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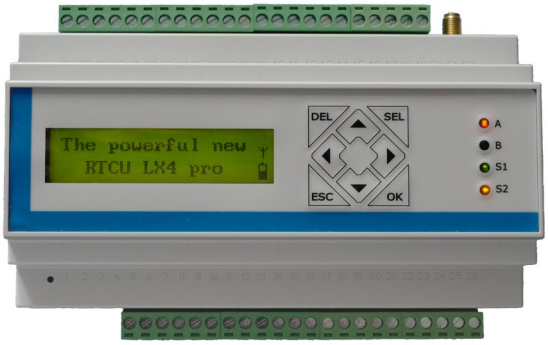
The M2M Enabler

DATA SHEET

RTCU LX4 pro

Advanced Industrial M2M / IoT Gateway

State-of-the-art platform for tomorrows demanding applications



For Professional M2M Applications

The RTCU LX4 pro has been designed for the most demanding M2M and Internet of Things applications, which cannot be solved with simpler non-programmable devices.

The RTCU LX4 pro rests on the **RTCU M2M Platform,** that brings all the necessary tools together to develop, implement and maintain todays sophisticated M2M/IoT applications.

The **development task** is supported by the **free** RTCU IDE development environment complimented by a large and comprehensive documentation and application example library.

The RTCU Communication Hub is the corner-stone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment.

Deploying and maintaining new application and firmware versions for devices in the field are handled by the powerful RTCU Deployment Server.

Two decades of know-how in one product!

Experience and Know-how

For more than twenty years Logic IO has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications.

The RTCU LX4 pro is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

RTCU products are deployed **underground**, **stationary**, **on the road**, **at sea**, **on the rail** and **in the skies**! - In any imaginable application and environment.

Device Advantages

- High-performance IoT Core.
- Worldwide LTE Cat.4 Cellular Engine.
- Ethernet interface.
- Wired M-Bus.
- Optional: Wireless M-Bus.
- 1-Wire bus.
- Multiple RS232/RS485 channels.
- Digital and analog input/outputs.
- Modbus expandable I/O.
- Graphical display with keypad.
- Digitized audio subsystem.
- DTMF decoding/transmission.
- Large flash memory capacity.
- SD-Card with up to 32 GB.
- Integrated battery backup.
- DIN rail mounting.

Platform Advantages

- NX32L execution architecture.
- Free RTCU IDE development tool.
- Secure platform.
- Hardware accelerated security.
- Huge standard API.
- Open platform SDK.
- Comprehensive protocol support.
- Device Emulator.
- Sophisticated deployment tools.
- Fast and free email support.

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RTCU LX4 pro Highlights

Advanced Industrial M2M / IoT Gateway

Platform:

- Based on the **RTCU M2M Platform**.
- **NX32L (NX32 for Linux) execution architecture.**
  - RTCU IDE development tool.
  - Operates under a full and highly optimized Linux variant.
  - Secure communication with TLS and hardware assisted encryption/authentication.
  - Open and extendable with Platform SDK.

Wireless Communication:

- **Worldwide LTE Cat. 4 Multi-Band Cellular Engine.**
- Internal **SIM-card reader** with support for **embedded SIM.**
- Optional: **Wireless M-Bus** according to EN 13757-4/7 OMS EU/CE.

Coverage

Wired Communication:

- **Ethernet** LAN interface with 10/100 Mbps.
- **Wired M-bus** (EN 13757 2/3) with support for up to 20 slave devices.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **2 x RS485** channels and **1 x RS232** channel.

I/O Interfaces:

- **8 x digital inputs** and **8 x high-power** solid-state **digital outputs**.
- Up to 4 digital inputs can be configured as **IEC62053-31 Class A** compliant.
- **4 x analog inputs** with 0..10 volt / 0..20 mA with **12 bit precision**.
- **2 x analog outputs** with 0..10 volt / 0..20 mA.
- **Expandable I/O** with standard Modbus modules.

User Interaction:

- **Graphical 144x32 pixels display** with black-on-green back-lit text/graphics.
- **Keypad** with 8 keys for sophisticated user interaction and control.
- **DTMF** support for Interactive Voice Response applications.
- High-speed **Mini-USB service-port** connector.

Storage:

- Internal **flash drive** with up-to 64 MByte capacity.
- **Persistent memory** and circular **datalogger**.
- Standard **SD-Card** reader.

Services Available

Technical Support.

Application development support.

Maintenance.

Hardware support.

Warranty services.

Accessories

Modbus IO extension modules.

Antennas.

Cable parts.

1-Wire parts.

...and more.

Find out more and start developing today!

Learn more about the RTCU M2M platform and the X32 architecture in the **"The RTCU M2M Platform"** data sheet.

To learn more about the technical details and usage of the RTCU LX4 pro, please download the **"RTCU LX4 pro Technical Manual"**.

Also make sure to get the **FREE RTCU IDE** Development Environment, **RTCU Communication Hub** and the **Deployment Server** to get a hands-on experience how rapid development/deployment of game changing M2M/IoT applications were meant to be.

Please visit www.logicio.com

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The M2M Enabler

DATA SHEET

RTCU LX4 pro Specifications

RTCU M2M Platform
- NX32 for Linux - NX32L.
- Fully NX32 compatible.
- Hardened execution environment.
- Full TLS/SSL support.

LX Hardware Core
- Powerful 32-bit ARM processor.
- Hardware floating point and DSP.
- 128 Mbyte RAM.
- 256 Mbyte NAND flash.
- Real-time clock with battery-backup.

Storage
- Internal flash drive (Up to 64 MByte).
- Persistent data flash.
- Multiple circular dataloggers.
- SD-card reader.

Cellular Engine
- **LTE Cat.4 Engine (Worldwide).**
  Max 150 Mbps(DL)/Max 50 Mbps(UL).
  LTE FDD: 15 bands.
  LTE-TDD: 4 bands.
  WCDMA: 7 bands.
  GSM: Quad-band.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- Internal SIM-card reader.
- Optional eSIM.

Communication Interfaces
- 100BASE-T Ethernet interface.
- 1 x RS232 with RTS/CTS.
- 2 x RS485.
- 1-Wire bus with LED support
- Wired M-Bus with up to 20 slaves.
  Compliant with EN13757 2/3.
- Optional: wM-Bus. Mode S, T, C, R2.
  Compliant with EN13757 4/7 OMS.
- USB service/programming port.

Digital I/O Interface
- 8 x digital solid-state digital output.
  Max. 36 volt / 1.5 A per. channel.
  Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
  User supplied power source.
- 8 x digital inputs.
  Logic high: 8 to 40 VDC.
  Logic low: -5 to 3 VDC.
  Impedance: 3.3kohm @ 12V.
- 4 x IEC62053-31 Class A input.

