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Made in Czech Republic

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EN

AirTM-100S

Pulse converter

Characteristics

- The Pulse converter counting quantities of pulses from the energy meters (electricity, water, gas).
- The Pulse converter is designed for use on existing gauges even without impulse output „S0" (gauge must support sensing).
- AirTM-100 converts gauge consumption using sensors - LS (LED sensor), WS (magnetic sensor for water meter), MS (magnetic sensor) or pulse output.
- For each power meter it is necessary to have one Pulse converter AirTM-100.
- With the wireless solution and Sigfox communication, it can communicate instantly to your chosen location and be operated immediately.
- Data is sent to the server from which it can be subsequently displayed as a smartphone, application, or Cloud notification
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Power supply: 5-12 V DC or 1x 3.6 V batteries SAFT.
- In the case of external power, the battery is automatically disconnected and serves as backup power.
- Protection degree IP65.

General instrucions

Internet of Things (IoT)

- The IOT wireless communications category describes the Low Power Wide Area (LPWA). This technology is designed to provide full-range coverage both inside and outside buildings, energy-saving and low-cost operation of individual devices. The Sigfox network is available to use this standard.

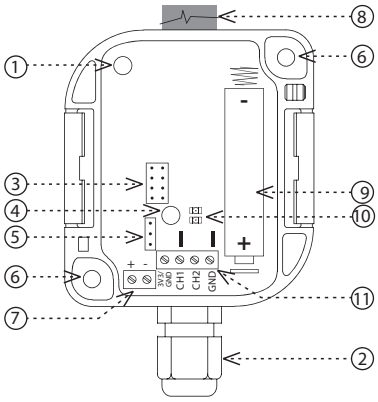
Sigfox network information

- The network supports bidirectional communication but with a limited number of feedbacks. It uses the free frequency band divided by Radio Frequency Zones (RCZ).
  - RCZ1 (868 MHz) Europe, Oman, South Africa
  - RCZ2 (902 MHz) North America
  - RCZ3 (923 MHz) Japan
  - RCZ4 (920 MHz) South America, Australia, New Zealand, Singapore, Taiwan
- Sigfox has more coverage across countries, so it is better suited for long distance monitoring.
- For more information on this technology, please visit www.sigfox.com.

Caution for proper operation:

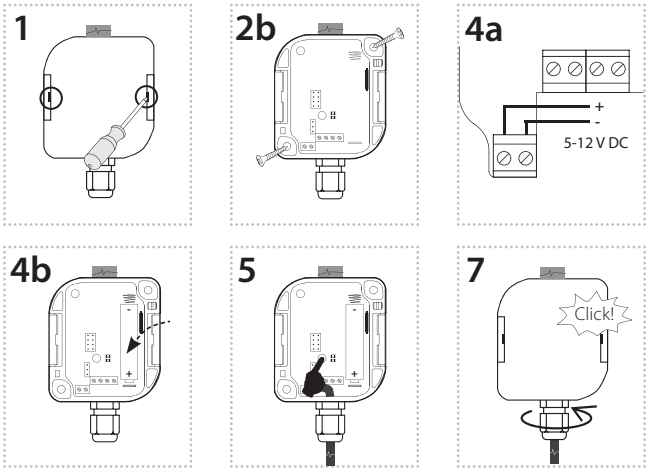
- Products are installed according to the wiring diagram given for each product.
- For proper device functionality, it is necessary to have sufficient coverage of the selected network at the installation site.
- At the same time, the device must be registered in the network. Successful device registration on a given network requires a charge for traffic.
- Each network offers different tariff options - it always depends on the number of messages you want to send from your device. Information on these tariffs can be found in the current version of the ELKO EP pricelist.

Description



1. Tamper
2. Bushing M16x1.5 for connecting cable with max. diameter of 10 mm
3. Programming pins
4. Button SET
5. Setting pins for 3V3 / GND clamp
6. Hole for mounting on the wall Ø 4.3 mm / 0.2"
7. Power terminal
8. Antenna
9. Battery
10. LED indication
11. Sensor connection terminal

Assembly



1. Using a flat-blade screwdriver gradually slide it into one groove and the other in the lid and swing open the cover.
2. The product can be attached in two ways:
   a) Directly on a flat surface by gluing * - apply a suitable adhesive to the bottom of the base. Place the base in the desired location and let it dry.
   b) Using a suitable fastener ** by screwing - drill holes into the base with two holes of suitable diameter corresponding to the position of the holes in the bottom of the box. Place the base at the desired location and attach it with suitable bonding material according to the substrate.
3. Thread the sensor through the bushing and plug it in according to the required function - see chapter Functions, remove jumper (only after setting the function).
4. Connect the supply voltage (via the power supply the transmitter functionality message is sent to the application)
   a. on the clamp
   b. Insert the battery and check the correct location.
5. Set the required function (see chapter Function)

Cloud app assignment

It is done in your Smartphone application. Enter the relevant information on the product cover into the application.

