

## M-BUS thermometer MPPS-2

## M-BUS Series

### User manual

**MPPS-2** is a microcontroller manometer with two inputs for connecting 4-20mA sensors or devices and additional m-bus interface. It is intended for measuring pressure in exact range and transfer data over m-bus, using standard m-bus protocol of communication. Device is with autonomous power supply coming from the grid. It can supply up to two separate input channels 4-20mA for measuring pressure from 0 to 16 bars. Data transmitted is the last measured value with precision of 0.01 bar, no historic data is supported.

Mounting is made on a standard M36 DIN-rail.

### 1. Main technical parameters

- |                                     |                                                |
|-------------------------------------|------------------------------------------------|
| - number of input channels          | - 2                                            |
| - power supply                      | - 55-250 Vac, 85-350Vdc                        |
| - permissible m-bus network voltage | - 12-42 Vdc                                    |
| - m-bus current consumption         | - 3 mA (2 m-bus loads)                         |
| - measurement range, bar            | - from 0 (MIN) to 16 (MAX) bar                 |
| - precision, bar                    | - 0.01 bar                                     |
| - storage temperature               | - -50÷+90 °C                                   |
| - humidity                          | - 40÷90 %                                      |
| - dimensions (H/W/D max)            | - 86/71/57mm                                   |
| - m-bus interface speed             | - 300/2400 bps, Odd/Even/No parity, 1 stop bit |
| - own weight                        | - < 170 g                                      |
| - initial m-bus settings            | - 2400bps, 8-E-1                               |

### 2. Mode of operation

MPPS-2 device turns automatically ON when power supply is provided. It enters in normal mode of operation and starting to feed both channels, no matter sensors connected or not. Status of each 4-20mA input is signaled with bicolor leds, having three different situations:

- Green - sensor connected, normal mode
- Yellow - sensor not connected
- Red - short circuit in this input

There is certain period of time (2 seconds) before a valid new measurement can be read through m-bus because analogue part must take enough measurements to achieve desired precision. If measurement is outside measurement range user will get as a value MIN or MAX of the range. All settings are made over m-bus, using Gineers or other provider standard M-bus software (if the device is not locked). MPPS-2 follows m-bus standard in any way and answers on the following telegrams:

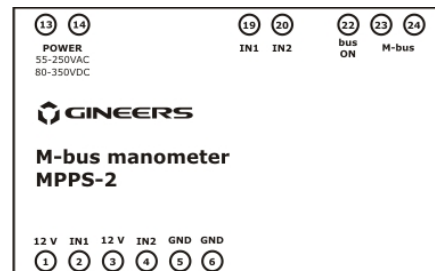
#### M-bus responses

- SND\_NKE -> responds with ACK (0xE5)
- REQ\_UD2 -> responds with long frame (START sequence, header and three data telegrams)
- Changing of primary address (from 1 to 250)
- Changing of secondary address
- Changing of baud rate
- Manufacture specific telegram according to calibration methods

REQ\_UD2 response can be downloaded for further clarification from [www.gineers.com/en/products\\_remote/products\\_remote\\_slave\\_mpps2.php](http://www.gineers.com/en/products_remote/products_remote_slave_mpps2.php)

M-bus unique address must be a number from 1 to 250, different for every connected m-bus device; otherwise there will be collisions and wrong readings. All devices come with default primary address of 1 and unique secondary address, written on MPPS-2 front panel. Setting primary m-bus address above 250 is not allowed since these addresses are reserved for special purposes. Primary and secondary addresses can be set in any time, until device is locked with special m-bus telegram. When locked, no further changing of Primary, Secondary address and baud rate are allowed.

Pressure values are given in m-bus telegram as Main value and storage number 1. Value is SIGNED integer, i.e. 4 bytes hexadecimal value. Precision is given by VIF byte, which in



this case is value in milibars. All devices are calibrated in factory for pressure measurement range and measure equally. Calibration is carried due to reference 4-20mA generator. If non-standard sensor/device/transmitter is used – new calibration can be done to have correct measurement.

### 3. Mounting and electrical wiring

MPPS-2 can be mounted on a standard M36 DIN-rail. All external connections are made with isolated wires, crossing 0.25mm<sup>2</sup>÷1.5mm<sup>2</sup>. Description of terminal blocks:

No terminal block	Description
23, 24	m-bus
13, 14	Power supply 55-250Vac or 85-350Vdc
1, 2	Input channel 1, for connecting 4-20mA sensor
3, 4	Input channel 2, for connecting 4-20mA sensor
5, 6	GND
Indication	
22	Presence/absence of m-bus
20	Status of Input 2
19	Status of Input 1

Maximal length of wires depends only on exact sensor used.

### 4. Putting MPPS-2 in operation

- step 1: mount MPPS-2 on a DIN-rail
- step 2: connect pressure sensors to MPPS-2 inputs (4-20mA)
- step 3: connect m-bus network cable
- step 4: connect and turn on Power supply to MPPS-2

If not short circuit device enters normal mode of operation and further parameterization (m-bus address, baud, etc.) can be made. Device has short circuit protection on following events:

- m-bus network
- power supply short circuit
- short circuit in any of the inputs

### 5. Inputs and pressure measurement

MPPS-2 has two separate independent channels for measuring voltage over 4-20mA interface. For this purpose analogue part has two current generators, with very small drift and temperature deviation. However, there can be small changes/drifts in elements of different MPPS-2 or different sensors/transmitters used. That is why special calibration is provided through m-bus interface. This is correction of linearity and comes in the form of correction factor at 20mA current on each input.

All MPPS-2 devices are calibrated in the factory according to reference 4-20mA generator, so they will measure exactly the same values. However, if there are deviations in the sensor response from normal values user can carry his own calibration with Gineers software.

### 6. Warranty

The warranty of the device is limited to 3 years from the date of sale. If the device shows any defect or malfunctions during that period, the manufacturer is obligated to repair the device in its own service for manufacturer's expense, or, if the repair is impossible, to replace the device with new one. The transportation costs to the manufacturer's service are due to the client. The warranty voids if this manual's instructions are not met, warranty seals are removed or the device was opened by unauthorized by the manufacturer personnel.

Serial number:.....

Sale date:.....

Sign:.....

(If no date of sale, date sale becomes production date, coded in device serial number. If no serial number – no warranty)

### 7. The package contains

- MPPS-2 - 1 pcs.
- User manual - 1 pcs.

### 8. Manufacturer

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