

# RTCU MX2 encore

## Advanced Telematics and Telemetry Appliance

The perfect balance of quality, performance, flexibility and affordability

### For Professional M2M Applications

The RTCU MX2 encore is based on the top-of-the-line RTCU MX2 turbo with certain features carefully omitted for a perfect balance between price and functionality.

The RTCU MX2 encore 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.

*15 years of experience and know-how in one product!*

### Experience and Know-how

For 15 years Logic IO has been committed to offer the most sophisticated platform for advanced and highly demanding M2M / IoT applications.

The RTCU MX2 encore 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

- Quad band GSM engine.
- Multi-GNSS positioning engine.
- Internal FAT32 flash-drive.
- 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.
- 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.
- Programmable in VPL and Lua.
- Huge standard API.
- Comprehensive protocol support.
- Full featured Device Simulator.
- Sophisticated deployment tools.
- Fast and free email support.
- Backward and forward compatible.

*World Leader in Advanced and Professional M2M/IoT Technology since 1999.*

# RTCU MX2 encore **Highlights**

## Advanced Telematics and Telemetry Appliance

The RTCU MX2 encore 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**.
- Cost-efficient variant of the **RTCU MX2 turbo**.
- **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.
- World-wide **Quad-band GSM engine**.
- External SIM-card reader.
- Digitized audio can be played over GSM or to an external device.
- **DTMF** support for implementation of Interactive Voice Response applications.
- State-of-the art **Multi-GNSS positioning engine** with GPS, GLONASS, 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 **4.5 MB**.
- Internal **4 MB FAT32 flash drive**.
- **1 x RS232** channel.
- **2 x analog inputs** with 0..10 volt / **12 bit precision**.
- **5 x digital inputs** and **4 high-power solid-state digital outputs**.
- **1-Wire bus** for accessories such as ID-button reader, temperature sensors, etc.
- **Powerful on-demand hardware options:**
  - **Full CAN 2.0B** controller with hardware filtering and multi-speed support.
  - **RS485 channel** with MODBUS and expandable I/O.
  - **Internal SIM-card reader**. Active reader selectable from the application.
- **On-demand options** can be applied **anytime** - even remotely after installation.
- 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.
- High-speed **USB programming cable** support.
- Fully supported by the **RTCU Gateway 2** and the **RTCU Deployment Server**.
- Exclusive and durable **aluminum** encapsulation.



### Services Available

Technical Support.  
Application development support.  
Maintenance.  
Hardware support.  
Warranty services.

### Accessories

MODBUS modules.  
2 mega-pixel Camera.  
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 encore, please download the "RTCU MX2 encore 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)

# RTCUCU MX2 encore Specifications

## Processor and Main-memory

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

## Storage

- 3.5 MB persistent data flash.
- 4 MB internal FAT32 flash drive.
- 1 MB circular automatic datalogger.
- 20 KB FRAM with fast access / unlimited write endurance.

## GSM

- 850/900/1800/1900 Mhz.
- GPRS Multi-slot class 12.
- Max. 85.6 kbps (up/down link)
- CSD with up to 14.4 Kbps.
- SMS / PDU.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- Micro-SIM 1.8/3 volt.
- External and internal SIM card-reader. Switchable from the application.

## GNSS / GPS

- Mediatek MT3333 Multi-GNSS chip.
- GPS, GLONASS 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 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.

## On-Demand Hardware Options

- Applied "any-time" - locally or remotely.
- Over-the-air hardware upgrade.

## External Interfaces.

- SIM-card slot for micro-SIM with lock and presence detection.
- 4 x LED indicators.
- Reset/recovery switch,
- TE-Connectivity "Mate'n'Lock": RS232, I/O, Power, Communicator.
- SMA Female connector for GSM.

## Physical Characteristics

- Encapsulation: Aluminum/plastic.
- Optional mounting bracket.
- Approx. 290 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).
- IP30 with SIM/Connectors in use.

## Approvals

- E1 type approval:  
2004/104/EC UN ECE R10 - ed 3.
- CE mark / Applied R&TTE directive.
- GSM 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.  
Lua support is currently under development.

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## Models Available

SKU RT-MX2E: