BRODERSEN

simplifying process

The RTU for small utility applications featuring EN/IEC60870-5-101 protocol

RTU870

RTU870 Compact Utility Outstation

TYPE	UCR-24IOA/Bxxyy.Dx	UCR-24IOC/Bxxyy.Dx	UCR-28IO/B04yy.Dx
INPUTS/OUTPUTS			
Digital inputs	16 (14 if Counter inputs are used).	16 (14 if Counter inputs are used).	16 (14 if Counter inputs are used).
Digital outputs	4 Relay outputs.	4 Relay outputs.	8 PNP outputs.
Counter inputs	2 S0.	2 S0.	2 S0.
Analogue inputs	4 process signal inputs.	4 process signal inputs.	4 process signal inputs.
Expansion	Via expansion modules.	Via expansion modules.	Via expansion modules.
Galvanic separation	Optocoupler/switched capacitor.	Optocoupler/switched capacitor.	Optocoupler/switched capacitor.
Indicators DI/DO	LEDs.	LEDs.	LEDs.
Terminals	Plug-in screw terminals.	Plug-in screw terminals.	Plug-in screw terminals.
COMMUNICATION			
Primary interface	RS232 or V23 modem.	RS232 or V23 modem.	RS232.
Protocol	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.
Speed	Max. 19200 baud.	Max. 19200 baud.	Max. 19200 baud.
Secondary interfaces	RS232 and TTY.	TTY.	No.
Protocols	IEC1107C and EN/IEC60870-5-102.	IEC1107C and EN/IEC60870-5-102.	-
Speed	Max. 9600 baud.	Max. 9600 baud.	-
Built-in real time clockSpeed	Yes.	Yes.	Yes.
POWER SUPPLY			
Built-in power supply	Yes, see options.	Yes, see options.	Yes, see options.
Built-in battey charger	Yes, see options.	Yes, see options.	Yes, see options.
Externel supply	Yes.	Yes.	Yes.
Loop supply	-	-	Yes, see options.
MOUNTING			
DIN rail	35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.
Housing	Anodized aluminium.	Anodized aluminium.	Anodized aluminium.
Dimensions: (HxWxD) excluding terminal blocks	80 x 213 x 62 mm.	80 x 213 x 62 mm.	80 x 162 x 62 mm.
CONFIGURATION			
Interface	RS232, RJ11 connector.	RS232, RJ11 connector.	RS232, RJ11 connector.
Config. software	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.
/B OPTIONS (/Bxxyy)			
COM option (xx)			
/B01yy	COM V23 LL MODEM 2/4 WIRE	COM V23 LL MODEM 2/4 WIRE	-
/B02yy	COM PSTN V32 DIAL-UP	COM PSTN V32 DIAL-UP	-
/B03yy	COM ISDN	COM ISDN	-
/B04yy	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE
Power Supply options (yy)			
/Bxx00	-	-	-
/Bxx10	-	-	PS (110-240V)
/Bxx11	-	-	PS (110-240V), LPS (24V/200mA)
/Bxx12	-	-	PS (110-240V), LPS (12V/400mA)
/Bxx20	PS (110-240V), UPS12V	PS (110-240V), UPS12V	PS (110-240V), UPS12V
/Bxx21	-	-	PS (110-240V), UPS12V, LPS(24V/200mA)
/Bxx22	-	-	PS (110-240V), UPS12V, LPS(12V/400mA)
/Bxx30	PS (24-48VDC)	PS (24-48VDC)	PS (24-48VDC)
/Bxx40	-	-	-
/Bxx50	PS (24-60VDC)	PS (24-60VDC)	PS (24-60VDC)
/Bxx60	PS (110-240V), UPS24V	PS (110-240V), UPS24V	PS (110-240V), UPS24V
Analogue inputs Dx/Px:			
D1:	0-10V/0-20mA	0-10V/0-20mA	0-10V/0-20mA
D2:	4-20mA	4-20mA	4-20mA
D3:	0-5V	0-5V	0-5V
D6:	0-20mA	0-20mA	0-20mA
D7:	0-2V	0-2V	0-2V
D8:	0-10mA	0-10mA	0-10mA
P1:	-	-	-
P2:	-	-	-

COM: Primary interface
PS: Built-in power supply.
UPS: Built-in battery charger.
LPS: Loop supply.
BS: Battery/solar panel supply

