logic IO
The M2M Enabler

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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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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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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Models Available
SKU RT-MX2W:
GSM: 850/900/1800/1900 Mhz