TDE Instruments

Digalox® DPM72 RS485/Modbus interface

Instruction manual (Rev-2024-05)

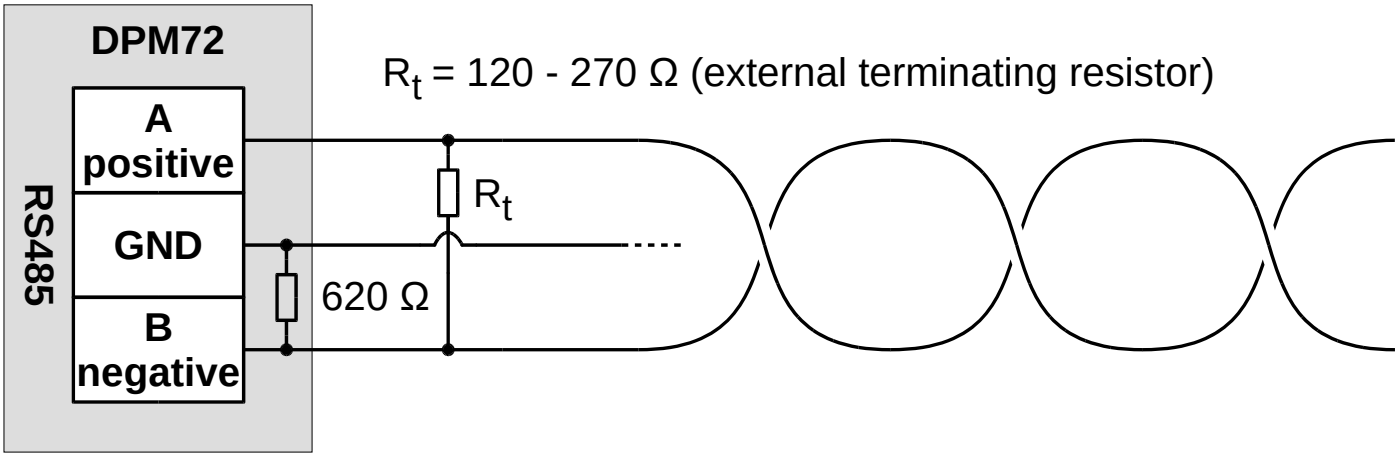
1. Description

The Digalox® DPM72 devices with Modbus interface can communicate as master or slave with other DPM72 devices or devices from other manufacturers via the Modbus RTU protocol. Values from the device are available as display values, values from other devices can be integrated into the display as remote values. In master mode, values can also be exchanged between two slaves with the help of a buffer.

2. Specification

- 8 data bits, 1 stop bit
- Baud rate: adjustable up to 500,000 baud
- Parity: none, even, odd, space, mark
- ¼ unit load, up to 128 participants
- External terminating resistor required

3. Electrical connections



4. Configuration – general

To configure a device, disconnect it from the Modbus network, short-circuit terminal J8 and connect the device to a PC using an RS485 USB adapter. "RS485 config" appears on the display (if available), the device can now be configured using the "Digalox® Manager" software. After completing the configuration, open J8 again. For devices with a display, all values that are to be transmitted must also be visible on the display. Devices without a display provide the first four display values. By setting jumpers J4-J6, other display values are provided accordingly.

5. Configuration – master

In master operating mode, up to 64 actions can be defined, which the master carries out periodically. They allow read or write access to the Modbus registers of the slaves. A delay between the messages can be set via the master delay parameter in order to ensure compatibility with slower slaves.

6. Byte order

By default, the devices transmit the values in the byte order 21436587. A different byte order can be selected for the slave operating mode. The master operating mode allows the byte order to be set for each action.

