VIRONE

CE

DC-1

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(EN) Operating and installation manual
Carbon monoxide detector

(EN) SAFETY PRECAUTIONS

Before using the device, read this Service Manual and keep it for future use. Any repair or modification carried out by yourselves results in loss of guarantee. The manufacturer is not responsible for any damage that can result from improper device installation or operation.
In view of the fact that the technical data are subject to continuous modifications, the manufacturer reserves a right to make changes to the product characteristics and to introduce different constructional solutions without deterioration of the product parameters or functional quality.
Orno-Logistic Sp. z o.o. holds no responsibility for the results of non-compliance with the provisions of the present Manual. Orno Logistic Sp. z o.o. reserves the right to make changes to the Manual - the latest version of the Manual can be downloaded from www.support.virone.pl. Any translation/interpretation rights and copyright in relation to this Manual are reserved.

The device must be installed in accordance with the enclosed operating instructions by a qualified person.
The carbon monoxide detector is not a substitute for a smoke or flammable gas detector. The unit should be stored in a dry room at a temperature between -20°C and 50°C. The unit is intended to provide protection against the serious effects of carbon monoxide exposure. It does not provide complete safety for persons with special health conditions. If in doubt consult your doctor.
Failure to follow the instructions in this manual may result, for example, in fire, burns, electric shock, physical injury and other material and immaterial damage.
1. Do not use the device contrary to its dedication.
2. Do not immerse the device in water or other fluids.
3. Do not operate the device when its housing is damaged.
4. Do not open the housing, do not tamper with the electronics and do not carry out repairs or modifications yourself as these actions may damage the sensor.
5. Store the unit in a dry and dark place, and do not throw packaging and do not expose it to mechanical damage during transportation.
6. Suitable for indoor use only.

Every household is a user of electrical and electronic equipment and therefore a potential producer of hazardous waste to humans and the environment from the presence of hazardous substances, mixtures and components in the equipment. On the other hand, waste equipment is a valuable material, from which we can recover raw materials such as copper, tin, glass, iron and others. The symbol of a crossed-out rubbish bin placed on the equipment, packaging or documents attached thereto indicates the necessity of separate collection of waste electrical and electronic equipment. Products marked in this way, under penalty of a fine, may not be disposed of in ordinary waste together with other waste. The marking also means that the equipment was placed on the market after the 13th August 2005. It is the user's responsibility to hand over the waste equipment to a designated collection point for proper treatment. Used equipment may also be returned to the seller in case of purchase of a new product in a quantity not greater than the new purchased equipment of the same type. Information about the available waste electrical equipment collection system can be found at the information point of the shop and in the municipal office. Proper handling of waste equipment prevents negative consequences for the environment and human health!

Used batteries and/or accumulators should be treated as separate waste and placed in an individual container. Used batteries or accumulators should be taken to a collection/receipt point for used batteries and accumulators. For information on collection/collection points, contact your local authority or your local dealer. Used equipment may also be returned to the seller in case of purchase of a new product in a quantity not greater than the new purchased equipment of the same type. The product is equipped with a portable battery. Please refer to the following manual for instructions on how to install and remove batteries.

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Please do not press the TEST button during battery installation!!!

Carbon monoxide (CO) is a colourless, odourless and highly poisonous gas. If present in bloodstream, it impedes oxygen transportation in blood, which results in heart and brain damage through oxygen deficiency in tissues.

Carbon monoxide is a product of incomplete combustion of fuels and fossils such as: natural gas, propane, petrol, coal or heating oil. Carbon monoxide emission may occur in all installations generating energy through combustion. Exact value of dangerous concentration of carbon monoxide has not been specified. It depends on exposure time in the poisonous environment.

The following devices and equipment may be the source of carbon monoxide: liquid fuel or gas boiler (heating oil, mazout, natural gas, etc.), solid fuel boiler (wood, coal, coke, peat, etc.), gas water boiler (e.g. bathroom heater), fireplace, portable gas heater, masonry heater, gas stove, etc.

Possible causes of high carbon monoxide concentration in a residential building:

- Improperly or poorly installed fuel combustion devices.
- Blocked or cracked chimneys.
- Blocked ventilation ducts or excessive tightness of rooms.
- Car or gas lawn mower engine is turned on and left in a closed space.
- Portable paraffin or gas heaters in poorly aired rooms.

