TYPE	UCR-28IO/RTUzxx.Dx	UCR-16DIO/RTUzxx.P1	UCR-32DI/RTUzxx.D1
INPUTS/OUTPUTS			
Digital inputs	16 (inclucing 2 Counter/S01 input)	16	32
Digital outputs	8	16	-
Analogue inputs	4	-	-
Expansion	Via expansion modules.	Via expansion modules.	Via expansion modules.
Maximum number of I/O	496 digital or 100 analogue or combination of both.	496 digital or 100 analogue or combination of both.	496 digital or 100 analogue or combination of both.
Galvanic separation	Optocoupler.	Optocoupler.	Optocoupler.
Indicators DI/DO	Red LED inputs/yellow LED outputs.	Red LED inputs/yellow LED outputs.	Red LED inputs.
Built-in power supply	Yes (see options).	Yes (see options).	Yes (see options).
Built-in battery charger	Option.	Option.	Option.
12/24V loop supply	Yes (see options).	-	-
External 12V output	Yes.	Yes	Yes.
COMMUNICATION			
Protocol	MODBUS RTU (slave).	MODBUS RTU (slave).	MODBUS RTU (slave).
Data transmission	Serial cable, modem, radio and GSM.	Serial cable, modem, radio and GSM.	Serial cable, modem, radio and GSM.
Max. Baud rate	9600 Bit/sec.	9600 Bit/sec.	9600 Bit/sec.
Data format	8, 1, None.	8, 1, None.	8, 1, None.
Log capacity	480 Kbytes - resizeable 5-100%	480 Kbytes - resizeable 5-100%	480 Kbytes - resizeable 5-100%
Built-in real time clock	Yes.	Yes.	Yes.
Dial-up function	Yes, up to 50 telephone numbers.	Yes, up to 50 telephone numbers.	Yes, up to 50 telephone numbers.
Security	Password and Dial Back.	Password and Dial Back.	Password and Dial Back.
SMS	Yes, with GSM modem	Yes, with GSM modem	Yes, with GSM modem
MOUNTING			
DIN rail	35 mm symmetrical.	35 mm symmetrical.	35 mm symmetrical.
Housing	Anodized aluminium.	Anodized aluminium.	Anodized aluminium.
Plug-in input/output terminals	Yes.	Yes.	Yes.
RS232 serial port	Yes. 9 Pole Sub D male connector.	Yes. 9 Pole Sub D male connector.	Yes. 9 Pole Sub D male connector.
Dimensions: (HxWxD) excluding terminal blocks	80 x 162 x 62 mm.	80 x 162 x 62 mm. (RTU00: 80 x 108 x 62 mm.)	80 x 162 x 62 mm. (RTU00: 80 x 108 x 62 mm.)
PROGRAMMING			
Configuration with B-CONW or A-WARE / Upload/communication software	IOTOOL32 Pro	IOTOOL32 Pro	IOTOOL32 Pro
Maximum size of programmes	23 Kbyte.	23 Kbyte.	23 Kbyte.
RTUxx OPTIONS			
Additional RS232 port options (z)			
RTU1xx	MODBUS RTU Master	-	-
Power Supply options (xx)			
RTU00	-	PS (10-30V)	PS (10-30V)
RTU10	PS (110-240V)	PS (110-240V)	PS (110-240V)
RTU11	PS (110-240V), LPS (24V/200mA)	-	-
RTU12	PS (110-240V), LPS (12V/400mA)	-	-
RTU20	PS (110-240V), UPS	PS (110-240V), UPS	PS (110-240V), UPS
RTU21	PS (110-240V), UPS, LPS (24V/200mA)	-	-
RTU22	PS (110-240V), UPS, LPS (12V/400mA)	-	-
RTU30	PS (24-48V)	PS (24-48V)	PS (24-48V)
RTU40	-	-	-
Analogue inputs Dx:			
D1:	0-10V/0-20mA	-	-
D2:	4-20mA	-	-
D3:	0-5V	-	-
D6:	0-20mA	-	-
D7:	0-2V	-	-

PS = Built-in power supply.
UPS = Built-in battery charger for 12V battery.
LPS = 12/24V Loop supply.
BS = Battery supply interface incl. solar panel connection

