

iNELS Air

Sensors and detectors for IoT



ELKO EP



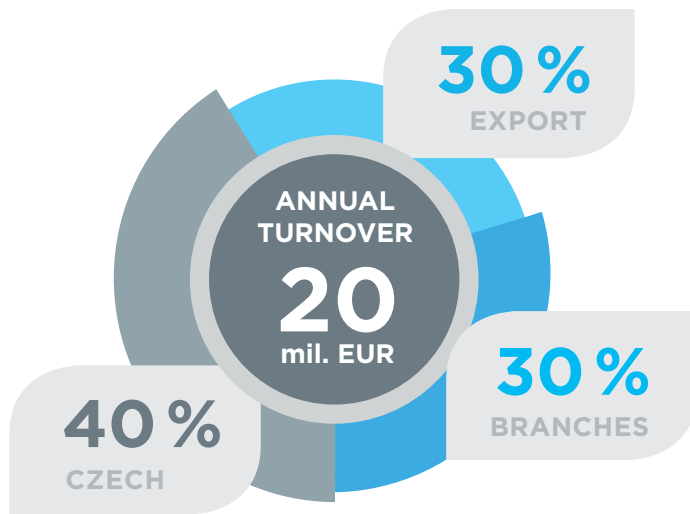
We are traditional, innovative and purely Czech development manufacturer of electronic devices and we have been your partner in the field of electroinstallations for 26 years.

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



13
BRANCHES OVER
THE WORLDS

70
EXPORTING
COUNTRIES

330
EMPLOYEES

10 000
iNELS INSTALLATION

12 000 000
MANUFACTURED PRODUCTS

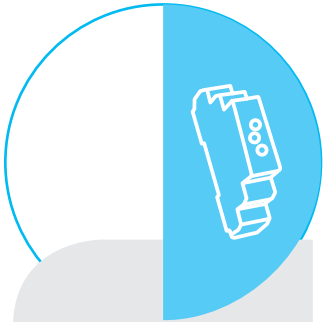


WE ARE



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.

Smoke detector and Air quality sensors



Weather station



Monitoring of energy



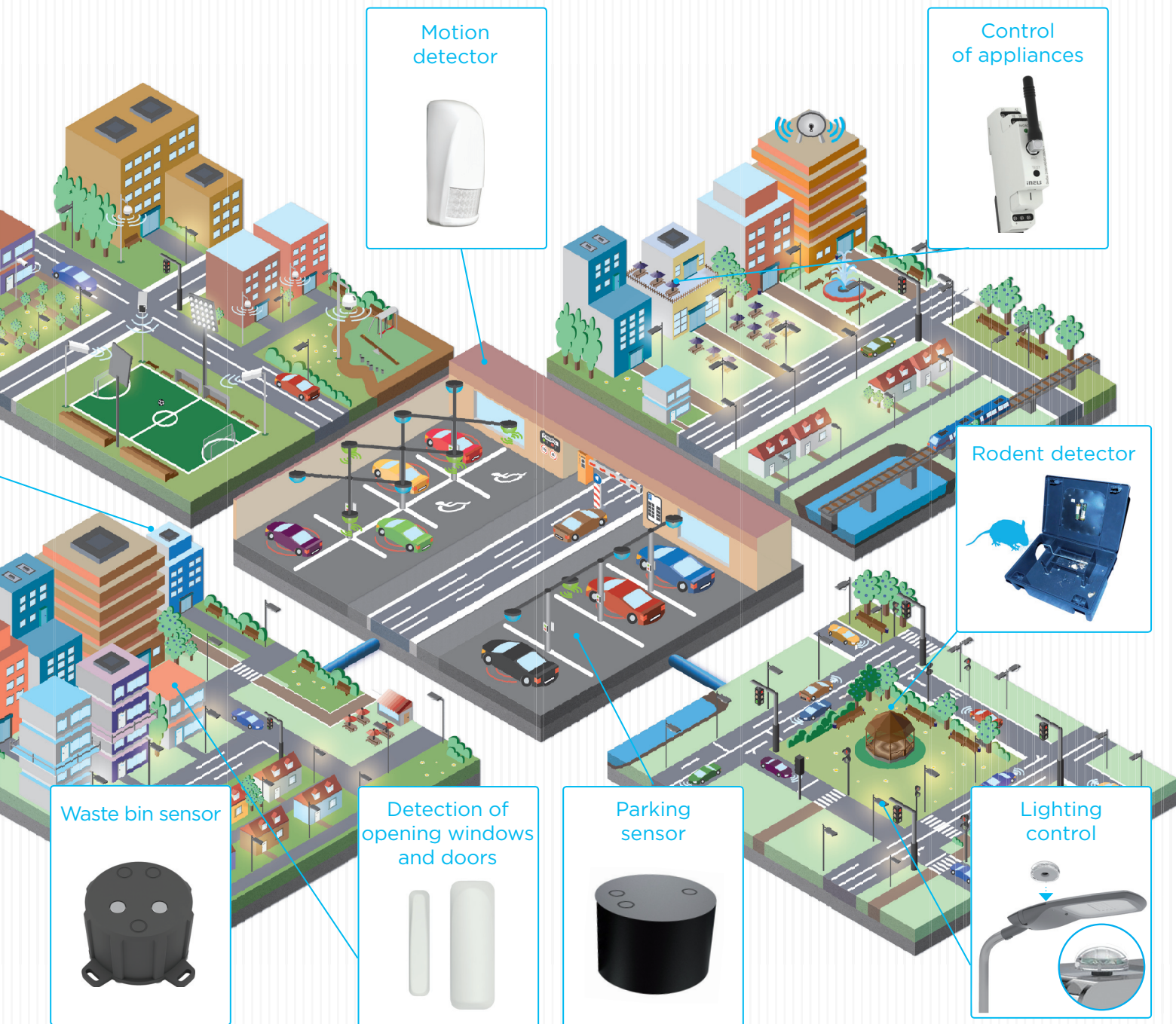
The network supports bidirectional communication with a limited number of feedbacks. It uses the free frequency band of 868 MHz. It has more extensive coverage across the Czech Republic and abroad and is therefore more suitable for long distance monitoring of the equipment. You can find current network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



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.



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.



\$ Saving

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.

🔒 Safety

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.

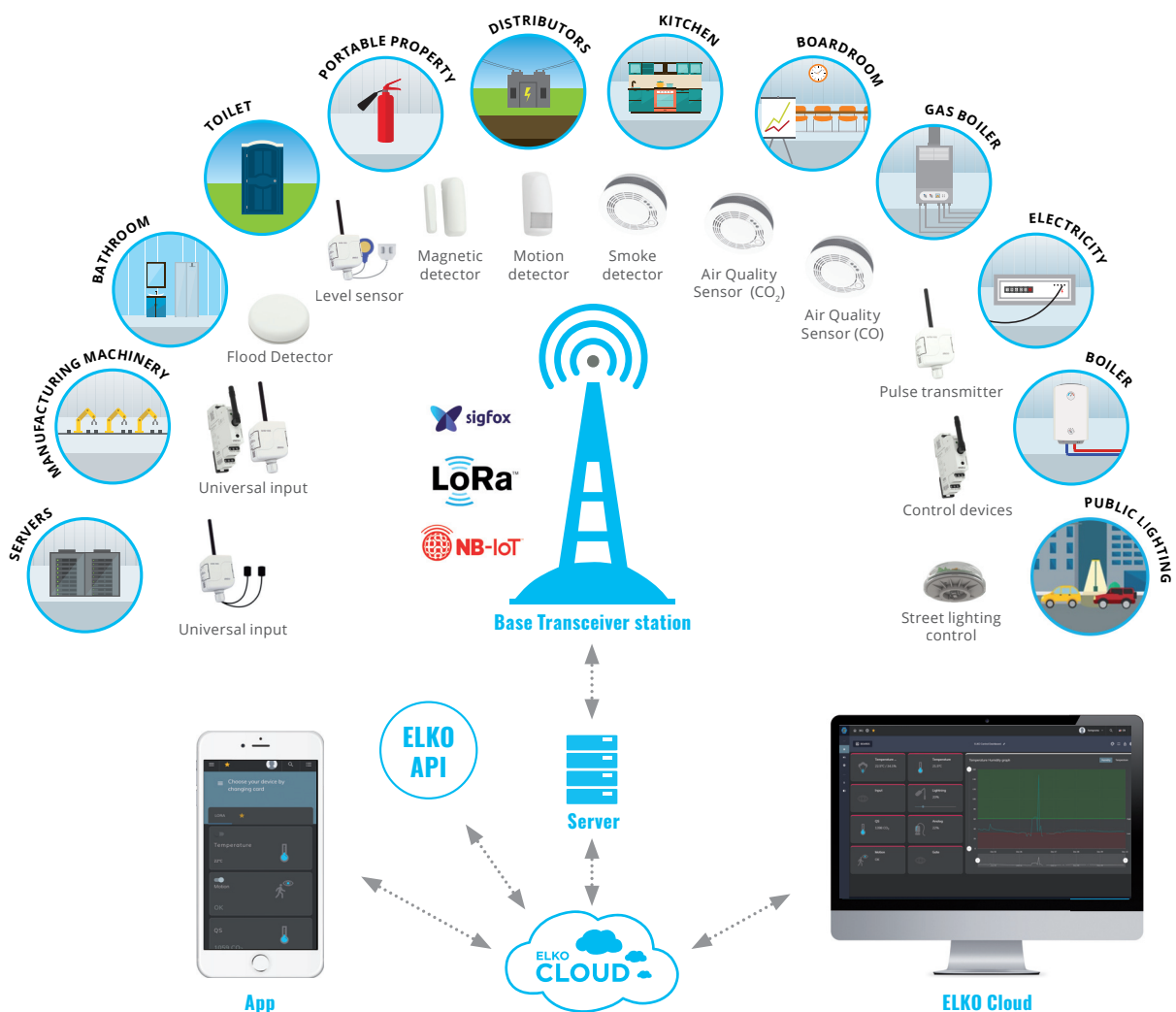
💎 Design

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 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)




AirIM-100S

Product line

Type of devices

- IM** - Input module
- DAC** - Digital analog converter
- MD** - Motion detector
- PS** - Parking sensor
- QS** - Air Quality sensor
- SA** - Switching actuator
- SD** - Smoke detector
- SF** - Flood detector
- SOU** - Twilight sensor
- TM** - Pulse transmitter
- WD** - Magnetic detector
- SLC** - Street light controller
- WS** - Waste bin sensor

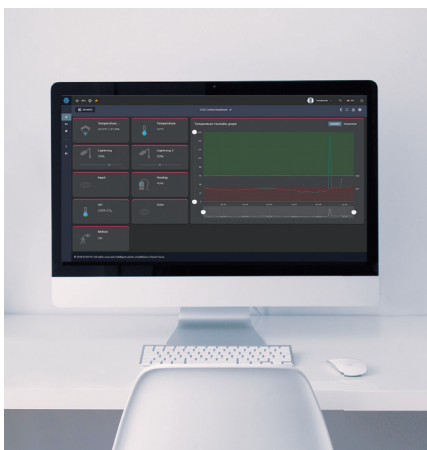
Network

- S** - Sigfox 
- L** - Lora 
- NB** - NB-IoT 

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.



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



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.

You can view your iNELS Air data in several ways:



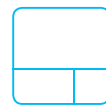
ELKO Cloud



Application & notification



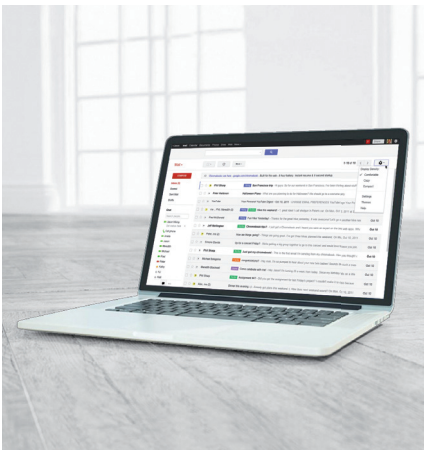
E-mail



IFTTT



Smart City Platform



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.



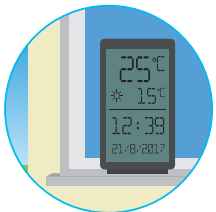
Input module

AirIM-100

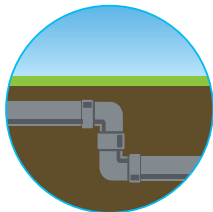
- measures the current temperature or humidity of your device through temp. sensors (see Page 52)
- timely warnings against critical temperatures
- can be used for other measurements (voltage, current, level, energy, etc.)
- in IP65 enclosure
- technical parametres see Page 24



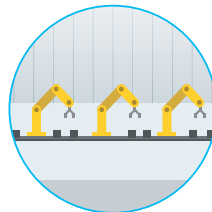
Examples of use:



Outdoor temperature measurement



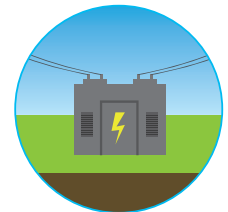
Pipeline (against freezing)



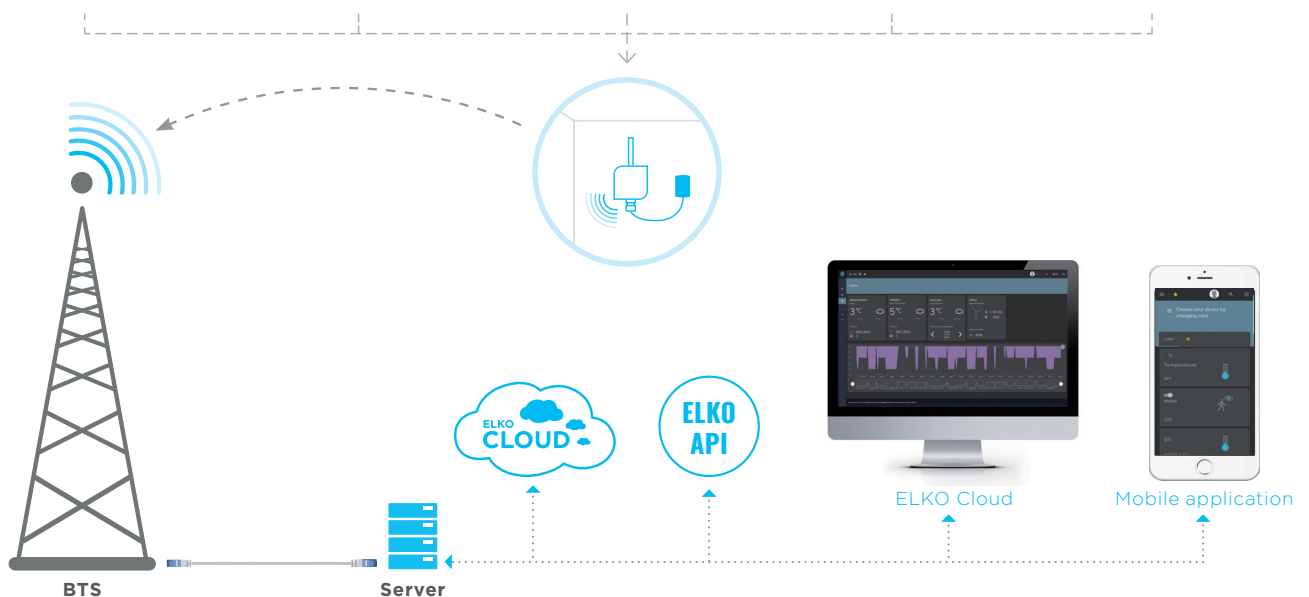
Machines (against overheating)



Server room (correct temperature)



Distribution station

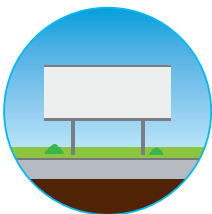


State and device monitoring

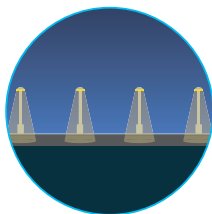
The functionality of the equipment and machines is a priority for each manufacturer or operator. Detecting emergencies, critical states and monitoring the current state of the voltage or current of the connected devices can be ensured in a simple way. The universal sensor ensures smooth and seamless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

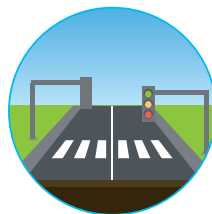
Examples of use:



