

# iNELS Air

Sensors and detectors for IoT



# ELKO EP



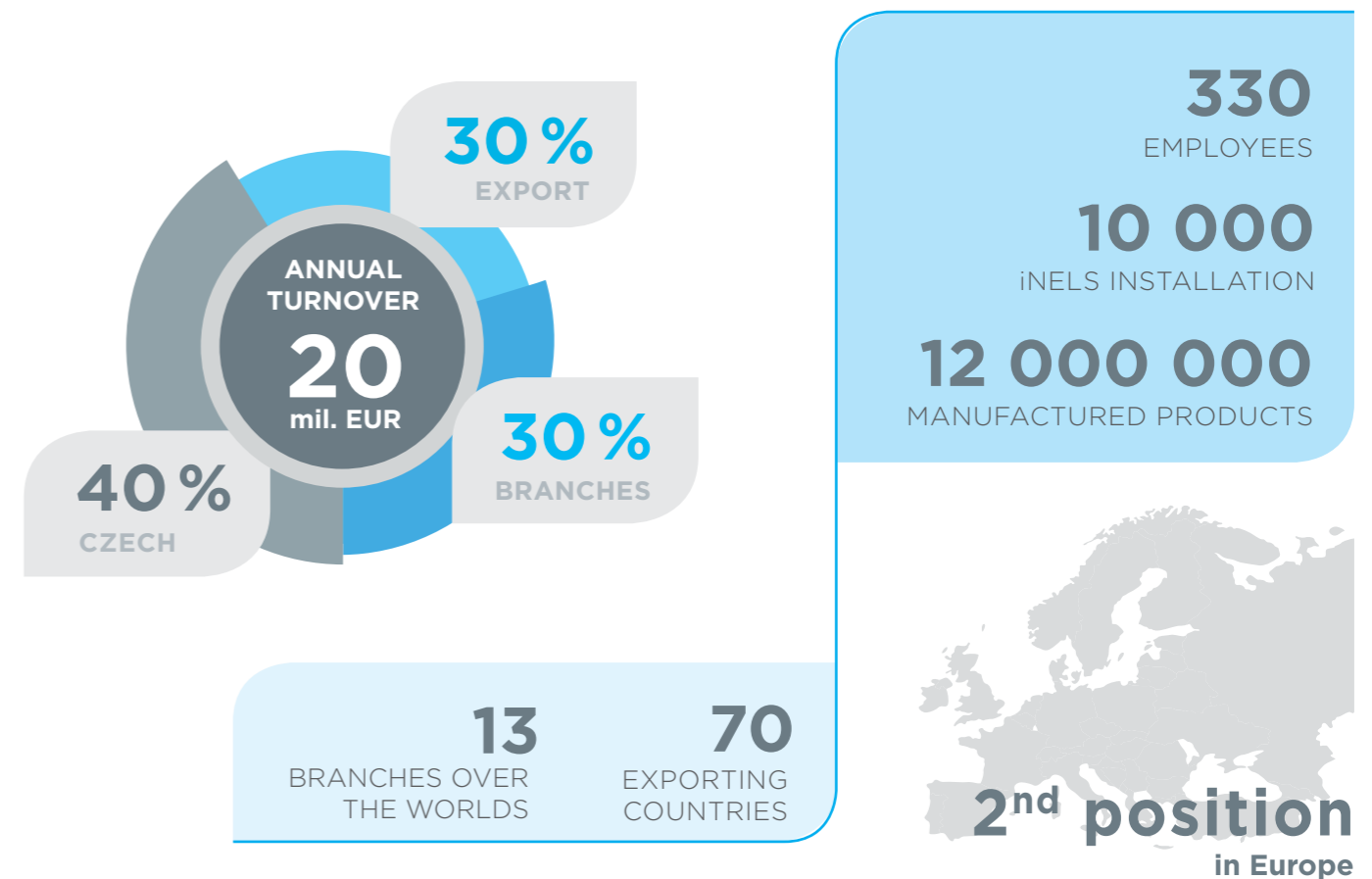
We are traditional, innovative and purely Czech development manufacturer of electronic devices and we have been your partner in the field of electroinstallations for 26 years.

ELKO EP employs about 330 people, exports its products to more than seventy countries, and has representatives in thirteen foreign branches. Company of the Year of the Zlín Region, Visionary of the Year, Global Exporter of the Year, Participation in the Czech TOP 100, these are just some of the awards received. Still, we are not finished. We are constantly striving to move forward in the field of innovation and development. That's our primary concern.

Millions of relays, thousands of satisfied customers, hundreds of our own employees, twenty six years of research, development and production, thirteen foreign branches, one company. ELKO EP, innovative- a purely Czech company based in Holešov, where development, production, logistics, service and support go hand in hand. We primarily focus on developing and manufacturing systems for building automation in the residential, commercial and industrial sector, a wide range of Smart city facilities and the so-called Internet of Things (IoT).



# Facts and stats

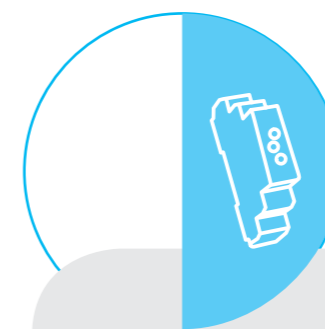


## WE ARE



### DEVELOPERS

In the new R&D center, more than 30 engineers develop new products and extend the functionality of existing products



### PRODUCERS

modern antistatic spaces, 2x fully automated SMD production lines, 2 shift operations.



### SUPPORT

24 hours / 7 days / 360 days we not only provide technical support but also logistics.



### SELLERS

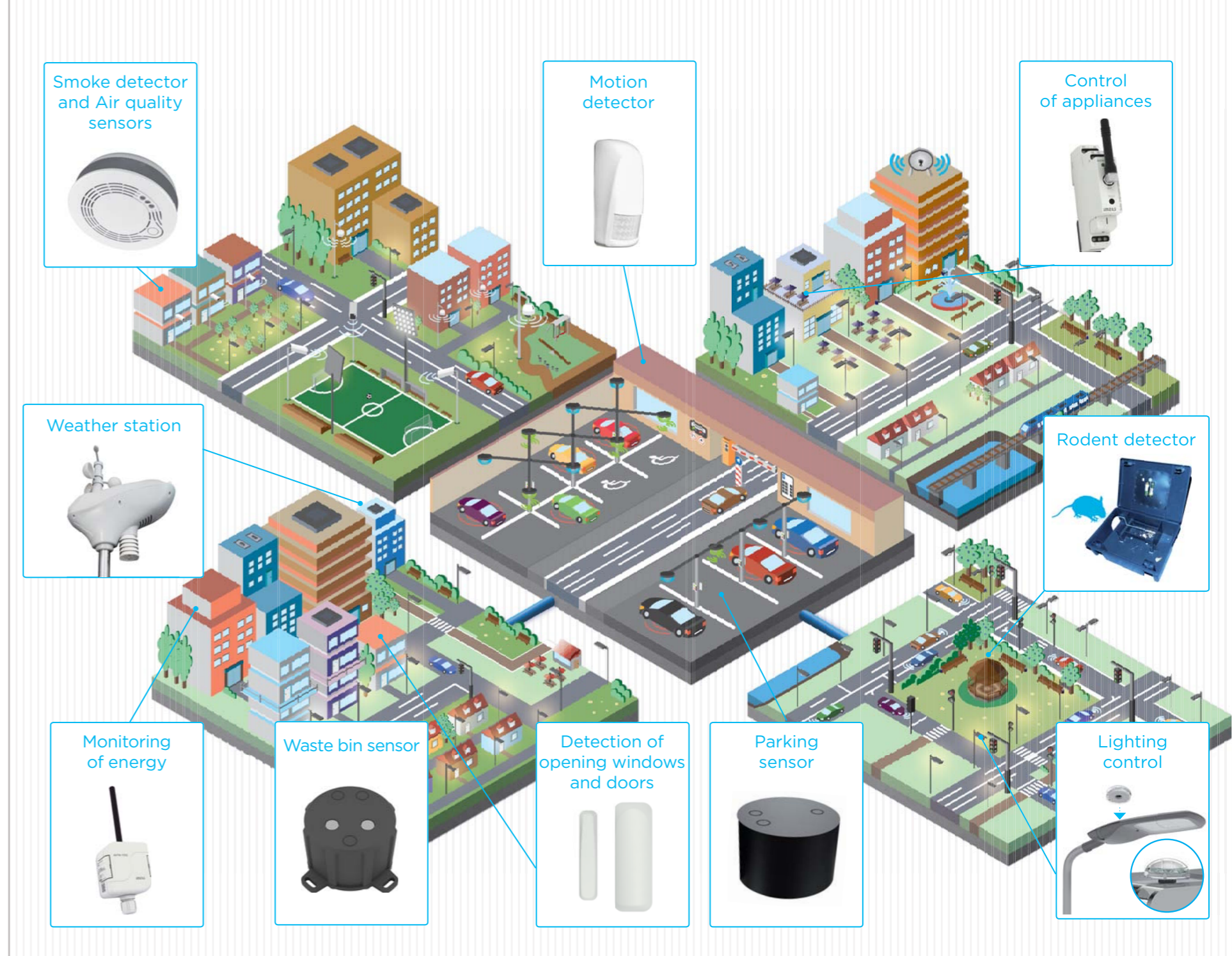
personal access to more than 70 sales representatives in ELKO EP Holding provides impeccable services and superior products at an affordable price.

# About iNELS Air

**iNELS Air was designed in response to the dynamically developing network for IoT (Internet of Things). The IoT wireless communications category describes the Low Power Wide Area (LPWA). This technology is designed to provide full coverage even inside buildings, with energy-saving and low-cost operation of individual devices.**

The product group includes sensors for communication on the Sigfox, LoRa and NB-IoT protocol. Linking sensors with ELKO Cloud and IFTTT (If This Then That) is ideal for a wide range of applications.

Individual products have the letter "S", "L" or "NB" in their type designation. This distinguishes the way of communication. "S" stands for communication over the Sigfox network, "L" stands for communication over the LoRa network, and "NB" uses communication via the NarrowBand network.



The network supports bidirectional communication with a limited number of feedbacks. It uses the free frequency band of 868 MHz. It has more extensive coverage across the Czech Republic and abroad and is therefore more suitable for long distance monitoring of the equipment. You can find current network coverage on the site [www.sigfox.com](http://www.sigfox.com).

A bidirectional network using the free band of 868 MHz for its communications. The advantage of this network is the possibility of freely deploying the individual stations in local locations, thus strengthening their signal. It can therefore be used effectively in areas of companies or cities, for example. You can find current network coverage on the site [www.lora-alliance.org](http://www.lora-alliance.org).

The network is the only one that uses the LTE licensed band for its two-way communication. The advantage of NB-IoT is the use of the already built-in network to ensure adequate coverage both inside and outside buildings. It uses this technology with its SIM card devices. You can find current network coverage on the site.

The use of web-based networks ensures low energy consumption. Thanks to this, most of the sensors can be battery-powered and their capacity can last for an average of 2-5 years. The sensors are simple and affordable. The price for ongoing communication varies depending on the type of network you choose - but in general this communication is considered affordable.

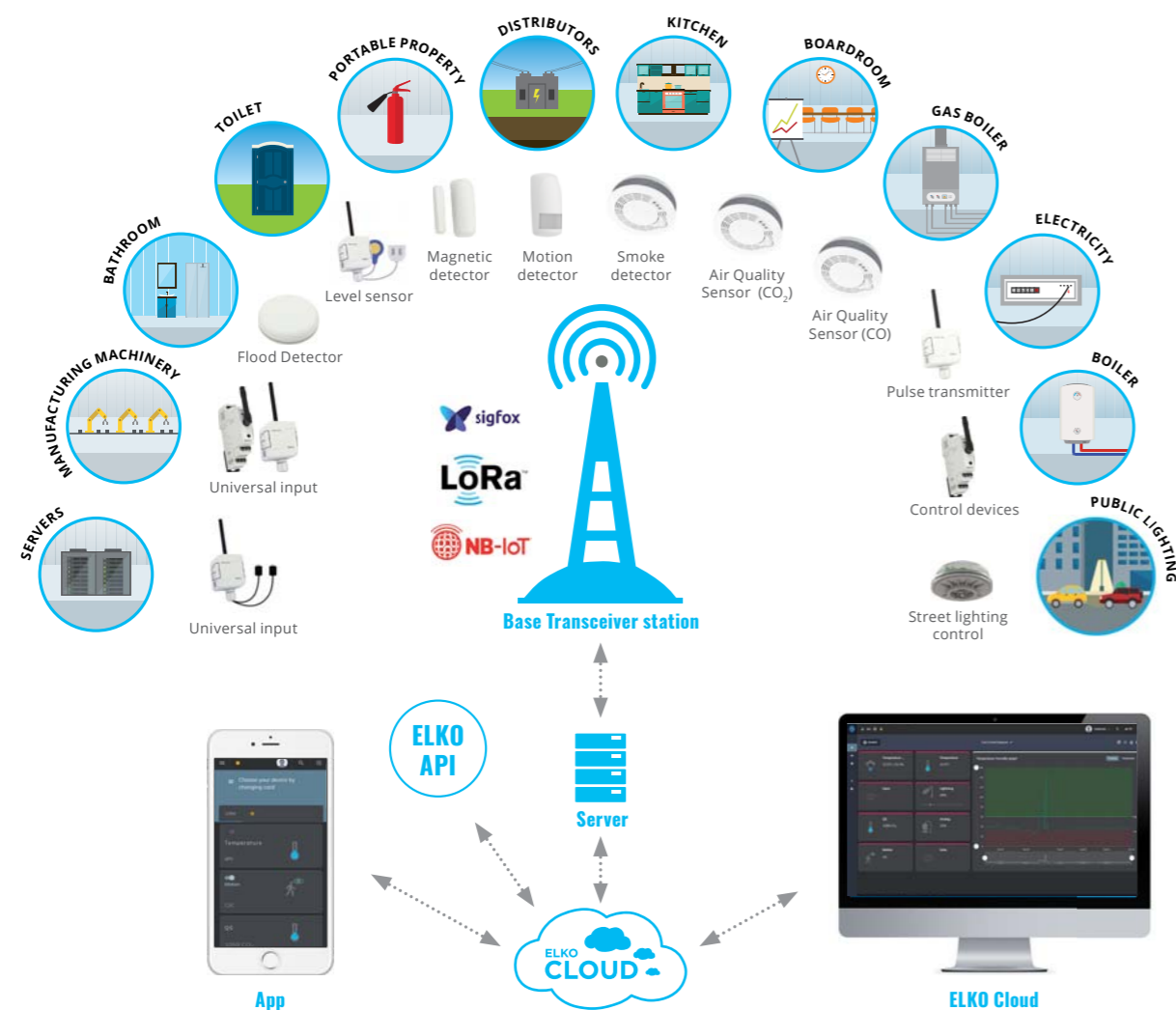
All data from the sensors is encrypted before sending, which ensures their security. Access to the individual measured data can then be done in the application or ELKO Cloud under your login information. This ensures the continuous supervision of your property.

The design of the individual products is tailored to their purpose - the design of the detectors is designed for placing into interior spaces, the modular devices into the switchgear and, on the other hand, the products for outdoor use are IP65 compliant. The wireless design of individual devices also enables easy installation and almost immediate use.

# Principle function

Data from sensors and actors (further as an „devices“) is sent via transmitters (BTS station) to the control server, from where they are sent to Server. Data transmission is provided by the UNB (Ultra Narrow Band) or LoRaWAN (Low Power Wide Area Network) internet protocol. Depending on the user's requirements, data may be sent to the smartphone application or integrated into the master system.

Installation of individual sensors and detectors is very simple. You will place unit randomly in range of the network. The activation of the sensor is achieved using a QR code, which is placed on each component. For the operation of individual products, it is necessary to have a secure connection with the network provider you want to use. This connectivity allows you to select individual intervals for sending messages according to your requirements.



# User registration

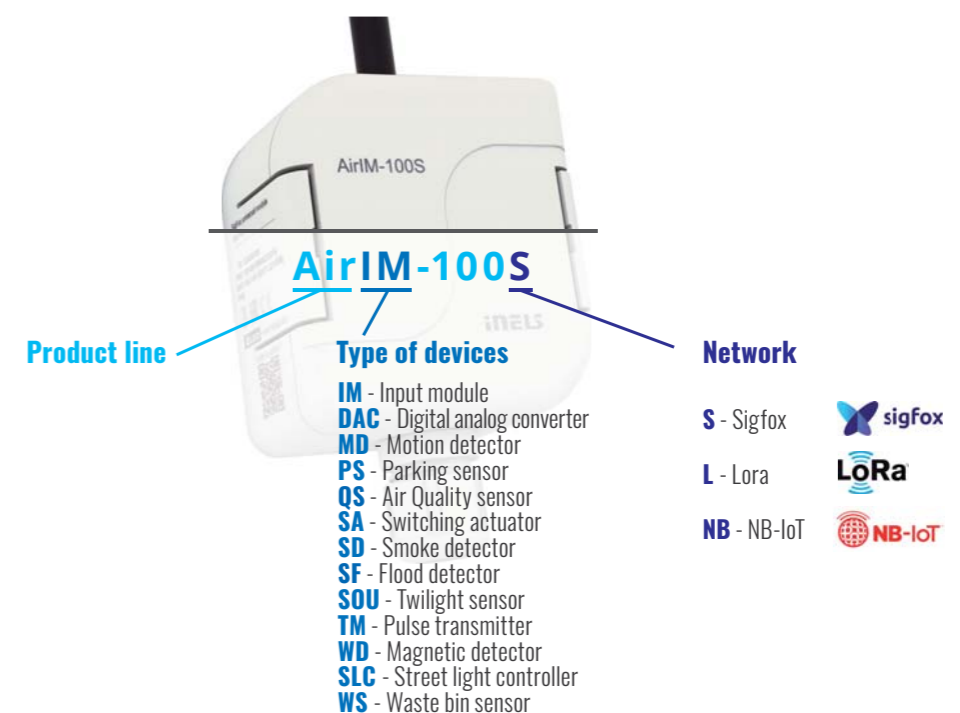
To use the iNELS Air devices, you need to have an ELKO Cloud registration or app registration that will collect the current data from these products, store the history and back up your settings. An unlimited number of devices can be assigned to one account.

The possibility of using ELKO Cloud: Cloud for customers of our company. ELKO Cloud is a bridge for smart phone control. User registration can be done at [www.elkoep.cloud](http://www.elkoep.cloud) or easily from iNELS Air. An email contact is always required to set up your account, this will serve as your login name and your account will be authenticated, and your password can be selected.



ELKO Cloud is secured with the SSL protocol.

# Labeling of the product (Type decoding description)



# Notification and control

**Data from iNELS Air device can be displayed in several variants and combined with each other.**

An important carrier of all information and the overall history of each device is the ELKO Cloud. From this storage, all statement can then be displayed in your smartphone application, where you can set notifications in the form of a popup window in the top bar of the phone, by message to your email. Using this application offers one of the fastest ways to find out about the current status of your sensors and actors. Linking the device(s) to the ELKO Cloud and IFTTT Interface offers extra countless amounts of information on unwanted situations or alarms.

You can view your iNELS Air data in several ways:



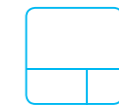
ELKO Cloud



Application & notification



E-mail



IFTTT



Smart City Platform



## ELKO Cloud

To easily view your data on your computer/laptop, use the ELKO Cloud, which in addition to current statuses also stores the history of your sensor data.

[www.elkoep.cloud](http://www.elkoep.cloud)



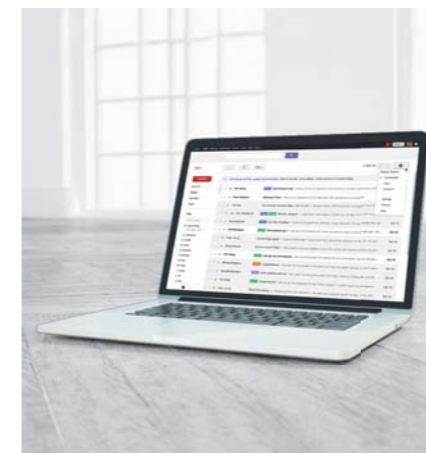
## Application

Simply check the current status of your connected power sensors or detectors directly in your smartphone. The application offers a user-friendly and intuitive environment.



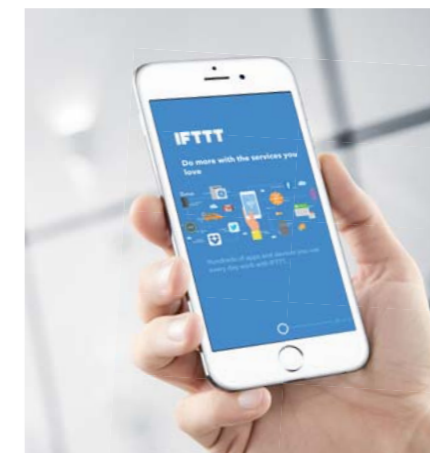
## Notification

The application alerts you to any unwanted status with a popup notification in the top bar of your smartphone. Quickly, you will learn about any changes without having to control the devices directly in the application.



## E-mail

You can also be informed about important changes to the monitored devices by receiving a notification email message direct to your e-mail address. For each sensor, e-mail messages can be set separately.



## IFTTT

IFTTT is a Cloud Bridge that allows iNELS Air communicates through social networks (Facebook, Instagram, Pinterest, and more). It can also control other compatible products within the app.



## Smart City Platform

The platform is designed specifically for displaying the status of individual sensors and actuators and at the same time control the switching devices in the Smart City. Using a laptop or computer, you can view the city plan and individual installed items to show you their current status - for example, free parking spaces.

# Measuring and monitoring temperature and humidity

**Monitoring the required temperature and not exceeding the set limits is a major problem for many industrial, manufacturing and warehousing process.**

The universal sensor can monitor undesirable heating or cooling fluctuations, which are immediately reported. It informs at regular intervals about the actual temperature in the monitored areas. The simple solution is to ensure continuous supervision, thereby eliminating any financial loss caused by overheating or subcooling of the premises or devices.

