Each time the button is pressed, it changes the value of a single register, so it is possible to read how many times the button has been pressed since the last reading of its state.

Main configuration menu

All device settings can be made using the configuration menu buttons.

To enter the menu, hold down the [F2] button for approximately 8 seconds. The display will show 0000 indicating the service password input mode; the first digit will blink:

Enter the service password (default: 0000).

Buttons [F1/F3] are used to change the value of a given item, button [F2] confirms the set value of a given item of the password (the currently set item blinks). If you enter an incorrect password, an error message will appear:

he device will then switch to normal operation.

After entering the correct password, the first item of the main configuration menu will be displayed:

Exiting the menu will occur automatically after 30 seconds of inactivity or after selecting "EXIT" and confirming the selection with [F2]. After entering the correct password, it is remembered for 2 minutes after leaving the menu, which allows you to re-enter the settings (within 2 minutes from the last time you left the menu) without having to re-enter the password.

Configuration menu for communication parameters

The menu for configuration of communication parameters can be found in position No. 1 in the main configuration menu "CONN":

After confirming the selection with [F2] button, the menu for configuring the communication parameters is displayed.

Position No. 1 in the communication parameters configuration menu - "ADDR":

The "BAUD" position is used to set the communication speed of the RS-485 communication interface in the range shown below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Information on the display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 bps</td>
<td>12</td>
</tr>
<tr>
<td>2400 bps</td>
<td>24</td>
</tr>
<tr>
<td>4800 bps</td>
<td>48</td>
</tr>
<tr>
<td>9600 bps</td>
<td>96</td>
</tr>
<tr>
<td>19200 bps</td>
<td>192</td>
</tr>
</tbody>
</table>

Position No. 2 in the communication parameters configuration menu - "BAUD":

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 up to that end point of collection, as well as to store the devices of the purchase of new equipment (in accordance with this 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.

Description of the device MR-LED-T is a user panel for systems with Modbus RTU communication. It allows you to display the value read in the system and provides 3 buttons that can be used as inputs. The module is enclosed in a 36×72 mm panel housing with a 14 mm display in the front part.

The value shown on the display reflects the value from the Modbus register of the device. It is possible to display numbers from -999 to 9999. The display of fractional numbers is possible by setting the position of the comma anywhere by the corresponding register. The buttons on the front of the device can be used as control signals.

Each time the button is pressed, it changes the value of a single register, so it is possible to read how many times the button has been pressed since the last reading of its state.

Main configuration menu

All device settings can be made using the configuration menu buttons.

To enter the menu, hold down the [F2] button for approximately 8 seconds. The display will show 0000 indicating the service password input mode; the first digit will blink:

Enter the service password (default: 0000).

Buttons [F1/F3] are used to change the value of a given item, button [F2] confirms the set value of a given item of the password (the currently set item blinks). If you enter an incorrect password, an error message will appear:

he device will then switch to normal operation.

After entering the correct password, the first item of the main configuration menu will be displayed:

Exiting the menu will occur automatically after 30 seconds of inactivity or after selecting "EXIT" and confirming the selection with [F2]. After entering the correct password, it is remembered for 2 minutes after leaving the menu, which allows you to re-enter the settings (within 2 minutes from the last time you left the menu) without having to re-enter the password.

Configuration menu for communication parameters

The menu for configuration of communication parameters can be found in position No. 1 in the main configuration menu "CONN":

After confirming the selection with [F2] button, the menu for configuring the communication parameters is displayed. Position No. 1 in the communication parameters configuration menu - "ADDR":

The "ADDR" position is used to set the address of the device as seen by the Modbus RTU protocol in the range 1-247. After pressing the [F2] button, set the expected value using the [F1/F3] buttons and then confirm the set value with the [F2] button.
After pressing the [F2] button, set the expected value using the [F1/F3] buttons and then confirm the set value with the [F2] button. According to the Modbus RTU standard, 2 stop bits are sent if the parity check is deactivated. When the parity check is enabled, 1 stop bit is sent:

<table>
<thead>
<tr>
<th>Data format without parity check</th>
<th>Data format with parity check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start bit 8 data bits 2 stop bits</td>
<td>Start bit 8 data bits Parity bit 1 stop bit</td>
</tr>
</tbody>
</table>

Position No. 4 of the communication parameters configuration menu - "BACK":

The "BACK" item is used to exit the configuration menu for configuration of communication parameters.

---

### Configuration menu for general settings

The menu for configuring general settings can be found in position No. 2 in the main configuration menu "OTH".

After confirming the selection with the [F2] key, the general configuration settings menu will be displayed. Position No. 1 of the general settings configuration menu - "VERS":

The "VERS" position is used to check the software version of the device. After pressing the [F2] button, the device software version will be displayed. Pressing the [F2] button again will return to the general settings configuration menu.