Analog I/O Interface
- 4 x analog inputs.
  Range is 0..10VDC or 0..20 mA
  Resolution: 12 bit
  Accuracy: Typ. ±0.5% FSR @ 25°C
  Impedance: 40 kohm (V)/504 ohm (C).
- 2 x analog outputs.
  Range is 0..10VDC or 0..20 mA
  Resolution: 10 bit
  Accuracy: Typ. ±0.5% FSR @ 25°C.
- Protected against transients and low-pass filtered.

User Interaction
- 144x32 pixels graphical/text display with black text on green a back-lit background.
- Keypad with 8 user defined keys.
- 3 x bi-colour LED / Yellow status LED.
- DIP-switches.
- I/O configuration jumpers for digtal and analog modes.
- Jumpers for RS485 termination
- Reset / recovery switch.

Battery and Charger
- On-board 2Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.
- On-board temperature sensor.

Electrical
- Supply operating range: 8 to 36 VDC.
- Short and reverse power protected.

External Interfaces
- Two-part pluggable connector for:
  Power, I/O, RS232, RS485, Wired M-Bus.
- RJ45 for LAN with LED status.
- SD-card slot with presence and write protect detection.
- SMA Female connector for cellular.
- Optional: SMB male for Wireless M-bus.
- LED indicators and DIP switches.
- Reset/recovery switch.
- Mini USB-B as service port.

Physical Characteristics
- Encapsulation:
  9 Module M36 DIN-rail.
- Approx. 430 gram without accessories.
- W 157 x H 86 x D 58 mm.
  (wihout SMA and screw-terminals).

Environmental Specification
- Operating temperature: -30 to 60°C.
- Battery charge temperature:
  -10 to 45 °C
- Recommended storage temperature:
  0 to 45°C.
- Humidity: 5..90% (non condensing).
- Ingress Protection: IP20 .

Approvals
- 2014/53/EU Radio Equipment Directive.
- 2014/30/EU EMC Directive
- 2011/65/EU RoHS Directive.

Warranty
- Two-years return to factory parts and labor.
- Optional warranty up to 5 years.
  (restrictions apply).

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www.logicio.com

Models Available
SKU:
RT-LX4P
RT-LX4WM1 (Wireless M-Bus CE)

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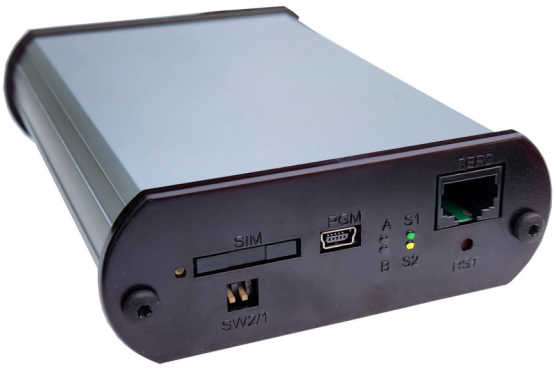
DATA SHEET

RTCU LX2 pro

Advanced Automotive M2M / IoT Gateway

State-of-the-art platform for tomorrows demanding applications



For Professional M2M / IoT Applications

The RTCU LX2 pro is designed for the most sophisticated M2M and Internet of Things applications that demand the most advanced product available on the market today.

The RTCU LX2 pro rests on the **RTCU M2M Platform,** that brings all the necessary tools together to develop, implement and maintain the most sophisticated M2M/IoT applications.

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The RTCU Communication Hub is the cornerstone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment.

Deploying and maintaining new application and firmware versions for devices in the field are handled by the powerful RTCU Deployment Server.

Two decades of know-how in one product!

Experience and Know-how

For almost 25 years Logic IO has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications.

The RTCU LX2 pro is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

RTCU products are deployed **underground**, **stationary**, **on the road**, **at sea**, **on the rail** and **in the skies**! - In any imaginable application and environment.

Device Advantages

- **RTCU MX2 turbo compatible.**
- High-Performance LX IoT Core.
- Large 4 GB Internal Flash drive.
- Worldwide LTE Cat.4 Cellular Engine.
- Dual SIM card readers.
- Bluetooth LE 5.3.
- High-precision Dual-band GNSS.
- Dead Reckoning and RTK support.
- Accelerometer and Gyroscope.
- Dual full CAN 2.0B channels.
- Multiple RS232/RS485 channels.
- Modbus expandable I/O.
- 1-Wire bus.
- Digital and Analog input/outputs.
- Digital audio sub-system.
- Durable Aluminium encapsulation.
- Integrated battery backup.

Platform Advantages

- NX32L execution architecture.
- Secure platform.
- Hardware accelerated security.
- Free RTCU IDE development tool.
- Huge standard API.
- Open platform SDK.
- Comprehensive protocol support.
- Instrumented Execution.
- Sophisticated deployment tools.
- Fast and free email support.

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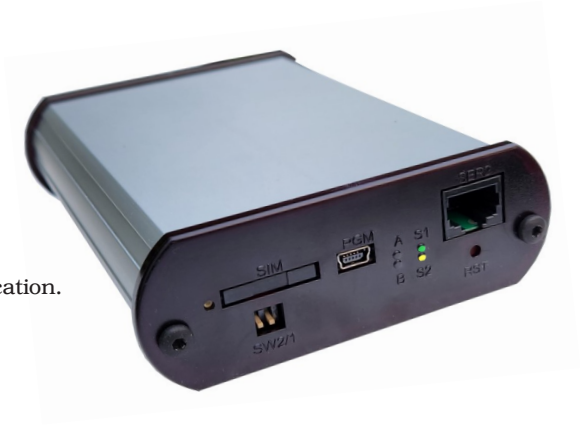
The M2M Enabler

DATA SHEET

RTCU LX2 pro Highlights

Advanced Automotive M2M / IoT Gateway



Platform:

- Based on the **RTCU M2M Platform**.
- **NX32L (NX32 for Linux) execution architecture.**
  - RTCU IDE development tool.
  - Operates under a full and highly optimized Linux variant.
  - Secure communication with TLS and hardware assisted encryption/authentication.
  - Open and extendable with Platform SDK.

Wireless Communication:

- **Worldwide LTE Cat. 4 Multi-Band Cellular Engine.**
- **Dual SIM-card readers** and support for **eSIM.**
- **Bluetooth Low-Energy - BLE 5.3**.
- **High-precision Dual-band L1/L5 Multi-Constellation GNSS** positioning engine.
- **Optional: Dead-Reckoning** and **RTK** with sub-meter accuracy.

Wired Communication:

- **2 x Full CAN 2.0B** channels with hardware filtering and multi-speed support.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **2 x RS232** channels and **1 x RS485** channel.

I/O Interfaces:

- **6 x digital inputs.**
- **4 x high-power** solid-state **digital outputs**.
- **2 x analog inputs with flexible range of 0..10VDC or 0..30VDC (12 bits).**
- **Expandable I/O** with standard Modbus modules.

User Interaction:

- **Digitized audio** subsystem.
- **DTMF** support for Interactive Voice Response applications.
- High-speed **Mini-USB service-port** connector.
- On-board **Accelerometer** and **Gyroscope**.

Storage:

- Internal **flash drive** with **4 GB** total capacity.
- **Persistent memory** and circular **datalogger**.