With its IP65 cover along with battery power makes it ideal for placement in less accessible places.



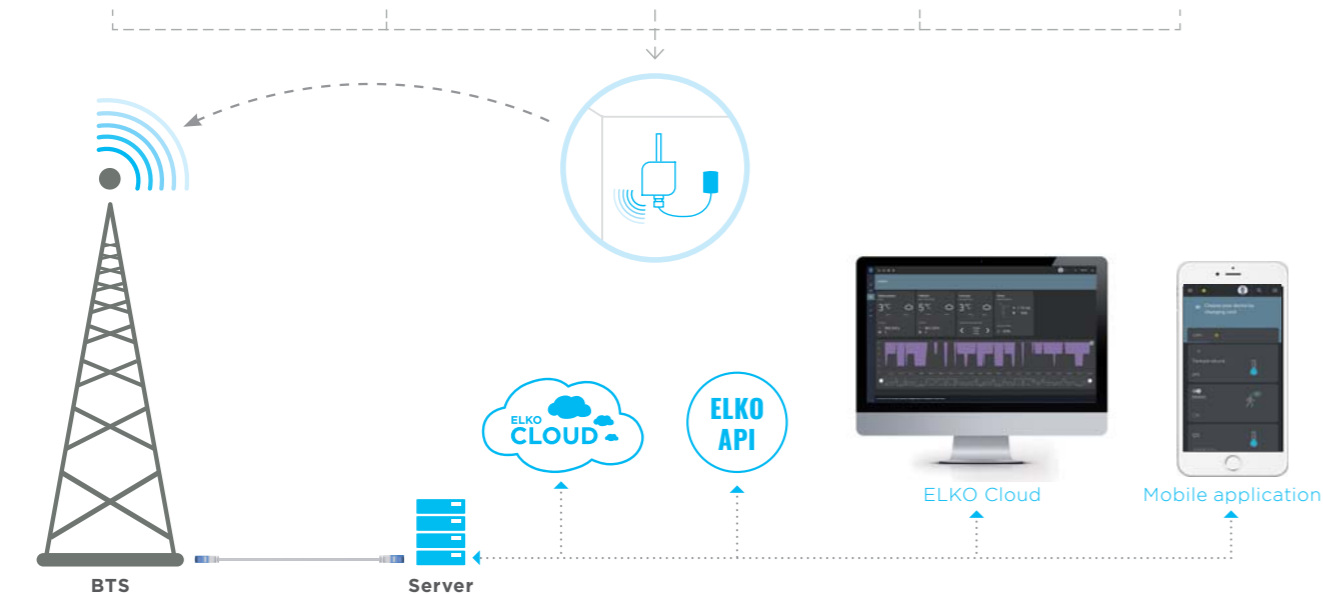
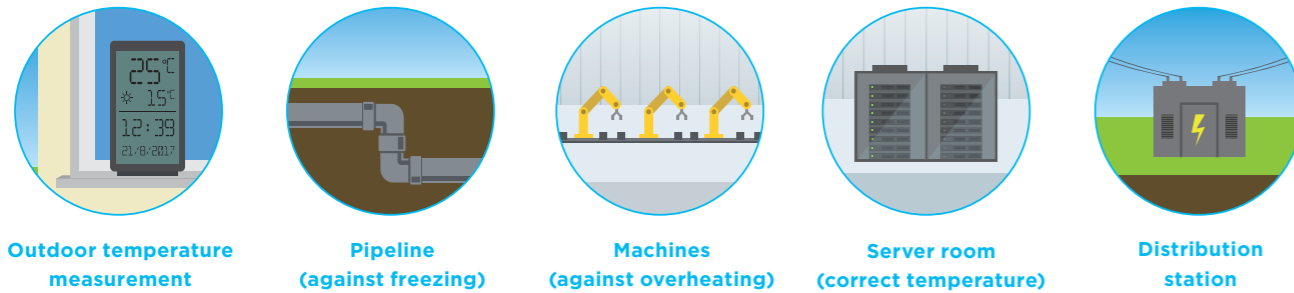
Input module

AirIM-100

- measures the current temperature or humidity of your device through temp. sensors (see Page 52)
- timely warnings against critical temperatures
- can be used for other measurements (voltage, current, level, energy, etc.)
- in IP65 enclosure
- technical parameters see Page 24



## Examples of use:



# State and device monitoring

**The functionality of the equipment and machines is a priority for each manufacturer or operator. Detecting emergencies, critical states and monitoring the current state of the voltage or current of the connected devices can be ensured in a simple way. The universal sensor ensures smooth and seamless operation in the residential and industrial sectors.**

The sensors include analogue and digital inputs that are sent by a BTS transmitter to the Server, where the data is further redirected to the application on your smart phone. The devices can monitor a value of 0/1, measured at the input voltage of 0 (1)—10 V or current 0 (4)—20 mA or connect the output of the monitoring relays (see [www.elkoep.com/products](http://www.elkoep.com/products))



Input module

AirIM-100

- monitor current state of voltage or current flow
- timely warns when the set voltage/current is exceeded/falls below
- can also be used for other measurements (temperature, humidity, altitude, energy measurements, etc.)
- in IP65 enclosure (Protection against water, dust, ...)
- technical parameters see Page 24



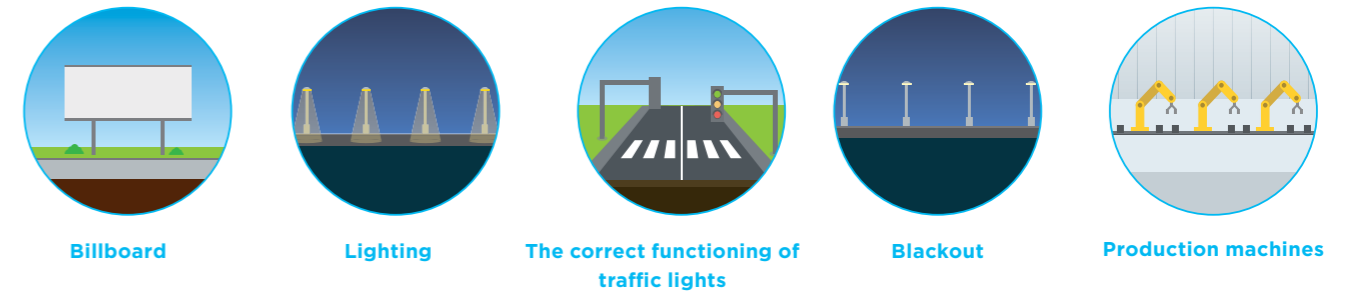
Input module

AirIM-100/M

- in conjunction with the relevant monitoring relay monitors the current status of the appliances and detects critical and emergency states
- permanent power supply 24—240 V AC
- 1-MODUL, DIN rail mounting
- technical parameters see Page 28



## Examples of use:



# Protection against flooding, level control

## Flooding a room is one of the most common domestic accidents that you can easily avoid.

The wireless flood detector monitors for any leakage from your washing machine or dishwasher and warns you in timely fashion of any unwanted water leakage in the bathroom, kitchen, or cellar. If water is detected, you will be alerted by notifications on your smart phone or the ELKO Cloud Report. A universal float sensor or FP-1 external flood probe can be used to monitor the level and give early warning of critical values. Using a flood probe, it is possible to detect, for example, filling the sump while the float sensor reports the filling of the water or other liquid reservoir.



### Flood detector

AirSF-100

- activation occurs after flooding the bottom contacts on the detector
- battery power
- data are displayed in a smart phone application or ELKO Cloud
- IP68 enclosure
- technical parameters see Page 31



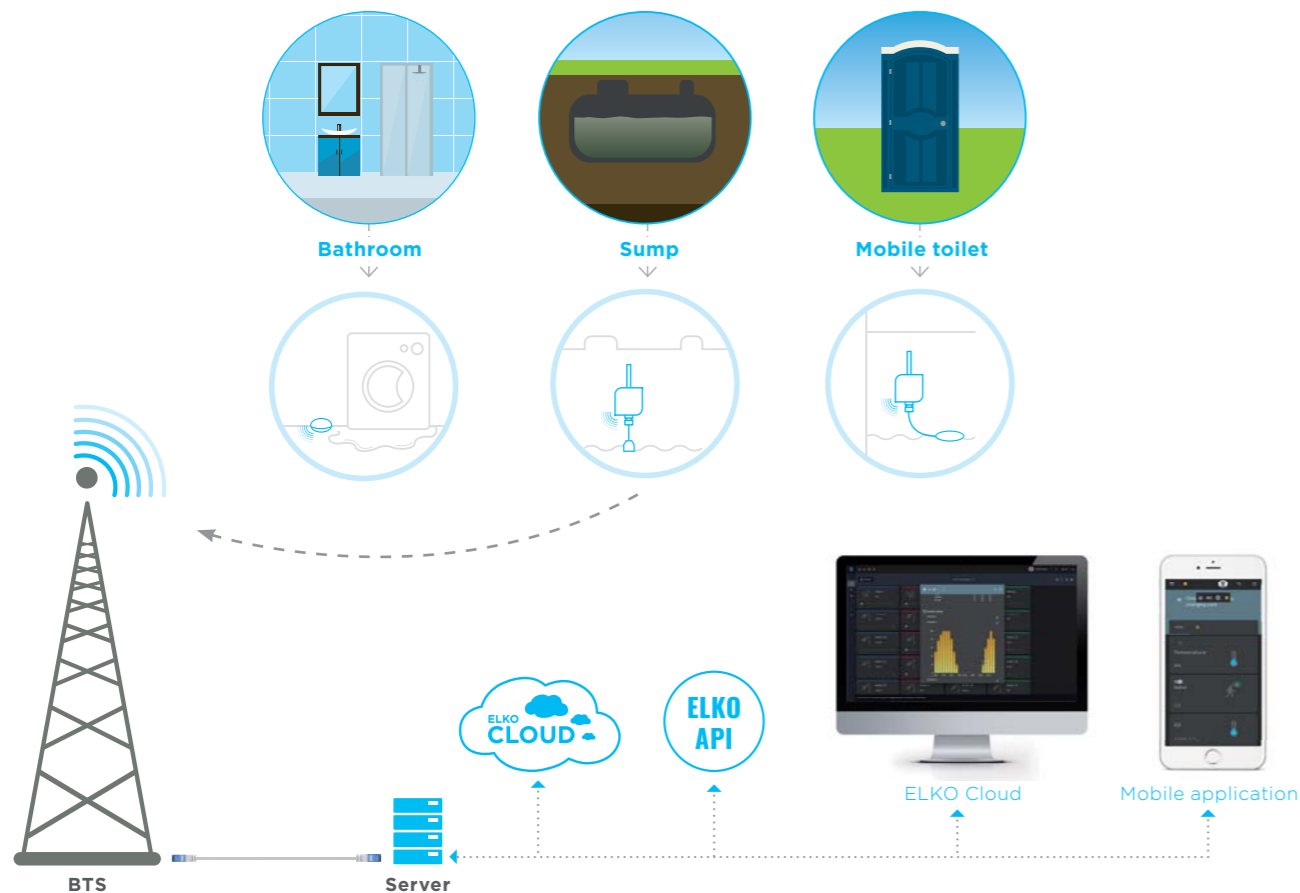
### Level control

AirIM-100

- monitor the current level of liquid
- It warns against critical values in a timely manner
- battery power / permanent power supply 5 - 12 V DC
- IP65 enclosure (Protection against water, dust, ...)
- only one sensor can be connected to the AirIM
- technical parameters see Page 24



## Examples of use:



# Inventory monitoring, relocation, ...

## Windows and doors are an easy target for uninvited visitors, so it's good to have everything under control.

The detector consists of two parts - the main housing and magnetic. The main housing enables all communication and monitors the position of the magnet in the magnetic part. The alarm will be triggered when the magnet is removed from the main housing so you informed about the unwanted movement and you can react quickly to it. Although the detector is primarily designed for windows and doors in remote buildings, cellars, or substations, it can also be used to monitor movable property or when you want to know that inventory is moving.



magnet

### Magnetic detector

AirWD-100

- activation occurs by removing the magnet from the sensor
- for indoor use
- status is displayed in a smartphone application or ELKO Cloud
- battery power
- technical parameters see Page 32



magnet

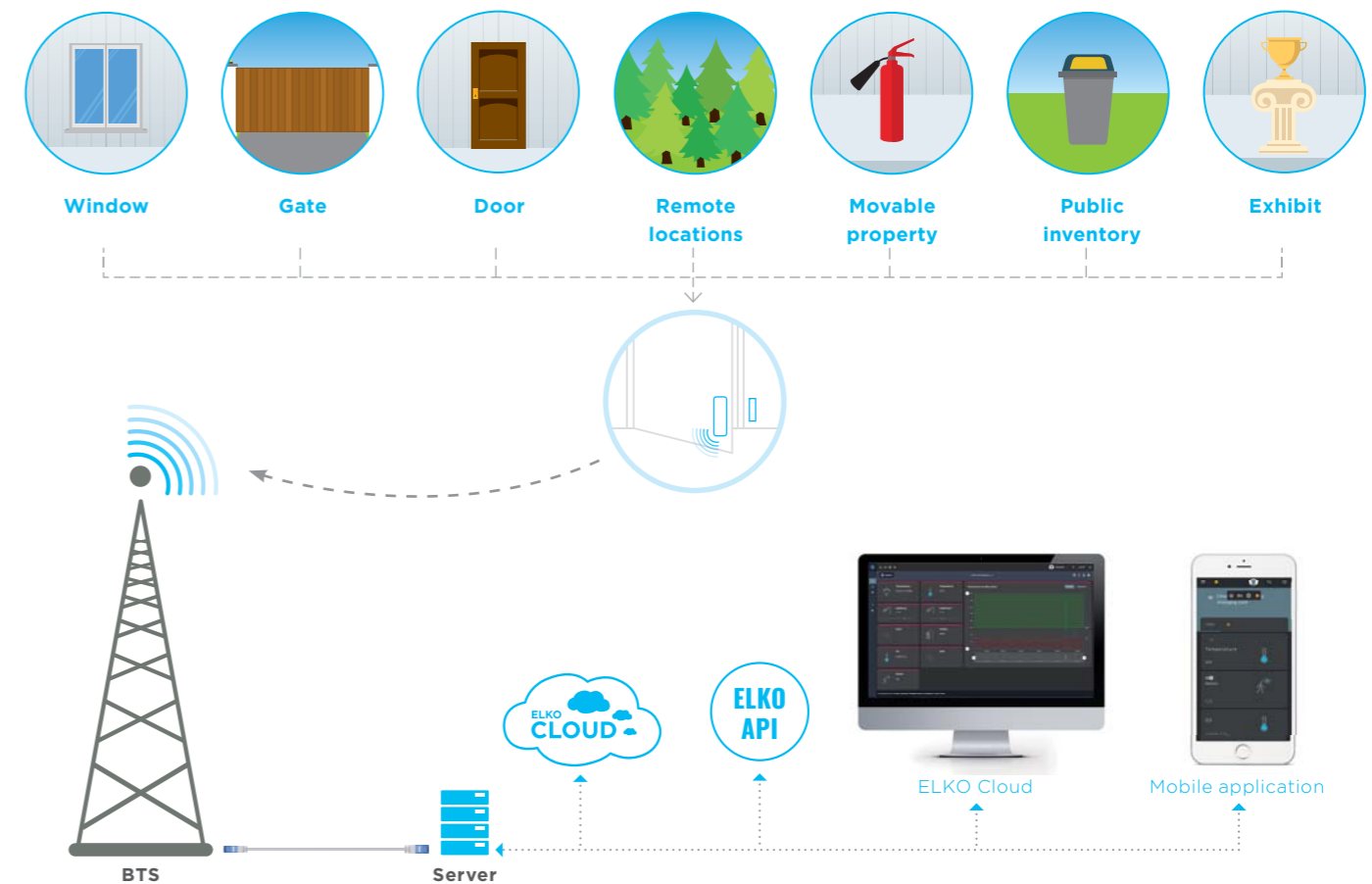
### Magnetic detector

AirWD-101

- activation occurs by removing the magnet from the sensor
- for outdoor use
- status is displayed in a smartphone application or ELKO Cloud
- battery power
- technical parameters see Page 33



## Examples of use:



# Motion detection

**Keep control before the intrusion of strangers and cottages, barns, for example, the substation which you look into once in a while.**

The motion detector will guard these areas for you. Using a keychain, you simply unlock these areas when you are present, and when you exit you use the keychain again to activate the detector. In addition, one detector can be paired with multiple key chains, so all members of your family or authorized person can have their own keychain.



Motion detector  
AirMD-100

- detects people moving in a supervised area
- sensitivity adjustment
- battery power
- technical parameters see Page 30




+


Mini alarm  
Motion detector & RF Key

- used to activate and deactivate the motion detector at the moment you leave or enter the guarded area
- RFIO<sup>2</sup> communication protocol
- technical parameters see Page 51

## Examples of use:



# Detecting presence of smoke

**The kitchen and living room are the two most frequently used room in which are also the most appliances. Therefore, it is natural to have these rooms protected from any resulting fire.**

The smoke detector alerts you to any emerging fire, allowing you to respond and protect not only the people in the area but also your property in a timely manner.

After the smoke detection of an emerging fire, it instantly transmits this information to Server. Therefore, its use also plays an important role in monitoring remote areas, such as free-standing garages, barns or power stations, where you look only once in a while.

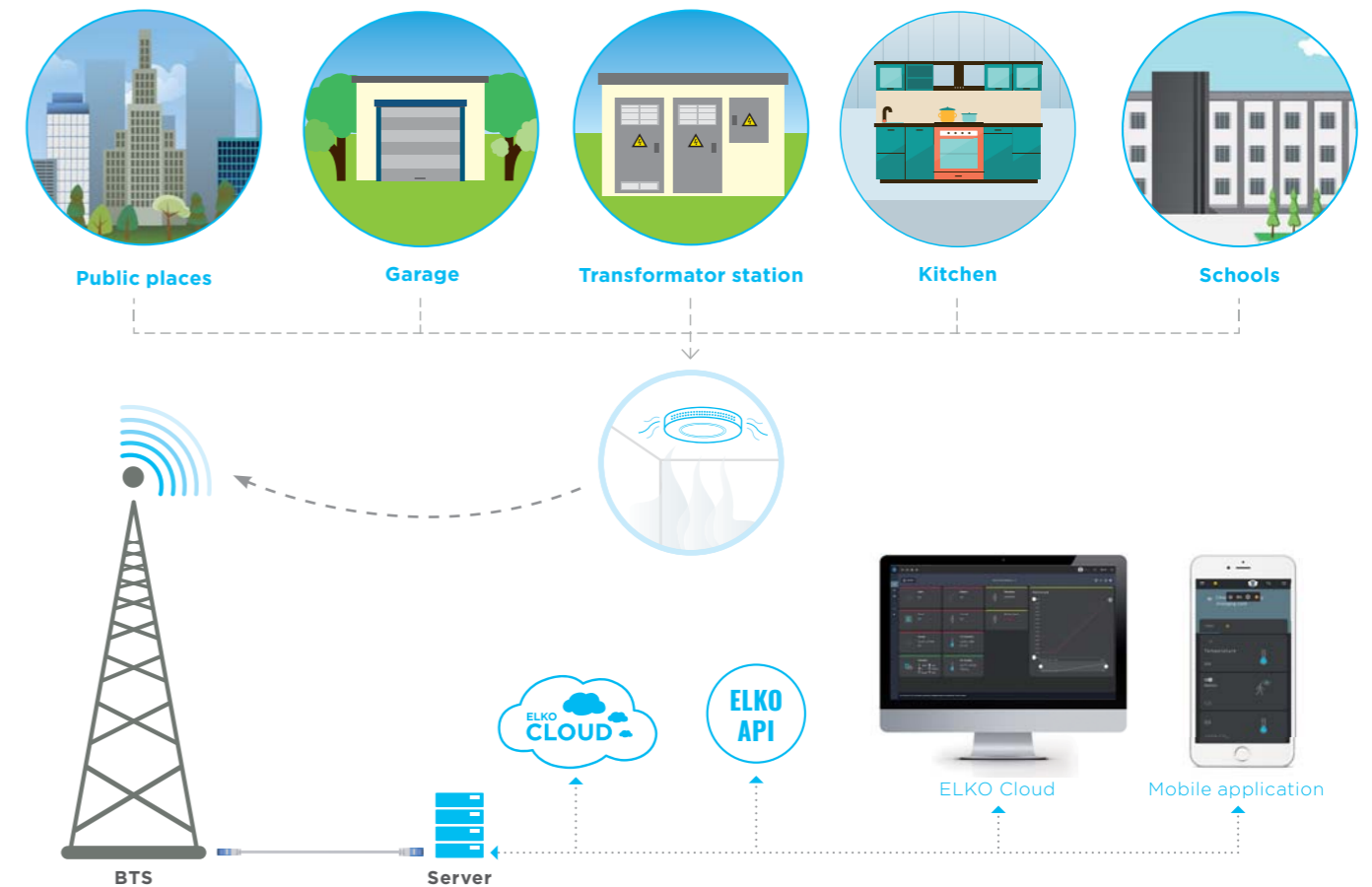


Smoke detector  
AirSD-100

- smoke detection in the result of fire
- automatic testing of functionality
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- battery power 4x AA
- technical parameters see Page 34



