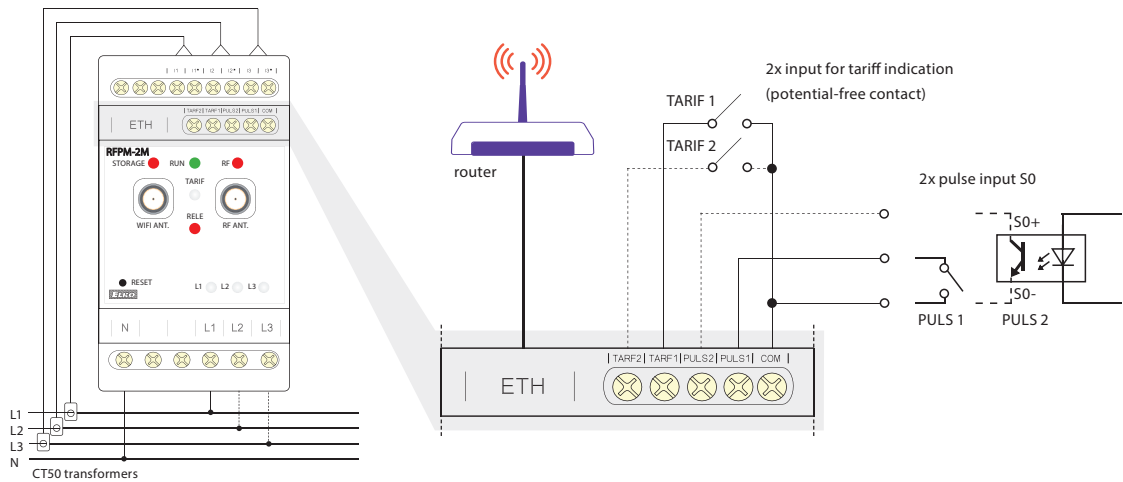


RFPM-2M | Energy gateway

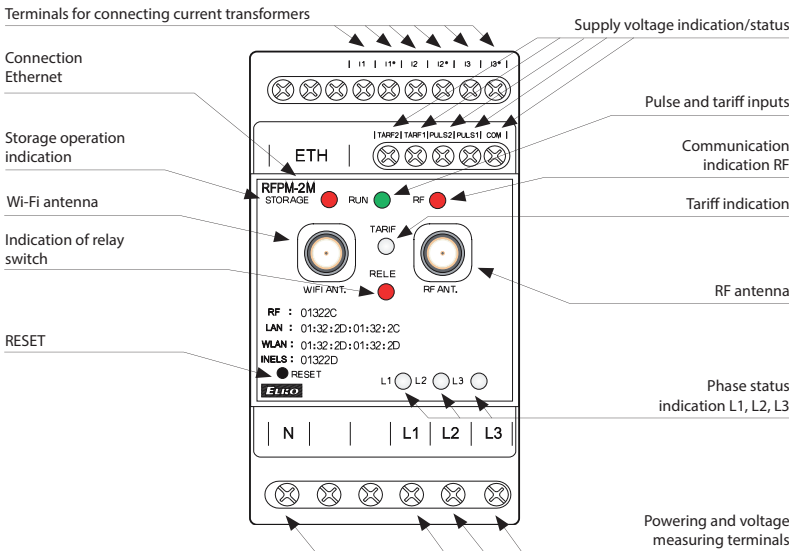


- The energy gateway is a central device for assessing energy consumption (electricity, water, gas, heating).
- The Energy Gateway receives data in the following ways:
 - a) Pulse inputs (2 inputs) for direct connection to 50 meter outputs
 - b) Wireless RFTM-1 converters (up to 8 pcs), which read pulses from meters, either directly (outputs S0) or by scanning measurement indicators (dial, flashing LED, magnetic tag and wirelessly transmits them to RFPM-2M. Suitable probes (LS, WS, MS) are used, which are part of the RFTM-1 offer.
 - c) Through current transformers CT-50 (up to 3 inputs), through which the phase conductors are passed.
 - d) Potential-free contact of the tariff (2 inputs = 4 tariffs).
- Connection to the data network is made by means of LAN Ethernet connector or wirelessly via a Wi-Fi network.
- Monitored data is stored on internal memory storage.
- By means of the application iHC and cloud connection, it is possible to maintain online access to data and monitoring history.
- Possibility to set the response to the set level - closes the relay.
- The power supply of the device is provided from the monitored phase L1.
- Range up to 100 m (in open space), if the signal between the controller and the user is weak, use the signal repeater RFRP-20 or protocol component RFIO2 that supports this feature.
- Communication frequency with bidirectional protocol RFIO.
- 3-module design, mounted on a DIN rail into the switchboard.

Connection



Device description



Tariff indication - RGB LED

TARIF 1:	red
TARIF 2:	green
TARIF 3:	blue
TARIF 4:	yellow

Phase status indicator L1, L2, L3 - R/G LED

failure (outage):	red
active phase:	green
unmonitored phase:	LED off

Technical parameters		RFPM-2M
Supply/measured voltage:		230 V AC / 50-60 Hz, 1f / 3f +N
Supply voltage tolerance:		+15/-20%
Closed relay power input:		5 VA
Switching voltage level:		140 V, +10/-20%
RF Control interface		
Communication protocol:		RFIO
Frequency:		866–922 MHz (for more information see p. 80)
Signal transfer method:		two-way addressed message
Output for antenna:		SMA - FEMALE*
Antenna RF:		1 dB (part of suply)
Range:		in open space up to 100 m
Control		
Controlling:		Bootloader (press >2 s)
Button Reset:		Unit reset (press >10 s)
Interface Wi-Fi		
Wi-Fi mode:		AP Bridge / AP LAN / Client
Standard:		IEEE 802.11 b/g/n / 2.4 GHz
Wi-Fi Security:		WEP, WPA-PSK, WPA2-PSK
Frequency range Wi-Fi:		RP - SMA - FEMALE*
Antenna Wi-Fi:		1 dB (part of suply)
Range:		up to 20 m
Interface Ethernet		
Connection:		static IP / DHCP Client
Transfer speed:		10 / 100 Mbit / s
Connector:		RJ45
Preset IP address/IP address of bootloader:		192.168.1.2
Measuring		
Pulse inputs:		PULS1 (S0), PULS2 (S0)
Tariff inputs:		TARF1, TARF2 - binary combination
Option of switching inputs:		switching by contact / opening by collector
Separation by isolation of power and control circuits:		reinforced Insulation (Cat. II surges by EN 60664-1)
Probes measuring current:		3x CT50
Wireless consumption sensor:		RFTM-1
Measuring circuit		
Network:		1f-3f
Frequency:		50 - 60 Hz / ±10 %
Accuracy:		Class 1.0
Current measuring coil:		max. 50 A (current transformer CT50)
Wire diameter:		max. 16 mm
Other data		
Working temperature:		-20 to + 35°C
Storage temperature:		-30 to +70°C
Operating position:		vertical
Mounting:		DIN rail EN60715
Protection:		IP20 from front panel / IP40 in cover
Overvoltage category:		II.
Degree of pollution:		2
Cross-section of connecting wires (mm²):		max. 1x 2.5, max. 2x 1.5 / with a hollow max. 1.5
Dimension:		90 x 52 x 65 mm
Weight:		125 g

* Max Tightening Torque for antenna connector is 0.56 Nm.

Methods of sensing meters

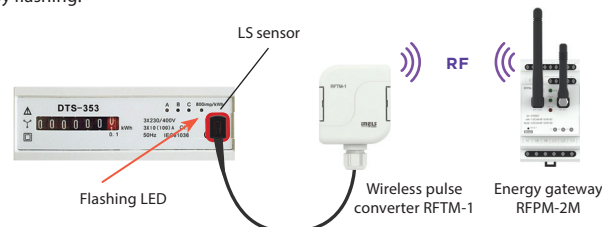
CT (Current transformer)

Opening pliers open/close on the existing wire of the measured circuit, most frequently at the main supply at the electricity meter.



