eNet radio energy detector 1-gang mini
Art. No. : FMES3680UP

Operating instructions

1 Safety instructions

Electrical devices may only be mounted and connected by electrically skilled persons.

Serious injuries, fire or property damage possible. Please read and follow manual fully.

Danger of electric shock. Always disconnect before carrying out work on the devise or load. In so doing, take all the circuit breakers into account, which support dangerous voltages to the device and or load.

These instructions are an integral part of the product, and must remain with the end customer.
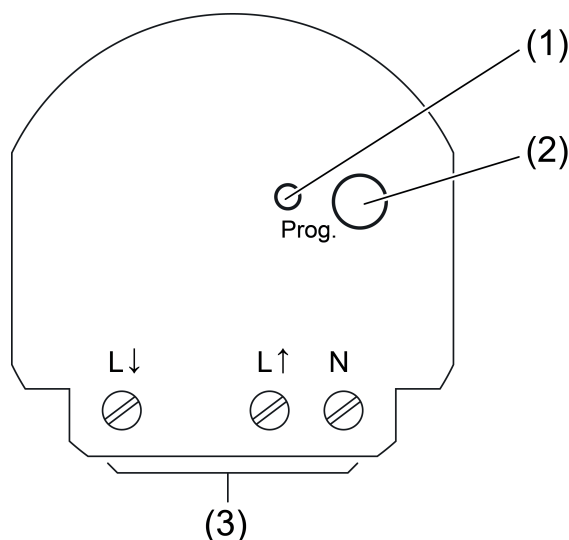
2 Device components

Figure 1: Energy sensor

(1) Status LED, red
(2) Button **Prog**
(3) Terminals

3 Function

Intended use

- Energy sensor for radio transmission of voltage, current and energy values
- Operation with eNet server
- Mounting in appliance box according to DIN 49073 with a suitable cover
- Mounting in surface-mounted housing or built-in housing (accessory) for false ceilings
- ⓘ The energy sensor is not officially calibrated and may not therefore be used for invoicing purposes.

Product characteristics

- Detection of current and voltage of the connected consumer
- Calculation of the effective, idle, apparent power and the active energy
- Event or time-controlled transmission of measured value telegrams to the eNet server

- Fully encrypted radio transmission (AES-CCM) from eNet Server software version 2.0
- Update of the device software

Functional description

The energy sensor records and calculates various characteristic electrical values of the connected consumers. It is possible to indicate these values using the **eNet SMART HOME app**. All the energy sensors available in the building installation can be monitored using the eNet serve.

Time and event-controlled data transmission

The energy sensor determines the current consumption data every 0.2 seconds. The data can be transmitted at a configurable transmission of 1...60 minutes.
In addition, data transmission can be coupled to the change in effective power. If the effective power exceeds a value of 1...2000 W and the deviation to the most recently transmitted value is 1...50 %, the data is transferred again, but only after at least one minute.

Default setting
Time-controlled transmission, transmission interval: 15 minutes
Event-controlled transmission:
Rel. threshold value, effective power: 10 %
Abs. threshold value, effective power: 1 W

Transferred characteristic electric values

- Current
- Voltage
- Average effective power
  Interval for average formation configurable between 0.2...300 s.
- Apparent power
- Fundamental oscillation idle power
- Active energy
  The total active energy is saved to power failure-proof memory.

4 Information for electrically skilled persons

4.1 Fitting and electrical connection

> ⚠ **DANGER!**
>
> **Electrical shock when live parts are touched.**
>
> **Electrical shocks can be fatal.**
>
> **Before working on the device, disconnect the power supply and cover up live parts in the working environment.**

