smart-house Controller

BH8-CTRLZ, BH8-CTRLZG

- ***Programmable smart-house controller***
- ***Option for built-in GSM Modem for monitoring and control via SMS***
- ***User-friendly configuration via Windows 98/2000/NT/XP software***
- ***Real-time, timer and logic functions***
- ***Analog set-point control and monitoring***
- ***Light and Rollerblind control functions***
- ***Alarm Monitoring***
- ***Option for Radio controlled clock for high real time accuracy***
- ***2 x RS232 ports for configuration and smart-house data read/write***
- ***1 x RS485 port for networking of up to 32 smart-house controllers***
- ***Modbus-RTU protocol***
- ***4 digital inputs / 4 digital outputs on-board***
- ***H8-housing for DIN-rail mounting (EN50022)***
- ***AC or DC power supply***

INPUT/OUTPUT SPECIFICATIONS

Serial Port		RS 232	
COM 1		115 kBaud	
COM 2		9600 Baud, adjustable	
Data format		8 bit	
COM 1, COM 2		No parity	
		1 stop bit	
		9-pole female SUB-D	
Pin assignment	TxD	Pin 2	
	RxD	Pin 3	
	GND	Pin 5	
Dielectric voltage			
Com.port - smart-house		≥ 2 kVAC (rms)	
Protocol		Modbus-RTU	
RS 485	Termination	Pin 27	When in use, connect to pin 31
	Fs-B	Pin 28	When in use, connect to pin 30
	Fs-A	Pin 29	When in use, connect to pin 31
	+ (B)	Pin 30	
	- (A)	Pin 31	
	GND	Pin 32	
	V+	Pin 33*)	
Protocol		Modbus-RTU	
smart-house Output		smart-house carrier	
Output voltage		8.2 V	
Current		< 130 mA	
Short-circuit protection		Yes	

Sequence time	
32 channels	38.6 ms
128 channels	132.3 ms
Digital outputs	4 PNP transistors
Function	Programmable
Output voltage V_{DD}	≤ 35 VDC
Output current	≤ 100 mA
Output voltage drop	≤ 2 V
Off-state leakage current	≤ 100 µA
Short-circuit protection	None
Built-in protective diodes	None
Dielectric voltage	
Output - smart-house	≥ 4 kVAC (rms)
Output - Input	200 V
Inductive loads	External noise suppression required
Inputs	
Digital	6 - 30 VDC
Voltage	ON > 5.5 V OFF < 1.5 V
Current	≤ 6 mA
Dielectric voltage	
Input - smart-house	≥ 4 kVAC
GSM Modem	
Siemens cellular engine	TC35
Dual Band	EGSM900 and GSM1800
Output power	Class 4 (2 W) EGSM900 Class 1 (1 W) GSM1800
Antenna connector	FME

*) V+ and GND may be used as supply for digital I/O's, if RS 485 is not used.

GENERAL SPECIFICATIONS

Real-time clock	
Accuracy	Better than ± 1 minute/month
Internal back-up time	Typ. 48 hours
Power ON delay	< 2.5 s
Indication for	
Supply ON	LED, green
ON Line	LED, yellow
COM 1	LED, red
COM 2	LED, red
RS 485	LED, red
GSM	LED, red
Environment	
Degree of protection	IP 20

Pollution degree	3 (IEC 60664)
Operating temperature	0° to +50°C (+32° to +122°F)
Storage temperature	-20° to +85°C (-4° to +185°F)
Humidity (non-condensing)	20 to 80% RH
Mechanical resistance	
Shock	15 G (11 ms)
Vibration	2 G (6 to 55 Hz)
Housing	H8-housing
Weight	640 g

