SBC3513

Rugged 3U VPX Single Board Computer with Intel® Xeon® W Processor (11th Generation Intel Core i7 Technology) and aligned to SOSA™ standard

The SBC3513 Rugged Single Board Computer (SBC) from Abaco Systems features the new high performance, highly integrated Intel® Xeon W processor (formerly known as 'Tiger Lake H').

High Performance, High Reliability

The new Xeon W combines eight 11th Generation Core™ i7 technology processing cores with a rich I/O mix, all with the backing of Intel's Embedded Use Conditions – ideal for long term, high reliability applications.

The SBC3513 offers memory resources including 64 GB of high speed DDR4 SDRAM and up to 480 GB NAND Flash (NVMe SSD), plus a range of I/O including DisplayPort™, USB, GPIO and serial comms. An on-board mezzanine expansion site is also provided for enhanced system flexibility.

In alignment with the SOSA™ technical standards and in support of the DOD's C4ISR/ EW Modular Open Suite of Standards (CMOSS), the SBC3513's data plane fabric connectivity is via a 100G capable Ethernet

fat pipe, with a Gen 4 capable PCIe™ fat pipe providing the expansion plane. Control plane connectivity on the backplane is via two 25G capable Ethernet ultra-thin pipes with an additional 2500BASE-T thin pipe for external connection.

Available in a range of air- and conduction cooled build levels with extended temperature capability, the SBC3513 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 SBC3513 incorporates a range of security features that 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. Customers who wish to embed their own application specific features, can also be supported. Contact factory for details.

FEATURES:

- Single slot 3U VPX Single Board Computer
- Xeon W CPU
- Two channels of soldered DDR4 SDRAM with ECC up to 64 GB
- Up to 480 GB NAND Flash (NVMe SSD)
- 100G Ethernet data plane
- x4 PCIe expansion plane
- 25G Ethernet control plane
- IPMI management plane
- One XMC site
- Rear I/O:
  - 1x 2500BASE-T
  - 1x SATA port
  - Up to 3x COM ports
  - 1x DisplayPort
  - 1x USB 2.0 port
  - 1x USB 3.2 Gen 1 port
  - 4x GPIO
- Convection- and conduction cooled variants
- Deployed Test Software
- Windows and Linux operating system support

Abaco SYSTEMS

AMETEK®

SBC3513 Rugged 3U VPX SBC with Intel Xeon W Processor (11ᵗʰ Generation Intel CoreTechnology) and aligned to SOSA™ standard

Rich range of Software options
- AMI UEFI including support of BIOS Guard for signed image execution
- Intel Slim BootLoader (SBL)
- Open Linux® (Fedora), Red Hat Enterprise Linux, Windows® 11

- 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

Examples and assistance are also available for integrating 'chain of trust' operation (from power-up to application start) into system scenarios. Other operating system support is available on request.

[*FSP = Intel Firmware Support Package].

Block diagram
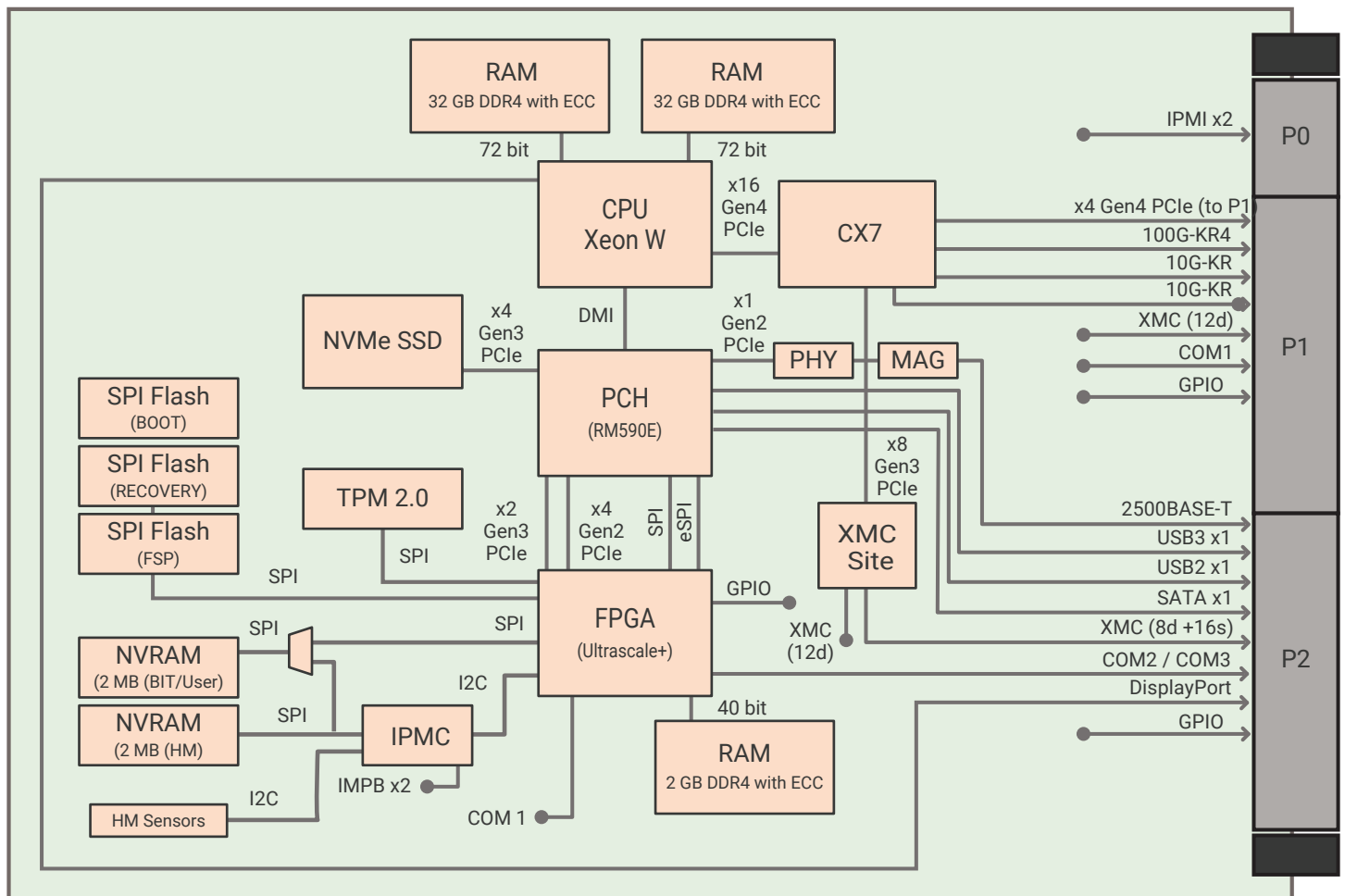
SBC3513 Rugged 3U VPX SBC with Intel Xeon W Processor
(11th Generation Intel CoreTechnology) and aligned to SOSA™ standard