Encapsulation:

- Housed in a durable **Aluminium** case.

Services Available

Technical Support.

Application development support.

Maintenance.

Hardware support.

Warranty services.

Accessories

Garmin Fleet Management.

Modbus I/O extension modules.

Antennas.

Cable parts.

1-Wire parts.

...and more.

Find out more and start developing today!

Learn more about the RTCU M2M platform and the NX32L architecture in the **"The RTCU M2M Platform"** data sheet.

To learn more about the technical details and usage of the RTCU LX2 pro, please download the **"RTCU LX2 pro Technical Manual"**.

Also make sure to get the **FREE RTCU IDE** Development Environment, **RTCU Communication Hub** and the **Deployment Server** to get a hands-on experience how rapid development/deployment of game changing M2M/IoT applications were meant to be.

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The M2M Enabler

DATA SHEET

RTCU LX2 pro Specifications

RTCU M2M Platform
- NX32L Execution Architecture.
- Fully NX32 compatible.
- Open and user-extendable API.
- RTCU M2M Platform SDK.

LX Hardware Core
- Powerful 32-bit ARM processor.
- Hardware floating point and DSP.
- 128 Mbyte RAM.
- Up-to 512 Mbyte NAND flash.
- Real-time clock with battery-backup.

Storage
- 4 GB Internal flash drive.
- Persistent data flash.
- Multiple circular dataloggers.

Cellular Engine
- **LTE Cat.4 Engine (Worldwide).**
  Max 150 Mbps(DL)/Max 50 Mbps(UL).
  LTE FDD: 15 bands.
  LTE-TDD: 4 bands.
  WCDMA: 7 bands.
  GSM: Quad-band.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- Dual SIM card reader (int/ext).
- Mini-SIM 1.8/3 volt
- Application controlled SIM card.
- Optional eSIM.

Audio
- Fully digitized audio system.
- Transfer, store and play audio.
- Digitized cellular audio.

Bluetooth
- Bluetooth Low Energy 5.3.
- IEEE 802.15.4-2011 PHY
- Optional: Zigbee and OpenThread.

GNSS
- Multi-constellation.
- Dual-Band using L1 / L5 bands.
- GPS, Galileo, GLONASS, BeiDou, and QZSS.
- SBAS: WAAS, EGNOS, MSAS, and GAGAN.
- AGPS capable.
- RTCM v2.3 and v3.3 output capable.
- Accuracy: < 1m CEP (@-130 dBm).
- Anti-jamming, Noise cancellation.
- Active 3 volt GNSS antenna.
- RTK (optional) with sub-centimeter accuracy.
- Dead Reckoning with IMU (optional).
- Optional dual GNSS receiver.

Sensors
- Temperature sensor.
- 3-axis Accelerometer. ±16g@16b.
- 3-axis Gyroscope. ±2000dps @16b.

Wired Communication
- 2 x Full CAN2.0B with hardware filtering and multi-speed support.
- 1 x RS232 with control signals.
- 1 x RS232 with RX/TX.
- 1 x RS485 with Modbus support.
- 1-Wire bus.
- USB service/programming port.

I/O Interface
- 4 x digital solid-state digital output.
  Max. 36 volt / 1.5 A per. channel.
  Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
- 6 x digital inputs with ignition.
  Logic high: 8 to 40 VDC.
  Logic low: -5 to 3 VDC.
  Impedance: 13 kohm @ 12V.
- 2 x analog inputs.
  Range is 0..10VDC or 0..30VDC.
  Resolution: 12 bit
  Accuracy: Typ. ±0.3% FSR @ 25°C.
  Impedance: 40 kohm.
- Protected against transients and low-pass filtered.

User Interaction
- 4 x bi-colour LED.
- 2 x DIP-switches.
- Switches for RS485 /CAN termination.
- CAN write enable switch.
- Reset / recovery switch.

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www.logicio.com

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RTCU LX2 pro Specifications (continued)

External Interfaces

- Plug-compatible with the MX2 turbo and the RTCU NX-200.
- SIM-card slot for a mini-SIM card
- SIM card tray presence detection.
- 4 x LED indicators and 2 x DIP switches.
- Reset/recovery switch.
- RJ45 for RS232 with full control signals.
- Dip-switch under frontplate:
    - CAN/RS485 termination.
    - CAN write enable.
- SMA Female connector for cellular.
- SMA-RP Female connector for BT.
- SMA Female connector for GNSS.
- USB 2.0 service port mini-USB.
- TE-Connectivity "Mate'n'Lok':
    - Power
    - I/O.
    - RS232 / RS485
    - CAN
    - 1-wire

Electrical

- Operating voltage: 8 to 36 VDC.
- Short and reverse power protected.
- 5 VDC-out @ 500 mA.

Battery and Charger

- On-board 2 Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.

Power Management

- Low-power modes.
- Wait for Event:
  Timer, Digital input, Accelerometer, RS232, RS485, CAN, Cellular, and Power change state.
- Wait for event, from: 0.4 mA@12V.
- Supervision of supply voltage / type.

Physical Characteristics

- Encapsulation: Aluminium profile.
- Colour: Anodized natural grey.
- Material: Aluminum and plastic.
- Approx. 300 gram without accessories.
- W 97 x H 35 x D 132 mm.
  (without connectors).
- Optional mounting bracket

Environmental Specification

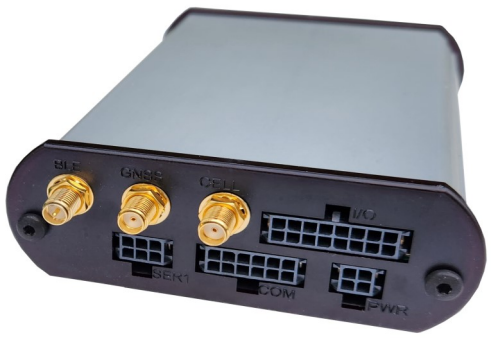
- Operating temperature: -40 to 65°C.
- Battery charge temperature:
  -10 to 45 °C.
- Recommended storage temperature:
  0 to 45°C.
- Humidity: 5..90% (non condensing).
- Ingress Protection: IP20 .

Approvals

- 2007/46/EC UN ECE R10 Rev. 06 (E1).
- 2014/53/EU Radio Equipment Directive.
- 2011/65/EU RoHS Directive.
- Cellular:
  GCF/CE/FCC/PTCRB/IC/Anatel/SRRC/NAL/CCC/KC/NCC/JATE/TELEC/RCM/IFETEL/FAC/NBTC/ICASA.

Warranty

- Two-years return to factory parts and labor.
- Optional warranty up to 5 years. (restrictions apply).



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Models Available
SKU: RT-LX2P
RTCU LX2 pro.

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DATA SHEET

RTCU NX-400 evo

Advanced Industrial M2M / IoT Gateway

State-of-the-art platform for tomorrows demanding applications

For Professional M2M / IoT Applications

The RTCU NX-400 evo has been designed for the most demanding M2M and Internet of Things applications that demands the absolutely most advanced product available on the market.