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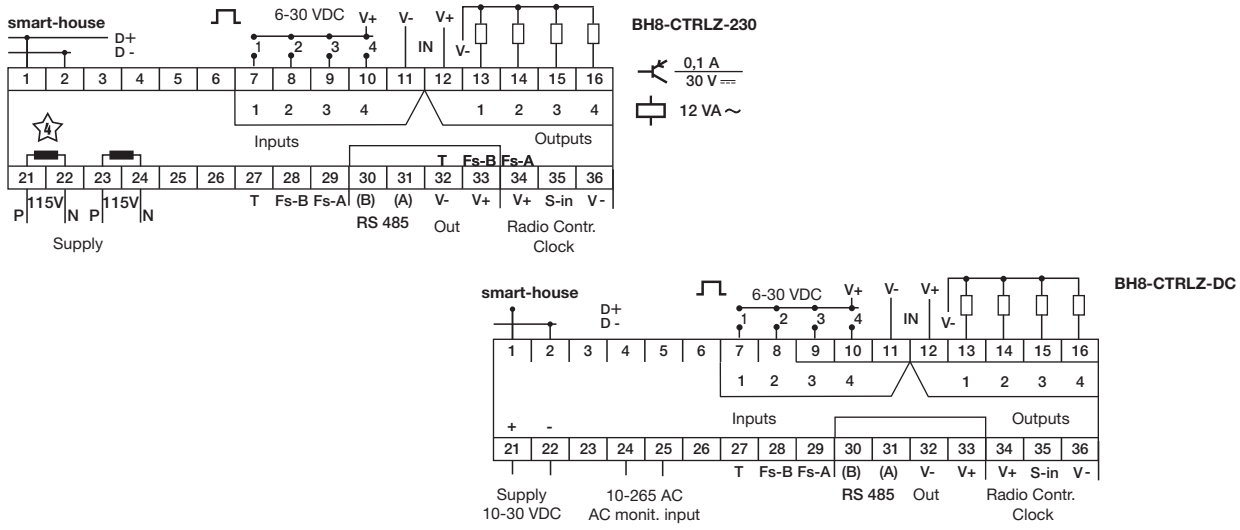
SUPPLY SPECIFICATIONS

Power supply	***AC-Types***	Overvoltage cat. III (IEC 60664)
Rated operational voltage		
through term. 21 & 24		
jumper term. 22 & 23		230 VAC ± 15% (IEC 60038)
Power on term. 21 & 23		
Neutral on term. 22 & 24		115 VAC ± 15% (IEC 60038)
Frequency		45 to 65 Hz
Rated operational power		Typ. 7 VA/3 W
Power dissipation		
BH8-CTRLZ		≤ 6 W
BH8-CTRLZG		≤ 7 W
Rated impulse withstand voltage	230 V	4 kV
	115 V	2.5 kV
Dielectric voltage		
Supply - smart-house		≥ 4 kVAC (rms)
Supply - Output		≥ 4 kVAC (rms)
Supply - Input		≥ 4 kVAC (rms)
Supply - Com. ports		≥ 4 kVAC (rms)
Heat dissipation		4 W
Power supply	***DC-Types***	Overvoltage cat. III (IEC 60664)
Rated operational voltage		
through term. 21 & 22		10 to 30 VDC
AC monitor		
terminal 24 and 25		- 50 Hz for synchronizing the clock - in case of voltage break (AC) the log will automatically update itself until 10 mSec before loss of current
Reverse polarity protection		Yes
Rated operational power		6 W
Power dissipation		
BH8-CTRLZ		≤ 6 W
BH8-CTRLZG		≤ 7 W
Inrush current		1 A
Rated impulse withstand volt.		800 V
Dielectric voltage		
Supply - smart-house		500 V
Supply - Output		200 V

WIRING DIAGRAM



MODE OF OPERATION

Intelligent functions
The BH8-CTRLZx-xxx smart-house controller is a programmable device which is particularly well suited for building automation applications due to the dedicated intelligent functions for lighting control, roller blind control, temperature control and alarm monitoring. In addition to that, the unit can be configured to perform real-time, logic and timer functions. The Windows-based configuration software is extremely easy to use due to the pre-programmed functions.

smart-house controller configuration
The smart-house controller must be configured by means of the user-friendly Windows-based configuration software. This is included in the package and has to be installed on a Win 95/98/2000/NT/XP PC. When the configuration is completed, the configuration is downloaded into the smart-house controller via COM1 (RS232 port). The configuration can be saved on a file, and it is also possible to upload the configuration from a smart-house controller.