## Examples of use:



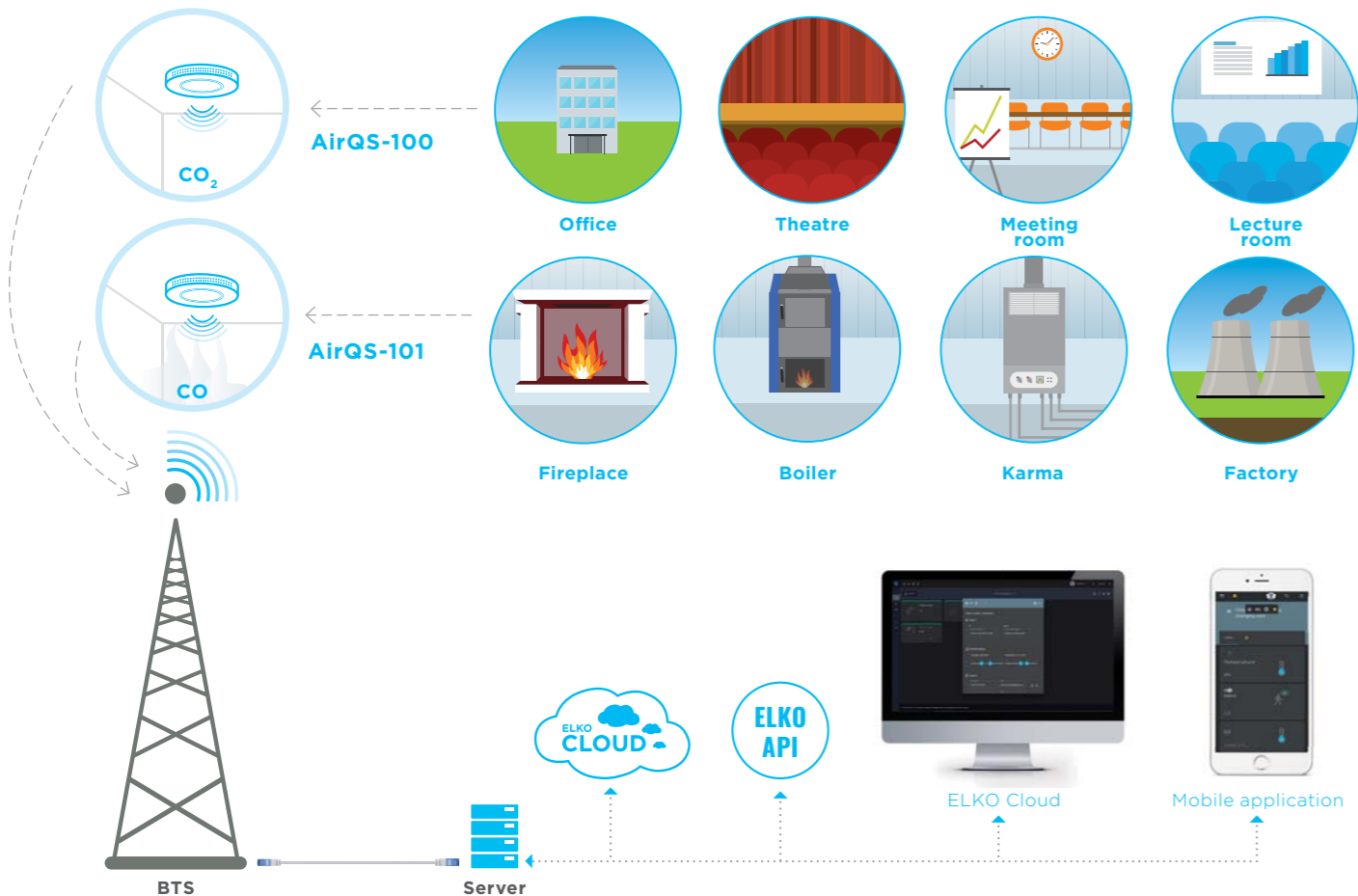


# Surrounding Air quality

**Impurities in the air are among one of the basic environmental problems. Some substances also have a negative effect on human beings.**

Even one person in a poorly ventilated room, by breathing, will soon increase the carbon dioxide (CO<sub>2</sub>) concentration to a detrimental level. Higher concentrations can cause headache, affect the ability to concentrate, drowsiness, or worse. Conversely, carbon monoxide (CO) is produced by incomplete combustion and is very dangerous for human beings. This gas is also produced by cigarettes or aromatic rods. Our sensors will allow you to easily measure these concentrations and react to an undesirable amount in a timely manner. They can also be part of a master system.

## Examples of use:

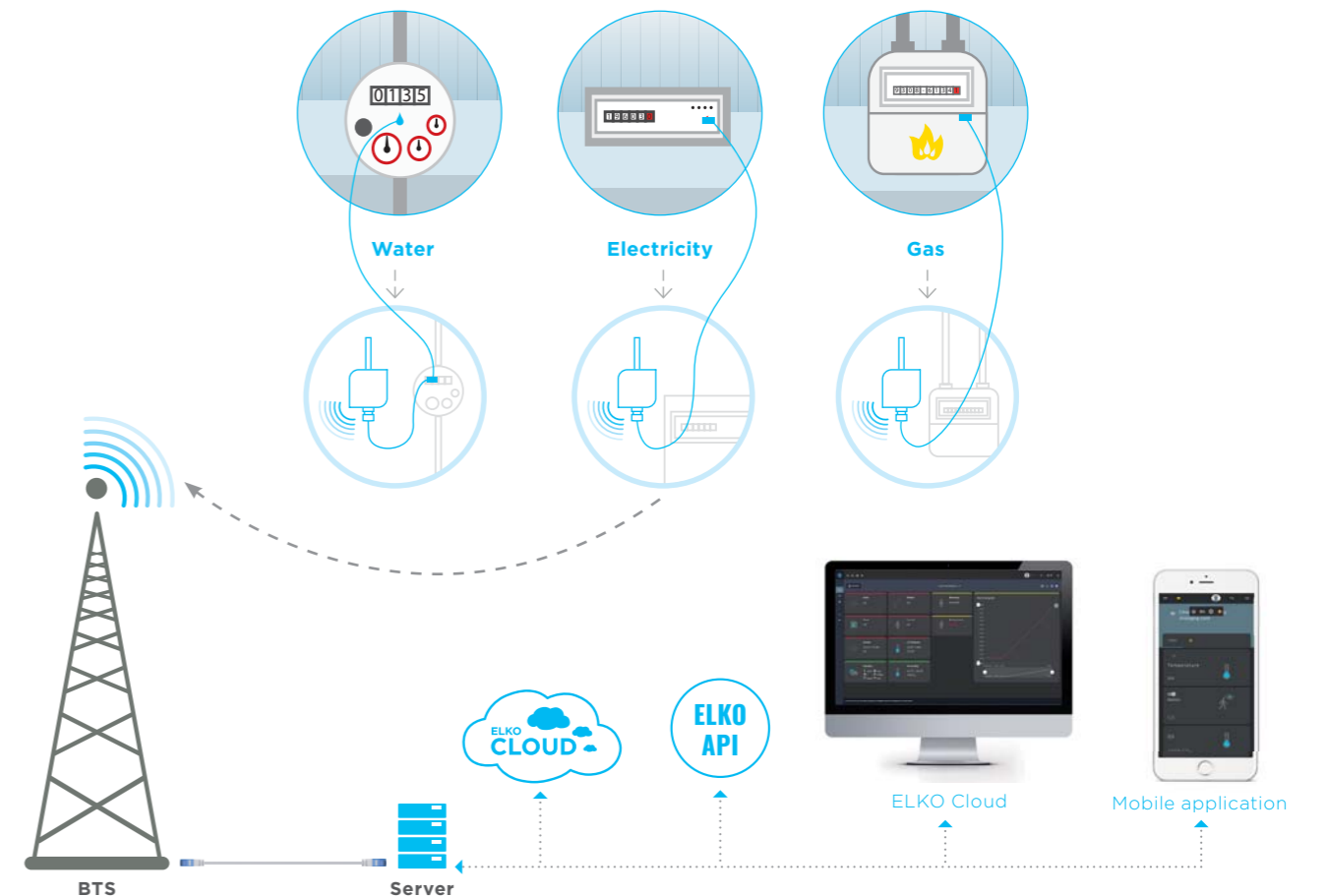


# Measurement and monitoring of energy

**Monitoring of energy due to the ever increasing cost is among the important aspects of every object or property.**

Wireless sensors are installed directly on to the water meter, gas meter and electrical meter without damaging their seals. Pulses and data are converted to wireless commands that are transmitted to Server, where they are further processed and evaluated. You can also set a notification when you exceed the set (critical) parameters using the smartphone application.

## Examples of use:



**Air quality sensor - CO<sub>2</sub>**  
AirQS-100

- measurement of the concentration of CO<sub>2</sub> which, in large quantities, can cause headache, affect the ability to concentrate, drowsiness, or worse
- information about actual temperature and humidity
- automatic testing of functionality
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- permanent power supply 12-240 V AC/DC
- technical parameters see Page 36

**Air quality sensor - CO**  
AirQS-101

- a security component for monitoring the CO concentration resulting from incomplete combustion
- information about actual temperature and humidity
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- battery power, 4x AA
- technical parameters see Page 38



**Pulse transmitter**  
AirTM-100

- a wireless pulse transmitter designed to scan data from home energy meters
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- battery power
- in IP65 enclosure (protection dust, ...)
- technical parameters see Page 26

**Supported sensors**

- LS - LED sensor
- MS, WS - magnetic sensor
- SO - pulse output
- technical parameters see Page 53



# Waste management

**The primary idea of smart waste management is to streamline waste administration with the help of modern technologies and to directly reduce the costs of collection and disposal.**

Ultrasound scans the “level” of the waste, and over the IoT wireless network it regularly transfers this information to the Server.

Battery power allows for up to 5 years of operation, outdoor weather-resistant design allows it to rest on the lid of the container. The entire sensor is located in an anti-vandal box.

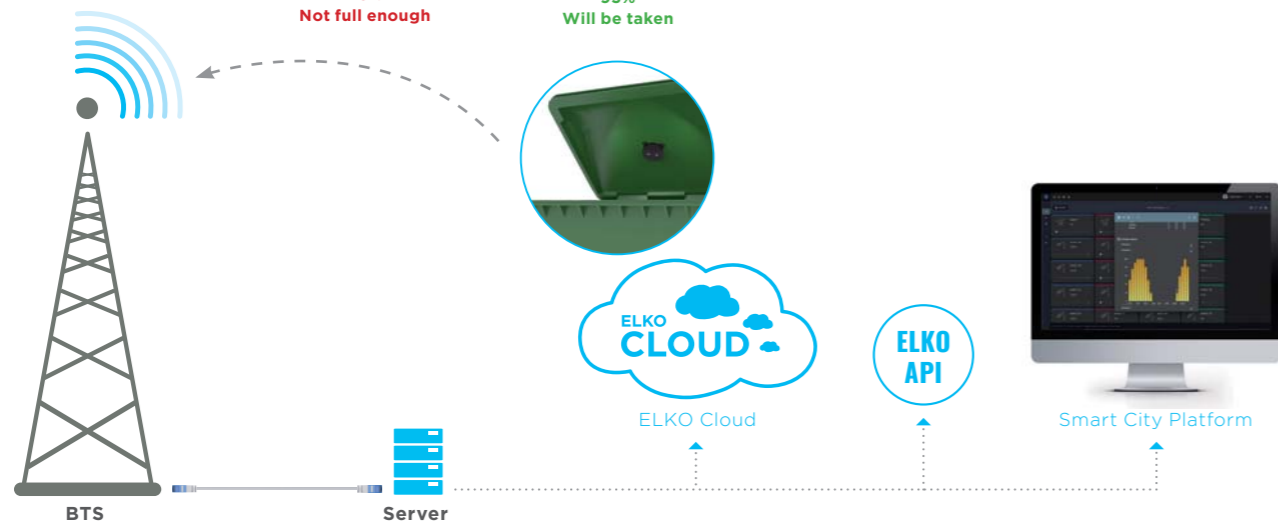
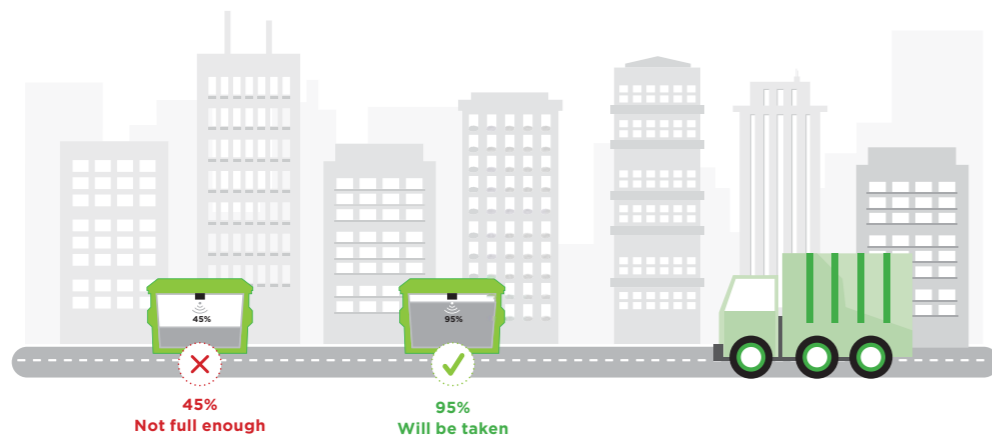
The filled volume of the container can be viewed via the platform on-line, in a clear map background with color-coded icons. Builtin artificial intelligence, collection history, and current period can predict the requirement for emptying. In this way, containers of recyclable secondary raw materials (paper, glass, PET) can also be monitored.



## Waste bin sensor

AirWS-100

- ultrasound sensor informs about the fill volume condition of the container, the waste container, may trigger a requirement to empty it.
- temperature sensor informs about temperature in waste container
- built-in sensor for opening the lid or for tipping over the waste container
- battery power with a lifetime of about 8 years
- IP65 protection
- technical parameters see Page 47



# Smart parking

**Finding a free parking space in today’s crowded cities is almost a miracle...**

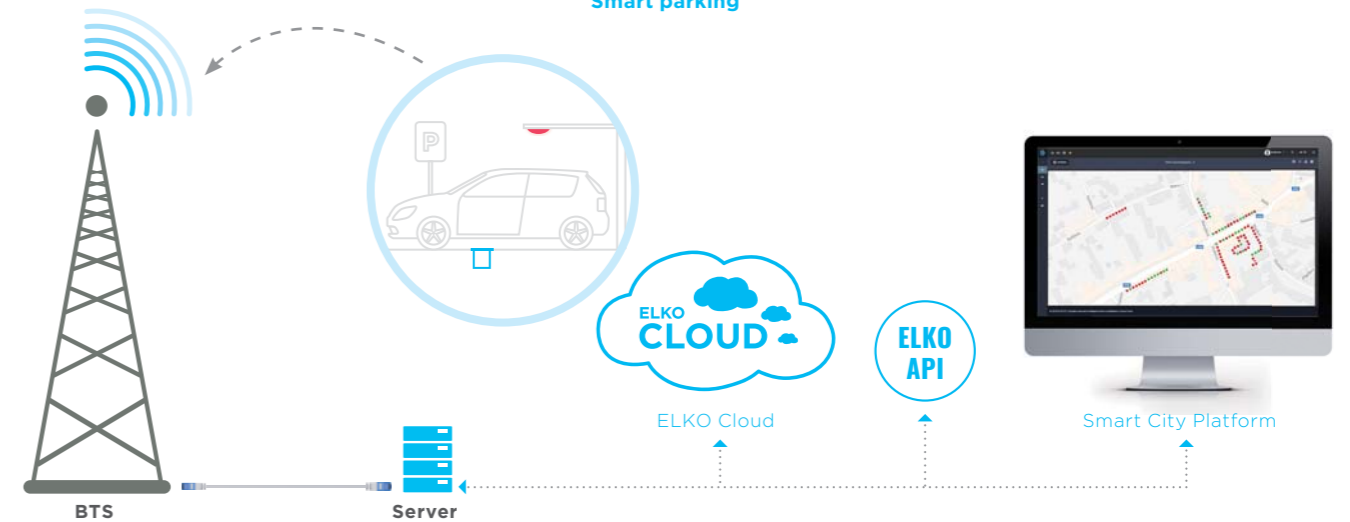
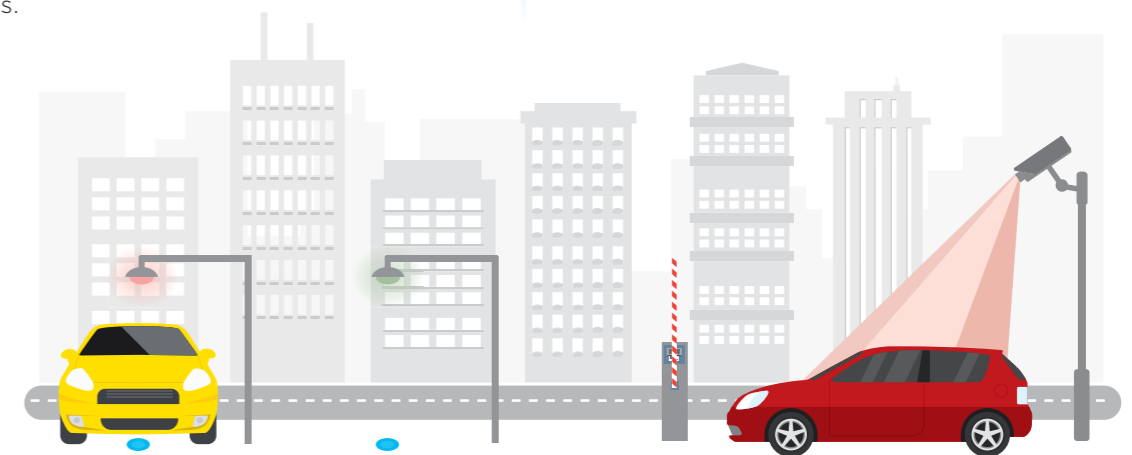
A total of 20% of drivers in urban traffic are just looking for a place to park. However, their cars cannot easily reach free spaces. The solution is to install parking sensors that use state-of-the-art technology. In conjunction with the service application, you have a solution that will free the streets of your city. Sensors located on individual parking spaces detect occupancy; the application navigates cars to vacancies, and in the case of charging customers can also pay parking fees. The installation of sensors is simple; it takes about 20 minutes with the necessary equipment. Our parking sensors can be used in corporate parking lots, car parks at department stores or administrative complexes.



## Parking sensor

AirPS-100

- detects a free or occupied parking space utilising the magnetic principle
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- battery power with a lifetime of about 10 years
- enhanced IP67 protection
- technical parameters see Page 46



# Smart street lighting

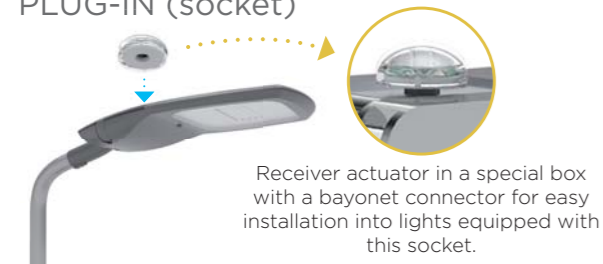
**Smart public lighting is environmentally friendly, as well as being kind to your wallet.**

Replacing existing light sources with modern LED lights combined with intelligent control makes it possible to reduce the cost of electricity consumption by up to 80%. Thanks to the LoRa's modern network of communications, the lights can be controlled from up to 20 km. In addition to switching on and off, it is possible to control the intensity of lighting and also to diagnose a light defect. Using an oscilloscope, it can respond to ambient conditions. The component for public lighting simply attaches to the light or the mast and is immediately operational. Control can be performed from the control room by using cloud applications, in the field by tablet or smartphone.

## Retrofit modul



## PLUG-IN (socket)



## OEM (built-in) - Embedded



## Street light controller

AirSLC-100/LWES, AirSLC-100/NEMA

- two standards: 4 pins - LUMAWISE ENDURANCE S, 7 pins - NEMA
- „hat“ is according to the type of luminaire on the bottom or top
- output: DALI or 0-10 V
- technical parameters see Page 40-43



## Street light controller

AirSLC-100

- a component for switching public lighting in a city, area, car park
- data are displayed in a smart phone application or Cloud
- permanent power supply 110—230 V AC
- in IP65 enclosure (Protection against water, dust, ...)
- output: DALI or 0-10 V
- technical parameters see Page 44



## Twilight sensor

AirSOU-100

- allows you to capture the current natural light intensity, and with this information control the intensity of artificial lighting, thereby reducing power consumption.
- battery power
- enhanced IP65 protection (dust and splash protection)
- technical parameters see Page 45



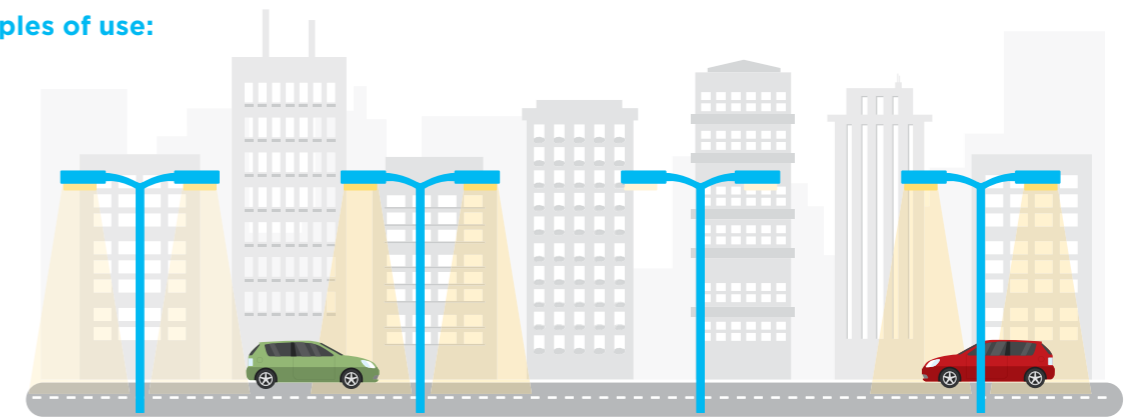
## Built-in

LoRaWAN Modul OEM

- Connection: soldering pins
- Power supply: 5-24VDC, after breaking source parts only stabilized 3V3 / 140mAh
- Communication:
  - SPI 1x
  - Analog pins 8x (12-bit)
  - USART 1x
  - I / O digital pins 29x
- Gain: + 2,12 dB
- Communication: LoRa 868Mhz
- Antenna: external ULF or SMA connector, internal bent parts of the product
- technical parameters see Page 50



## Examples of use:



# Controlled dimming of lights

**Maintain a constant light intensity in a given area is for many of us a tough challenge...**

Using the dimming light sensor, you can simply capture data relating to the natural light and respond to it by utilising artificial lighting control, which also reduces electricity consumption. Thanks to its enhanced coverage and battery power, it can also be placed in outdoor areas and used in both residential and commercial projects - production or storage halls or greenhouses. You can also use the unit as the main component which can control a whole group of luminaires using the measured data.