The RTCU NX-400 evo rests on the **RTCU M2M Platform,** that brings all the necessary tools together to develop, implement and maintain the most sophisticated M2M/IoT applications.

The **development task** is supported by the **free** RTCU IDE development environment complimented by a large and comprehensive documentation and application example library.

The RTCU Communication Hub is the corner-stone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment.

Deploying and maintaining new application and firmware versions for devices in the field are handled by the powerful RTCU Deployment Server.

Two decades of know-how in one product!

Experience and Know-how

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The RTCU NX-400 evo is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

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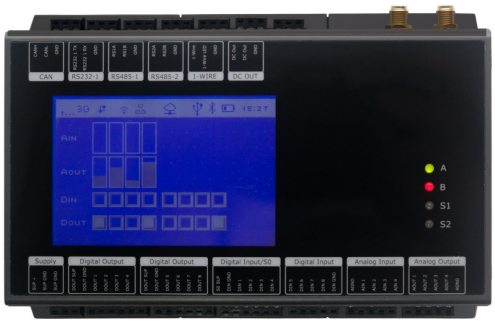
In any imaginable application and environment.



Device Advantages

- Powerful processor.
- Large memory capacity.
- Worldwide LTE Cat.4 Cellular Engine.
- WLAN.
- Bluetooth (Classic / LE).
- USB host port.
- Digital and analog input/outputs.
- Modbus expandable I/O.
- Graphical display with touchscreen.
- Multiple RS232/RS485 channels.
- Full CAN 2.0B support.
- Ethernet interface.
- 1-Wire bus.
- Digital audio with playback / record.
- Integrated battery backup.

Platform Advantages

- NX32L execution architecture.
- Secure platform.
- Hardware accelerated security.
- Free RTCU IDE development tool.
- Huge standard API.
- Open platform SDK.
- Comprehensive protocol support.
- Device Emulator.
- Sophisticated deployment tools.
- Fast and free email support.

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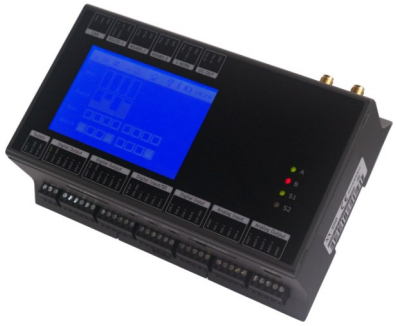
DATA SHEET

RTCU NX-400 evo Highlights

Advanced Industrial M2M / IoT Gateway



Platform:

- Based on the **RTCU M2M Platform**.
- **NX32L (NX32 for Linux) execution architecture.**
  - RTCU IDE development tool.
  - Operates under a full and highly optimized Linux variant.
  - Secure communication with TLS and hardware assisted encryption/authentication.
  - Open and extendable with Platform SDK.

Wireless Communication:

- **Worldwide LTE Cat. 4 Multi-Band Cellular Engine.**
- **Wireless LAN** (Wi-Fi).
- Classic and Low-Energy **Bluetooth**.
- **Optional**: Wireless M-Bus.

Wired Communication:

- 100 Mbps **Ethernet** LAN interface.
- **Full CAN 2.0B** controller with hardware filtering and multi-speed support.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **USB host** port for expandability.
- **2 x RS232** channels and **2 x RS485** channels.

I/O Interfaces:

- **4 x analog inputs** and **4 x analog outputs** with 0..10 volt / 0..20 mA.
- **8 x digital inputs** and **8 x high-power** solid-state **digital outputs**.
- 4 digital inputs can be configured as **IEC62053-31 Class A** compliant.
- **Expandable I/O** with standard Modbus modules.

User Interaction:

- **Graphical 240x160 pixels White-on-Blue display.**
- **Touch-screen** with virtual buttons.
- **Digitized audio** with GSM / Speaker / Line-out and Microphone.
- **DTMF** support for Interactive Voice Response applications.
- High-speed **Mini-USB service-port** connector.

Storage:

- Internal **flash drive** with up-to 512 MByte capacity.
- **Persistent memory** and circular **datalogger**.
- Standard **SD-CARD** reader and **USB flash media**.

Services Available

Technical Support.

Application development support.

Maintenance.

Hardware support.

Warranty services.

Accessories

Modbus I/O extension modules.

HD Camera with video stream.

GPS receiver.

Antennas.

Cable parts.

1-Wire parts.

...and more.

Find out more and start developing today!

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The M2M Enabler

DATA SHEET

RTCU NX-400 evo Specifications

RTCU M2M Platform
- NX32 for Linux - NX32L.
- Fully NX32 compatible.
- Larger capacity and higher performance compared to NX32.
- Open and user-extendable API*.
- RTCU M2M Platform SDK.

NX32L Hardware Core
- Cortex-A5 32-bit ARM processor.
- Hardware floating point and DSP.
- 128 MByte LP-DDR RAM.
- 512 MByte NAND flash.
- 16 MByte NOR flash.
- 128 KByte SRAM with battery-backup.
- Real-time clock with battery-backup.

Security
- Embedded firewall.
- TLS/SSL support with full certifcate management.
- TLS/SSL support for SMTP, MQTT, FTP, HTTP, RCH, and TCP/IP sockets.
- Hardware assisted strong encryption/ authentication: AES-128, AES-192, AES 256, DES, TripleDES, HASH, RND and RSA signature.

Storage
- Persistent data flash.
- Non-volatile SRAM.
- Internal flash drive (Up-to 512 MByte).
- Circular datalogger.
- SD-CARD.
- USB flash media.

Cellular Engine
- **Multi-band LTE Cat. 4 (Worldwide)**
  LTE FDD: 15 bands.
  LTE-TDD: 4 bands.
  WCDMA: 7 bands.
  GSM: Quad-band.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- External Mini SIM card-reader.
- Optional eSIM.

Wireless LAN
- WiFi at 2,4 GHz ISM bands.
- IEEE 801.11b/g/n/d/e/h/i.
- WPA/WPA2 certification.
- Up-to 150 Mbps.

Bluetooth
- Classic and Low Energy (LE).
- Bluetooth 2.1 + EDR up-to 3 Mbps
- Bluetooth 3.0 and 4.0 Dual mode.
- Intelligent co-existence with WiFi.

Optional Wireless
- Wireless M-Bus.
- ZigBee / IEEE 802.15.4.
- KNX RF.

Audio
- Fully digitized audio system.
- Transfer, store and play audio.
- Line and amplified speaker output.
- Microphone input.
- Digitized GSM audio.

Wired Communication
- 100BASE-T Ethernet interface.
- Full CAN2.0B with hardware filtering and multi-speed support.
- 2 x RS232. One with control signals.
- 2 x RS485.
- 1-Wire bus.
- USB host port.
- USB service/programming port.

