

WARRANTY. The F&F products are covered by a warranty of the 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 compliant 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.

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:



The 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.

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






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

Parameter	Information on the display
1200 bps	
2400 bps	
4800 bps	
9600 bps	
19200 bps	

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Parameter	Information on display
38400 bps	
57600 bps	
115200 bps	

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. 3 of the communication parameters configuration menu - "PARI":



The "PARI" position is used to set the RS-485 communication interface parity control bits in the range of the values shown below:

Parameter	Information on display
Parity check off	
Parity bit	
Odd parity bit	

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:

Data format without parity check

Start bit	8 data bits	2 stop bits
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Data format with parity check

Start bit	8 data bits	Parity bit	1 stop bit
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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 "OTHR":



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:

Parameter	Information on display
YES – reset the device to factory settings	
NO – no action	

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:

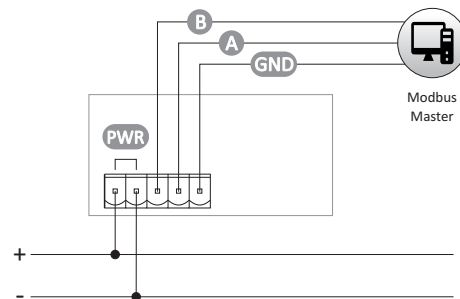
Table 1. Default settings of the device

Parameter	Value
Modbus address	1
Communication speed	9600 bps
Parity	off
Communication diode	on
Service password	0000

Description of the panel

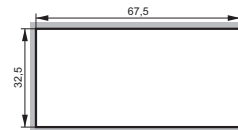


Connection scheme



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.

Technical data

power supply	9÷30 V AC/DC
current consumption	max. 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 protocols	Modbus RTU
working temperature	-10÷40°C
terminal	2.5 mm ² 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)	
Protocole	Modbus RTU
Operating mode	SLAVE
Range of network addresses	1+247 (1)
Command codes	3: Read registers group (0x03 – Read Holding Registers) 6: Write a single register (0x06 – Write Single Register) 16: Write registers group (0x10 - Write 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/(2)
Max. query frequency	15 Hz

Modbus registers

Basic registers			
address	description	type	access*
0 (0x0000)	Value shown on the display (minimum -999, maximum - 9999)	int	R/W
1 (0x0001)	Dot position (minimum 0 – no dot, maksimum 4 – dot on the right)	int	R/W
2 (0x0002)	Current state of F1 button (0 – button not pressed, 1 – button pressed)	int	R
3 (0x0003)	Counter of F1 button presses (Number of button presses, resetting after entering 0, other values prohibited)	int	R/W
4 (0x0004)	Current state of F2 button (0 – button not pressed, 1 – button pressed)	int	R
5 (0x0005)	Counter of F2 button presses (Number of button presses, resetting after entering 0, other values prohibited)	int	R/W
6 (0x0006)	Current state of F3 button (0 – button not pressed, 1 – button pressed)	int	R
7 (0x0007)	Counter of F3 button presses (Number of button presses, resetting after entering 0, other values prohibited)	int	R/W

*R – read only, R/W – read and write

Communication settings			
address	description	type	access*
256 (0x0100)	Modbus address (minimum 1, maksimum 247)	int	R/W
257 (0x0101)	Transmission speed 0 – 1200 bps 1 – 2400 bps 2 – 4800 bps 3 – 9600 bps 4 – 19200 bps 5 – 38400 bps 6 – 57600 bps 7 – 115200 bps	int	R/W
258 (0x0102)	Parity check 0 - None 1 - Even 2 - Odd CAUTION! Setting the parity to ODD or EVEN automatically sets the communication to work with one stop bit. If there is no parity (NONE), 2 stop bits are automatically set.	int	R/W
259 (0x0103)	Default configuration Entering 1 restores the default configuration	int	R/W

* R/W – read and write

Other registers			
address	description	type	access*
34 (0x0022)	Control of the communication diode (0 – LED does not flash during Modbus communication, 1 – LED flashes during Modbus communication)	int	R/W
64 (0x0040)	Password to access the menu from the keyboard (minimum 0, maksimum 9999)	int	R/W
1024 (0x0400)	Operating time from power on [LSW] Value is calculated as $MSW * 65536 + LSW$	int	R
1025 (0x0401)	Operating time from power on [MSW] Value is calculated as $MSW * 65536 + LSW$	int	R
1026 (0x0402)	Serial number [MSW] Value is calculated as $MSW * 65536 + LSW$	int	R
1027 (0x0403)	Serial number [LSW] Value is calculated as $MSW * 65536 + LSW$	int	R
1028 (0x0404)	Manufacturing date 5 bits – day, 4 bits – month, 7 bits – year [without 2000]	int	R
1029 (0x0405)	Software version (10 – 1.0 etc.)	int	R
1030-1035 (0x0406–0x040B)	The device identifier "F&F_MR-LED-T" 2 characters in each register	char	R

*R – read only, R/W – read and write