UCR-16DIO/B04yy.Px	UCR-32DI/B04yy.Dx	UCR-12I/B04yy.Dx	UCR-8DIO/B04yy.Px
16.	32.	8 (6 if Counter inputs are used).	8.
16 PNP outputs.	-	-	8 PNP outputs.
-	-	2 S0.	-
-	-	4 process signal inputs.	-
Via expansion modules.	Via expansion modules.	Via expansion modules.	Via expansion modules.
Optocoupler.	Optocoupler.	Optocoupler/switched capacitor.	Optocoupler.
LEDs.	LEDs.	LEDs.	LEDs.
Plug-in screw terminals.	Plug-in screw terminals.	Plug-in screw terminals.	Plug-in screw terminals.
RS232.	RS232.	RS232.	RS232.
EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.
Max. 19200 baud.	Max. 19200 baud.	Max. 19200 baud.	Max. 19200 baud.
No.	No.	No.	No.
-	-	-	-
-	-	-	-
Yes.	Yes.	Yes.	Yes.
Yes, see options.	Yes, see options.	Yes, see options.	Yes, see options.
-	-	-	-
Yes.	Yes.	Yes.	Yes.
-	-	-	-
35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.
Anodized aluminium.	Anodized aluminium.	Anodized aluminium.	Anodized aluminium.
80 x 108/162 x 62 mm.	80 x 108/162 x 62 mm.	80 x 108/162 x 62 mm.	80 x 108/162 x 62 mm.
RS232, RJ11 connector.	RS232, RJ11 connector.	RS232, RJ11 connector.	RS232, RJ11 connector.
UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.
-	-	-	-
-	-	-	-
-	-	-	-
COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE
PS (10-30V, NOT ISOLATED)	PS (10-30V, NOT ISOLATED)	PS (12VDC±10%, NOT ISOLATED)	PS (10-30V, NOT ISOLATED)
PS (110-240V)	PS (110-240V)	PS (110-240V)	PS (110-240V)
-	-	-	-
-	-	-	-
PS (110-240V), UPS12V	PS (110-240V), UPS12V	PS (110-240V), UPS12V	PS (110-240V), UPS12V
-	-	-	-
-	-	-	-
PS (24-48VDC)	PS (24-48VDC)	PS (24-48VDC)	PS (24-48VDC)
-	-	-	-
PS (24-60VDC)	PS (24-60VDC)	PS (24-60VDC)	PS (24-60VDC)
PS (110-240V), UPS24V	PS (110-240V), UPS24V	PS (110-240V), UPS24V	PS (110-240V), UPS24V
-	-	0-10V/0-20mA	-
-	-	4-20mA	-
-	-	0-5V	-
-	-	0-20mA	-
-	-	0-2V	-
-	-	0-10mA	-
-	-	-	-
-	-	-	-

UCR-10IOM/Bxxyy.Dx	UCR-10IOM/Bxxyy.Px	UCR-4DIOM/Bxxyy.Px	UCR-4DIM/Bxxyy.Dx
4 (2 if Counter inputs are used).	4 (2 if Counter inputs are used).	4 (2 if Counter inputs are used).	4 (2 if Counter inputs are used).
4 PNP outputs.	4 PNP outputs.	4 PNP outputs.	-
2 S0 compliant.	2 S0 compliant.	2 S0 compliant.	2 S0 compliant.
2 Process signal inputs.	2 Pt100 sensor inputs.	-	-
-	-	-	-
Optocoupler/Switched capacitor.	Optocoupler.	Optocoupler.	Optocoupler.
-	-	-	-
Plug-in screw terminals.	Plug-in screw terminals.	Plug-in screw terminals.	Plug-in screw terminals.
RS232, PSTN, GSM	RS232, PSTN, GSM	RS232, PSTN, GSM	RS232, PSTN, GSM
EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.	EN/IEC60870-5-101 Slave.
Max. 19200 baud.	Max. 19200 baud.	Max. 19200 baud.	Max. 19200 baud.
No.	No.	No.	No.
-	-	-	-
-	-	-	-
Yes.	Yes.	Yes.	Yes.
Yes, see options.	Yes, see options.	Yes, see options.	Yes, see options.
-	-	-	-
Yes.	Yes.	Yes.	Yes.
-	-	-	-
35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.
Anodized aluminium.	Anodized aluminium.	Anodized aluminium.	Anodized aluminium.
80 x 162 x 62 mm.	80 x 162 x 62 mm.	80 x 162 x 62 mm.	80 x 162 x 62 mm.
RS232, RJ11 connector.	RS232, RJ11 connector.	RS232, RJ11 connector.	RS232, RJ11 connector.
UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.	UTILTOOL32 or IOTOOL32Pro.
-	-	-	-
COM PSTN V32	COM PSTN V32	COM PSTN V32	COM PSTN V32
COM GSM DUAL BAND 900/1800MHz	COM GSM DUAL BAND 900/1800MHz	COM GSM DUAL BAND 900/1800MHz	COM GSM DUAL BAND 900/1800MHz
COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE	COM RS232 SERIAL INTERFACE
-	-	-	-
PS (110-240V)	PS (110-240V)	PS (110-240V)	PS (110-240V)
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
PS (24-48VDC)	PS (24-48VDC)	PS (24-48VDC)	PS (24-48VDC)
PS (12VDC), SOLAR/CHR CTRL.	PS (12VDC), SOLAR/CHR CTRL.	PS (12VDC), SOLAR/CHR CTRL.	PS (12VDC), SOLAR/CHR CTRL.
PS (24-60VDC)	PS (24-60VDC)	PS (24-60VDC)	-
0-10V/0-20mA	-	-	-
4-20mA	-	-	-
0-5V	-	-	-
0-20mA	-	-	-
0-2V	-	-	-
0-10mA	-	-	-
-	-50 - 100 C	-	-
-	-50 - 300 C	-	-

