



SBC3518

Rugged 3U VPX Single Board Computer with Intel® Core Ultra 9 Processor aligned to SOSA™ standard

The SBC3518 Rugged Single Board Computer (SBC) from Abaco Systems features the new high performance, highly integrated Intel® Core Ultra 9 processor (formerly known as 'Panther Lake').

High Performance, High Reliability

The Intel® Core Ultra 9 processor combines next gen CPU, GPU and NPU engines with Premium connectivity to deliver exceptional performance to a wide range of applications.

CPU (Central Processing Unit)

Performance hybrid architecture supporting 16 cores in total (4 Performances, 8 Efficient cores, 4 Low Power cores).

NPU (Neural Processing Unit)

Integrated NPU5 for dedicated AI performance.

GPU (Graphics Processing Unit)

Integrated 4 x Xe3 GPU architecture.

For AI (Artificial Intelligence) applications the combined CPU / GPU / NPU processing units can deliver up to 100TOPS.

The SBC3518 offers memory resources including 64 GB of high speed LPDDR5x SDRAM and up to 1TB 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 SBC3518'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. As an additional option, the ultra-thin pipes are multiplexed with SERDES connections from the FPGA to enable the use of alternate TSN (Time Sensitive Networking) enabled Ethernet IP.

Available in a range of air- and conduction cooled build levels with extended temperature capability, the SBC3518 is designed to meet the requirements of a wide range of applications from industrial through to fully rugged defense and aerospace programs.

Enhanced Security

The SBC3518 incorporates a range of security features that include an inherently secure FPGA solution (Xilinx® Zynq® UltraScale+™), with support for Customers who wish to embed their own application specific features.

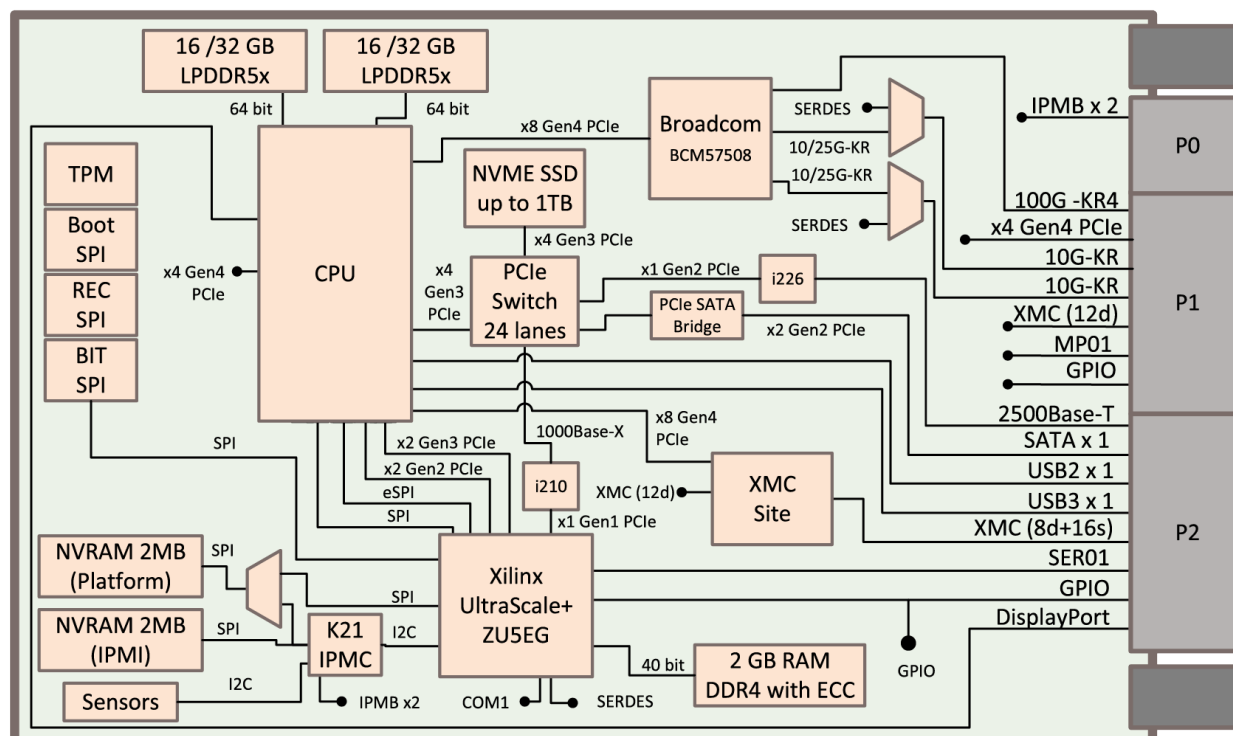
Rich range of Software options

- AMI UEFI including support of BIOS Guard for signed image execution
- Intel Slim Bootloader (SBL)
- Support for Red Hat Enterprise Linux, Rocky Linux and Ubuntu Linux, Windows® 11
- Comprehensive Deployed Test Software: PBIT, and CIBIT (CBIT and IBIT function)

FEATURES:

- Single slot 3U VPX Single Board Computer
- Intel® Core Ultra 9 processor
- Two channels of soldered LPDDR5x SDRAM with ECC up to 64 GB
- Up to 1TB NAND Flash (NVMe SSD)
- 40/100G Ethernet Data Plane
- x4 PCIe Expansion Plane
- 1/10/25G Ethernet Control Plane
- IPMI Management Plane
- One XMC site
- Rear IO:
 - 1x 2500BASE-T
 - 1x SATA port
 - 1x DisplayPort
 - 1x USB 2.0 port
 - 1x USB 3.2 port
 - 2x Serial Ports
 - 4x GPIO
- Convection and conduction cooled variants
- Deployed Test Software
- Windows®, and Linux® OS support

Block diagram



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

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Specifications

Processor

- Intel® Core Ultra 9 processor formerly known as Panther Lake

CPU : H-484 SKU with

- 4 Performance cores at TBD GHz
- 8 Efficient cores at TBD GHz
- 4 Low Power cores at TBD GHz

NPU

- Integrated NPU5 (50 TOPS)

GPU

- Integrated 4 x Xe3 GPU (40 TOPS)

SDRAM

- 64 GB LPDDR5x SDRAM (dual channel) soldered with ECC

Non-Volatile RAM

- 2 MB FRAM (BIT / User)

On-board NVMe Solid State Disk Drive (SSD)

- Up to 1TB

BIOS

- 2x 32 MB SPI Flash for BIT and BIOS plus 1x 32 MB SPI Flash for Recovery

Data Plane

- 40/100GBASE-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 10/25GBASE-KR by default. These can also operate as 1000BASE-KX ports.

Management Plane

- Baseboard Management Controller (BMM) in accordance with VITA 46.11-2022 Tier 3 IPMC

XMC Site

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

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
- MP01 can be configured as a 2-wire RS-232 port, or a 2-wire 3.3V-tolerant LVCMOS port. SER01 can be configured as a 4-wire RS-422 port, or two 2-wire RS-232 (SER01A and SER01B)

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-PAY1F1F2U1TU1T1U1T-14.2.16
- Module Profile MOD3-PAY1F1F2U1TU1T1U1T-16.2.15-4

Power Requirements

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

Watchdog/ Timers/ TPM

- Software programmable windowed watchdog in FPGA
- Timers in FPGA (software programmable)
- TPM 2.0 (Trusted Platform Module)

Temperature Sensor

- PCB and FPGA temperature sensors

FPGA

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

Other Hardware Features

- Hardware Write-Protect