Specifications

Processor
- Xeon W CPU (W-11865MRE) formerly known as Tiger Lake
- 8-cores at 2.6 GHz with AVX-512
- 45W TDP
- RM590E PCH (Platform Controller Hub)

SDRAM
- 64 GB DDR4 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 32 MB SPI Flash for BIT and BIOS plus 1x 32 MB SPI Flash for Recovery

Data Plane
- 100GBASE-KR4
- RDMA over Converged Ethernet (RoCE)

Expansion Plane
- Four lanes of Gen 4 capable PCIe to P1

Control Plane (Gigabit Ethernet)
- ETH0 is configured as 2500BASE-T, and routed to P2
- ETH1 and ETH2 are routed to P1 and configured as 10GBASE-KR by default. These can also operate as 1000BASE-KX ports.

XMC Site
- x8 PCIe Gen 4
- x8d+x16s tracked to P2
- x12d tracked to P1
- Profile P1w9-X12d+P2w9-X16s+X8d

Management Plane
- Baseboard Management Controller (BMM) in accordance with VITA 46.11

USB Ports
- One USB 2.0 port is routed to P2
- One USB 3.2 Gen 1 port is routed to P2

Graphics Port
- One DisplayPort is routed to P2

Serial Ports
- Two 16C550 compatible async serial ports are available on P1 and P2
- COM1 can be configured as a 2-wire RS-232 port, or a 2-wire 3.3V-tolerant LVCMOS port.
- COM2 can be configured as a 4-wire RS422 port, or two 2-wire RS-232 (adding COM3)

SATA Port
- One SATA 6 Gb/s capable port is routed on P2

GPIO
- Four GPIO pins, 3.3V tolerant

OpenVPX Profile Compatibility
- Slot Profile SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16
- Module Profile MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-4

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

Watchdog/ Timers/ TPM/ ETI
- Software programmable windowed watchdog in FPGA
- Timers in FPGA (software programmable)
- TPM 2.0 (Trusted Platform Module)
- ETI (Elapsed Time Indicator)

Temperature Sensor
- PCB and FPGA temperature sensors

FPGA
- Xilinx Zynq UltraScale+ FPGA (ZU5EG) with advanced security features

Other Hardware Features
- Hardware Write Protection

Environmental

	Level A	Level 5
Cooling Method	Convection	Conduction
Conformal Coating	Optional	Standard
High/Low Temp	-0C°/TBD	−40C°/TBD
Operational	(300 ft/m)	At cold wall
Random Vibration	$0.002g^2$/Hz*	$0.1g^2$/Hz**
Shock	20g***	40g***

* With a flat response to 1000 Hz, 6 dB/Oct roll-off from 1000 to 2000 Hz   ** From 10 to 1000 Hz   *** Peak sawtooth 11 ms duration

WE INNOVATE. WE DELIVER. YOU SUCCEED.

Americas: 866-OK-ABACO or +1-866-652-2226 | Europe, Africa, Middle East, & Asia Pacific: +44 (0) 1327-359444

abaco.com

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 manufacturer of electronic instruments and electromechanical devices with 2021 sales of more than $5.5 billion.