In response to the command "readout ID" (code 17), we obtain a packet of information about the module: in the "Slave ID" code 0xEC; in the "Run Status Indicator" code 0xFF; in the "Additional Data" text "PU-1Mv1.2".

The values of the input voltage is stored in the register as an integer times the one (for example, the value of the register 230 corresponds to the voltage of 230V).

### Purpose

The transmitter MB-1U-1 is designed to measure the voltage and exchange data using the RS-485 port in accordance to MODBUS RTU protocol.

### Functioning

The module measures the value of input voltage (AC or DC voltage circuit). Reading the value of the input voltage and setting all parameters of communication are realised by the user via RS-485, using MODBUS RTU communication protocol.

Switching power supply voltage is indicated by a green LED U. The correct exchange of data between the module and the second device is indicated by a yellow LED Tx.

The transmitter measures the RMS voltage TrueRMS, which ensures high measurement accuracy even with distorted waveforms.

### Parameters of MODBUS RTU protocol

<table>
<thead>
<tr>
<th>Communication parameters</th>
<th>Protocol</th>
<th>MODBUS RTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work mode</td>
<td>SLAV</td>
<td></td>
</tr>
<tr>
<td>Port settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>X, N, 1/2, None/7/8, Even/ODD</td>
<td></td>
</tr>
<tr>
<td>Start bits</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Stop bits</td>
<td>1, 1/2</td>
<td></td>
</tr>
<tr>
<td>Range of network addresses</td>
<td>1-247</td>
<td></td>
</tr>
<tr>
<td>Range of base addresses</td>
<td>1-238</td>
<td></td>
</tr>
<tr>
<td>Range of residual addresses</td>
<td>switch:</td>
<td>0-9</td>
</tr>
</tbody>
</table>

### Command codes

- 1: Read actual base register
- 0x03: Read holding register
- 0x06: Read all or some retainable input values
- 0x05: Read input register
- 0x04: Write single register
- 0x16: Write multiple registers
- 0x17: Read I/O
- 0x11: Report slave (0)

### The maximum frequency of queries

384 Hz

### Setting the network address

The module can accept network addresses in the range 1-247. 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 9. 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). Set a new module address is 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.

### Registers

#### Communication parameters

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

Module can accept network addresses in the range 1-247. 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 9. The sum of these two values determines the network address (e.g., 1+6=7, 70+3=73, 238+9=247).

| 1       | read a speed of transmission | 06, 16 | int  | read |
| 2       | save a new speed of transmission | 06, 16 | int  | write |

The speed value [bit/sec] is given in the form of an integer divided by 100, for example, 9600/16=write 0x03 0x60 0x16; 115200/16=write 0x03 0x7c 0x16 (see figure 1353).

| 2       | read of actual parity value | 03   | int  | read |
| 3       | save a new parity value     | 06, 16 | int  | write |

Parity adopt appropriate meanings: None - 0, 1/2 - 1, ODD - 2

| 4       | read of actual number of stop bits | 03   | int  | read |
| 5       | save the number of stop bits   | 06, 16 | int  | write |

Number of stop bits accepts the importance of 1 or 2

#### Registry parameters

<table>
<thead>
<tr>
<th>address</th>
<th>description</th>
<th>code</th>
<th>type</th>
<th>atr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>readout of the measured voltage</td>
<td>04</td>
<td>int</td>
<td>read</td>
</tr>
</tbody>
</table>

The values of the input voltage is stored in the register as an integer times the one (for example, the value of the register 230 corresponds to the voltage of 230V).

In response to the command "readout ID" (code 17), we obtain a packet of information about the module: in the "Slave ID" code 0xEC; in the "Run Status Indicator" code 0xFF; in the "Additional Data" text "PU-1Mv1.2".

### Warranty

The F&F products are covered by a warranty of 24 months from the date of purchase. Effective only with proof of purchase. Contact your dealer or directly with us. More information how to make a complaint can be found on the website: www.fif.com.pl/reklamacje

Do not dispose of this device in the trash along with other waste! According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collection, as well as to store the occasion of the purchase of new equipment in accordance with the principle of old for new regardless of brand. Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.

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**phone/fax: (+48 42) 215 23 83 / 227 09 71 POLAND**
**http://www.fif.com.pl e-mail: biuro@fif.com.pl**
Assembly

General assumptions:
* Recommended use of shielded twisted pair signal cables for connecting the module to another device.
* Communication lines must be completed by termination module LT-04 (F&F).
* When using shielded cables grounded screens performed only on one side and as close to the device.
* Do not lay signal cables in parallel in close proximity to the line of high and medium voltage.
* Do not install the module in close proximity to high power electrical loads, electromagnetic measurement devices, devices with phase power regulation, and other devices that may introduce noise.

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

Technical data
- supply: 9-30VDC
- max. current load: 50mA
- measure TrueRMS range AC: 0÷285V
- DC: 0÷400V
- measure mistake: 0.5%
- reading registry precision: ±0.5%
- breakdown voltage IN->OUT: 3kV
- sampled frequency: 10Hz
- port communication protocol: Modbus RTU
- working temperature: -20°C÷50°C
- relative humidity: 85% for 30°C
- connection screw terminals: 2.5mm
- torque: 0.4N
- dimensions: 1 module (18mm)
- protection level: IP20