TELEMETRY FOR UTILITY APPLICATIONS

CONCEPT

Brodersen range of RTU870 Compact Utility Outstations allows you to transfer data from remote/isolated sites to a central control room via the utility protocol EN/IEC60870-5-101. The RTU870 can be used in medium and small utility applications where monitoring and control of up to 500 I/Os are required. I/Os can be expanded by using a wide range of available I/O expansion modules. The unit also has a serial IEC870-5-102 and IEC1107 mode C compliant meter interface, fitted as standard. Beside supporting the EN/IEC60870-5-101 Slave protocol the RTU870 can also perform simple local control tasks.

The outstations offers flexibility in hardware and software configurations, and are designed to meet your utility application requirements. The range and combinations of outstations listed in this selection guide are just a few of the hundreds of possible combinations that our RTU870 Utility Outstation offers. We are sure we can meet your requirements, too.

S0 compliant counter inputs and support for serial utility meter protocols makes it a true Utility Outstation and with the small, compact and ruggish design the RTU870 is the perfect choice for cost effective applications.

Configuration and setup is done with the Brodersen RTU870 software tool. It provides you with online monitoring and the programming facilities necessary to configure the EN/IEC60870-5-101 options in your RTU870.

Furthermore the RTU870 can be programmed to handle your local control requirements. Alternatively you can specify your requirements and let us configure the RTU870 - in this case it becomes a simple plug'n play RTU.

PRINCIPLE

The communication to the RTU870 uses on the utility protocol EN/IEN60870-5-101 which is based on a master/slave principle where a main station (master) can communicate with a large number of RTU870s (slaves).

A typical installation consists of an RTU870 Compact Outstation connected to meters (flow, electricity, etc.), sensors, electricity switching devices or other utility devices. The RTU870 communicates with a larger outstation or main station via serial interface or modem (Leased line V23, dial-up connection via PSTN or GSM). The communication protocol settings in each case is pre-defined at the design of the application, partly defined in the protocol interoperability settings.

At the central main station, all the data (I/O status, alarms, counter values, meter data, etc.) are used to provide the user with the nessesary information. The real time stamping on the data given by the RTU870 ensures useful and consistent data are logged.

Locally the RTU870 handles simple tasking such as monitoring temperature levels, safe shut down functions etc. which can work independently of the main station or other sub-stations.

TYPICAL RTU870 INSTALLATIONS

Transformer station

In this application, the RTU870 is monitoring alarms and other on/off status indications in medium and smaller transformer stations. Data from electricity meters is collected partly from the pulse counters and partly via a serial interface to more intelligent meters. The counter values and load profiles can be passed to the main station via the serial connection.

Pipeline monitoring

Along the pipeline each pump and flow monitoring station is equipped with an RTU870. All flow data and alarm data are collected and reported by the RTU870 to the main station. In addition, several environmental measurements such as temperature, rain and wind data can also be scanned and passed to the RTU on request.

Concept & Applications

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simplifying process

The **BRODERSEN** group has for more than 30 years supplied industrial process components including remote outstations, data loggers and communication modules for the process and automation industry.
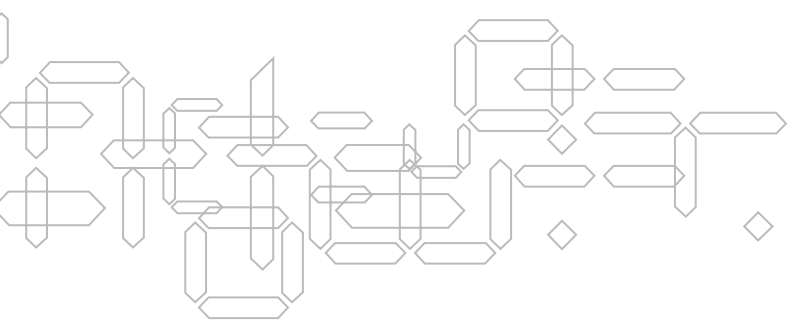
Denmark:
Brodersen Controls A/S
Betonvej 10
DK-4000 Roskilde
Tel.: +45 46 74 00 00
Fax: +45 46 75 73 36
bc@brodersencontrols.com
www.brodersencontrols.com

Germany:
Brodersen Automation GmbH
Düsseldorfer Str. 138
D-45481 Mülheim a. d. Ruhr
Tel.: +49 (208) 46954-0
Fax: +49 (208) 46954-50
ba@brodersen.de
www.brodersen.de

United Kingdom:
Brodersen Control Systems Ltd.
Canbury Business Park, Unit 11
Elm Crescent, Kingston upon Thames
Surrey KT2 6HJ
Tel.: +44 (0) 20 8546 4283
Fax: +44 (0) 20 8547 3628
bcs@brodersen.co.uk
www.brodersen.co.uk