



- Rolling Stock Certified
- Reliable Fanless Performance
- Integrated Connection
- Open Platform
- Cloud Certified
- Highly Customizable
- Long-term Availability



## Features

**Rolling Stock Certified** - Suitable for rugged rolling stock applications, is certified for EN50155 (EN50155 Class OT4 ST1, wide range power supply) and EN45545 (Fire and Smoke). Integrated MVB interface with ESD+ or EMD

**Reliable Fanless Performance** - Powerful and efficient: dual and quad core Intel Atom E3900, soldered-down eMMC storage and ECC memory for additional protection in a fanless package

**Integrated Connection** - Carrier pre-certified LTE cellular connectivity, 2.4/5.0GHz Wi-Fi, BLE, and Dead Reckoning GNSS

**Open Platform** - Provides an integrated, open IoT Edge Framework to free the developer from proprietary solutions

**Cloud Certified** - Seamless integration with Eurotech Everyware Cloud, Microsoft Azure, Amazon Web Services IoT and other Cloud services

**Highly Customizable** - Modular design for application customizations, ranging from factory options to custom front panel connectors and software configurations

**Long-term Availability** - Designed for markets and use cases where long-term availability and support is a must have requirement

## Description

The BoltGATE 20-31 Family is a modular IoT Edge Gateway system, EN50155-certified, which addresses the challenges of the next-generation applications for smart transportation by combining hardware and software for Edge processing and Cloud connectivity. The Family consists of a main CPU Module and a wide set of Expansion Modules: the main CPU Module can be used stand alone; the Expansion Modules provide a wide set of additional features. CPU and Expansion Modules can be combined to create a flexible system that suits any use case with the ideal solution.

The main CPU Module – the BoltGATE 20-31 – is based on the Intel® Atom™ E3900 processor, with up to 8GB of ECC RAM, up to 32GB of eMMC, and an optional SSD storage module. Interfaces include up to 3x GbE, 2x USB 3.0, Serial, and Display ports; security features include TPM 2.0. A high accuracy GNSS receiver supporting GPS/GLONASS with UDR (Untethered Dead Reckoning) mode is available in selected configurations. A railway certified power supply is integrated into the main CPU Module, with an ultra-wide input voltage range: 24 to 110VDC, EN50155. The power is distributed by the main CPU Module to the Expansion Modules.

The BoltGATE 20-31 adds integrated hardware and software components to support the MVB interface (Duagon chipset, Configurations: ESD+ read-only / ESD+ / EMD read-only / EMD).

The Expansion Modules are:

- BoltAIR 20-31, with up to 3 wireless units and an odometer input;
- BoltSER 20-31, with serial & CAN interfaces;
- BoltIO 20-31, including up to 16 +16 Digital I/Os;

## Modular IoT Edge Gateway for Rolling Stock - Intel Atom E3900, LTE Cat 4, MVB

- BoltNET 20-31, with 4 Gigabit Ethernet ports;
- BoltSTOR 20-31, the storage expansion module.

Every module in the BoltGATE 20-31 is fanless and compact, designed to fit in a 3U recess. All modules support -40 to +70°C operating temperature range (EN50155:2017, class OT4, ST1) and can be installed on a DIN-rail, wall-mounted, or assembled in a 19" rack.

Powered by [Eurotech's IoT Edge Framework, Everyware Software Framework \(ESF\)](#), the BoltGATE 20-31 provides a fast go-to-market solution for IoT transportation applications such as passenger infotainment and entertainment, train-to-ground communications, and fleet management. The Java-based IoT Edge Framework provides a friendly web-based user interface to visually compose powerful data flows to acquire data from the bus, filter, aggregate and analyze it at the Edge, and publish it to the Cloud through the popular MQTT protocol. Optionally, [Everyware Cloud, Eurotech's IoT Integration Platform](#), completes this solution by providing data integration to the applications and by offering complete management of the devices deployed in the field.

For customers requiring more configuration flexibility, Eurotech Professional Services offer an extensive number of options for both hardware (additional features, custom front panel/ connectors, branding) and software (customized application images).

