

# μTOPAZE

## High Performance Computing 3U VPX Rugged System



DESIGNED & PRODUCED  
IN FRANCE

### ► Embedded Processing System for Radar, Sonar, EWR, C4ISR, AI,...

μTOPAZE is a rugged 3U VPX mission computer dedicated to high-speed signal processing and computing applications. Its I/O flexibility is capable of meeting a large number of configurations where multiProcessors, GPGPU, FPGA for heterogeneous computing architecture are mandatory.

Thanks to our experience in designing embedded systems, we provide pre-integrated, pre-tested & fully qualified COTS systems according to military norms as DO-160, MIL-STD-810, MIL-STD-461, ...

μTOPAZE is ready to work in harsh environments of Defense computing applications for extreme temperatures, altitudes, voltage spikes, shocks, vibrations, and more.

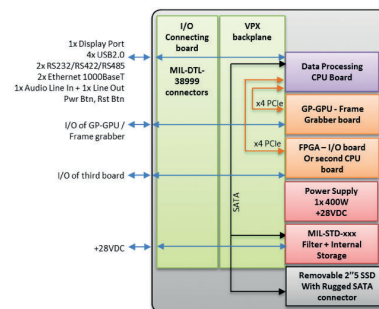
Other products could draw your attention: nanoONYX, μONYX, ONYX, ...

ECRIN Systems offers Modified COTS services, Product Lifecycle Management program with innovative Long-Term Support services to reduce the overall cost of ownership and provide industry-leading safeguards against component obsolescence.

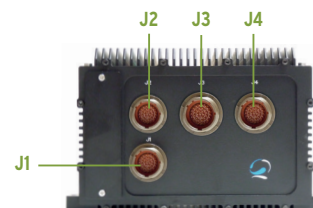
- > 3x VPX-3U slots
- > Intel® Xeon® processor
- > NVIDIA GPU with 4x 3G/HD-SDI inputs and 2x HD-SDI outputs
- > Peripheral slot for additional I/O as FPGA XMC card, avionic I/Os, ...
- > 1x 400 watts VITA 62 Power Supply
- > 1x MIL-STD-461/1275E filtering board + M.2 slot storage
- > 1x 2.5" SSD removable on front panel
- > MIL-DTL-38999 connectors

## System specifications

5-slot VPX Backplane,	1x payload slot for COTS VPX-3U INTEL CPU 1x payload slot for COTS GPGPU powered by NVIDIA GPU RTX3000 or RTX5000 1x payload slot for COTS FPGA+FMC carrier or XMC/AP carrier or 2nd INTEL CPU 1x VITA62 Power Supply: 400 Watts 1x MIL-STD-1275E / MIL-STD-461 filtering + internal SATA SSD storage (M.2)
Processor / Memory	Quad-Core Intel® Xeon® E3-1505M c6 (47W), 32GBytes of memory Xeon E-2276ME 45W (35W cTDP), 6C/GT2 (ECC/non-ECC) (On request)
Security	TPM 2.0
Video	1x Display Port single link from CPU board
Ethernet	2x 10/100/1000 Base-T
Audio	1x Line In, 1x Line Out
USB	4x USB2.0
Serial	2x RS-232/422/485 (User configurable)
GPIO	2x GP Inputs (LVTTTL) 2x GP Outputs (LVTTTL)
Storage	M.2 (S80) SATA Slot #1: On SBC board M.2 (S80) SATA slot #2: On filtering board 1x Removable 2.5" SATA SSD, 100.000 Insert/extractions
GP-GPU	CUDA cores for parallel processing, and frame grabber NVIDIA Quadro Turing RTX3000, 5.3 TFLOPS, 1920 CUDA Cores, 240 Tensor Cores NVIDIA Quadro Turing RXT5000, 9.5 TFLOPS, 3072 CUDA Cores, 384 Tensor Cores 4x HD-SDI input and 2x HD-SDI output, or 1x 3G-SDI input + 3x HD-SDI inputs, and 2x HD-SDI output Operating Temp -40°C to +75°C; 40G Peak @ 11ms; 10G peak @ 5-2000Hz
Expansion slot	1x VPX-3U FPGA+FMC carrier or XMC/AcroPacks carrier
Discrete I/O	On front panel: LED Power, LED User defined On MIL-DTL-38999 connector: Power button, Reset button
Hardware Monitor	Supply voltages, CPU, carrier board temperature sensors



Block diagram



- J1: +28VDC P/S; 4-pins
- J2: GPU I/O (3x DP or 6-coax for 4x 3G-SDI in and 2x 3G-SDI out); 55-pin or 6-coax
- J3: CPU #0 I/O (DP, Audio, 2 GbE, 4 USB 2.0, 2 RS232/422, 4 GPIO, PWR, RST); 79-pin
- J4: 3<sup>rd</sup> slot equipped FPGA or XMC/AP carrier: User dependent; 66-pin

## Power supply

Power Input	+28VDC (+16VDC up to +36VDC) EMI filtering board according to DO-160 / MIL-STD-461 / MIL-STD-1275 / MIL-STD-704
Power supply	VITA62 Power Supply: 400W
Power consumption	Up to 200 Watts; 90 Watts max per slot

## SWaP-C constraints

Size (WxDxH)	With MIL-DTL-38999 connectors: Width 216mm x Depth 226mm x High 140mm
Weight	Up to 1kg (Depends on Bill Of Material)
Cooling types	Conduction cooled system: Convection & radiation by fins, conduction by cold plate, or forced air flow (double envelop with IP68 fans in option)
Connectors	Military circular IP67 locking connectors (MIL-DTL-38999) Front panel customizable for specific application (38999/Coax, SMA/FO/RF...)

## Environmental Qualification Tests

Operating temperature	-40°C / +55°C (depend on configuration and cooling system)	Salt fog	50% salt spray @ 96h; DO-160G section 14 Cat T
Storage temperature	-40°C / +85°C	Sand & Dust	Wind and fine dust particles; DO-160
Ingress protection rating	IP67	Shock & vibration	40g@11ms & Method 514.6/cat20 GM; MIL-STD-810G
Altitude	From 752mbar (8000ft) to 116mbar (50000ft); DO-160	EMI / RFI	DO-160 / MIL-STD-461F
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 requirements

## Software corner

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

CECC	ITAR Free - No export control (ECCN 4A003)
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## Other specifications

Regulatory compliance	European CE Mark, REACH, RoHS, WEEE, CoC
Warranty	1-year return to factory (extended warranty available with services contract)

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