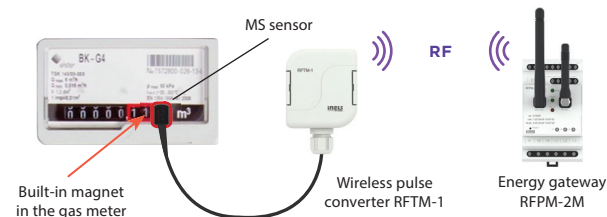
LS (LED sensor)

The LED sensor scans LED impulses on the meter, which indicates consumption by flashing.



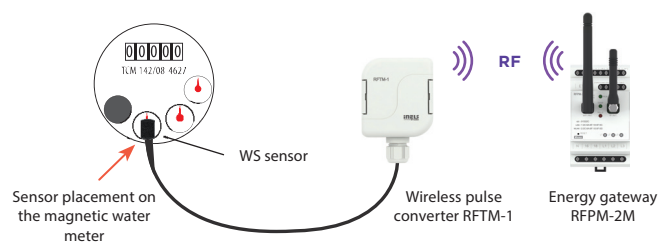
MS (Magnetic sensor)

The magnetic sensor scans movement of the numeral, upon which a permanent magnet is placed.



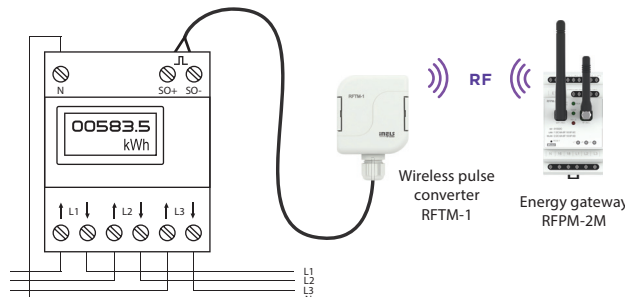
WS (Magnetic sensor for water meter)

The magnetic sensor detects the pulse that is created with each rotation of the magnet placed on the unit dial.



IMP (Output „S0“)

Meters with impulse output indicated as „S0“ connected by wires to terminals GND and DATA1 on the sensor RFTM-1.