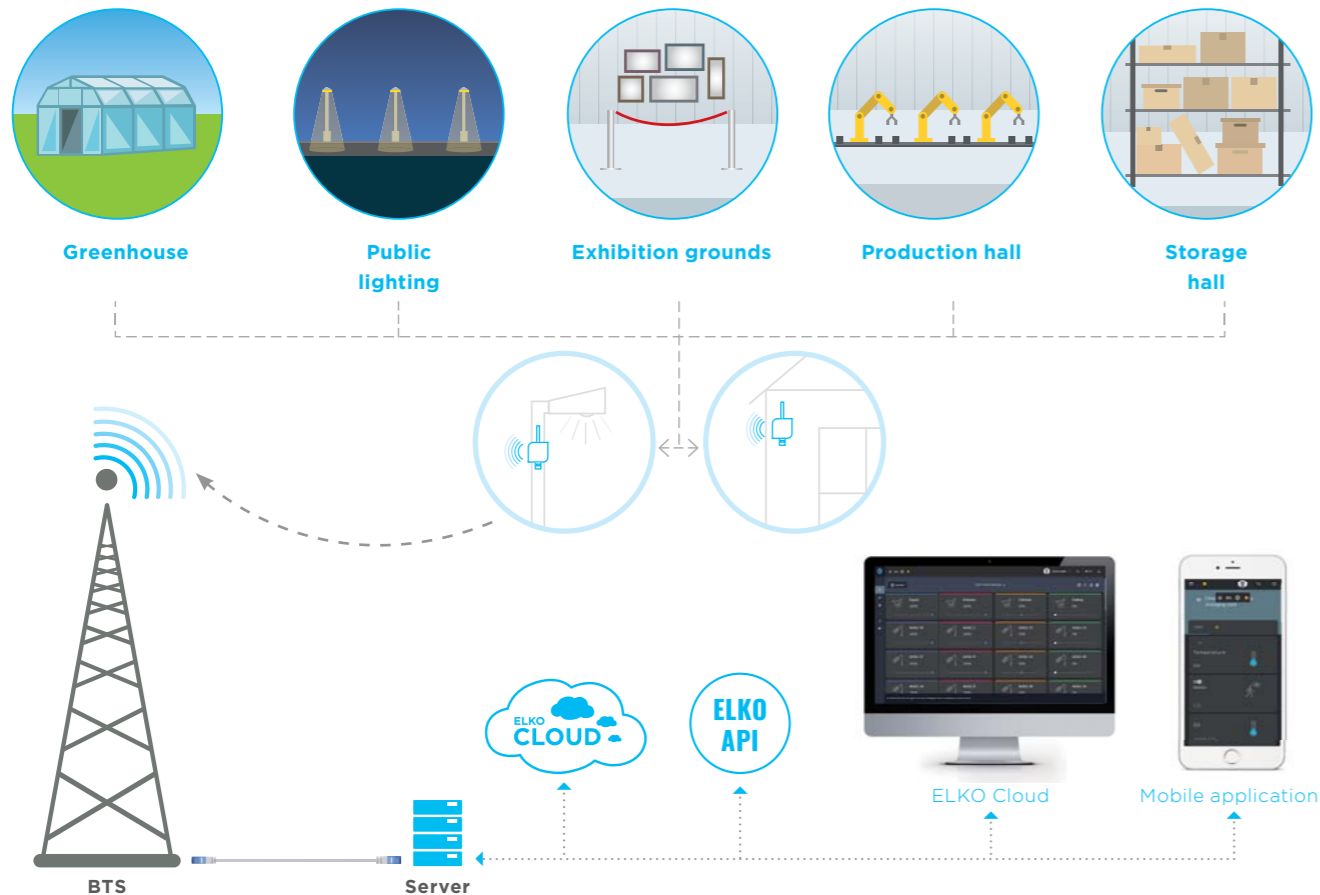
Twilight sensor

AirSOU-100

- allows you to capture the current natural light intensity, and with this information control the intensity of artificial lighting, thereby reducing power consumption.
- battery power
- enhanced IP65 protection (dust and splash protection)
- technical parameters see Page 45



## Examples of use:



# Technical informations

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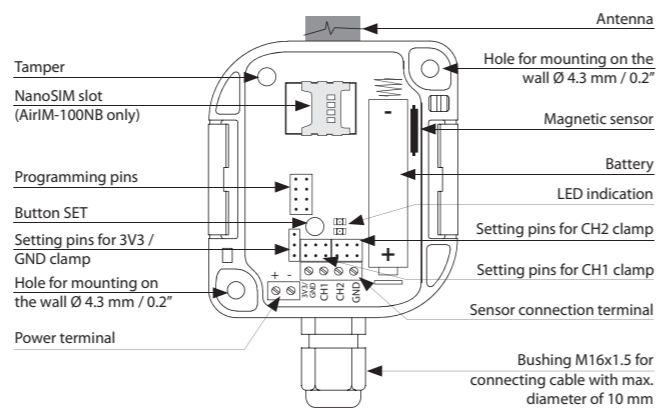
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- The universal device is used to detect device statuses which ensure the smooth and trouble-free operation both in the residential and industrial sectors.
- The sensor has a pulse, analog, binary input and terminals for connecting the temperature sensor.
- In conjunction with the sensor it is used, for example, for monitoring the level, temperature, gas, water or electricity, flooding...
- It provides a quick solution to learn about the critical condition of your device which you can immediately respond to (e.g. service interference).
- Using the universal sensor will help you eliminate financial losses caused by device malfunctions, or report the need for action in advance.
- For each power meter it is necessary to have one universal AirIM-100 sensor.
- With the wireless solution and Sigfox / LoRa / NB-IoT 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.
- Anti-sabotage: When a cover is removed, a message is sent to the application or ELKO Cloud.
- Power supply: 5-12 V DC or 1x 3.6 V batteries SAFT with approx. 5 years (depending on the frequency of use)
- In the case of external power, the battery is automatically disconnected and serves as backup power.
- Protection degree IP65.

Device description



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 <sup>2</sup>
Connection of the sensor:	terminals, wires 0.5 – 1 mm <sup>2</sup>
Cable grommet:	M16 x 1.5 for cable ø max. 10 mm
Dimension with antenna:	182 x 62 x 34 mm
Weight:	108 g (without battery)

Technical parameters	AirIM-100S	AirIM-100L	AirIM-100NB
<b>Power supply</b>			
Battery power:	1x 3.6V LS 14500 Li-SOCl <sub>2</sub> AA		
Battery life:	max. 5 years	max. 3 years (depending on the frequency of use)	
External power supply:	5 – 12 V DC (on terminal)		
Supply voltage tolerance:	+10 %; -15%		
Standby consumption:	0.2 mW		
Transmitting power consumption:	250 mW	150 mW	850 mW
<b>Setting</b>			
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 Magnetic contact Tamper

Analog inputs	
Thermal:	TC / TZ*
Voltage:	AIN 0(1) - 10 V
Current:	AIN 0(4) - 20 mA
Battery measurement:	12 V/24 V
Flooding:	Flood probe*

Digital inputs	
Inputs:	IN1, IN2
Supported sensors for energy measurements:	LS (LED sensor)* MS, WS (magnetic sensor)* SO (Contact, open collector)

Detection of the magnet sensor	
Closed:	< 1.5 cm
Open:	> 2 cm
Reliability:	99.9 %

Other supported sensors	
Flood probe:	FP-1
Tempe. and humidity measurement:	HTM2500LF

Temperature measurement range	
Thermo sensor TC:	0 .. 70 °C
Thermo sensor TZ:	-40 .. 125 °C
Sensor HTM2500LF:	-40 .. 85 °C

Communication			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km**	Approx. 10 km**	Approx. 30 km**

\* Not included in the package  
 \*\* Depending on network coverage  
 \*\*\* Pay attention to the operating temperature of batteries -60...+85 °C

Function

- 1. Energy measurement - pulse counting SO**  
 When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
 Recommended accessories: cable for SO output
- 2. Energy measurement - pulse counting from active sensor LS, MS, WS**  
 When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
 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.
- 3. Flood Detection - Flood Sensor**  
 Recommended accessories: flood sensor FP-1
- 4. Opening detection - Window / Door Magnetic Sensor (integrated inside the unit)**  
 Activation occurs by delaying the magnet from the sensor.  
 Recommended accessories: Magnet D / WD  
 Note: The universal sensor has a magnet sensor located only on one side, so be careful about the correct position relative to the magnet.
- 5. Analog measurement. Voltage 0 - 10 V**
- 6. Analog measurement. Current 0 - 20 mA**
- 7. Battery measurement 12/24 V - voltage measurement 0 - 24V**
- 8. Temperature measurement**  
 Recommended accessories: TC or TZ temperature sensor
- 9. HTM2500LF - Temperature and Humidity Sensor Measurement HTM2500LF**  
 Recommended accessories: HTM2500LF sensor
- 10. Alarm function - check the contact**

Sigfox Ready Certification

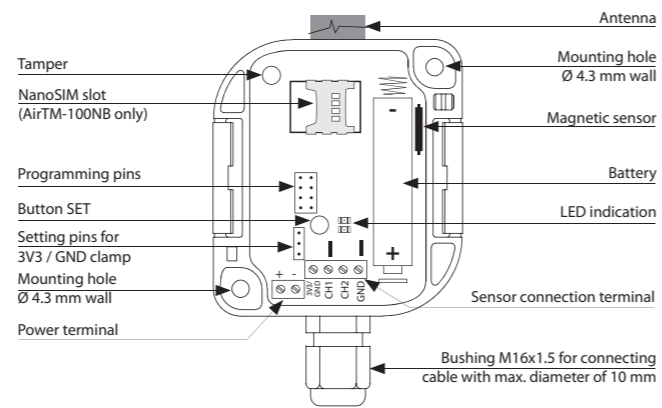


Certificate ID for AirIM-100S Universal Sensor:  
 P\_0094\_56EE\_01



- The Wireless Pulse Transmitter counting quantities of pulses from the energy meters (electricity, water, gas).
- The sensor is designed for use on existing gauges even without impulse output „50“ (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 universal AirTM-100 sensor.
- With the wireless solution and Sigfox / LoRa / NB-IoT 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 with approx. 5 years (depending on the frequency of use).
- In the case of external power, the battery is automatically disconnected and serves as backup power.
- Protection degree IP65.

Device description



Technical parameters	AirTM-100S	AirTM-100L	AirTM-100NB
<b>Power supply</b>			
Battery power:	1x 3.6V LS 14500 Li-SOCl <sub>2</sub> AA		
Battery life:	max. 5 years	max. 3 years (depending on the frequency of use)	
External power supply:	5 - 12 V DC (on terminal)		
Supply voltage tolerance:	+10 %; -15%		
Standby consumption:	0.2 mW		
Transmitting power consumption:	250 mW	150 mW	850 mW
<b>Setting</b>			
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		
<b>Control</b>			
Control:	button SET Magnetic contact Tamper		
<b>Detection of the magnet sensor</b>			
Closed:	< 1.5 cm		
Open:	> 2 cm		
Reliability:	99.9 %		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
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 <sup>2</sup>		
Connection of the sensor:	terminals, wires 0.5 – 1 mm <sup>2</sup>		
Cable grommet:	M16 x 1.5 for cable ø max. 10 mm		
Dimension with antenna:	182 x 62 x 34 mm		
Weight:	100 g (without battery)		

\* Depending on network coverage

\*\* Pay attention to the operating temperature of batteries -60...+85 °C

Function

- 1. Energy measurement - pulse counting S0**  
When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
Recommended accessories: cable for S0 output
- 2. Energy measurement - pulse counting from active sensor LS, MS, WS**  
When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
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): is particularly suitable for water meters that support magnetic sensing.
- 3. Opening detection - Window / Door Magnetic Sensor (integrated inside the unit)**  
Activation occurs by delaying the magnet from the sensor.  
Recommended accessories: Magnet D / WD  
Note: The universal sensor has a magnet sensor located only on one side, so be careful about the correct position relative to the magnet.

Sigfox Ready Certification

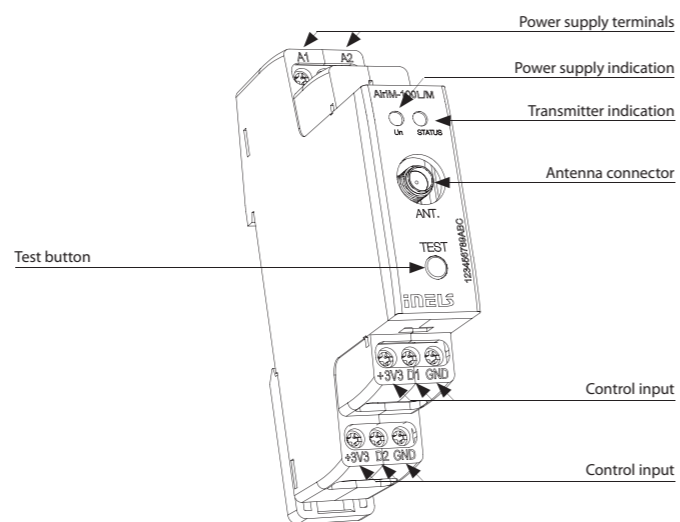


Certification ID for AirTM-100S Pulse Transmitter:  
P\_0094\_B301\_01



- In conjunction with the appropriate monitoring relay, it serves for voltage monitoring (overvoltage and under-voltage) in both 1 phase and 3 phase networks, checks the phase shift between current and voltage, and monitors the frequency or the current flowing on individual appliances.
- Using a universal feature provides a quick solution to keep track of the current status of the supervised equipment or technology unit and eliminates the financial loss caused by the malfunction of the device
- Communication on the Sigfox or LoRa network.
- Data is sent to the server from which it can be subsequently displayed as a smartphone, application, or Cloud notification.
- Li-Ion battery pack for 1 day backup.
- The package includes an internal antenna AN-I, in case of locating the converter in a metal switchboard, you can use the external antenna AN-E for better signal reception.
- 1-MODULE, DIN rail mounting.

Device description



Accessories

A summary and overview of all types of monitoring relays can be found in the technical catalogue **Modular electronic devices**: <https://www.elkoep.com/catalogs-and-brochures>

Technical parameters	AirIM-100S/M	AirIM-100L/M
Supply voltage:	24-240 V AC / 50-60 Hz	
Backup power:	battery Li-Ion	
Supply voltage tolerance:	+10 % / -25 %	
Input:	3 VA	
<b>Setting</b>		
Setting:	With a message from the server	
Alarm Detection:	message to the server	
Battery status view:	only when the battery is powered by a message on the server	
<b>Indication</b>		
- red LED:	broadcast	
- green LED:	power supply	
Control:	button (Communication test)	
Connection of the sensor:	terminals, wires 0.5 - 1 mm <sup>2</sup>	
<b>Input</b>		
Digital input:	IN1, IN2	
Supported sensors for energy measurements:	LS (LED sensor)* MS, WS (magnetic sensor)* SO (Contact, open collector)	
<b>Communication</b>		
Protocol:	Sigfox	LoRa
Transmitter frequency:	RCZ1 868 MHz	868 MHz
Range in open space:	Approx. 50 km**	Approx. 10 km**
<b>Other parameters</b>		
Working temperature:	-20 ... + 50 °C	
Operation position:	any	
Mounting:	DIN rail EN 60715	
Protection degree:	IP20 from the front panel	
Overvoltage category:	III.	
Pollution degree:	2	
Max. cable size (mm <sup>2</sup> ):	max. 1x 2.5, max. 2x 1.5 / with a hollow max. 1x 2.5	
Output for antenna:	SMA connector***	
Dimension:	90 x 17.6 x 64 mm	
Weight:	93 g	

\* Not included in the package

\*\* Depending on network coverage

\*\*\* Max Tightening Torque for antenna connector is 0.56 Nm.

Function

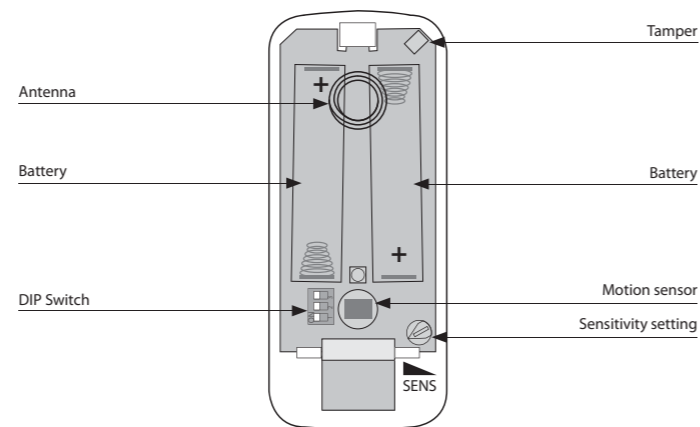
- 1. Energy measurement - pulse counting S0**  
When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
Recommended accessories: cable for S0 output
- 2. Energy measurement - pulse counting from active sensor LS, MS, WS**  
When the function is set: longer press (> 2) of the SET button, the green LED will blink twice, and then the LED will flash when counting the pulse.  
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.
- 3. Opening detection - Window / Door Magnetic Sensor (integrated inside the unit)**  
Activation occurs by delaying the magnet from the sensor.  
Recommended accessories: Magnet D / WD  
Note: The universal sensor has a magnet sensor located only on one side, so be careful about the correct position relative to the magnet.

## AirMD-100 | Motion detector



- The PIR motion detector is used to detect people moving in the interior.
- PIR sensitivity settings to eliminate unwanted switching.
- The detector offers a quick and comfortable solution for detecting motion in an object. It's just a simple installation at the location.
- The Sigfox, LoRa or NB-IoT network can be used for message transmission.
- Anti-sabotage function (tamper): When unauthorized interference with the detector occurs (disassembly) it sends an information message to the server.
- Data is sent to the server from which it can be subsequently displayed as a smart phone, application, or Cloud notification.
- Battery status information is sent as a message to the server.
- Power supply: battery 2x 1.5 V AA, the battery life is around 1 year, according to the frequency of use.
- The arm and disarm is done either with a message from the server or by using the AirKey key fob that communicates with the detector wirelessly.

### Description

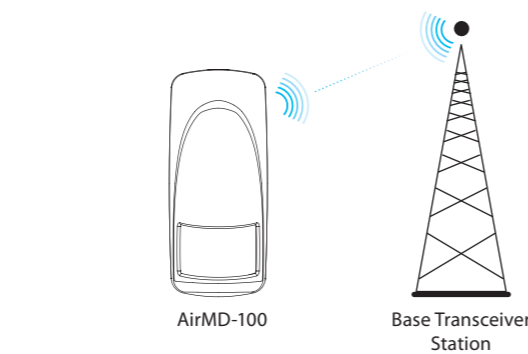


### Function

Activating and deactivating the motion detector is done by pressing the (Ⓜ or Ⓜ) button on the AirKey wireless key fob.

After capturing motion, the detector is turned on for 5 seconds to enable / disable guard - indicated by a blue LED. After this time, the detector is idle for another 30 seconds.

If the detector is deactivated by the AirKey controller, it does not transmit the detected motion information to the user.



### Accessories

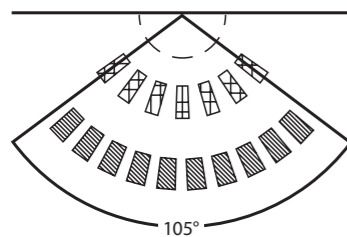


Technical parameters	AirMD-100S	AirMD-100L	AirMD-100NB
<b>Power supply</b>			
Battery power:	battery 2x 1.5V AA		
Battery life:	min. 1 year (according to the frequency of use)		
<b>Setting</b>			
Alarm Detection:	message to the server		
Battery status view:	only when the battery is powered by a message on the server		
<b>Indication</b>			
- blue LED:	motion detected		
Programming:	DIP Switch 3		
Detection angle:	105°		
Detection distance:	max. 12 m		
Recommended working height:	max. 2.2 m		
<b>Communication</b>			
Protocol:	iNELS RF Control		
Transmitter frequency:	868 MHz		
Range in open space:	up to 100m		
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	0...+50°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operating position:	vertical		
Mounting:	glue / screws		
Protection degree:	IP20		
Color:	white		
Dimension:	46 x 105 x 43 mm		
Weight:	62 g (without battery)		

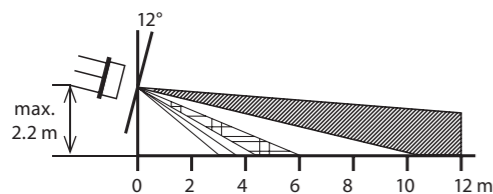
\* Depending on network coverage

### Detection field - the detection area is covered by three cones

Top view range



Side view range



## AirSF-100 | Flood detector



- The flood detector is used to detect water leakage - the activation occurs the moment the flooding of the contacts located on the underside of the detector occurs.
- Provides a quick solution to learn about unwanted flooding in your bathroom or kitchen that you can react too immediately.
- With a wireless Sigfox / LORA / NB-IoT communication network the device can be immediately put in the desired location and run immediately.
- Anti-sabotage function - the detector contains a motion sensor and sends a message to the server during any unauthorized manipulation.
- Flood detection is signalled by vibration and acoustic signalling. In the case of water detection, data is sent to the server, ...
- 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: 2x 1.5V AAAA battery life approx. 2 years (depending on frequency of use).