Connecting and mounting energy sensor

To ensure good transmission quality, keep a sufficient distance from any possible sources of interference, e.g. metallic surfaces, microwave ovens, hi-fi and TV systems, ballasts or transformers.
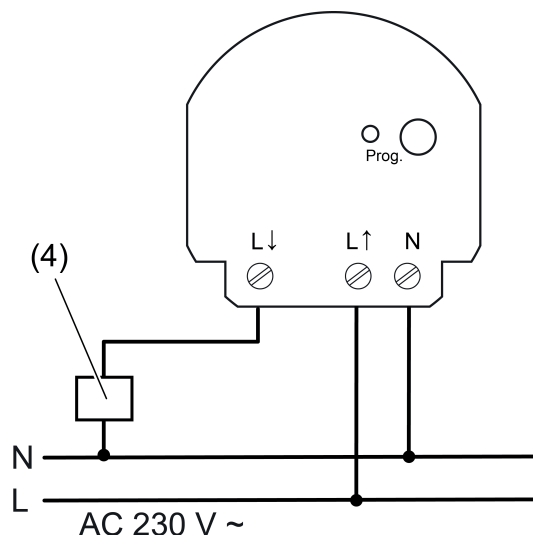
Figure 2: Connection example, energy sensor

(4) Monitored consumer
- Connect energy sensor as shown in the connection example (figure 2).
- Insert energy sensor in the appliance box in such a way that the **Prog** button and status LED are visible.
- Perform commissioning.
- Mount the cover.

4.2 Commissioning

DANGER!
Electrical shock when live parts are touched.
Electrical shocks can be fatal.
During commissioning, cover the parts carrying voltage on the device and in their surrounding area.

Integrating an energy sensor into the project

The energy sensor must be read in using a device search of the eNet Server and integrated into the project.

To do this, the eNet server must be connected correctly and connected to a computer (see the instructions of the eNet server).

- Start the commissioning interface of the eNet server. Create or open the project into which the energy sensor is to be integrated (see product documentation of the eNet server).
- Start the device search in the commissioning interface of the eNet Server.
- Press button **Prog** (2) for longer than 4 seconds.

  The status LED (4) flashes after 1 seconds. The energy sensor is in programming mode for approx. 1 minute.

  The eNet server finds the energy sensor and displays it on the commissioning interface.

  The status LED of the energy sensor goes out.
- Add the energy sensor to the device location using the commissioning interface.

Removing an energy sensor from the project

- In the commissioning interface of the eNet server, delete the energy sensor from the current project (refer to the product documentation of the eNet server).

  The energy sensor is removed from the project and the parameters reset to the default setting.

Resetting the device to the factory setting

The connection to the eNet server is disconnected and parameters are reset to default setting.

- Press the **Prog** button for at least 20 seconds.

  The status LED flashes after 4 seconds. After 20 seconds the status LED flashes faster.

- Release **Prog** button and press briefly once again within 10 seconds.

  The status LED flashes more slowly for approx. 5 seconds.

  Device is reset to default setting.

5 Appendix

5.1 Technical data

Rated voltage	AC 230 V ~
Mains frequency	50 / 60 Hz
Rated load current	16 A (I_L)
Peak current (1 s)	80 A
Peak current (1 min)	24 A
Power consumption	max. 0.5 W
Transmission interval	1 ... 60 min
Ambient temperature	-25 ... +70 °C
Connection	
single stranded	0.75 ... 4 mm²
Finely stranded with conductor sleeve	0.75 ... 2.5 mm²
Dimensions Ø×H	53×23 mm
Radio frequency	868.0 ... 868.6 MHz
Transmission capacity	max. 20 mW
Transmitting range in free field	typ. 100 m
Measuring ranges	
Current	0 mA ... 16 A
Accuracy (current)	± 0.5 % of the current value and ± 8 mA
Voltage	207 ... 250 V
Accuracy (voltage)	± 0.5 % of curr. val.
Transmitted power and output values	
Effective output	-4000 ... 4000 W
Apparent output	0 ... 4000 VA
Idle output	-4000 ... 4000 var
Accuracy (power)	± 0.5 % of the current value and ± 2 W/VA/var
Effective energy	-99999 ... 99999 kW·h
Receiver category	2

5.2 Parameter list

The device parameters can be changed with the eNet server:

Device and channels

Parameters	Setting options, Basic setting	Explanations
Function	Energy, Unused Basic setting: Energy	Energy The channel works as an energy sensor. Unused The channel is not displayed in the **eNet SMART HOME app** and is disabled for use in the commissioning interface.

Advanced device settings

Parameters	Setting options, Basic setting	Explanations
Manual commissioning	On, Off Basic setting: On	Disables manual commissioning for all device channels. In the "Off" setting, the device cannot be reset to the factory setting.
Repeater mode	On, Off Basic setting: Off	In addition to its other functions, the device can be used as a repeater. In the "On" setting, the device repeats all the received telegrams.
Transmission mode	Single, Double Basic setting: Double	The transmission of all measured value telegrams is repeated to guarantee increased transmission security (no unsecured transmission). It is possible to switch over to simple transmission.

