

WZU-485B (UH50-485B)

Module for Landis+Gyr Ultraheat UH50 Heat Meter for RS485 Interface

Installation and Operating Guide

SAFETY INFORMATION

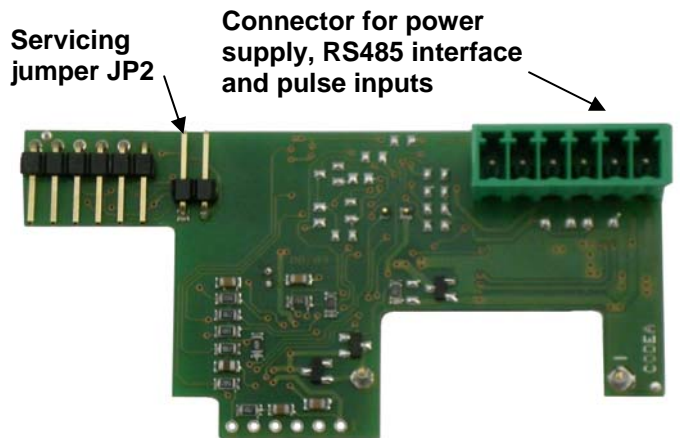
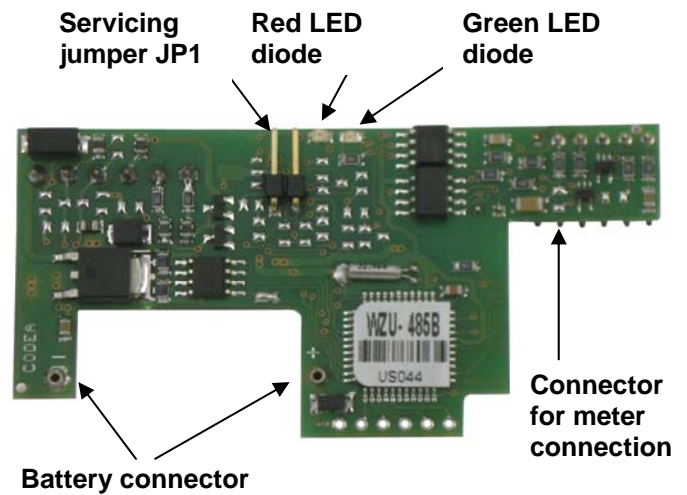
- When installing and handling the **WZU-485B** module, proceed carefully and respect safety precautions against electrostatic discharge.
- Before taking hold of the module, touch the metal part of the meter with your finger to release dangerous electrostatic charge.
- Route external cables always through the appropriate bush sleeves.
- Do not cut the bush sleeves shorter than necessary as this may reduce the level of protection.

1. Description of the module

WZU-485B is an add-on module for type Ultraheat UH50 meters. The module is intended for data transmission using the RS485 communication interface.

WZU-485B module is equipped with a servicing jumper JP1, using which an immediate readout of data from the meter can be initialized. Next to this jumper JP1, red and green indicator LED diodes indicating the activity of the module, are located.

The connector intended for connecting the RS485 interface and pulse inputs is placed on the module rear panel. This connector is also intended for supply of the module from an external DC voltage source. Also servicing jumper JP2 on the rear panel of the module is located. This second jumper (JP2) is intended for configuration of the module (when inserted) for the meters UH50 with 5.13 and lower.



2. Installation and assembly

WZU-485B module kit contains:

- module **WZU-485B** itself
- connector for RS485 interface and power supply
- 2x short-circuiting servicing jumper
- lithium battery 3,6V, type 14250

Module accessories



**Position
Module 1 Position
Module 2**

The Ultraheat UH50 meter provides two slots for connecting add-on modules. These slots are marked as “Module 1” and “Module 2” on the meter plate (visible after removing the cover).

The **WZU-485B** add-on module can be fitted into the meter only as **Module 1**.



2.1. Installation of module into meter

Install the module into the meter by inserting it into the guiding grooves, in the plastic bottom of the meter in the Module 1 slot.

Push the module carefully to the stop in its guiding grooves and insert it into the six pin meter connector.

By doing this, the mechanical installation of the **WZU-485B** module has been completed.