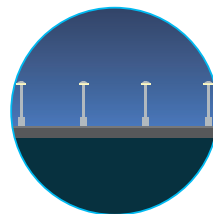
Billboard



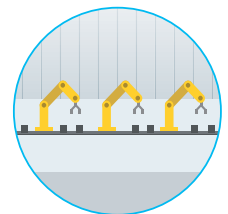
Lighting



The correct functioning of traffic lights



Blackout



Production machines



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



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



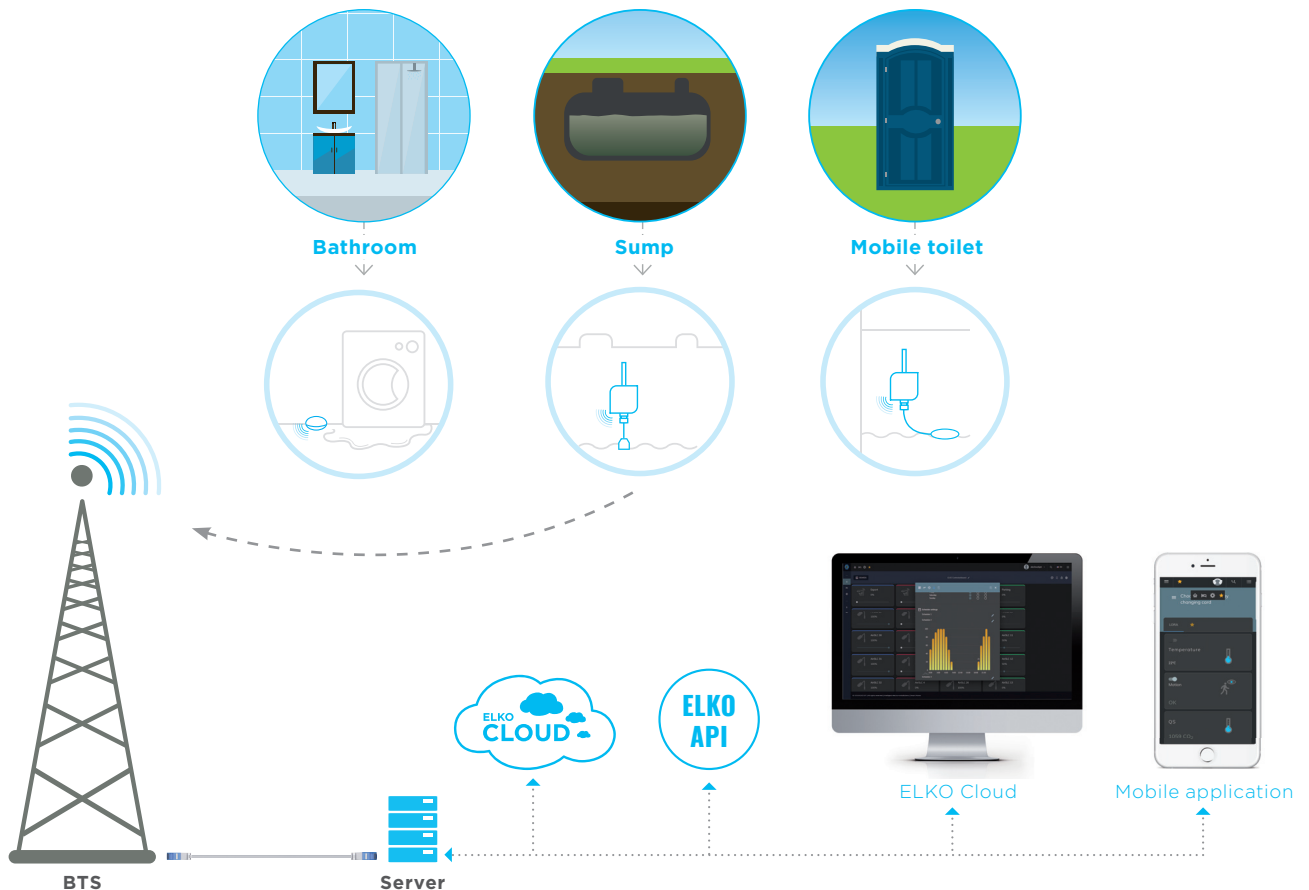
Level control

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:

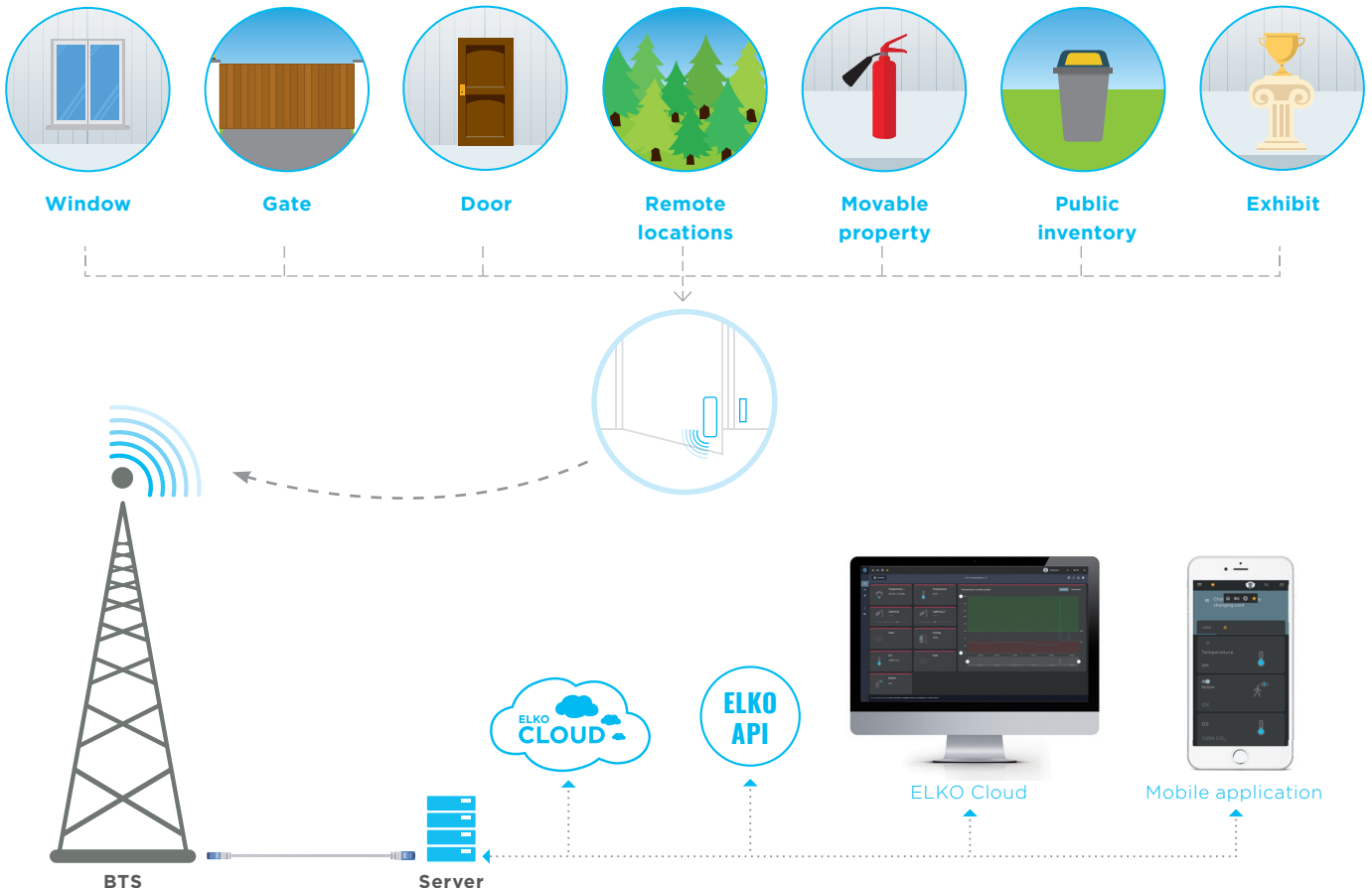


Inventory monitoring, relocation, ...

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.

Examples of use:



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



magnet

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

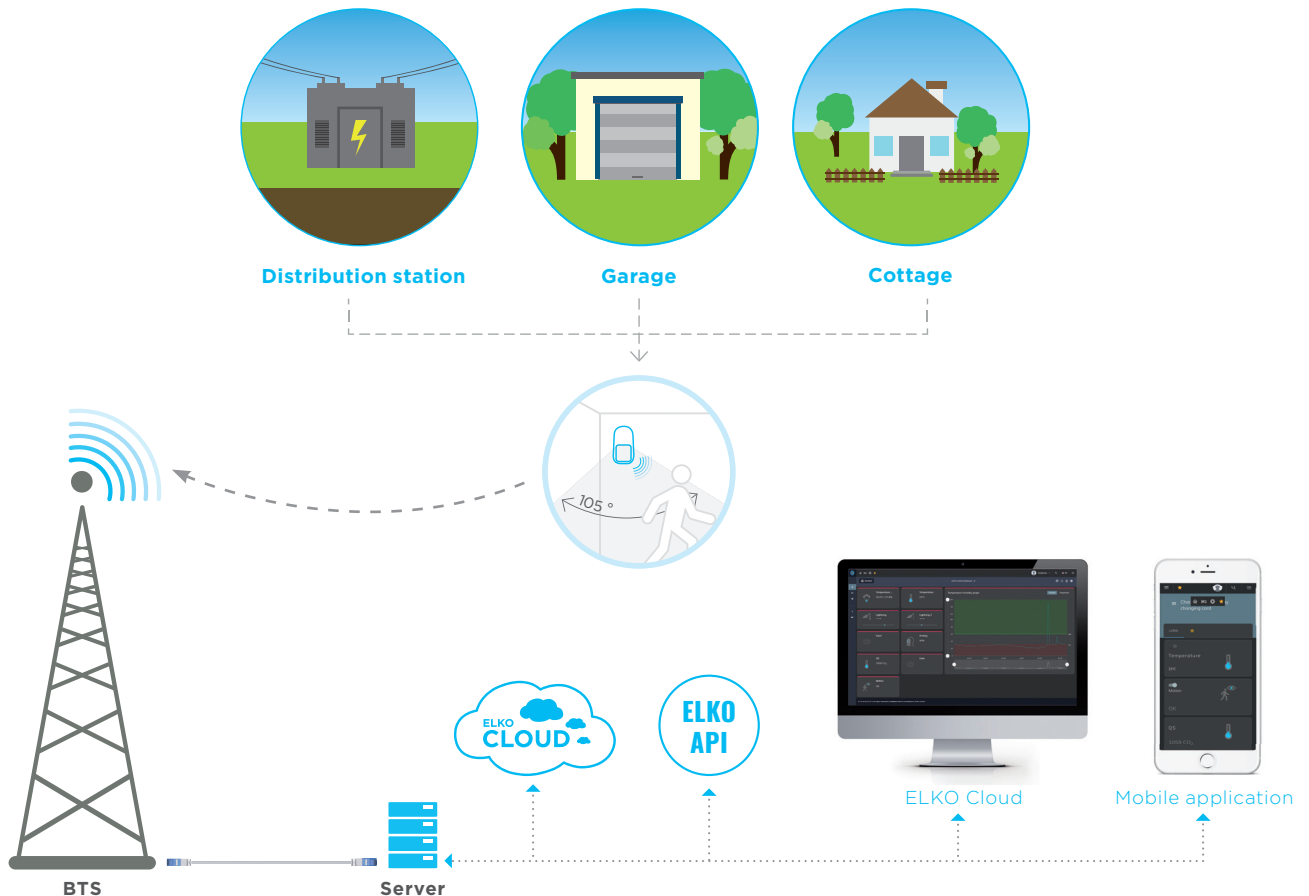
Motion detector & RF Key

- used to activate and deactivate the motion detector at the moment you leave or enter the guarded area
- RFIO² communication protocol
- technical parameters see Page 51

AirMD

RF Key

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.