Set the sensing type (sensor LS, WS, MS or pulse output S0).

6. Fill the jumper onto the adjustment pins (see the Function chapter).
7. Replace and snap the front cover. When closing, the handles have to be snapped to their original position. To ensure the degree of protection, tighten the grommet carefully.

* The glue must meet the optimal conditions for product placement (influence of temperature, humidity ...)

** For example, a screw or screw of max. Ø 4 mm can be used as a suitable fastener material, 13 mm (distance to the partition in the box) must be added to the required length for attachment to the substrate.

Safe handling

When handling a device unboxed it is important to avoid contact with liquids. avoid unnecessary contact with the components of the device. Do not touch the metal objects inside the unit.

Recommendations for installation

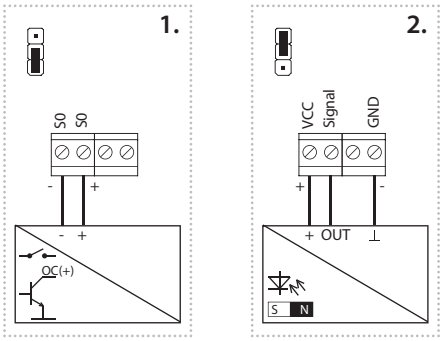
- Ensure the correct location - see Warning.
- Prior to attaching the AirTM-100, check the length of the connected sensor and the location of the scanned device.
- The working position is arbitrary but the grommet should not be directed upwards.
- The product does not require special handling and maintenance.

Function

When the power is connected, the transmitter sends the initial message to the server. Any unauthorized interference with a device, regardless of the feature set, immediately sends the message to the server.

1. **S0** - pulse counting S0
   - Checking the correct pulse readings: after setting the longer push (> 2) function of the SET button, the LED will be activated, which will flash when counting the pulse. The LED flashes with a short press or automatically after 5 minutes.
   - Measured values send the sensor every 4 hours, or immediately when the 5000 pulse limit is exceeded.
   - Recommended accessories: cable for S0 output

2. **Energy measurement** - pulse counting from active sensor LS, MS, WS
   - Checking the correct pulse readings: after setting the longer push (> 2) function of the SET button, the LED will be activated, which will flash when counting the pulse. The LED flashes with a short press or automatically after 5 minutes.
   - Measured values send the sensor every 4 hours, or immediately when the 5000 pulse limit is exceeded.
   - Recommended accessories
     - LS (LED sensor): is particularly suitable for power meters that support LED pulse sensing
     - MS (magnetic sensor): is particularly suitable for gas meters that support magnetic sensing.
     - WS (magnetic sensor for water meter): it is particularly suitable for water meters that support magnetic sensing.
   - Wiring of LS, MS and WS sensors: (+) brown wire, (-) white wire, (OUT) green wire.

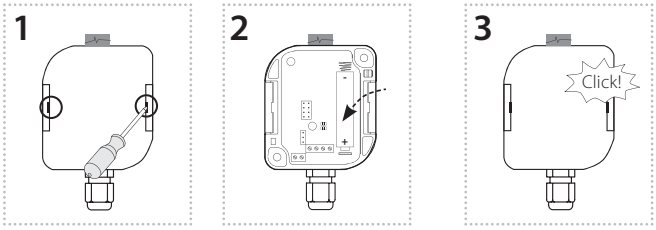


Setting functions:
- Long press SET (> 5s) to enter programming mode.
- The green LED will flash by function (function 1 - 1x, 2 - 2x).
- Short (<1s) by pressing the SET button to move upwards in the function selection, press (> 2 / <5s) longer to go down the function selections.
- Pressing the button (> 5s) long saves the set function and restarts the device.

Restart

- Open the cover. Power interruption (remove the battery from the device).
- Press SET> 1min.
- Connect power (insert battery). Close the cover.

Replacing batteries



1. Using a flat-blade screwdriver gradually slide it into one and then the other groove in the lid and swing open the cover.
2. Remove the discharged battery and insert a new battery into the holder. Beware of polarity. Both LEDs will flash 3 times (see device status indication).
3. Replace and snap the front cover.

Notice:

Only use batteries designed for this product correctly inserted in the device! Immediately replace weak batteries with new ones. Do not use new and used batteries together. If necessary, clean the battery and contacts prior to using. Avoid battery shorts! Do not dispose of batteries in water or fire. Do not dismantle batteries, do not try to charge them and protect them from extreme heating - danger of leakage! Upon contact with acid, immediately rinse the affected area with a stream of water and seek medical attention. Keep batteries out of the reach of children. If it is suspected that the battery has been swallowed or somehow placed inside the body, consult a doctor immediately. Give the doctor information about the type of battery (from battery case, device or its manual, etc.) to determine the chemical composition of the battery. Batteries must be recycled or returned to an appropriate location (e.g. collection container) in accordance with local legal provisions.

Device states

Unit initialization	**Indication**	
Start	3 x R + G blinks	power supply (external or battery), reset unit
SIM ERR *2) ERR *2)	5 x flashes R (repeatedly)	error MAC / error MODULU
Successful network connection * 2)	1 x flashes R	start unit ok
Measurement		
Tamper	without indication	opening the cover
Magnet	3 x flashes G	non contact / contact magnet
SET button short press (< 2s)	1 x flashes G	test, cancel, „long press“
SET button longer press (> 2s / <5s)	2 x flashes G	setting mode (signaling of measurement / pulses)
Measurement signaling * 1)	1 x flashes G	impulse LS / MS / WS / S0, temperature measurement, ...
Communication		
Communication	1 x flashes R	sending / receiving data
Other known states		
Does not respond to the SET button	any LED lights	it is necessary to disconnect the power supply (external or battery), after 60 seconds after the LED goes out, insert the battery
The unit is still in reset	still indicates start	the battery may be discharged
The unit does not respond even after removal insert the battery	without indication	a discharged battery or a damaged product

When the tamper is pressed, the LED is turned off!

Note:
R... LED red
G... LED green
* 1) Indicates only when you press SET> 2 s (setting mode)
* 2) Planned

UPLINK / DOWNLINK

UPLINK

Function	Byte	0		1								2	3	4	5	6	7
	Bit	7	6 - 0	7	6	5	4	3	2	1	0						
S0		First message flag: 1 - first message 0 - others	0x01	Reserved for future use						Tamper: 1 - opened 0 - closed	Battery: 1 - low level 0 - OK	Counter[0]	Counter[1]	Counter[2]	Counter[3]	*Version FW	*Subversion FW
ENERGY_METERING			0x02									Counter[0]	Counter[1]	Counter[2]	Counter[3]	*Version FW	*Subversion FW

DOWNLINK

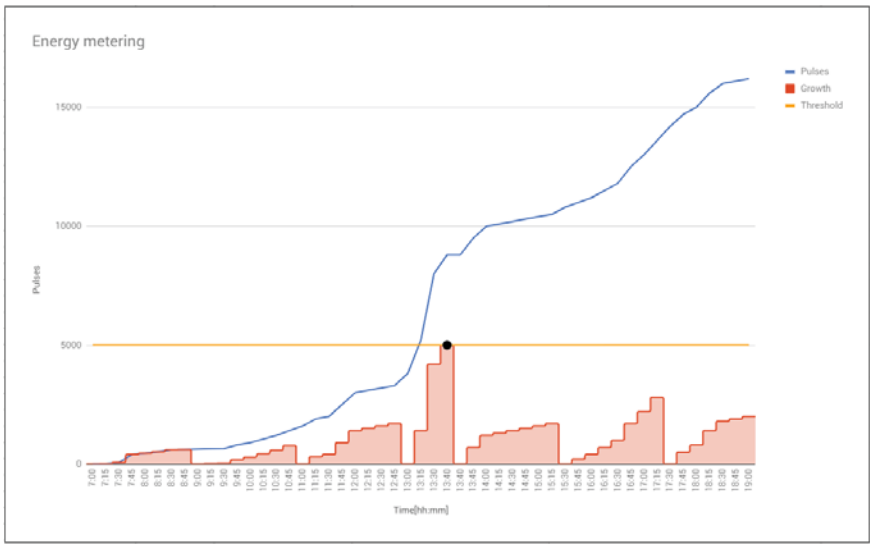
Function	0	1	2	3	4	5	6	7
S0	0x01	Heartbeat period	0x00	0x00	Threshold 1H	Threshold 1L	Threshold 2H	Threshold 2L
ENERGY_METERING	0x02	Heartbeat period	0x00	0x00	Threshold 1H	Threshold 1L	0x00	0x00

