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BEFORE INSTALLING THE SENSOR, READ THIS INSTRUCTION CAREFULLY

DESCRIPTION

The CTW-10 sensor is used for continuous monitoring of dangerous concentration of carbon monoxide in the air. When a threat is detected the sensor triggers a loud sound (min. 85 dB) and optical signal in the form of a flashing diode. It is equipped with a precise and reliable electrochemical sensor with a lifetime of 10 years. The device has a LCD display showing current carbon monoxide concentrations and information messages. The sensor can work independently but thanks to built-in Wi-Fi and free NaviHome or TUYA app can be accessed by remote access to the sensor on phones and tablets with Android or iOS. Thanks to this in the event of an alarm, the user will receive a notification about this fact on his/her phone even if he is away from the place where the sensor is installed, e.g. at work or on holiday on the other side of the world (communication of phone with internet is required).

INSTALLATION REMARKS

- It is recommended that the device should be installed by a qualified person.
- The device should be stored in a dry and a shady place. During transport the sensor should not be exposed to mechanical damage as it may affect by reducing the lifetime of the device. You shouldn't use the sensor with any signs of mechanical damage.
- Sensors should be installed close to rooms mostly exposed to the presence of carbon monoxide produced as a result burning fuels such as gas, wood, coal. To avoid false alarms it must be maintained at least 2 meter distance from possible sources of carbon monoxide.
- Sensors should be installed at height of approx. 150 cm from the ground (at least 20 cm below the ceiling and at least 1 m from the room corner).
- To provide optimal protection sensors should be installed in closed rooms where household members stay for a long time, especially in bedrooms. In multi-story buildings it is recommended to install at least one detector on each floor.
- These detectors should not be installed in the so-called "dead" spaces, (e.g. alcoves covered by furniture or curtains, at the top of the roof, etc.) and wherever their operation will be disturbed by direct access of fresh air (e.g. nearby doors, windows, ventilation grilles, fans). These devices should not be placed, in particular places exposed to dust, dirt, aerosols and household chemicals that may permanently damage the detector.

TECHNICAL DATA

| | |
|----------------------------------|--------------------------------------------------|
| Supply voltage: | 3 V DC (CR123A battery with a lifetime ~5 years) |
| Sensor type: | electrochemical (lifetime 10 years) |
| Current consumption during rest: | <20 µA |
| Transmit power: | ERP<20 mW |
| Wi-Fi protocol: | 802.11b/g/n |
| Loudness: | ≥85 dB /3 m |
| Degree of protection: | IP20 |
| Compliance with the standard: | EN 50291-1:2018+AC:2021 |
| Operating temperature range: | -10 - 40 °C |
| Humidity operating range: | ≤ 95% |
| Dimensions: | 86.5 x 86.5 x 30.5 mm |