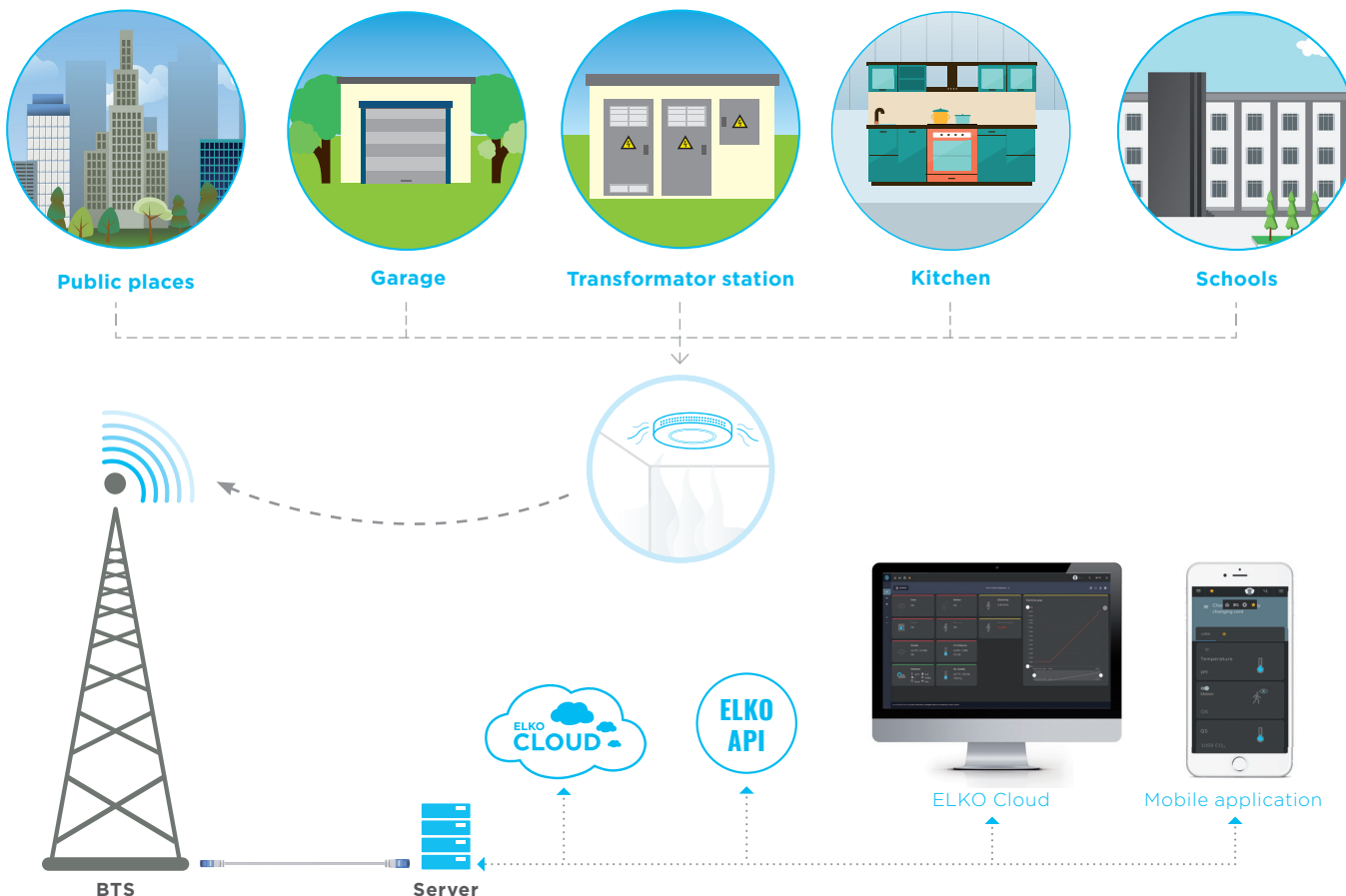
Smoke detector

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

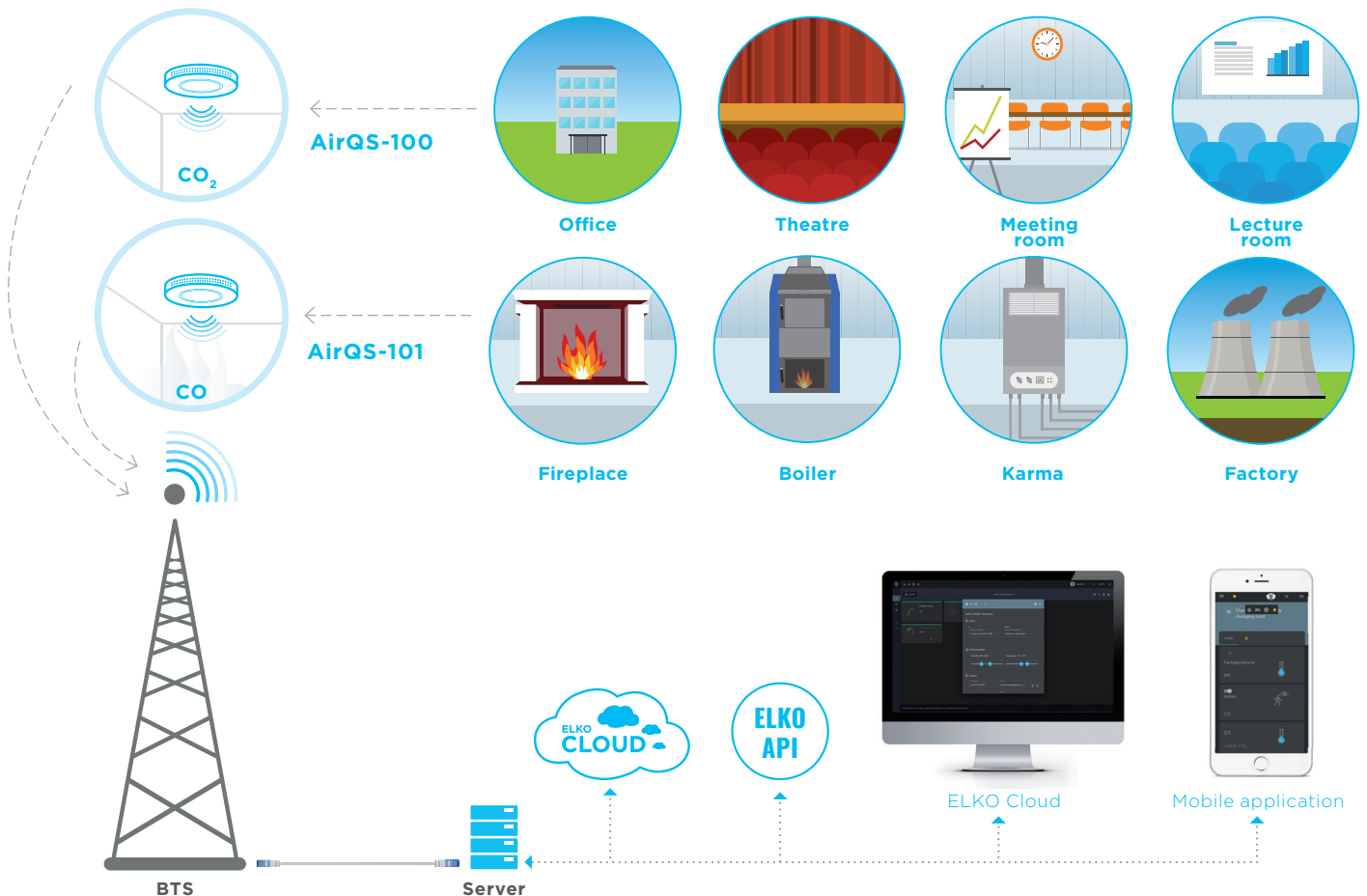
Impurities in the air are among one of the basic environmental problems. Some substances also have a negative effect on human beings.

Even one person in a poorly ventilated room, by breathing, will soon increase the carbon dioxide (CO₂) 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:



Air quality sensor - CO₂

AirQS-100

- measurement of the concentration of CO₂ 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



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.



Pulse transmitter

AirTM-100

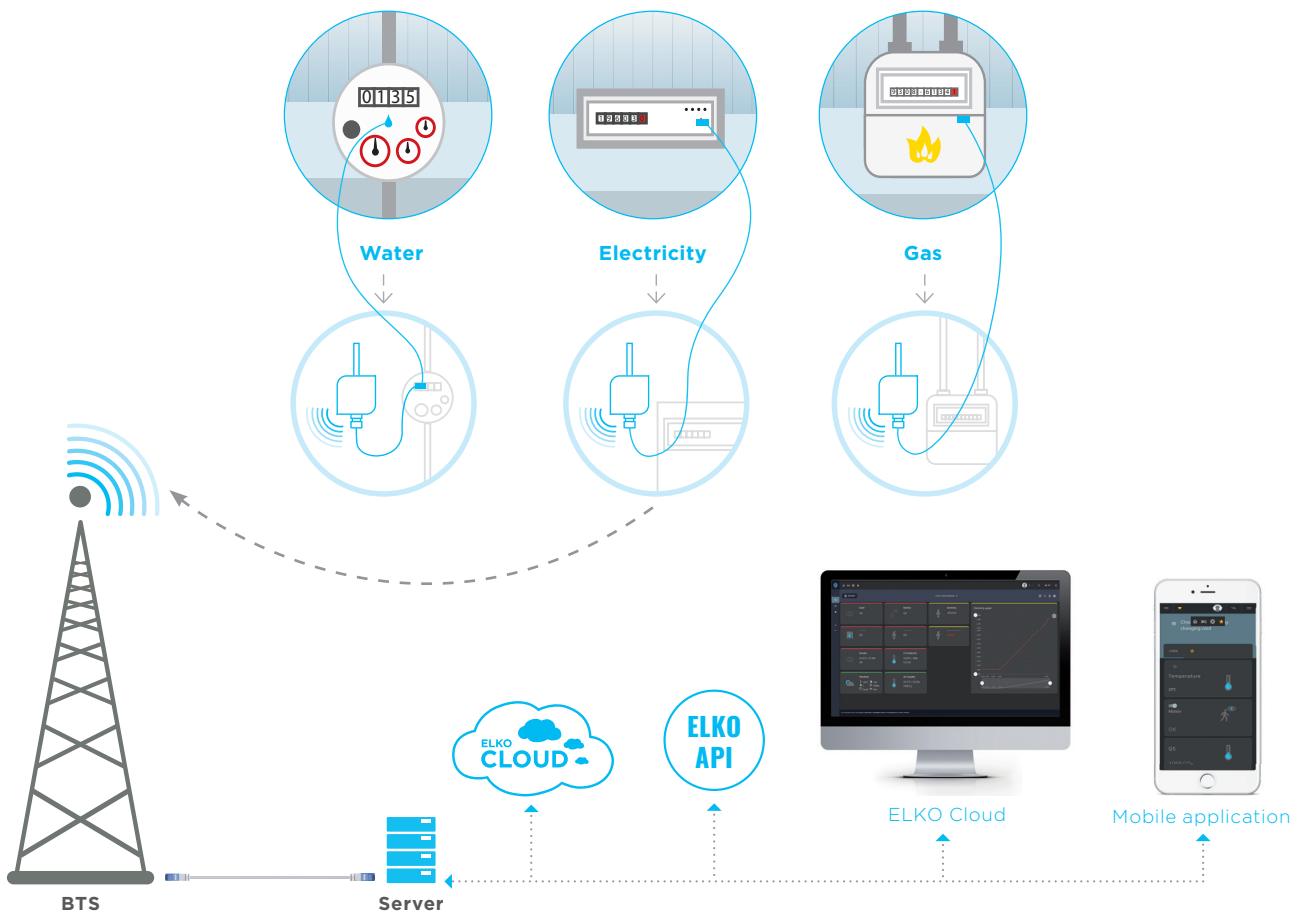
- a wireless pulse transmitter designed to scan data from home energy meters
- data are sent to the server and displayed in a smartphone application or ELKO Cloud
- battery power
- in IP65 enclosure (protection dust, ...)
- technical parametres see Page 26



Supported sensors

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

Examples of use:



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.

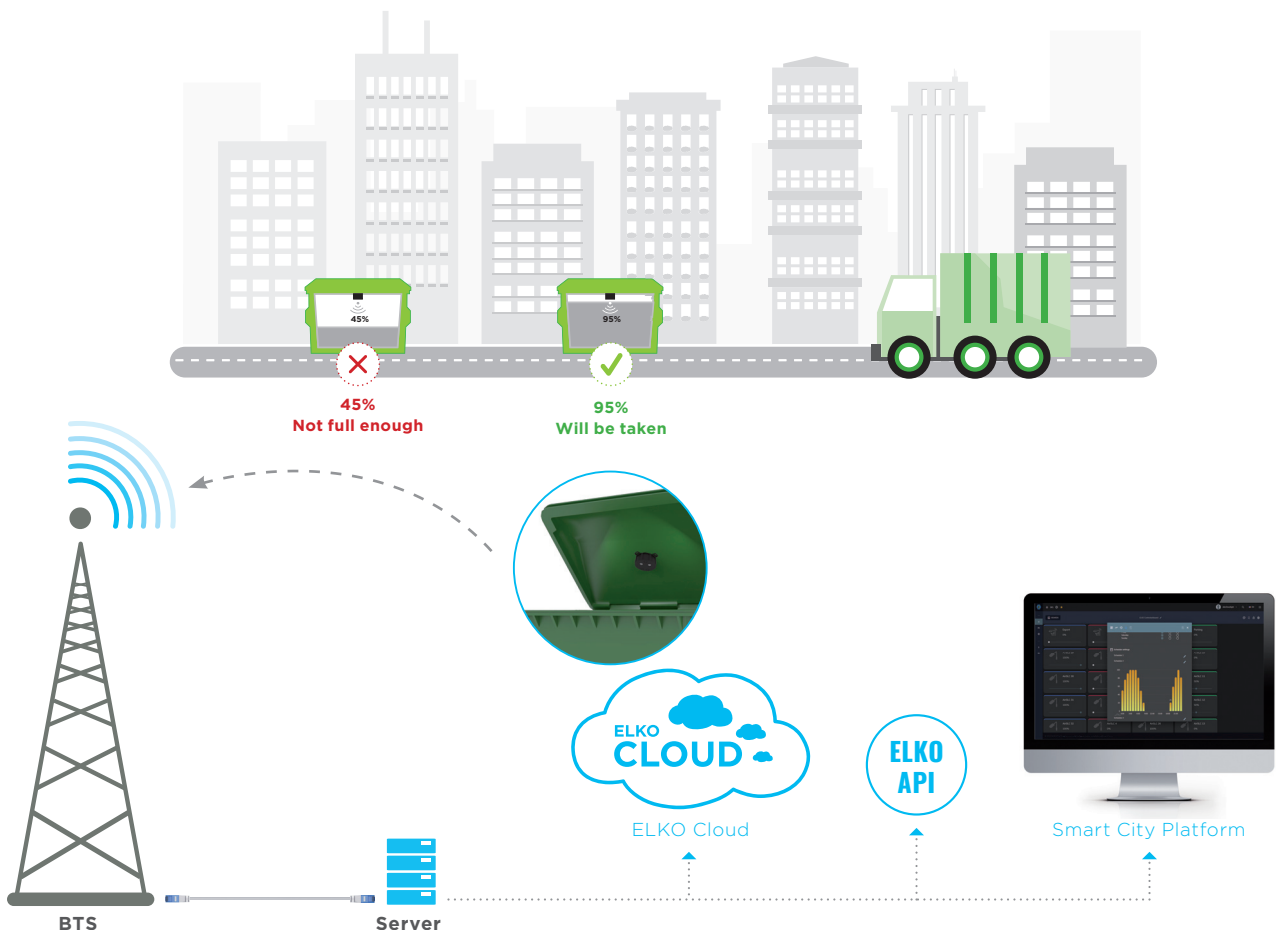
The filled volume of the container can be viewed via the platform on-line, in a clear map background with color-coded icons. Builtin artificial intelligence, collection history, and current period can predict the requirement for emptying. In this way, containers of recyclable secondary raw materials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

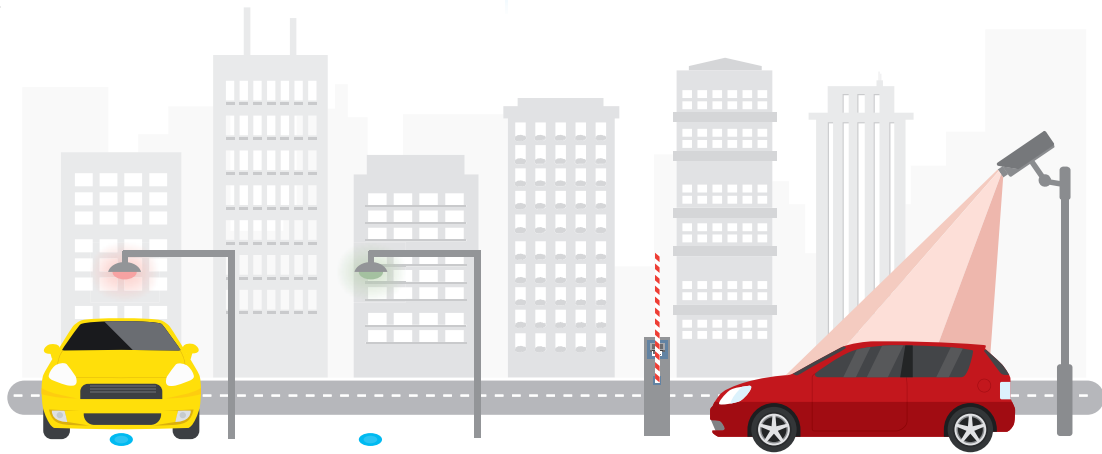
A total of 20% of drivers in urban traffic are just looking for a place to park. However, their cars cannot easily reach free spaces. The solution is to install parking sensors that use state-of-the-art technology. In conjunction with the service application, you have a solution that will free the streets 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

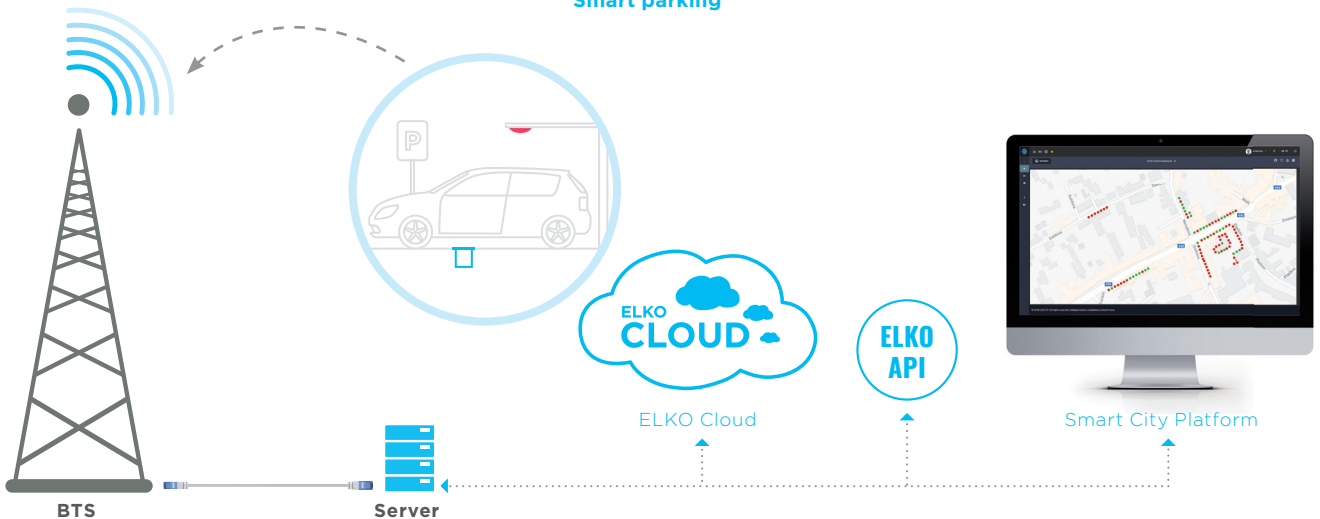
AirPS-100



- 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 parking



Smart street lighting

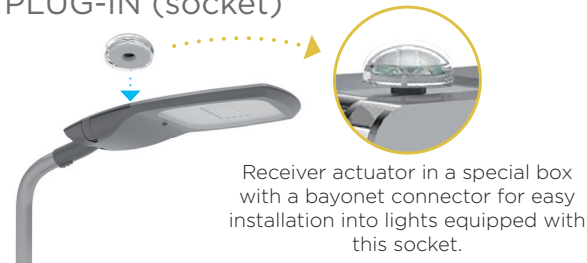
Smart public lighting is environmentally friendly, as well as being kind to your wallet.