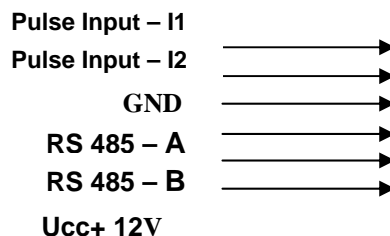


2.2. Connecting module communication interface

Create an opening in the rubber bushing of the meter and lead through the cables.

Use the indications to connect the communication interface cables, pulse input cables and module power supply into the screw connector and then insert this connector into its counterpart on the WZU-485B module plate.

From the inner side of the meter, fix the cables with the metal bracket to the plastic bottom of the meter and tighten with the screw.



The WZU-485B module is supplied from an external DC voltage source at +12V.

The connection of the module connector is indicated in the attached figure.

3. Technical data

Power supply	DC, +12V (8-24V)
Consumption	max. 15mA without RS485 bus load
Communication protocol	according to EN 60870 (MBUS), ModBUS - RTU
Transmission rate	2400 bps, 4800bps, 9600bps, 19200bps

Communication address	according to setup of Ultraheat meter or addr. 254, 255 for M-BUS, or addr. 0 for ModBUS	
Data updating	1 hour period - M-BUS protocol per command NORMALIZATION (0x40; received request confirmed immediately, data available within 5s) - ModBUS protocol per request of the data replies the old data packet and new data are available within 5s	
Command response time	within 100ms	
Readout time from meter	max. 2s (does not receive data from RS485)	
Releasing of RS485 bus	within 10ms from the last transmitted byte	
Number of pulse inputs	2 pulse inputs	
Number of WZU-485B per UH50	one WZU-485B module; connection only for slot 1 " Module 1 "	
Module battery life	up to 6 years of operation + 1 year of storage	
Backup	EEPROM 1x per hour in UH50	
Standard for pulse inputs	class IB according to EN1434-2	
Frequency of inputs	max. 10 Hz	
Pulse duration (low)	≥ 50 ms	
Pause between pulses (high)	≥ 50 ms	
Pulse value	0.01 liter / pulse to 10,000.00 liters / pulse, in steps of 0.01 liter / pulse	
UH50 display indication	display and output in m ³ , 7 digits; acc. to parameter setting with or without 1 decimal place	
Polarity	yes, must be correct, if transmitter is an "open collector" type	
Electrical isolation from the meter	yes, pulse inputs I1 and I2 with common grounding	
Output voltage	approx. 3.3 V	
Internal resistance	approx. 1.5 MΩ	
Source current	approx. 2 μA	
Pulse input closed (low)	Switching threshold	Low < 0.2 V Resistance < 50 kΩ
Pulse input open (high)	Switching threshold	High unconnected "collector" Resistance ≥ 6 MΩ
Connection	insulation stripping length 5 mm	
Connection options	- rigid or flexible, 0.25...0.75 mm ² - flexible with ferrules, 0.25...0.75 mm ²	
Cable length	max. 10 m the used cables should be as short as possible and their length must not exceed 10 m.	

4. Module activation and functionality

Location of the indication LED diodes and of jumper JP1 and JP2 in the module WZU-458B is shown on scheme, chapter 1.

Jumper JP1 function and LED diode (red/green) signalization is described further in the text.

Description of LED signalization:

1. Installing of the jumper JP1 – one to five short blinks - **Initialization of the module,**
2. Steady five sec blink using communication protocol **corresponding colour: M-BUS red diode / ModBUS green diode,**
3. Five short blinks – colour of blinks indicates **communication speed,**

4. Pause for period of 20 sec – first possibility is to **remove jumper JP1** and thereby put module in **operation** (or to carry out the initialization of the module), second possibility to **keep the jumper** connected and put the module to **stand-by mode**.

Ad 1) Data reading from the meter can be initialized by inserting and subsequent removing of jumper JP1 for period 2-5 sec. Red diode blinks with interval 1 sec during insertion of JP1. Initialization of the module and its operation is finished.

Ad 2) If jumper JP1 is inserted longer than 5 sec red or green diode (according to communication protocol) lights for 5 sec. Communication protocol would be changed if the jumper is removed during this period. This changeover is indicated by change of diode light colour.

