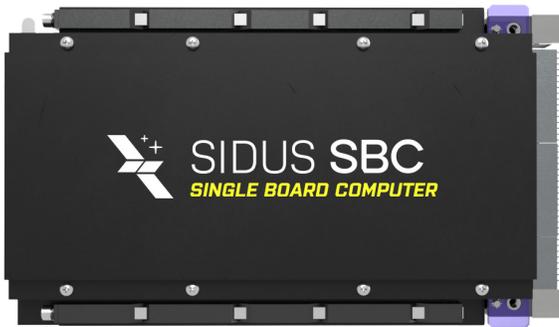# Sidus Single Board Computer (SSBC)

High Performance On-board Computer

The Sidus Single Board Computer (SSBC) is a rugged, modular 3U VPX solution designed for size-constrained and mission-critical applications and engineered for high-performance computing in extreme environments.

The SSBC is a part of the Fortis™ suite, which includes the following product line options:

- » FeatherEdge™ AI/ML Processor
- » Position, Navigation, and Timing (PNT)
- » Global Positioning System (GPS) Receiver
- » Custom Input/Output (I/O) Card
- » Power Converter Card
- » Software Defined Radio (SDR)

Key Features

- » **High-Performance Processing -** Powered by a Quad-Core ARM® processor delivering 30,000+ DMIPS and 45,000 CoreMarks for compute-intensive tasks
- » **Secure Boot and Scalable Memory -** Features secure QSPI Flash, DDR4 RAM, 64 GB NAND Flash, and 512 GB User Flash with triple watchdogs for enhanced reliability
- » **High-Speed Connectivity -** Supports 10 Gbps SerDes, PCIe® Gen3, Ethernet, UART, and JTAG for fast data transfer and streamlined development
- » **Comprehensive OS Support -** Includes VxWorks BSP with optional support for Linux, PikeOS, and RTEMS to meet diverse mission requirements

Applications

Air
- » Aerial Drones
- » Ballistic Missiles
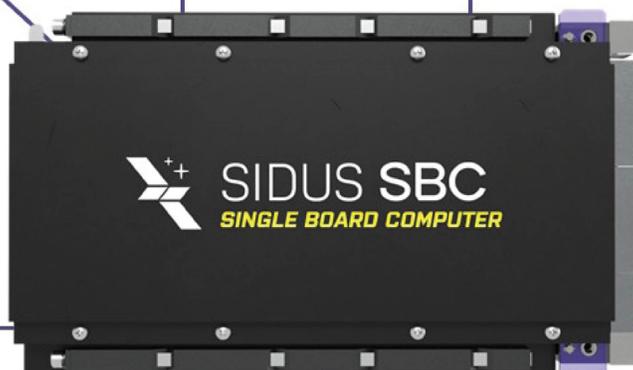- » Commercial and Civil Aircraft
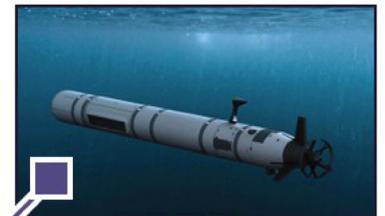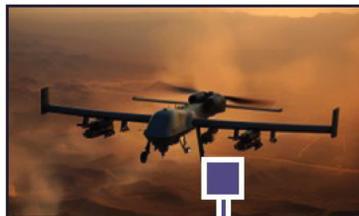
Sea
- » Submarines
- » Surface Ships
- » Underwater Drones

Land
- » Command and Control (C2) Network
- » Electronic Warfare (EW)
- » Intelligence, Surveillance, and Reconnaissance (ISR)
- » Unmanned Ground Vehicles (UGVs)

Space
- » Counterspace Operations
- » Satellites
- » Space Defense
- » Space Situational Awareness

Sidus Single Board Computer (SSBC)

High Performance On-board Computer

Sidus Single Board Computer (SSBC) Specifications

System Architecture	System on Chip (SoC)	Teledyne e2V QLS1046 » High-speed security protocol processing, including IPsec, SSL, TLS, and IKE
	Processor	Quad Core ARM® Cortex®-A72 » 64-bit ARM® Cortex®-A72 (with ECC-protected L1 and L2 cache memories) » RAM 4GB DDR4 with ECC, 72-bit interface, operating @ up to 1050 MHz » Up to 1.8 GHz operation
	FPGA	Rad-hard PolarFire® up to 5 Softcore RISC V Processors (RTOS)
	Board Resources	» Watchdog (x2 SoC internal and x1 SoC external) » Temperature sensors » Voltage sensors

Memory Resources		
QSPI Flash	512 MB
NAND Flash	64 GB
User Flash	512 GB

I/O		
Gigabit Ethernet (10/100/1000Base-T)	3
10 Gigabit Ethernet (10GbE)	2
USB 2.0	1
USB 3.0	1
Serial Ports (RS422)	2
1 PPS	1 IN
I2C	2
CANbus	1
PCIe®	1x PCIe® x2 1x PCIe® x1
Differential Pairs / Single-ended	14 / 28

Software	
	» Linux OS » VxWorks » PikeOS » RTEMS

Mechanical	Dimensions	3U VPX Slot (100 mm x 160 mm)
	Weight	<1 kg (2.2 lbs)

Power	Input Power	12 VDC and 3.3 VDC
	Power Consumption	» 15-25 W under typical load » Max 50 W when board is fully utilized

Environmental	Cooling Method	Conduction-cooled
	Operating Temp — Min.	-55° C
	Operating Temp — Max.	+125° C
	Vibration (3 Axes) MIL-STD-810H	0.024G / 25 Hz
		0.15G / 150 Hz
		0.15G / 1 kHz
	Random (Freq)	0.02G / 0-2 kHz
	Sine (Freq)	10G / 0-500 Hz
	Shock (3 Axes)	20G / 5 mS

Orbit Type	Terrestrial	LEO	GEO
Radiation Tolerance (TID)	N/A	25 krad	100 krad
Latch Up Immunity (SEL/SEE)	N/A	>40 MeV-cm²/mg	>75 MeV-cm²/mg
Relative Humidity	0-95%	N/A	N/A
Part Selection	MIL-SPEC	Rad-hard	Rad-hard
SEU Rate	N/A	<2.56 × 10⁻⁵ NA	<2.56 × 10⁻⁵ NA