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.

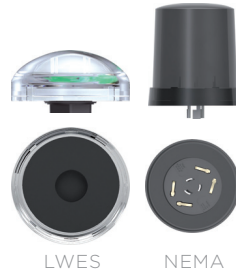
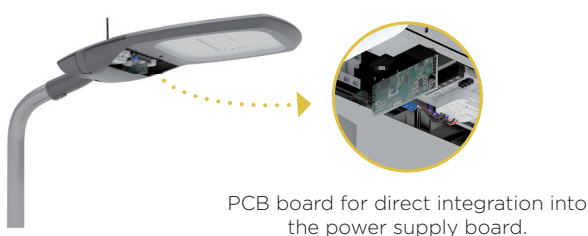
Retrofit modul



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

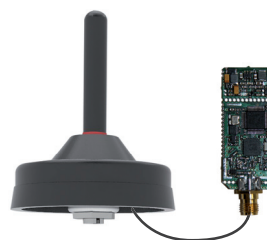


- allows you to capture the current natural light intensity, and with this information control the intensity of artificial lighting, thereby reducing power consumption.
- battery power
- enhanced IP65 protection (dust and splash protection)
- technical parameters see Page 45



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





Lights on
25%



Lights on
50%

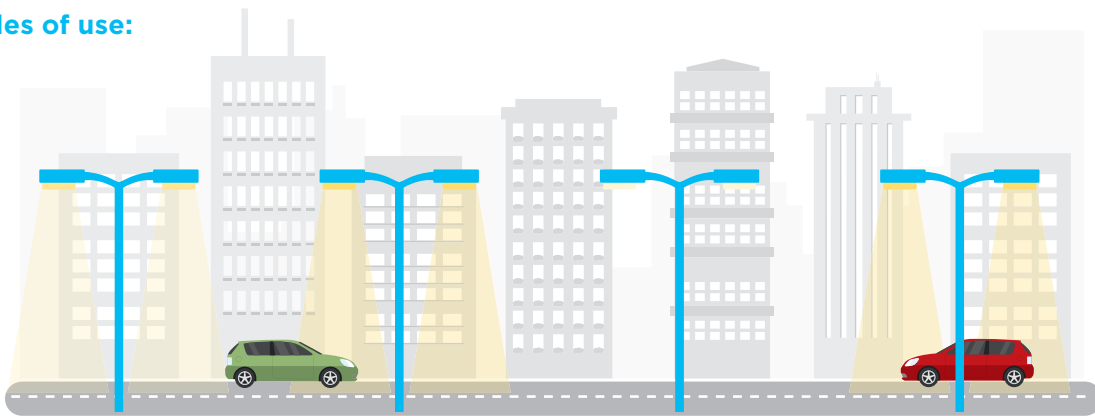


Lights on
75%



Lights on
100%

Examples of use:



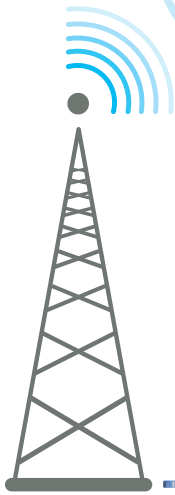
Public lighting

Retrofit

Plug-In



AirSLC-100



BTS



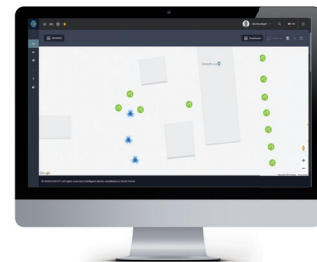
Server



ELKO Cloud



ELKO API



Smart City Platform

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.



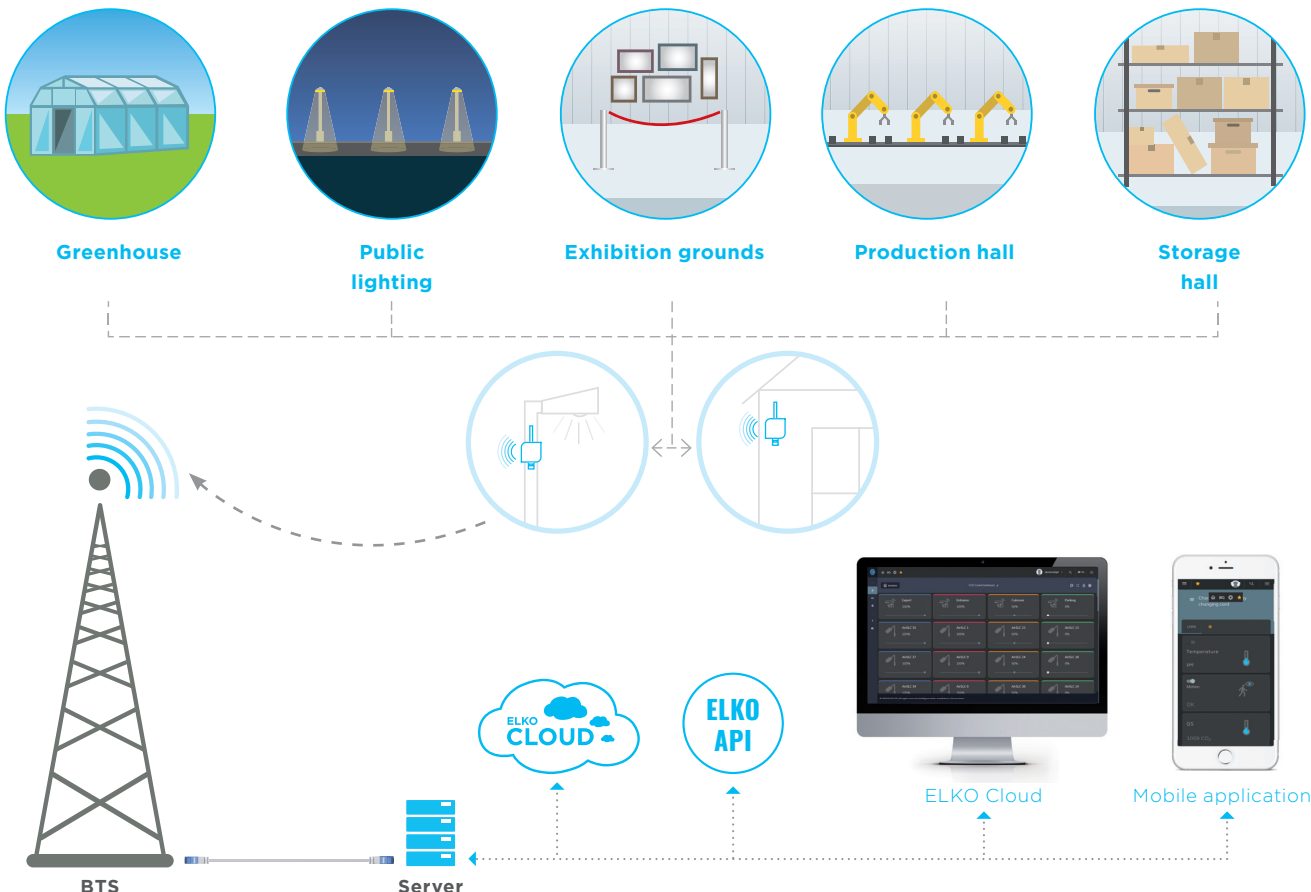
Twilight sensor

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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| Technical parameters | AirIM-100S | AirIM-100L | AirIM-100NB |
|--|--|---|----------------------|
| Power supply | | | |
| Battery power: | 1x 3.6V LS 14500 Li-SOCl ₂ AA | | |
| Battery life: | max. 5 years | max. 3 years (depending on the frequency of use) | |
| External power supply: | 5 – 12V DC (on terminal) | | |
| Supply voltage tolerance: | +10 %; -15% | | |
| Standby consumption: | 0.2 mW | | |
| Transmitting power consumption: | 250 mW | 150 mW | 850 mW |
| Setting | | | |
| Setting: | With a message from the server using setting pins, SET button, programming cable | | |
| Alarm Detection: | message to the server | | |
| Battery status view: | only when the battery is powered by a message on the server | | |
| Control | | | |
| Control: | button SET 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** |

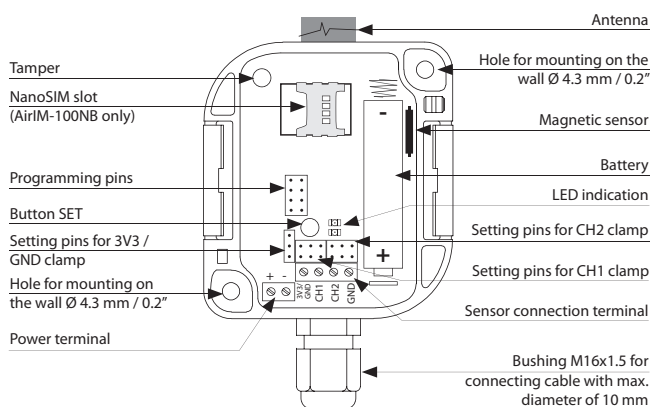
* Not included in the package

** Depending on network coverage

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

- 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 ² |
| Connection of the sensor: | terminals, wires 0.5 – 1 mm ² |
| 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) |

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. 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

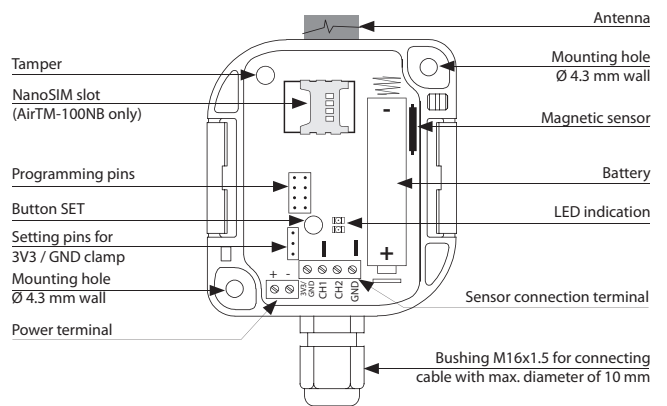
AirTM-100 | Pulse transmitter



| Technical parameters | AirTM-100S | AirTM-100L | AirTM-100NB |
|---------------------------------------|--|---|----------------------|
| Power supply | | | |
| Battery power: | 1x 3.6V LS 14500 Li-SOCl ₂ 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 |
| Setting | | | |
| Setting: | With a message from the server using setting pins, SET button, programming cable | | |
| Alarm Detection: | message to the server | | |
| Battery status view: | only when the battery is powered by a message on the server | | |
| Control | | | |
| Control: | button SET Magnetic contact Tamper | | |
| Detection of the magnet sensor | | | |
| Closed: | < 1.5 cm | | |
| Open: | > 2 cm | | |
| Reliability: | 99.9 % | | |
| 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* |
| Other parameters | | | |
| Working temperature: | -30...+60°C (Pay attention to the operating temperature of batteries)** | | |
| Storage temperature: | -30...+70°C | | |
| Operating position: | any | | |
| Mounting: | glue / screws | | |
| Protection degree: | IP65 | | |
| Connecting External Power: | terminals, wires 0.5 – 1 mm ² | | |
| Connection of the sensor: | terminals, wires 0.5 – 1 mm ² | | |
| Cable 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) | | |

- 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 „S0“ (gauge must support sensing).
- AirTM-100 converts gauge consumption using sensors - LS (LED sensor), WS (magnetic sensor for water meter), MS (magnetic sensor) or pulse output.
- For each power meter it is necessary to have one 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 3.6V 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



* 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): 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.

Sigfox Ready Certification



Certification ID for AirTM-100S Pulse Transmitter:
P_0094_B301_01



| 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 | |
| Setting | | |
| 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 | |
| Indication | | |
| - red LED: | broadcast | |
| - green LED: | power supply | |
| Control: | button (Communication test) | |
| Connection of the sensor: | terminals, wires 0.5 - 1 mm ² | |
| Input | | |
| Digital input: | IN1, IN2 | |
| Supported sensors for energy measurements: | LS (LED sensor)* MS, WS (magnetic sensor)* SO (Contact, open collector) | |
| Communication | | |
| Protocol: | Sigfox | LoRa |
| Transmitter frequency: | RCZ1 868 MHz | 868 MHz |
| Range in open space: | Approx. 50 km** | Approx. 10 km** |
| Other parameters | | |
| 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 ²): | 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 | |

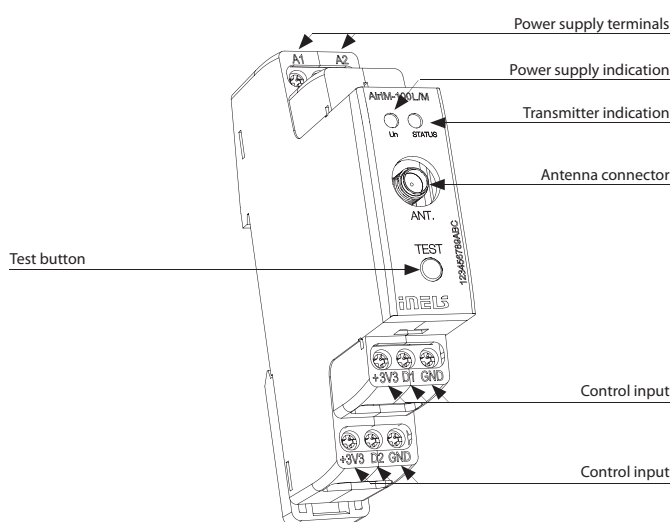
* Not included in the package

** Depending on network coverage

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

- 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>

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.

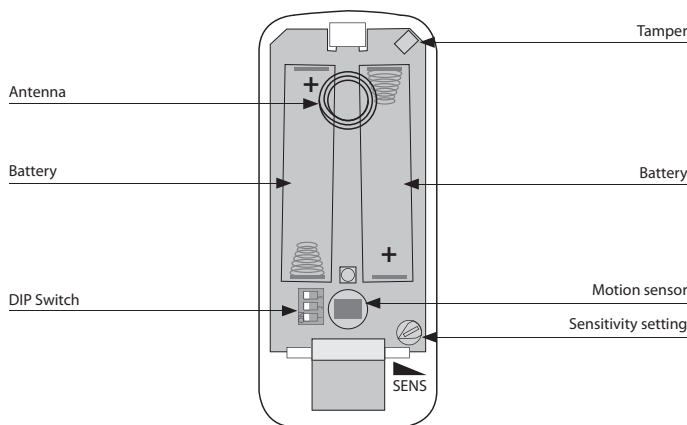


| Technical parameters | AirMD-100S | AirMD-100L | AirMD-100NB |
|-----------------------------|---|----------------|----------------------|
| Power supply | | | |
| Battery power: | battery 2x 1.5V AA | | |
| Battery life: | min. 1 year (according to the frequency of use) | | |
| Setting | | | |
| Alarm Detection: | message to the server | | |
| Battery status view: | only when the battery is powered by a message on the server | | |
| Indication | | | |
| - blue LED: | motion detected | | |
| Programming: | DIP Switch 3 | | |
| Detection angle: | 105° | | |
| Detection distance: | max. 12 m | | |
| Recommended working height: | max. 2.2 m | | |
| Communication | | | |
| 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* |
| Other parameters | | | |
| 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

- 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

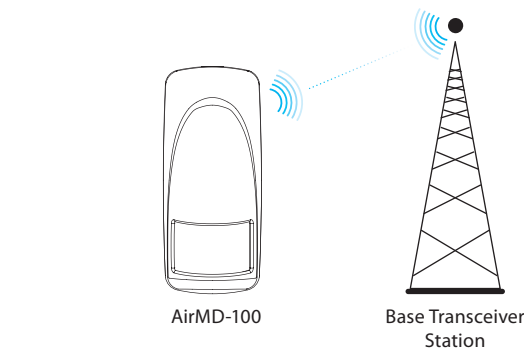


Function

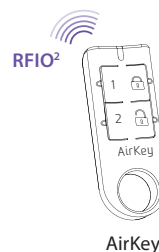
Activating and deactivating the motion detector is done by pressing the (Ⓜ or Ⓜ) button on the AirKey wireless key fob.

