RTU32

Utility Outstation and Controller

Installation and wiring manual

Doc No 40215 Version 3.00

BRODERSEN

simplifying systems

Regulations for the installation and operation of electrical systems

The RTU32 devices are produced under the attention of the relevant regulations and appointments, especially to IEC 1010-1.

The RTU32 is classified according to DIN VDE (IEC664-1) 0110: Insulation coordination for equipment within low-voltage systems
Part 1: Principles, requirements and tests.

- Pollution degree 2.

Only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation is to be expected.

- Over voltage category II

Is in accordance with the appointment in IEC 1010-1, table J1.

The user has to ensure that the devices and the components belonging to them are mounted under the attention of such safety regulations and standards as may from time to time be in force.

DIN VDE 0100
Erection of power installations with rated voltages below 1000V.

DIN VDE0 106
Protections against electrical shock part 100: Actuating members positioned close to parts liable to shock.

Installation and application hints

Documentation

This documentation includes hints for the installation and wiring of the RTU32 module. Additional information have to be taken from the data sheet and RTU32 operators guide.

Qualified personnel

The RTU32 modules conduct partly dangerous contact voltages at their connectors.

DIN VDE 0113
Electrical equipment of machines part 1: General requirements

DIN VDE 0160
Electronic equipment for use in electrical power installations and their assembly into electrical power installations.

IEC 1131
Programmable controllers
Part 2: Equipment requirements and tests.

If the pollution degree 2 (VDE 0110) can not be guaranteed or an ongoing protection against direct contact is required the devices should be mounted into appropriate cubicles.

If RTU32 module devices are coupled with or fed by power-frequency voltage networks of overvoltage category III qualified protective provisions have to be taken to guarantee overvoltage category II according to VDE 0110 at the terminal connectors (e.g. surge voltage protectors).

Touching parts which are alive can force heavy injuries of health.

Installation, commissioning and maintenance of such systems is therefore only allowed by technical instructed personnel. It should have relevant knowledge:

- in dealing with dangerous voltages.
- in the use of specifications and standards.

In particular VDE- and accident preventation regulations.

Use according to the rules

The RTU32 module was developed, manufactured, tested and documented while observing the relevant standards. When observing the valid regulations for installation, commissioning and maintenance, the product poses no danger to health and objects in normal case. Use according to the rules means that the

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RTU32 module is operating and maintained exclusively in the form as described in the functional- and module description documents. Especially the technical data for the process-circuits and the supply should be regarded.

Any liability for the consequences of incorrect use or after unauthorized repairs is rejected.

WARNING CAUTIONS

⚠ **Earth the devices**
Before connecting any power to the device, make sure that the earth terminal is wired to protective earth. The earthing may be removed only if it is certain that no more power is being supplied to the device.
Regard the earthing principles for the serial peripheral bus (direct or capacitive earthing)

⚠ **Connecting of the supply voltage**
A terminal block feeding dangerous contact voltages (supply, input/output channels should only be plugged or withdrawn in off load state.

- **RTU32 shall ALWAYS be mounted in horisontal position! Any other mounting positions will reduce the natural heat dispassion process and will heavily reduce the overall lifetime of the product.**

- **Protect the device from dampness, dirt and damage during transport, storage and operation.**

- **Do not operate device outside of the specified technical data.**

- **Operate device according to the protection degree IP20 (DIN 40050)**
  Mount into a closed cubicle or rack if the environmental conditions that requires.

- **Do not obstruct the ventilation for cooling**
  Do not cover the ventilation slots by cables or wires.

- **Lead signal - and power- lines separately**
  Capacitive and inductive interferences of the power lines to signal lines should be prevented by appropriate cable laying (distance, crossing).

Technical data/user guide and data sheet are available for download on the Brodersen homepage

www.brodersen.com

or by contacting your local distributor.