User Interaction
- Dot-matrix LCD with 240x160 pixels,
- White-on-blue back-lit.
- Status-bar with information on all interfaces.
- Fully programmable with high-level functionality such as graphs, buttons, dialogs etc.
- Touch screen with virtual buttons.
- DX4i pro compatibility mode.
- 4 x bi-colour LED.
- DIP-switches.
- I/O configuration jumpers for analog mode.
- Virtual jumpers for RS485 and CAN termination
- Reset / recovery switch.

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RTCU NX-400 evo Specifications (continued)

Digital I/O Interface

- 8 x digital solid-state digital output.
  Max. 36 volt / 1.5 A per. channel.
  Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
  User supplied power.
- 8 x digital inputs.
  Logic high: 8 to 40 VDC.
  Logic low: -5 to 3 VDC.
  Impedance: 3.3kohm @ 12V.
- 4 x IEC62053-31 Class A input.
- Digital input #1 can be used as ignition.

Analog I/O Interface

- 4 x analog inputs.
  Range is 0..10VDC or 0..20 mA
  Resolution: 12 bit
  Accuracy: Typ. ±0.3% FSR @ 25°C
  Impedance: 40 kohm (V)/504 ohm (C).
- 4 x analog outputs.
  Range is 0..10VDC or 0..20 mA
  Resolution: 12 bit
  Accuracy: Typ. ±0.3% FSR @ 25°C.
- Protected against transients and low-pass filtered.

Electrical

- Operating voltage: 8 to 36 VDC.
- Short and reverse power protected.
- 5 VDC-out @ 300 mA.
- USB 5 VDC @ 500 mA.

Battery and Charger

- On-board 2Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.
- Integrated battery temperature sensor.
- Support for larger external battery.

Power Management

- Low-power modes.
- Wait for Event: Timer, Digital input, Touch screen, RS232*, CAN, GSM*, Power change state.
- Wait for event, from: 2 mA@12V.
- Supervision of supply voltage / type.

External Interfaces

- SD-CARD slot with presence and write protect detection.
- Audio line-Out. 3.5mm mini-jack.
- Speaker-Out. 3.5mm mini-jack.
- Microphone. 3.5mm mini-jack.
- SIM-card slot for mini-SIM with lock and presence detection.
- Service-port (Mini USB-B).
- RJ45 for RS232 (EIA-561).
- RJ45 for LAN with LED indicators.
- USB host-port (USB-A receptable).
- SMA female connector for UMTS.
- RP-SMA connector for Wi-Fi/Bluetooth.
- Pluggable terminal blocks with 3.5 mm pitch and M2 screw:
  Supply, I/O, CAN, RS485, RS232, 1-wire, DC-Out and external battery.

Expandable

- I/O expansion Modbus modules.
- GPS receiver.
- Additional Ethernet port.
- Additional RS232 / RS485 ports.
- Industrial USB hub.
- Camera with HD video streaming*
- Speaker and microphone.
- External battery pack.

Physical Characteristics

- Encapsulation: 9M DIN-rail (EN60715)
- Colour: Dark-Grey.
- Material: Self-extinguising blend PC/ABS.
- Approx. 465 gram without accessories.
- W 160.2 x H 89 (top) x D53.5 mm.
  (wihout connectors and terminal blocks).

Environmental Specification

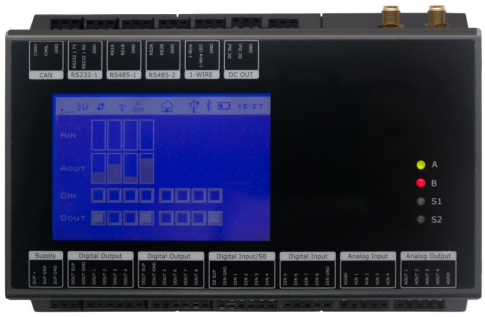
- Operating temperature: -30 to 60°C.
- Battery charge temperature:
  -10 to 45 °C
- Recommended storage temperature:
  0 to 45°C.
- Humidity: 5..90% (non condensing).
- Ingress Protection: IP20 .

Approvals

- 2014/53/EU Radio Equipment Directive.
- 2014/30/EU EMC Directive
- 2011/65/EU RoHS Directive.

Warranty

- Two-years return to factory parts and labor.
- Optional warranty up to 5 years.
  (restrictions apply).



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Models Available
SKU: RT-NX400-EVO

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RTCU NX-200

Advanced Automotive M2M / IoT Gateway

State-of-the-art platform for tomorrows demanding applications

For Professional M2M / IoT Applications

The RTCU NX-200 is designed for the most sophisticated M2M and Internet of Things applications that demand the most advanced product available on the market today.

The RTCU NX-200 rests on the **RTCU M2M Platform,** that brings all the necessary tools together to develop, implement and maintain the most sophisticated M2M/IoT applications.

The **development task** is supported by the **free** RTCU IDE development environment, complemented by a large and comprehensive documentation and application example library.

The RTCU Communication Hub is the cornerstone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment.

Deploying and maintaining new application and firmware versions for devices in the field are handled by the powerful RTCU Deployment Server.

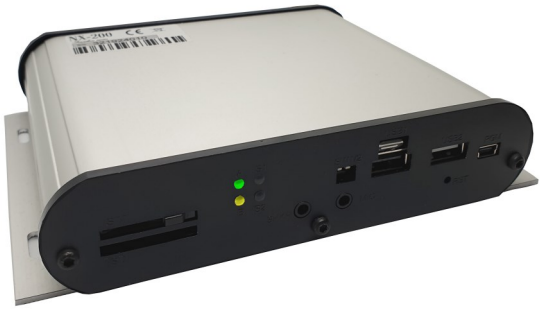
Two decades of know-how in one product!

Experience and Know-how

For twenty years Logic IO has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications.

The RTCU NX-200 is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

RTCU products are deployed **underground**, **stationary**, **on the road**, **at sea**, **on the rail** and **in the skies**! -
In any imaginable application and environment.



Device Advantages

- Powerful processor.
- Large memory capacity.
- Worldwide LTE Cat.4 Cellular Engine.
- Multi-constellation GNSS.
- Automotive Dead Reckoning support.
- WLAN.
- Bluetooth (Classic / Low Energy).
- Dual USB host port.
- Digital and analog input/outputs.
- Flex inputs (analog/digital mode).
- Dual Full CAN 2.0B support.
- Multiple RS232/RS485 channels.
- Modbus expandable I/O.
- Ethernet interface.
- 1-Wire bus.
- Digital audio with playback / record.
- Full range of motion sensors.
- Integrated battery backup.

Platform Advantages

- NX32L execution architecture.
- Secure platform.
- Hardware accelerated security.
- Free RTCU IDE development tool.
- Huge standard API.
- Open platform SDK.
- Comprehensive protocol support.
- Device Emulator.
- Sophisticated deployment tools.
- Fast and free email support.