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.

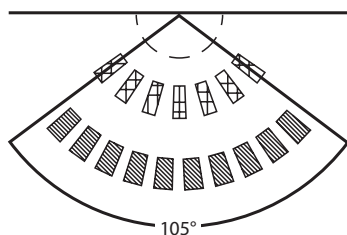


Accessories

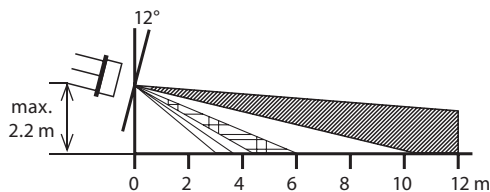


Detection field - the detection area is covered by three cones

Top view range



Side view range





| Technical parameters | AirSF-100S | AirSF-100L | AirSF-100NB |
|-------------------------|---|----------------|----------------------|
| Power supply | | | |
| Battery power: | 2x 1.5V AAAA battery | | |
| Battery life: | approx. 2 years (depending on frequency of use) | | |
| Setting | | | |
| 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 | | |
| Detection | | | |
| 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 | | |
| Indication | | | |
| - red LED: | broadcast | | |
| 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* |
| Other parameters | | | |
| 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) | | |

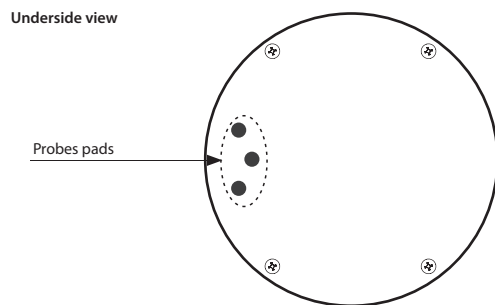
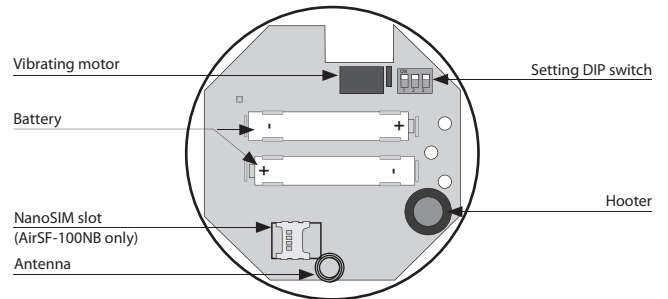
* Depending on network coverage

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.

- 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).

Device description



Conductivity of liquids

| Liquids suitable for detection | | Inadmissible liquids |
|--------------------------------|--------------------|------------------------------|
| Type of liquid | Resistivity [Ωcm]* | |
| Drinking water | 5-10 kΩ | Demineralised 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 foam | ~18 kΩ | |

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

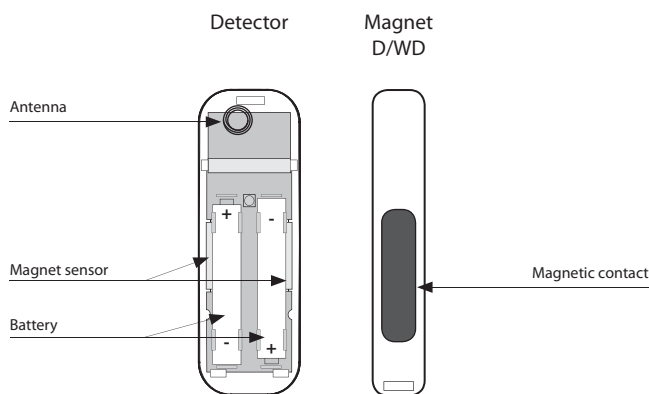


- The magnetic detector is used to detect motion – it is activated by removing the magnet from the sensor.
- The Sigfox, LoRa or NB-IoT network can be used for message transmission.
- Data is sent to the server from which it can be subsequently displayed as a smartphone, application, or Cloud notification.
- 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 |
|-------------------------|---|----------------|----------------------|
| Power supply | | | |
| Battery power: | 2x 1.5 V AAAA battery | | |
| Battery life: | approx. 2 years (depending on frequency of use) | | |
| Setting | | | |
| Alarm Detection: | message to the server | | |
| Battery status view: | message to the server | | |
| Detection | | | |
| Closed: | < 1.5 cm | | |
| Open: | > 2 cm | | |
| Reliability: | 99.9 % | | |
| Indication | | | |
| - red LED: | broadcast | | |
| Sensor: | magnetic / tongue relay | | |
| 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* |
| Other parameters | | | |
| 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 | | |
| Detector | | | |
| Dimension / Weight: | 31.5 x 75 x 30 mm / 23 g (without battery) | | |
| Magnet | | | |
| 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.



- 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.

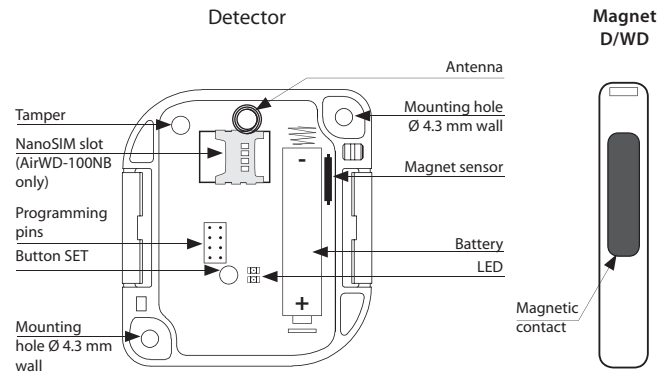
| Technical parameters | AirWD-101S | AirWD-101L | AirWD-101NB |
|---|---|------------|----------------------|
| Power supply | | | |
| Battery power: | 1x 3.6V LS 14500 Li-SOCl ₂ AA | | |
| Battery life: | max. 5 years | | max. 3 years |
| (Depending on the type of sensing and pulse frequency and transmission) | | | |
| Standby consumption: | 0.2 mW | | |
| Transmitting power consumption: | 250 mW | 150 mW | 850 mW |
| Setting | | | |
| Setting: | Using a message from the server, the programming cable | | |
| Alarm Detection: | message to the server | | |
| Battery status view: | message to the server | | |
| Control | | | |
| Control: | Button SET Magnetic contact Tamper | | |
| Detection | | | |
| Closed: | < 1.5 cm | | |
| Open: | > 2 cm | | |
| Reliability: | 99.9 % | | |
| Sensor: | Reed magnetic contact | | |
| Communication | | | |
| 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* |
| Other parameters | | | |
| 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 | | |
| Detector | | | |
| Dimension / Weight: | 70 x 62 x 34 mm / 43 g (without battery) | | |
| Magnet | | | |
| 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.

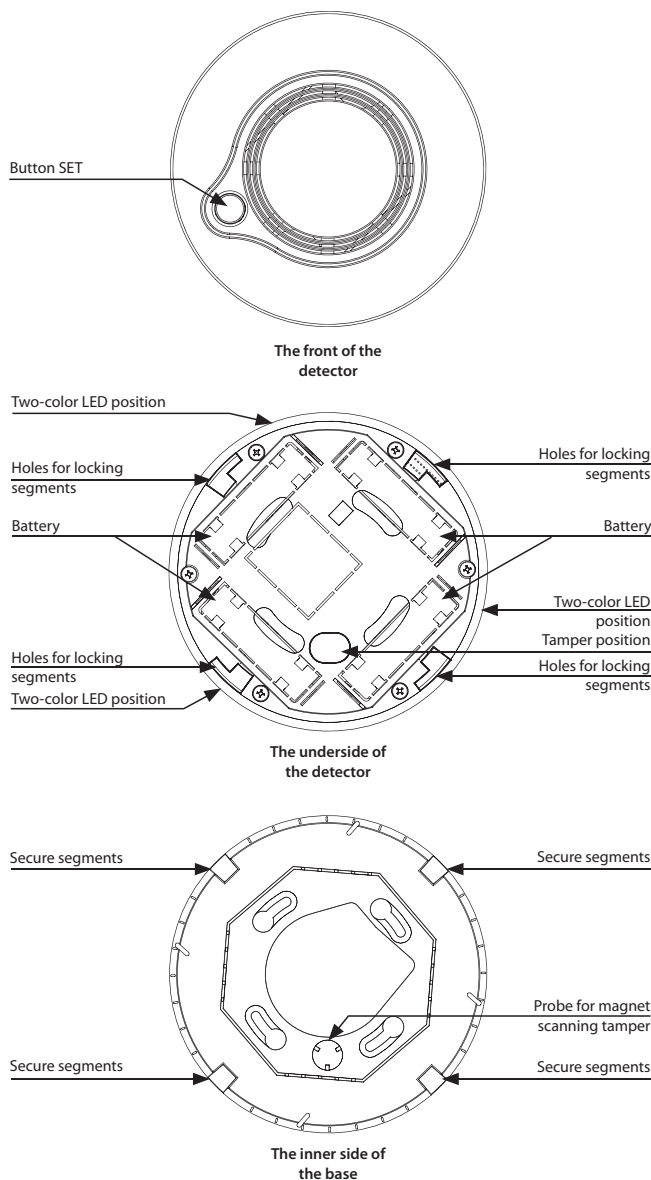


| Technical parameters | AirSD-100S | AirSD-100L | AirSD-100NB |
|-------------------------------------|--|----------------|----------------------|
| Power supply | | | |
| Battery power: | battery 4x 1.5 V AA | | |
| Battery life: | approx. 1 year | | |
| Input | | | |
| Smoke Detection: | built-in sensor | | |
| Detection: | smoke from burning | | |
| Detection principle: | optical-smoke scanning technology | | |
| Response Time: | a few seconds after contact with the smoke | | |
| Temperature measuring: | | | |
| Range: | -25 .. 70 °C | | |
| Accuracy: | ± 3 °C | | |
| Humidity measuring: | | | |
| Sensitivity: | 0 .. 90 % RH | | |
| Accuracy: | ± 4 % | | |
| Light intensity measurement: | | | |
| Range: | 0.045 - 188 000 Lx | | |
| Setting | | | |
| 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 | | |
| Control | | | |
| Detection area: | max. 40 m ³ | | |
| Recommended installation height: | max. 4 m | | |
| Acoustic signal: | greater than 85 dB at 3 meters | | |
| Test button SET: | yes | | |
| 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* |
| Other parameters | | | |
| 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

- 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



Function

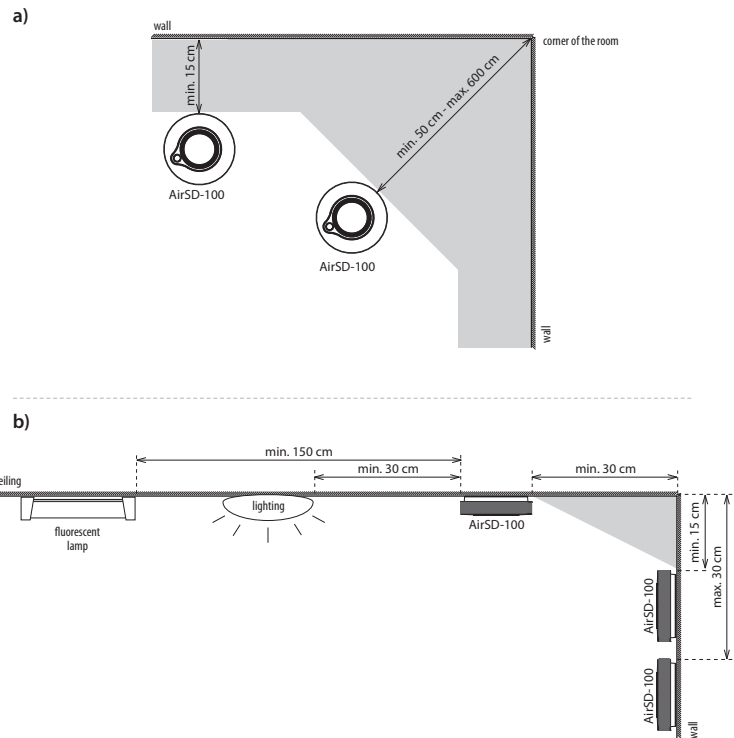
An internal, battery-powered smoke detector combines the timely detection of smouldering and open fires from which smoke escapes. It is equipped with an optical smoke detector for smoke detection. An example of a smouldering fire is a burning cigarette on a couch or bedding, which is a common cause of 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 m³. 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 | Air quality sensor - Carbon dioxide (CO₂)

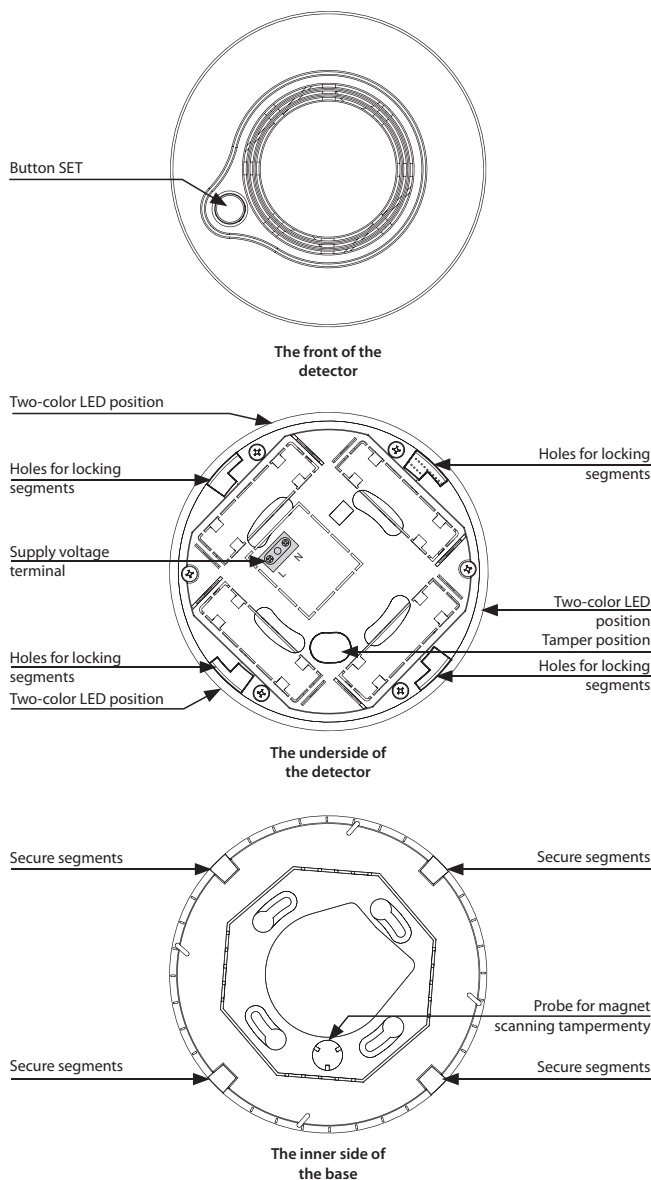


- AirQS-100 - monitors the CO₂ content of the room and also measures the actual temperature and humidity in the room.
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Thanks to the wireless solution and Sigfox / LoRa / NB-IoT communication, it can 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.

| Technical parameters | AirQS-100S | AirQS-100L | AirQS-100NB |
|---|--|----------------|----------------------|
| Power supply | | | |
| External power supply: | 110 - 240 V AC | | |
| Input | | | |
| Measurement of CO ₂ 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 | | |
| Setting | | | |
| Alarm Detection: | message to the server | | |
| Indication | | | |
| Red / green LED: | See manual | | |
| Detection area: | max. 40 m ³ | | |
| Recommended installation height: | max. 4 m | | |
| 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* |
| Other parameters | | | |
| 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

Device description



Function

The detector detects the carbon dioxide (CO₂) 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, CO₂ 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 CO₂ concentration
 - the green LED blinks briefly - the measured values are OK.
 - Red LED blinks briefly - CO₂ 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 CO₂ 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 | Air quality sensor - Carbon monoxide (CO)