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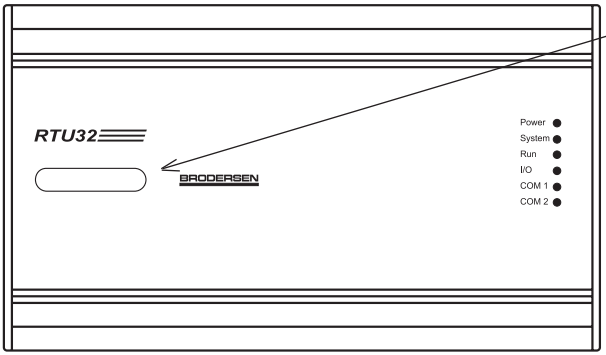
Layout and dimension drawings (for standard versions)

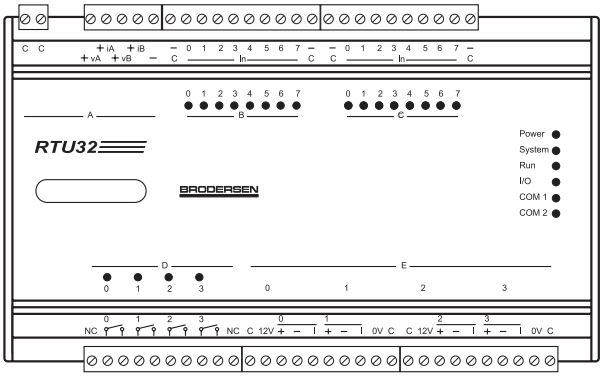


Type indication

On the back of the device you will find the type label with:

- Unique type no.
- S/N
- Initial SW/HW versions.
- EAN code/bar code.

Normal sized RTU870



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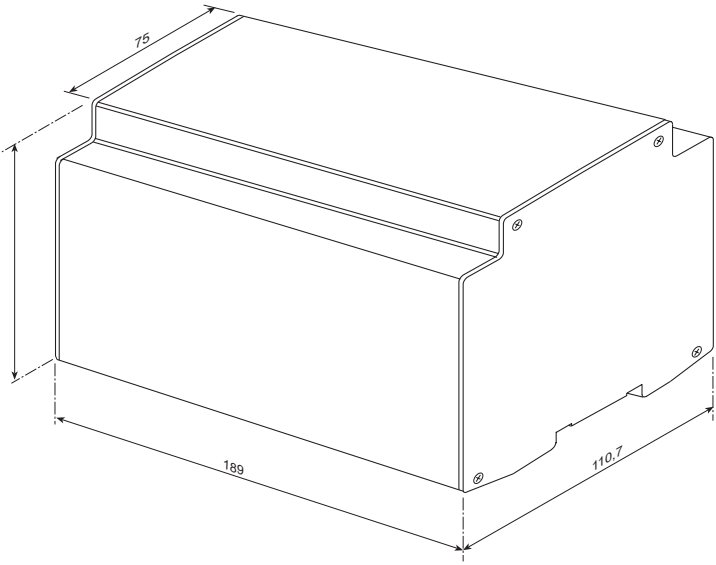
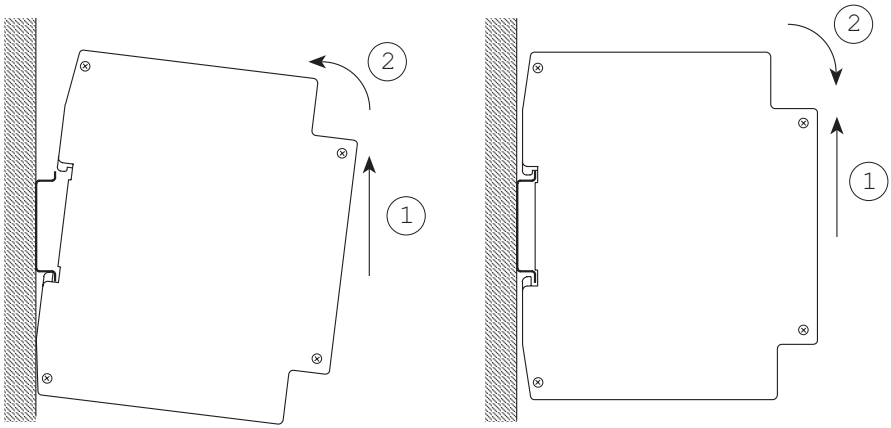
Standard = 93,8
(Special versions
up to 112mm)



Mounting instruction

The RTU is mounted on a 35mm DIN-rail (EN50022). For mounting and de-mounting - see the drawings below.