Note

Name	Unit	Example
Counter [0 – 3]	pulse	Counter[0] = 0x01 Counter[1] = 0x02 Counter[2] = 0x03 Counter[3] = 0x04 Counter = 0x01020304 = 16909060 pulses

Heartbeat period	0 - 127 [x min]	heartbeat message period
	128 - 255 [(x - 127) h]	
Threshold 1H 1L	0 - 65535	Input 1 - pulses threshold
Threshold 2H 2L	0 - 65535	Input 2 - pulses threshold

Graf



Technical parameters

	AirTM-100S
Power supply	
Battery power:	1x 3.6V LS 14500 Li-$SOCl_2$ AA
Battery life by frequency *:	
1x 10 minutes	0.4 years
1x 60 minutes	2.1 years
1x 12 hours	8.5 years
1x 24 hours	9.9 years
External power supply:	5 – 12 V DC (on terminal)
Supply voltage tolerance:	+10 %; -15%
Standby consumption:	0.2 mW
Transmitting power consumption:	250 mW
Setting	
Setting:	With a message from the server using setting pins, SET button, programming cable
Alarm Detection:	message to the server
Battery status view:	only when the battery is powered by a message on the server
Control	
Control:	button SET Tamper
Digital inputs	
Inputs:	IN1, IN2
Supported sensors for energy measurements:	LS (LED sensor)** MS, WS (magnetic sensor)** SO (Contact, open collector)
Communication	
Protocol:	Sigfox
Transmitter frequency:	RCZ1 868 MHz
Range in open space:	Approx. 50 km***
Transmission power (max.):	25 mW / 14 dBm
Other parameters	
Working temperature:	-30…+60°C (Pay attention to the operating temperature of batteries)
Storage temperature:	-30…+70°C
Operating position:	any
Mounting:	glue / screws
Protection degree:	IP65
Connecting External Power:	terminals, wires 0.5 – 1 mm^2
Connection of the sensor:	terminals, wires 0.5 – 1 mm^2
Cable gommet:	M16 x 1.5 for cable ø max. 10 mm
Dimension:	182 x 62 x 34 mm
Weight:	100 g (without battery)

* Values are calculated under ideal conditions and may vary depending on the type of sensor connected
** Not included in the package
*** Depending on network coverage

Sigfix Ready Certification

Certification ID for AirTM-100S Pulse Transmitter: **P_0094_B301_01**

Warning

Read the operating instructions before installing the device and putting it into operation. Instruction manual is designated for mounting and also for user of the device. It is always a part of its packing. Installation and connection can be carried out only by a person with adequate professional qualification upon understanding this instruction manual and functions of the device, and while observing all valid regulations. Trouble-free function of the device also depends on transportation, storing and handling. In case you notice any sign of damage, deformation, malfunction or missing part, do not install this device and return it to its seller. It is necessary to treat this product and its parts as electronic waste after its lifetime is terminated. Before starting installation, make sure that all wires, connected parts or terminals are de-energized. While mounting and servicing observe safety regulations, norms, directives and professional, and export regulations for working with electrical devices. Do not touch parts of the device that are energized – life threat. To ensure the transmission of the radio signal, make sure that the devices in the building where the installation is installed are correctly located. Unless otherwise stated, the devices are not intended for installation in outdoor and damp areas, they must not be installed in metal switchboards or in plastic cabinets with metal doors - this prevents transmission of the radio frequency signal. iNELS Air is not recommended for controlling life-saving instruments or for controlling hazardous devices such as pumps, heaters without thermostat, lifts, hoists, etc. - radio frequency transmission may be overshadowed by obstruction, interference, transmitter battery may be discharged etc., thereby disabling the remote control.