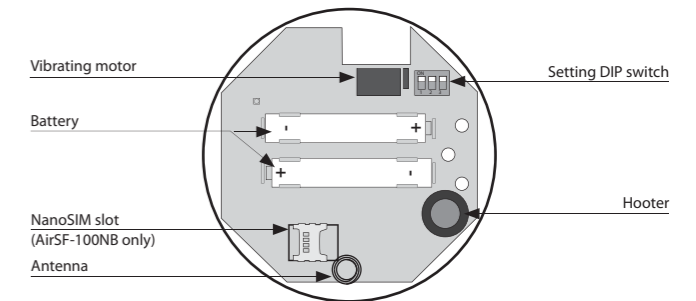
Technical parameters	AirSF-100S	AirSF-100L	AirSF-100NB
<b>Power supply</b>			
Battery power:	2x 1.5V AAAA battery		
Battery life:	approx. 2 years (depending on frequency of use)		
<b>Setting</b>			
Alarm Detection:	message to the server vibration, audible alarm		
Battery status view:	message to the server		
Acoustic signal:	greater than 85 dB		
Alarm setting:	DIP switch		
<b>Detection</b>			
Sensor:	contacts for flooding		
Detection principle:	contact between the sensor sensed liquid		
Response Time:	2 s after connecting the scanning contacts		
Measurement accuracy:	99.8 %		
Sensitivity:	in the range 0.03 - 20 kΩ		
<b>Indication</b>			
- red LED:	broadcast		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	0...+50°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operation position:	capture contacts for flooding downwards		
Mounting:	loose		
Protection degree:	IP68		
Dimension:	Ø 89 x 23 mm		
Weight:	25 g (without battery)		

\* Depending on network coverage

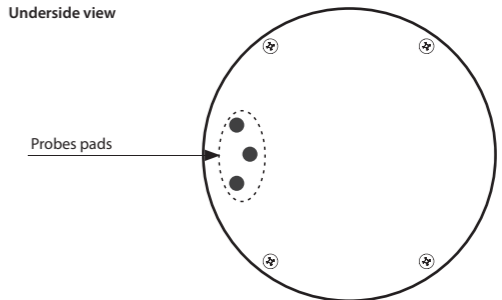
### Function

When connecting sensing contacts (flooding with water), it sends a data message and starts an alternating acoustic / mechanical alarm. Switching off the audio / mechanical alarm can be set by the DIP switch.

### Device description



Underside view



### Conductivity of liquids

Liquids suitable for detection		Inadmissible liquids
Type of liquid	Resistivity [Ωcm]*	
Drinking water	5-10 kΩ	Demineralsed water
Well water	2-5 kΩ	Deionised water
River water	2-15 kΩ	Bourbon
Rain water	15-25 kΩ	Gasoline
Waste water	0.5-2 kΩ	Oil
Seawater	~0.03 kΩ	Liquid gases
Salt water	~2.2 kΩ	Paraffin
Natural / hard water	~5 kΩ	Ethylene glycol
Chlorinated water	~5 kΩ	Paints
Condensed water	~18 kΩ	High alcohol-content liquids
Milk	~1 kΩ	
Milk serum	~1 kΩ	
Fruit juices	~1 kΩ	
Vegetable Juices	~1 kΩ	
Broths	~1 kΩ	
Wine	~2.2 kΩ	
Beer	~2.2 kΩ	
Coffee	~2.2 kΩ	
Soap toam	~18 kΩ	

\* Resistivity characterizes the local conductivity or resistive properties of materials which conduct electric current.



## AirWD-100 | Magnetic detector

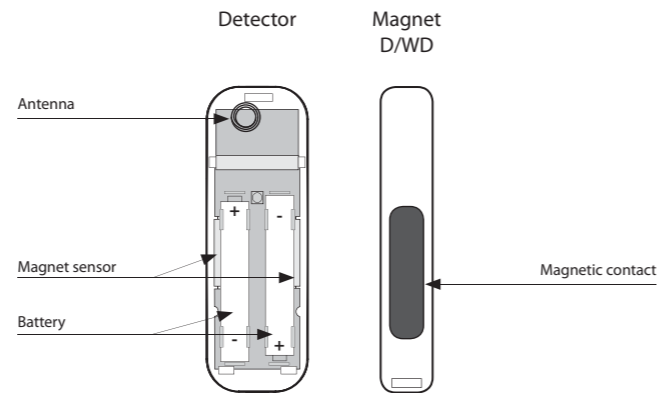


- The magnetic detector is used to detect motion – it is activated by removing the magnet from the sensor.
- The Sigfox, LoRa or NB-IoT network can be used for message transmission.
- Data is sent to the server from which it can be subsequently displayed as a smartphone, application, or Cloud notification.
- Battery status information is sent as a message to the server.
- Power supply: 2x 1.5 V AAAA battery life approx. 2 years (depending on frequency of use).

Technical parameters	AirWD-100S	AirWD-100L	AirWD-100NB
<b>Power supply</b>			
Battery power:	2x 1.5 V AAAA battery		
Battery life:	approx. 2 years (depending on frequency of use)		
<b>Setting</b>			
Alarm Detection:	message to the server		
Battery status view:	message to the server		
<b>Detection</b>			
Closed:	< 1.5 cm		
Open:	> 2 cm		
Reliability:	99.9 %		
<b>Indication</b>			
- red LED:	broadcast		
Sensor:	magnetic / tongue relay		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	0...+50°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operation position:	vertical		
Mounting:	glue		
Protection degree:	IP40		
Color:	white		
<b>Detector</b>			
Dimension / Weight:	31.5 x 75 x 30 mm / 23 g (without battery)		
<b>Magnet</b>			
Dimension / Weight:	15 x 75 x 13 mm / 13 g		

\* Depending on network coverage  
\*\* included in the package

### Device description



### Function

**Detection of opening**  
Activation occurs when the magnet is removed from the sensor. The detector sends a data message every 12 hours. In case of a state change, it sends the data message immediately.

## AirWD-101 | Magnetic detector

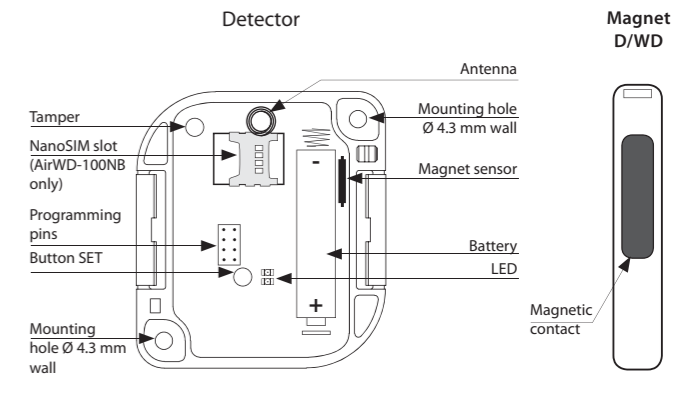


- The magnetic detector is used to detect motion – it is activated by removing the magnet from the sensor.
- The Sigfox, LoRa or NB-IoT network can be used for message transmission.
- Data is sent to the server from which it can be subsequently displayed as a smartphone, application, or Cloud notification.
- Battery status information is sent as a message to the server.
- Anti-sabotage (tamper): If the device is tampered with, the message is immediately sent to the server.
- Power supply: 1x 3.6 V batteries SAFT with approx. 5 years (depending on the frequency of use).
- Protection degree IP65.

Technical parameters	AirWD-101S	AirWD-101L	AirWD-101NB
<b>Power supply</b>			
Battery power:	1x 3.6V LS 14500 Li-SOCl <sub>2</sub> AA		
Battery life:	max. 5 years	max. 3 years (Depending on the type of sensing and pulse frequency and transmission)	
Standby consumption:	0.2 mW		
Transmitting power consumption:	250 mW	150 mW	850 mW
<b>Setting</b>			
Setting:	Using a message from the server, the programming cable		
Alarm Detection:	message to the server		
Battery status view:	message to the server		
<b>Control</b>			
Control:	Button SET Magnetic contact Tamper		
<b>Detection</b>			
Closed:	< 1.5 cm		
Open:	> 2 cm		
Reliability:	99.9 %		
Sensor:	Reed magnetic contact		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	cca 50 km*	cca 10 km*	cca 30 km*
<b>Other parameters</b>			
Working temperature:	-30... +60 °C (Pay attention to the operating temperature of batteries)**		
Storage temperature:	-30 .. +70°C		
Operation position:	vertical		
Mounting:	glue / screws		
Protection degree:	IP65		
<b>Detector</b>			
Dimension / Weight:	70 x 62 x 34 mm / 43 g (without battery)		
<b>Magnet</b>			
Dimension / Weight:	15 x 75 x 13 mm / 13 g		

\* Depending on network coverage  
\*\* Pay attention to the operating temperature of batteries -60...+85 °C  
\*\*\* included in the package

### Device description



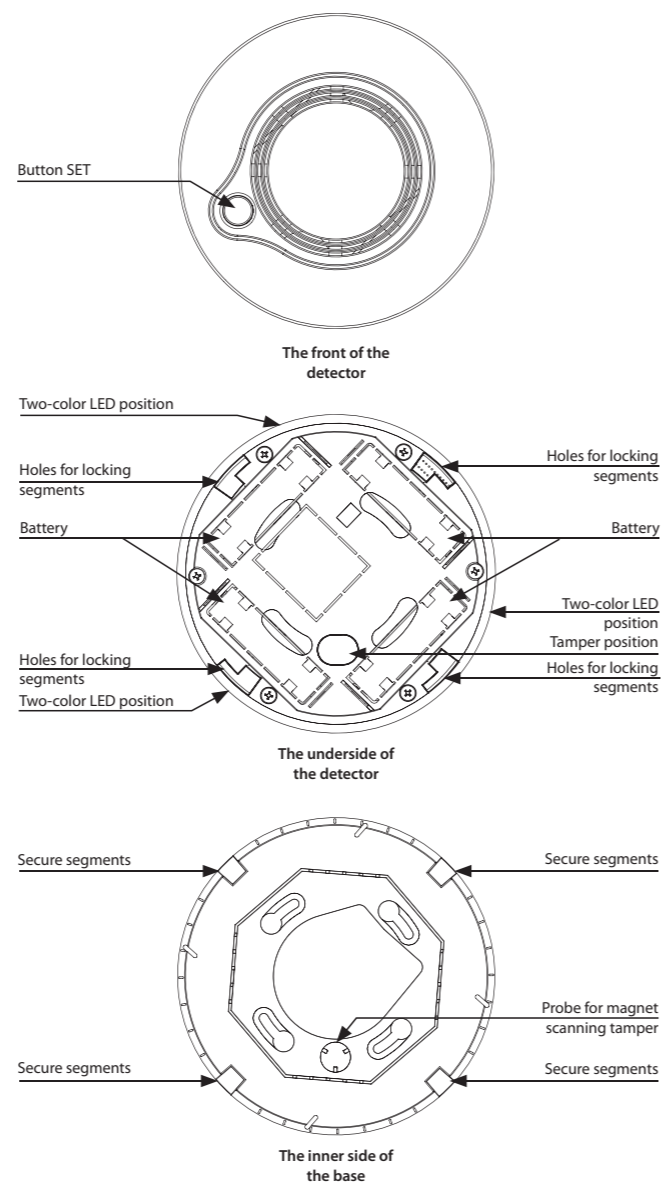
### Function

**Detection of opening**  
Activation occurs when the magnet is removed from the sensor. The detector sends a data message every 12 hours. In case of a state change, it sends the data message immediately.



- The smoke detector is used for the early warning of an emerging fire in residential and commercial buildings and also measures the actual temperature and humidity in the room.
- The detector utilises a scanning method using an optical chamber, which has enhanced smoke detection responses.
- Self-test function highlights the failure of the detector, eliminating the malfunction in the event of a fire.
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Thanks to the wireless solution and Sigfox / LoRa / NB-IoT 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 smart phone, application, or Cloud
- Battery power can be sent to the server when it is powered by a battery.
- Power supply: battery 4 x 1.5 V AA, the battery life is around 1 year.

**Device description**



Technical parameters	AirSD-100S	AirSD-100L	AirSD-100NB
<b>Power supply</b>			
Battery power:	battery 4x 1.5 V AA		
Battery life:	approx. 1 year		
<b>Input</b>			
Smoke Detection:	built-in sensor		
Detection:	smoke from burning		
Detection principle:	optical-smoke scanning technology		
Response Time:	a few seconds after contact with the smoke		
<b>Temperature measuring:</b>			
Range:	-25 .. 70 °C		
Accuracy:	± 3 °C		
<b>Humidity measuring:</b>			
Sensitivity:	0 .. 90 % RH		
Accuracy:	± 4 %		
<b>Light intensity measurement:</b>			
Range:	0.045 - 188 000 Lx		
<b>Setting</b>			
Alarm Detection:	message to the server, indication LED, audible alarm		
Battery status view:	message to the server, indication LED		
Button SET:	Test / setting / signalling		
DIP switch:	Position 1 - Turn off scanning signaling		
<b>Control</b>			
Detection area:	max. 40 m <sup>3</sup>		
Recommended installation height:	max. 4 m		
Acoustic signal:	greater than 85 dB at 3 meters		
Test button SET:	yes		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Humidity:	up to 92% relative humidity (RH) / 10% to 85% RH, no condensation or frost		
Working temperature:	0...+40°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operation position:	Horizontal (ceiling) / Vertical (Wall)		
Mounting:	screws		
Protection degree:	IP20		
Color:	white		
Dimension:	Ø 120 x 36 mm		
Weight:	176 g (without battery)		

\* Depending on network coverage

**Function**

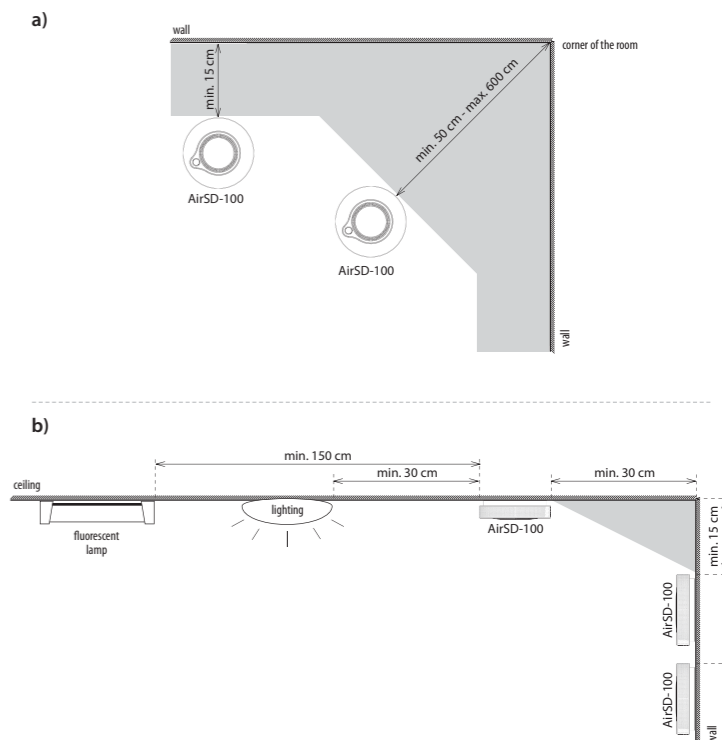
An internal, battery-powered smoke detector combines the timely detection of smouldering and open fires from which smoke escapes. It is equipped with an optical smoke detector for smoke detection. An example of a smouldering fire is a burning cigarette on a couch or bedding, which is a common cause of fires.

**Indicators and detector states:**

After inserting the batteries, the detector sends an introductory message containing the measured temperature, humidity, optical-smoke sensor status, and firmware version of the device.

- The detector scans for smoke every 10 seconds, the green LED blinks at the same time (the LED signalling can be switched off by the DIP switch). Every 10 minutes the detector senses temperature, humidity and light intensity. Displays the measured data report at six hourly intervals. In the case of smoke detection or rapid temperature change it is displayed immediately.
- Alarm - the sensor detects smoke, the red LED blinks within 1 second, the detector emits a loud, intermittent „beep“. Terminate the alarm by scattering the smoke. The audible alarm can be switched off by the test button, in the case of positive smoke detection; the audible alarm is restored after 5 minutes.
- Dead battery:
  - sending a message to the server
  - every 5 s 3 times the red LED lights up on the detector.
- Detector failure:
  - sending a message to the server
  - Indication of the red LED on the detector and one short beep every 40 seconds.
- Removed from base:
  - sending a message to the server
  - every 3 seconds the red LED lights up on the detector.

**Location**



**Appropriate location**

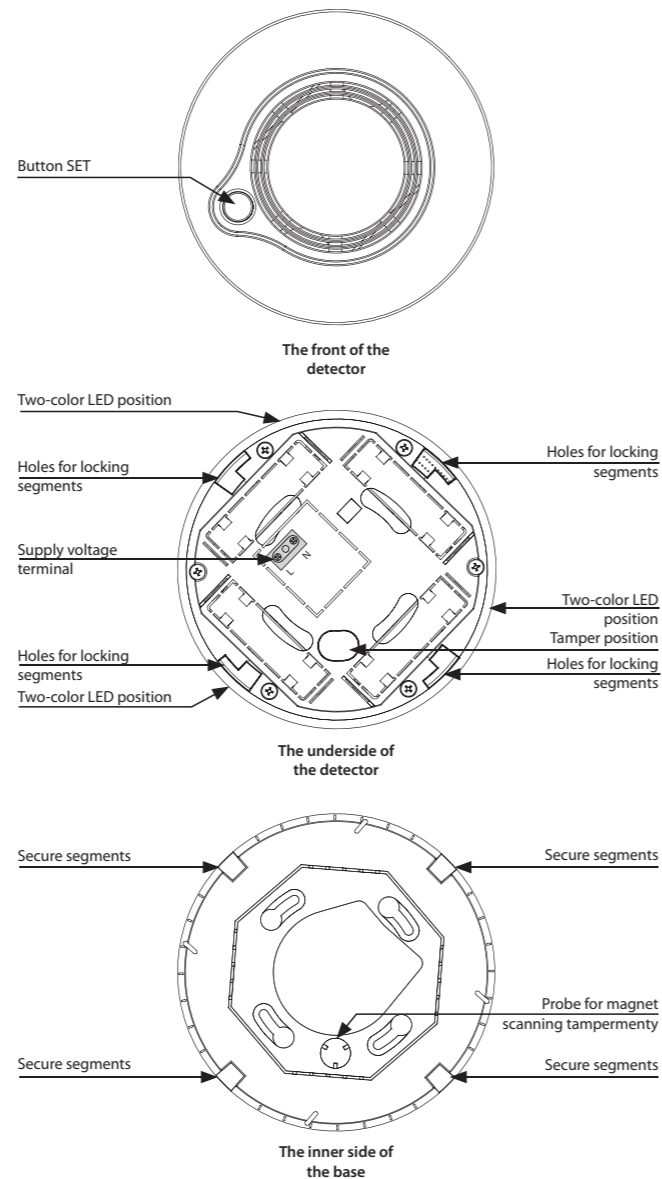
In new buildings, install smoke detectors according to the project.

- Smoke and other combustion products rise to the ceiling and expand horizontally. In residential buildings we recommend installing smoke detectors in the middle of the ceiling.
- Detector area is 40 m<sup>3</sup>. Make sure that the smoke detector is located at least 15 cm from the side wall and 50 cm from each corner of the room (fig. A). Max. The recommended installation height is 4 m.
- In the rooms with a sloping, pointed or saddle roof (e.g. attics) the smoke detectors are mounted on the ceiling at a distance of 90 cm from the highest point.
- When installing on a wall, place the detector 15 -30 cm below the ceiling (Figure b). The bottom of the detector should be located above the top edge of all doors, windows and other openings.
- Although it is most appropriate to install a fire detector, it is recommended to place it in a connection room such as a staircase or hallway. The triggering of the alarm is delayed, but it will limit the number of the false alarms from the smoke of burnt pans or smoke from the fireplace.
- To increase security, detectors should be installed in each room of the building.



- AirQS-100 - monitors the CO<sub>2</sub> content of the room and also measures the actual temperature and humidity in the room.
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Thanks to the wireless solution and Sigfox / LoRa / NB-IoT 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
- Power supply 110-240 V AC.

Device description



Technical parameters	AirQS-100S	AirQS-100L	AirQS-100NB
<b>Power supply</b>			
External power supply:	110 - 240 V AC		
<b>Input</b>			
Measurement of CO <sub>2</sub> concentration:	YES		
Sensitivity:	300 - 5 000 ppm		
Accuracy:	5% (0 - 180 ppm)		
Temperature measuring:	built-in sensor		
Sensitivity:	-25 .. 70 °C		
Accuracy:	± 3 °C		
Humidity measuring:	built-in sensor		
Sensitivity:	0 .. 90 % RH		
Accuracy:	± 4 %		
Light intensity measurement:	built-in sensor		
Range:	0.045 - 188 000 Lx		
<b>Setting</b>			
Alarm Detection:	message to the server		
<b>Indication</b>			
Red / green LED:	See manual		
Detection area:	max. 40 m <sup>3</sup>		
Recommended installation height:	max. 4 m		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	0...+40 °C		
Storage temperature:	-30...+70 °C		
Operation position:	Horizontal (ceiling) / Vertical (Wall)		
Mounting:	screws		
Protection degree:	IP20		
Color:	white		
Dimension:	Ø 120 x 36 mm		
Weight:	185 g		

\* Depending on network coverage

Function

The detector detects the carbon dioxide (CO<sub>2</sub>) content in confined spaces by means of a sensor. Sending a message to the server alerts you to the need air the space

Indications and states of the detector

After the power supply is connected, the detector sends an introductory message containing the measured values of temperature, humidity, CO<sub>2</sub> level and firmware version of the device.

