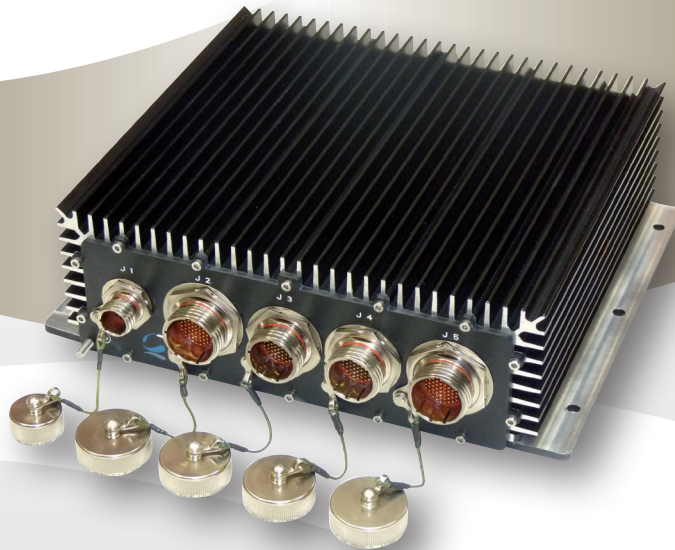


ONYX

Versatile mission computer for Vetronics & Avionics applications



▶ RTCA DO & MIL-STD qualified COTS rugged modular mission computers to cut time, budget and design risk

ONYX consists of fully integrated computing subsystems ready for deployment in SWaP-C extreme environment. It allows the unit to fit easily into available nooks on any platform, making it ideal for space constrained applications such as ground vehicles, manned & unmanned aircrafts, helicopters, UAS or any other robots in harsh environment requiring rock-solid reliability.

Qualified ONYX systems slash design risk, lower costs and speed deployment thanks to risk-lowering of proven technology, stress tests passed for maximum loads, saving up to \$60,000 and 2 months campaign, reducing smaller parts inventory to simplify LRU obsolescence management.

ONYX is based on modular mezzanines concept that offers customer a large flexibility and Long Life Management under revision control. It employs leading edge dual or quad-core Intel® Haswell or Skylake processing capabilities to meet a wide variety of civilian and military tactical mission programs. ONYX is ideal for high performance harsh environment/space constrained applications, and features flexible I/O which can be tailored to customer requirements, with just a few NRE allowing customer to accelerate Time-to-Market with optimized TCO.

A particular attention has been made on reliability and thermal management. Internal I/O routing from the backplane to the front panel MIL-DTL-38999 connectors is by means of solid-state transition module. It provides cable-free higher reliability and improved signal integrity.

> Supports Multi-Core INTEL i7 3rd, 4th and 6th Gen, evolutionary thanks to COM Express architecture with perspective of Long Life Management

> MXC GPGPU mezzanine dedicated for powerful graphics (DVI-D, SD/HD-SDI...), video capture, intensive computing

> VGA and other legacy display interfaces on demand (STANAG 3350 or analog RGBHV...)

> H.264/AVC encoding and streaming capabilities

> PMC and mini PCI Express sites for flexible I/O expansion and Wireless functions

> Cable-free, fan less, MIL-DTL-38999 circular connectors

> Real cold start at -40°C and up to +71°C operating temp (depend on configuration and cooling system)

> Standard BOM Qualified MIL-STD-810G/461F/1275D/704/DO-160F

> IP-67 Ingress protection

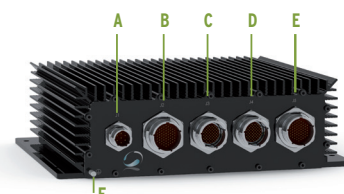
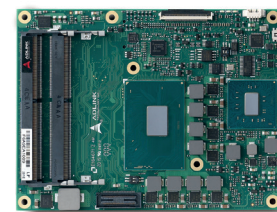
> High flexibility to Modified COTS services

