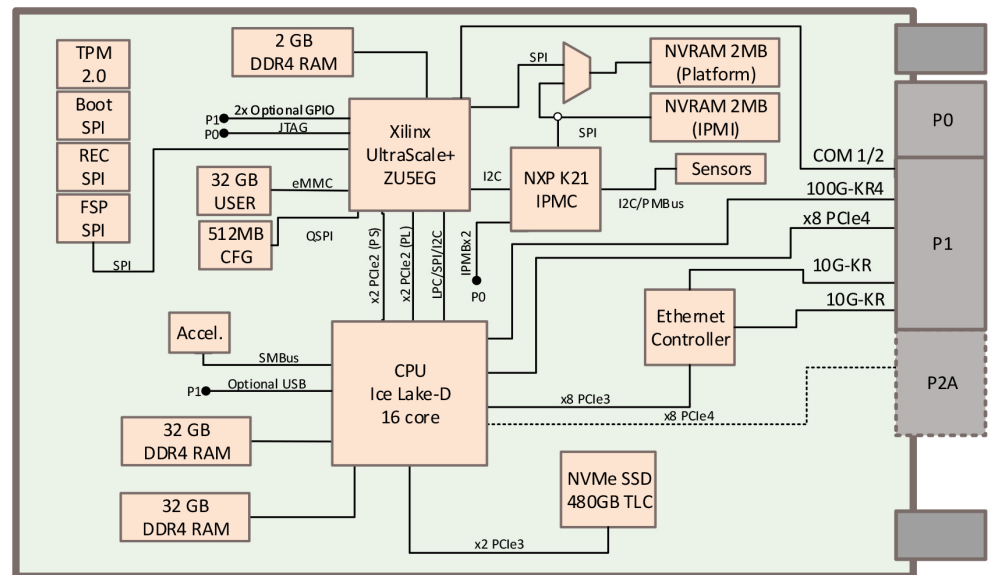
Other

- 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)

Block diagram



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

Power Requirements

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

Temperature Sensor

- PCB and FPGA temperature sensors

Watchdog/ Timers/ TPM/ ETI

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

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 business unit of AMETEK, Inc., a leading global provider of industrial technology solutions serving a diverse set of attractive niche markets.