

ECRIN SYSTEMS

# μTOPAZE



## High Performance Computer 3U VPX Rugged System

### EMBEDDED PROCESSING SYSTEM FOR RADAR, SONAR, EWR, C4ISR, AI,...

μTOPAZE is a rugged 3U VPX mission computer specifically designed for high-speed signal processing and advanced computing applications. Its flexible I/O architecture supports a wide range of configurations, making it ideal for systems requiring heterogeneous computing with multi-processors, GPGPUs, and FPGAs.

Leveraging our expertise in embedded system design, we deliver pre-integrated, pre-tested, and fully qualified COTS solutions, compliant with key military standards such as DO-160, MIL-STD-810, MIL-STD-461, and more.

Engineered to operate reliably in the most demanding environments, μTOPAZE is ready for deployment in defense applications facing extreme temperatures, high altitudes, power fluctuations, shocks, vibrations, and other harsh conditions.

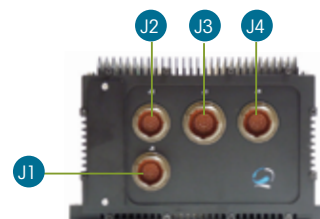
μTOPAZE is part of a comprehensive range of rugged computing solutions, which also includes the nanoONYX, ONYX, and more.

In line with its commitment to quality and long-term support, ECRIN Systems offers a full range of value-added services, including Modified COTS solutions, Product Lifecycle Management, and Long-Term Support programs, designed to reduce total cost of ownership and safeguard systems against component obsolescence.

- 3x VPX-3U slots
- Intel® Xeon® D or W 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 connector

## SYSTEM SPECIFICATIONS

|                             |                                                                                                                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5-slot VPX Backplane</b> | 1x payload slot for COTS VPX-3U INTEL CPU<br>1x payload slot for COTS NVIDIA GPGPU<br>1x payload slot for COTS NVIDIA GPGPU or FPGA carrier or INTEL CPU<br>1x VITA62 Power Supply: 400 Watts<br>1x MIL-STD-1275E / MIL-STD-461 filtering + internal SATA SSD storage (M.2) |
| <b>Processor</b>            | 8-Core Intel® Xeon®W -11865MRE (45W TDP),<br>10-Core Intel® Xeon®D 1848TER (58W TDP)<br>32GBytes of memory                                                                                                                                                                  |
| <b>Security</b>             | TPM 2.0                                                                                                                                                                                                                                                                     |
| <b>Video</b>                | 1x Display Port single link from CPU board                                                                                                                                                                                                                                  |
| <b>Ethernet</b>             | 2 x 10/100/1000 BASE-T + 1x 10GBASE-SR/LR                                                                                                                                                                                                                                   |
| <b>Audio</b>                | 1x Line In, 1x Line Out                                                                                                                                                                                                                                                     |
| <b>USB</b>                  | 4 x USB2.0 + 1x USB3.0                                                                                                                                                                                                                                                      |
| <b>Serial</b>               | 2RS232 + 2RS422 + 2 CAN                                                                                                                                                                                                                                                     |
| <b>Storage</b>              | M.2 SATA Slot #1: On SBC board<br>M.2 SATA slot #2: On filtering board 1x Removable 2.5" SATA SSD, 100.000 Insert/extractions                                                                                                                                               |
| <b>GP-GPU</b>               | CUDA cores for parallel processing, and frame grabber NVIDIA RTX PRO™ 4000 GPU (Blackwell architecture)<br>NVIDIA RTX™ 2000 Ada GPU<br>Cores 4x HD-SDI input and 2x HD-SDI output, or 1x 3G-SDI input + 3x HD-SDI inputs, and 2x HD-SDI output                              |
| <b>Expansion slot</b>       | 1x VPX-3U FPGA+FMC carrier or IOs carrier + QMC                                                                                                                                                                                                                             |
| <b>Discrete I/O</b>         | On front panel: LED Power, LED User defined<br>On MIL-DTL-38999 connector: Power button, Reset button                                                                                                                                                                       |
| <b>Hardware Monitor</b>     | Supply voltages, CPU, carrier board temperature sensors                                                                                                                                                                                                                     |



- 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-co  
**J3**: CPU #0 I/O (DP, Audio, 2 GbE, 4 USB 2.0, 2 RS232/422, 4 GPIO, PWR, RST); 79-pin  
**J4**: 3rd slot equipped FPGA or XMC/AP carrier>User dependent; 66-pin

## POWER SUPPLY

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

## SWAP-C CONSTRAINTS

|                      |                                                                                                                                                  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Size (WxDxH)</b>  | With MIL-DTL-38999 connectors: Width 216mm x Depth 226mm x High 140mm                                                                            |
| <b>Weight</b>        | Up to 11kg (Depends on Bill Of Material)                                                                                                         |
| <b>Cooling types</b> | Conduction cooled system: Convection & radiation by fins, conduction by cold plate, or forced air flow (double envelop with IP68 fans in option) |
| <b>Connectors</b>    | Military circular IP67 locking connectors (MIL-DTL-38999)<br>Front panel customizable for specific application (38999/Coax, SMA/FO/RF...)        |

## ENVIRONMENTAL QUALIFICATION TESTS

|                                  |                                                            |                              |                                                                                                                                                                                                                                                                  |
|----------------------------------|------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating temperature</b>     | -40°C / +55°C (depend on configuration and cooling system) | <b>Salt fog</b>              | 50% salt spray @ 96h; DO-160G section 14 Cat T                                                                                                                                                                                                                   |
| <b>Storage temperature</b>       | -40°C / +85°C                                              | <b>Sand &amp; Dust</b>       | Wind and fine dust particles; DO-160                                                                                                                                                                                                                             |
| <b>Ingress protection rating</b> | IP67                                                       | <b>Shock &amp; vibration</b> | 40g@11ms & Method 514.6/cal20 GM; MIL-STD-810G                                                                                                                                                                                                                   |
| <b>Altitude</b>                  | From 752mbar (8000ft) to 116mbar (50000ft); DO-160         | <b>EMI / RFI</b>             | DO-160 / MIL-STD-461F                                                                                                                                                                                                                                            |
| <b>Humidity</b>                  | 0%-95% @ 65°C and 0-85°C @ 38°C RH; DO-160                 | <b>CE certification</b>      | EN 55032: 2015 / A1: 2019 Electromagnetic compatibility of multimedia equipment - Emission requirements<br>EN 55035: 2017: Electromagnetic compatibility of multimedia equipment - Immunity requirements<br>EN 62368-1:2014+AC:2015: Part 1: Safety requirements |

## SOFTWARE CORNER

|                         |                            |
|-------------------------|----------------------------|
| <b>Operating system</b> | Microsoft Windows or Linux |
|-------------------------|----------------------------|

## EXPORT CONTROL CLASSIFICATION

|             |                               |
|-------------|-------------------------------|
| <b>CECC</b> | ITAR Free - No export control |
|-------------|-------------------------------|

## OTHER SPECIFICATIONS

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