Channel settings

| Parameters	Setting options, Basic setting	Explanations
Active energy	-1073741823…1073741823 Wh Basic setting: 0 Wh (Current value)	Displays the currently cumulated active energy. The value can be reset to 0 or set to any other value.

Extended channel settings

Parameters	Setting options, Basic setting	Explanations
Manual commissioning	On, Off Basic setting: On	Blocks manual commissioning for the device channel. In the "Off" setting, the device cannot be reset to the factory setting.
Transmit voltage	On, Off Basic setting: On	Transmits the current voltage value.
Transmit current	On, Off Basic setting: On	Transmits the current current value.
Transmit effective power	On, Off Basic setting: On	Transmits the average effective power. If negative values are displayed, then effective power is fed in, e.g. via a photovoltaic system.

Transmit reactive power	On, Off Basic setting: On	Sends the current fundamental oscillation idle power value. If negative values are displayed, this is capacitive reactive power. Positive values show an inductive reactive power.
Transmit apparent power	On, Off Basic setting: On	Transmits the current apparent output value.
Transmit absolute active energy	On, Off Basic setting: On	Transmits the cumulative value of the active energy. If negative values are displayed, then effective energy is fed in, e.g. via a photovoltaic system.
Transmission interval	1 … 60 min Basic setting: 15 min	The current consumption data is transmitted at the interval set here at the latest. Changes to the effective power cause fresh transmission, however only after one minute at the earliest.
Rel. threshold value, effective power	1 ... 50 % Basic setting: 10 %	The transmission of the consumption data can be coupled to the change in effective power. The basis is always the most recently transmitted effective output value. If the percentage change entered here is exceeded, then all the measured values are resent.
Abs. threshold value, effective power	0 … 2000 W Basic setting: 1 W	A lower threshold value of the effective power can be entered here, to avoid frequent transmission in the lower power range. Event-controlled transmission is only active above this threshold value.
Suppression length, effective power	0 ms … 300 s Basic setting: 0 ms	Triggers for event-controlled transmission are often switch-on and switch-off operations. In order to avoid incorrect measured values due to switch-on peaks, this parameter can be used to enter a suppression period. The measured values are only transmitted if the effective power is still above or below the relative threshold value after the set time.
Averaging length	0.2 … 300 s Basic setting: 1 s	In the case of effective power, it is not the current value which is transmitted, as with other measured values, but the average value. It is possible to set the period for average value formation here.

Information window

During channel selection in the Information window, the following values are displayed.

Display value	Explanations
Voltage	Displays the current voltage value.
Current	Displays the current current value.
Effective power	Displays the current effective power.
Reactive power	Displays the current reactive power. If negative values are displayed, this is capacitive reactive power. Positive values show an inductive reactive power.
Apparent power	Displays the current apparent power.
Absolute active energy	Displays the current absolute active energy. If negative values are displayed, then effective energy is fed in, e.g. via a photovoltaic system.
Active energy	Displays the cumulated active energy. Meter reading can be set via settings window.

ⓘ The value can be updated using the arrow next to the display values.

5.3 Troubleshooting

Negative effective output or energy values are displayed.
Cause 1: This is an energy source, e.g. a photovoltaic system, feeding in energy.
Cause 2: The energy sensor is connected in reverse polarity.

Connect the energy sensor with the correct polarity.

ⓘ If negative reactive power values are displayed, this is a capacitive idle power. Positive values show an inductive reactive power.

5.4 Accessories

Mounting adapter for mini housing   Art. No. FM-EBG
eNet server for rail mounting   Art. No. ENET-SERVER

5.5 Conformity

Albrecht Jung GmbH & Co. KG hereby declares that the radio system type
 Art. No. FMES3680UP
corresponds to the directive 2014/53/EU. You can find the full article number on the device. The complete text of the EU Declaration of Conformity is available under the Internet address: www.jung.de/ce

5.6 Warranty

The warranty follows about the specialty store in between the legal framework as provided for by law.

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