GSM Modem Option
The BH8-CTRLZG-xxx smart-house controller has a built-in GSM Modem which enables monitoring and control of smart-house signals via SMS messages to/from mobile GSM telephones. There are 3 different ways to use SMS messaging:

• The smart-house controller can be programmed to send out event-based SMS messages. The event can be a channel switching ON or OFF, or it can be an analog signal crossing a set-point.

• Requests for status of digital or analog data can be sent and answered via SMS messages

• Status of digital channels can be controlled by sending commands via SMS messages

In order to make use of the GSM modem, the following is required:

• A SIM-card with the pin-code 9090 needs to be inserted into the slot in the front of BH8-CTRLZG-xxx. The SIM-card must be a 3V type.

MODE OF OPERATION cont.

• A GSM antenna needs to be connected to the FME connector on BH8-CTRLZG-xxx. If the unit is installed in a metal enclosure, the antenna must be installed outside the enclosure and connected to the smart-house controller via a cable (an antenna of this type is available as accessory).

A LED in the front of BH8-CTRLZG-xxx indicates the status of the GSM modem. By emitting different blink patterns, the LED indicates "connecting", "SIM-card missing", "No network found", "No response from modem", "SMS sent" and "SMS received".

Radio Controlled Clock Option
It is possible to equip the BH8-CTRLZx-xxx with an external antenna for radio-controlled clock in order to achieve high timing accuracy in connection with real-time functions and event time stamps. When the antenna ANT2 is used, the BH8-CTRLZx-xxx will receive accurate timing signals from the DCF77 transmitter located in Frankfurt a.M., Germany. The antenna outputs the demodulated signals to the smart-house controller via an open collector driver.
The DCF77 transmitter covers all of Central Europe since the transmission radius is at least 1000 km. For longer distance the use of ANT2 depends on receiver conditions. ANT2 connects to the BH8-CTRLZx-xxx terminals.

RS232 ports
The smart-house controller is provided with two RS232 ports (COM1 and COM2) which both can be used by PC's/PLC's for read/write of smart-house data using the Modbus-RTU protocol. COM1 is also used for download and upload of configuration files (created by the smart-house controller configuration software) and for firmware upgrades. COM1 has a fixed baudrate of 115 kBaud, while the baudrate of COM2 is adjustable.

RS485 port
The RS485 port enables networking of up to 32 smart-house controllers operating as Modbus-RTU slaves. This makes it possible for a PC or PLC operating as RS485 Modbus-RTU Master to read/write data from any of the 32 smart-house controllers. Each unit must be assigned a device address via the configuration software. In total, the RS485 network makes up to 4096 smart-house I/O points accessible from the PC or PLC. Find below a RS485 networking diagram.

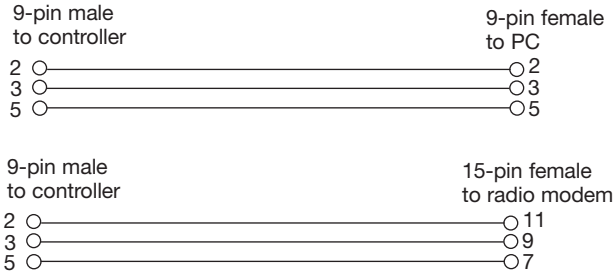
Modbus-RTU protocol
Using the Modbus-RTU commands 2 and 3 through COM1, COM2 or RS485 makes it possible to read any type of smart-house data (digital, analink or multiplexed analog). The status of digital and multiplexed analog data can be controlled via the commands 5, 6 and 16. See manual for memory map information.

On-board I/O
The smart-house controller has 4 digital inputs and 4 digital outputs on-board. These have been implemented to reduce the cost of remote stations with only a few signals (e.g. in connection with an SMS alarm system or radio modem remote stations). The onboard I/O's are used via the logic functions of the smart-house controller, where they can be assigned to specific channel addresses.

