

RTU32 Utility Outstation and Controller

Installation and Connection Guide

18.06

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 VDE 0106
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 prevention 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 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 with drawn in off load state.

- **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.

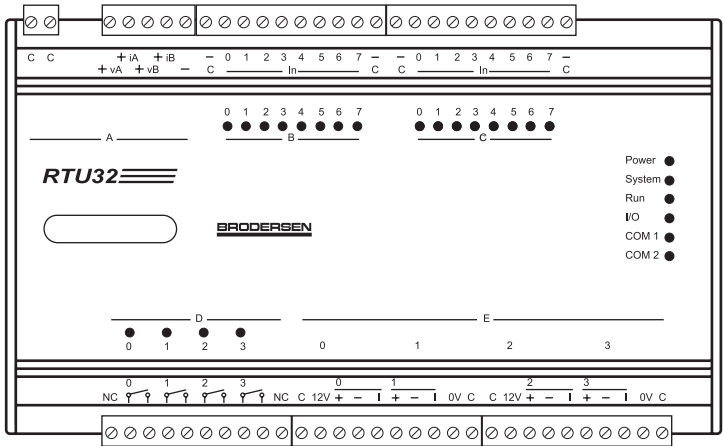
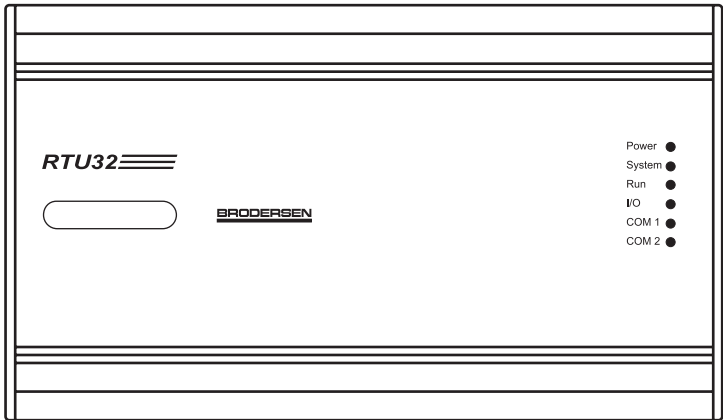
- **Do not obstruct the ventilation for cooling**
Do not cover the ventilation slots by cables or wires.

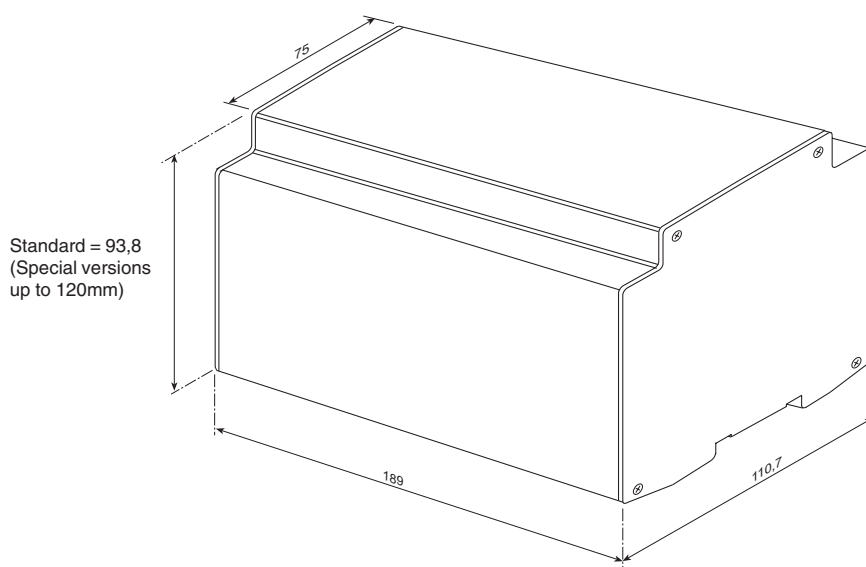
- **Lead signal - and power- lines separately**

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 down load on the Brodersen Controls homepage www.brodersencontrols.com or by contacting your local distributor.