NOTE: ALWAYS MOUNT HORISONTAL!



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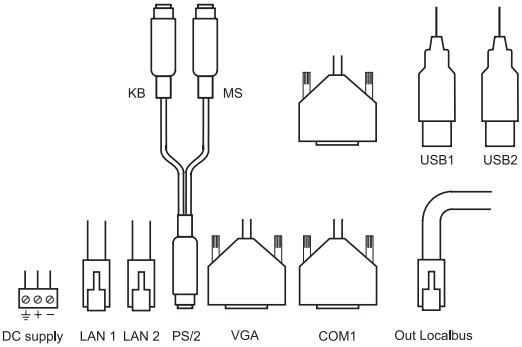
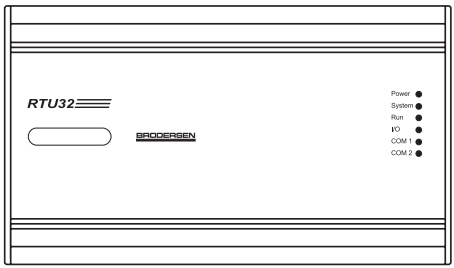
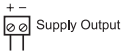
Wiring Diagram - general
Terminal blocks for I/O and power supply are plug-in connectors with screw terminals. It is recommended to use ferrules on wires.
LAN and localbus are RJ45 - **Note**: Be carefull to connect correctly.
VGA is standard 15 pole sub-D VGA connector. COMs are 9 pole sub-D male. PS/2 interface is for included twin interface cable for connection of keyboard and mouse.

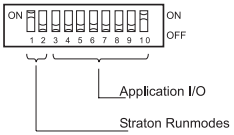
Wire size
Earth and power supply: max. 2,5mm^2 (earth wiring must be 2,5mm^2 and kept as short as possible)
Other connectors: Max. 1,5mm^2 with ferrules.

Wiring diagram
UCN-B/xx









DIL switches (works as DI in PLC program)

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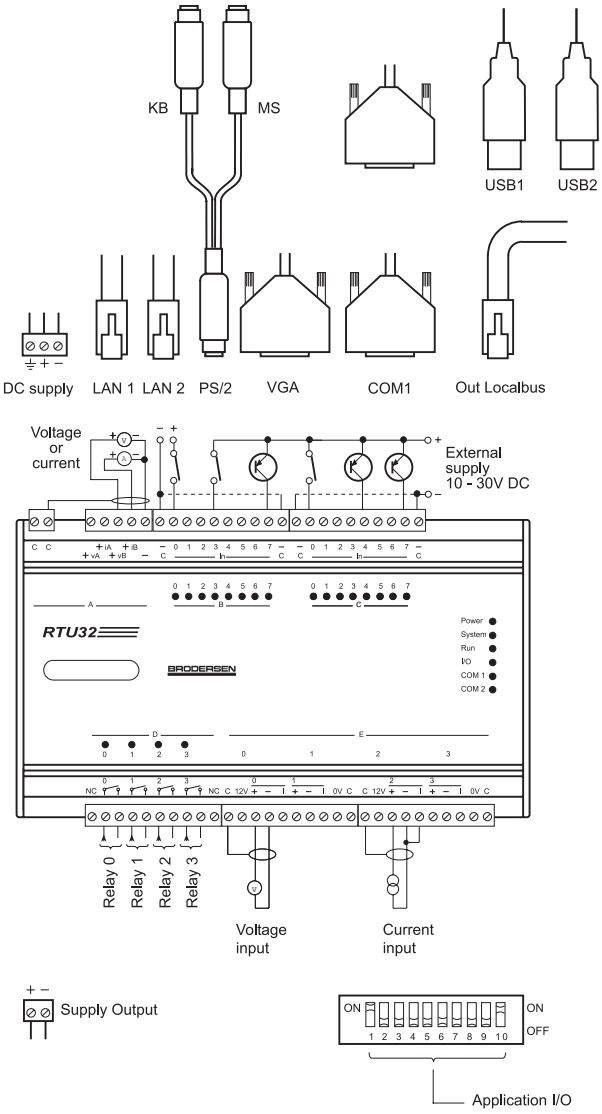
UCN-26IO/xx



