



EDGE IOT GATEWAY M DIN RAIL

Datasheet. Release 1.0

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 (M Din Rail) connects whatever data customer needs to process directly at the edge, reducing latency and relieving connectivity networks with full support of **Orchestra Platform**.

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 -30 °C and +70 °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, Wirepas 2.4GHz Mesh, Wirepas 5G NR+, Wi-Fi 802.11 a/b/g/n/ac/ax is assured, as well as the very new 5G sub-6 GHz version that will open up tremendous possibilities.

The CTHINGS.CO® Edge IoT Gateway (M Din Rail) 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 (M Din Rail) 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.

SPECIFICATIONS

<p>Hardware Features</p>	<p>Industrially certified hardware for enhanced Edge Computing</p> <ul style="list-style-type: none"> • NXP i.MX8M Plus Quad, quad-core ARM Cortex-A53, 1.8GHz • Memory RAM: 1GB – 8GB, LPDDR4, • Storage: 16GB – 128GB eMMC flash, • Dimensions: 110 x 30 x 95 mm (main unit) • Dimensions: 110 x 20 x 95 mm (extension modules) • Operating temperature range: -30 °C to +70 °C • Passively cooled • CE/FCC/UKCA certified & RoHS compliant device
<p>Internal Interfaces</p>	<ul style="list-style-type: none"> • 1x mini-PCIe full size connector with USB 2.0 • 1x M.2 Key-E up to 2230, PCIe Gen 3 x1 + USB 2.0 (as an external module attached to the main unit)
<p>Physical Interfaces</p>	<ul style="list-style-type: none"> • 2x 1 Gbps RJ-45 Ethernet • 1x RS485, 2-wire half-duplex • 1x RS232, Rx/Tx • 1x CAN bus port • 2x digital outputs + 2x digital inputs (Isolated, 24V, EN 61131-2) • 1x serial console via UART-to-USB bridge, micro-USB connector • 1x USB3.0 port, type-A connector
<p>Electrical Specification</p>	<ul style="list-style-type: none"> • 12V-24V DC (-20%/+20%) • 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 compliant

SPECIFICATIONS

Connectivity (options) Full flexibility which allows plug and play exchange of connectivity modules to meet requirements:
 Bandwidth overview per connectivity technology:

- **Rel. 14 LTE Cat. 20:**
 LTE-FDD: Max. 2.0 Gbps (DL); Max. 200 Mbps (UL)
- **Rel. 7 HSPA+:**
 WCDMA: Max. 42 Mbps (DL); Max. 5.76 Mbps (UL)
- **Rel. 14 LTE Cat NB2:**
 Max. 127 Kbps (DL); Max. 158.5 Kbps (UL)
- **Rel. 14 LTE Cat M1 with CE Mode B:**
 Max. 588 Kbps (DL); Max. 1119 Kbps (UL)
- **EDGE:** 296kbps (DL), Max. 236.8kbps (UL)
- **GPRS:** 107kbps (DL), Max. 85.6kbps (UL)
- **GPS, GLONASS, Galileo, BeiDou/Compass, QZSS,**
 Cell ID/Wi-Fi positioning
- **Wi-Fi 6E (a/b/g/n/ac/ax 2.4/5/6 GHz):** Max. 2.4 Gbps
- **Bluetooth Low Energy (BLE) 5.3**
- **Wirepas 2.4 GHz MESH**
- **Wirepas 5G NR+**

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**
- **Debian®**
- Yocto
- Flexible I/O operations
- Upgrade Over-The-Air (FOTA)
- Support for CTHINGS.CO® Orchestra

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. 20, Cat. M, NB-IoT, EGPRS, Wi-Fi 6ax, BLE 5.3, Wirepas 2.4GHz MESH, Wirepas 5G NR+

Rich Software Ecosystem

Linux® OS (Yocto® 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

Multipurpose computing, hybrid data processing in edge, public or private cloud

Wide array of industrial IO Protocols

RS485, 2-wire half-duplex, 1x RS232, Rx/Tx, 1x CAN bus port, 2x digital outputs + 2x digital inputs (Isolated, 24V, EN 61131-2)

Modular Expansion

Expandable with additional modules to support more RS485, RS232, CAN, and GPIO channels

External appearance



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