

μONYX

Rugged Small Form Factor Mission Computer with removable storage



DESIGNED & PRODUCED
IN FRANCE

► DO-160, MIL-STD-810 & MIL-STD-461 Qualified COTS for Vetrronics, Aeronautics, Defense & Security,...

μONYX is a Small Form Factor rugged embedded computer designed and produced 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 benefit from many advantages to integrate μONYX when low power, very compact footprint and lightweight are the keys.

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

μONYX features Intel® Core™ i7-8665UE @ 1.7GHz processor, with configurable TDP from 7.5 Watts to 15W.

μONYX is built on a modular concept that offers a large flexibility and Long-Life Management:

- Compact COM Express processor module, type 6
- Three expansion slots offering a large amount of additional I/O as Ethernet, ARINC429, ...
- Two removable 2"5 SSD

μONYX supports extreme environmental conditions and is fully qualified according military norms as DO-160, MIL-STD-810, MIL-STD-461.

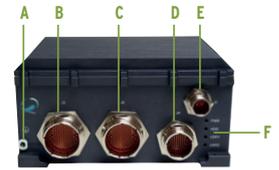
Therefore, it saves strongly your design and Environmental Qualification fees.

- > Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 32GB non-ECC DDR4
- > Up to two removable 2"5 SSD behind sealed door panel
- > 1x DVI-D Single Link
- > 1x PMC and 2x mini PCI Express sites for flexible avionics and industrial I/O expansion
- > 4x RS-232 + 2x RS-422 and 4x USB 2.0
- > 1x USB 3.0 Full Specs with circular USB-Field connector

- > SFF: 3 liters, 3 kilos, 30 Watts
- > Cableless, Fanless, MIL-DTL-38999 connectors
- > Operating Temperature -40°C up to +71°C (depending on the processor version and the cTDP)
- > Qualified according to DO-160, MIL-STD-810, MIL-STD-461
- > Long Life Management with revision control
- > ITAR free without export control
- > High flexibility to Modified COTS services

System specifications

Processor Module	COM-Express Compact Size (95x95 mm) Intel® Core™ i7-8665UE @ 1.7GHz, 15W, Quad-Core, 32GB non-ECC DDR4 Memory
Security	TPM 2.0 (Infineon)
Video outputs (Intel HD Graphic)	1x DVI-D Single Link
Other Video inputs / outputs	Use of mini PCIe board
Ethernet	2x 10/100/1000 BaseT
Serial	2x RS-232 (Tx, Rx) + 2x RS-232 (Tx, Rx, RTS, CTS) 2x RS422 (Tx +/-, Rx +/-)
USB 2.0	4x USB2.0
USB 3.0 (38999 USB Field)	Full USB3.0 specifications (on rear panel)
Audio	Intel® HD Audio: 1x In and 1x Out Lines
Discret I/O	8x Isolated Inputs 8x Isolated Outputs Reset, Power Button, Power Led, HDD Led, Fast Erase, 2x user's LEDs
I/O expansion slots	1x PMC slot 1x mini PCIe + 1x mini PCIe/AcroPack slots
Solid state disk (SSD) (internal)	1x mSATA (shared with one 2"5 removable SSD)
Solid State Disk (SSD) (Removable)	2x SSD 2.5" sites (on rear panel)
Hardware monitoring	Voltages, CPU, GPU, and carrier board temperatures
Watchdog timer	Programmable timer range to generate RESET



- A: Mechanical ground
- B: CPU I/O
- C: PMC & isolated GPI/GPO
- D: miniPCIe Slots I/O
- E: Power Supply
- F: 2x Monitoring & 2x User's LEDs



Removable SSD tray and USB 3.0 connector

Power supply

Power Input	+28VDC (+12VDC up to +36VDC)
Power consumption	Less than 40W

SWaP-C constraints

Size (WxDxH)	208mm x 163mm x 107mm (8.19" x 6.41" x 4.21")
Weight	3kg (6.6 lbs.)
Cooling type	Convection & radiation by fins, conduction by cold plate (conduction cooled inside)
Connectors	MIL-DTL-38999 connectors Front panel customizable for specific application

Environmental Qualification Tests

Operating temperature	-40°C / +71°C (depending on the processor version and the cTDP)	Salt fog Dust	50% salt spray / 96h (D0-160) Wind and fine dust particles (D0-160)
Storage temperature	-40°C / +85°C	Operating shock & vibration	D0-160 / MIL-STD-810G
Ingress protection rating	IP65	EMI / RFI	D0-160 / MIL-STD-461F
Altitude	Up to 15000 feet (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 requirements
Humidity	0%-95% relative humidity (D0-160)		

Software corner

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

Export control classification

	ITAR Free - No export control
--	-------------------------------

Other specifications

Regulatory compliance	European CE Mark, REACH, RoHS, WEEE
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 breakout standard CPU I/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

Note: The information in this document is subject to change without notice and should not be considered as a commitment by ECRIN Systems. While reasonable precautions have been taken, ECRIN Systems assumes no responsibility for any error that may appear in this document. All trademarks or registered trademarks are the properties of their respective owners.