Ad 3) Further, diode makes five short blinks representing communication speed. Red blinks indicate speed and green blinks supplement the red ones up to count of five blinks. Explanation of red blinks meaning:

- 1 blink (2400bps),
- 2 blinks (4800bps),
- 3 blinks (9600bps),
- 4 blinks (19200bps).

For example: speed of 9600 bps is indicated as 3 red blinks and two green blinks.

If change of communication speed is needed you must remove jumper JP1 just after the blink of requested communication speed. It means, if 19200 bps is requested remove jumper after fourth blink. Confirmation of communication speed will be confirmed by 1 sec blink of red diode.

If change of communication speed is needed and simultaneously type of communication protocol was carried out, it means JP1 was removed during 5 sec. light of LED diode, change of communication speed is not possible at the moment. Proceed as described. Insert back jumper JP1, let the diode indicate current communication speed and remove jumper at requested blink/communication speed indication.

Ad 4) Now there is 20 second brake to remove jumper JP1. Jumper JP1 must be removed after successful setting procedure to enable standard operation procedure.

The jumper JP1 is not inserted in active state of the module in the heat meter!

Module switches to stand-by mode if the jumper JP1 is not removed during 20 sec brake.

Subsequent start-up of the module could be carried out by removing of JP1, wait 2 seconds and insert the jumper for 2-5 sec again to make the initialization of the module.

After disconnecting jumper JP1, communication with the meter takes place (approx. 2-5 sec). Flashing of the red LED diode (for 1 sec) indicates correct data readout.

If no data are received from the meter, the red LED diode flashes twice briefly and if only incomplete data are received, the red LED diode flashes three times briefly. If the communication with the meter fails, communication and LED diode indication (for the first phase) is repeated 6 times and otherwise only 3 times.

If communication with the meter fails, the module sets zero data.

The second jumper (JP2) is intended for configuration of the module (JP2 inserted) for the meters UH50 with FW 5.13 and lower, and for the meters UH50 with FW 5.15 and higher (JP2 disconnected).

If the module will be installed to the meter with FW 5.15 and higher (when JP2 inserted!), the module will operate only with the limitation same for the FW 5.13 and lower, see chapter 5.

5. Description of communication protocol ModBUS

Values are in the binary form, unless otherwise indicated. 2-byte values – type signed and 4-byte type unsigned (absolute value of read parameter from the meter).

Communication address according to setup of the meter (address MB).

Data format of complete read message:

address in memory	value	number of a byte	format
1	Tp	2	0,01°C
2	Tv	2	0,01°C
3	dT	2	0,01K
4	Q	4	0,001m3/h
6	P	4	0,01kW
8	Echl	4	0,001 unit according to header, counter of cold energy
10	Time	4	M-BUS type F
12	F	2	error of the meter
13	header	2	units 0xABCD D- units E ,EM 0-GJ 1-MWh
14	E	4	0,001 unit according to header
16	V	4	0,001 m3
18	N	4	serial number
20	EM	4	0,001 unit according to header
22	VM	4	0,001 m3
24	A1	4	0,1 unit 0,1[m3] see UH50 papawin
26	A2	4	0,1 unit 0,1[m3] see UH50 papawin
28	I1	4	0,00001 unit per imp 10000,00[pi] see UH50 papawin
30	I2	4	0,00001 unit per imp 10000,00[pi] see UH50 papawin
32	N1	4	serial number A1
34	N2	4	serial number A2

Note: max I1 and I2 is 10 unit per imp

Logging data:

Address	value	number of a byte	format
24	A1	4	0,1 unit see UH50 papawin 0,1[m3]
26	A2	4	0,1 unit see UH50 papawin 0,1[m3]
28	I1	4	0,00001 unit per imp 10000,00[pi] see UH50 papawin
30	I2	4	0,00001 unit per imp 10000,00[pi] see UH50 papawin
32	N1	4	serial number A1
34	N2	4	serial number A2

Note: logging is only possible by one data item

Example of logging:

Address	Function	Starting Reg. Num		Reg.Num		byte count	data				CRC	
		0	28	0	2		4	0x00	0x0F	0x42	0x40	xx
xx	16	0	28	0	2	4	0x00	0x0F	0x42	0x40	xx	xx

Note: save data 0x000F4240 to the parameter I1 (10,00000 unit per imp)

If the module is installed to the meter Ultraheat UH 50 with FW 5.15 and higher and the module is configured for FW 5.15 and higher (jumper JP2 is disconnected), then it is possible to write-in the parameters I1,I2,N1,N2 only by Papawin software.