### Ordering Code: BTGATE-20-31-XY

| XX                    |                     | -11  | -21  | -31   |
|-----------------------|---------------------|--|--|---|
| <b>PROCESSOR</b>      | CPU                 | Intel Atom x5-E3940, 1.60GHz (1.80GHz), Quad Core                                    | Intel Atom x5-E3930, 1.30GHz (1.80GHz), Dual Core                              | Intel Atom x5-E3940, 1.60GHz (1.80GHz), Quad Core |
| <b>MEMORY</b>         | RAM                 | 8GB (DDR3L 1600MHz - with ECC)   | 4GB (DDR3L 1600MHz - non ECC)  | 8GB (DDR3L 1600MHz - with ECC)                    |
| <b>STORAGE</b>        | Embedded            | 32GB of eMMC Soldered Down   | 16GB eMMC Soldered Down  | 32GB eMMC Soldered Down                           |
|                       | Integrated          | Factory Option: Integrated 2.5" SSD SATA III   |  |   |
|                       | Other               | 1x microSD Slot (Service Panel)  |  |   |
| <b>I/O INTERFACES</b> | Ethernet            | 3x 10/100/1000Mbps, M12 X-coded Connector  |  |   |
|                       | USB                 | 2x USB 3.0 Noise and Surge Protected - 1x USB 2.0 (Service Panel)                    |  |   |
|                       | Serial              | 1x TTL Console (Service Panel)   |  |   |
|                       | MVB                 | ESD+ with "RX only" or "RX/TX"<br>Factory Option: EMD with "RX only" or "RX/TX"      | -  | -   |
|                       | Audio               | -  | Factory Option: 2x Line IN, 1x Stereo Mic IN, 2x Line OUT                      |   |
|                       | Video               | 1x mini DisplayPort  |  |   |
| <b>CELLULAR</b>       | LTE Category        | 1x LTE Global Cat 4, 2G/3G Fallback  |  |   |
| <b>OTHER RADIOS</b>   | GPS                 | GPS/QZSS/GLONASS/BeiDou/Galileo with Untethered Dead Reckoning                       |  |   |
|                       | Wi-Fi / BT          | -  | WiFi 802.11 a/b/g/n, BLE 4.0   |   |
|                       | Antennas (External) | 2x SMA (Cellular with Antenna Diversity) - 1x SMA (GPS)                              | 2x SMA (Cellular with Antenna Diversity) - 2x RP-SMA (Wi-Fi/BT) - 1x SMA (GPS) |   |
| <b>OTHER</b>          | RTC                 | Yes, with SuperCAP (up to 2 Months Retain), Fast Reboot Support                      |  |   |
|                       | System Watchdog     | Yes  |  |   |
|                       | EEPROM              | 32KB   |  |   |
|                       | TPM                 | TPM 2.0  |  |   |
|                       | LEDs                | 1x Power - 2x MiniPCIe Slot - 3x Ethernet - 3x Programmable (Dual Color Green/Amber) |  |   |
| <b>MISC</b>           | Buttons             | 1x Reset, 1x Programmable (Service Panel)  |  |   |
|                       | SIM Slot            | SIM Slots (2x microSIM) (Service Panel)  |  |   |
| <b>POWER</b>          | Input               | Ultra-wide Input Voltage Range: 9 to 137.5VDC, with Ignition Key Sense               |  |   |
|                       | Consumption         | 15W Typ, 30W Max   |  |   |
| <b>ENVIRONMENT</b>    | Operating Temp.     | - 40 to +70 °C, +85 °C for 10 Minutes (EN50155 Class OT4 ST1)                        |  |   |
|                       | Storage Temp.       | - 40 to +85 °C   |  |   |
| <b>CERTIFICATIONS</b> | Regulatory          | CE   |  |   |
|                       | Safety              | EN62368, UL60950 (S)   |  |   |
|                       | Vertical            | EN50155, EN45545 (Fire and Smoke)  |  |   |
|                       | Environmental       | RoHS3 - REACH  |  |   |
|                       | Cellular            | RED  |  |   |
|                       | Ingress             | IP30   |  |   |
| <b>MECHANICAL</b>     | Enclosure           | Material: Aluminium - Color: Black Anodized  |  |   |
|                       | Mounting Options    | Mounting Options: DIN Rail, Accessories Available for Wall-mount / 19" Rack-mount    |  |   |
|                       | Dimensions          | 61x132x149mm (WxHxD) - With Connectors   |  |   |

### Software

|                 |               |  |
|-----------------|---------------|--|
| <b>SOFTWARE</b> | OS            | Eurotech Everywhere Linux or Windows 10 IoT Enterprise |
|                 | SDK           | Yocto-based Eclipse Tooling, Azul Java                 |
|                 | IoT Framework | Everyware Software Framework (Java/OSGi)               |

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### Ordering Code: BTAIR-20-31-11

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|-------------------------------|---------------------|--|
| <b>I/O INTERFACES</b>         | Odometer            | Odometer   |
| <b>EXPANSION</b>              | Expansion Slots     | 3x MiniPCle Full/Half-Size                                       |
| <b>CELLULAR</b>               | LTE Category        | 1x LTE Global Cat 4 - Factory Option: LTE Cat 6 (Single Modem)   |
| <b>OTHER RADIOS</b>           | Wi-Fi/BT            | WiFi 802.11 a/b/g/n, BLE 4.0                                     |
|                               | Antennas (External) | 2x SMA (Cellular with Antenna Diversity) - 2x RP-SMA (Wi-Fi/BT)  |
| <b>OTHER</b>                  | LEDs                | 1x Power (Blue) - 1x Odometer (Green) - 3x MiniPCle Slot (Green) |
| <b>POWER</b>                  | Consumption         | 5W Typical   |
| <b>ENVIRONMENT</b>            | Operating Temp.     | - 40 to +70 °C, +85 °C for 10 Minutes (EN50155 Class OT4 ST1)    |
|                               | Storage Temp.       | - 40 to +85 °C   |
| <b>CERTIFICATIONS</b>         | Regulatory          | CE   |
|                               | Safety              | EN62368, UL60950 (§)   |
|                               | Vertical            | EN50155, EN45545 (Fire and Smoke)                                |
|                               | Environmental       | RoHS3 - REACH  |
|                               | Cellular            | RED  |
|                               | Ingress             | IP30   |
| <b>MECHANICAL</b>             | Enclosure           | Material: Aluminium - Color: Black Anodized                      |
|                               | Dimensions          | 42x132x149mm (WxHxD) - With Connectors                           |

(§) UL, NRTL listing Factory Option.