- Sends a data message about the measured values and the status of the detector every 10 minutes.
- Indication of measured CO<sub>2</sub> concentration
  - the green LED blinks briefly - the measured values are OK.
  - Red LED blinks briefly - CO<sub>2</sub> concentration is higher than 1500 ppm. Air quality is undesirable. It is necessary to air the room.
- Supply voltage indication
  - The green LED is lit under the button.
- Removed from base:
  - sending a message to the server.
  - every 2 seconds the red LED on the detector blinks.

Location

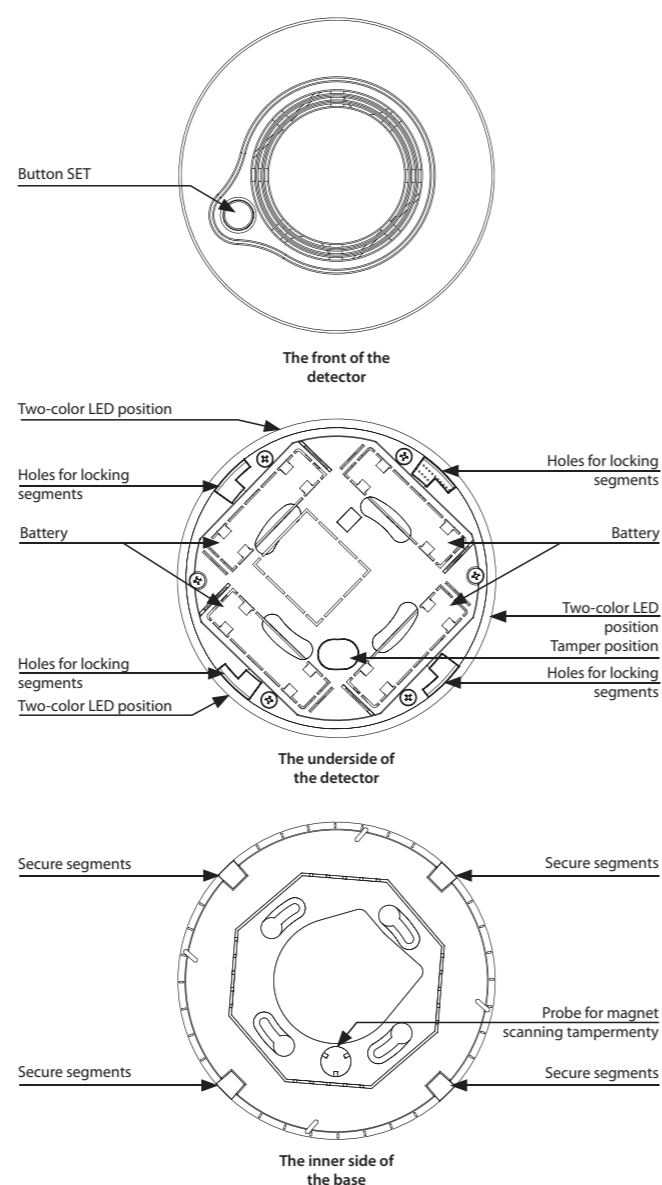
Appropriate location

- Carbon dioxide is heavier than air. The best location for determining the average CO<sub>2</sub> concentration is about 1.6 m above the floor.
- The detector should be placed in the bedrooms and rooms where you regularly spend time (offices, classrooms ...).



- AirQS-101 is used as a safety device for monitoring the CO concentration resulting from incomplete combustion. It also informs you of the actual temperature, humidity and light intensity in the area.
- Provides a quick solution to learn about undesirable CO concentrations that can be immediately reacted too.
- The self-test function alerts you to a detector malfunction, eliminating its malfunction.
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Thanks to the wireless solution and Sigfox / LoRa / NB-IoT 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 smart phone, application, or Cloud.
- Battery power can be sent to the server when it is powered by a battery.
- Power supply: battery 4 x 1.5 V AA, the battery life is around 1 year.

Device description



Technical parameters	AirQS-101S	AirQS-101L	AirQS-101NB
<b>Power supply</b>			
Battery power:	battery 4x 1.5 V AA*		
Battery life:	approx. 1 year		
<b>Input</b>			
Measurement of CO concentration:	YES		
Sensitivity:	0 - 10 000 ppm		
Accuracy:	5% (0 - 500 ppm)		
Temperature measuring:	built-in sensor		
Sensitivity:	-25 .. 110 °C		
Accuracy:	± 3 °C		
Humidity measuring:	built-in sensor		
Sensitivity:	0 .. 90 % RH		
Accuracy:	± 4 %		
Light intensity measurement:	built-in sensor		
Range:	0.045 - 188 000 Lx		
<b>Setting</b>			
Alarm Detection:	message to the server, indication LED, audible alarm		
Battery status view:	message to the server, indication LED		
Button SET:	Test / setting / signalling		
DIP switch:	Position 1 - Turn off scanning signaling		
<b>Control</b>			
Detection area:	max. 40 m <sup>3</sup>		
Recommended installation height:	max. 4 m		
Acoustic signal:	greater than 85 dB at 3 meters		
Test button SET:	yes		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Humidity:	up to 92% relative humidity (RH) / 10% to 85% RH, no condensation or frost		
Working temperature:	0...+40°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operation position:	Horizontal (ceiling) / Vertical (Wall)		
Mounting:	screws		
Protection degree:	IP20		
Color:	white		
Dimension:	Ø 120 x 36 mm		
Weight:	184 g (without battery)		

\* Depending on network coverage

Function

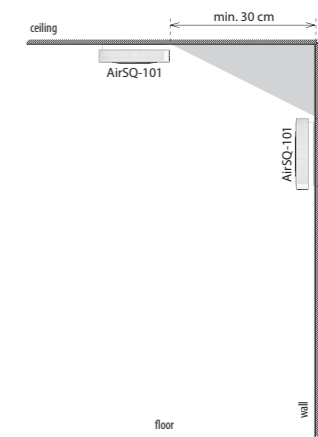
The detector detects carbon monoxide (CO) content in enclosed spaces by means of a sensor. It's designed to alert you to the presence of CO before the critical state - that is, before most people experience the symptoms of CO poisoning to have time to solve the problem calmly.

Indicators and detector states:

After inserting the batteries, the detector sends an introductory message containing the measured values of the temperature, humidity level of the CO level and the firmware version of the device.

- The detector scans every 10 seconds, the green LED blinks at the same interval (the LED can be switched off by the DIP switch). Every 10 minutes the detector senses temperature, humidity and lighting. Sends the measured and status data report over the 6-hour interval.
- Alarm indication for CO detection
  - 30 ppm = no alarm before 120 minutes
  - 50 ppm = Alarm signalling within 60-90 minutes
  - 100 ppm = Alarm signalling within 10-40 minutes
  - Above 300 ppm, the detector must declare an alarm within 3 minutes.
- Alarm - Sensor detects CO, red LED blinks within 1 second, detector emits loud, intermittent „beep“. Terminate the alarm by scattering the CO (venting ...).
- Dead battery:
  - sending a message to the server
  - every 5 s 3 times the red LED lights up on the detector.
- Detector failure:
  - sending a message to the server
  - Indication of the red LED on the detector and one short beep every 40 seconds.
- Removing from base:
  - sending a message to the server
  - every 2 seconds the red LED on the detector blinks.

Location



Appropriate location

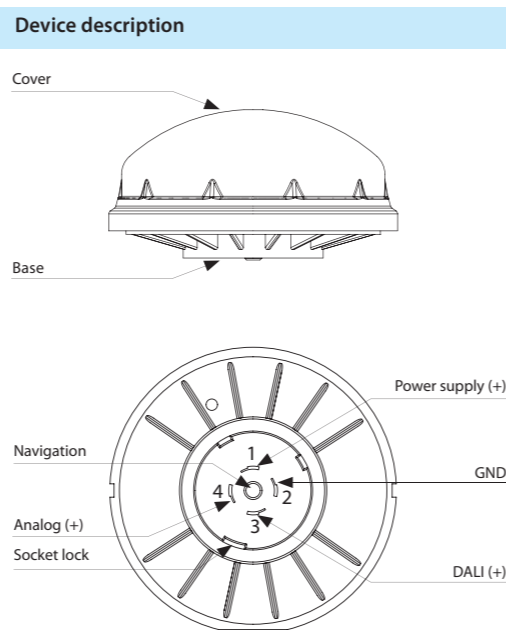
- Carbon monoxide has the same density as the air in the room and is therefore uniformly dispersed. However, since CO originates as a product of an incomplete combustion process, it is very likely that it will have a higher temperature than the ambient air and will therefore slowly climb to the ceiling. Detector location is useful at a height of about 1.6 m above the floor.
  - If you attach the device to a wall, it must be higher than the upper edge of the window and door but at least 15 cm below the ceiling.
  - if you attach the device to the ceiling, it must be at least 30 cm from each wall.
  - If the ceiling is oblique, place the device in the upper part of the room.
- To increase security, detectors should be installed in any room with a combustion appliance (gas, wood, coal, etc.) 2-3 m away from the CO source (boiler, fireplace, water heater ...).
- Warning sound of the detector must be heard in the bedroom and rooms where you regularly spend time.
- In one-room sleeping and living rooms at the same time, such as studios, caravans or boats, it is necessary to place the detector as close as possible to the sleeping area and as far as possible from the stove or burner.
- It is recommended that the CO detector be installed on each floor of a multi-storey house (e.g. CO in the cellar may not reach the alarm on the next floor).



- Used for remote control of the luminaire: ON / OFF / DIMM.
- It informs about the fault of the ballast, light source, connecting wires ...
- Communicates over the wireless LPWAN network (LoRa or NB-IoT).
- Output signal 0 (1) -10V or DALI for direct control of ballast in luminaire.
- Internal digital light intensity sensor, range 5 - 100,000Lx.
- Internal digital temperature sensor in the range -30 ... 70 ° C.
- Supply voltage: 12- 24 V DC.
- Protection IP65, UV resistant, designed for outdoor installation in the LUMAWISE ENDURANCE S.
- Update using the RFAF / USB Service Key.

Technical parameters	AirSLC-100L/ LWES/DALI	AirSLC-100NB/ LWES/DALI	AirSLC-100L/ LWES/0-10	AirSLC-100NB/ LWES/0-10
Supply voltage:	12 - 24 V DC			
Supply voltage tolerance:	-10 /+15 %			
Standby consumption:	0.5 W			
Consumption max.:	at 3.5 W communication			
<b>Temperature sensor</b>				
Range:	-30 .. 70°C			
Accuracy:	±1°C in the range -10°C .. 70°C ±3°C in the range -30°C .. -10°C			
<b>Light sensor</b>				
Scanned Range:	5 - 100 000 Lx			
Detection angle:	130°			
<b>Indication</b>				
- blue LED:	module power supply			
- green LED:	STATUS module			
- red LED:	LPWAN communications			
<b>Inputs</b>				
Communication Interface:	DALI polarized - active (20mA)		Analog 0(1)-10 V (20mA)	
External relay:	x		12 / 24 V DC, max. 250 mA	
<b>Communication</b>				
Protocol:	LoRa	NB-IoT*	LoRa	NB-IoT*
Transmitter frequency:	868 MHz	LTE Cat NB1 (B3/B20)	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:**	Approx. 10 km	Approx. 30 km	Approx. 10 km	Approx. 30 km
Protocol: iNELS RF Control				
Transmitter frequency:	868.5 MHz			
Range in open space:	up to 20 m			
<b>Other parameters</b>				
Working temperature:	-30 .. +70 °C			
Storage temperature:	-30 .. +70 °C			
Operation position:	See manual			
Mounting:	in socket			
Protection degree:	IP65			
Overtoltage category:	III.			
Pollution degree:	2			
Dimension:	Ø 80 x 40 mm			
Weight:	64 g			

\* nanoSIM / eSIM  
\*\* Depending on network coverage

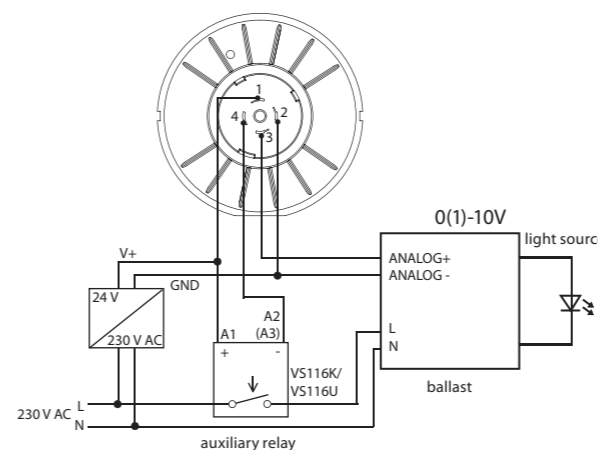


**Funkce**

- When the power is connected, the device sends the initial message containing the measured temperature and light intensity.
- Mode setting (message from server):
- Manual:
  - turn on / off, adjust brightness
  - scanning and data transmission interval of temperature and light intensity data (range ....)
- Automatic:
  - the on / off is controlled according to the intensity measured by the light sensor
  - sensor senses temperature and intensity of lighting every 2 minutes. After that, it sends a data message of measured values every 60 minutes.

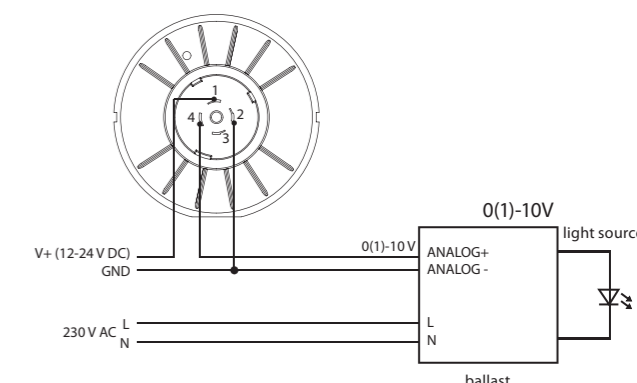
**Example connection**

**Connection 0 (1) -10V (analog) + tripping relay**



Description of wiring contacts:  
 1 - 12/24 V power supply  
 2 - GND / analog output 0(1) - 10 V (-)  
 3 - control of an external relay  
 4 - analog output 0(1)-10 V (+)

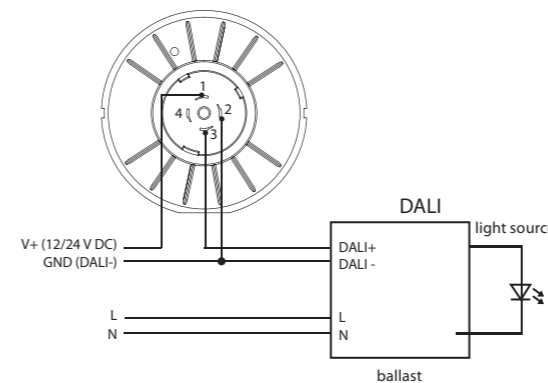
**Connection 0 (1) -10V (analog) without relay**



In the off state, the analog ballast may light up slightly (depending on gear type).

**Connection DALI**

Connection of one DALI light + button (distinguishes long / short press)



Description of wiring contacts:  
 1 - 12/24 V power supply  
 2 - GND / DALI-  
 3 - DALI+

For the management of DALI BUS there is not an exact cable type recommended, but it is important to keep some installation conditions.  
 For DALI BUS lines up to 100 m the recommended min. conductor cross section is 0.5 mm<sup>2</sup>. For management between 100 m -150 m a cross section of 0.75 mm<sup>2</sup> and more than 150 m the recommended min is 1.5 mm<sup>2</sup>. Management of more than 300 m is not recommended. The voltage drop at the end of the installation may not be greater than 2 V.



- Used for remote control of the luminaire: ON / OFF / DIMM.
- Measures current flow - fault detection (ballast fault, light source, connecting wires ...)
- Communicates over the wireless LPWAN network (LoRa or NB-IoT).
- Output signal 0 (1) -10V or DALI for direct control of ballast in luminaire.
- Internal digital light intensity sensor, range 5 - 100,000Lx.
- Internal digital temperature sensor in the range -30 ... 70 °C.
- Power supply: 100-230 V AC, Power 3.5 VA.
- The IP66, UV-resistant, is designed for outdoor mounting in the NEMA socket.
- Update using the RFAF / USB Service Key.
- Connection standard: Standard ANSI C136.41 Dimming Receptacle.

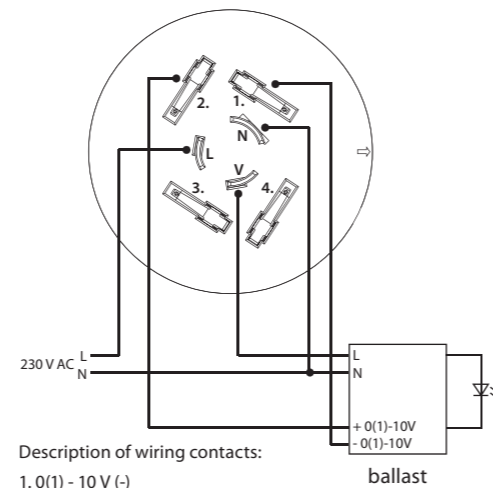
Technical parameters	AirSLC-100L/ NEMA/DALI	AirSLC-100NB/ NEMA/DALI	AirSLC-100L/ NEMA/0-10	AirSLC-100NB/ NEMA/0-10
Supply voltage::	AC 100 - 230 V AC			
Power:	3.5 VA			
Supply voltage tolerance:	-10 /+15 %			
Standby consumption:	0.5 W			
Consumption max.:	3.5 W			
<b>Temperature sensor</b>				
Range:	-30 .. 70°C			
Accuracy:	±1°C in the range -10°C .. 70°C ±3°C in the range -30°C .. -10°C			
<b>Light sensor</b>				
Scanned Range:	5 - 100 000 Lx			
Detection angle:	130°			
<b>Indication</b>				
- blue LED:	power the unit			
- green LED:	STATUS			
- red LED:	RF Communication			
<b>Inputs</b>				
Communication Interface:	DALI polarized - active (20 mA) / passive (250 mA)		Analog 0(1)-10 V (20mA)	
Internal DALI consumption:	10 mA		x	
Power outputs L, N, V	Load max. 15 A			
<b>Communication</b>				
Protocol:	LoRa	NB-IoT*	LoRa	NB-IoT*
Transmitter frequency:	868 MHz	LTE Cat NB1 (B3/B20)	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:**	Approx. 10 km	Approx. 30 km	Approx. a 10 km	Approx. 30 km
Protocol:	iNELS RF Control			
Transmitter frequency:	866 MHz, 868 MHz, 916 MHz			
Range in open space:	up to 20 m			
<b>Other parameters</b>				
Working temperature:	-30 .. +50 °C			
Storage temperature:	-30 .. +70 °C			
Operation position:	See manual			
Mounting:	in socket			
Protection degree:	IP66			
Overvoltage category:	III.			
Pollution degree:	2			
Dimension:	Ø 88 x 96 mm			
Weight:	160 g			

\* nanoSIM  
\*\* Depending on network coverage

For the management of DALI BUS there is not an exact cable type recommended, but it is important to keep some installation conditions.  
For DALI BUS lines up to 100 m the recommended min. conductor cross section is 0.5 mm<sup>2</sup>. For management between 100 m -150 m a cross section of 0.75 mm<sup>2</sup> and more than 150 m the recommended min is 1.5 mm<sup>2</sup>. Management of more than 300 m is not recommended. The voltage drop at the end of the installation may not be greater than 2 V.

