3.5 SBC

The Hardened Industrial Edge Computing Platform

3.5" SBC Series – Engineered for Deterministic Edge Performance

ROBUST 3.5” SBC Engineered for Mission-Critical Edge Deployments

The CT-DAS01 is not merely a 3.5” Single Board Computer; it is a purpose-built Industrial Gateway Controller designed to reduce integration complexity while delivering high compute density and resilient communication for next-generation industrial edge systems.

- Deployment Ready Solution
- Industrial Grade
- Fast Time To Market
- Compact & Ruggeddized Design

Architectural Pillar of the CT-DAS01

Industrial edge systems require more than processing power — they demand deterministic communication, physical interface flexibility, and long-term deployment stability in uncontrolled environments.

The CT-DAS01 is engineered as a compact Industrial Gateway Controller built on a 3.5" SBC architecture. It combines high core-density processing, native industrial I/O, redundant networking, and hardened power architecture into a deployment-ready embedded platform.

Rather than functioning as a generic SBC, the CT-DAS01 is architected to enable scalable, multi-service edge computing across automotive, automation, and remote AI applications.

The CT-DAS01 consolidates compute, control, connectivity, and environmental resilience into a single compact edge platform.

High-Core Compute Density

- Intel Atom® x7835RE (8 cores, 3.6 GHz)
- Up to 36GB DDR5 SO-DIMM
- NVMe PCIe x2 Storage

Native Industrial Control I/O

- 2x CAN FD
- 2x RS-232/422/485
- 8-bit DIO

Resilient Multi-Path Connectivity

- Dual 2.5GbE
- Dual Nano SIM (via M.2 B-Key)
- 5G Ready
- TPM 2.0

Hardened Environmental Design

- -40°C to 85°C Operating Temp
- 9–36V Wide Voltage
- OVP / OCP / Surge Protection

High-Core-Count Edge Processing

The CT-DAS01 is powered by the Intel® Atom® x7835RE / x7433RE processors (up to 8 cores, 3.6 GHz), delivering high parallel compute capacity within a thermally efficient SoC architecture.
This high core density, combined with the low TDP characteristics of the Intel® Atom® x7000RE platform, enables sustained multi-threaded performance while minimizing thermal output—an essential factor for reliable operation in wide-temperature industrial environments.

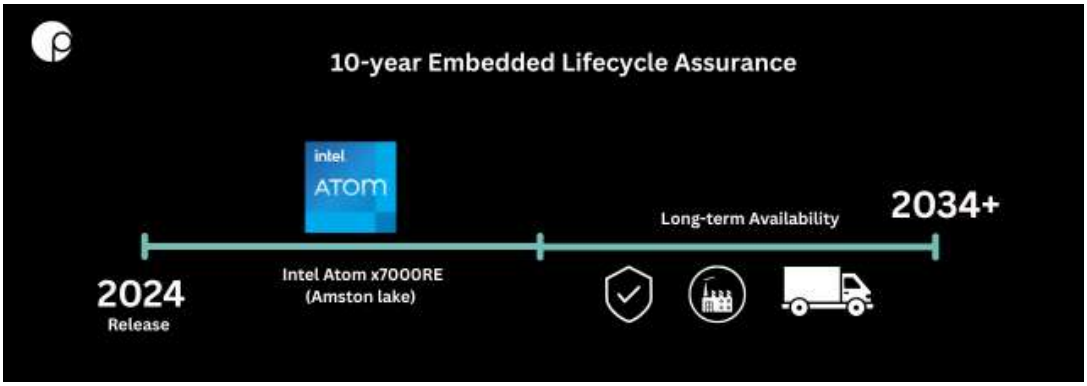
This processing architecture supports the simultaneous execution of:

- Real-time data acquisition for continuous monitoring, analysis, and immediate response to operational data at the edge.
- Protocol translation to enable seamless communication between legacy systems, field devices, and modern network infrastructures.
- Containerized edge services to deploy, manage, and scale applications efficiently in distributed environments.
- AI-light inference workloads to perform on-device analytics and decision-making with low latency and reduced bandwidth usage.
- Secure gateway functions to ensure protected data transmission, device authentication, and network integrity across connected systems.

