

escOBC – Satellites On-Board Computer

escOBC is a powerful universal On-Board-Computer for new space satellite platforms and compatible with cubesat platforms. The product dimensions are matched with the PC104 form factor.

The powerful System on Chip combining multi-core processor and programmable logic array allows efficient, real-time execution of complex algorithms to process raw data on-board, thus reducing space to ground communications bandwidth needs. Multiple power saving modes may be activated when high computational power is not required to decrease power consumption.

Independent system monitoring is ensured by integrated supervisor subsystem based on radiation tolerant microprocessor. Latch-up protection is assured by constant current monitoring and several mitigation techniques.

Key features

- Four 64-bit Linux capable user cores + one monitoring core
- Programmable logic array for functionality extension
- Independent radiation-tolerant supervisor
- Warm/cold redundancy support
- Expected life-time 3-5 years on LEO
- On-board current, voltage and temperature monitoring

Technical Specifications

General	
Processor	5x RISC-V 64-bit
Processor clock	up to 625 MHz
Logical blocks	254 k
DRAM	512 MB (ECC)
NVM (program)	128 MB (redundant)
NVM (configuration)	16 MB (redundant)
Mass storage	2 GB SLC NAND
Power supply	5 V \pm 5%
Power consumption	up to 10 W
Operating temperature range	-30 °C to +60 °C
Non-operating temperature range	-40 °C to +85 °C
Radiation (TID)	30 kRad (Si) for rad-tolerant version

Interfaces	
CAN	2x
RS422/RS-485	2x
UART 3.3 V	1x
SPI 3.3 V	1x
PPS (RS-422)	1x
GPIO 3.3 V logic	8x
JTAG for SoC	1x
Ethernet	none/1x/2x (optional)

Size and Weight	
Length	96 mm
Width	91 mm
Height	24 mm
Mass	250 g

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esc Aerospace has over 20 years of experience in space sector and is highly respected in innovative R&D as a product-neutral system integrator with offices worldwide. esc Aerospace is a leader in the field of on-board Avionics and is one of the leading SMEs in projects with a focus on space & defence. esc Aerospace is experienced in the areas of Avionics, Autonomous Software, Counter-Unmanned Aerial Systems (C-UAS) and Guidance, Navigation & Control (GNC) systems. esc Aerospace provides comprehensive solutions for satellite communication all around the world. esc Aerospace produces on-board computers (OBC) – escOBC, radiation monitors SpacePix® & sensor systems.