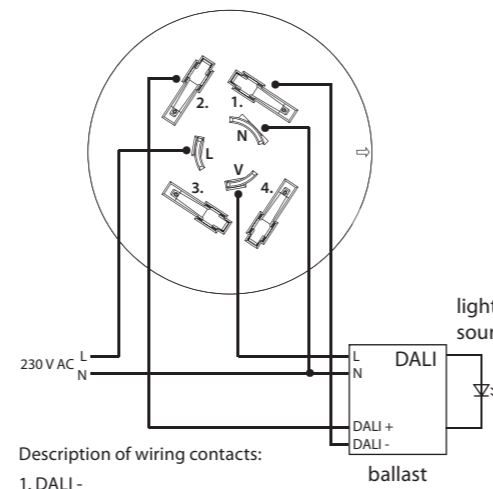
**Example connection**

**Connection 0 (1) -10V (analog)**



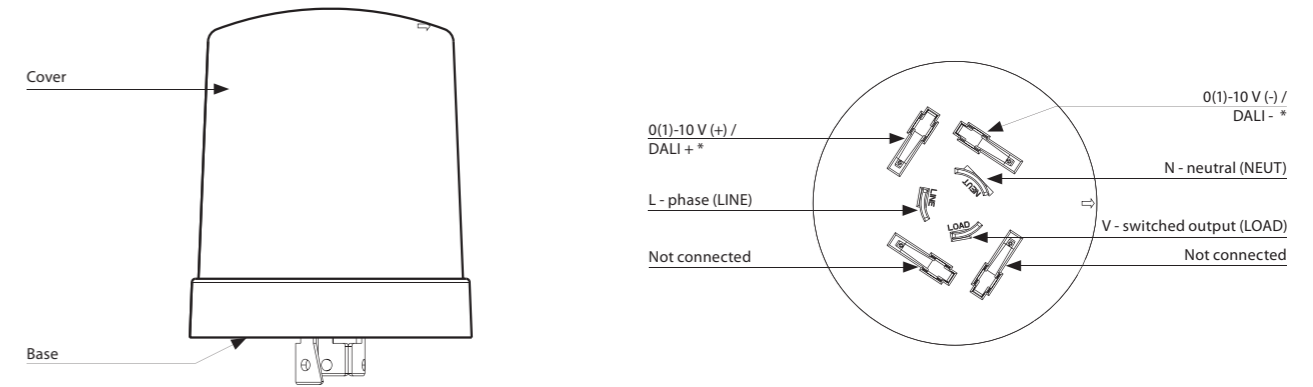
Description of wiring contacts:  
1. 0(1) - 10 V (-)  
2. 0(1)-10 V (+)  
3. not connected  
4. not connected  
L (LINE)- phase  
N (NEUT) - neutral  
V (LOAD) - switched output

**Connection DALI**



Description of wiring contacts:  
1. DALI -  
2. DALI +  
3. not connected  
4. not connected  
L (LINE)- phase  
N (NEUT) - neutral  
V (LOAD) - switched output

**Device description**

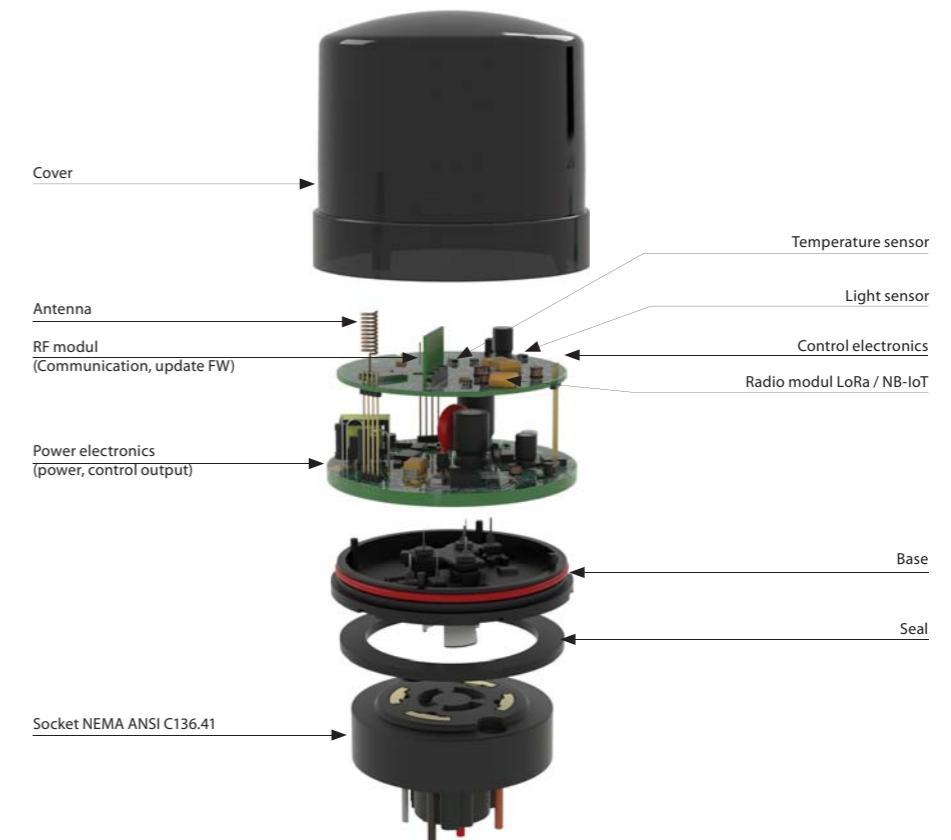


\* by module type (analog / DALI)

**Function**

- When the power is connected, the device sends the initial message containing the measured temperature and light intensity.
- Mode setting (message from server):
- Manual:
  - turn on / off, adjust brightness
  - scanning and data transmission interval of temperature and light intensity data (range ...)
- Automatic:
  - the on / off is controlled according to the intensity measured by the light sensor
  - sensor senses temperature and intensity of lighting every 2 minutes. After that, it sends a data message of measured values every 60 minutes.

**Disintegration**



## AirSLC-100 | Street light controller

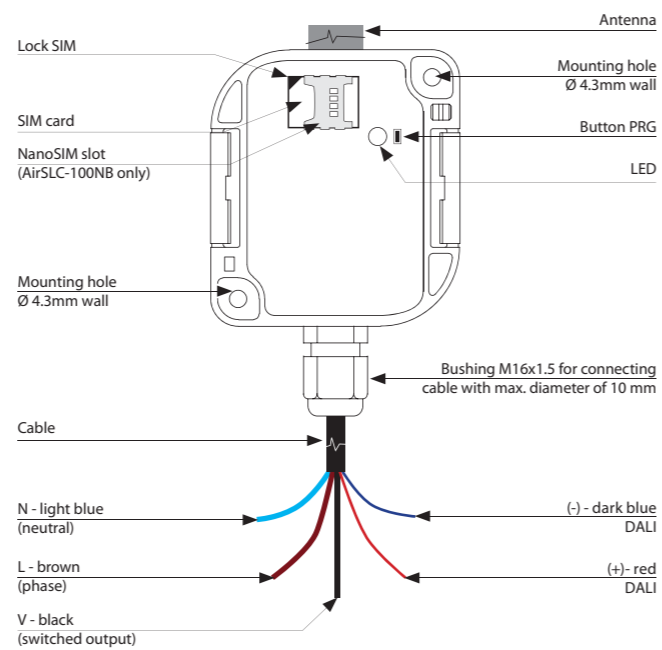


- Used for remote control of the luminaire: ON / OFF / DIMM.
- Module measures current flow - fault detection (ballast fault, light source, connecting wires ...).
- The two-directional communication module is intended primarily for monitoring and switching of public lighting in cities,
- Using a monitoring and switching component will help you eliminate financial costs.
- Communicates over the wireless LPWAN network (LoRa or NB-IoT).
- Data is sent to the server from which it can be subsequently displayed as a smart phone, application, or Cloud notification.
- Update using the RFAF / USB Service Key.

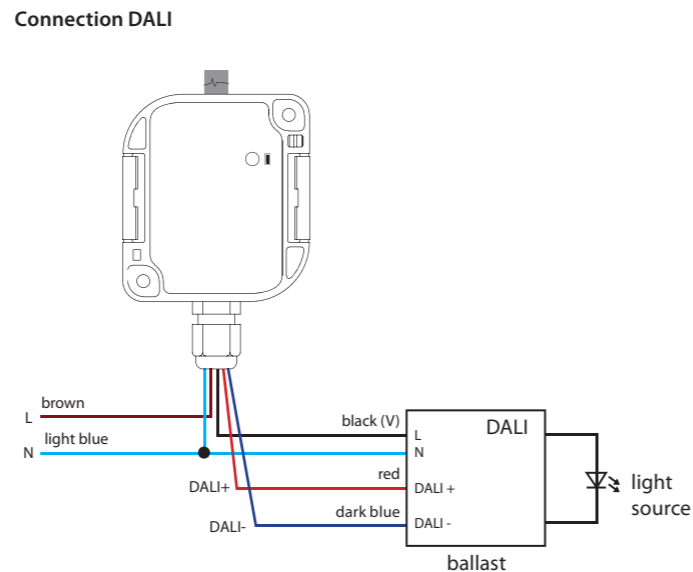
Technical parameters	AirSLC-100L/ DALI	AirSLC-100NB/ DALI
Supply voltage:	110 - 230 V AC / 50 - 60 Hz	
Apparent input:	3 VA	
Dissipated power:	1.2 W	
Supply voltage tolerance:	+10 /-15 %	
<b>Output</b>		
Communication Interface:	active (self-powered) DALI - polarized, the ability to connect one device	
<b>Setting</b>		
Setting:	message to the server	
<b>Control</b>		
Control:	With a message from the server / button TEST	
Output Indication Indicator:	green LED	
Indication:	red LED	
<b>Communication</b>		
Protocol:	LoRa	NB-IoT
Transmitter frequency:	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 10 km**	Approx. 30 km**
<b>Other parameters</b>		
Working temperature:	-15 ... + 50 °C	
Operation position:	any	
Mounting:	glue / screws**	
Protection degree:	IP44	
Overvoltage category:	III.	
Pollution degree:	2	
Cable		
- terminals:	3x 1.5 mm <sup>2</sup> , 2x 0.5 mm <sup>2</sup>	
- Cross section:	Ø 8 mm	
- length:	45 cm	
Length of individual wires:	5 cm	
Cable grommet:	M16 x 1.5 for cable Ø max. 10 mm	
Dimension with antenna:	182 x 62 x 34 mm	
Weight:	162 g	

\* Depending on network coverage  
\*\* Do not enclose in metal switchboards and the like.

### Device description



### Example connection



## AirSOU-100 | Twilight sensor

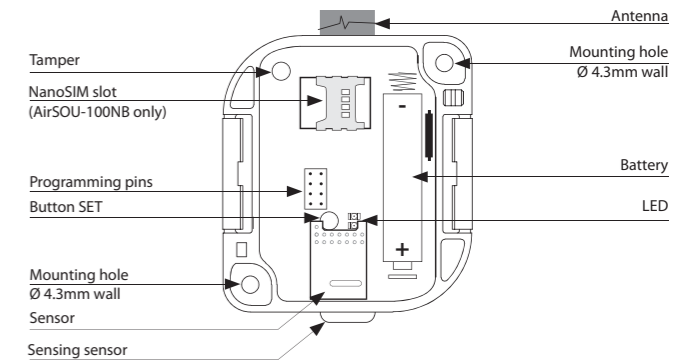


- Information about the actual light intensity can be used in the task of maintaining a constant illumination in a given space, where it is possible to regulate the intensity of artificial lighting thanks to the contribution of natural lighting from outside, thereby reducing the energy consumption.
- AirSOU-100L can be used not only in residential projects, but also in commercial office projects or production and warehouse or production halls.
- The AirSOU-100 is recommended to be installed so that the light sensing sensor is facing downwards and not exposed to direct light.
- The scanning range is 1 - 100,000 lux.
- Data is sent to the server from which it can be subsequently displayed as a smart phone, application, or Cloud notification.
- Battery power can be sent to the server when it is powered by a battery.
- The AirSOU-100 is supplied in an IP65 enclosure and can be installed in an outdoor environment.

Technical parameters	AirSOU-100S	AirSOU-100L	AirSOU-100NB
<b>Inputs</b>			
Light measurement range:	1 - 100 000 lx		
Detection angle:	100°		
<b>Power supply</b>			
Battery power:	1x 3.6V LS 14500 Li-SOCl <sub>2</sub> AA		
Battery life:	max. 5 years	max. 3 years (Depending on settings)	
External power supply:	5- 12 V DC (on terminal)		
Supply voltage tolerance:	+10 %; -15%		
Standby consumption:	0.2 mW		
Transmitting power consumption:	250 mW	150 mW	850 mW
<b>Setting</b>			
Setting:	Using a message from the server, the programming cable		
Battery status view:	message to the server		
<b>Control</b>			
Control:	button (Communication test) Tamper		
<b>Communication</b>			
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	-30...+60°C (Pay attention to the operating temperature of batteries)**		
Storage temperature:	-30...+70°C		
Operation position:	any		
Mounting:	glue / screws		
Protection degree:	IP44		
Dimension with antenna:	158 x 62 x 34 mm		
Weight:	108 g (without battery)		

\* Depending on network coverage  
\*\* Pay attention to the operating temperature of batteries -60...+85 °C

### Device description



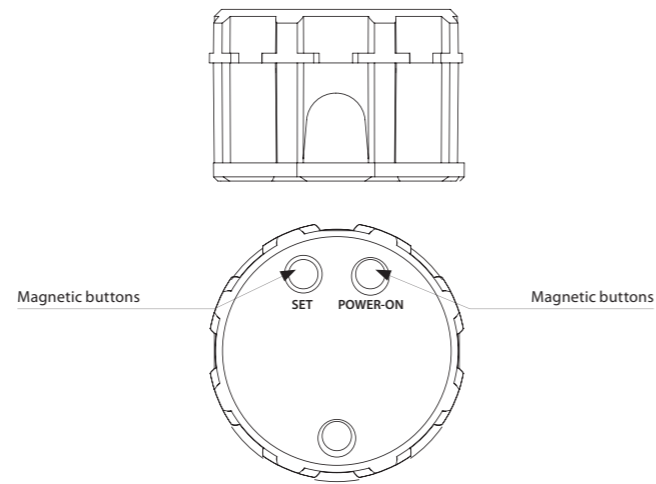
### Function

After inserting the batteries, the sensor sends an introductory message containing the measured light intensity. The sensor scans the light intensity every 2 minutes. After that, it sends a data message of measured values every 60 minutes. In the event of a sudden change in light intensity, it sends the data message immediately.



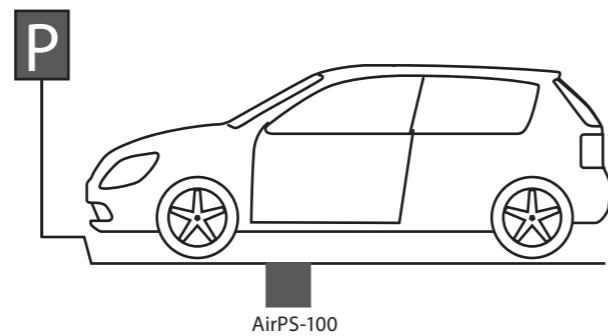
- Parking sensors can be used in corporate parking lots, car parks at department stores or administrative complexes etc.
- Detects a free and occupied parking space for which the magnetic principle is used.
- Sensor is resistance to external influences (UV, salt, snow plough).
- With the wireless solution and Sigfox / LoRa / NB-IoT communication, it can communicate instantly to Server and be operated immediately.
- Battery power with a lifetime of about 10 years

Device description



Settings: by using supplied magnetic key

Sensor location



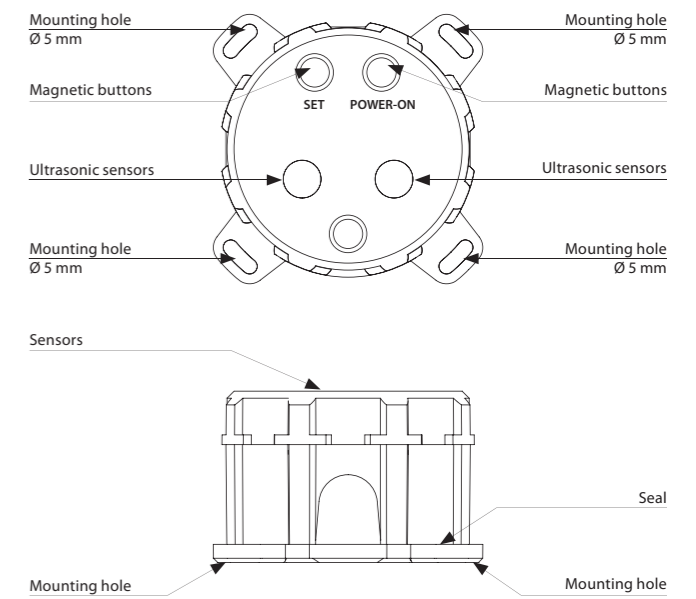
Technical parameters	AirPS-100S	AirPS-100L	AirPS-100NB
<b>Power supply</b>	non-removable battery		
Battery power:	2x 3.6V LiSOCL2 (15.4 Ah)		
Battery life:	Approx. 10 years, depending on the setting		
View battery status:	in ELKO Cloud		
<b>Setting</b>	With a message from the server RF command		
Indication:	message to the server		
<b>Detection</b>			
Detection principle:	magnetic		
Detection distance:	0 - 50 cm		
Theft detection:	yes		
Temperature measurement:	yes		
<b>Communication</b>			
Protocol:	iNELS RF Control		
Transmitter frequency:	868.5 MHz		
Range in open space:	up to 100 m		
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km*	Approx. 10 km*	Approx. 30 km*
<b>Other parameters</b>			
Working temperature:	-30 ... + 85 °C		
Operating position:	Push into the road (ground level)**		
Pressure load:	up to 1 000 kg		
Protection degree:	IP67		
Resistance to external influences:	UV, salt, snow plough		
Dimension:	Ø 87 x 62 mm		
Weight:	432 g		

\* Depending on network coverage  
\*\* Minimum distance from metal objects (canal) – 1m.



- The sensor informs about the fill volume condition of the container, the waste container, may trigger a requirement to empty it. It also informs you of the actual temperature in the scanning area.
- It has a built-in sensor for opening the lid or for tipping over the waste container.
- With wireless technology and its compactness, the device can be used in a variety of applications.
- Reliable measurement, regardless of material colour, transparency, gloss and interference light.
- With the wireless solution and Sigfox / LoRa / NB-IoT 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 smart phone, application, or Cloud notification.
- Battery status information is sent as a message to the server.
- Power: 2x LiSoCL2 3.7V (integrated) battery life up to 8 years according to frequency of measurement and message transmission.
- Sensitivity to dirt, dust, moisture and fog. The IP65 is suitable for installation in demanding environments.

Device description



Settings: by using supplied magnetic key

Function

1. Ultrasonic sensors measure the distance between the sensor and the surface being scanned.
2. The sensor measures the temperature in the scanning area.
3. Detects the position of the sensor (e.g. opening the lid, tipping over the waste container, etc.).

Its sturdy case makes it suitable for use in demanding environments where it can resist adverse weather conditions, UV radiation,

Activation of the fill detector is performed by attaching the activation magnet to the POWER-ON magnetic button and then SET for 5 seconds. Calibration is performed..

Within 10 minutes of activation and calibration, the sensor sends an introductory message containing the measured values. Another status data message is sent at twelve-hour intervals (can be edited by the message from the server). In the event of a significant change (e.g. temperature) immediately. The status, temperature and position sensing intervals can be set by message from the server.

Technical parameters	AirWS-100S	AirWS-100L	AirWS-100NB
<b>Power supply</b>			
Battery power:	2 x LiSoCL2 3.7V		
Battery life:	up to 8 years according to frequency of measurement and message transmission		
<b>Fill detection</b>			
Detection principle:	ultrasonic		
Range:	5 - 300 cm		
Resolution:	1 cm*		
<b>Input</b>			
Temperature measuring:	built-in sensor		
Range:	-30 .. 85 °C		
Sensitivity:	1 °C		
Accuracy:	± 3 °C		
<b>Position detection</b>			
Tilt sensing:	digital sensor		
Angle:	± 180 °		
Accuracy:	± 5 °		
<b>Setting</b>			
Measured values:	message to the server		
Battery status view:	message to the server		
<b>Communication</b>			
Protocol:	iNELS RF Control RFIO**		
Transmitter frequency:	868 MHz		
Range in open space:	až 20m		
Protocol:	Sigfox	LoRa	NB-IoT
Transmitter frequency:	RCZ1 868 MHz	868 MHz	LTE Cat NB1 (B3/B20)
Range in open space:	Approx. 50 km***	Approx. 10 km***	Approx. 30 km***
<b>Other parameters</b>			
Working temperature:	-30...+85°C (Pay attention to the operating temperature of batteries)		
Storage temperature:	-30...+70°C		
Operation position:	sensing contacts downwards		
Mounting:	glue / screws		
Protection degree:	IP65		
Dimension:	Ø 97 x 62 mm		

\* Depending on type and content storage  
\*\* For service purposes  
\*\*\* Depending on network coverage



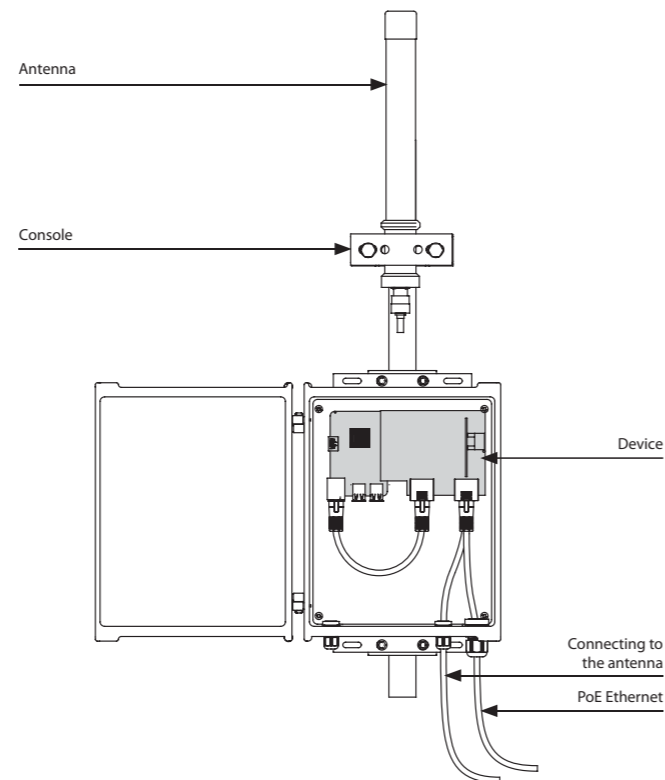
## LoRa Gateway FWD | for LoRaWAN networks



- LoRa Gateway has the LoRa receiver / transmitter function and the packet forwarder, receives / broadcasts LoRa messages and transmits them to the assigned server.
- LoRa Gateway serves as a transceiver for customers who have their own server solutions.
- The Gateway (or BTS - Based Transceiver Station) serves as a tool to create your own LoRa home network for the Internet of Things.
- It collects requests from end devices, and then transfers them to a pre-determined Server.
- The antenna provides radiation in all directions.
- The gateway is also designed for outdoor use.
- For proper Gateway functionality, you need a connected Ethernet cable and a permanent 48 V DC / POE power supply.