The platform fills a strategic gap between low-core embedded processors and higher-power Core-class systems, providing meaningful multi-thread performance without the thermal and power overhead typically associated with higher-wattage CPUs.

Embedded Lifecycle Assurance

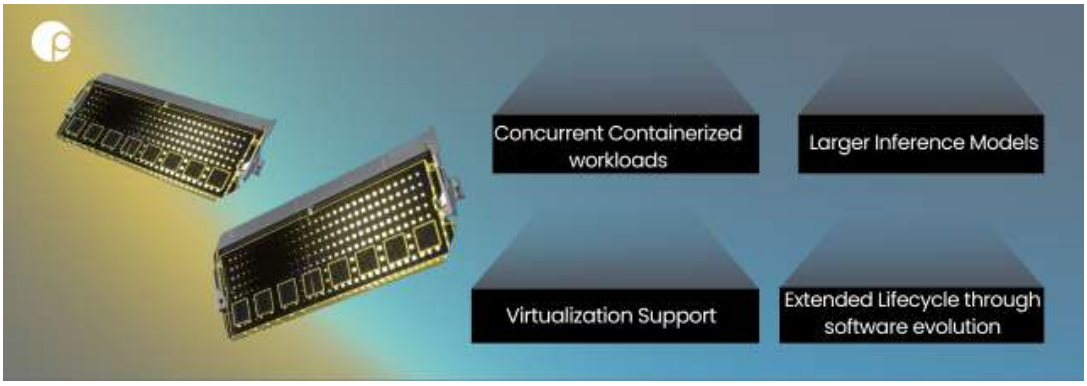
Built on the Intel® Atom® x7000RE (Amston Lake) platform—introduced in 2024—the CT-DAS01 is aligned with a 10-year embedded lifecycle roadmap, ensuring long-term availability and sustained platform stability for industrial deployments.



This lifecycle commitment provides consistent hardware supply, validated firmware continuity, and predictable performance across extended product programs. For OEMs and system integrators, it reduces redesign cycles, minimizes certification disruption, and lowers long-term maintenance risk—critical factors in automotive, industrial automation, and transportation systems.

Memory & Software Scalability

Supporting up to 32GB DDR5 5600MT/s SO-DIMM, the CT-DAS01 provides the memory headroom required for modern edge software stacks.



The memory subsystem ensures that deployed systems remain viable as application demands expand.

INTEGRATED I/O CONTROL

Native Connectivity

Deterministic Communication

Multi-Protocol Serial

Direct Sensor Interface

Industrial I/O Architecture

Edge systems ultimately succeed or fail based on how effectively they interface with the physical world. The CT-DAS01 integrates a comprehensive I/O stack designed to eliminate external adapters and simplify system-level design.

Fieldbus & Control Interfaces

- 2x CAN FD for deterministic automotive and industrial communication
- 2x RS-232/422/485 for multi-protocol serial integration
- 8-bit DIO for direct sensor and actuator interfacing

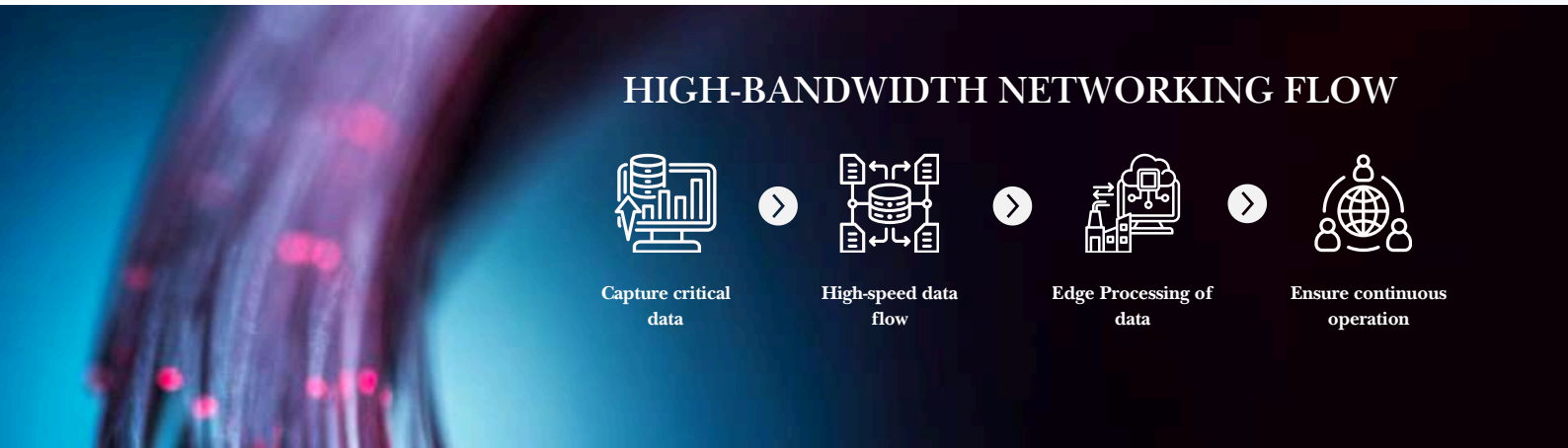
This native integration reduces wiring complexity, lowers system failure points, and supports direct connectivity to vehicles, PLCs, robotics controllers, and legacy industrial devices.

