

Edge AI for Smart Transportation

Bring AI-powered operational intelligence to transportation vehicles and infrastructure



Transportation systems are becoming more connected, autonomous, and data-driven. From intelligent vehicles and rail to smart infrastructure and logistics hubs, operators need real-time insights at the edge. Together, Intel and Kontron deliver scalable Edge AI platforms that process sensor, video, and operational data locally, enabling faster decisions, improved safety, greater efficiency, and operational resilience.

From vehicles and infrastructure to connected transportation networks, this approach brings intelligence closer to where decisions happen, helping operators respond faster and operate more efficiently.



➤ EvoTrac S1901

Bring AI processing directly to vehicles and heavy-duty machines. Combine high-performance computing and GPU acceleration for real-time analytics, autonomy and smart decision-making.

- AI-assisted vehicle & infrastructure operations
- AI perception, sensor processing, video analytics
- Predictive maintenance
- Real-time analytics

Ideal for:

Off-Highway | Agriculture | Construction | Mining
Maritime Ports | Fleet | Airports



➤ ME1310

Extend Edge AI beyond the vehicle with intelligent infrastructure computing for transportation networks, rail systems, ports, airports, and smart city deployments.

- Video analytics
- Infrastructure monitoring
- Edge AI inferencing
- Multi-sensor fusion
- Operational data aggregation

Ideal for:

Rail | Transportation Infrastructure | Private
Networks | Edge Computing



EvoTrac S1901 Highlights

Powered by the 8-Core Intel® Xeon® D-1732TE (Ice Lake-D), the S1901 brings enterprise data-center intelligence into the intelligent vehicle cab. Featuring Intel® DL Boost and Intel® TCC for deterministic, low-latency control loops, alongside Intel® QAT hardware encryption and ECC memory integrity, it allows transit authorities to consolidate route telematics, fare collection, and AI-driven passenger safety onto a single ruggedized, fanless computing hub.

- Intel® TCC: Delivers deterministic sub-millisecond control loop response times for safety-critical vehicle buses.
- Intel® DL Boost (AVX-512): Accelerates local ML sensor processing on the CPU without loading the discrete GPU.
- Intel® QAT & SGX: Secures V2X communication and fare transactions with zero penalty on vehicle compute cycles.

Technical Information

Industrial & Heavy Vehicle Sealed Chassis: Fully fanless conduction cooling handles 150W workloads across -40°C to +70°C inside a dust-tight, submersible IP67 enclosure. Powered by a wide 9–36 VDC isolated supply engineered to withstand heavy engine-cranking dropouts and inductive load surges.

Independent Safety Island (AURIX™): Features an optional Infineon AURIX™ TC387/TC397 safety MCU on an electrically isolated domain. It monitors primary CPU health and commands vehicle fail-safes or emergency stops directly across CAN FD buses if the main OS or AI models stall.

Deterministic Sensor Fusion: Houses an onboard L2+ managed Ethernet switch (10GbE / 2.5GbE / 7x 1GbE) paired with IEEE 1588 PTP and an integrated u-blox NEO-M9N GNSS receiver. Dedicated hardware generates a +/-5 ns 1PPS alignment signal, synchronizing LiDAR, radar, and camera feeds to eliminate object "ghosting".

Dedicated Vision & AI Inferencing: Integrates a single NVIDIA® RTX™ 2000 Ada Generation MXM GPU on an unthrottled PCIe Gen 3 x16 link. It delivers real-time neural network inferencing and zero-latency video processing for 360° obstacle classification, track/route hazard detection, and autonomous navigation.

Server-Class Host Engine: Powered by the Intel® Xeon® D-1732TE 8-Core processor with up to 64GB industrial DDR4 ECC memory.

Intel® VT-x / VT-d: Consolidates isolated infotainment, telematics, and passenger surveillance into isolated VMs.



ME1310 Highlights

High-Density Compute at the Edge: Powered by the 3rd Gen Intel® Xeon® D processor, delivering server-class multi-core performance in a compact, low-power footprint built for space-constrained edge environments.

Built-in Hardware Acceleration: Features integrated Intel® QuickAssist Technology (QAT) to offload cryptography and data compression, freeing CPU cores for critical workloads.

Edge AI & Analytics Ready: Includes Intel® Deep Learning Boost (VNNI) and AVX-512 to accelerate real-time AI inferencing and computer vision directly at the network edge.

Ultra-Fast I/O & Networking: Direct PCIe Gen 4 lanes and high-throughput integrated Ethernet maximize data transfer speeds for dense compute clusters, storage, and add-in accelerator cards.

Telecom & Critical-Timing Precision: Native support for hardware-based IEEE 1588 PTP and Synchronous Ethernet (SyncE) ensures ultra-low latency and synchronization for Open RAN, vRAN, private 5G deployments.

Technical Information

- **Rugged, Space-Saving 1U Chassis:** Ultra-short 13.5" (343 mm) depth fits tight wayside or on-board cabinets, with wide-temperature operation from -40°C to +65°C (DC) and front-to-back airflow.
- **Server-Class Edge Compute:** Powered by 3rd Gen Intel® Xeon® D processors with up to 512 GB DDR4 ECC memory and NVMe RAID storage to consolidate passenger tracking, CCTV analytics, and telemetry on a single platform.
- **Expandable Hardware Acceleration:** 2x PCIe Gen 4 x16 slots (up to 150 W) support dedicated AI/GPU accelerators, video processing, or specialized rail communication cards.
- **Carrier-Grade Rail Networking:** Integrated Network 200Gb switch with 4x 25GbE processor uplinks and SFP28/SFP+ ports for high-bandwidth sensor ingestion and easy daisy-chaining.
- **Sub-Microsecond Timing & Holdover:** Native IEEE 1588 PTP and SyncE with an optional advanced OCXO providing 4-hour holdover to maintain mission-critical sync across private 5G, CBTC, and track-to-train networks during GPS dropouts.
- **Fleet Reliability & Longevity:** AST2600-based out-of-band remote management (Redfish/IPMI), TPM 2.0 root of trust, 7x hardwired alarm inputs, and a 10-year product lifecycle built for transit procurement cycles.

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