UCR-12I/RTUzxx	UCR-8DIO/RTUzxx.P1	DESCRIPTION	PART NUMBER
Preliminary			
		CABLES	
8	8		
-	8	Null-modem, 9-pole female/female, 3m.	**UCC-561**
4	-		
Via expansion modules.	Via expansion modules.	Modem, 9-pole female/25-pole male.	**UCC-563**
496 digital or 100 analogue or combination of both.	496 digital or 100 analogue or combination of both.	Modem cable shielded 9 pole/9 pole 0,5m	**UCC-565**
Optocoupler.	Optocoupler.	Modem cable shielded 9 pole/9 pole 1,5m	**UCC-565/1,5**
-	Red LED inputs/yellow LED outputs	Modem cable std. 9pole/9 pole 1,5m	**UCC-567**
Yes (see options).	Yes (see options).	GSM modem cable 9 pole/15 pole	**UCC-568**
Option.	Option.		
-	-	Local bus, 10 cm.	**UCC-501**
Yes	Yes.	Local bus, 50 cm.	**UCC-502**
		Local bus, 100 cm.	**UCC-503**
		Local bus, 300 cm.	**UCC-504**
		SOFTWARE	
MODBUS RTU (slave).	MODBUS RTU (slave).		
Serial cable, modem, radio and GSM.	Serial cable, modem, radio and GSM.	Windows based IEC1131-3 programming software.	
9600 Bit/sec.	9600 Bit/sec.		
8, 1, None.	8, 1, None.		
480 Kbytes - resizeable 5-100%	480 Kbytes - resizeable 5-100%		
Yes.	Yes.	Object oriented programming software.	**IOTOOL32 Pro**
Yes, up to 50 telephone numbers.	Yes, up to 50 telephone numbers.		
Password and Dial Back.	Password and Dial Back.		
Yes, with GSM modem	Yes, with GSM modem	Drivers and tools, incl. DDE/DLL support.	
		COMPATIBLE PRODUCTS	
		SOFTWARE	
35 mm symmetrical.	35 mm symmetrical.		
Anodized aluminium.	Anodized aluminium.		
Yes.	Yes.		
Yes. 9 Pole Sub D male connector.	Yes. 9 Pole Sub D male connector.		
		ZenOn (Copa Data) • B. V. Electronic • Citect •	Tested by Brodersen
80 x 162 x 62 mm.	80 x 162 x 62 mm.	Factory Link • Fix32 • IgSS • InTouch •	Tested by Brodersen
(RTU00: 80 x 108 x 62 mm.)	(RTU00: 80 x 108 x 62 mm.)	InControl • Kepware • Labtech Notebook •	Tested by Brodersen
		Labtech Control • LabWIEW • Microsoft Excel	Tested by Brodersen
		• Microsoft Access • Microsoft Visual Basic	Tested by Brodersen
		MODEMS	
IOTOOL32 Pro	IOTOOL32 Pro	Brodersen UCM-8x • ACEEX 14400 • HORNET •	Tested by Brodersen
23 Kbyte.	23 Kbyte.	JEKYLL TEL • 32 (industrial modem) • LASAT	Tested by Brodersen
		Safire 560 • LASAT Unique • LEONARDO •	Tested by Brodersen
		Smartlink • 2M ELECTRONIC • US Robotics	Tested by Brodersen
		Sportster • Westermo TD-32 (industrial modem)	Tested by Brodersen
-	-	**GSM MODULE**	
		Brodersen UCM-91/92 • Wavecom WMO2	Tested by Brodersen
PS (12V DC +10%)	PS (10-30V DC)		
PS (110-240V)	PS (110-240V)	**RADIO**	
-	-		
-	-	Brodersen UCW-1x/5x • PASCALL Wireless 500	Tested by Brodersen
		• SATEL 2ASX	Tested by Brodersen
PS (110-240V), UPS	PS (110-240V), UPS		
-	-	**VARTA BATTERIES**	
-	-		
		ACCU CF12V/3AH • ACCU CF12V/6,5AH •	Tested by Brodersen
PS (24-48V)	PS (24-48V)	ACCU CF12V/12AH	Tested by Brodersen
BS	BS		
0-10V/0-20mA	-		
4-20mA	-		
0-5V	-		
0-20mA	-		
0-2V	-		

RTU8 Compact Outstation
Remote Data logger

EXPANSION MODULES

Expansion modules are clipped directly onto the DIN rail and connected to the RTU8 via a plug-in local bus cable.