If the module is configured for FW 5.13 and lower (jumper JP2 is inserted), then it is possible write-in above mentioned parameters only by communication protocol ModBUS and these parameters will not be displayed on the meter.

It is possible to write-in these parameters using PC by RS485 interface (used simple reduction RS232/485).

Data reading

Data block is available for address 1 – 35.

Completeness of sent variables is not checked by the module, reading of just a part of multiregister variable.

Any address from the range could be chosen as a starting point.

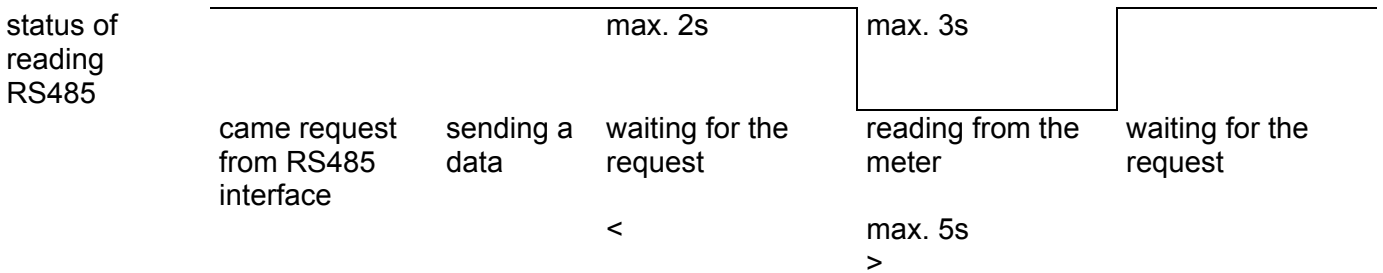
Response only at call (command) 03.

Data from the meter are read automatically at one-hour interval.

New data from the meter are read within 5 seconds after sending request for data block reading.

During reading of the data from the meter, module does not react on call from RS485.

Upon request of data block reading with address „0“ module reads out from the meter and message information is not processed.



No data read from the meter is processed if module is continuously appealed in interval shorter than 2 sec.

Module does not reply on data reading, only commands are carried out.

Data contained in message are recovered after reading from the meter including impulse response.

6. Description of communication protocol M-BUS

In case the pulse units are deactivated, the module replies by version of message according to an article no.1, and if the pulse units are activated, the module automatically replies by version of message according to an article no.2.

Only annotated data are filled. The rest of a message is zero values.

1. Version of message without pulse inputs:

```

0x68,0xF8,0xF8,0x68,
0x08,0x00,0x72,
0x00,0x00,0x00,0x00,
0xA7,0x32,0x02,0x04,0x00, 0x00,0x00,0x00,
0x09,0x74,0x00,0x09,0x70,0x00,
0x0C,0x0F,0x00,0x00,0x00,0x00, //E
0x0C, 0x14,0x00,0x00,0x00,0x00, //V
0x0B,0x2D,0x00,0x00,0x00, //P
0x0B,0x3B,0x00,0x00,0x00, //Q
0x0A,0x5A,0x00,0x00, //Tp
0x0A,0x5E,0x00,0x00, //Tv
0x0A,0x62,0x00,0x00, //dT
0x4C,0x14,0x00,0x00,0x00,0x00,
0x4C,0x0F,0x00,0x00,0x00,0x00,
0x0C,0x78,0x00,0x00,0x00,0x00, //N
0x89,0x10,0x71,0x00,
0x9B,0x10,0x2D,0x00,0x00,0x00,
0xDB,0x10,0x2D,0x00,0x00,0x00,
0x9B,0x10,0x3B,0x00,0x00,0x00,
0x9A,0x10,0x5B,0x00,0x00,
0x9A,0x10,0x5F,0x00,0x00,
0x0C,0x22,0x00,0x00,0x00,0x00,
0x3C,0x22,0x00,0x00,0x00,0x00,
0x7C,0x22,0x00,0x00,0x00,0x00,
0x42,0x6C,0x00,0x00,
0x8C,0x20,0x0F,0x00,0x00,0x00,0x00,
0x8C,0x30,0x0F,0x00,0x00,0x00,0x00,
0x8C,0x80,0x10,0x0F,0x00,0x00,0x00,0x00,
0xCC,0x20,0x0F,0x00,0x00,0x00,0x00,
0xCC,0x30,0x0F,0x00,0x00,0x00,0x00,
0xCC,0x80,0x10,0x0F,0x00,0x00,0x00,0x00,
0x9A,0x11,0x5B,0x00,0x00,
0x9A,0x11,0x5F,0x00,0x00,
0x9B,0x11,0x3B,0x00,0x00,0x00,
0x9B,0x11,0x2D,0x00,0x00,0x00,
0xBC,0x01,0x22,0x00,0x00,0x00,0x00,
0x8C,0x01,0x0F,0x00,0x00,0x00,0x00, //EM
0x8C,0x21,0x0F,0x00,0x00,0x00,0x00,
0x8C,0x31,0x0F,0x00,0x00,0x00,0x00,
0x8C,0x81,0x10,0x0F,0x00,0x00,0x00,0x00,
0x8C,0x01,0x14,0x00,0x00,0x00,0x00, //VM
0x04,0x6D,0x00,0x00,0x00,0x00, //time
0x0F,0x02,0x04,0x00,0x00,0x00,0x00,0x16
    
```