High-Bandwidth Networking

The platform incorporates:

- 2x 2.5GbE (Intel® i226IT)

These ports enable high-throughput data movement for sensor aggregation, machine vision pipelines, and redundant industrial network topologies.



Display & HMI Flexibility

Gateway + HMI Ready

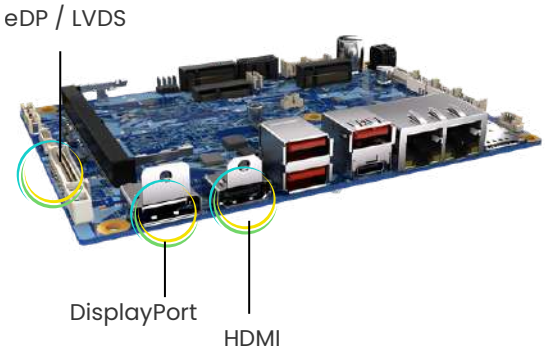
Multi-Display Support

GPU-Free Graphics

Integrated display outputs include:

- DisplayPort 1.4a
- HDMI 1.4b
- eDP / LVDS

This allows the CT-DAS01 to function as both a headless gateway and an embedded HMI controller, supporting panel PCs, operator terminals, and vehicle dashboard systems without external GPU requirements.



Modular Expansion & Storage

The board provides flexible expansion architecture:

- M.2 M Key (PCIe x2 NVMe) for high-speed storage
- M.2 B Key (shared SATA 3.0) for 4G/5G modules or storage
- M.2 E Key for Wi-Fi/Bluetooth

This modular approach enables deployment-specific configuration while maintaining a compact and standardized footprint.

Connectivity & Edge Continuity

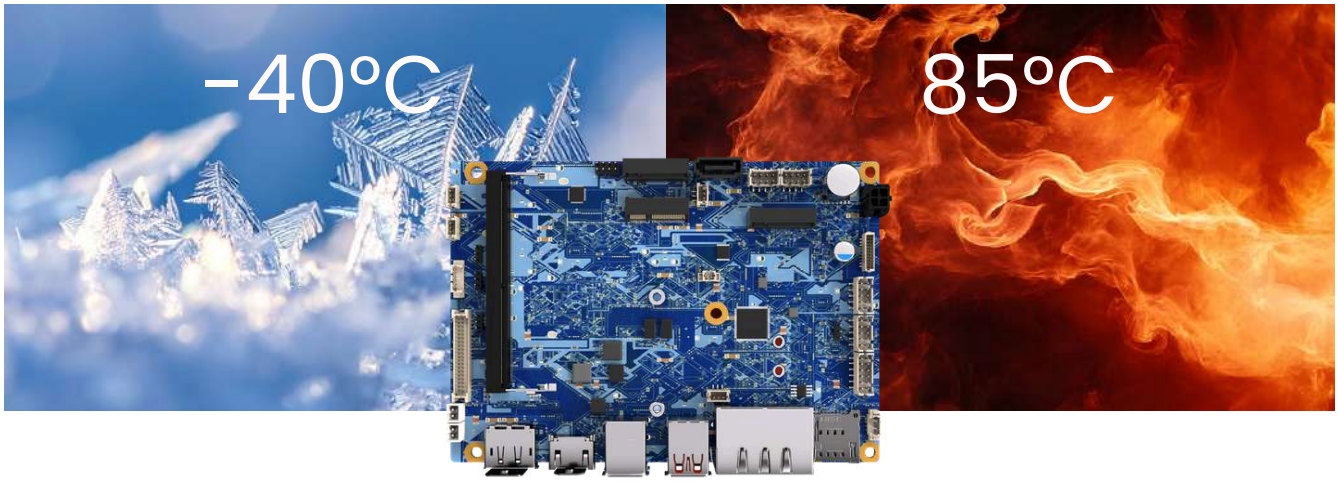
Distributed and remote edge deployments require uninterrupted communication and trusted device identity. The CT-DAS01 is architected with multi-path networking and hardware-based security to ensure always-on operation across dynamic infrastructure conditions.

