ONYX-HD

HD Video situation awareness rugged computer

RTCA DO-160 & MIL-STD Qualified COTS VIDEO Computer to capture, process, display with augmented reality, encode and stream new HD EO/IR sensors

ONYX-HD consists of fully integrated Video computing engine 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 situation awareness applications embedded in mobile space constrained such as manned & unmanned aircrafts, MALE and Tactical UAS, civilian and military helicopters, ground vehicles...

Qualified ONYX-HD profiles 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.

ONYX-HD profile is based on modular mezzanines concept that offers customer a large flexibility and Long Life Management with revision control. It employs cutting edge Heterogeneous System Architecture composed with Intel® multi-core i7, KINTEX 7 capture engine added to the last generation AMD E8860 GPU dedicated to parallel image computing task to meet a wide variety of civilian and military with advanced Augmented Reality features like Video and Data Management, Digital Moving Map, Tactical Video Overlay, Mission Management System.

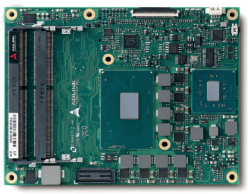
Particularly attention has been made on embedded image processing thanks to GPGPU/FPGA features that specifically targets high end HD-SDI digital and broadcast SMPTE inputs and outputs with augmented reality in real-time (ONYX-HD latency is less than 100ms glass to glass), H.264 AVC compression and EAS-NI encryption. Long life AMD E8860 GPGPU offer up to 768 GFLOPS parallel computing engine. 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 high speed signal integrity for HD-SDI throughputs.

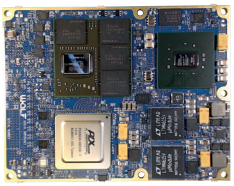
- INTEL Multi-Core i7 + KINTEX 7 + AMD E8860 with up to 768 GFLOPS GPGPU engine
- 2* HD-SDI inputs SMPTE-292M, 1920x1080p30
- 2* simultaneous HD-SDI outputs SMPTE-292M, 1920x1080p30
- 2* Analog NTSC/PAL inputs for legacy sensors
- 1x VGA + 1x DVI-D Single Link (Intel HD Graphic)
- H.264/AVC video Encoding with streaming capabilities
- Linux Metadata Extraction/Insertion
- Embedded EGNOS-capable GPS
- PMC and mini PCI Express sites for flexible I/O expansion and Wireless functions
- Cable-free, Fan less, MIL-DTL-38999 connectors
- Real cold start at -40°C and up to +71°C Operating Temp (depend on configuration and cooling system)
- Standard BOM Qualified DO-160F and MIL-STD-810G/461F/1275D/704
- IP-67 Ingress
- ITAR free without Export Control
- Long Life Management with revision control
- Only 80 Watts Power consumption
- High flexibility to Modified COST services

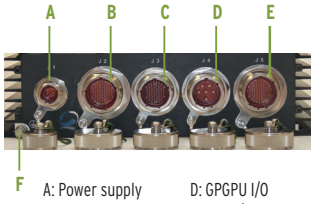
ecrin SYSTEMS

ONYX-HD

System specifications	
Processor Module	COM-Express Basic Size
Processor 6th Generation Intel	Mobile 6th 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 4th Generation Intel	4th 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 DDR3L memory up to 16GB
Video outputs (Intel HD Graphic)	1x VGA* + 1x DVI-D Single Link
Video inputs / outputs (GP-GPU)	Powered by the E8860 AMD GP-GPU (clocked at 300MHz) 2 independent digital HD-SDI inputs SMPTE-292M, 1920x1080p30 2 simultaneous HD-SDI outputs SMPTE-292M, 1920x1080p30 2 independent analog NTSC/PAL/SECAM inputs
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 slots	Powered by the MXC-E8860-MVHD card
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	Less than 90W

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) Front panel customizable 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, EN55022, EN 55024 - SAFETY: 2014/35/UE ; EN60950-1 : 2006 2nd edition A11 : 2009 + A1 : 2010 + A12 : 2011 + A2 : 2014

Software corner	
Operating system	Linux 32/64-bit. For other requirements, contact ECRIN Systems

Security & dependability	
Trusted platform module	Atmel AT97SC3204; TPM 1.2/2.0 (TPM 2.0 release later)
Built-In-Test	pBIT, monitoring functions library, Maintenance L2 with SEMA library

Export control classification	
	ITAR Free - Not Controlled (ECCN 4A003)

Other specifications	
Reliability	Designed and manufactured using ISO 9001:2000 Certified Quality Program
MTBF	Calculated per MIL-HDBK-217F, available upon request
Regulatory compliance	European CE Mark
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

094/06.16 BCC bcconsultants.fr

sales@ecrin.com
www.ecrin.com

Headquarters
143, rue Louis Neel
Parc Technologique du Pré Roux
38920 Crolles - France
Tel: +33 (0)4 76 92 20 01

Marketing & sales
2 - 12, rue du Chemin des Femmes
Immeuble l'Odyssée
91300 Massy - France
Tel: +33 (0)1 69 07 83 22

ecrin SYSTEMS