MP32A

RTU32M CPU Module (4x variants)

**Rev. A/B/C 200-900MHz with 2x 10/100 LAN ports
and a choice of a USB or RS232/RS485 port (USB Type A, USB M8, serial M8)**

**Rev. D 900-1800MHz with 2x 10/100/1000 LAN ports
and a USB port (M8)**

BRODERSEN

simplifying systems

INTRODUCTION

The RTU32M series is based on an embedded 32-bit industrial platform providing flexible RTU functionality for a wide range of remote monitoring and control applications in the utility and infrastructure markets.

Each RTU32M comprises of a CPU module (MP32A), power supply module and the desired mix of IO modules and system modules, as required.

The RTU32M supports a variety of standard and open protocols such as Modbus, IEC60870, IEC61850 and DNP3. It also includes the fast event-based Binding protocol - a fast and reliable way to distribute time stamped event data between any Brodersen RTU32M in the network.

The RTU32M CPU module (MP32A) has a web server configuration interface for setup of the RTU 'personality' e.g., IP address, IO range, slave address etc. Additional RTU functionality, including logic, messaging and logging are configured in the Brodersen Worksuite.

The RTU32M CPU module (MP32A) supports up to 60 I/O modules.

POWER SUPPLY MODULE BACKPLANE PART

Description	Part Nr.
BUS module for CPU, Start	BB61A
BUS module for CPU, Middle	BB61B
BUS mod. for standby CPU (redund. setup)	BB61R

VERSIONS / ORDERING CODES

Hardware basic version

Order codes:

MP32A Rev. A 200-900MHz, 2x 10/100 LAN, 1x USB
MP32A Rev. B 200-900MHz, 2x 10/100 LAN, 1x USB (M8)
MP32A Rev. C 200-900MHz, 2x 10/100 LAN, 1x serial (M8)

MP32A Rev. D 900-1800MHz, 2x 1000 LAN, 1x USB (M8)

MODULE FRONT VIEW

USB Type A Socket   USB M8   RS232/RS485 M8   USB M8

Figure 1: MP32A Rev. A, B, C & D front view

FEATURE LIST

- Modular RTU with or without integrated I/O and communication devices.
- Real Time Operating System.
- Communication Protocols include (>20 available);
  - Full Modbus suite.
  - IEC60870-5-101/103/104
  - IEC61850 Client / Server Protocol.
  - DNP3 Master and DNP3 Slave.
  - Binding - Global Distribution and Subscription of Event Based Time Stamped Variables.
- Communication Protocols can also be created as part of the logic application interface.
- Communication interfaces; 2 x Ethernet 10/100, 1x USB for MP32A REV A,B,C and 2 x Ethernet 10/100/1000, 1x USB for MP32A REV D are featured on the CPU module.
- Full EN/IEC61131 PLC runtime – also used for special and flexible data manipulation.
- Includes power supply monitoring of the RTU32M supply voltage and temperature.
- Support for redundant power supplies and CPUs.
- Hot swappable I/O.
- Full remote management with configuration, programming and flexible distribution of all levels of software from and to RTUs on remote locations.

CPU SPEED

The CPU module speed is managed via the RTU performance license options:

MP32A Rev. A, B, & C

DL-200MHZ-RL	200MHz
DL-500MHZ-RL	528MHz
DL-900MHZ-RL	900MHz

MP32A Rev. D

DLQ - 900MHZ-RL	900MHz
DLQ - 1800MHZ-RL	1800MHz

RAM SIZE

MP32A Rev. A, B, & C

DL-128MB-RL	128MB
DL-256MB-RL	256MB

MP32A Rev. D

DLQ - 1GB-RL	1GB
DLQ - 4GB-RL	4GB
DLQ - 8GB-RL	8GB

RUNTIME

Runtime performance for MP32A Rev. A,B,C & D:

Typical cycle time:	1msec
Scan time LB2 I/O:	0.5msec

I/O Detection and Configuration:
Self-discovering I/O
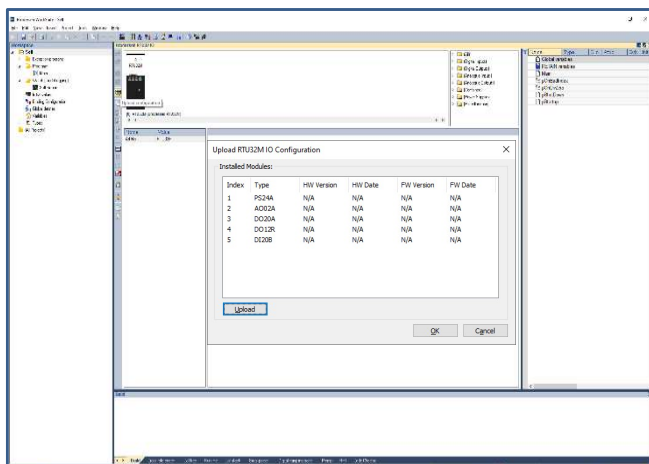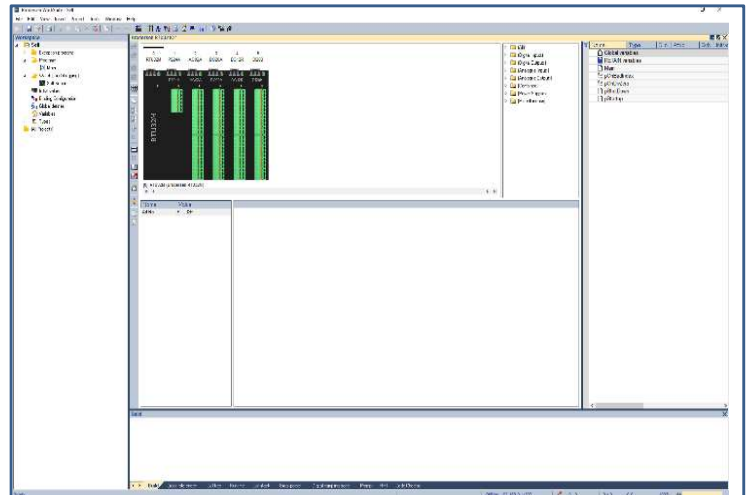

Figure 2: Self discovering I/O

Figure 3: Discovered I/O

CPU HARDWARE

MP32A Rev. A, B, & C

CPU:	ARM Cortex – A7, 32-Bits
	Freescale i.MX6, 200-900 MHz
Memory:	RAM: 128-256MB SDRAM
	NAND Flash: 128MB
	NVRAM/FRAM: 128KB
	Micro SD Card Flash disc – removable
RTC:	Integrated and super capacitor backed Realtime Clock with 1 msec resolution 10 ppm
Interfaces:	LAN: 2x 10/100Mbps RJ45
MP32A Rev. A:	1 x USB 2.0 Host.
MP32A Rev. B:	1 x USB comm. with M8 connector
MP32A Rev. C:	1 x serial port (RS232/RS485) with M8

MP32A Rev. D

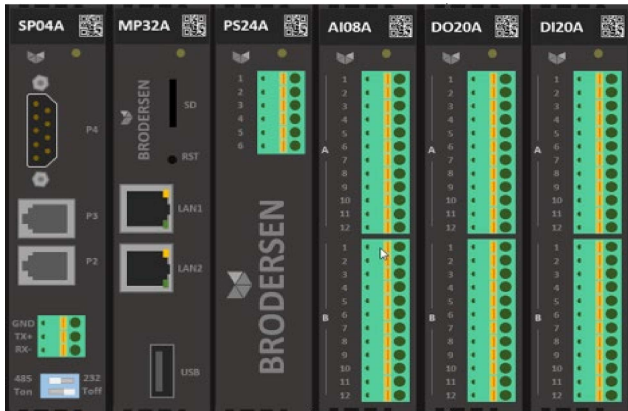|	
CPU:	ARM Quad Cortex – A53,64-bits
	NXP i.MX8Plus,900-1800 MHZ
Memory:	RAM: 1-8GBRAM LPDDR4
	eMMC Flash:8-64GB
	NVRAM/FRAM: 128KB
	Micro SD Card Flash disc – removable
Interfaces:	LAN: 2x 10/100/1000Mbps RJ45
	1 x USB comm. with M8 connector

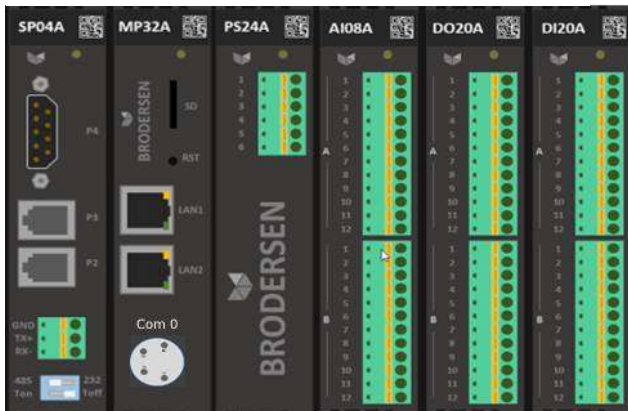*Figure 4: MP32A Rev. A hardware interface with I/O*