- Dual 2.5GbE enables high-bandwidth wired networking and redundant network topology configurations.
- Dual Nano SIM architecture (via M.2 B-Key 4G/5G module) supports carrier failover, ensuring continuous cellular backhaul when primary connections are disrupted.
- TPM 2.0 establishes a hardware root of trust, enabling secure boot, device authentication, and protected credential storage.

This layered connectivity architecture ensures secure, continuous edge-to-cloud communication even in infrastructure-limited environments.

Operational Hardening

The CT-DAS01 is engineered for deployment in environments where environmental control cannot be guaranteed, ensuring dependable performance in harsh and unpredictable conditions.



- Operating temperature range of -40°C to 85°C enables reliable performance in extreme hot and cold conditions.
- Wide 9–36V DC input range ensures stable operation in environments with fluctuating or unstable power sources.
- Integrated OVP, OCP, and surge protection protects against voltage spikes, overcurrent events, and electrical transients.

This power and thermal architecture minimizes field failure risk in:

Mobile deployments

Stable operation in vehicles and transit systems

Factory floors

Reliable performance in industrial environments

Outdoor enclosures

Withstands extreme weather and temperatures

Energy and utility infrastructure

Built for mission-critical power systems

Application Alignment

Automotive & Transportation

Deploy in-vehicle compute systems with direct CAN FD integration and resilient power handling.

Industrial Automation

Support predictive maintenance, machine vision, and real-time control workloads with deterministic communication and scalable compute.

Remote Edge AI

Execute inference workloads locally while maintaining redundant cellular connectivity for cloud synchronization.

Critical Infrastructure

Enable hardened gateways for utilities, energy grids, and smart city deployments where reliability and environmental tolerance are mandatory.

We Design, Manufacture, and Service Customers Around the World

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CT-DAS01 3.5" SBC Industrial Motherboard

Model	CT-DAS01
CPU	Intel Atom x7835RE / x7433RE, Upto 8 core
Memory	1x DDR5 4800/5600 MT/s SO-DIMM, Max 32GB
Storage	1x M.2 M Key (2280, PCIe x2) support for NVMe
Display	1x DP 1.4a 1x eDP / 1x LVDS
Rear I/O	2x 2.5GbE RJ45, 1x Dual Nano SIM Socket 3x USB 3.2 Gen 1 Type A, 1x USB 3.2 Gen 1 Type C 2x USB 2.0 Pin header 3port
Internal I/O	2x RS-232/422/485 (Internal
Expansion	M.2 B Key (PCIe x1/USB 3.0) – NVMe or 4G/5G M.2 E Key (PCIe x1/USB 2.0) – Wi-Fi/Bluetooth
Operating Systems	Windows 10/11 Linux Ubuntu 22.04 / 24.04 LTS
Power	AT, ATX, DC IN 9~36V OVP (Over Voltage Protection) OCP (Over Current Protection)
Operating Temperature	-40°C to 85°C
TPM	TPM 2.0
Dimension	146 x 102mm

USA 918 Radecki Ct., City of Industry, CA 91748
TW 176 Jianyi Rd., Zhonghe Dist., New Taipei City
800.977.3646
886-2-7731-7888
sales@premioinc.com
premioinc.com