7. Modbus register

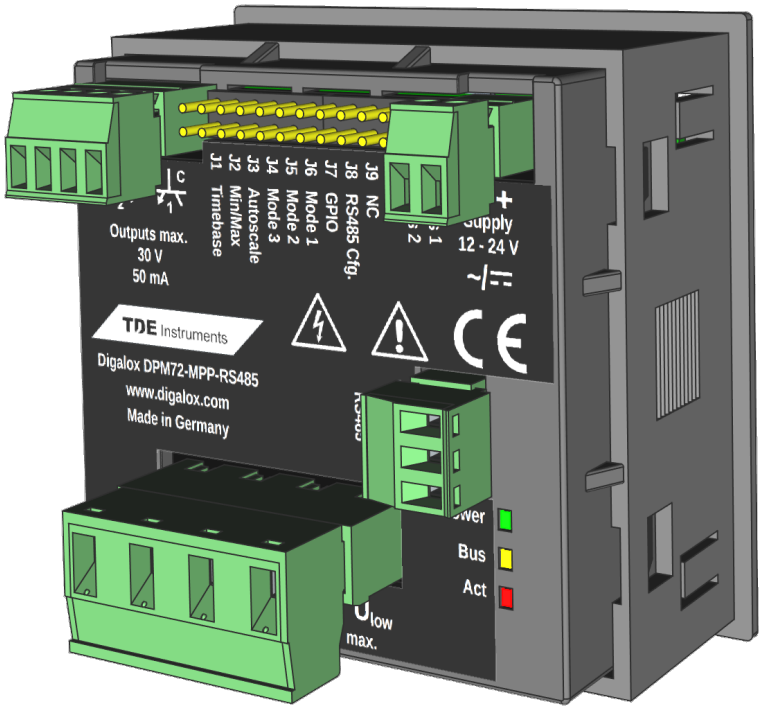
Read input registers – function code: 04

Address (hexadecimal)	Address (decimal)	Data type	Description
0x00	0	Float32, IEEE-754	display value 1
0x02	2	Float32, IEEE-754	display value 2
0x04	4	Float32, IEEE-754	display value 3
0x06	6	Float32, IEEE-754	display value 4
0x08	8	Int64	display value 1
0x0C	12	Int64	display value 2
0x10	16	Int64	display value 3
0x14	20	Int64	display value 4

Read / write holding registers – function code: 03 / 16

Address (hexadecimal)	Address (decimal)	Data type	Description
0x00	0	Float32, IEEE-754	remote value 1
0x02	2	Float32, IEEE-754	remote value 2
0x04	4	Float32, IEEE-754	remote value 3
0x06	6	Float32, IEEE-754	remote value 4
0x08	8	Int64	remote value 1
0x0C	12	Int64	remote value 2
0x10	16	Int64	remote value 3
0x14	20	Int64	remote value 4

8. Status LEDs



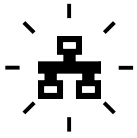
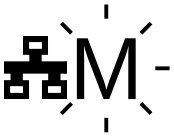
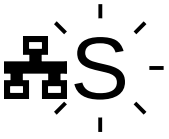
There are three LEDs on the rear of the device that indicate the device and bus state:

- Power (green)
- Bus (orange)
- Act (red)

State	Meaning
Power (green) shines	Device on
Bus (orange) shines or flashes	Bus active
Act (rot) flashes quickly or shines	Device sends
Bus (orange) and Act (rot) flashes with a 2 second pause [master only]	Slave does not respond

9. Communication status display

The state of the Modbus communication is shown on the display.

Display	State	Meaning
	Symbol flashes	Connection problems
	M (Master) flashes	Device communicates in master mode
	S (Slave) flashes	Device communicates in slave mode

10. Messages on the display (Master)

Display	Meaning	Solution
MB timeout Sx	Slave x does not respond	Check slave configuration, increase master delay
MB Sx	Wrong slave x responds	Check slave configuration
MB exc. Sx: y	Slave x responds with Modbus exception y	Read the error number in the slave manual or the Modbus standard
MB w/fc. Sx	Slave x responds with wrong function code	Check slave configuration
MB size Sx	Response from slave x is wrong size	Check slave configuration
MB res. Sx	Confirmation from slave x for function code 16 (write “Holding registers”) is incorrect	Check slave configuration
MB func. Sx	Slave x responds with an unsupported function code	Check slave configuration

11. Messages on the display (Slave) / Modbus exceptions:

Display	Meaning	Solution
MB illegal fc. y	Unsupported function code y received from the master; Modbus exception 1 answered.	Check master configuration
MB illegal data addr.	Invalid register access requested by master; Modbus exception 2 answered	Check master configuration

12. Contact details

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