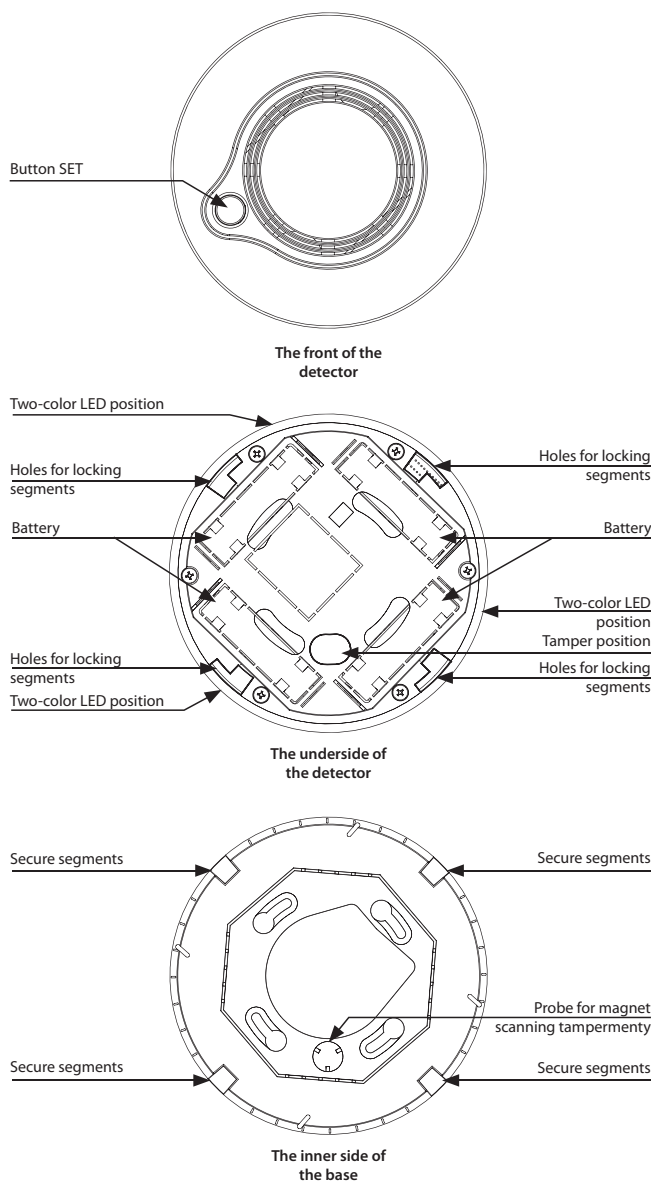


- AirQS-101 - is used as a safety device for monitoring the CO concentration resulting from incomplete combustion. It also informs you of the actual temperature, humidity and light intensity in the area.
- Provides a quick solution to learn about undesirable CO concentrations that can be immediately 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.

| Technical parameters | AirQS-101S | AirQS-101L | AirQS-101NB |
|----------------------------------|--|----------------|----------------------|
| Power supply | | | |
| Battery power: | battery 4x 1.5 V AA* | | |
| Battery life: | approx. 1 year | | |
| Input | | | |
| 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 | | |
| Setting | | | |
| 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 | | |
| Control | | | |
| Detection area: | max. 40 m ³ | | |
| Recommended installation height: | max. 4 m | | |
| Acoustic signal: | greater than 85 dB at 3 meters | | |
| Test button SET: | yes | | |
| 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* |
| Other parameters | | | |
| 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

Device description



Function

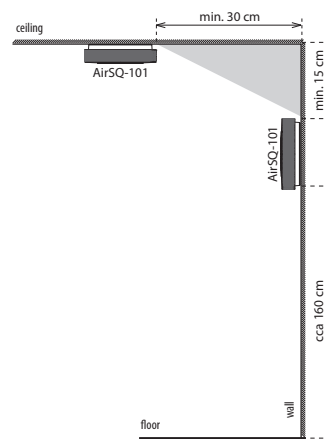
The detector detects carbon monoxide (CO) content in enclosed spaces by means of a sensor. It's designed to alert you to the presence of CO before the critical state - that is, before most people experience the symptoms of CO poisoning to have time to solve the problem calmly.

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.

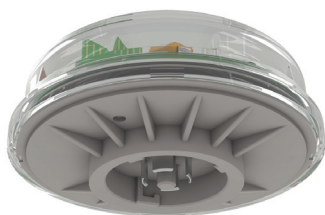
Location



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).

AirSLC-100/LWES | Street light controller (plug)

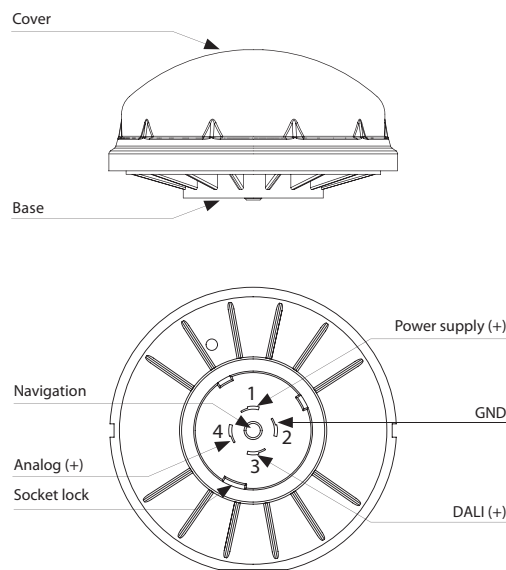


- Used for remote control of the luminaire: ON / OFF / DIMM.
- It informs about the fault of the ballast, light source, connecting wires ...
- Communicates over the wireless LPWAN network (LoRa or NB-IoT).
- Output signal 0 (1) -10V or DALI for direct control of ballast in luminaire.
- Internal digital 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.

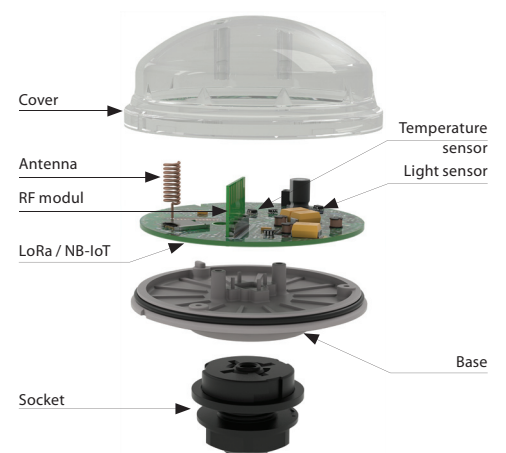
| Technical parameters | AirSLC-100L/ LWES/DALI | AirSLC-100NB/ LWES/DALI | AirSLC-100L/ LWES/0-10 | AirSLC-100NB/ LWES/0-10 |
|---------------------------|---|----------------------------|----------------------------|----------------------------|
| Supply voltage: | 12 - 24 V DC | | | |
| Supply voltage tolerance: | -10 /+15 % | | | |
| Standby consumption: | 0.5 W | | | |
| Consumption max.: | at 3.5 W communication | | | |
| Temperature sensor | | | | |
| Range: | -30 .. 70°C | | | |
| Accuracy: | ±1°C in the range -10°C .. 70°C ±3°C in the range -30°C .. -10°C | | | |
| Light sensor | | | | |
| Scanned Range: | 5 - 100 000 Lx | | | |
| Detection angle: | 130° | | | |
| Indication | | | | |
| - blue LED: | module power supply | | | |
| - green LED: | STATUS module | | | |
| - red LED: | LPWAN communications | | | |
| Inputs | | | | |
| Communication Interface: | DALI polarized - active (20mA) | | Analog 0(1)-10 V (20mA) | |
| External relay: | x | | 12 / 24 V DC, max. 250 mA | |
| Communication | | | | |
| 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 | | | |
| Other parameters | | | | |
| Working temperature: | -30 .. +70 °C | | | |
| Storage temperature: | -30 .. +70 °C | | | |
| Operation position: | See manual | | | |
| Mounting: | in socket | | | |
| Protection degree: | IP65 | | | |
| Overvoltage category: | III. | | | |
| Pollution degree: | 2 | | | |
| Dimension: | Ø 80 x 40 mm | | | |
| Weight: | 64 g | | | |

* nanoSIM / eSIM
** Depending on network coverage

Device description



Disintegration

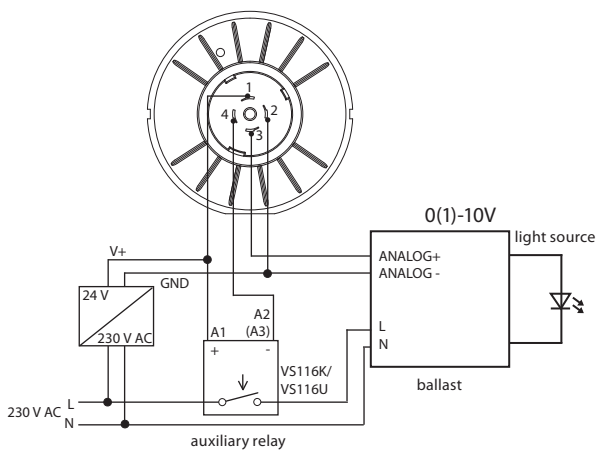


Funkce

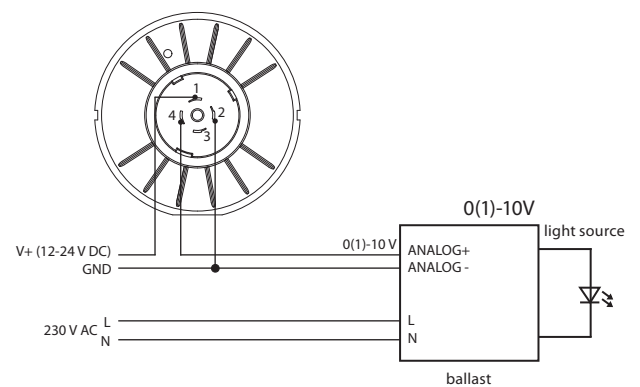
- When the power is connected, the device sends the initial message containing the measured temperature and light intensity.
- Mode setting (message from server):
- Manual:
 - turn on / off, adjust brightness
 - scanning and data transmission interval of temperature and light intensity data (range)
- 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



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



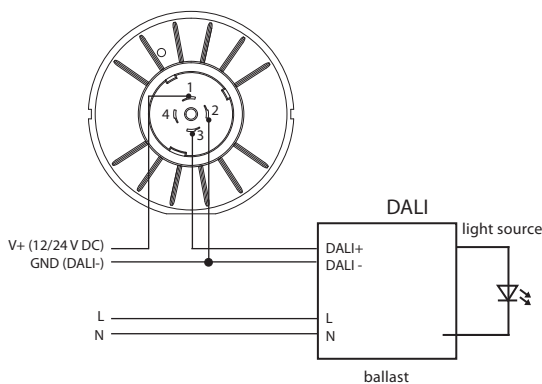
In the off state, the analog ballast may light up slightly (depending on gear type).

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 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 mm². For management between 100 m -150 m a cross section of 0.75 mm² and more than 150 m the recommended min is 1.5 mm². 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.

AirSLC-100/NEMA | Street light controller (plug)



- 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 | | | |
| Temperature sensor | | | | |
| Range: | -30 .. 70°C | | | |
| Accuracy: | ±1°C in the range -10°C .. 70°C ±3°C in the range -30°C .. -10°C | | | |
| Light sensor | | | | |
| Scanned Range: | 5 - 100 000 Lx | | | |
| Detection angle: | 130° | | | |
| Indication | | | | |
| - blue LED: | power the unit | | | |
| - green LED: | STATUS | | | |
| - red LED: | RF Communication | | | |
| Inputs | | | | |
| 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 | | | |
| Communication | | | | |
| 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 | | | |
| Other parameters | | | | |
| 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

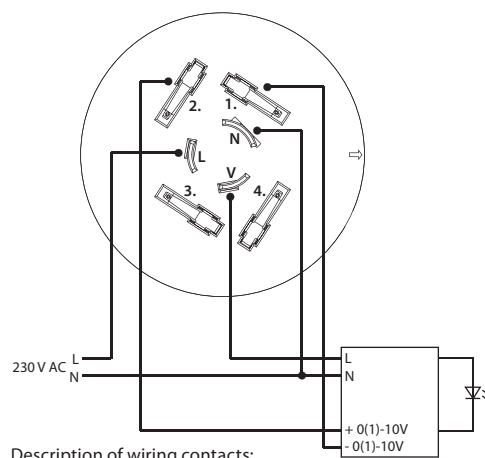
** Depending on network coverage

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 mm². For management between 100 m -150 m a cross section of 0.75 mm² and more than 150 m the recommended min is 1.5 mm². 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

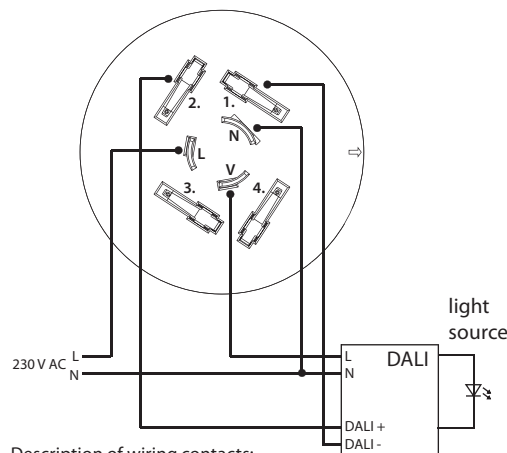
Connection 0 (1) -10V (analog)



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

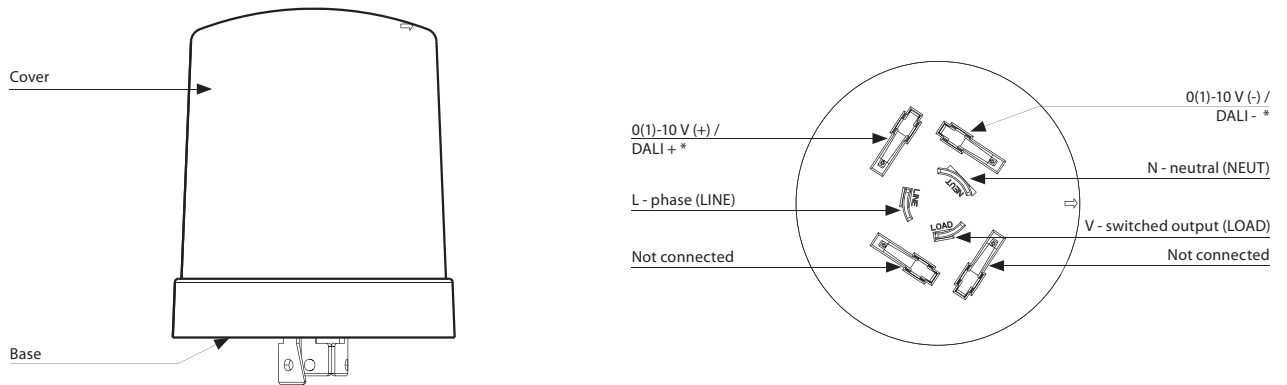


Description of wiring contacts:

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

AirSLC-100/NEMA | Street light controller (plug)