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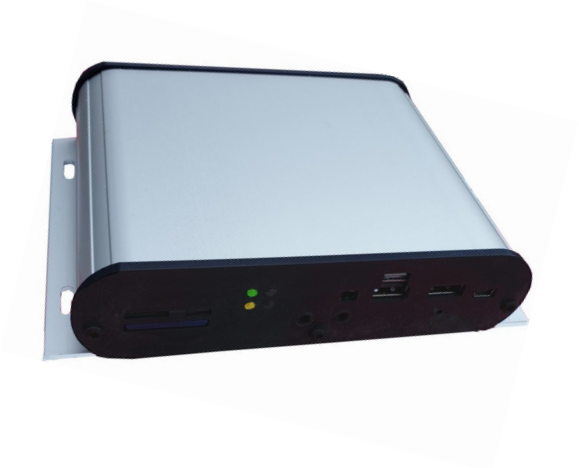
RTCU NX-200 Highlights

Advanced Automotive M2M / IoT Gateway



Platform:

- Based on the **RTCU M2M Platform**.
- **NX32L (NX32 for Linux) execution architecture.**
  - RTCU IDE development tool.
  - Operates under a full and highly optimized Linux variant.
  - Secure communication with TLS and hardware assisted encryption/ authentication.
  - Open and extendable with Platform SDK.

Wireless Communication:

- **Worldwide LTE Cat. 4 Multi-Band Cellular Engine.**
- **Dual SIM-card readers** and support for **eSIM.**
- **Wireless LAN** (Wi-Fi).
- Classic and Low-Energy **Bluetooth**.
- **Multi-constellation GNSS with GPS, GLONASS and GALILEO.**
- RTCU NX-200 DR: GNSS with **Automotive Dead Reckoning.**

Wired Communication:

- 100 Mbps **Ethernet** LAN interface.
- **2 x Full CAN 2.0B** controller with hardware filtering and multi-speed support.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **2 x USB host** port for expandability.
- **2 x RS232** channels and **1 x RS485** channel.

I/O Interfaces:

- **5 x digital inputs** and **4 x high-power** solid-state **digital outputs**.
- **4 x flex inputs** with dual-mode analog /digital operation.
- **2 x analog inputs with 12 bits resolution.**
- **Expandable I/O** with standard Modbus modules.

User Interaction:

- **Digitized audio** with Speaker and Microphone jacks.
- **DTMF** support for Interactive Voice Response applications.
- High-speed **Mini-USB service-port** connector.
- Motion sensors: Accelerometer, Gyroscope and Magnetometer.

Storage:

- Internal **flash drive** with up-to 512 MByte capacity.
- **Persistent memory** and circular **datalogger**.
- Standard **SD-CARD** reader.
- USB **flash media**.

Services Available

Technical Support.

Application development support.

Maintenance.

Hardware support.

Warranty services.

Accessories

Modbus I/O extension modules.

HD Camera with video stream.

Antennas.

Cable parts.

1-Wire parts.

...and more.

Find out more and start developing today!

Learn more about the RTCU M2M platform and the NX32L architecture in the **"The RTCU M2M Platform"** data sheet.

To learn more about the technical details and usage of the RTCU NX-200, please download the **"RTCU NX-200 Technical Manual"**.

Also make sure to get the **FREE RTCU IDE** Development Environment, **RTCU Communication Hub** and the **Deployment Server** to get a hands-on experience how rapid development/deployment of game changing M2M/IoT applications were meant to be.

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DATA SHEET

RTCU NX-200 Specifications

RTCU M2M Platform
- NX32L Execution Architecture.
- Fully NX32 compatible.
- Larger capacity and higher performance compared to NX32.
- Open and user-extendable API.
- RTCU M2M Platform SDK.

NX32L Hardware Core
- Cortex-A5 32-bit ARM processor.
- Hardware floating point and DSP.
- 128 MByte LP-DDR RAM.
- 512 MByte NAND flash.
- 16 MByte NOR flash.
- 128 KByte SRAM with battery-backup.
- Real-time clock with battery-backup.

Security
- Embedded firewall.
- TLS/SSL support with full certifcate management.
- TLS/SSL support for SMTP, MQTT, FTP, HTTP, RCH, and TCP/IP sockets.
- Hardware assisted strong encryption/ authentication: AES-128, AES-192, AES 256, DES, TripleDES, HASH, RND, and RSA signature.

Storage
- Persistent data flash.
- Non-volatile SRAM.
- Internal flash drive (Up-to 512 MByte).
- Circular datalogger.
- SD-CARD.
- USB flash media.

Cellular Engine
- **LTE Cat.4 Engine (Worldwide).**
  Max 150 Mbps(DL)/Max 50 Mbps(UL).
  LTE FDD: 15 bands.
  LTE-TDD: 4 bands.
  WCDMA: 7 bands.
  GSM: Quad-band.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- Dual SIM card reader, with Mini-SIM 1.8/3 volt.
- Application controlled SIM card.
- Optional eSIM.

Wireless LAN
- WiFi at 2,4 GHz ISM bands.
- IEEE 801.11b/g/n/d/e/h/i.
- WPA/WPA2 certification.
- Up-to 150 Mbps.

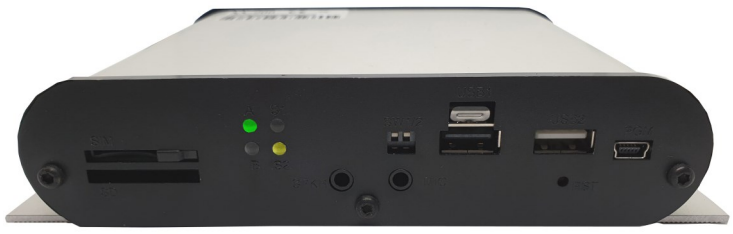
GNSS
- Multi-GNSS chip.
- GPS, GLONASS and GALILEO.
- 99 acquisition / 33 tracking channels.
- SBAS (WAAS,EGNOS,MSAS,GAGAN).
- A-GPS capable.
- Anti-jamming, Noise cancellation.
- Active 3 volt GNSS antenna.
- RTCU NX-200 DR:
  Automotive Dead Reckoning.

Bluetooth
- Classic and Low Energy (LE).
- Bluetooth 2.1 + EDR up-to 3 Mbps
- Bluetooth 3.0 and 4.0 Dual mode.
- Intelligent co-existence with WLAN.

Wired Communication
- 100BASE-T Ethernet interface.
- 2 x Full CAN2.0B with hardware filtering and multi-speed support.
- 2 x RS232. One with control signals.
- 1 x RS485.
- 1-Wire bus.
- 2 x USB host port. One with lock.
- USB service/programming port.

Audio
- Fully digitized audio system.
- Transfer, store and play audio.
- Amplified speaker output.
- Microphone input.
- Digitized GSM audio.

User Interaction
- 4 x bi-colour LED.
- DIP-switches.
- Virtual jumpers for RS485 and CAN termination.
- CAN write enable jumper on one port.
- Reset / recovery switch.



