

# OR-485

Opto-Isolated Repeater Datasheet.

## OPTO-ISOLATED CONVERTER / REPEATER

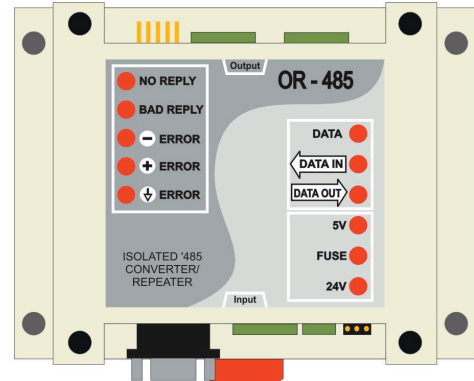
The OR-485 is an externally powered isolated converter/repeater with added diagnostic features. There are two input ports which can be jumper selected; one for PC (RS232), the other one is for upper level RS485 bus (RS485). Available are isolated, half-duplex, RS485 output ports to connect to the network. The OR-485 has the capability to detect common wiring mistakes on the output side and report them using MODBUS protocol or LED status.

Input: RS-232 or RS485 (jumper selected)

Output: Isolated RS485

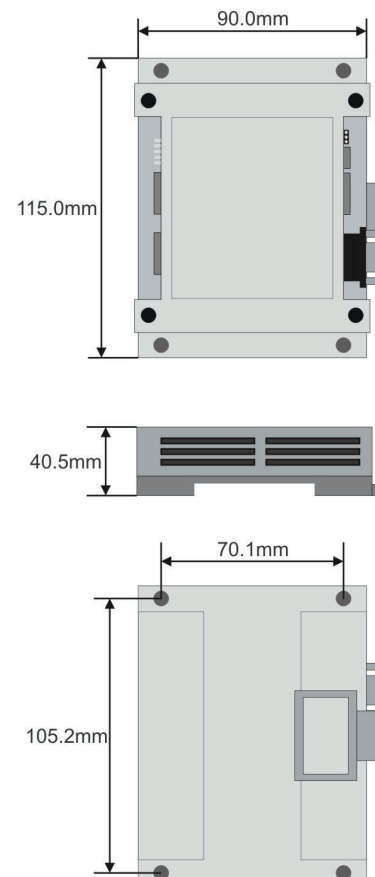
### Highlights:

- RS485 BUS diagnostic function
- MODBUS Communication Protocol
- 2 baudrate settings: 9600bps and 19200bps
- Diagnostic waveform display
- Communication status display
- Isolated power supply and opto isolated communication
- In-Circuit Serial Programming™ (ICSP™)



## TECHNICAL DATA

Supply voltage.....	12~24VDC ±20%
Power consumption.....	80mA at 24Vdc
Power Supply Protection .....	against polarity inversion
Dimensions.....	40.5mm H x 90.0mm W x 115.0mm D 1.59" x 3.54" x 4.53"
Ambient temperature:	
Operation.....	10-50°C (50-99°F)
Storage.....	2-50°C (35-120°F)
Material, enclosure.....	Flame proof plastic
Enclosure rating.....	IP31
Colour.....	Grey
Weight .....	180g



