VOLTAGE MEASUREMENT TRANSMITTER with Modbus RTU

MB-3U-1

WARRANTY. The F&F products are covered by a warranty of 24 months from the date of purchase. Defective goods must be returned to the dealer or directly to us. More information on how to make a complaint can be found on the website.

Do not dispose of this device in the trash along with other waste! According to the Law on Waste, electrical and electronic equipment (EEE) and their waste are classified as waste of special nature, posing a threat to the environment and human health.

Purpose

MB-3U-1 transducer is designed to measure the voltage and to transmit the data via RS-485 port using MODBUS RTU protocol.

Operation

The module continuously measures the values of the input alternating voltage and input direct voltage (three-phase alternating current voltage or voltage circuits of direct current). Readout of recorded voltage and setting of all communication parameters are carried out through RS-485 port using the MODBUS RTU communication protocol. Power up is indicated by a green LED U light. Valid data exchange between the module and the second device is indicated by a yellow LED Tx light. The transducer measures the effective value of TrueRMS voltage, which ensures high accuracy even with distorted flow.

Registers

<table>
<thead>
<tr>
<th>Communication parameters</th>
<th>address</th>
<th>description</th>
<th>code</th>
<th>type</th>
<th>atr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 read actual base address</td>
<td>03</td>
<td>int</td>
<td>read</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 save a new base address: 1 to 238</td>
<td>06, 16</td>
<td>int</td>
<td>write</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Module can accept network addresses in the range 1 to 247. The network address of the module is set in a complex way: via MODBUS protocol to set the base address, the number in the range 1 to 238, and a multi-position switch to set address residual, i.e. the number from 0 to 9th. The sum of these two values determines the network address (e.g. 1 + 6 = 7, 70 + 3 = 73, 238 + 9 = 247). Multi-position code switch is located under the front elevation. Cladding removed using flat head screwdriver 3mm elevation gently undermining hooks on the sides of the enclosure. 3mm flat screwdriver to switch the rotary switch to the desired number, as a sub-address.

The speed value [bit/sec] is given in the form of an integer divided by 100, for example, 9600 [bit/sec].

Setting the network address

Module can accept network addresses in the range 1 to 247. The network address of the module is set in a complex way: using the MODBUS protocol to set the base address, the number in the range 1 to 238, and a multi-position switch to set address residual, i.e. the number from 0 to 9th. The sum of these two values determines the network address (e.g. 1 + 6 = 7, 70 + 3 = 73, 238 + 9 = 247). Multi-position code switch is located under the front elevation. Cladding removed using flat head screwdriver 3mm elevation gently undermining hooks on the sides of the enclosure. 3mm flat screwdriver to switch the rotary switch to the desired number, as a sub-address (range 0 to 9).

To set a new network address the sum of the values and partial base address, after setting the front elevation set up with special attention to the proper fitting of LEDs in the holes.
Installation
1. Set the address and communication parameters of the module.
2. Take OFF the power.
3. Put the module on the rail.
4. Power supply connect to joints 10-12 according to marks.
5. Signal output 11-11’ connect with output of MASTER device.
6. Connect the voltages measurement circuits to the corresponding inputs of the transducer (as in a given example).

Input/output description

Indirect measurement of voltage three-phase network using voltage transformers

Direct measurement of the DC circuits current

Reset communication settings
1. Take OFF the power
2. Remove the front panel.
3. Set “9” on the switch.
4. Take ON the power and within 3 sec switch to “1”.

Technical data

- supply voltage: 9÷30V DC
- maximum power consumption: 50mA
- TrueRMS measurement range:
  - AC voltage: 0÷285V
  - DC voltage: 0÷400V
- measurement error: 0.5%
- register readout precision: 1V
- processing error: ±0.5%
- sampling frequency: 10Hz
- port: RS-485
- communication protocol: Modbus RTU
- operating mode: SLAVE
- working temperature: -20÷50°C
- relative humidity: 85% dla +30°C
- terminal: 2.5mm² screw terminals
- tightening torque: 0.4Nm
- dimensions: 1 module (18 mm)
- protection level: IP20