Technical parameters		GTW-FWD
<b>Power supply</b>		
Supply voltage:		48 V DC / active PoE
Input:		max. 10 W
<b>Connection</b>		
Connection:		PoE connector with RJ 45 power supply according to the 802.11af standard.
<b>Communication</b>		
Protocol:		LoRa
Transmitter frequency:		868 MHz
Range in open space:		Approx. 10 km
<b>Hardware</b>		
Baseplate:		Rapsberry Pi 3
Max. connected nodes		thousands
OS:		Linux
LoRA chip:		Semtech SX-1301 s SX-1257
<b>Antenna</b>		
Emission:		omnidirectional VGD4
Material:		high quality fiberglass
Gain:		8 dBi
Polarization:		vertical
<b>Other parameters</b>		
Working temperature:		-20 ... + 60 °C
Relative humidity:		95 %
Montage:		on the boom Ø 30-50 mm
Protection degree:		IP56
Overvoltage category:		III.
Pollution degree:		2
Dimension without antenna:		280 x 213 x 90 mm
Weight:		1731 g (without antenna)
Antenna length:		660 mm
Antenna Weight:		1400 g

### Device description



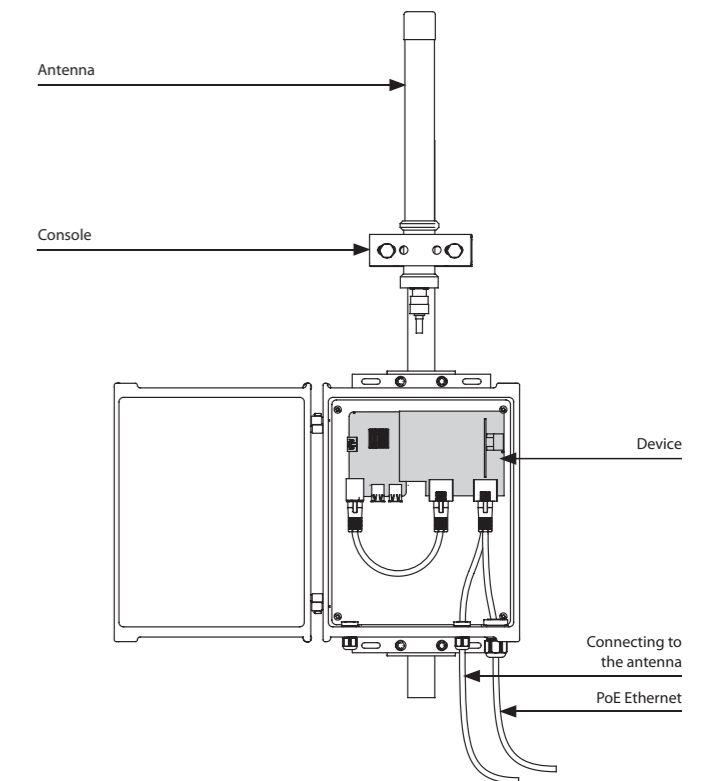
## LoRa Gateway LNS | for LoRaWAN networks



- The LoRa Gateway has the LoRa receiver / transmitter function and the server, receives / transmits messages Lora and processes it on your own server.
- Contains LoRa Network Server (LNS) software for setting and managing end devices.
- By default, the server is open and unsecured - it is designed for further customer integration.
- The Gateway (or BTS - Based Transceiver Station) serves as a tool to create your own LoRa home network for the Internet of Things.
- It collects requests from end devices, and evaluates them.
- The LoRa Gateway Server can be assigned to thousands of IoT terminal devices communicating on this network.
- Assignment of end devices is done through a web portal, which then records all requirements from individual sensors.
- The antenna provides radiation in all directions.
- The gateway is also designed for outdoor use.
- For proper Gateway functionality, you need a connected Ethernet cable and a permanent 48 V DC / POE power supply.

Technical parameters		GTW-LNS
<b>Power supply</b>		
Supply voltage:		48 V DC / active PoE
Input:		max. 10 W
<b>Connection</b>		
Connection:		PoE connector with RJ 45 power supply according to the 802.11af standard.
<b>Communication</b>		
Protocol:		LoRa
Transmitter frequency:		868 MHz
Range in open space:		Approx. 10 km
<b>Hardware</b>		
Baseplate:		Rapsberry Pi 3
Max. connected nodes		thousands
OS:		Linux
LoRA chip:		Semtech SX-1301 s SX-1257
<b>Antenna</b>		
Emission:		omnidirectional VGD4
Material:		high quality fiberglass
Gain:		8 dBi
Polarization:		vertical
<b>Other parameters</b>		
Working temperature:		-20 ... + 60 °C
Relative humidity:		95 %
Montage:		on the boom Ø 30-50 mm
Protection degree:		IP56
Overvoltage category:		III.
Pollution degree:		2
Dimension without antenna:		280 x 213 x 90 mm
Weight:		1731 g (without antenna)
Antenna length:		660 mm
Antenna Weight:		1400 g

### Device description





- An existing installation (OEM) module
- Is used to communicate existing devices through the LoRa network
- The function of the device is programmed as required
- Power supply: 5-24 V DC, after breaking the 3 V DC / 140 mAh source section (via linear stabilizer)
- Communication:
  - SPI 1x
  - Analog pins 8x (12-bit)
  - USART 1x
  - I / O digital pins 29x
- Optional antenna connection:
  - SMT Ultra-Miniature Coaxial Connector
  - SMA connector
  - by soldering (the antenna is part of the device to which the module is connected)
- Dimensions\*\*:
  - with ULF connector - 19.5 x 46.1 x 4 mm
  - with SMA connector - 19.5 x 57 x 7 mm
  - with internal antenna - 19.5 x 46.1 x 21 mm

Technical parameters		LoRaWAN Modul OEM
Supply voltage:	5 - 24 V DC / 3V3 140 mAh	
Supply voltage tolerance:	+10 /-15 %	
<b>Setting</b>		
Setting:	With a message from the server	
<b>Indication</b>		
Indication:	blau LED	
<b>Communication</b>		
Protocol:	LoRa	
Transmitter frequency:	868 MHz	
Range in open space:	Approx. 10 km*	
<b>Other parameters</b>		
Working temperature:	-15 ... + 50 °C	
Operation position:	any	
Mounting:	soldering	
Antenna output by application:	ULF connector	
Dimension:	19.5 x 46.1 x 4 mm**	
Weight:	13.6 g	
Antenna output AN-I or AN-E:	SMA connector***	
Dimension:	19.5 x 57 x 7 mm**	
Weight:	15 g	
Dimension:	19.5 x 46.1 x 21 mm**	
Weight:	13.5 g	

\* Depending on network coverage

\*\* Dimension after breaking source parts

\*\*\* Max Tightening Torque for antenna connector is 0.56 Nm.

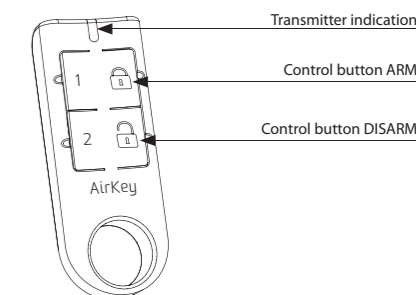
### AirKey | 4 button controller - keychain



- It is used to activate and deactivate the motion detector when you enter or leave the monitored area.
- One detector can be matched up to 32 key fobs. The key fob can be paired with any number of detectors.
- Designed in black and white with laser printing.
- Battery power supply (3V/CR2032 - included in the supply) with battery life of around 5 years based on frequency of use.

Technical parameters		AirKEY/W	AirKEY/B
Supply voltage:	3 V battery CR 2032		
Transmission indication:	red LED		
Number of buttons:	4		
<b>Communication</b>			
Protocol:	iNELS RF Control RFIO		
Transmitter frequency:	868 MHz		
Range in open space:	up to 100 m		
Signal transmission method:	unidirectionally addressed message		
<b>Other parameters</b>			
Operating temperature:	-10 ... +50 °C		
Operating position:	any		
Color:	white	black	
Protection:	IP20		
Contamination degree:	2		
Dimensions:	64 x 25 x 10 mm		
Weight:	10 g (without battery)		

### Description



### RFAF/USB | Service Key

Technical parameters		RFAF/USB
Power:	max. 1W	
Interface:	USB 1.1 and higher, plug „A“	
Range:	100 m	
Min. distance of RF		
Touchactuator:	1m	
Frequency:	866 MHz, 868 MHz, 916 MHz	
Power supply indication:	green LED	
RF communication indication:	red LED	
<b>Other parameters</b>		
Operating temperature:	0 .. +55°C	
Storage temperature:	- 20 .. +70°C	
Protection:	IP30	
Contamination degree:	2	
Work space:	any	
Installation:	any	
Dimensions:	22 x 85 x 15 mm	
Weight:	20 g	
Related standards:	EN 60950-1	



- The RFAF / USB Service Key (in conjunction with the RF\_analyzer) is designed for iNELS RF Control system partners and serves for:
  - Setting the repeater (signal amplifier) through the iNELS RF Control elements labeled as RFIO2. This option allows you to communicate over longer distances (in the order of 50 m) via existing iNELS RF Control elements in the installation (eliminating the use of the RFRP-20 repeater).
  - upgrade of firmware in the iNELS RF Control elements (labeled RFIO<sup>2</sup>), in the case of new firmware versions that improve the functionality of the elements on which we are constantly working.
  - The RF Network Analyzer will reliably analyze the communication between the controller (where you plan to place it) and the component in the installation. Indicates signal strength / quatty as well as possible frequencies that can interfere with communication.
  - sw RF analyzer can be found at [inels.com/partners](http://inels.com/partners) in section SW / FW RF Control

TC, TZ | Thermo sensors



EAN code	
TC-0: 8595188110075	TZ-0: 8595188140591
TC-3: 8595188110617	TZ-3: 8595188110600
TC-6: 8595188110082	TZ-6: 8595188110594
TC-12: 8595188110099	TZ-12: 8595188110587

Technical parameters	TC	TZ
Range:	0..+70 °C	-40..+125 °C
Scanning element:	NTC 12K 5 %	NTC 12K 5 %
In air/ in water:	(τ65) 92 s / 23 s	(τ65) 62 s / 8 s
In air/ in water:	(τ95) 306 s / 56 s	(τ95) 216 s / 23 s
Cable material:	High temperature PVC	Silicone
Terminal material:	High temperature PVC	Nickel plated copper
Protection degree:	IP67	IP67
Insulation:	-	-

Types of temperature sensors

	TC-0	TZ-0
- length:	100 mm	110 mm
- weight:	5 g	4.5 g
<hr/>		
- length:	3 m	3
- weight:	108 g	106 g
<hr/>		
- length:	6 m	6 m
- weight:	213 g	216 g
<hr/>		
- length:	12 m	12 m
- weight:	466 g	418 g

τ65 (95): time, which sensor needs to heat up on 65 (95) % of ambient temperature of environment, in which is located.

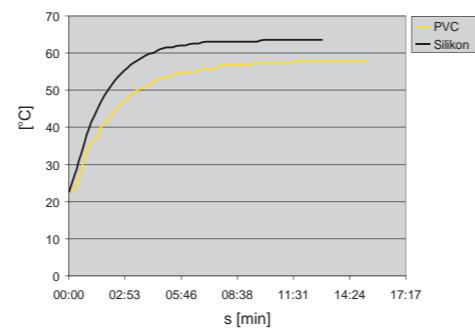
- Thermister temperature sensors are made of Negative Temperature Coefficient (NTC) embedded in a PVC or metal sleeve with a thermal-conductive sealer.
- Sensor TC
  - lead-in cable to sensor TC is made of wire CYSY 2D x 0.5 mm/ 0.02".
- Sensor TZ
  - cable VO3SS-F 2D x 0.5 mm /0.02" with silicone insulation for use in high temperature applications.
  - silicone insulation for use in high temperature applications.
- Temperature sensors can be connected directly to the terminal block
- Cable lengths can not be changed, connected or modified.

Resistive values of sensors in dependance on temperature

Temperature (°C)	Sensor NTC (kΩ)
20	14.7
30	9.8
40	6.6
50	4.6
60	3.2
70	2.3

Tolerance of sensor NTC 12 kΩ is ± 5% by 25 °C / 77°F.

Diagramm of sensor warm up via air



PVC -reaction to water temperature from 22.5 1°C to 58°C.  
Silicone - reaction to water temperature from 22.5°C to 63.5°C.

HTML2500LF | Temperature and humidity sensor



Technical parameters	HTML2500LF
Operating temperature:	- 40 .. + 85 °C
Relative humidity:	1 % .. 99 %
Humidity measurement accuracy:	± 3 %
Supply voltage:	5 V
Dimensions:	326 mm
Weight:	17.5 g

LS, MS, WS | Sensors



EAN code	
LS: 8595188155762	
MS: 8595188155779	
WS: 8595188157940	

Technical parameters	LS	MS	WS
Working temperature:	-20 .. +50 °C		
Cross-section of connecting wires:	max. 3.5 mm		
Wire length:	1.5 m*		
Protection:	IP65		

\* the standard supplied length of 1.5m can be custom ordered in an extended version of up to 5 m.

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.

MS (Magnetic sensor):

- The magnetic sensor scans movement of the numeral, upon which a permanent magnet is placed.
- The MS sensor is particularly suitable for gas meters that support magnetic sensing.
- The sensing sensor is glued over the last number of the face dial measured.

WS (magnetic sensor 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).

AN-I | Internal antenna



- into plastic switchboard
- rod angle, without cable
- sensitivity 1 dB
- the internal antenna is included in the standard package

EAN code	
Internal antenna AN-I:	8595188161862

AN-E | External antenna



- for mounting into metal switchboard
- cable length 3 m
- sensitivity 5 dB
- the external antenna AN-E is supplied on request only

EAN code	
External antenna AN-E:	8595188190121

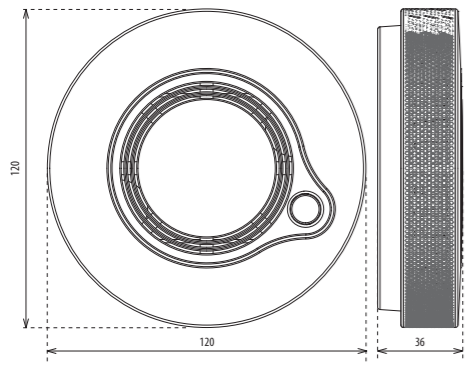
FP-1 | Flood probe



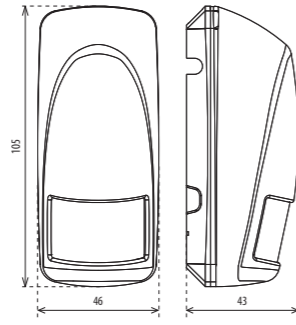
EAN code	
FP-1:	8595188147064

Technical parameters	FP-1
Working temperature:	-10 .. +40 °C
Mounting:	glue
Length of cable:	3 m
Dimensions:	60 x 30 x 8 mm
Related standards:	EN 50130-4, EN 55022

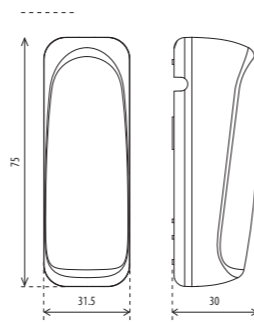
Product dimension



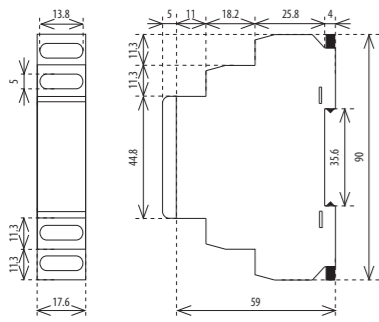
AirSD-100, AirQS-100, AirQS-101



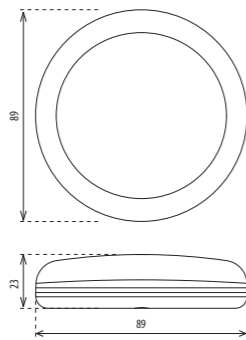
AirMD-100



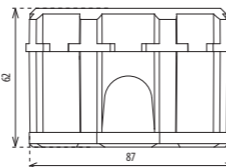
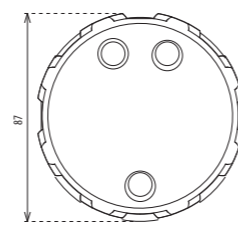
AirWD-100



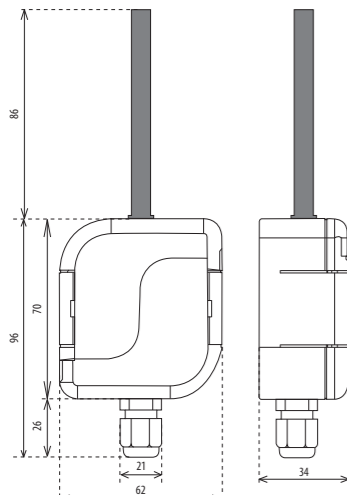
AirIM-100x/M



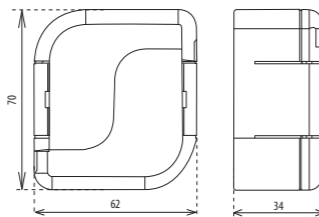
AirSF-100



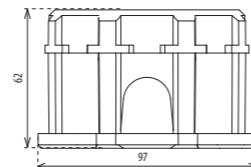
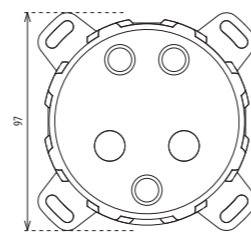
AirPS-100



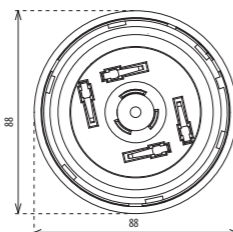
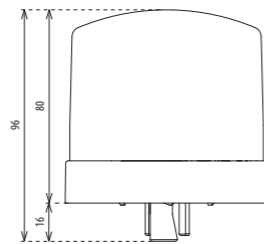
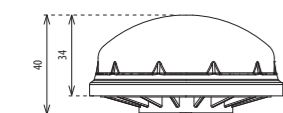
AirIM-100, AirTM-100  
AirSOU-100, AirSLC-100



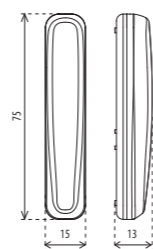
AirWD-101



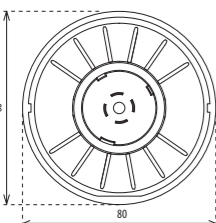
AirWS-100



AirSLC-100/NEMA



D/WD



AirSLC-100/LWES

Others just resell  
HOWEVER, WE DEVELOP AND MANUFACTURE  
PRODUCTS OURSELVES!

**26 years**  
on the market

**15 years**  
ISO certification

**40**  
developers

**330**  
employees

**2000m<sup>2</sup>**  
manufacturing  
space

**200**  
proprietary  
plastic mods

**2**  
SMD lines

**1 mil.**  
components  
per day

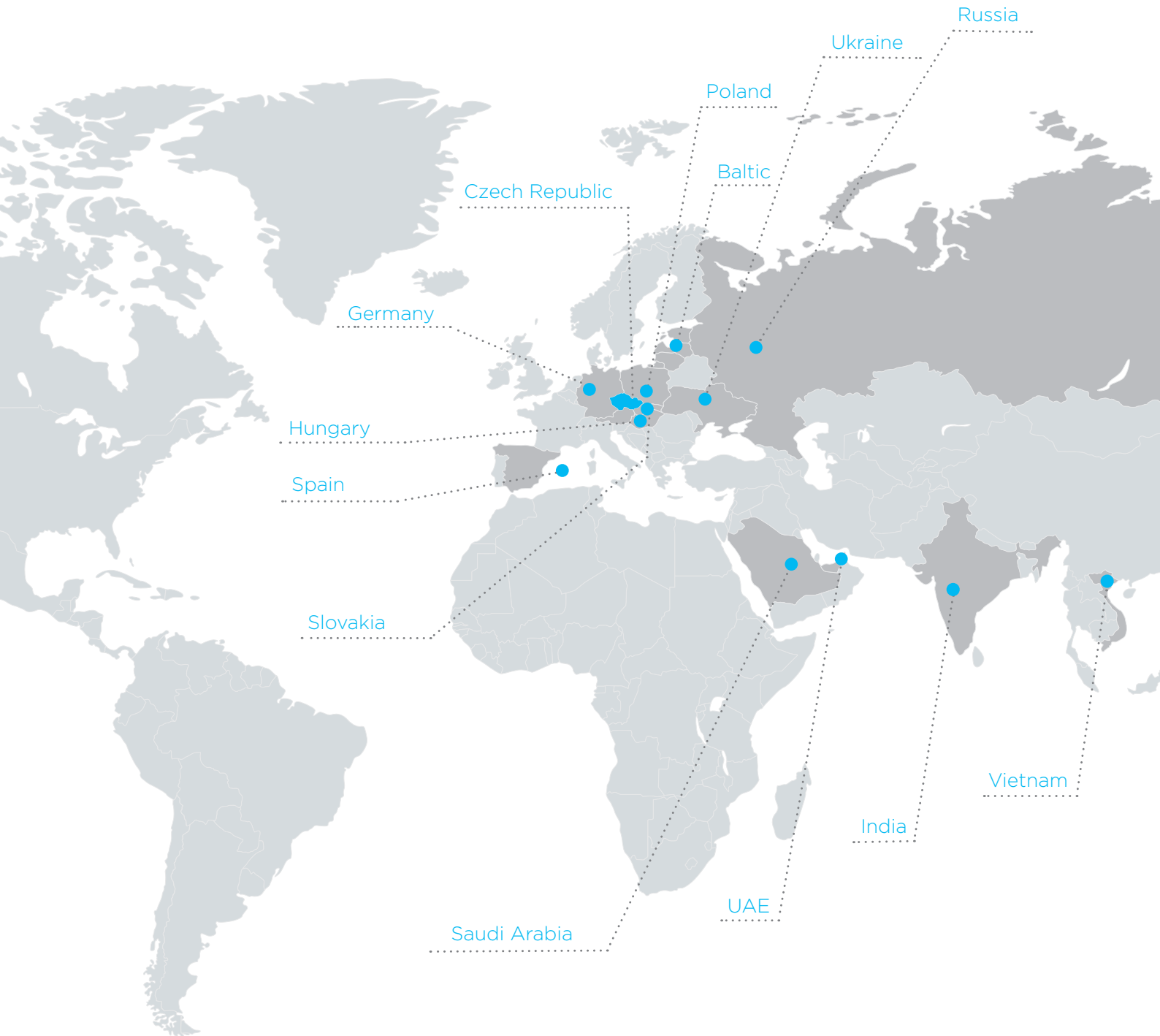
**600 000**  
products  
per year

**2 000 m<sup>2</sup>**  
finalization  
and dispatch

**2000**  
warehousing  
spaces

**2**  
printing lasers

# ELKO EP Holding



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