PIN ASSIGNMENT, COM1, COM2

Pin	Signal
2	T x D
3	R x D
5	Signal Ground

RS 232 CABLE

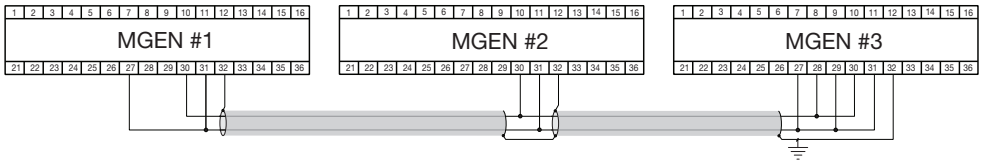


WIRING DIAGRAM

Example of a complete wiring diagram for a system with 3 smart-house controllers connected in a RS485 network.

The Cable
The RS485 communication cable is a shielded, twisted pair cable. The cable must be installed to pass close by each node. The maximum length of a single cable run is 1200 m.
The cable must be terminated at each end.
The termination resistor is connected to terminal 30 (B) and terminal 27 internally. Therefore pin 27 needs to be connected to pin 31 (A) in both of the cable endings in order to make the terminations effective.
In order to make the RS485 communication fail-safe, the connections 28 and 29 shall only be used in one cable end. By connecting pin 31 (A) to pin 29, and by connecting pin 30 (B) to pin 28, the communication is made effective.

Cable isolation
The communication cable must not be run in cable trays carrying power wiring nor in close proximity to power wiring.



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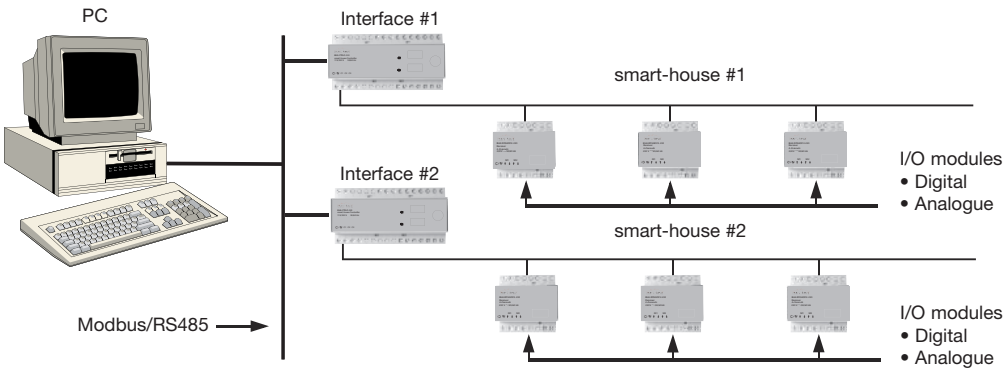
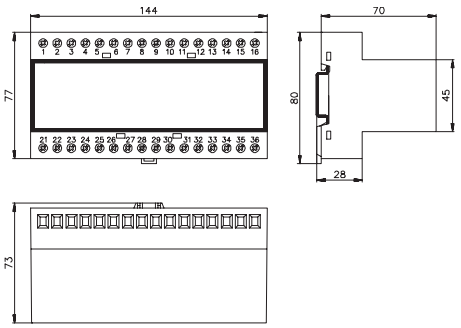
NETWORKING



DIMENSIONS

H8-housing



TYPE SELECTION

Supply	*Ordering no.*	*Ordering no. w. GSM telephone*
115/230 VAC	BH8-CTRLZ-230	BH8-CTRLZG-230
10-30 VDC	BH8-CTRLZ-DC	BH8-CTRLZG-DC

SCOPE OF SUPPLY

1 x smart-house Controller	BH8-CTRLZx-xxx
1 x User manual	MAN 15-029-223
1 x RS 232 cable	RS 232-9 M/9 F
1 x Configuration software	SW G 38xx15

ACCESSORIES

GSM Antenna 900 MHz	ANT1
Antenna for radio controlled clock	ANT2