APPEARANCE

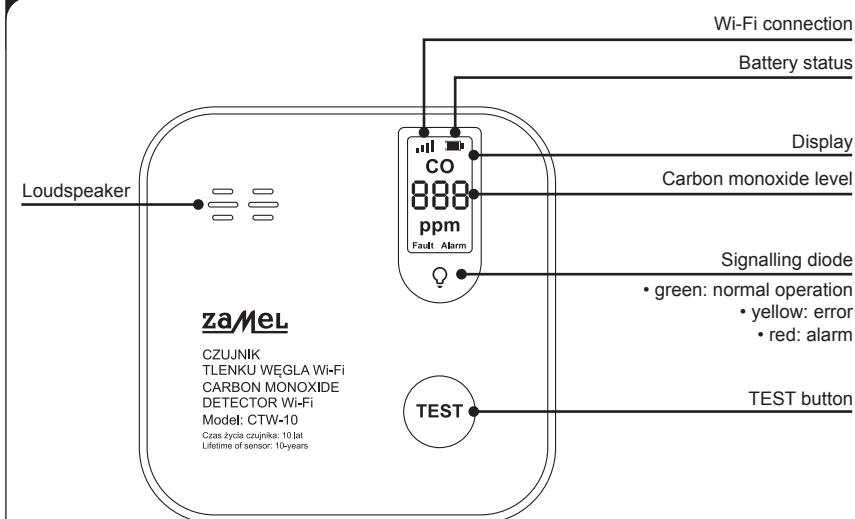


Fig. 1

Carbon monoxide is a highly poisonous, colorless and odourless gas, easily spreading in the air. It is produced as a result of incomplete combustion of many fuels such as: wood, oil, gas, gasoline, kerosene, propane, coal. Incomplete combustion is caused by the lack of the appropriate amount of oxygen necessary for complete burning. This may be due to lack of fresh (external) air to the device in which combustion takes place or due to contamination or poor condition of the gas burner. It can be caused by the blocked chimneys and ventilation ducts. This is especially dangerous in apartments where windows are tightly closed or sealed for the winter. There is a danger of carbon monoxide poisoning due to the fact that carbon monoxide is a gas undetectable to humans because it is colorless and odourless. It enters the body through the respiratory system and is then absorbed into the bloodstream. In the human respiratory system, carbon monoxide binds with hemoglobin 210 times faster than oxygen, blocking the flow of oxygen to the body. This causes a serious threat to human health and life. It prevents the proper distribution of oxygen in the blood and causes brain damage. Acute poisoning may result in irreversible damage of central nervous system, coronary failure and heart attack or even death.

That's why it's so important to install carbon monoxide detectors in living spaces and regular inspection of devices generating carbon monoxide (stoves, boilers, gas heaters water, etc.) and checking the patency of ventilation ducts.

Carbon monoxide accumulates in the body, which means long-term inhalation of low concentrations may cause symptoms dangerous to health and life. Small children, elderly people and pets are more susceptible to carbon monoxide hazards. People suffering from certain medical conditions may need a sensor that alarms at concentrations below 30ppm. When in doubt consult your doctor.

INSTALLATION

1. Remove the sensor mounting base by pulling it down (see Fig. 2)
2. Open the battery compartment cover and remove the battery, wrapped in foil for transport.
3. Remove the battery from the foil and reinstall it, remembering to maintain the correct polarity. The battery compartment is equipped with a latch preventing installation of the mounting base if the battery is not installed.
4. Mount the base on the wall using the included screws or double-sided sticker.
5. Hang the sensor on the base.

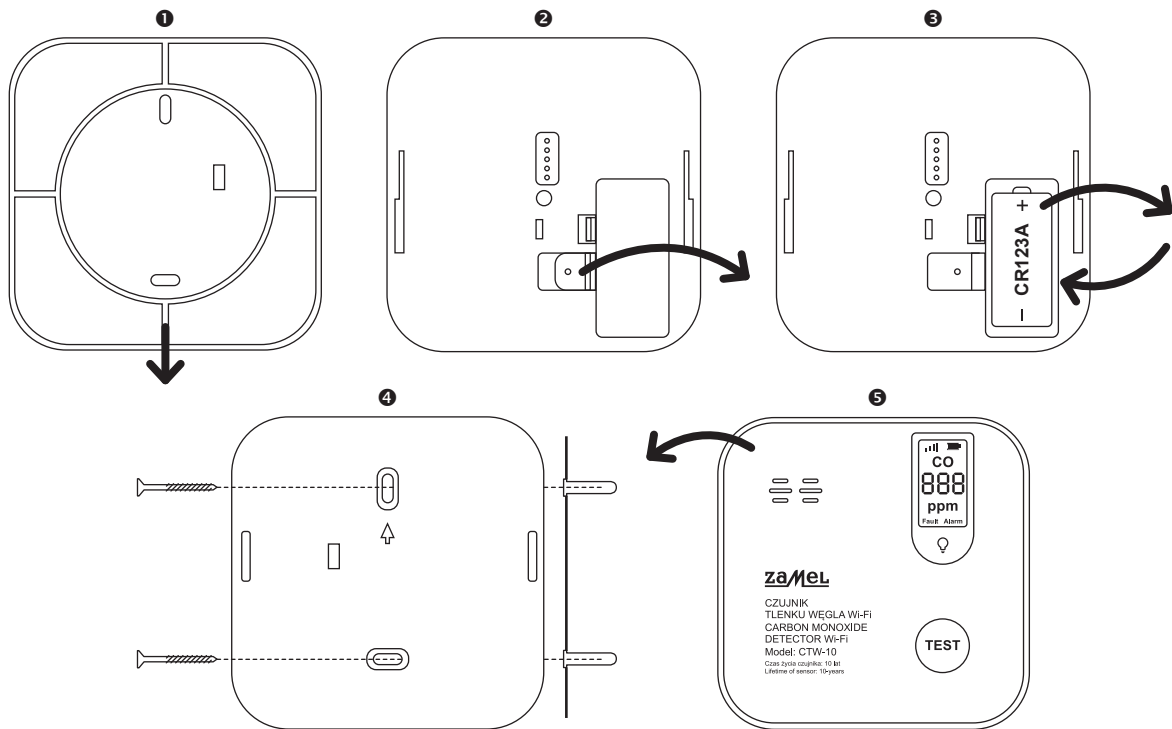


Fig. 2

ATTENTION! POSSIBILITY OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSAL OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

SENSOR WARM UP

After installing the batteries, the device will turn on and emit a single sound signal. It will then start counting down from 120 to 0 which means that the sensor warm-up process started. During this time, the green LED flashes every 2 seconds.