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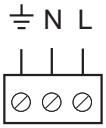
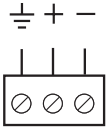
Power Supply

Version 10



Mains supply

Version 30.



VDC supply

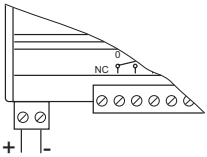
Earthing: Connect to PE conductor - wire as short as possible.

Version 10:
L: 115-230V AC/DC Mains supply
N: 0V Mains supply (neutral).

Version 30:
+: +24-48V DC positive
-: 0V negative

Supply Output

Version 10 and 30.

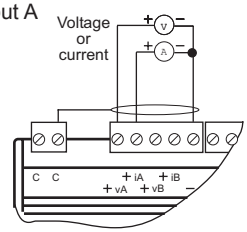


Supply for I/O etc.
12V max. 200mA

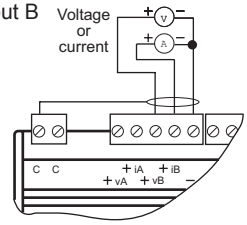
Analogue Output

2 sourced analogue channels.
Output ranges: 0-10V, 0-5V, -5 - +5V, -10 - +10V, 0-20mA, 4-20mA.
(Range selected on web configuration page).
The shield must be connected to the common terminal (C).

Output A



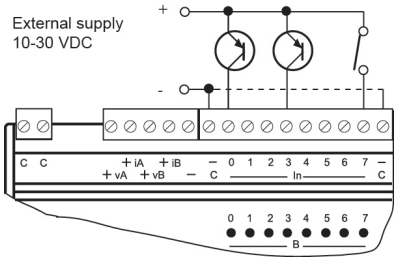
Output B



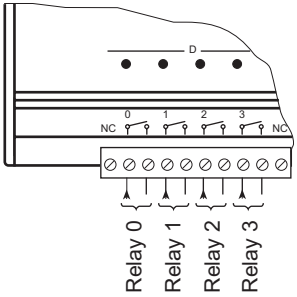
Note: Only one output type per channel (voltage or current can be sourced by each output).

Digital Input /S0 Counter wiring
To activate the inputs an external voltage is required, use e.g. the 12V supply from the RTU/PLC.

Inputs can additional be used for S0 counter inputs. Must be connected via potential free contacts. (only on 26IO)

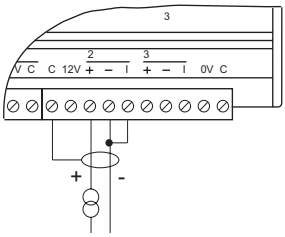


Relay Output Wiring
4 potential free normally open (NO) relay outputs.
Max. load: 250V AC 5A (resisstive)
Min. load: 0,1mA 100mV DC

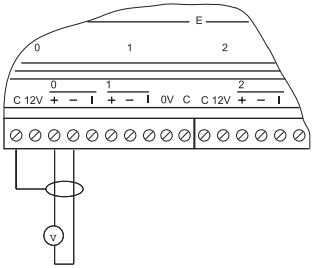


Analogue Input (voltage or current)
4 analogue inputs. Are configured on web configuration pages or in STRATON.
Ranges: 0-10V, +/- 10V, 0-5V, +/- 5V, 0-20mA, 4-20mA.
The shield must be connected to the common terminal (C).