Device description

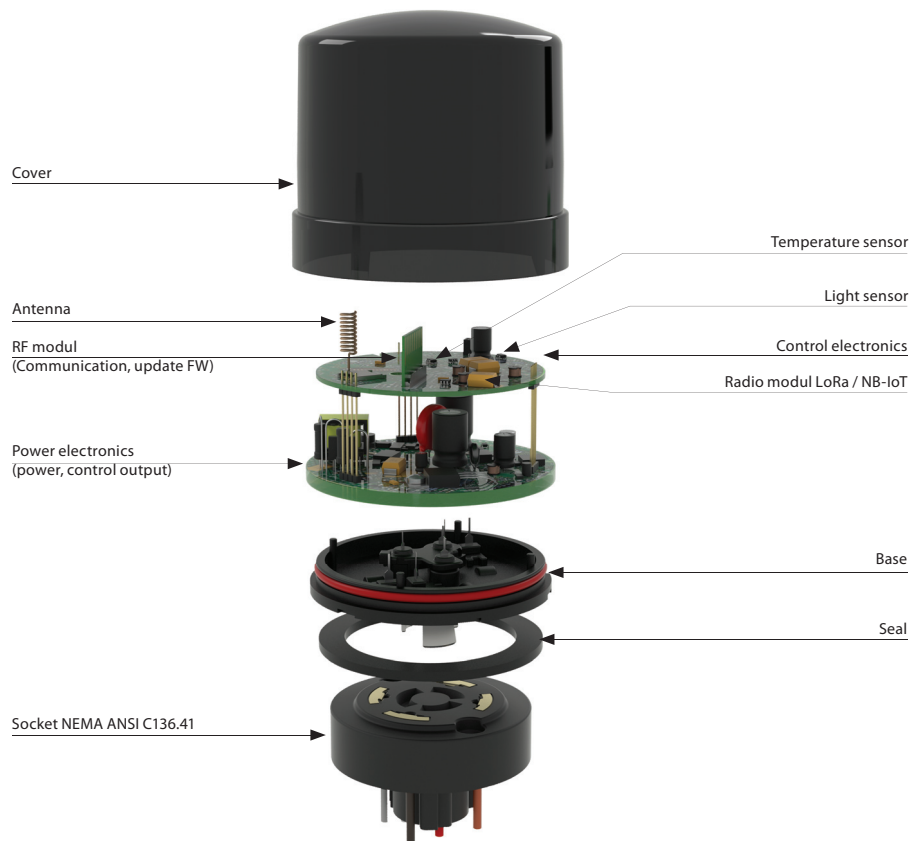


* by module type (analog / DALI)

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





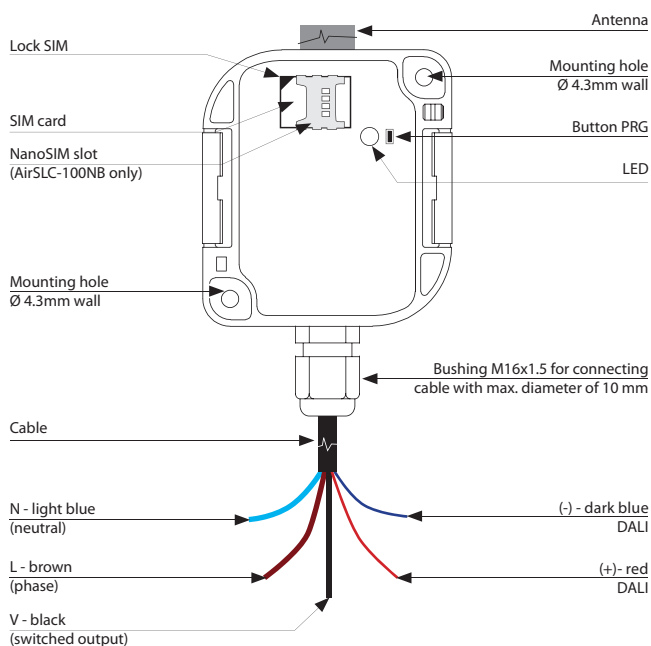
- Used for remote control of the luminaire: ON / OFF / DIMM.
- Module measures current flow - fault detection (ballast fault, light source, connecting wires ...).
- The two-directional communication module is intended primarily for monitoring and switching of public lighting in cities,
- Using a monitoring 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 % | |
| Output | | |
| Communication Interface: | active (self-powered) DALI - polarized, the ability to connect one device | |
| Setting | | |
| Setting: | message to the server | |
| Control | | |
| Control: | With a message from the server / button TEST | |
| Output Indication Indicator: | green LED | |
| Indication: | red LED | |
| Communication | | |
| Protocol: | LoRa | NB-IoT |
| Transmitter frequency: | 868 MHz | LTE Cat NB1 (B3/B20) |
| Range in open space: | Approx. 10 km** | Approx. 30 km** |
| Other parameters | | |
| 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 ² , 2x 0.5 mm ² | |
| - 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

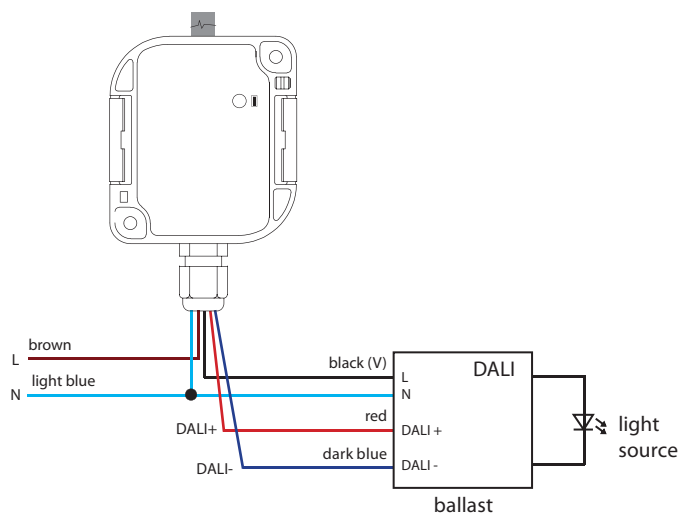
** Do not enclose in metal switchboards and the like.

Device description



Example connection

Connection DALI





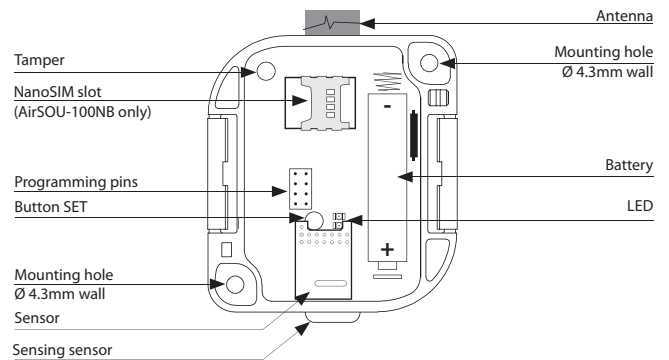
| Technical parameters | AirSOU-100S | AirSOU-100L | AirSOU-100NB |
|---------------------------------|---|----------------|----------------------|
| Inputs | | | |
| Light measurement range: | 1 - 100 000 lx | | |
| Detection angle: | 100° | | |
| Power supply | | | |
| Battery power: | 1x 3.6V LS 14500 Li-SOCl ₂ 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 |
| Setting | | | |
| Setting: | Using a message from the server, the programming cable | | |
| Battery status view: | message to the server | | |
| Control | | | |
| Control: | button (Communication test) Tamper | | |
| 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* |
| Other parameters | | | |
| 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

- 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.

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.



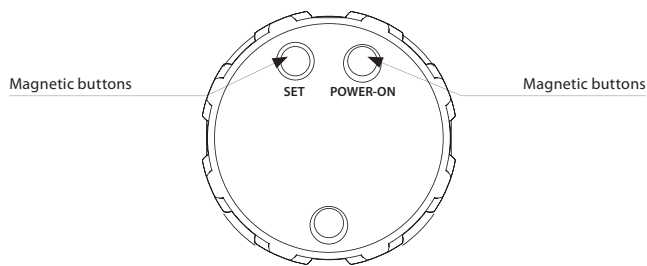
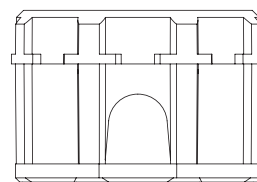
- Parking sensors can be used in corporate parking lots, car parks at department stores or administrative complexes etc.
- Detects a free and occupied parking space for which the magnetic principle is used.
- Sensor is resistance to external influences (UV, salt, snow plough).
- With the wireless solution 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

| Technical parameters | AirPS-100S | AirPS-100L | AirPS-100NB |
|------------------------------------|--|----------------|----------------------|
| Power supply | | | |
| 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 | | |
| Setting | | | |
| Setting: | With a message from the server RF command | | |
| Indication: | message to the server | | |
| Detection | | | |
| Detection principle: | magnetic | | |
| Detection distance: | 0 - 50 cm | | |
| Theft detection: | yes | | |
| Temperature measurement: | yes | | |
| Communication | | | |
| 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* |
| Other parameters | | | |
| 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

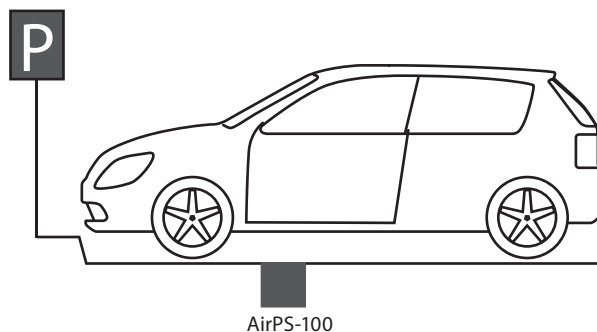
** Minimum distance from metal objects (canal) – 1m.

Device description



Settings: by using supplied magnetic key

Sensor location





| Technical parameters | AirWS-100S | AirWS-100L | AirWS-100NB |
|---------------------------|--|------------------|----------------------|
| Power supply | | | |
| Battery power: | 2 x LiSoCL2 3.7V | | |
| Battery life: | up to 8 years according to frequency of measurement and message transmission | | |
| Fill detection | | | |
| Detection principle: | ultrasonic | | |
| Range: | 5 - 300 cm | | |
| Resolution: | 1 cm* | | |
| Input | | | |
| Temperature measuring: | built-in sensor | | |
| Range: | -30 .. 85 °C | | |
| Sensitivity: | 1 °C | | |
| Accuracy: | ± 3 °C | | |
| Position detection | | | |
| Tilt sensing: | digital sensor | | |
| Angle: | ± 180 ° | | |
| Accuracy: | ± 5 ° | | |
| Setting | | | |
| Measured values: | message to the server | | |
| Battery status view: | message to the server | | |
| Communication | | | |
| 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*** |
| Other parameters | | | |
| 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 | | |

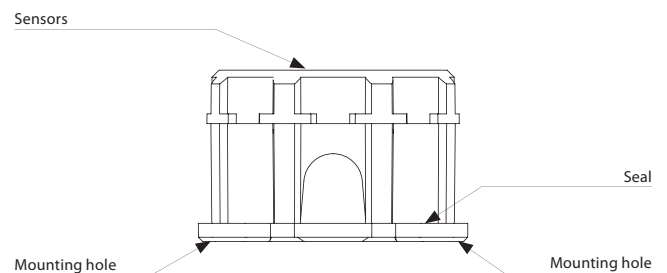
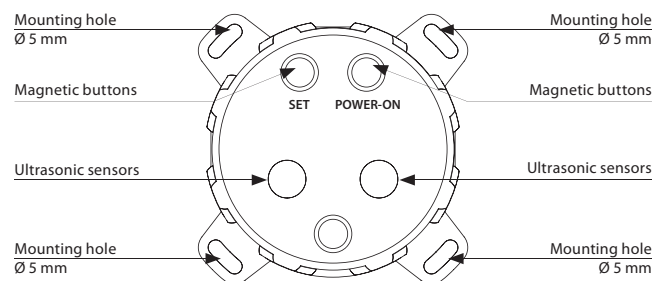
* Depending on type and content storage

** For service purposes

*** Depending on network coverage

- 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.

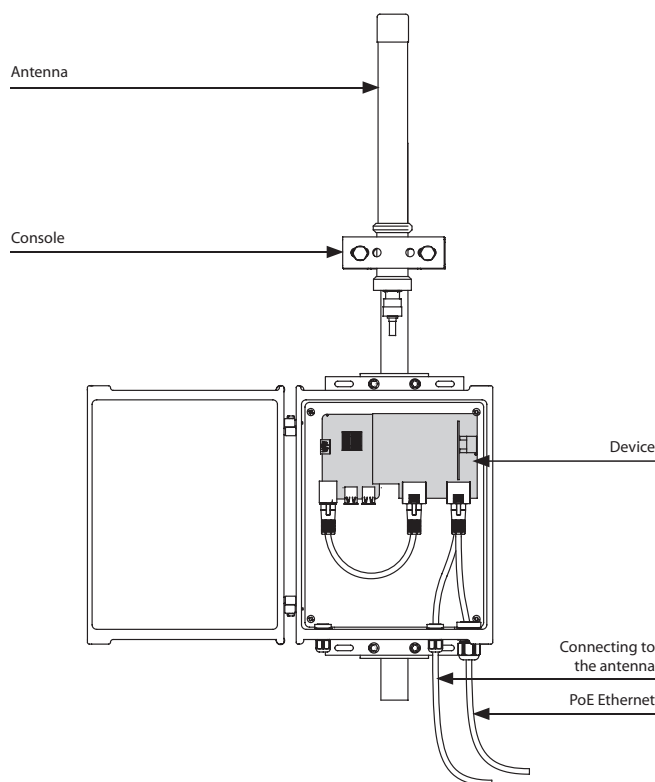
The status, temperature and position sensing intervals can be set by message from the server.



- 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 |
|----------------------------|---|---------|
| Power supply | | |
| Supply voltage: | 48 V DC / active PoE | |
| Input: | max. 10 W | |
| Connection | | |
| Connection: | PoE connector with RJ 45 power supply according to the 802.11af standard. | |
| Communication | | |
| Protocol: | LoRa | |
| Transmitter frequency: | 868 MHz | |
| Range in open space: | Approx. 10 km | |
| Hardware | | |
| Baseplate: | Rapsberry Pi 3 | |
| Max. connected nodes | thousands | |
| OS: | Linux | |
| LoRA chip: | Semtech SX-1301 s SX-1257 | |
| Antenna | | |
| Emission: | omnidirectional VGD4 | |
| Material: | high quality fiberglass | |
| Gain: | 8 dBi | |
| Polarization: | vertical | |
| Other parameters | | |
| 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

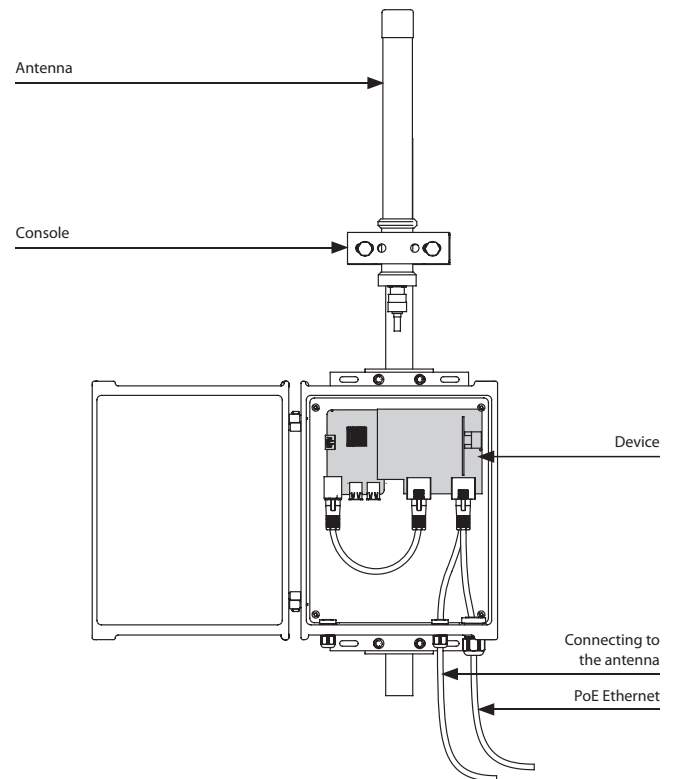


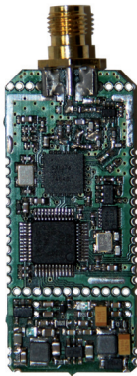


| Technical parameters | | GTW-LNS |
|----------------------------|---|---------|
| Power supply | | |
| Supply voltage: | 48 V DC / active PoE | |
| Input: | max. 10 W | |
| Connection | | |
| Connection: | PoE connector with RJ 45 power supply according to the 802.11af standard. | |
| Communication | | |
| Protocol: | LoRa | |
| Transmitter frequency: | 868 MHz | |
| Range in open space: | Approx. 10 km | |
| Hardware | | |
| Baseplate: | Rapsberry Pi 3 | |
| Max. connected nodes | thousands | |
| OS: | Linux | |
| LoRA chip: | Semtech SX-1301 s SX-1257 | |
| Antenna | | |
| Emission: | omnidirectional VGD4 | |
| Material: | high quality fiberglass | |
| Gain: | 8 dBi | |
| Polarization: | vertical | |
| Other parameters | | |
| 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 | |

- 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.