NORMAL MODE

After warming up process, the sensor switches to normal operation mode, indicated by a short flash of the green LED once every 40 seconds. In normal operation mode, the display shows the current recorded carbon monoxide concentration.



ALARM

When the sensor detects a dangerous level of carbon monoxide, the concentration level appears on the display and a loud alarm sounds and the ALARM LED flashes. The alarm signal will remain on until the danger disappears (carbon monoxide levels will not decrease). When the alarm occurs, the gas supply must be immediately cut off and the stove must be turned off - ventilate the room and leave it immediately. You should also notify the appropriate help to check the cause of excessive carbon monoxide concentration



Carbon monoxide detection levels compliant with the EN 50291-1:2018+AC:2021 standard

| | |
|---------|--------------------------------------------------------|
| 30 ppm | The alarm cannot appear before 120 minutes have passed |
| 50 ppm | The alarm must appear within 60-90 minutes |
| 100 ppm | The alarm must appear within 10-40 minutes |
| 300 ppm | The alarm must appear within 3 minutes |


If an alarm occurs, you should:


- Immediately ventilate the room by opening windows and doors,
- leave the room immediately,
- even though the alarm has stopped, the cause of its occurrence should be determined by checking the condition and patency of the ventilation ducts and the condition of the heating devices and possibly notify the appropriate services (e.g. fire brigade, gasworks),
- if any symptoms of poisoning occur (headache, dizziness, nausea) by any household member, call an ambulance immediately.

TEST PROCEDURE

After pressing the TEST button, the device performs a test procedure to check the functionality of the sensor. An acoustic signal will then sound several times, and the red ALARM LED is flashing. After the test is completed, the device should return to normal operation mode, indicated by flashing green POWER diode every few dozen seconds and displaying the current carbon monoxide concentration. This means that the testing procedure has ended successfully. It is recommended to test the device in this way once a month.


LOW BATTERY SIGNALLING

When the battery charge drops below a critical level, the symbol will appear on the display: , and once every 40 seconds a single sound signal appears and a yellow FAULT LED lights up. This means the battery should be replaced with a new one.

 + single sound and yellow diode once per 40 s


SIGNALING OF DEVICE FAILURE

The device has an auto-diagnostic system that appears on the display when a sensor failure is detected - Err appears, a double beep is heard ("di, di") once every 40 sec. and the yellow FAULT LED is flashing. Device failure means the need to contact immediately the technical support.

 + double sound and yellow diode once per 40 s

END OF SENSOR LIFETIME SIGNALING

The average lifetime of the CTW-10 sensor is approximately 10 years. After the electrochemical sensor contained in this device has been used, the auto-diagnostic system causes the word 'End' to appear on the display and a triple sound signal is generated ("di,di,di") and the yellow 'FAULT' LED flashes every 40 sec. This means the end of the sensor's lifetime and the need to replace it with a new one.

 + triple sound and yellow diode once per 60 s

CONNECTING THE SENSOR WITH WI-FI AND THE NAVIHOM OR TUYA APP.

The device can operate independently like a standard carbon monoxide detector but big advantage is the ability to connect it to the Internet and remotely notifying the user of an alarm and device status via the NaviHome or TUYA app installed on the phone/tablet with Android or IOS. Two types of applications can be used for the sensor. The first one is dedicated to the Zamel products - NaviHome application. And the second one is standard TUYA application. One of them needs to be downloaded from the Google Play Store (Android) or App Store (iOS) and installed on smartphone or tablet.

To properly configure the sensor with the NaviHome or TUYA application following actions should be done:


- Make sure the sensor is placed in a place with Wi-Fi access.

- Download and install NaviHome or TUYA application from Google Play or the App Store on phone.
- If you do not have an account in the application, you should create one by clicking the "Register" button (Fig. 3).

When adding a new sensor to the application it is important that the phone is connected to the same WI-FI network like the sensor.

- Put the sensor in pairing mode via long press of the TEST button on the device (approx. 5 sec.) until 'PAR' appears on the display and the red LED will start flashing.

