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Made in Czech Republic

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EN

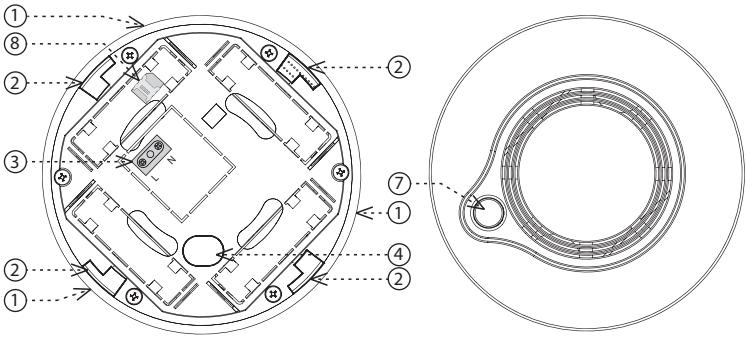
AirQS-100NB

Air quality sensor - carbon dioxide (CO_2)

Characteristics

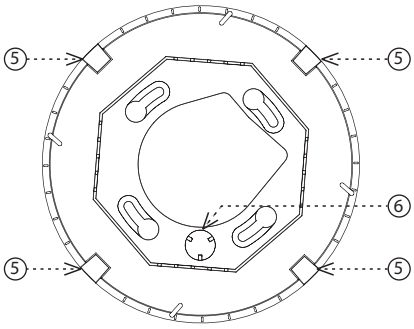
- AirQS-100 - monitors the CO_2 content of the room and also measures the actual temperature, humidity and light intensity in the room.
- Anti-sabotage: If access to the device is unauthorized, a message is immediately sent to the server.
- Thanks to the wireless solution and NB-IoT communication, it 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.
- Power supply 110-240 V AC.

Description



The underside of the detector

The front of the detector



The inner side of the base

1. Two-color LED position
2. Holes for locking segments
3. Supply voltage terminal
4. Tamper position
5. Secure segments
6. Probe for magnet scanning tampermenty
7. Button SET
8. NanoSIM slot

Cloud app assignment

It is done in your Smartphone application. Enter the relevant data located on the detector cover into the application.

General instrucions

Internet of Things (IoT)

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

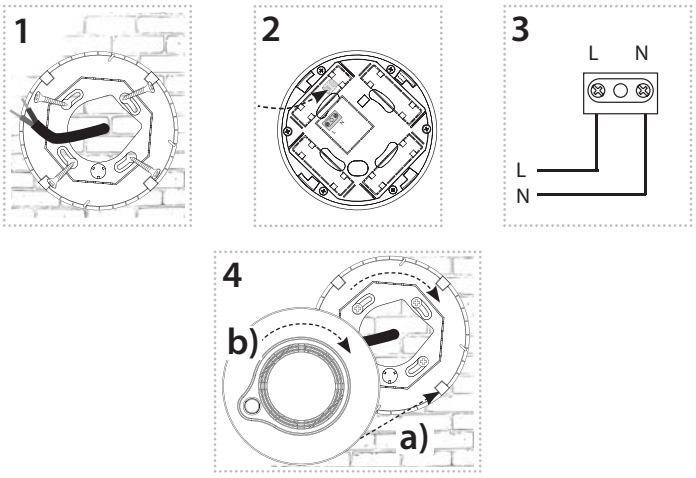
Information about the NarrowBand network

- The network provides two-way communication and the only one to use the licensed LTE band. Our devices allow band 1 (2100MHz), Band 3 (1800MHz), Band 8 (900MHz), Band 5 (850MHz), Band 20 (800MHz) and Band 28 (700MHz).
- It uses this SIM card technology for each device.
- The advantage of NarrowBand is the use of already built-up grids, which ensures sufficient reception outside and inside buildings.
- For more information on this technology, please visit www.vodafone.cz

Caution for proper operation:

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

Assembly



1. Place the base at the desired location (on a flat surface) so that the power supply is located in the centre opening. You can use the base as a drilling template. Attach the base with suitable bonding material * according to the substrate.
2. Carefully insert nanoSIM (the device must not be energized when inserting or replacing nanoSIM!)
3. Connect the supply voltage to the detector clamp (by attaching the supply voltage, the detector functionality message will be sent to the application).
4. Adjust the connected wire and place the detector on the base so that the projection on the base faces the tamper position in the detector cover (a). Turn the detector clockwise (b).

* Suitable fitting material can be, for example, a countersunk head screw, a screw Ø of 3 mm.

Function

The detector detects the carbon dioxide (CO_2) 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 of temperature, light intensity, humidity, CO_2 level and firmware version of the device.

- Sends a data message about the measured values and the status of the detector every 10 minutes.
- Indication of measured CO_2 concentration
  - the green LED blinks briefly - the measured values are OK.
  - Red LED blinks briefly - CO_2 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.

