nanoONYX

Ultra Small, Low Power & Expendable Rugged Computer

MADE IN FRANCE

DESIGNED & PRODUCED IN FRANCE

▶ DO-160, MIL-STD-810 & MIL-STD-461 Qualified COTS for Vetronics, Aeronautics, Defense & Security, UAV,...

nanoONYX is an Ultra-SFF rugged embedded computer imagined and manufactured by ECRIN Systems targeting aeronautics tactical missions embedded in UAV, fixed and rotary wings (un)manned aircrafts. A large number of other defense applications as ground vehicles, underwater robots, ... will discover many advantages to integrate nanoONYX when low power, very compact footprint and lightweight are the keys.

Other products could draw your attention: µONYX, ONYX, µTOPAZE, ...

nanoONYX features Quad-Core Intel® Atom™ E3950 processor with TDP starting from 6.5 Watts to 12W for low power applications. It also supports Intel® Core™ i7-8665UE @ 1.7GHz processor, with configurable TDP from 7.5 Watts to 15W.

nanoONYX is built on a modular concept that offers expandability and Long-Life Management:
- Mini-COM Express processor module, type 10
- Four expansion slots supporting AcroPack® mPCIe-based Rugged I/O Modules and offering a large amount of additional I/O as Ethernet, ARINC429, DAC, ADC, ...

nanoONYX supports extreme environmental conditions and is fully qualified according military norms as DO-160, MIL-STD-810, MIL-STD-461. Therefore, it strongly saves your Design and Environmental Qualification fees.

- › Intel® Atom™ E3950 @ 1.6GHz, 12W, Quad-Core, 8GB DDR3L
- › Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 8GB DDR3L (16GB on request)
- › 1x DVI-D single link graphic output
- › 2x GbE
- › 2x RS-232, 2x RS-422 and 4x USB 2.0
- › 4x AcroPack / mini PCIe expansion slots for Avionics, Wireless and Industrial I/O
- › TPM 2.0

- › 1x internal M.2 SSD slot
- › Cableless, fanless, MIL-DTL-38999 connectors
- › Qualified DO-160 and MIL-STD-810/461
- › Operating Temperature -40°C to +71°C (depending on the processor version and the cTDP)
- › Long Life Management with revision control
- › ITAR free without export control
- › High flexibility to Modified COTS services

ecrin SYSTEMS

nanoONYX

System specifications	
Processor / Memory	Intel® Atom™ E3950 @ 1.6GHz, 12W, Quad-Core, 8GB DDR3L Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 8GB DDR3L (16GB on request)
TPM	TPM 2.0 Infineon SLB 9665 (Intel® Atom™ E3950) Software TPM (Intel® Core™ i7-8665UE)
Video	1x DVI-D single link output
Ethernet	2x 10/100/1000Base-T Ethernet (i210 / i219)
Audio	1x Line In, 1x Line Out
USB	4x USB2.0
Serial	2x RS232 (Tx, Rx, GND) 2x RS422 (Tx+, Tx-, Rx+, Rx-, GND)
GPIO	2x GP Inputs (LVTTL) 2x GP Outputs (LVTTL)
GPS	GPS antenna and 1 pps (via mini PCIe function)
Storage	1x M.2 (S42) SATA SSD internal slot
Expansion slots	4x AcroPack / mini PCIe slots Supporting Ethernet, ARINC429, MIL-STD-1553, RS232/424, DIO, ADC, DAC, CAN bus, …
Discrete I/O	On front panel: Power LED On MIL-DTL-38999 connector: Power button (ATX/AT CPLD mode), Reset button
Hardware Monitoring	Supply voltages, CPU, carrier board temperature sensors

Apollo Lake COMe Type 10
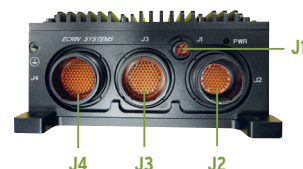
J1: +28VDC; 3 pts
J2: 2x GbE, DVI-D, 2x USB, RS 232/422, Antenna, 1x pps, PWR-ON & reset Btn; 55 pts
J3: AP #3 & #4 (30-pin), 2x USB, RS 232/422, Audio; 85 pts
J4: AP #1 (50-pin), AP #2 (30-pin), 4x GPIO; 85 pts

Power supply	
Power Input	+28VDC (+12VDC up to +36VDC)
Power consumption	Up to 25 Watts (<15 Watts typic)

SWaP-C constraints	
Size (WxDxH)	205mm (L) x 140 mm (W) x 67.5 mm (H) including connectors
Weight	#1,9kg without AcroPack modules
Cooling types	Conduction cooled system: convection & radiation by fins, conduction by cold plate or forced air flow
Connectors	MIL-DTL-38999 connectors Front panel customizable for specific applications

Environmental Qualification Tests			
Operating temperature	-40°C / +71°C (depending on the processor version and the cTDP)	Salt fog	50% salt spray @ 96h; DO-160
Storage temperature	-40°C / +85°C	Sand & Dust	Wind and fine dust particles; DO-160
Ingress protection rating	IP67	Shock & vibration	40g@11ms ; DO-160
Altitude	Up to 116mbar (50000ft); DO-160	EMI / RFI	According to DO-160 / MIL-STD-461
Humidity	0%-95% @ 65°C and 0-85°C @ 38°C RH; 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 requirement

Software corner	
Operating system	Windows 10 32/64-bit, Linux 32/64-bit, ElinOS. For other requirements, contact ECRIN Systems

Export control classification	
CECC	ITAR Free - No export control

Other specifications	
Regulatory compliance	European CE Mark, REACH, RoHS, WEEE, CoC
Warranty	1-year return to factory (extended warranty available with service contract)
Starter cable set	Breakout cable set mates with MIL-DTL-38999 connectors to break out standard CPUI/O and power signals to traditional PC style interfaces for lab purposes
Development kit	Open Starter kit based on same hardware building blocks for quick and easy integration and debugging

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