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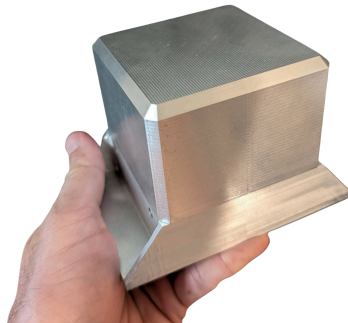
EDGE10

Specifications Sheet

Edge10 2026 LEO

April 2026

Compact edge computing device for real-time data processing and control on board the spacecraft.



Edge10 Radiation Shielded LEO Compute Module

Product Overview

The Edge10 is a radiation shielded compact compute platform with a roadmap that features forward compatibility with current generation chipsets every year.

The Edge10 provides compute hardware with CPU, GPU, and NPU (Neural Processing Unit) cores to enable the deployment of Vision AI agents to perform mission and spacecraft operation.

The Edge10 serves for on orbit Edge Processing to serve three broad use cases.

- Earth Observation
- (RPOD) Rendezvous Proximity Operations and Docking /Autonomy
- (ISM) In Space Manufacturing

Key Features

- Exceptional AI performance (up to 15 TOPS) at low power.
- Support for multiple concurrent image sensors for computer vision, SLAM, obstacle avoidance, and object recognition.
- Blue UAS Framework compliance for secure, trusted operations.
- Open VOXL SDK for rapid development with ROS 1/2, PX4/ArduPilot integration.

Technical Specifications

- Processor: Qualcomm QRB5165 (8 cores, up to 3.091 GHz).
- Memory: 8 GB LPDDR5.
- Storage: 128 GB flash.
- Accelerators: Adreno 650 GPU (1024 ALU), 15 TOPS NPU / Hexagon Tensor Accelerator, DSP for real-time flight control.

Input/Output (I/O)

- Image Sensors: 4 concurrent MIPI CSI (via J6/J7 connectors with interposers; supports EO, thermal like FLIR Lepton, ToF, stereo/tracking).
- Integrated Sensors: 2× ICM-42688P IMU (or equivalent), 1× ICP-10100/10111 barometer.
- Other: USB 3.0 (J3 10-pin JST-GH), USB-C (J9 for ADB/host), debug console (J4), fan header (J2), power monitoring via I2C.
- Expansion: Camera interposers, VOXL Mini ESC (4-in-1), power modules; GPIO/CSI/CCI interfaces at 1.8V CMOS.

Networking & Connectivity

- Base: No built-in Wi-Fi; USB 3.0 for add-on modules.
- Add-on Support: Wi-Fi, 4G/LTE, 5G, Microhard via USB or dedicated interfaces.
- Protocols: Supports PX4/ArduPilot telemetry, ROS, VOXL SDK networking stacks.

Power

- Main Input: 3.8 V DC nominal (J1 Molex connector; designed around 1S LiPo nominal).
- Recommended: Pair with VOXL Power Module (MDK-M0041-4 variant for 3.8 V output) or VOXL Mini ESC regulated output.
- Consumption: Approximately 0.5–8 W (platform-typical range; exact idle/load depends on workload—confirm via testing as sources vary slightly between 0.1–8 W for the family).
- Note: Not designed for direct high-voltage input; use regulated 3.8 V supply. Inrush handling via compatible power module (up to 6 A momentary).

Physical & Mechanical

- Dimensions: 120 mm × 80 mm x 85mm
- Mass: Less than 1kg.
- Mounting: Board-level (PCB stack); compatible with custom frames or drone integration.
- Enclosure: Open-frame design (ruggedness depends on final integration).

Environmental Specifications

- Operating Temperature: -30°C to +85°C for components; validate for full assembly).
- Other: Designed for SWaP-constrained environments; vibration/shock tolerance suitable for small UAS (test per application standards).
- MTBF: Not publicly detailed; typical for high-reliability aerospace-grade components.

Software & Firmware

- Operating System: Ubuntu 18.04 (Linux kernel v4.19).
- Flight Stack: Embedded PX4 (or ArduPilot) on Sensors DSP.

- SDK: VOXL SDK with support for GPS-denied navigation, SLAM, obstacle avoidance, object recognition, computer vision.
- Frameworks: ROS 1 & 2 compatible; TensorFlow/GPU-accelerated AI.
- Security: Blue UAS Framework compliant; secure boot and vault-like features from QRB5165.

Performance

- AI: Up to 15 TOPS (NPU + GPU).
- Vision: 4 concurrent MIPI sensors; high-resolution video encoding.
- Real-Time: Deterministic flight control via dedicated DSP; low-latency sensor fusion.
- Scalability: Expandable with accessories for more sensors or connectivity.

Compliance, Certifications & Standards

- Blue UAS Framework (DIU) compliant.
- Other: FCC, CE, RoHS (platform-level; full system certification depends on integration). Qualcomm-based security and safety features.

Ordering Information

- Base Part: Edge10 core board (equivalent to M0104).
- Variants: Camera configurations (e.g., with IMX sensors, thermal interposers), ESC/power module bundles.
- Included: Base compute board; accessories sold separately (power module, ESC, camera flexes, cables).
- Options: 5G add-ons, specific sensor kits, development kits.

Additional Sections

- **Applications:** Edge AI perception, small robotics—include block diagrams or example integrations.
- **Accessories & Expansion:** VOXL Power Module, Mini 4-in-1 ESC, camera interposers (M0186, M0187, etc.), ToF modules, USB adapters.
- **Support & Resources:** Links to docs.modalai.com (feature matrix, connectors, power guide, mechanical drawings—2D PDF and 3D STEP available), VOXL SDK, forums.
- **Revision History:** Track spec sheet versions.