RFTM-1 | Pulse converter

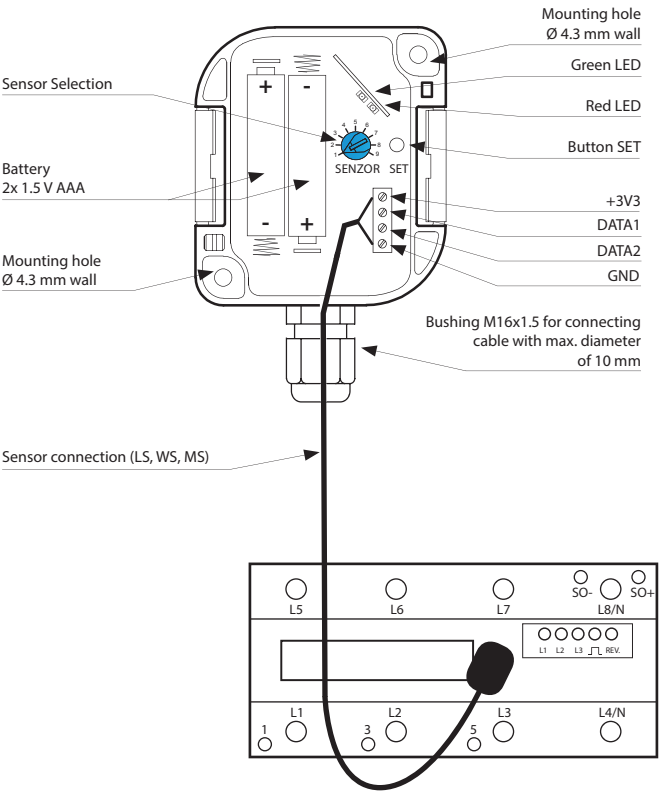


- The wireless pulse converter detects home energy meters (electric, water, gas) by means of sensors, and sends them to the wireless unit RFBM-2M.
- The energy gateway RFBM-2M acts as an interface between the meter and a smartphone.
- Measured values are displayed in the application iHC-MAIRF/iHC-MIIRF, in daily, weekly or monthly overview in graphs.
- The sensor is designed for use on existing meters and even without the impulse output “S0” (The gauge must support scan).
- RFTM-1 transfers consumption from meters using sensors - LS (LED sensor), WS (Magnetic sensor for meter), MS (Magnetic sensor) or by impulse output („S0“).
- For each consumption meter, it is necessary to have one pulse converter RFTM-1.
- Battery power (2x 1.5 V AAA batteries - included in package) with average battery life of around 2 years (according to the type of scan, frequency of transmissions and pulses).
- Range up to 100 m (in open space), if the signal between the controller and the user is weak, use the signal repeater RFRP-20 or protocol component RFIO2 that support this feature.
- Communication frequency with bidirectional protocol RFIO.
- The increased IP65 protection is appropriate for mounting in risers, switchboards and other demanding environments.

Technical parameters		RFTM-1
Power supply:	2x 1.5 AAA batteries	
Battery Life:	Appr. 2 years, (depending on the type of sensor, frequency of transmissions and pulses)	
Indication		
Setting mode:	Green LED flashes - active Red LED - flashes during impulse sensor registration	
Communications Test - RF STATUS:	Green LED - communication OK Red LED - communication ERR	
Normal operation:	no indication	
Control		
Manual control:	button SET	
Sensor Selection:	rotary potentiometer	
Supported sensors (not included in the package):	LS (LED sensor) MS, WS (magnetic sensor) S0 (Contact, open collector, reed magnetic contacts)	
Output		
Communication protocol:	RFIO	
Frequency	866–922 MHz (for more information see p. 80)	
Range:	in open space up to 100 m	
Other data		
Working temperature:	-20 to +50 °C *	
Storage temperature:	-30 to +70°C	
Operating position:	any	
Protection:	IP65	
Cross-section of connecting wires:	max. 0.5 - 1 mm ²	
Dimension:	72 x 62 x 34 mm	
Weight:	104 g	

* Pay attention to the operating temperature of batteries.

Device description





- Current Transformer - CT50 has open clips, which can be opened and closed. This design allows a current transformer to be placed on the existing measuring circuit wire, usually at the main flow of the meter.

Technical parameters	CT50
Current:	50 A
Output:	16.66 mA
Conversion ratio:	3000:1
Accuracy:	1 %
Dielectric strength, Ferrite cores/secondary winding:	2000 V AC / 1 min
Frequency:	50 - 60 Hz
Other data	
Operating temperature:	-15 to 60 °C
Storing temperature:	-30 to 90 °C
Flammability:	UL 94 - V ₀
Max. diameter through the conductors:	16 mm
Dimension (w x h x d)/ cable leads:	31 x 46 x 32 mm / 1 m
Weight:	86 g

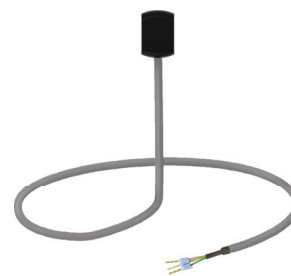
LS | LED sensor



- The LED sensor scans LED impulses on the meter, which indicates consumption by flashing.
- The LED sensor is particularly suitable for power meters that support LED pulse sensing (the LED on the meter is marked "imp").
- The sensor's scanner is affixed with glue above the LED diode of the meter signaling indication of consumption.
- The sensor is connected to the internal terminal of the RFTM-1 converter.

Technical parameters	LS
Voltage range:	2.5 to 3.7V
Minimum consumption (idle mode):	0.5uA *
Maximum power consumption (pulses 100Hz):	max. 2uA *
Working temperature:	-20 to 50 °C
Other data	
Cross-section of connecting wires:	max. 3.5 mm
Wire length:	1.5 m
Protection:	IP20

Sensor LS responds only to light pulses, i.e. it does not detect static state LEDs.



