

# RTCU NX-400

## Advanced Industrial M2M / IoT Gateway

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

### For Professional M2M / IoT Applications

The RTCU NX-400 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 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

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 NX-400 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.
- LTE Cat.4 Cellular Engine, or
- Penta-band UMTS cellular engine.
- Wi-Fi.
- 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.

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

# RTCU NX-400 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:

- **LTE Cat. 4 Multi-Band Cellular Engine, or**
- Penta-band world-wide **UMTS/HSPA engine.**
- **Wireless LAN (Wi-Fi).**
- Classic and Low-Energy **Bluetooth.**
- **Optional:** Wireless M-Bus, ZigBee and KNX.

### 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:

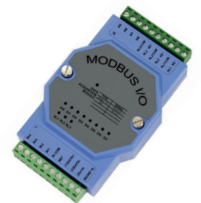
- Internal **flash drive** with up-to 512 MByte capacity.
- **Persistent memory** and circular **datalogger.**
- Standard **SD-CARD** reader.

### 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!

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-400, please download the "**RTCU NX-400 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.

# RTCU NX-400 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.
- 8 MByte Dataflash.
- 128 KByte SRAM with battery-backup.
- Real-time clock with battery-backup.

## Security

- Embedded firewall.
- TLS/SSL support with full certificate 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 [E]**  
LTE FDD: B1/B3/B7/B8/B20/B28A  
WCDMA: B1/B8  
GSM/EDGE: 900/1800 MHz.
- **Penta-band UMTS/HSPA.**  
GSM: 850/900/1800/1900 MHz.  
UMTS: 800/850/900/1900/2100 MHz.  
SMS / PDU.
- DTMF decoding / transmission.
- Digitized voice playback / IVR.
- External SIM card-reader, with Mini-SIM 1.8/3 volt.
- 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.OB 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 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.
- RFID-Reader\*.
- 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.  
(without 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).



\* Certain features may still be under development.

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## Models Available

SKU: RT-NX400

SKU: RT-NX400-LE