> BIT functions

> ITAR free without export control

System specifications

Processor Module	COM-Express Basic Size
Processor 6 th Generation Intel	Mobile 6 th Generation Intel® Xeon® and Core™ Processors - 14nm ("Skylake-H") Xeon® E3-1505L v5 2.0/2.8GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 25W (4C/GT2) Core™ i7-6822EQ 2.0/2.8GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 25W (4C/GT2)
Memory	Dual channel 1867/2133 MHz DDR4 memory up to 32GB
Processor 4 th Generation Intel	4 th Generation Intel® Core™ i7 Processors (Mobile) - 22nm ("Haswell") i7-4860EQ 2.4 GHz (3.2 GHz Turbo), 47W (4C/GT3) i5-4400E 2.7 GHz (3.3 GHz Turbo), 37W (2C/GT2) i5-4402E 1.6 GHz (2.7 GHz Turbo), 25W (2C/GT2)
Memory	Dual channel with ECC 1600/1333 MHz DDR3 memory up to 16GB
Processor 3 rd Generation Intel	3 rd Generation Intel® Core™ i7/i3, 22nm process, ("Ivy Bridge") i7-3612QE 2.1GHz, 6MB L3 cache, 35W, quad core i7-3555LE 2.5GHz, 4MB L3 cache, 25W, dual core i7-3517UE 1.7GHz, 4MB L3 cache, 17W, dual core
Memory	Dual channel ECC 1600 MHz DDR3 memory up to 16 GB
Video outputs (Intel HD Graphic)	1x VGA* + 1x DVI-D Single Link
Other video Inputs / Outputs	Use of MXC or miniPCIe boards
Ethernet	3x 10/100/1000 BaseT
Serial	4x RS232/RS422/RS485 (software configurable)
USB 2.0	4x USB2.0 High / Full / Low speed
USB 3.0 (38999 USB Field)	With miniPCIe card. Limited to 250MBytes /sec, on rear panel
Audio	Intel® High Def Audio: 1x In and 1x Out Lines
Discret I/O	8x GPIO LV TTL - Reset, Power Button, Power Led, HDD Led, Fast Erase
I/O Expansion slots	1x PMC slot 1x miniPCIe slot
GP-GPU Expansion slot	1x MXC slot
Solid State Disk (SSD) (Internal)	1x SSD 2.5" slot (MLC or SLC) - 1x cFast slot (MLC or SLC)
Hardware monitoring	Voltages, CPU, GPU, and carrier board temperatures
Watchdog timer	Programmable timer range to generate RESET



A: Power supply
B: USB, Serial, GPIO, DVI-D + VGA
C: Ethernet, Audio
D: GPGPU I/O
E: PMC I/O's
F: Ground

Power supply

Power Input	+28VDC (+10VDC up to +36VDC) Hold-up capacitors for momentary power interruption protection (approx 120ms) MIL-STD-1275D / DO-160F / MIL-STD-461F / MIL-STD-704
Power consumption	From 45W to 90W (depends on CPU + GPU BOM)

SWaP-C constraints

Size (WxDxH)	270mm x 250mm x 88mm (2U)
Weight	7kg
Cooling type	Convection & radiation by fins, conduction by cold plate (conduction cooled inside)
Connectors	Military circular IP67 locking connectors (MIL-DTL-38999) Customizable front panel for specific application

Environmental Qualification Tests

Operating temperature	-40°C / +71°C (depend on configuration and cooling system)	Salt fog	50% salt spray / 96h (DO-160F)
Storage temperature	Storage: -40°C / +85°C	Dust	Wind and fine dust particles (DO-160F)
Ingress protection rating	IP67	Operating shock & vibration	MIL-STD-810G / DO-160F
Altitude	Up to 15000 feet (DO-160F)	EMI / RFI	MIL-STD-461F / DO-160F
Humidity	0%-95% relative humidity (DO-160F)	CE certification	EMC: 2014/30/UE ; EN 61000-6-2, EN55032, EN 55024 - SAFETY: 2014/35/UE ; EN60950-1 : 2006 2 nd edition A11 : 2009 + A1 : 2010 + A12 : 2011 + A2 : 2014

Software corner

Operating system	Windows 7 (Windows 10 for Skylake only) 32/64-bit, Linux 32/64-bit, ElinOS, PikeOS. For other requirements, contact ECRIN Systems
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Security & dependability

Trusted platform module	Atmel AT97SC3204; TPM 1.2/2.0 (TPM 2.0 release later)
Built-In-Test	BIT, monitoring functions library, maintenance L2 with SEMA library

Export control classification

	ITAR Free - No export control (ECCN 4A003)
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Other specifications

Reliability	Designed and manufactured using ISO 9001:2015 Certified Quality Program
MTBF	Calculated per MIL-HDBK-217F, available upon request
Regulatory compliance	European CE Mark, REACH, RoHS, WEEE
Warranty	1 year return to depot warranty (extended warranty available with service contract)
Starter cable set	Optional starter breakout cable set mates with MIL-DTL-38999 connectors to break out standard CPU I/O and power signals to traditional PC style interfaces for lab or bench testing purposes

* Not available with Skylake processor

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