

nanoONYX



DESIGNED & PRODUCED
IN FRANCE

Ultra Small, Low Power & Modular Rugged Computer

Ultra-SFF rugged embedded computer designed and manufactured by ECRIN Systems

Based on the latest generation of Intel processors and qualified according to the military equipment environmental standards (DO-160, MIL-STD-810 & MIL-STD-461), the nanoONYX is a low-power, rugged, and scalable computing solution for air, land and sea systems.

Being the most compact of a complete range of rugged computers, the nanoONYX is ideal for any demanding application requiring both high performance in a dense passively cooled system and the support of functions such as AI, graphics, and cybersecurity.

With its modular and robust design, the nanoONYX offers the embedded market a completely mil-qualified and customizable solution benefitting from a long-term support.

The nanoONYX:

- supports a wide range of processor as the Intel® Atom™ E3950 processor, the Intel® Core™ i7-8665UE, or the Intel® Core™ i7-1185GRE through Mini-COM Express processor module, type 10
- features four expansion slots supporting AcroPack® mPCIe-based Rugged I/O Modules and offering a large array of additional I/O as Ethernet, ARINC429, DAC, ADC, ...

Using the nanoONYX, system integrators benefit from a ruggedized, fully qualified and durable COTS solution with a high-quality technical support.

- Intel® Atom™ E3950 @ 1.6GHz, 12W, Quad-Core, 8GB DDR3L
- Intel® Core™ i7-1185GRE @ 1.8GHz, 15W, Quad Core, 16GBBytes LPDDR4X
- Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 8GB DDR3L
- 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 and Industrial I/O
- TPM 2.0
- 1x internal M.2 SSD slot
- Cableless, fanless, MIL-DTL-38999 connectors
- Qualified according DO-160, MIL-STD-461, MIL-STD-810
- Operating temperature:
-40°C to +55°C without external air flow
+71°C depending on processor version and cTDP
- Long Life Management with revision control
- ITAR free
- High flexibility to Modified COTS services
- Optional Holdup module, 200ms

System specifications

Processor / Memory	Intel® Atom™ E3950 @ 1.6GHz, 12W, Quad-Core, 8GB DDR3L Intel Core™ i7-1185GRE @ 1.8GHz, 15W, Quad Core, 16GB LPDDR4X Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 8GB DDR3L
TPM	TPM 2.0 Infineon 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	Internal voltages; CPU and carrier board temperatures



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 30W, 25W typic
Optional Holdup module	According to D0160, Section 16, Category A, 200ms (290ms @ 35W)

SWaP-C constraints

Size (WxDxH)	205mm (L) x 140 mm (W) x 67.5 mm (H) including connectors With Holdup module: 205mm (L) x 140 mm (W) x 78,9 mm (H) including connectors
Weight	Without Holdup module and AcroPack : 1,9kg - With Holdup module and without AcroPack : 2,3kg
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 to +55°C without external air flow +71°C depending on processor version and cTDP	Sand & Dust	Wind and fine dust particles; D0-160
Storage temperature	-40°C / +85°C	Shock & vibration	40g@11ms ; D0-160
Ingress protection rating	IP67	EMI / RFI	According to D0-160 / MIL-STD-461
Altitude	Up to 116 mbar (50000ft); D0-160	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
Humidity	0%-95% @ 65°C and 0-85°C @ 38°C RH; D0-160		
Salt fog	50% salt spray @ 96h; D0-160		

Software corner

Operating system	Windows 10 32/64-bit, Linux 32/64-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
Development kit	Starter kit based on same hardware building blocks for quick and easy integration and debugging

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