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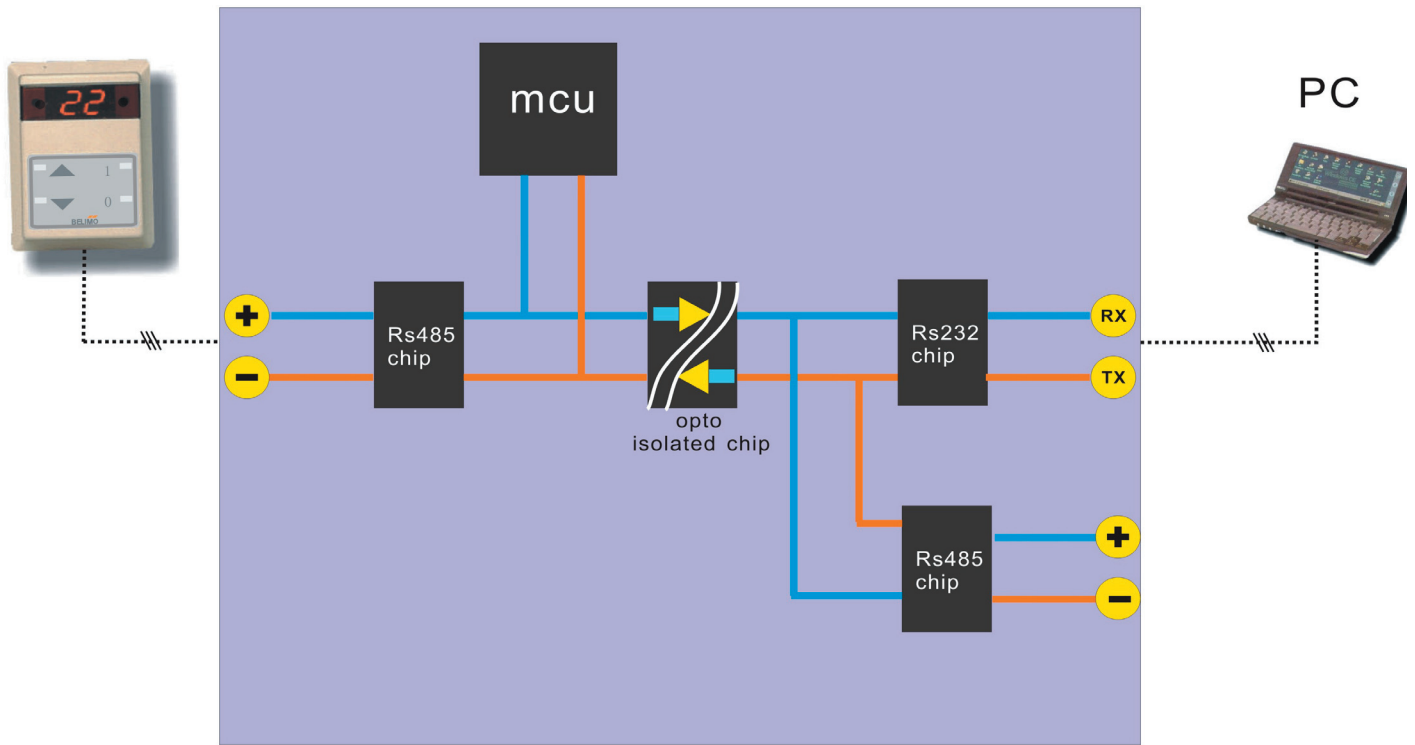
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## STRUCTURE