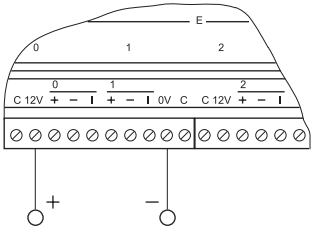
Wiring: Current Input



Wiring: Voltage Input



Output Voltage for Sensors



12VDC output for loop powered transmittery/ sensors max. 100 mA

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COM1: Serial Interface
RS232 wiring
RS232 meter port connector (9 pole sub-D male)

Pin no	Signal	Description/Remarks
1	DCD	Data Carrier Detect (in)
2	RX	Receive data (in)
3	TX	Transmit data (out)
4	DTR	Data terminal ready(out)
5	SG	Signal ground
6	DSR	Data Send Ready (in)
7	RTS	Request to send (out)
8	CTS	Clear to send (in)
9	RI	Ring Indicator (in)

Hardware handshake signal use is setup via software configuration.

COM2: Serial RS232 wiring
RS232 meter port connector (9 pole sub-D)

Pin no	Signal	Description/Remarks
1	DCD	Data carrier detect (in)
2	RX	Receive data (in)
3	TX	Transmit data (out)
4	DTR	Data terminal ready (out)
5	SG	Signal ground
6	DSR	Data set ready (in)
7	RTS	Request to send (out)
8	CTS	Clear to send (in)
9	RI	Ringing indicator (in)

Hardware handshake signal use is setup via software configuration.

COM2: Serial RS485 wiring
RS485 (9 pole sub-D)

Pin no	Signal	Description/Remarks
1	Data-	Data-
2	NC	Not used
3	Data+	Data+
4	SG	Signal Ground
5	NC	Not used
6	NC	
7	NC	
8	NC	
9	NC	

Note: The RS485 is not biased. Make sure that your connected devises are supporting biased.

COM2: Serial RS422 wiring (optional configuration)
RS422 (9 pole sub-D)

Pin no	Signal	Description/Remarks
1	TX-	Transmit data -
2	RX+	Receive data+
3	TX+	Transmit data+
4	RX-	Receive data-
5	SG	Signal ground
6	NC	Not used
7	NC	
8	NC	
9	NC	

Ethernet
Ethernet: RJ45 10/100BASE-T. It is recommended to use shielded patch cables.

PS/2 Interface
PS/2 interface for keyboard and mouse. Use enclosed dual cable for controlling the RTU32 with a standard mouse and keyboard.

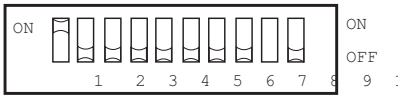
VGA Connector
VGA connector 15 pin sub-D standard for connecting VGA compatible monitor.

Dual USB
Dual USB interface type 2.0

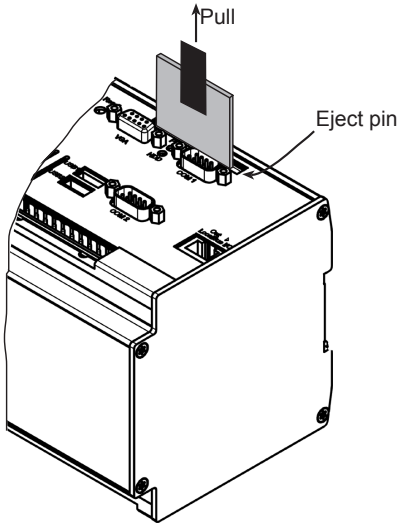
Localbus RJ45
Localbus RJ45 connector for Brodersen I/O expansion modules. The localbus connection support also power supply to expansion mo-dules. **NOTE** that there is load limitations depending of the RTU32 type. Consult data sheet for details.

DIL Switch
The DIL switch settings are read as digital inputs by the PLC software and can be used for application specific settings.