- The LED sensor scans LED impulses on the meter, which indicates consumption by flashing.
- The LED sensor is particularly suitable for power meters that support LED pulse sensing (the LED on the meter is marked "imp").
- The sensor's scanner is affixed with glue above the LED diode of the meter signaling indication of consumption.
- The sensor is connected to the internal terminal of the RFTM-1 converter.

Technical parameters	MS
Voltage range:	1.6 to 3.6 V
Consumption	7uA *
Output load:	max. 3mA
Scanning period:	100ms
Switch sensing sensitivity (output L):	±(2.3 to 4.7)mT
Opening detection sensitivity (output->H):	±(0.9 to 3.8)mT
Hysteresis:	1mT
Working temperature:	-40 to 80 °C
Other data	
Cross-section of connecting wires:	max. 3.5 mm
Wire length:	1.5 m
Protection:	IP20

WS | Magnetic sensor for water meter



- A magnetic sensor that detects the pulse that is created by each rotation of the magnet placed on the unit dial meter.
- The WS sensor is especially suitable for water meters that support magnetic sensing.
- The sensing sensor is glued over the circular unit face of the gauge (the scanning dial is different from the other indicators, e.g. the white arrow wheel).
- The sensor is connected to the internal terminal of the RFTM-1 converter.

Technical parameters	WS
Voltage range:	1.65 to 5.5V
Consumption:	1.5uA *
Output load:	max. 150uA
Switch sensing sensitivity:	±(0.3 to 1.1)mT
Opening detection sensitivity:	±(0.2 to 0.9)mT
Hysteresis:	0.2mT
Working temperature:	-40 to 80 °C
Other data	
Cross-section of connecting wires:	max. 3.5 mm
Wire length:	1.5 m
Protection:	IP20

* Measured at 3V, no load output.

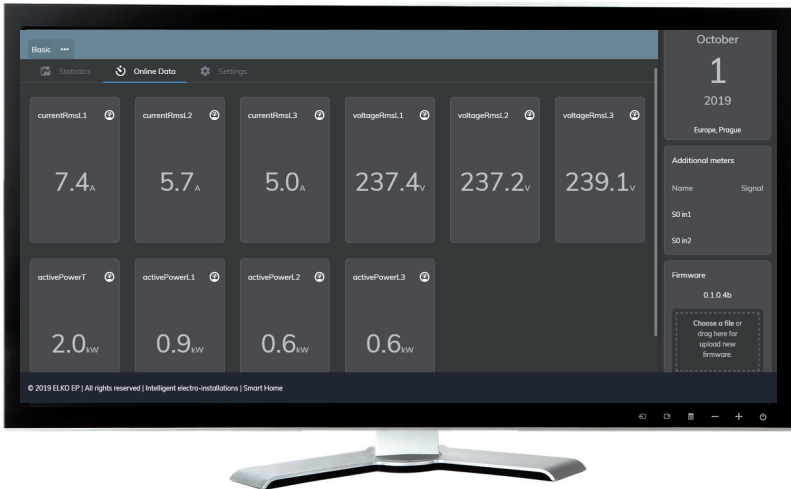
RFPM-2 | Energy gateway with improved application

The Energy Gateway RFPM-2M web interface now has a completely new and cleaner visualization. This makes displaying and evaluating energy consumption even more convenient and easy.

DEMO web interface <http://217.197.144.56:2130/>
Login and password: **admin**



- STATISTICS**
- Sample overview of electricity consumption (today, yesterday, this week, this month)
 - Consumption converted to finance costs
 - Graphical visualization of consumption (by hours, days, months)

