PRELIMINARY!

SmartEDGE

AI Enabled Industrial Gateway



SmartEDGE: The First AI-Enabled 5G IoT Edge Compute Gateway

SmartEDGE redefines what's possible at the edge, delivering on-device AI acceleration, real-time analytics, and industrial-grade connectivity for mission-critical deployments. The platform offers up to 12 TOPS of local AI processing, 5G/Wi-Fi 6E communications, and ruggedized hardware designed for harsh environments, ensuring consistent performance and uptime wherever data is generated.

Built for Vision and Physical AI workloads, the gateway supports real-time computer vision pipelines, automated inspections, robotics, and intelligent surveillance, while reinforcing critical infrastructure such as power grids, distributed energy resources and transportation networks. High-performance processing and robust 5G connectivity enable low-latency anomaly detection and autonomous response across enterprise and industrial operations.

SmartEDGE integrates with **EdgeFabric.ai** and the **Percepxion**™ device management platform to streamline model packaging, pipeline deployment, device provisioning, fleet management, firmware updates and remote diagnostics, minimizing latency and accelerating decision-making.

Key Features

AI at the Edge	Run custom AI/ML models locally (e.g., predictive maintenance, anomaly detection) with up 12 TOPS of compute power.
EdgeFabric.ai Toolchain	Simplify AI model deployment, optimization, and orchestration with a visual, no-code pipeline builder. Integrated with Edge Impulse.
Percepxion Platform	Centralized device management for firmware updates, containerized apps, certificates, and remote provisioning—all via a single pane of glass.
Industrial-Grade Design	Fanless, ruggedized for harsh environments (-40°C to +75°C), with PoE, 9–60VDC power, and DIN rail mountable enclosure.
Connectivity	5G, 4G LTE, Wi-Fi 6E, and Gigabit Ethernet with multi-wan failover and load balancing for resilient operations.
Security	InfiniShield™ framework with secure boot, root-of-trust, zone-based firewall, and VPN support to protect against cyber threats.
Protocol Conversion	Real-time conversion between Modbus, DNP3, IEC 104, OPC-UA, MQTT, and more—enabling legacy and modern systems to interoperate.
Long-Term Support	2036+ lifecycle with Linux RT OS (Yocto), container support, and future-proof expandability.

Target Audience:

- **Computer Vision & Robotics:** Real-time vision, inspections, robotics, surveillance, and autonomous systems.
- **Industrial IoT:** Manufacturers, logistics, and oil-and-gas modernizing resilient OT infrastructure.
- **Energy & Utilities:** Grid, DER, renewable, demand-response improving reliability and automated decision-making.

Perfect For:


Vision AI


Physical AI


Energy & Utilities

SmartEDGE Highlights

- On-device AI acceleration up to 12 TOPS
- Pre-configured with EdgeFabric.ai and Percepxion
- 5G/Wi-Fi 6E industrial connectivity
- Fieldbus and industrial protocol conversion
- Secure, scalable, long-life edge deployments

InfiniShield™ Security

- Secure boot
- Secure firmware updates
- Secure storage
- Secure communications
- Secure network attach

LANTRONIX

proofed by OOD ICO

SmartEDGE Gateway

AI Enabled
Industrial Gateway

Lantronix Software Services

Percepxion™ provides a secure, cloud-based platform for provisioning, pipeline deployment, device lifecycle management and fleet-wide analytics, all through a single-pane interface.
https://www.lantronix.com/percepxion/

Hardware

Processor & Memory

- SMARC form-factor, 8-core CPU, up to 2.1 GHz:
- Qualcomm® Dragonwing™ QCS6490, up to 12 Dense TOPS, 8GB RAM, 64GB UFS
- RTC, Watchdog, TPM built-in
- User-installable NVMe m.2 SSD

Cellular

- Global - 5G rel. 17 RedCap with 4G Cat 4, bands: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n53, n66, n70, n71, n77, n78, n79, B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B71
  Dual-SIM dual standby support
- LWPAN option (via M.2)
- SIM slot with 3-in-1 Dual-SIM/SD, hidden behind a screw plate with tamper detection

