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**EDGE 10**

# Specifications Sheet

## Velox20/T100 Civ

**Compact edge computing device for real-time data processing**

Compact, industrial-grade edge AI and real-time control board powered by the Qualcomm Dragonwing IQ-9100 SoC, delivering up to 100 dense TOPS AI performance with M.2 M-key expansion, dual USB-C, Ethernet, and multi-camera support in a 50 × 65 × 5 mm footprint optimized for drones, robotics, wearables, and power-sensitive applications.

This is the civilian grade, commercial product.

The Military/Space variant spec sheet is available under NDA.

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### 1. Product Overview:

The Edge10 Velox20/T100 is an internally developed, ultra-compact edge computing and autopilot platform based on the Qualcomm QCS9100 (IQ-9100) chipset. It combines high AI throughput, functional safety, and rich industrial I/O in a rugged, low-SWaP design suitable for real-time autonomous and edge applications, including power-sensitive wearables.

#### Key Benefits:

- Up to 100 dense TOPS AI with efficient on-device inference.
- Flexible M.2 M-key NVMe expansion and high-speed connectivity.
- Industrial temperature range (-40 °C to +115 °C junction) with ECC memory and Safety Island.
- Optimized for low-power operation in wearables and battery-constrained systems.

#### Target Applications:

- Autonomous systems (drones, AMRs, robotics).
- Industrial edge AI, machine vision, and control.
- Building automation gateways and remote monitoring.
- Wearables and other power-sensitive edge applications (e.g., portable perception, body-worn AI).
- GPS-denied navigation and multi-sensor fusion.

#### High-Level Features:

- Qualcomm IQ-9100 SoC with heterogeneous compute and Safety Island.
- M.2 M-key PCIe Gen4 expansion.
- Dual USB-C ports, Ethernet, and multiple MIPI CSI camera ports.
- ECC-protected memory and wide-temperature ruggedness.

## 2. Key Features

- High AI throughput (100 dense TOPS) with dual Hexagon Tensor Processors.
- M.2 M-key slot for high-speed NVMe storage expansion.
- Networking: 1–2× 2.5 GbE ports with TSN support.
- Dual USB-C ports (USB 3.1 Gen2 capable).
- Multiple MIPI CSI-2 camera ports (up to 16 concurrent).
- Functional safety subsystem with planned SIL3 support.
- Low-power modes suitable for wearables and battery-operated devices.

## 3. Technical Specifications

### Hardware / Compute

- Processor: Qualcomm QCS9100 (IQ-9100) – Octa-core Kryo Gen 6 CPU (up to 2.36 GHz).
- Memory: Up to 36 GB LPDDR5 @ 3200 MHz with inline ECC (board population TBD).
- Storage: Onboard options + M.2 M-key (NVMe via PCIe Gen4).
- Accelerators: Adreno 663 GPU; Dual Hexagon Tensor Processors (100 dense TOPS); dedicated DSPs.

### Input/Output (I/O) & Sensors

**Expansion:** 1× M.2 M-key slot (PCIe Gen4, supporting NVMe SSD).

**USB:** 2× USB-C ports (USB 3.1 Gen2 capable).

**Networking:** 1–2× Ethernet ports (2.5 GbE with TSN support).

**Camera:** Multiple MIPI CSI-2 ports (4-lane interfaces; supports up to 16 concurrent cameras depending on configuration).

**Other:** GPIOs, UART/I2C/SPI, CAN-FD, debug headers.

- Integrated/Expansion Sensors: Support for IMUs, barometers, etc., via available buses.

### Networking & Connectivity

- Ethernet: 1–2× 2.5 GbE with Time-Sensitive Networking (TSN).
- Wireless: Support for Wi-Fi 6E/7, Bluetooth, or cellular via M.2 or companion modules.
- PCIe: Gen4 lanes allocated to M.2 M-key.

### Power

- Input: Board-specific DC input (TBD; e.g., wide range or regulated 3.8–24 V).
- Consumption: ~3.8–20 W typical (SoC range; full board TBD via measurement). Low-power modes optimized for wearables and battery-sensitive applications.
- Management: Advanced PMIC with monitoring.

### **Physical & Mechanical**

- Dimensions: 50 mm × 65 mm × 5 mm.
- Weight: Less than 40 g (extrapolated from comparable Qualcomm Dragonwing IQ-9100 module at 33 g for a similar 65 × 65 × 4.55 mm form factor; exact mass will be confirmed by prototype measurement).
- Mounting: 4 screws in 32 mm square configuration (standard for many drone frames; M2.5 or M3 holes recommended).
- Enclosure: Open-frame or optional rated enclosure.

### **Environmental Specifications**

- Operating Temperature: -40 °C to +115 °C (junction; board-level TBD).
- Storage/Humidity/Vibration: TBD from testing.
- Reliability: ECC protection, safety features.

### **Software & Firmware**

- Operating System: Linux (Yocto/Ubuntu/Redhat).
- Frameworks: ROS 2, AI toolkits, real-time stacks (PX4/ArduPilot or custom).
- Security/Safety: Secure boot, Safety Island (planned SIL3).

### **Performance**

- AI: 100 dense TOPS.
- Vision: Up to 16 concurrent MIPI cameras with advanced ISP.
- Video: 4K encode/decode support.
- Real-Time: Dedicated subsystem for deterministic control.
- Storage: High-speed NVMe via M.2 M-key.

## **4. Compliance, Certifications & Standards**

- Functional Safety: Planned SIL3 via Safety Island.
- Environmental: RoHS, AEC-Q100 Grade 3 components where applicable.
- EMC/Safety: FCC, CE, UL (pending board certification).
- Longevity: 10+ years support.

## **5. Ordering Information**

- Base Model: Edge10 Velox20/T100 (IQ-9100 core).
- Variants: Memory/storage options, I/O populations (e.g., camera count, Ethernet ports).
- Included/Options: M.2 modules, power adapters, camera cables, development kits.

## 6. Additional Sections

**Applications:** Diagrams showing M.2 expansion, USB-C + Ethernet setup, multi-camera configurations, and wearable/power-sensitive integrations.

**Accessories & Expansion Modules:** M.2 NVMe drives, camera interposers, USB-C peripherals.

**Warranty & Support:** Your terms; documentation links.

**Revision History:** References to development threads.