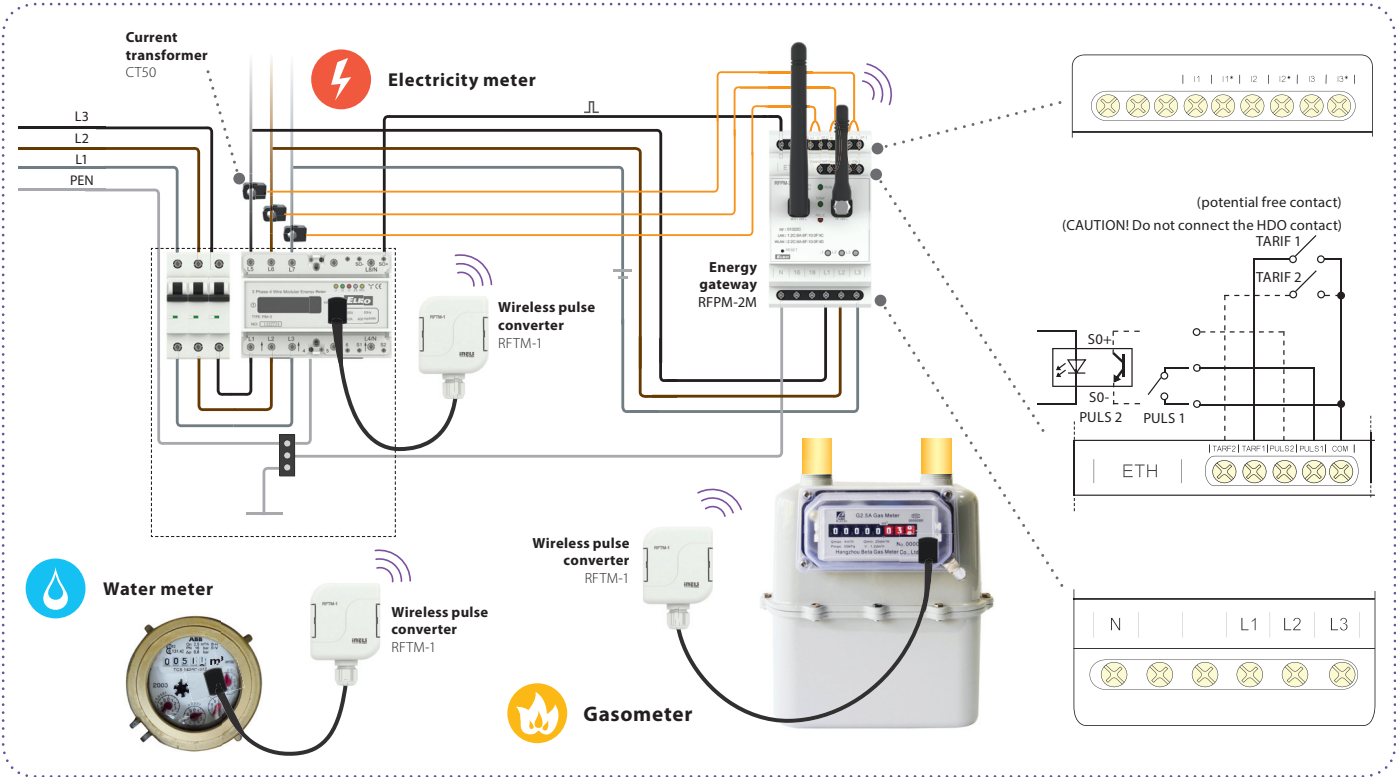


- ONLINE DATA**
- The Energy Gateway evaluates the following indicators in the network:
- Phase current/voltage
 - Phase overvoltage/undervoltage
 - Asymmetry
 - Distortion of the sine wave signal
 - Distortion of sine wave signal flow
 - Frequency
 - Active performance
 - Reactive power
 - Apparent performance
 - Power factor
 - Phase voltage shift between phases



- SETTINGS**
- Main SETTINGS menu
 - Example of "Phase settings" submenu

All basic and advanced settings are made simply, quickly and intuitively. If you have any questions, a telephone/e-mail technical support is available.



Measured data can be displayed not only through the web interface on the PC, but also in iNELS Home Control (iHC). The measured values of all quantities can be monitored, but above all archived and analysed in many selected time periods (daily, weekly, monthly and yearly). Consumption can be quantified in consumed units or directly in financial costs. Another advantage is the possibility of measuring electricity consumption in up to 4 tariffs.

PROMO APP available

Login and password: admin



Current consumption can be displayed as a bar graph. You can choose to display the consumption in units. One click to switch to power consumption in your currency. Significant savings can be achieved by analysing data.