Wi-Fi & Bluetooth

- 802.11ax Wi-Fi6E 2.4/5/6 GHz
- 802.11r support
- WPA3 support
- BLE 5.2

Ethernet

- 1x 10/100/1000Base-T PD-PoE++ WAN port
- 2x 10/100/1000Base-T PsE-PoE+ LAN ports
- 1x WAN 2.5G/1G SFP+

Serial

- 1x CAN FD
- 1x RS 232/422/485 isolated, on a 16-pin Combicon header

Graphics

- FHD+ @ 144 Hz, 4k @ 60 Hz, 1080 x 2520 pixels
- 1x miniDP

USB

- 1x USB 3.0 Type-C Console port, with power-in support 70W
- 4x USB 3.0 Type-A, host mode

I/Os

- ON/OFF switch, to toggle soft shutdown, GPIO configurable
- 1x Ignition Input
- 4x Isolated Input
- 4x Isolated Output

Location & Timing

- GNSS (GPS, GLONASS, Beidou, Galileo)
- L1 band support, L1+L5 on 5G variant

Temperature & Humidity

- Operating: -30 °C ~ +75 °C; up to 95% RH
- Storage: -40 °C ~ +85 °C; up to 95% RH

Power

- Input voltage: 9 ~ 60 V DC on a 2-pin Combicon header with screw
- 46 V DC for IEEE 802.3af
- 52 V DC for IEEE 802.3at
- 54 V DC for IEEE 802.3bt

Physical Description

- Plastic casing, brushed aluminum alloy heatsink
- Operating Status LEDs: Seven (Power, PD, PSE1, PSE2, State, Wi-Fi, Cellular)
- Size: (mm) 135 x 131.5 x 75 without connectors
- Weight: approximately 300g

Why SmartEDGE?

- **Lower Latency:** On-device analytics deliver immediate, autonomous responses.
- **Cut Costs:** Reduce bandwidth, storage and cloud processing expenses.
- **Strengthen Security:** InfiniShield™ encryption and on-gateway data handling protect sensitive workloads.
- **Future Ready:** Scalable, containerized OTA deployments across distributed sites.
- **Resilient Operation:** Maintain functionality during cloud or WAN outages, ideal for remote sites and distributed assets.

Vertical Solutions

1. SmartEDGE for Vision AI



- Real-time video analytics for security (e.g., loitering detection, crowd counting) or operational control (e.g., retail heatmaps).
- Surveillance system integration with legacy cameras and edge-based storage for low-bandwidth environments.

2. SmartEDGE for Physical AI



- Digital twins and anomaly detection for manufacturing equipment, reducing downtime with AI-powered alerts.
- Protocol conversion (e.g., Modbus to OPC-UA) and remote monitoring of industrial assets.

3. SmartEDGE for Energy & Utilities



- Predictive maintenance for substations, solar/wind farms, and orchestrating energy flows for EMS/battery storage stations using real-time sensor data and AI-driven fault detection.
- Smart grid integration, regulatory compliance (e.g., EU 2019/944), and energy optimization via local data processing.

Software Suite

Software stack

- Linux RT OS (Yocto)
- Percepxion™ Telemetry, Firmware/Configuration Updates
- Edge Compute Container Support & Management
- AI / ML Pipeline with EDGEFabric.ai Integration
- Strong Cybersecurity with InfiniShield™
- Enhanced Network configuration (VPN tunnel support, Multi-WAN load balancing and priority)
- Industrial protocols conversion suite (EtherCat, DLMS client, DNP3 outstation, Modbus, ...)
- User scripting, SDK and BSP available
- Integrated container for platform partners: Ignition EDGE, Cumulocity.

Warranty

- Two year limited

What's in the box?

- DIN clip
- Wall mounting bracket
- Antenna kit (Cellular, GNSS, Wi-Fi)
- Headers kit (Combicon 2-pins with screw, Combicon 16-pins)

Product SKU

Part Number	Description
G6-Q64-5R-EG-WW-S	SmartEDGE G600 Edge Compute Gateway, Q6490, Global 5G

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Learn More at lantronix.com/SmartEDGE-Gateway

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