Position No. 2 of the general settings configuration menu - "FACT":

The "FACT" position is used to restore the factory settings of the device. After pressing the [F2] button, the device will enter the service password entry mode. After entering the correct password, use the [F1 / F3] buttons to select the desired action according to the following values:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Information on display</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES – reset the device to factory settings</td>
<td></td>
</tr>
<tr>
<td>NO – no action</td>
<td></td>
</tr>
</tbody>
</table>

And then confirm the set value by pressing [F2]. Position No. 2 of the general settings configuration menu - "PASS":

The "PASS" position is used to change the service password. After pressing the [F2] button, the device will enter the mode of entering the current service code. After entering the correct password, 4 zeros will be displayed - use the [F1/F3] and [F2] buttons to enter the new password. If the operation is carried out correctly, the message "SAVE" will be displayed confirming the change of the password:

After changing the service code, the main configuration menu will exit. You will be able to enter the menu again after entering a new password.
Position No. 3 of the general settings configuration menu - “LED”:

The “LED” position is used to enable or disable Modbus communication signaling by means of the Tx diode on the front panel of the device.

After pressing the [F2] button, set the expected value using the [F1/F3] buttons and then confirm the set value with the [F2] button.

Position No. 4 of the general settings configuration menu - “BACK”:

The “BACK” position is used to exit the general settings configuration menu.

Restoring factory settings

It is possible to restore the device to its factory settings, for example in case of loss of the service password.

To do this, turn on the power of the device while holding down the [UP] and [DOWN] buttons and keep them pressed for 30 seconds from the moment the power is turned on. The factory settings reset will be confirmed by a test of the display:

---

**Table 1. Default settings of the device**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modbus address</td>
<td>1</td>
</tr>
<tr>
<td>Communication speed</td>
<td>9600</td>
</tr>
<tr>
<td>Parity</td>
<td>off</td>
</tr>
<tr>
<td>Communication diode</td>
<td>on</td>
</tr>
<tr>
<td>Service password</td>
<td>0000</td>
</tr>
</tbody>
</table>

---

**Technical data**

- Power supply: 9÷30 V AC/DC
- Max. current consumption: 100 mA
- Communication parameters:
  - Speed (adjustable): 1200÷115200 bit/sec
  - Data bits: 8
  - Stop bits: 1 or 2
  - Parity check: EVEN/ODD/NONE
  - Address: 1÷247
  - Communication protocol: Modbus RTU
  - Working temperature: -10÷40°C
  - Terminal: 2.5 mm² disconnectable terminals
  - Tightening torque: 0.4 Nm
  - Display height: 14 mm
  - Dimensions: 72×36×72 mm
  - Mounting hole dimensions: 67.5×32.5 mm
  - Mounting panel:
    - Protection level: IP20

**CE declaration**

Copy of the CE declaration can be downloaded from the website: www.fif.com.pl from the product subpage.

---

**Mounting**

1. The device should be mounted in a cut-out prepared according to the following figure:

2. The device should be inserted from the front into the hole.

3. Then attach the fastening elements to the sides of the device from behind and stabilize the device with them.

---

Position No. 3 of the general settings configuration menu - “LED”:

The “LED” position is used to enable or disable Modbus communication signaling by means of the Tx diode on the front panel of the device.

After pressing the [F2] button, set the expected value using the [F1/F3] buttons and then confirm the set value with the [F2] button.

Position No. 4 of the general settings configuration menu - “BACK”:

The “BACK” position is used to exit the general settings configuration menu.

Restoring factory settings

It is possible to restore the device to its factory settings, for example in case of loss of the service password.

To do this, turn on the power of the device while holding down the [UP] and [DOWN] buttons and keep them pressed for 30 seconds from the moment the power is turned on. The factory settings reset will be confirmed by a test of the display:

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**Table 1. Default settings of the device**

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<td>on</td>
</tr>
<tr>
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<td>0000</td>
</tr>
</tbody>
</table>

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**Technical data**

- Power supply: 9÷30 V AC/DC
- Max. current consumption: 100 mA
- Communication parameters:
  - Speed (adjustable): 1200÷115200 bit/sec
  - Data bits: 8
  - Stop bits: 1 or 2
  - Parity check: EVEN/ODD/NONE
  - Address: 1÷247
  - Communication protocol: Modbus RTU
  - Working temperature: -10÷40°C
  - Terminal: 2.5 mm² disconnectable terminals
  - Tightening torque: 0.4 Nm
  - Display height: 14 mm
  - Dimensions: 72×36×72 mm
  - Mounting hole dimensions: 67.5×32.5 mm
  - Mounting panel:
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Position No. 3 of the general settings configuration menu - “LED”:

The “LED” position is used to enable or disable Modbus communication signaling by means of the Tx diode on the front panel of the device.

After pressing the [F2] button, set the expected value using the [F1/F3] buttons and then confirm the set value with the [F2] button.

Position No. 4 of the general settings configuration menu - “BACK”:

The “BACK” position is used to exit the general settings configuration menu.