- After logging in to the application, click the "Add device" or "+" button in the right upper corner (Fig. 4).
- The sensor should be detected automatically which is signaled by an icon in the application. Click on it and it will start the process of pairing it with the application which may take several dozen seconds. If this sensor will not be detected automatically, you should find it in the device list in the sensor tab and then in the CO Alarm section, select the CO Alarm icon (Wi-Fi) - Fig.5.
- Then select the same Wi-Fi network in which the sensor is connected (Fig. 6).

 + flashing of red diode

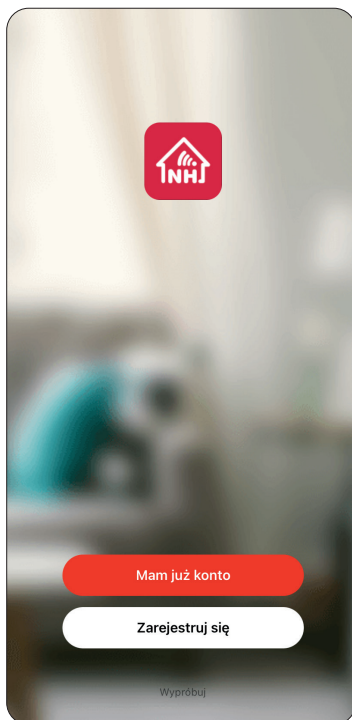


Fig. 3

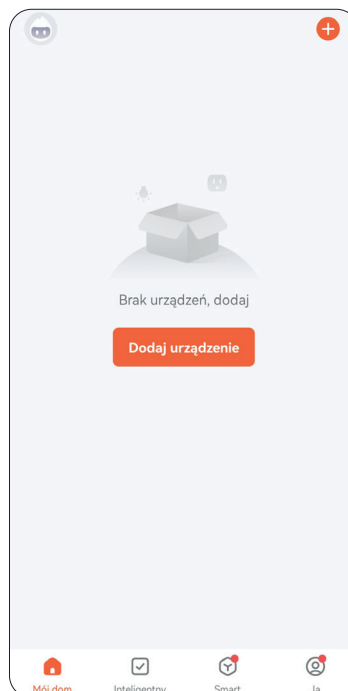


Fig. 4



Fig. 5

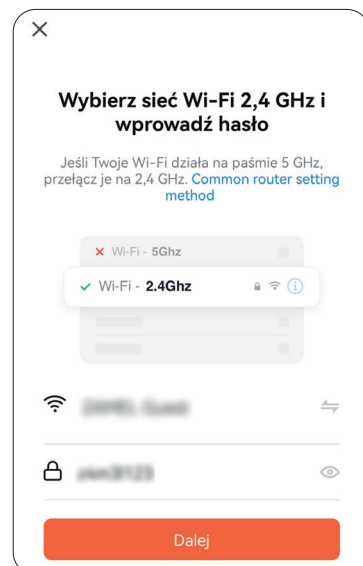


Fig. 6

The sensor works only with 2.4GHz Wi-Fi networks, no 5 GHz networks are supported and for the configuration process the phone has to be connected to the same 2.4 GHz network as the sensor.

- Put the sensor in pairing mode by holding the TEST button on the device for a longer time (approx. 5 sec.) until the word 'PAR' appears on the display and red LED starts flashing and then confirm this fact in the application (Fig. 7).
- After several seconds, the sensor should be added which is confirmed by a message as in Fig. 8.

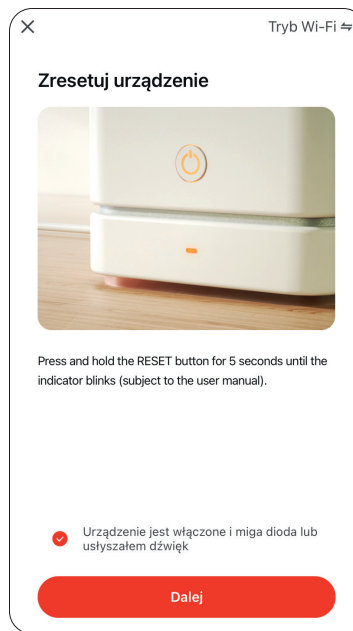


Fig. 7

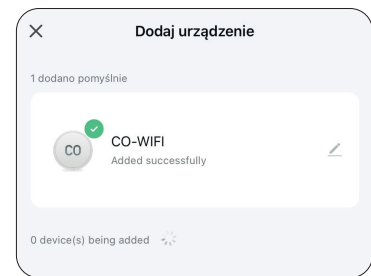


Fig. 8

OPERATING THE DEVICE IN THE APPLICATION

- By clicking on the device symbol in the list of added devices we gain access to the current status of the device (Fig. 9).