DIL SWITCH



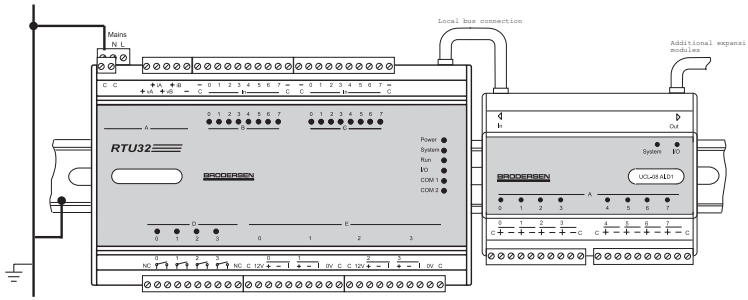
How to Remove the Flash Disc
When you need to remove or replace the flash disc, you must be very careful.
While you drag in the flash disc tag, push on the eject pin with your fingertip or e.g. a pen.



NOTE: Standard commercial compact Flash discs will not work in the RTU32. Order new industrial flash discs at your local distributor.

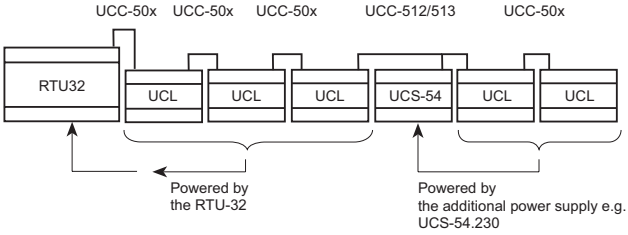
IO Expansion Modules and wiring

IO expansion modules is mounted next to the RTU and connected via a Local bus cable (cable UCC-505).
Connection to IO on the expansion module according to the module data sheet.



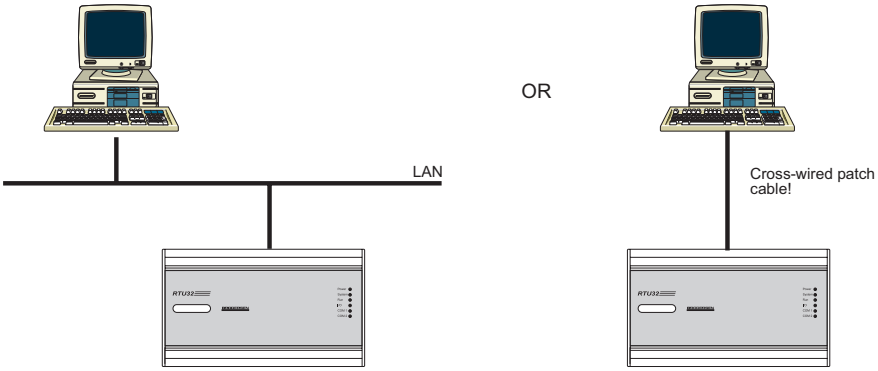
Wiring for Additional Power Supply

When the power consumption for I/O expansion modules exceed the output limit of the RTU32 PLC, additional power supplyes must be used..



Configuration of the RTU
The RTU is configured in 2 steps:
1. Basic settings is configured with your browser. Use LAN1 and IP address according to User Manual. Please read the user guide before starting configuration.

2. Application programming and control of IO's is done with a PC running the Straton Workbench. Connect a PC via network cable directly or via your normal network.



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ACCESSORIES

Contact your local distributor for list af available accessories like Compact Flash discs, cable, software tools etc.

Other RTUs in the Brodersen A/S RTU family

The range of RTU32 Series products covers a wide range of products. The family includ the below listed subfamily products:

RTU32S
Compact RTU supporting same functions and software as the RTU32 - but with downgraded performance.

RTU32R
19" Mountable RTU with same facilities and software compatibility with the RTU32.

RTU32E
Low enclosure profile RTU32 Series products - also compatible ith main RTU32 products.

For more info please use our document download facilities on our homepage

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