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RTCU NX-200 Specifications (continued)

I/O Interface

- 4 x digital solid-state digital output.
  Max. 36 volt / 1.5 A per. channel.
  Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
- 5 x digital inputs with ignition.
  Logic high: 8 to 40 VDC.
  Logic low: -5 to 3 VDC.
  Impedance: 14 kohm @ 12V.
- 4 x flex-inputs. Dual mode operation:
  Analog mode: 0..30VDC
  Digital mode: 0..30VDC.
  Impedance: 120 kohm @ 12V.
  Multi configuration support.
- 2 x analog inputs.
  Range is 0..10VDC.
  Resolution: 12 bit
  Accuracy: Typ. ±0.3% FSR @ 25°C.
  Impedance: 40 kohm (V).
- Protected against transients and low-pass filtered.

Sensors

- Temperature sensor.
- 3-axis Accelerometer. ±16g@16b.
- 3-axis Gyroscope. ±2000dps @16b.
- 3-axis Magnetometer. ±50 gauss @16b.

Electrical

- Operating voltage: 8 to 36 VDC.
- Short and reverse power protected.
- 5 VDC-out @ 300 mA.
- Dual USB 5 VDC @ 500 mA.

Battery and Charger

- On-board 2.6Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.

Power Management

- Low-power modes.
- Wait for Event: Timer, Digital input, accelerometer, RS232, RS485, CAN, Cellular, Power change state.
- Wait for event, from: 0.4 mA@12V.
- Supervision of supply voltage / type.

External Interfaces

- **Plug-compatible with the MX2 turbo.**
- SIM-card slots for mini-SIM card.
- SD-CARD slot.
- 2 x mini-jack for audio in/out.
- 4 x LED indicators and 2 x DIP switches.
- Reset/recovery switch.
- RJ45 for RS232 with full control signals.
- SMA Female connector for cellular.
- SMA-RP connector for WLAN and BT.
- SMA Female connector for GNSS.
- USB 2.0 Host port connectors.
- USB 2.0 Slave mini-USB connector.
- TE-Connectivity "Mate'n'Lok': RS232, RS485, CAN I/O, Power, Communicaton.

Expandable

- I/O expansion Modbus modules.
- Additional Ethernet port.
- Additional RS232 / RS485 ports.
- Industrial USB hub.
- Camera with HD video streaming.
- Speaker and microphone.

Physical Characteristics

- Encapsulation: Aluminium profile.
- Colour: Anodized natural grey.
- Material: Aluminum and plastic.
- Approx. 500 gram without accessories.
- W 148 x H 34 x D 122 mm.
  (without connectors / mounting flange).

Environmental Specification

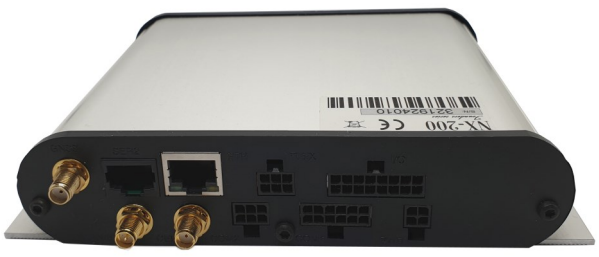
- Operating temperature: -40 to 65°C.
- Battery charge temperature:
  -10 to 45 °C.
- Recommended storage temperature:
  0 to 45°C.
- Humidity: 5..90% (non condensing).
- Ingress Protection: IP20 .

Approvals

- 2007/46/EC UN ECE R10 Rev. 05 (E1).
- 2014/53/EU Radio Equipment Directive.
- 2011/65/EU RoHS Directive.
- Cellular:
  GCF/CE/FCC/PTCRB/IC/Anatel/SRRC/NAL/CCC/KC/NCC/JATE/TELEC/RCM/IFETEL/FAC/NBTC/ICASA.

Warranty

- Two-years return to factory parts and labor.
- Optional warranty up to 5 years. (restrictions apply).



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Models Available
SKU: RT-NX200
SKU: RT-NX200DR
SKU: RT-NX200E

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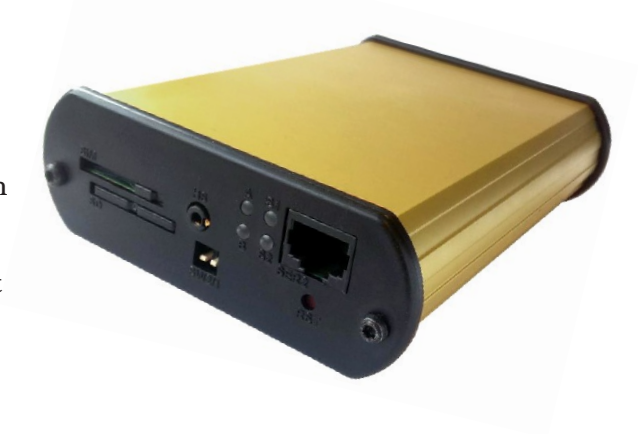
DATA SHEET

RTCU MX2 warp

Advanced Telematics and Telemetry Appliance

The perfect balance of quality, performance, flexibility and affordability



For Professional M2M Applications

The RTCU MX2 warp has been designed for the most demanding M2M and Internet of Things applications, which cannot be solved with simpler non-programmable devices.

The RTCU MX2 warp rests on the **NX32 architecture,** that brings all the necessary tools together to develop, implement and maintain todays sophisticated M2M/IoT applications.

The **development task** is supported by the **free** RTCU IDE development environment complimented by a large and comprehensive documentation and application example library.

The RTCU Communication Hub is the corner-stone of the **communication infrastructure** ensuring reliable two-way device communication in any network environment.

Deploying and maintaining new application and firmware versions for devices in the field are handled by the powerful RTCU Deployment Server.

Two decades of know-how in one product!

Experience and Know-how

For almost twenty years Logic IO has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications.

The RTCU MX2 warp is the result of this accumulated experience combined with valuable feedback from hundreds of professional and mission critical applications by major organizations around the world.

RTCU products are deployed **underground**, **stationary**, **on the road**, **at sea**, **on the rail** and **in the skies**! - In any imaginable application and environment.

Device Advantages

- Large memory capacity.
- FAT32 file-system.
- World-wide GSM cellular engine
- Multi-GNSS positioning engine.
- Internal and external SIM reader.
- 3-axis accelerometer.
- Full CAN 2.0B support.
- 1-Wire bus.
- RS232 and RS485 channels.
- Digital and analog I/O.
- Digitized voice playback.
- Hands-free interface.
- DTMF decoding/transmission.
- High-capacity battery.
- State of the art power-management.
- On-demand hardware options.

Platform Advantages

- NX32 execution architecture.
- Free RTCU IDE development tool.
- Fully programmable.
- Huge standard API.
- Comprehensive protocol support.
- Full featured Device Simulator.
- Sophisticated deployment tools.
- Fast and free email support.
- Backward and forward compatible.

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The M2M Enabler

DATA SHEET

RTCU MX2 warp Highlights

Advanced Telematics and Telemetry Appliance

The RTCU MX2 warp is targeting a broad range of advanced telemetry / telematics applications and has been designed according to the highest technical standards for professional automotive and industrial use.