2. Version of message with pulse inputs:

```

0x68,0xF6,0xF6,0x68,
0x08,0x00,0x72,
0x00,0x00,0x00,0x00,
0xA7,0x32,0x04,0x04,0x00,0x00,0x00,0x00,
0x09,0x74,0x00,0x09,0x70,0x00,
0x0C,0x0E,0x00,0x00,0x00,0x00, //E
0x0C,0x14,0x00,0x00,0x00,0x00, //V
0x0B,0x2D,0x00,0x00,0x00, //P
0x0B,0x3B,0x00,0x00,0x00, //Q
0x0A,0x5A,0x00,0x00, //Tp
0x0A,0x5E,0x00,0x00, //Tv
0x0A,0x62,0x00,0x00, //dT
0x0C,0x78,0x00,0x00,0x00, 0x00, //N
0x89,0x10,0x71,0x00,
0x9B,0x10,0x2D,0x00,0x00,0x00,
0x9B,0x10,0x3B,0x00,0x00,0x00,
0x9A,0x10,0x5A,0x00,0x00,
0x9A,0x10,0x5E,0x00,0x00,
0x0C,0x22,0x00,0x00,0x00,0x00,
0x3C,0x22,0x00,0x00,0x00,0x00,
0x7C,0x22,0x00,0x00,0x00,0x00,
0x42,0x6C,0x00,0x00,
0x8C,0x20,0x06,0x00,0x00,0x00,0x00,
0x8C,0x30,0x06,0x00,0x00,0x00,0x00,
0x8C,0x80,0x10,0x06,0x00,0x00,0x00,0x00,
0xCC,0x80,0x10,0x06,0x00,0x00,0x00,0x00,
0x9A,0x11,0x5A,0x00,0x00,
0x9A,0x11,0x5E,0x00,0x00,
0x9B,0x11,0x3B,0x00,0x00,0x00,
0x9B,0x11,0x2D,0x00,0x00,0x00,
0xBC,0x01,0x22,0x00,0x00,0x00,0x00,
0x8C,0x01,0x0E,0x00,0x00,0x00,0x00, //EM
0x8C,0x21,0x06,0x00,0x00,0x00,0x00,
0x8C,0x31,0x06,0x00,0x00,0x00,0x00,
0x8C,0x81,0x10,0x06,0x00,0x00,0x00,0x00,
0x8C,0x01,0x14,0x00,0x00,0x00,0x00, //VM
0x04,0x6D,0x00,0x00,0x00,0x00, //time
0x0F,0x02,0x04,0x00,0x00,0x20,0x32,0x16
    
```

You will also find up-to-date information on heat meters in the INTERNET at: www.landisgyr.com

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Codea s.r.o
 Přemyslovců 30
 709 00 Ostrava
 www.codea.cz