	DI	DO	AI	AO
TYPE NUMBER	DIGITAL INPUTS	DIGITAL OUTPUTS	ANALOGUE INPUTS	ANALOGUE OUTPUTS
UCL-16DI.D1	16 24V	-	-	-
UCL-32DI.D1	32 24V	-	-	-
UCL-08DI.AI	8 230V	-	-	-
UCL-08DIO.P1	8 24V	8 PNP	-	-
UCL-16DIO.P1	16 24V	16 PNP	-	-
UCL-16DO.P1	-	16 PNP	-	-
UCL-32DO.N1	-	32 NPN	-	-
UCL-32DO.P1	-	32 PNP	-	-
UCL-08DO.R1	-	8 RELAY	-	-
UCL-08AI.Dx	-	-	8	-
Options D1			0-10V DC	
D2			4-20mA DC	
D3			0-5V DC	
D6			0-20mA DC	
UCL-08AI.Px	-	-	8	-
Options P1/P51/P11			-50-100°C (Pt-100/500/1000)	
P2/P52/P12			-50-300°C (Pt-100/500/1000)	
P3/P53/P13			-50-850°C (Pt-100/500/1000)	
UCL-08AI.J/K/R/S/T	-	-	8	-
Options J1/K1/K2/R1/S1/T1			Thermocouple sensors	
UCL-04AO.Dx	-	-	-	4
Options D1				0-10V DC
D2				4-20mA DC
D3				0-5V DC
D6				0-20mA DC
UCL-28IO.Dx	16 24V	8 PNP	4	-
Options D1			0-10V DC	
D2			4-20mA DC	
D3			0-5V DC	
D6			0-20mA DC	
UCT-35L.xxx				
Options 924	Supply inputs 12-48V AC/DC	Expansion operator panel. Two lines of 20 characters each. Up to 200 prestored messages. Up to 16 variable digits in each message. 4 keys for entries.		
230	115-240V AC			

TELEMETRY/REMOTE DATA LOGGING

CONCEPT

Brodersen telemetry equipment allows you to transfer process signals from remote/isolated sites to a central control room (PC) via radio, telephone (PSTN) or by mobile telephone network (GSM etc.).

The remote site could be just a few kilometres away or in another country, or indeed, another continent. It does not matter; telemetry can span the globe. Telemetry can be just as effective if the remote site is only a couple of hundred metres away, across a road or railway line.

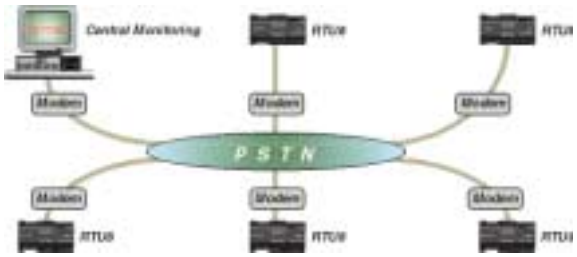
With its 480 Kbytes memory, the RTU8 Compact Outstation offers data logging facility and real-time clock for time stamping of historical events. Its user-friendly software and low cost now make it a viable option for many applications including installations within water, gas, railways, electricity, traffic and environmental telemetry systems.

The power of an ordinary PC together with the Brodersen RTU8, make small scale telemetry systems an economic reality.

PRINCIPLE

The communication to the RTU8 is based on a master/slave principle where a standard PC (master) can communicate with a large number of RTU8s (slaves).

A typical installation consists of an RTU8 Compact Outstation connected to the actual sensors and a modem or GSM module to handle the communication to the monitoring PC.



At the central monitoring station, the PC is equipped with communication software (IOTOOL32 Pro), which handles the communication to the RTU8 modules. The PC addresses an RTU8 by calling the relevant telephone number, and the RTU8 can likewise address the central monitoring station by calling the station's telephone number. Once communication is established, the data is transmitted in both directions as if the RTU8 was directly cabled to the PC.

Local tasking in the RTU8, independent of the communication to the central monitoring station, can be configured and downloaded from the PC using the software tools A-WARE or B-CONW, which are part of IOTOOL32 Pro. Each RTU8 works independently of other sub-stations.

TYPICAL RTU8 INSTALLATIONS

Water Supply/Treatment

In this application, the RTU8 is monitoring an unmanned pumping station which pumps ground water from boreholes to the treatment plant. Data, such as the amount of water pumped, running time of pumps, condition of filters etc., can all be monitored and logged. All data can be transferred to the control centre and, in the event of a failure, the RTU8 will contact the PC and report the problem.

Level Crossings

An RTU8 is monitoring the operation of a level crossing, and records the sequence of events that occur whenever a train passes the crossing. The time the traffic warning signals are activated, the barriers are raised and lowered, and the progress of trains relative to these actions, are all stored in the RTU's non-volatile memory. All events are being time stamped. If an incident should occur, all the relevant data can be uploaded to the central control room where the sequence of events can by analysed and produced in hard copy for use during any investigation.

Plant Monitoring and Fault Diagnosis – Remote Service Engineer.

A piece of plant can be fitted with an RTU8 to monitor and log its performance. In the event of a fault, a diagnosis can often be made by connection to the RTU8, without the need of a service engineer to attend the site. Such applications using the RTU8 include filtration plants, stand-by generators and waste water treatment.