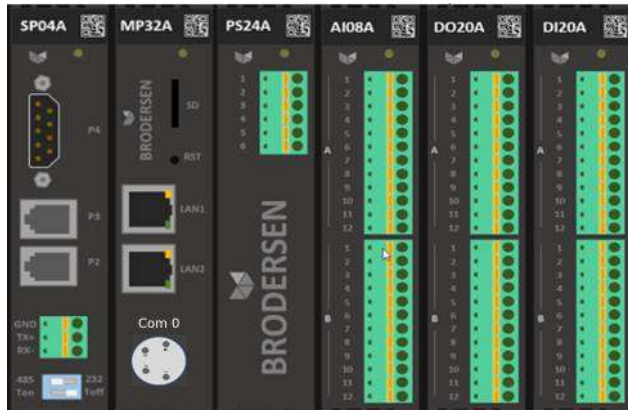*Figure 5: MP32A Rev. B hardware interface with I/O*
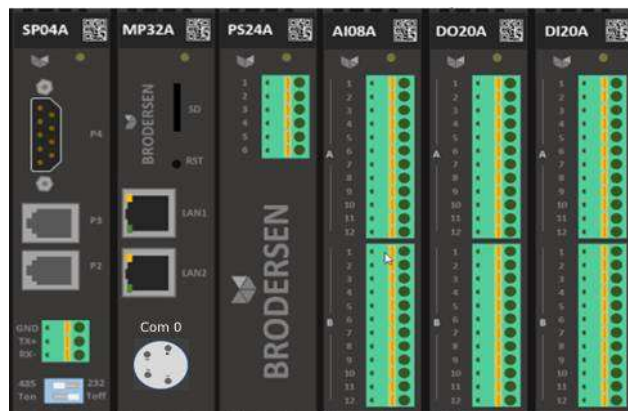

Figure 6: MP32A Rev. C hardware interface with I/O

Figure 7: MP32A Rev. D hardware interface with I/O

ELECTRICAL
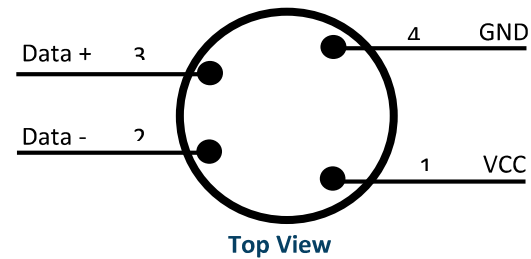
Power consumption (from backplane bus):
- Current consumption: 200mA (typ.) @ 12V
- Power consumption: 2.4W (typ.)
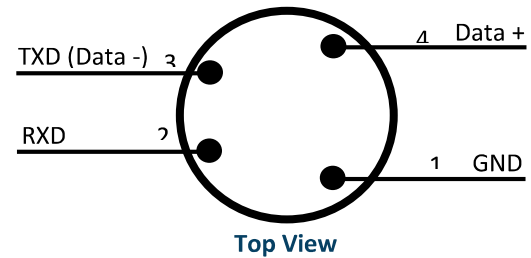
Separated/Safe Extra Low Voltage (SELV) limits:

VAC (RMS)	30V
VAC (Peak)	42.4V
VDC	60V

Note: The SELV limits relies on input supply and all connected voltages.

MP32A Rev. B USB Port pin out:

Top View

MP32A Rev. C Serial Port pin out:

Top View

MP32A Rev. D USB Port pin out:

Top View
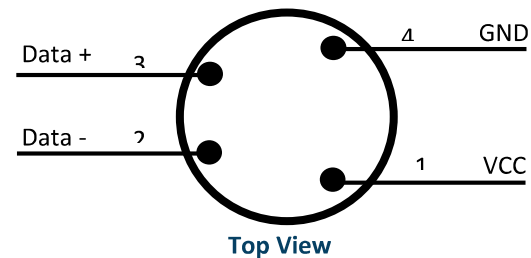
COMMUNICATION PORTS

The MP32A Rev. C serial communication provides the following communication ports:

COM1: Isolated RS232/RS485, configurable through web page, with M8 connector (4 Pins).

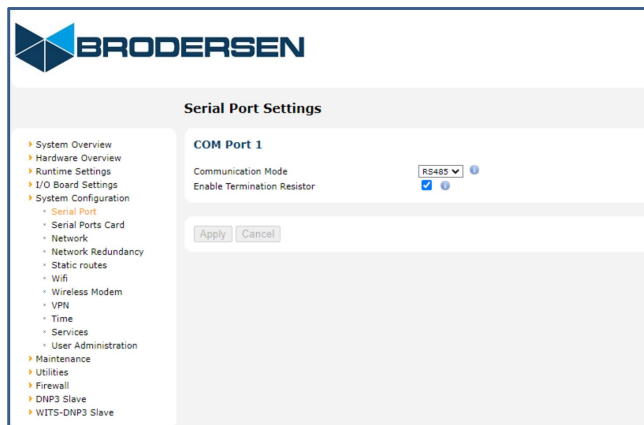| Pin No.	RS232	RS485
Pin 1	GND	GND
Pin 2	RXD	NA
Pin 3	TXD	Data -
Pin 4	NA	Data +