After clicking on the Set tab marked with a gear symbol a settings window opens (Fig. 10) where you can determine what notifications come from the sensor and appear on the phone. These may be:

- Device lifecycle – notification about the end of the sensor's life,
 - Low battery alert – notification about a low battery and the need to replace it,
 - Device sensor fault – alarm about device failure,
 - CO Alarm – alarm about the detection of carbon monoxide,
 - SMS Notification – alarm notification via SMS – an additionally paid option for TUYA, independent from Zamel
 - Phone Notification – alarm notification via telephone call – additionally paid option by TUYA, independent of Zamel
- In the "Record" tab we gain access to the event history recorded by the sensor
 - The "Smart" tab allows you to create scenes (dependencies between devices) if someone has different devices based on the TUYA system.

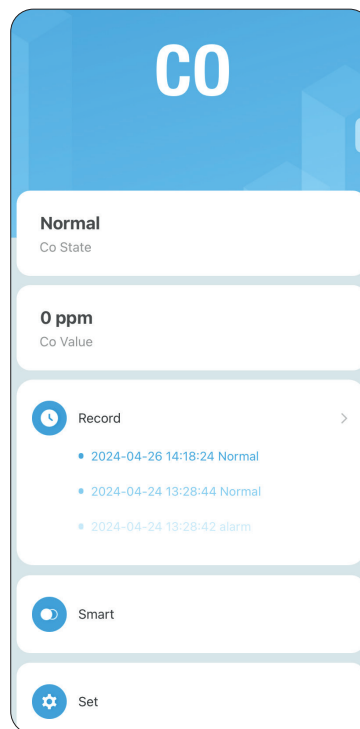


Fig. 9

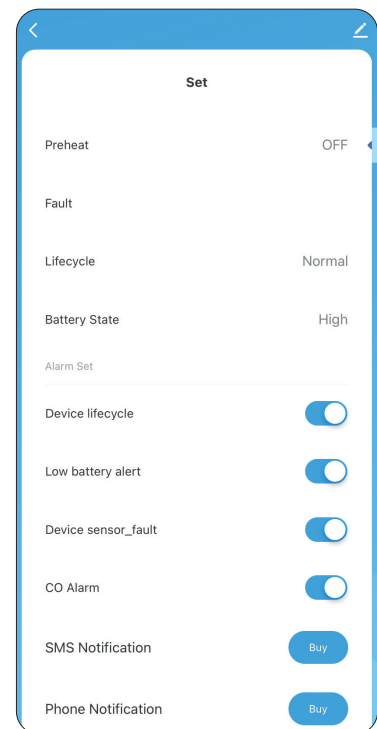



Fig. 10

 Do not dispose of this device with other waste! In order to avoid harmful effects on the environment and human health, the used device should be stored in designated areas. For this purpose, you can dispose of household waste free of charge and in any quantity to a collection point set up, as well as to the shop when you buy new equipment.

Maintenance and notes of use

- clean the device regularly, do not allow the air inlet to the sensor to become dusty,
- install devices in places that meet the conditions for permissible temperature and humidity,
- do not cover the device with paint when painting walls,
- do not spray cleaning agents directly onto the device,
- do not allow the sensor to be flooded,
- install the sensors in accordance with the recommendations of this manual,
- test the device once a month,
- replace the battery in the sensor immediately when it signals that it is low,
- replace the sensor with a new one when it signals a sensor failure and absolutely after the expiry date of 10 years from the production date,
- chemicals that may interfere with the sensor's operation and cause a false alarm: detergents used for washing, paraffin-based agents, thinners, solvents, paints, adhesives, gasoline fumes, hairsprays, aftershave, perfumes and some cleaning products.

Please note that carbon monoxide detectors significantly increase safety, but do not ensure it in 100% certainty of detecting carbon monoxide gas due to the possibility of failure, battery discharge and influence of external factors on the sensor. This is why the device should not be used as a substitute for proper heating and ventilation installation. Always test regularly the efficiency of the sensors themselves (in accordance with this manual) and heating installations (stoves, cookers etc.), as well as the patency of ventilation and chimney systems in a given room to minimize the risk of dangerous levels of carbon monoxide in the air.