Information about carbon dioxide (CO_2)

Carbon dioxide is a colourless gas without taste and odour; at higher concentrations you can have a slightly sour taste in your mouth. It's not burning, it's not poisonous - it asphyxiates.
The CO_2 concentration in the air is measured in ppm (parts per million). Under normal conditions, carbon dioxide in the air is represented by 0.04% (ca. 350-400 ppm), the human body does not respond to this quantity. The recommended indoor CO_2 level is about 1000 ppm. With increased CO_2 concentration in the air (1200-1,500 ppm), there are fatigue, headache, and performance decreases. The reaction to the amount of carbon dioxide in the air is subjective, affecting, for example, the state of health, temperature and humidity. As the maximum concentration without health risks the value is up to 5000 ppm. Higher levels of nausea, increased heartbeat, breathing difficulties, unconsciousness, and life-threatening conditions can occur.

Important Notice

- The detector can only warn you in time if it is properly installed and properly maintained and tested according to the instructions.
- Note that the correct indication of CO_2 concentration depends on how the air in the room is mixed, i.e. it takes a few minutes for the CO_2 concentration to stabilize.
- The detector is not suitable as a measuring instrument or part of a device to alert in the presence of gas, smoke or exhaust gases, or as part of a fire alarm or similar security device.
- The detector is not intended for installation in an industrial environment.
- Always be aware of potential dangers, develop safety awareness, and take precautions to avoid dangers whenever and wherever needed. The detector can reduce the likelihood of catastrophe but cannot guarantee 100% safety.

Placement recommendations

- The detector is intended for indoor use. Therefore, use it exclusively for scanning in closed, dry and dust-free areas.
- Ensure that the ventilation openings remain free and do not block it with other appliances, furniture or other objects.
- Place the detector in such a place that the ambient air can flow through the device.
- If a solid object or liquid enters the detector's interior, immediately suspend its operation and disconnect it from the power supply!

Appropriate location

- Carbon dioxide is heavier than air. The best location for determining the average CO_2 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 ...).

Inappropriate location

- In areas with limited air circulation e.g.: vestibule, niches, etc.
- In places where there is a sudden change in temperature or humidity.
- Where condensation occurs.
- In close proximity to windows, doors, ventilation devices.
- In direct proximity to persons or animals.
- In direct sunlight or near a heat source.

Maintenance and cleaning

To ensure proper operation, it is advisable to keep the detector clean

- At least once every 6 months, clean the surface using a soft brush or cloth. Using a brushless vacuum cleaner, carefully clear the cover and the ventilation holes from dust and dirt.
- Never use water, detergents or solvents. The detector may be damaged.
- Do not use any chemicals near the device (such as cleaning products, hair spray ...) fumes can adversely affect the function of the device.
- Do not apply colour to the detector. When painting, remove the detector and return to the location after the work has finished.
- Do not disassemble the detector; do not attempt to clean the inside of the detector.

UPLINK

Function	Byte	0-14	15					16	17	18	19	20	21	22	23	24	25	26
	Bit		7-4	3	2	1	0											
START		IMEI	0xC	Tamper: 1 - opened 0 - close	reserved	reserved	Alarm: 1 - alarm 0 - OK	FW version	reserved	reserved	Temperature [0]	Temperature [1]	Humidity [0]	Humidity [1]	Illuminance [0]	Illuminance [1]	CO_2 [0]	CO_2 [1]
HEARTBEAT			0x0					0x00	Run time[0]	Run time[1]								
ALARM			0x6					0x00										

Notes

Unit	Example
Temperature [°C] * 10	00F5 = 245 = 24,5 °C
Humidity [%] *10	01A1 = 417 = 41,7 %

Example

Message example	Byte	
04 00 00 48 00 54 01 25	04	Message type and flags - first digit define message type according to the table (0 is heartbeat) and second digit define flags of battery, tamper and smoke alarm - 4 Hex is 0100 binary so according to the table the battery is low
	00	Value according to the message type - in this case message type is Heartbeat so byte don´t have useful value
	00	Run time in hours - 0 * 256 hours
	48	Run time in hours - 48 Hex is 72 decimaly so the run time is 72 hours
	00	Temperature - 0054 Hex is 84 decimaly so the temperature is 8.4 °C
	54	
	01	Humidity - 0125 Hex is 293 decimaly so the humidity is 29.3 %
	25	

Technical parameters

	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:	NB-IoT
Transmitter frequency:	LTE Cat NB1*
Range in open space:	Approx. 30 km**
Transmission power (max.):	200 mW / 23 dBm
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

* Multiple frequency bands of B1 / B3 / B5 / B8 / B20 / B28
** Depending on network coverage

Warning

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