CTHINGS.CO®
EDGE IOT SOLUTIONS

EDGE IOT GATEWAY **XS**

Datasheet. Release 1.2

Remote monitoring of critical infrastructure with edge computing

Pervasive computing systems are capable of collecting, processing and communicating data, they can adapt to the data's context and activity. That means, in essence, a network that can understand its surroundings and improve the human experience and quality of life.

CTHINGS.CO® Edge IoT Gateway (XS) connects whatever data customer needs to process directly at the edge, reducing latency and relieving connectivity networks with full support of **Orchestra Platform and Orchestra OS.**

This Multi-Module gateway is based on Linux. It provides tremendous possibilities opening up the entire embedded applications ecosystem. It supports industry standard specifications like mission-critical operation in temperatures ranging between -40 °C and +80 °C.

The design provides the flexibility needed while still keeping it simple! Based on the concept of modularity, it may operate with many wireless technologies without PCB redesign requirements. As of now, support for all major cellular connectivity standards like Bluetooth 5.x, LTE Cat.1, Wirepas 2.4GHz Mesh, Wirepas 5G NR+, Wi-Fi 802.11 a/b/g/n/ac/ax is assured.

The **CTHINGS.CO® Edge IoT Gateway (XS)** also sports a large expansion system in order to enable plug-in modules for resilient industrial interfaces (digital and analog IOs, current measurement, high-current sourcing or sinking, galvanic isolation, relays, etc.).

To ease deployment of use cases and solutions, **CTHINGS.CO® Edge IoT Gateway (XS)** is designed alongside CTHINGS.CO® Orchestra, a state-of-the-art networking solution making provisioning and maintenance of private networks as simple as a few clicks. Additionally, we open the possibility for curated backend systems including open APIs for connecting external systems, as well as data visualisation capabilities through our interfaces and supported protocols.

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SPECIFICATIONS

Hardware Features	Industrially certified hardware for enhanced Edge Computing • **NXP i.MX93, dual-core Cortex-A53, 1.7GHz** • ARM Cortex-M33, 250Mhz • **Memory RAM: 1GB – 2GB, LPDDR4** • **Storage: 16GB – 128GB eMMC flash**, soldered on-board • Dimensions: 83 x 55 x 28 mm • Operating temperature range: **-40 °C to +80 °C** • Passive cooling, fanless design • Support for DIN-rail and wall mounting
Internal Interfaces	• 1x mini-PCIe full size connector with USB 2.0 • 1x M.2 Key-E up to 2230, USB 2.0 (as an external module attached to the main unit) • 4G/LTE CAT1bis cellular module, SIMCOM SIM7672G (global bands) • 802.11ac WiFi and Bluetooth 5.4 BLE
Physical Interfaces	• 1x 1 Gbps RJ-45 Ethernet • Optional* up to 2x RS485, 2-wire half-duplex • Optional* up to2x CAN-FD bus port • Optional* up to 3x digital out + 3x digital in (Isolated,24V,EN 61131-2) • Optional* TPM, Infineon SLB9673 • 1x serial console via UART-to-USB bridge, micro-USB connector
Electrical Specification	• 12V-24V DC (-20%/+20%), reverse voltage protection • Terminal block power input connector • EMI/ESD protected device • Myriad of power supply protection features: **UVLO**, **OVP**, **OCP**, **RPP, surge/transients**, **soft-start**, and more • **CE/FCC/UKCA** certified & **RoHS compliant** device

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SPECIFICATIONS

Connectivity (options)	Full flexibility which allows plug and play exchange of connectivity modules to meet requirements: Bandwidth overview per connectivity technology: • **LTE Cat. 1bis**: Max. 10 Mbps (DL); Max. 5 Mbps (UL) • **GPS**, GLONASS, BeiDou positioning • **Wi-Fi 6** (2.4/5 GHz) • **Bluetooth Low Energy (BLE) 5.4** • **Wirepas 2.4 GHz MESH** • **Wirepas 5G NR+** • **Zigbee / Thread**
Use Cases	The gateways supports vast range of usage across industries. Application examples: • Smart Retail: monitoring stock, goods rotation, sales • Smart Logistics: tracking distribution and transport • Smart Product: embedded intelligence and compute • Industry 4.0: digital retrofitting, enhanced maintenance, remote operations, automation • Smart Metering: remote and wireless data collection

Software Features	• Linux® OS:
	  • **CTHINGS.CO® Orchestra OS (Yocto®-based)**
	  • Debian®
	• Flexible I/O operations
	• Upgrade Over-The-Air (FOTA)
	• Support for CTHINGS.CO® Orchestra

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Certifications

The CTHINGS.CO® Edge IoT Gateway Is CE Class-A & EU RoHS Directive Compliant. The Device Has Been Tested To Meet The Following Electromagnetic Compatibility Standards:

Electromagnetic emissions	• Conducted emission: EN 55022, EN 55014-1, EN 55011 • Radiated emission up to 6 GHz • Harmonic current emission: EN 61000-3-2 • Voltage fluctuations and flicker: EN 61000-3-3
Immunity to electromagnetic interference (EMI):	• Electrostatic discharge (ESD) immunity: EN 61000-4-2 • Radiated electromagnetic field immunity: EN 61000-4-3 • Electrical fast transient / burst immunity: EN 61000-4-4 • Surge immunity: EN 61000-4-5 • Conducted disturbance immunity: EN 61000-4-6 • Power frequency magnetic field immunity: EN 61000-4-8 • Pulse magnetic field immunity: EN 61000-4-9 • Voltage dips & short interruptions: EN 61000-4-11

Extensive Connectivity	LTE Cat.1 , Wi-Fi 6, BLE 5.4, Wirepas 2.4GHz MESH, Wirepas 5G NR+, Zigbee, Thread, Matter	**Rich Software Ecosystem**	Linux® OS (Orchestra OS [Yocto®-based] and Debian®), Mainline Linux, FreeRTOS®
Vast IoT Protocol Suite	Native support of modern IoT Protocols: i.e. MQTT/-SN, Modbus TCP/RTU, Profinet, etc.	**OA&M Linux OS**	Remote operations, administration, and maintenance
Localisation	GPS, GLONASS, Galileo, BeiDou, COMPASS, Cell ID/Wi-Fi positioning, Wirepas 2.4/5G	**MPU**	Supported loading firmware via Silabs Bootloader over serial
Wide array of industrial IO Protocols	RS485 2-wire half-duplex, CAN bus port, digital outputs, digital inputs	**Modular Expansion**	Expandable with additional modules to support more RS485, CAN, and GPIO channels

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External appearance

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