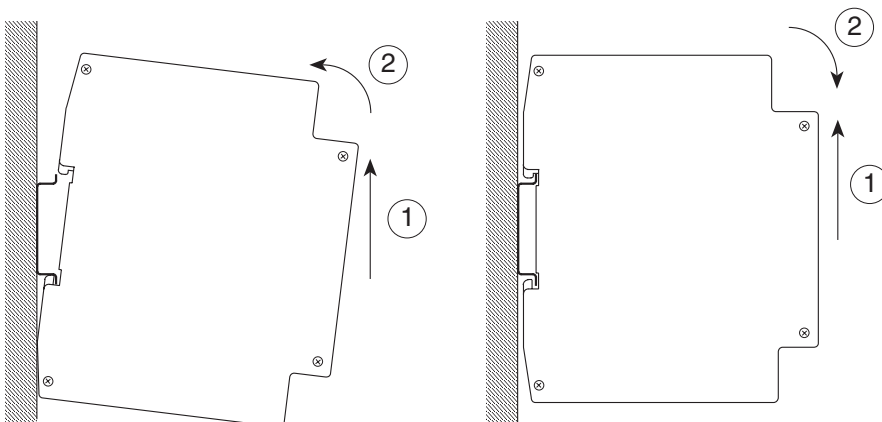
Layout and dimension drawings (for standard versions)





Mounting instruction

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



RTU32

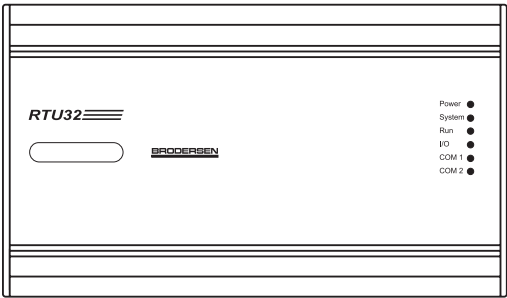
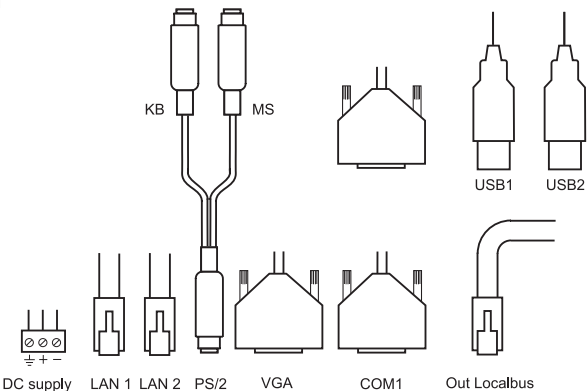
Wiring Diagram - general

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.

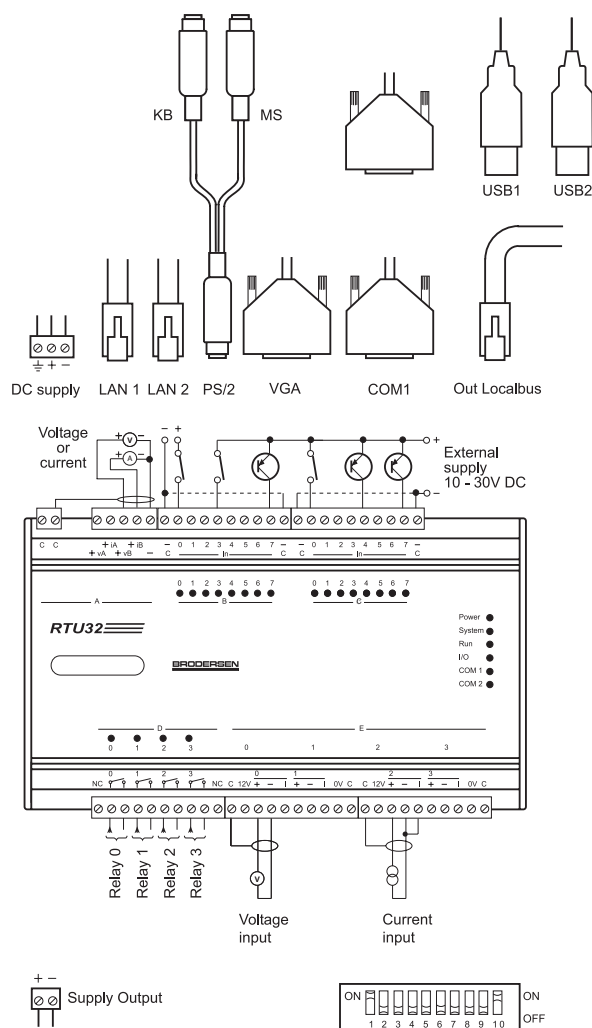
Wire size

Earth and power supply: max. 2,5mm² (earth wiring must be 2,5mm² and kept as short as possible)
Other connectors: Max. 1,5mm² with ferrules.

Wiring diagram
UCN-B/xx



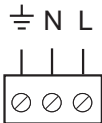
UCN-26IO/xx



RTU32

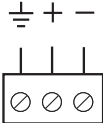
Power Supply

Version 10 and 20



Mains supply

Version 30.



VDC supply

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

Version 10 and 20:

L: 115-230VAC Mains supply

N: 0V Mains supply (neutral).

