

# RTCU MX2 turbo

## Advanced Telematics and Telemetry Appliance

The perfect balance of quality, performance, flexibility and affordability

### For Professional M2M Applications

The RTCU MX2 turbo 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 turbo rests on the **NX32 architecture**, that brings all the necessary tools together to develop, implement and maintain today's 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 Gateway 2 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 turbo 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.
- LTE Cat. 1 / UMTS / GSM 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.

### 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.

# RTCU MX2 turbo Highlights

## Advanced Telematics and Telemetry Appliance

The RTCU MX2 turbo 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 800+ 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.
- High-speed **LTE Cat. 1 cellular engine**. Backward compatible with 3G/2G.
- Also available with world-wide **Quad-band GSM engine** or **UMTS**.
- Internal and external SIM-card reader selectable from the application.
- Digitized audio can be played over GSM / to external device *(not supported on all device types)*.
- **DTMF** support for implementation of Interactive Voice Response applications.
- **Multi-GNSS positioning engine** with GPS, GLONASS, GALILEO and QZSS.
- High-performance **3-axis accelerometer** with 16g scale.
- Enhanced memory sub-system with **fast program execution**.
- 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.
- **2 x RS232** channels and **1 x 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**.
- **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.
- Wide operating range from **8..36 VDC**.
- External power can be selectable enabled/disabled by the application.
- 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.
- High-speed **USB programming cable** support.
- Fully supports the Professional Navigation and Messaging device **PNM-220**.
- Support the **Garmin Fleet Management Interface**.
- Fully supported by the **RTCU Gateway 2** and the **RTCU Deployment Server**.
- **Accessories:** Wi-Fi, Ethernet, Bluetooth, Camera and PNM-220 Navigation Device.
- 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 turbo, please download the "RTCU MX2 turbo Technical Manual".

Also make sure to get the **FREE RTCU IDE** Development Environment, **RTCU Gateway 2** 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](http://www.logicio.com)

# RTCU MX2 turbo 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.

## LTE / UMTS / GSM

- LTE Cat. 1 (EMEA).
- UMTS / Quad-band GSM.
- UMTS / 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 / GPS

- Mediatek MT3333 Multi-GNSS chip.
- GPS, GLONASS, GALILEO and QZSS.
- 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.
- 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, GSM, Accelerometer and power change state.
- Wait for event, from: 300 uA@12V.
- Supervision of supply voltage.
- Disable external power.

## Accelerometer

- 3-axis digital accelerometer.
- 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, Communication.
- RJ45 for RS232 with full control signals.
- SMA Female connector for GSM.
- SMB Female connector for GNSS/GPS.

## 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).

## Logic IO Worldwide Headquarters

Holmboes Allé 14  
8700 Horsens  
Denmark  
Phone: +45 7625 0210  
Fax: +45 7625 0211  
Commercial enquiries: sales@logicio.com  
Technical support: support@logicio.com  
[www.logicio.com](http://www.logicio.com)

## Models Available

**SKU RT-MX2T-LTE:**  
LTD-FDD: B1/B3/B7/B8/B20/B28A  
GSM: 900/1800 Mhz / UMTS: 900/2100 Mhz  
**SKU RT-MX2T:**  
GSM: 900/1800 Mhz / UMTS: 900/2100 Mhz  
**SKU RT-MX2T-A:**  
GSM: 850/900/1800/1900 Mhz  
UMTS: 850/1900 Mhz  
**SKU RT-MX2T-2G:**  
GSM: 850/900/1800/1900