Figure 7: By default, serial port web configuration

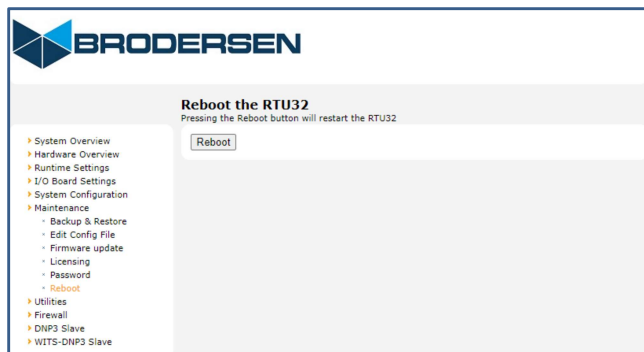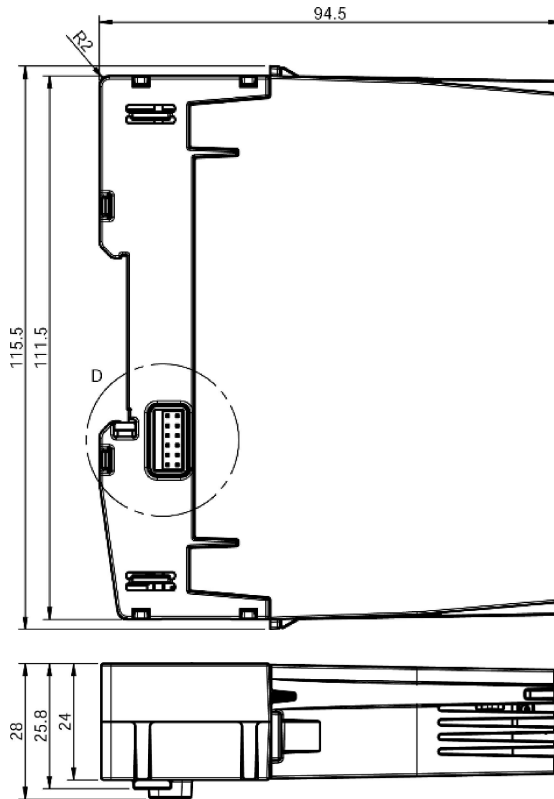**Note:** RTU must be rebooted from web page once the communication port is configured.

Figure 8: Rebooting RTU via webpage

MECHANICAL

Mounting	DIN 35
Width	24 mm
Height	111.5 mm
Depth	94.5 mm
Weight	102 grams

ENVIRONMENTAL CONDITIONS

Ambient operating temperature range	-25°C to +75°C
Ambient operating temperature range	-40°C to +85°C
Marked degree of protection	IP20
Humidity	0...99.8%
Ventilation Restrictions	No
Pollution Degree	2

STANDARDS

EMC:
- **IEC 61000-6-2**: EMC - Immunity standard for industrial environments
- **IEC 61000-6-4**: EMC - Emission standard for industrial environments
- **IEC 50121-4**: Railway applications - EMC - Emission and immunity of the signalling and telecommunications apparatus

Safety:
- **IEC 60950-1**: Safety requirements for Information technology equipment
- **IEC 61010-1**: Safety requirements for electrical equipment for measurement, control, and laboratory use

Environmental:
- **IEC 60068-2-1**: Environmental testing - Cold
- **IEC 60068-2-2**: Environmental testing - Dry heat
- **IEC 60068-2-30**: Environmental testing - Damp heat, cyclic (12 h + 12 h cycle)
- **IEC 60068-2-78**: Environmental testing - Damp heat, steady state
- **IEC 60068-2-6**: Environmental testing - Vibration (sinusoidal)
- **IEC 60068-2-27**: Environmental testing - Shock

MODULE LED STATUS

A dual color (red/yellow) LED is provided on the module to indicate the module status. Yellow indicates the module mode / state and red indicates module error or warnings (according to the table below):

Status	Yellow	Red
Power up	OFF	ON
Logic application Start	ON	OFF
Logic application Stop	OFF	OFF
Reboot: after pressing Reset Button while powered up	ON 400ms	OFF
	OFF 400ms	
Reset Button (Rebooted)/ Power up	OFF	ON
Factory default: after pressing Reset Button during power up (restores factory default settings)	3 times ON for 500ms	OFF
	3 times OFF for 500ms	
Passive Redundancy Partner (standby)	ON 500ms OFF 500ms	OFF

SAFETY PRECAUTIONS

- Follow the national safety regulation (IEC 61010-1) ⚠
- Only skilled personnel are to install and operate the modules.
- Modules can only be mounted in an end-use enclosure which provides protection against fire, electrical and mechanical hazards.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.