- Based on the **RTCU M2M Platform**.
- **NX32 execution architecture.**
  - RTCU IDE development tool with full featured device simulator.
  - Huge standard API with more than 1000+ functions.
  - Comprehensive protocol support, including:
    TCP-UDP/IP, FTP, SMTP, RACP, MQTT, MODBUS, FMS/J1939, NMP/Garmin FMI.
  - Fully backward compatibility with existing X32 applications.
- World-wide **Quad-band GSM cellular engine**.
- External SIM-card reader with optional internal reader.
- Digitized audio can be played over cellular / to external device.
- **DTMF** support for the implementation of Interactive Voice Response applications.
- **Multi-GNSS positioning engine** with GPS, GLONASS and optional GALILEO.
- High-performance **3-axis accelerometer** with 16g scale.
- Huge data-flash/logger memory with a capacity **of 8.5 MB**.
- Internal **8 MB FAT32 flash drive**.
- Standard FAT32 **SD-CARD** reader with up to 32 GB capacity.
- Up-to **2 x RS232** channels and an optional **RS485** channel.
- **2 x analog inputs** with 0..10 volt / **12 bit precision**.
- **5 x digital inputs** and **4 high-power** solid-state **digital outputs**.
- Optional **Full CAN 2.0B** controller with hardware filtering and multi-speed support.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **Powerful on-demand hardware options:**
  CAN: CAN 2.0B port.
  COM: RS485/MODBUS and 1xRS232 port with control signals.
  ISIM: Internal SIM-card reader.
  HS: Headset support.
- **On-demand options** can be applied **anytime** - even remotely after installation.
- Wide operating range from **8..36 VDC**.
- On-board **high-capacity Li-Ion battery**.
- Advanced **power-management** with wake-up on a wide range of events.
- **Hands-free interface** with microphone and Class-D audio speaker amplifier.
- Fully supports the Professional Navigation and Messaging device **PNM-220**.
- Support the **Garmin Fleet Management Interface**.
- Exclusive and durable **GOLD aluminum** encapsulation.

Services Available

Technical Support.

Application development support.

Maintenance.

Hardware support.

Warranty services.

Accessories

PNM-220 Navigation Device.

MDT-200 Data Terminal.

MODBUS modules.

2 mega-pixel Camera.

Industrial SD-CARD.

Ethernet / Wi-Fi.

Bluetooth.

Antennas and cables.

1-Wire parts.

...and more.

Find out more and start developing today!

Learn more about the RTCU M2M platform and the NX32 architecture in the **"The RTCU M2M Platform"** data sheet.

To learn more about the technical details and usage of the RTCU MX2 warp, please download the **"RTCU MX2 warp Technical Manual"**.

Also make sure to get the **FREE RTCU IDE** Development Environment, **RTCU Communication Hub** and the **RTCU Deployment Server** to get a hands-on experience how rapid development/deployment of game changing M2M/IoT applications were meant to be.

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The M2M Enabler

DATA SHEET

RTCU MX2 warp Specifications

Processor and Main-memory
- Powerful 32-bit ST ARM7 processor.
- 2112 KB fast execution RAM.
- 4532 KB Flash for firmware/application.

Storage
- 7.5 MB persistent data flash.
- 8 MB internal FAT32 flash drive.
- 1 MB circular automatic datalogger.
- 20 KB FRAM with fast access / unlimited write endurance.
- SD-CARD reader with up to 32 GB.

GSM
- Quad-band cellular GSM engine.
- EDGE / GPRS support.
- SMS / PDU.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- eCall prepared.
- Mini-SIM 1.8/3 volt.
- External and internal SIM card-reader. Switchable from the application.

GNSS
- Mediatek MT3333 Multi-GNSS chip.
- GPS, GLONASS and optional GALILEO.
- 99 acquisition / 33 tracking channels.
- SBAS (WAAS,EGNOS,MSAS,GAGAN).
- Position update with up to 4 hz.
- A-GPS capable.
- Sensitivity.
  Tracking: -165 dBm
  Reacquisition: -160 dBm
  Cold start: -148 dBm.
- Accuracy: < 2.5m CEP.
- Anti-jamming, Noise cancellation.
- Antenna present / short detection.
- Active 3 volt GNSS antenna.

Electrical Specification.
- Operating voltage is 8 to 36 VDC.
- Short and reverse power protected.

Battery and Charger
- On-board 2Ah (nominal) Li-Ion battery.
- Intelligent charger with temperature throttle and sub-zero degrees support.
- On-board temperature sensor.

Digital/Analog Interface
- 4 x digital solid-state digital output.
  Max. 36 volt / 1.5 A per. channel.
  Short-circuit, ESD, Inductive kick-back protected up to 20 mH.
- 5 x digital inputs.
  Logic high: 8 to 40 VDC.
  Logic low: -5 to 3 VDC.
- Digital input #5 can be used as ignition.
- 2 x analog inputs.
  Range is 0..10V.
  Resolution: 12 bit
  Precision: ±1.5% FSR @ 25°C
- Protected against transients and low-pass filtered.
- Expandable I/O with MODBUS.

Communication
- Full CAN2.0B with hardware filtering and multi-speed support.
- 1 x RS232 with control signals.
- 1 x RS232 with RX/TX.
  Alternatively used as service port.
- 1 x RS485 with MODBUS support.
- 1-Wire bus.

Power Management
- 5 execution speeds.
- Wait for Event: Timer, Digital input, RS232, CAN, Cellular, Accelerometer and power change state.
- Wait for event, from: 300 uA@12V.
- Supervision of supply voltage.
- Disable external power.

Accelerometer
- 3-axis digital acceleormeter.
- Resolution: 12 bit @ ±16g.
- Low-power mode.

External Interfaces.
- SIM-card slot for mini-SIM with lock and presence detection.
- SD-CARD slot with presence and write protect detection.
- Micro-jack 2.5" connector for hands-free.
- Audio out for digitized voice playback.
- 4 x LED indicators and 2 x DIP switches.
- Reset/recovery switch,
- TE-Connectivity "Mate'n'Lock': RS232, I/O, Power, Communicaton.
- RJ45 for RS232 with full control signals.
- SMA Female connector for cellular.
- SMB Female connector for GNSS.

Physical Characteristics
- Encapsulation: Aluminum/plastic.
- Optional mounting bracket.
- Approx. 300 gram without accessories.
- W 97 x H 35 x D 132 mm. (without antenna connectors).

Environmental Specification
- Operating temperature: -35 to 60°C.
- Battery charge temperature: -10 to 45 °C
- Recommended storage temperature: 0 to 45°C.
- Humidity: 5..90% (non condensing).

Approvals
- E1 type approval: 2004/104/EC UN ECE R10 - ed 3.
- RE Directive, RED 2014/53/EU.
- RoHS.
- Cellular engine: CE/GCF/FCC/PTCRB.

Warranty
- Two-years return to factory parts and labor.
- Optional warranty up to 5 years. (restrictions apply).

Note: *Some features are offered as on-demand options.*

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