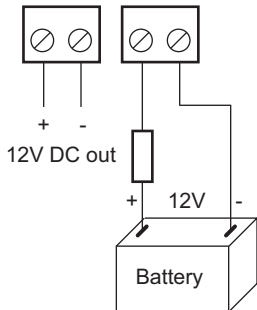
Version 30:

+: +24-48V DC positive

-: 0V negative

Battery

Only type 20.

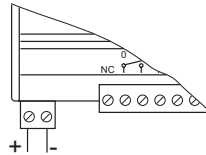


Battery: An external fuse 2A must be mounted on the live wire to the battery.

12VDC: Supply required for e.g. binary inputs.

Supply Output

Version 10 and 30.



Supply for I/O etc.

12V max. 200mA

Analogue Output

2 sourced analogue channels.

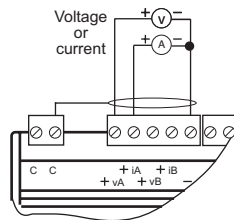
Output ranges: 0-10V, 0-5V, -5 - +5V,

-10 - +10V, 0-20mA, 4-20mA.

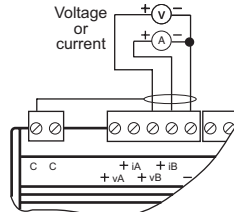
(Coded in application program).

The shield must be connected to the common terminal (C). The connector for analogue outputs have gold plated contacts and is special marked.

Output A



Output B

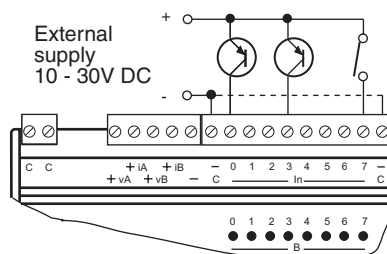


Note: Only one output type (voltage or current) can be sourced by each output).

Digital Input /S0 Counter wiring

To activate the inputs an external voltage is required, use e.g. the 12V supply from the RTU.

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

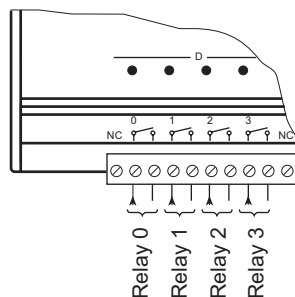


Relay Output Wiring

4 potential free normally open (NO) relay outputs.

Max. load: 250V AC 5A (resistive)

Min. load: 0,1mA 100mV DC

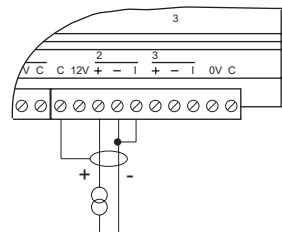


Analogue Input (voltage or current)

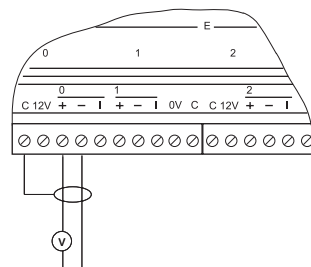
4 analogue inputs. Are configured in Straton. Ranges: 0-10V, +/- 10V, 0-5V, +/- 5V, 0-20mA, 4-20mA.

The shield must be connected to the common terminal (C). The connector for analogue inputs have gold plated contacts and is special marked.

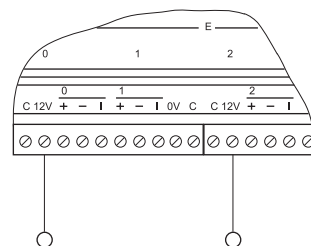
Wiring: Current Input



Wiring: Voltage Input



Output Voltage for Sensors



12V output for sensor
max. 100 mA

RTU32

**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	Ring 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	NC	} Not used
5	NC	
6	NC	
7	NC	
8	NC	
9	NC	

Note: The RS485 provides **NO** bios. Make sure that your connected devices are supporting bios.

COM2: Serial RS422 wiring

RS485 (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	NC	} Not used
6	NC	
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

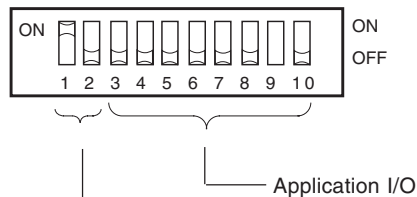
VGA connector 15 pin sub-D standard for connecting VGA compatible monitor.

Dual USB

Dual USB interface type 1.1.

Localbus RJ45

Localbus RJ45 connector for Brodersen I/O expansion modules. The localbus connection support also power supply to expansion modules. Note that the load must not exceed 1000mA.