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 % |
| Setting | |
| Setting: | With a message from the server |
| Indication | |
| Indication: | blau LED |
| Communication | |
| Protocol: | LoRa |
| Transmitter frequency: | 868 MHz |
| Range in open space: | Approx. 10 km* |
| Other parameters | |
| 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.

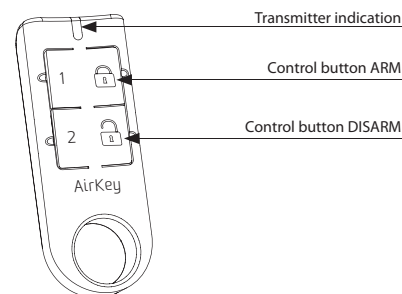
AirKey | 4 button controller - keychain



- 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 | |
| Communication | | |
| Protocol: | iNELS RF Control RFIO | |
| Transmitter frequency: | 868 MHz | |
| Range in open space: | up to 100 m | |
| Signal transmission method: | unidirectionally addressed message | |
| Other parameters | | |
| 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 |
| Other parameters | |
| 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 RFIO²), 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 / quality as well as possible frequencies that can interfere with communication.
 - sw RF analyzer can be found at 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 |
| | TC-3 | TZ-3 |
| - length: | 3 m | 3 |
| - weight: | 108 g | 106 g |
| | TC-6 | TZ-6 |
| - length: | 6 m | 6 m |
| - weight: | 213 g | 216 g |
| | TC-12 | TZ-12 |
| - 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.

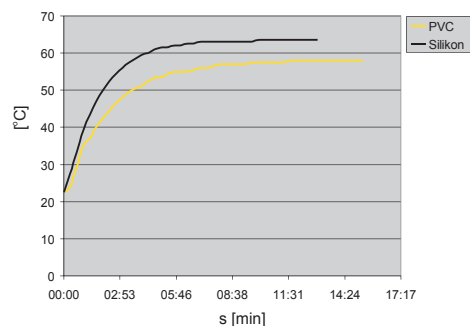
- Thermister temperature sensors are made of Negative Temperature Coefficient (NTC) embedded in a PVC or metal sleeve with a thermal-conductive sealer.
- Sensor TC
 - lead-in cable to sensor TC is made of wire CYSY 2D x 0.5 mm/ 0.02".
- Sensor TZ
 - cable VO3SS-F 2D x 0.5 mm /0.02" with silicone insulation 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 |

Accessories

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

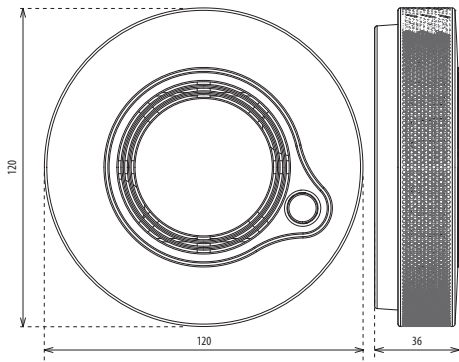
FP-1 | Flood probe



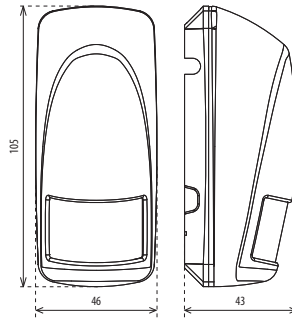
EAN code
FP-1: 8595188147064

| 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 |

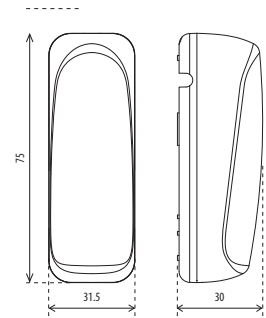
Product dimension



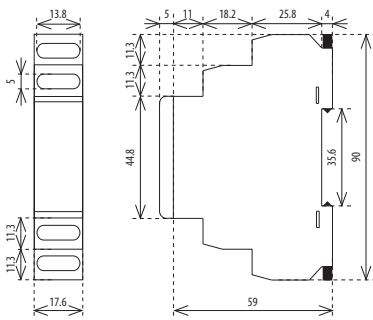
AirSD-100, AirQS-100, AirQS-101



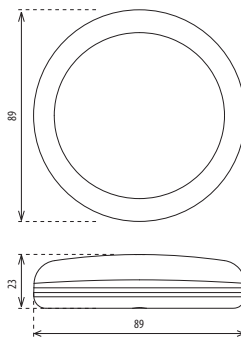
AirMD-100



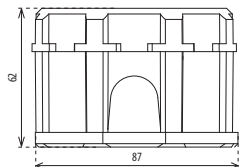
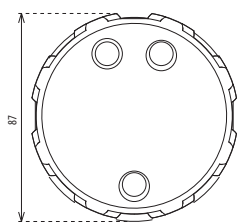
AirWD-100



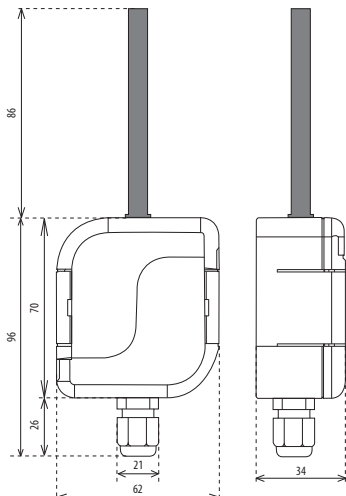
AirIM-100x/M



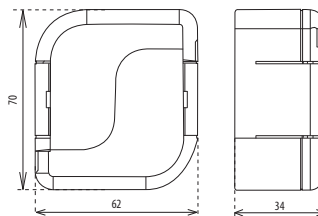
AirSF-100



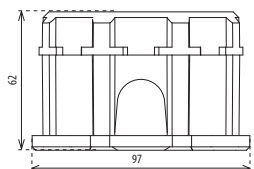
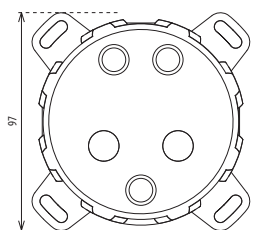
AirPS-100



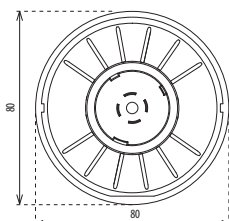
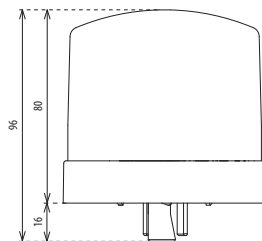
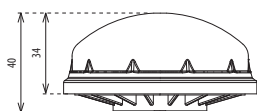
AirIM-100, AirTM-100
AirSOU-100, AirSLC-100



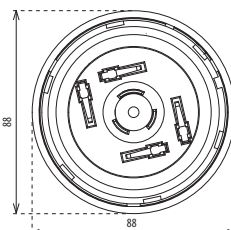
AirWD-101



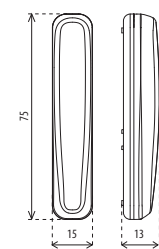
AirWS-100



AirSLC-100/LWES

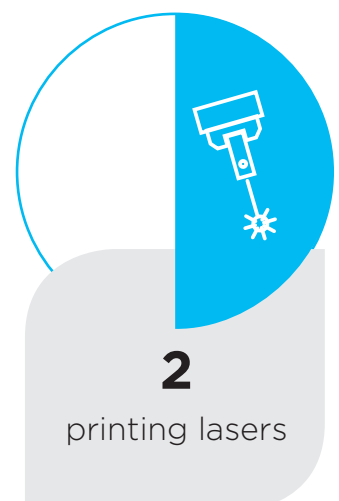
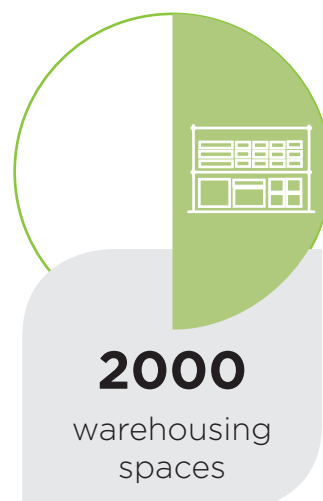
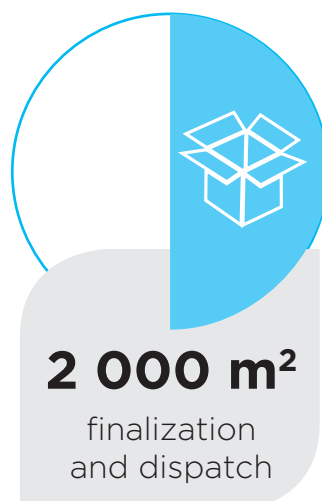
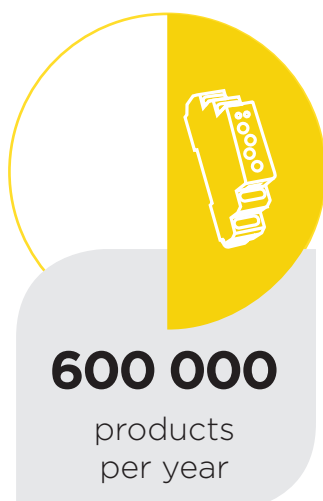
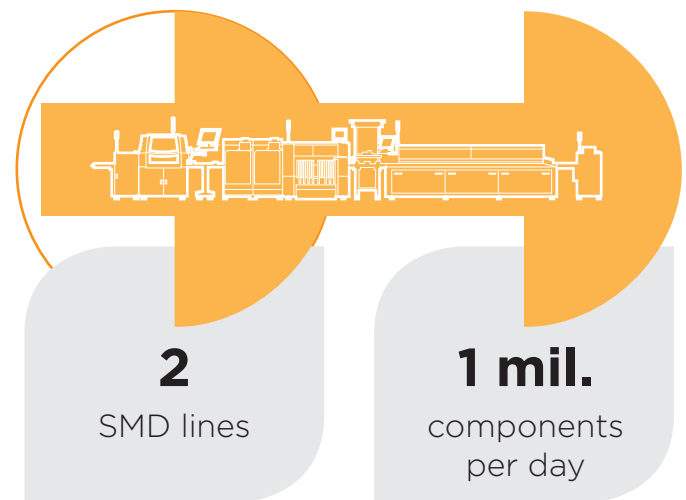
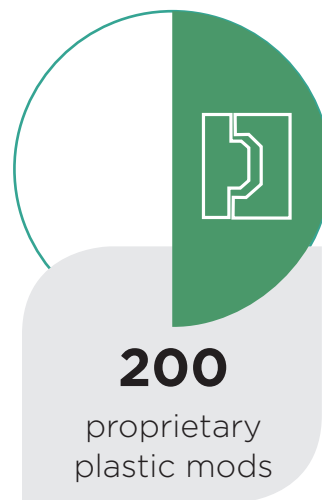
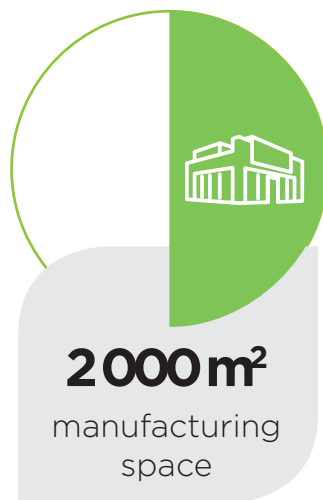
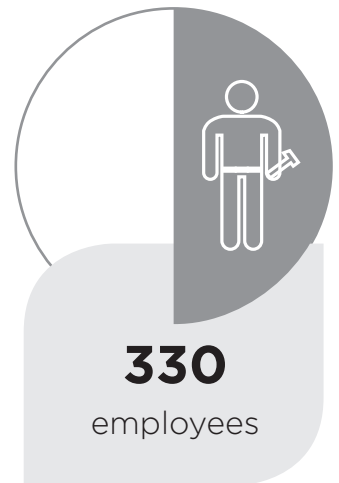
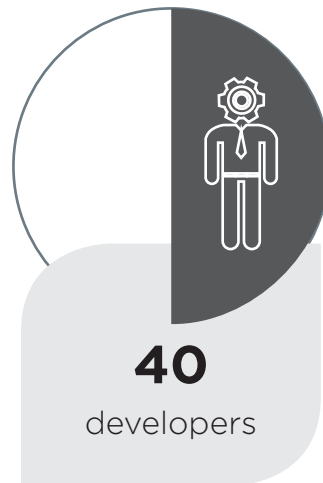


AirSLC-100/NEMA

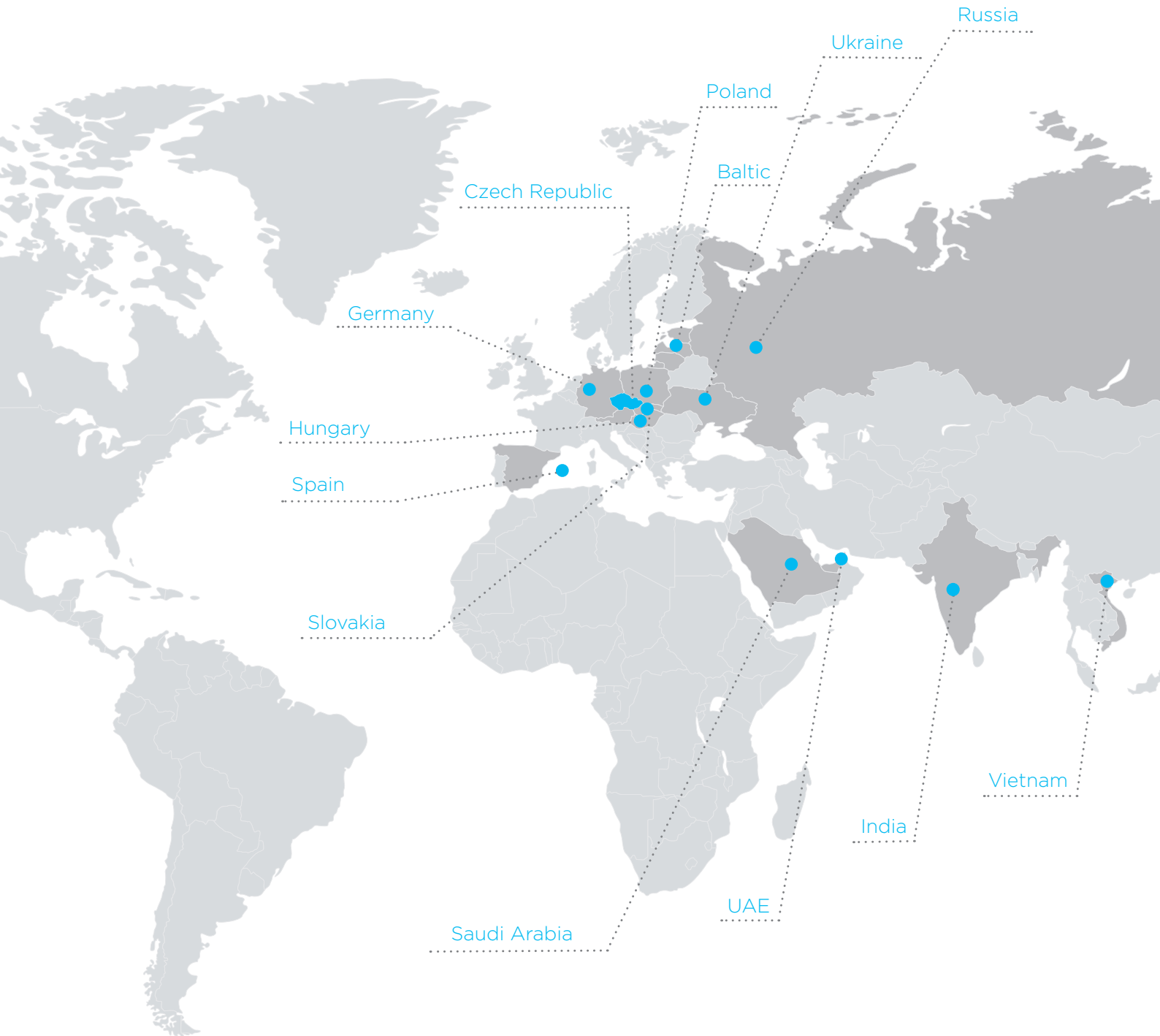


D/WD

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