Restoring factory settings

It is possible to restore the device to its factory settings, for example in case of loss of the service password.

To do this, turn on the power of the device while holding down the [UP] and [DOWN] buttons and keep them pressed for 30 seconds from the moment the power is turned on. The factory settings reset will be confirmed by a test of the display:

---

**Table 1. Default settings of the device**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</tr>
<tr>
<td>Communication diode</td>
<td>on</td>
</tr>
<tr>
<td>Service password</td>
<td>0000</td>
</tr>
</tbody>
</table>

---

**Technical data**

- Power supply: 9÷30 V AC/DC
- Max. current consumption: 100 mA
- Communication parameters:
  - Speed (adjustable): 1200÷115200 bit/sec
  - Data bits: 8
  - Stop bits: 1 or 2
  - Parity check: EVEN/ODD/NONE
  - Address: 1÷247
  - Communication protocol: Modbus RTU
  - Working temperature: -10÷40°C
  - Terminal: 2.5 mm² disconnectable terminals
  - Tightening torque: 0.4 Nm
  - Display height: 14 mm
  - Dimensions: 72×36×72 mm
  - Mounting hole dimensions: 67.5×32.5 mm
  - Mounting panel:
    - Protection level: IP20

**CE declaration**

Copy of the CE declaration can be downloaded from the website: www.fif.com.pl from the product subpage.
Communication parameters (default settings)

Protocol: Modbus RTU
Operating mode: 1011
Range of network addresses: 1-247

Command codes:
1: Read registers group
2: Read a single register
10: Write a single register
16: Write a multiple registers

Port settings (default settings)

Communication speed: 1200/2400/4800/9600/19200/38400/57600/115200
Data bits: 8
Parity: "NONE/Even/Odd"
Stop bits: 1
Max. query frequency: 15 Hz

Modbus registers

<table>
<thead>
<tr>
<th>Address</th>
<th>Description</th>
<th>Type</th>
<th>Access*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000</td>
<td>Value shown on the display (minimum -65536, maximum +65535)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0001</td>
<td>Duty percentage (minimum 0 – no duty, maximum 10 – full duty)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0002</td>
<td>Current drain of E3 LED (A)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0003</td>
<td>Counter of F1 button press (Number of button presses, resetting after entering 0, other values prohibited)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0004</td>
<td>Current drain of F2 button (A)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0005</td>
<td>Counter of F2 button press (Number of button presses, resetting after entering 0, other values prohibited)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0006</td>
<td>Counter of F3 button press (Number of button presses, resetting after entering 0, other values prohibited)</td>
<td>int</td>
<td>R/W</td>
</tr>
</tbody>
</table>

Communication settings

<table>
<thead>
<tr>
<th>Address</th>
<th>Modbus address (minimum 0, maximum 247)</th>
<th>Type</th>
<th>Access*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0100</td>
<td>Operating mode (0 – manual, 1 – slave, 2 – master)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0101</td>
<td>Communication speed (1 1200 bps, 2 2400 bps, 3 4800 bps, 4 9600 bps, 5 19200 bps, 6 38400 bps, 7 57600 bps, 8 115200 bps)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0102</td>
<td>Data bits (8)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0103</td>
<td>Parity check (0 – Even, 1 – Odd, 2 – None)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0104</td>
<td>Stop bits (1 – one stop bit, 2 – two stop bits)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0105</td>
<td>Default configuration (0 – leaves the default configuration)</td>
<td>int</td>
<td>R/W</td>
</tr>
</tbody>
</table>

Other registers

<table>
<thead>
<tr>
<th>Address</th>
<th>Description</th>
<th>Type</th>
<th>Access*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0200</td>
<td>Modbus address (minimum 0, maximum 247)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0201</td>
<td>Password to access the menu from the keyboard (minimum 0, maximum 9999)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0202</td>
<td>Operating time from power on [LSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0203</td>
<td>Operating time from power on [MSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0204</td>
<td>Serial number [MSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0205</td>
<td>Serial number [LSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0206</td>
<td>Manufacturing date (5 bits – day, 4 bits – month, 7 bits – year [without 2000])</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0207</td>
<td>Software version (10 – 1.0 etc.)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0208</td>
<td>LED control (0 – the LED does not flash during Modbus communication, 1 – LED flashes during Modbus communication)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x0209</td>
<td>Password to access the menu from the keyboard (minimum 0, maximum 9999)</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x020A</td>
<td>Operating time from power on [LSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
<tr>
<td>0x020B</td>
<td>Operating time from power on [MSW] Value is calculated as MSW * 65536 + LSW</td>
<td>int</td>
<td>R/W</td>
</tr>
</tbody>
</table>

*R – read only; R/W – read and write

CAUTION!
Setting the parity to ODD or EVEN automatically sets the communication to work with one stop bit. If there is no odd parity (RING), 2 stop bits are automatically set.