CODE SWITCH/ADDRESS SELECTOR


Straton SoftLogic run modes:

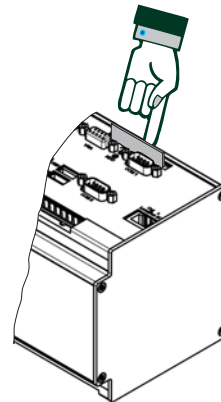
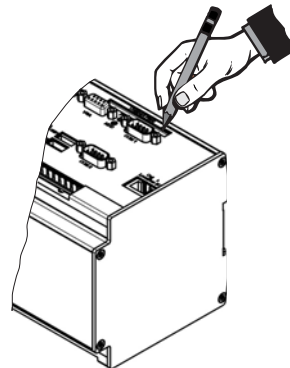
1	2	Description
Off	Off	Reserved
On	Off	
Off	On	
On	On	

How to Remove the Flash Disc

When you need to remove or replace the flash disc, you must be very careful.

Use e.g. a pen to push on the eject pin as shown on the figure. Do **NOT** push hard - the ejection of the flash disc will only push the flash disc out to the edge of the hole.

Use a fingernail or a small screw driver to get the flash disc out of the ejector.



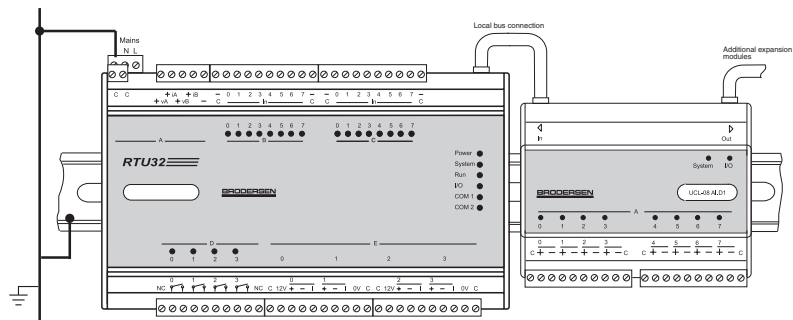
NOTE: Standard commercial compact Flash discs will not work in the RTU32. Order new industrial flash discs at your local distributor.

RTU32

IO Expansion Modules and wiring

IO expansion modules is mounted next to the RTU and connected via a Local bus cable (cable UCC-50x).

Connection to IO on the expansion module according to the module data sheet.



Configuration of the RTU

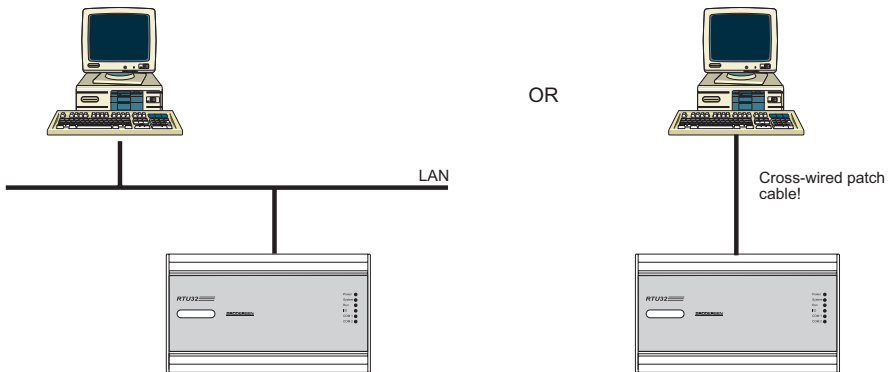
The RTU is configured in 2 steps:

1a (v. 1.00). Configure the RTU32 basic setting by connecting monitor, keyboard and mouse. Setup the network settings required - as in normal Windows environment.

1b (v1.10). Basic settings is configured with your browser. Use LAN 2 and IP address

according to the label indication. 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.



ACCESSORIES

UUCN-FLASH64
Compact Flash 64Mb industrial graded.

Special features

TBD

Other RTUs in the Brodersen Controls A/S RTU family

The range of small RTUs covers more than just the RTU32 types. The family covers also the below listed subfamily products:

RTU8

Compact RTU supporting Modbus RTU and with RTC and datalogging facilities.

RTU-COM

Compact microRTU with built-in modem of your choice. Alarm facilities.

RTU870

Utility RTU supporting IEC870-5-101 Slave protocol. Several I/O configurations possible.

RTU8E

RTU with Ethernet communication interface provide Modbus over TCP/IP communication. Built-in webserver for configuration.

For more info please use our document download facilities on our homepage www.brodersencontrols.com or contact your local distributor.