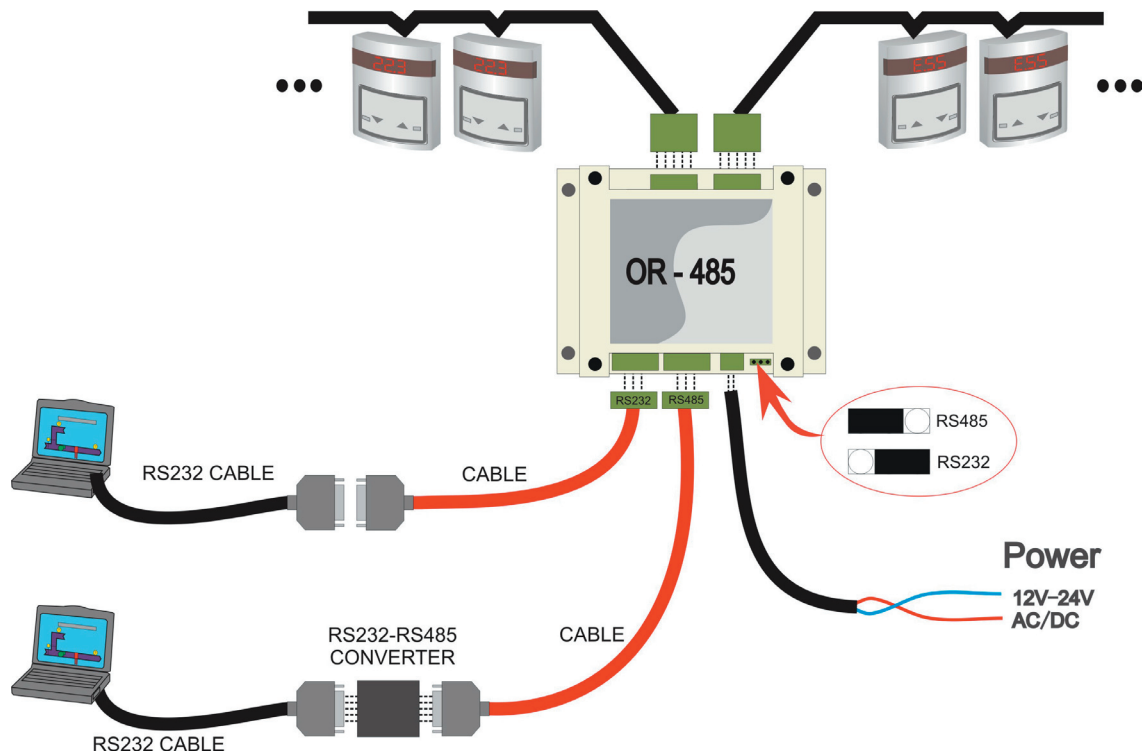
Thermostat

OR-485 Repeater

PC



## WIRING



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## DIAGNOSE AND DISPLAYING WAVEFORM

The OR - 485 can detect the RS485-bus signal, and analyze 3 channels( A, B, GND) voltage , judge it normal or error, and display the error information to the LED on the pannel at the same time . There are many registers in the MCU, and PC could read them through standard MODBUS commands. For example if PC send a command( enable getting waveform), OR - 485 will sample the data at once and when this process finished, it will enable the flag(waveform ready). PC can get the waveform when it find this flag be enabled.

## NETWORKING CAPABILITIES

The OR - 485 could connect PC directly, and PC also communicate with any thermostat on the RS485 BUS through this device, it could be used like repeater on the RS485 BUS.

## OR - 485 REGISTER LIST FOR THE COMMUNICATION

The system use standard Modbus communication protocol. There are several registers for the application that can be used for the communication with PC software.

### General purpose Register list

Note: When using the Modbus Poll software, addressing should be set to "Protocol Addresses (Base 0)" under the "Display" menu.

Address	Bytes	Range	Defaults	Description
0 to 3	4	-	-	Serial Number, 4 byte value, Read-only
4 - 5	2	-	-	Software Version – 2 byte value, Read-only
6	1	0 - 255	55	ADDRESS. Modbus device address,
7	1	0 - 255	-	Product Model
8	1	0 - 255	-	Hardware Revision
17 to 99				Blank, for future use

### System application Register list

Address	Bytes	Range	Defaults	Description
100 - 134	70	0 - 1024	0	Channel A waveform sample data, Read only, 1024 = 5V, 0 = 0V
135 - 169	70	0 - 1024	0	Channel B waveform sample data, Read only, 1024 = 5V, 0 = 0V
170	1	0 , 1	0	Channle A sample ready state, 1 is ok , 0 is not ready, Read only
171	1	0 , 1	0	Channle B sample ready state, 1 is ok , 0 is not ready, Read only
172	1	0 , 1	0	Channel A start sample data, 1 is enable, 0 is disable
173	1	0 , 1	0	Channel B start sample data, 1 is enable, 0 is disable
174	1	10 - 15	15	RS485 bus state, 10 GND error, 11 channel a error, 12 channel b error, 13 communication error, no input data from RS485 bus, 15 bus state is normal, read-only
175	1	96, 192	192	Baud rate setting, 96 is 9600, 192 is 19200

Notes: \*Byte format: start + 9 bits data + stop = 11 bits      \*Baud rate: 19200

#### Example to start a data capture :

1. enable the channel flag to seelct the channel for capture ( write the register address 172 or 173), only one can be active at a time
3. read the channel state and wait till the data is ready, ( register address 170 or 171 will show a '1' value when the data capture is complete)
4. Read the captured data from the storage registers (100-134 or 135 - 169). The voltage is 1024 for full scale, 5V.
5. If you are using the Modbus tool MBPoll, the menu item under 'display' should be set to 'protocol address 0', as opposed to "PLC address 1"