

ONYX-Ultra



Multi Mission Rugged Computer with graphics and video capture capabilities

DO-160, MIL-STD-810 & MIL-STD-461 QUALIFIED COTS FOR CONTROL, COMMAND, COMMUNICATIONS, INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE APPLICATIONS

The ONYX-Ultra is ECRIN Systems' high-performance Rugged Mission Computer, designed to meet the increasing computing, graphics and networking requirements of mission-critical embedded applications. Bridging the gap between traditional Rugged Mission Computers and VPX-based HPEC systems, it combines high processing performance with a compact, rugged and easily integrated platform.

Based on the latest Intel® Raptor Lake processor architecture, the ONYX-Ultra delivers significantly increased computing power and memory capacity. It supports NVIDIA RTX™ AD2000 and AD3500 MXM GPUs for demanding graphics, AI and image processing applications, while offering extensive configuration capabilities through a dedicated XMC expansion slot for additional graphics and video I/O functions, including HD-SDI inputs, as well as QMC and Mini PCIe expansion slots. The platform also features USB 3.x interfaces, dual 10 Gigabit Ethernet fiber optic ports, a removable M.2 SSD and a field-replaceable backup battery accessible without disassembling the computer, simplifying maintenance operations and reducing system downtime.

Designed for harsh environments, the ONYX-Ultra is CE compliant and qualified according to the military equipment environmental standards DO-160, MIL-STD-810 and MIL-STD-461, providing a high-performance, rugged and scalable computing solution for mission-critical air, land and sea applications.

- Intel® Raptor Lake-P i7-13800HRE @ 1.8Hz, 14 cores, 64GB DDR5, 4800MHz, IBEC
- TPM 2.0
- 3x 10/100/1000Base-T
- 2x 10GBase-SR (or LR on request)
- 3x USB2.0, 1x USB3.0/2.0 (USB-C connector)
- 2x RS232 + 2x RS422
- up to 2x DVI-D (with optional MXM GPU)
- 2x Storage Devices: 1x M.2 (S80) removable SATA SSD + 1x M.2 (S80) SATA SSD on board
- Hold-up Module for momentary power interruption according to DO-160

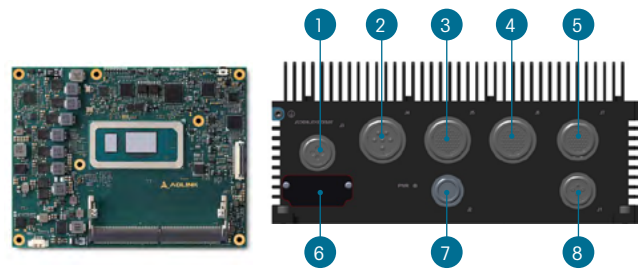
Optional features

- 4x HD-SDI inputs or 2x 3G-SDI + 2x HD-SDI
- 2x QMC slots for I/O expansion (Slot #1 limited to 32 I/O, Slot #2 limited to 24 I/O)
- 1x M.2 slot for AI Accelerator board
- 1x MXM 3.1 Type A/B slot supporting NVIDIA® GP-GPU AD2000 – AD3500
- Conduction cooled – Fan unit depending on power consumption
- MIL-DTL-38999 connectors
- ITAR free
- Qualified according DO160, MIL-STD-461 norms

ONYX-Ultra

SYSTEM SPECIFICATIONS

Processor / Memory COM-Express Basic Size	Intel® Raptor Lake-P i7-13800HRE @ 1.8Hz, 14 cores 64GB DDR5 4800MHz IBEC
Video outputs	1x DVI-D Single Link (Intel HD Graphic) 2x DVI-D with MXM module featuring NVIDIA GP-GPU. (cTDP limited to 35W w/o forced airflow)
Video inputs	4x HD-SDI inputs
Ethernet	3x 10/100/1000 BaseT 2x 10GBase-SR (or LR on request)
Serial	2x RS232 and 2x RS422
USB 2.0	3x USB2.0 High / Full / Low speed
USB 3.0	MIL-DTL-38999 USB Field connector on rear pane 1x USB3.0/2.0 (USB-C connector)
Discret I/O	3x GP Inputs (isolated), 2x GP Outputs (isolated)
I/O Expansion slots	2x QMC slots + 1x M.2 slot for AI card
GP-GPU Expansion slot	1x MXM slot for GP-GPU card 1x XMC slot for HD-SDI video capture card
Solid State Disk (SSD)	2x Storage Devices: 1x M.2 (S80) removable SATA SSD + 1x M.2 (S80) SATA SSD on board
Hardware monitoring	Internal voltages; CPU and carrier board temperatures
Watchdog timer	Programmable timer range to generate RESET



	Nb.
1 10 Gbase-SR	2
2 HD-SDI Input	4
3 QMC 32 I/O	32
4 DVI-D Single Link GPU	2
Ethernet 10/100/1000 Base-T	1
USB2.0	1
RS232 (Tx, Rx)	1
RS422 (Tx, Rx)	1
GP Input (Opto)	3
GP Output (Opto)	2

	Nb.
5 DVI-D Single Link CPU	1
Ethernet 10/100/1000 Base-T	2
USB2.0	2
Power ON	1
RS232 (Tx, Rx)	1
RS422 (Tx, Rx)	1
6 Removable M.2 (S80) SSD + battery	2
7 USB3.0	
8 +28VDC PSU	

POWER SUPPLY

Power Input	+28VDC (+14VDC up to +36VDC) Hold-up capacitors for momentary power interruption protection (120ms)
Power consumption	From 60 to 125W (depending on the Bill Of Material)

SWAP-C CONSTRAINTS

Size (WxDxH)	280mm x 284mm x 125mm including the connector, without the fan unit
Weight	<10kg
Cooling types	Convection & radiation by fins, Fan kit when needed (conduction cooled inside)
Connectors	MIL-DTL-38999 connectors Customizable front panel for specific application

ENVIRONMENTAL QUALIFICATION TESTS

Operating temperature	Operating temperature -40°C to +55°C without external air flow. (Depending on the power consumption)	Sand & Dust	Wind and fine dust particles (DO-160)
Storage temperature	-40°C / +85°C	Shock & vibration	DO-160 / MIL-STD-810
Ingress protection rating	IP65	EMI / RFI CE certification	MIL-STD-461
Altitude	Up to 15000 feet (DO-160)	CE certification	EN 55032: 2015 / A1: 2019 Electromagnetic compatibility of multimedia equipment - Emission requirements EN 55035: 2017: Electromagnetic compatibility of multimedia equipment - Immunity requirements EN 62368-1:2014+AC:2015: Part 1: Safety requirements
Humidity	0%-95% relative humidity (DO-160)		
Salt fog	50% salt spray / 96h (DO-160)		

SOFTWARE CORNER

Operating system	Windows 11 Pro*, Windows 11 IOT LTSC*, Linux 64-bit.*. For other requirements, contact ECRIN Systems
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OTHER SPECIFICATIONS

Regulatory compliance	European CE Mark, REACH, RoHS, WEEE, CoC
Starter cable set	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 purposes