

TYPE	UCR-28IO/RTUzxx.Dx	UCR-16DIO/RTUzxx.P1	UCR-32DI/RTUzxx.D1
INPUTS/OUTPUTS			
Digital inputs	16 (including 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	-	-



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 D2 D3 D6		0-10V DC 4-20mA DC 0.5V DC 0-20mA DC	
UCL-08AI.Px	-	-	8	-
Options	P1/P51/P11 P2/P52/P12 P3/P53/P13		-50-100°C (Pt-100/500/1000) -50-300°C (Pt-100/500/1000) -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 D2 D3 D6			0-10V DC 4-20mA DC 0.5V DC 0-20mA DC
UCL-28IO.Dx	16 24V	8 PNP	4	-
Options	D1 D2 D3 D6		0-10V DC 4-20mA DC 0.5V DC 0-20mA DC	
UCT-35L.xxx	-	-	-	-
Options	924 230	Supply inputs 12-48V AC/DC 115-240V AC	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.	

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.

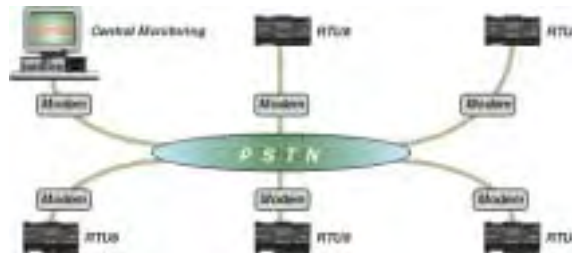
With its 480 Kbytes memory, the RTU8 Compact Outstation offers data logging facility and real-time clock for time stamping of historical events. Its user-friendly software and low cost now make it a viable option for many applications including installations within water, gas, railways, electricity,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