Symptoms of carbon monoxide poisoning

Concentration of CO in air ppm*	Approximate inhalation time and symptoms developed
50	Maximum allowable concentration for continuous exposure for healthy adults in any 8-hour period.
150	Slight headache after 1.5h.
200	Slight headache, fatigue, dizziness, nausea after 2-3 hours.
400	Frontal headache within 1-2 hours, life threat after 3 hours.
800	Dizziness, nausea and convulsion within 45 minutes. Unconsciousness within 2 hours. Death within 2-3 hours.
1600	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3200	Headache, dizziness and nausea within 5-10 minutes. Death within 25-30 minutes.
6400	Headache, dizziness and nausea within 1-2 minutes. Death within 10-15 minutes.
12800	Death within 1-3 min.

ppm – parts per milion

DESCRIPTION

DC-1 detector is a modern alarming device developed to constantly monitor carbon monoxide (CO) concentration. The detector does not detect concentration of other poisonous or flammable gases.

FEATURES

- high-quality electrochemical sensor,
- visual and sound alarming,
- LCD display with backlight,
- TEST button to check proper operation of the device,
- low battery indication,
- diode indicators (res, green, yellow),
- carbon monoxide concentration range from 25ppm to 550ppm,
- memory function for alarms that have occurred in the last 24 hours,
- alarm mute function,
- compliance with EN-50291 -1:2010 standard for home carbon monoxide detectors,
- measuring air temperature from -15˚C to 50˚C

TECHNICAL DATA	
Power supply:	4,5VDC (3 x1.5V - AA batteries) included
Detector type:	electrochemical type B
Sensitivity and detection time:	complies with EN50291:2010+A1:2012
Power consumption in stand-by:	<90µA
Power consumption in alarm state:	<75mA
Volume level:	>85 dB per 1m
Precision:	25-550 ppm (±10%), if the concentration exceeds 550 ppm, the display shows "Hco". If the concentration is less than 25 ppm the display will show 0 ppm.
Temperature:	Working temperature: from 0°C to +45°C, Storage temperature: from -20°C to +50°C
Permissible humidity:	operation range 0%~90% relative storage humidity 0%~70%
Dimensions:	90mm×120mm×40mm
Net weight:	0.22 kg
Alarm format:	series of 4 beeps at 1 second intervals, "ALARM" LED indication flashes red, concentration display on LCD screen

CONSTRUCTION OF DEVICE

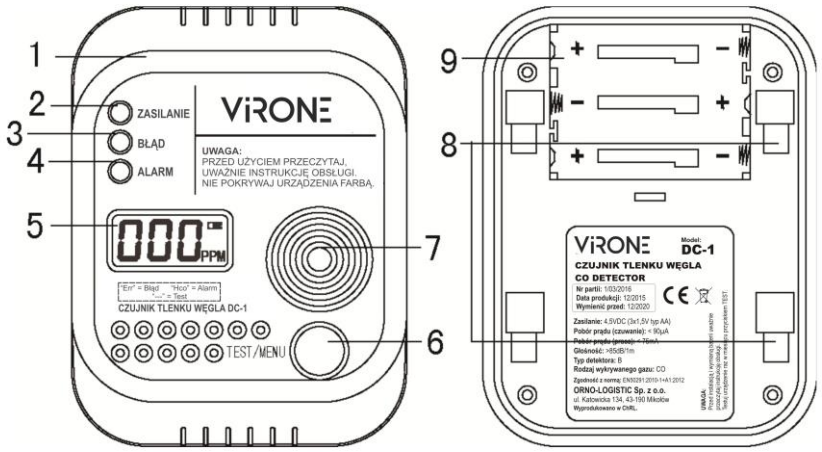


fig. 1

1. Housing
2. Green diode - POWER
3. Yellow diode - ERROR
4. Red diode – ALARM
5. Backlit LCD display
6. TEST button
7. Ventilation hole
8. Mounting brackets
9. Battery compartment

INSTALLATION

The detector should be installed in all rooms, where there are any devices that might be the source of danger. It does not mean that additional sensors or detectors are not necessary.
When selecting installation place, make sure that the alarm signal will be well heard in other rooms. It is recommended to install CO detector on every floor of the multilevel building.

It is perfect if CO detector is installed in line with the below indications:

1. In every room with a device that combusts fuels.
2. In rooms distant to the above specified rooms, where residents spend most of their time.
3. In every bedroom.
4. At least 150cm from any fuel combusting device.
5. At eye level (ca. 150cm-200cm from the floor). Above the door/window level, but still at least 150mm from the ceiling.
6. In rooms longer than 10m it is recommended to install 2 or more detectors, at max.10m distance from the respective detectors.

If you have a limited number of carbon monoxide detectors, use the below recommendations when selecting their installation place:

1. Install the detector in a bedroom, if the fuel burning device is in the sleeping area.
2. Install in every room, where there is a fuel burning device with a closed or open combustion chamber.
3. Install in rooms where residents spend most of their time (e.g. in a living room).
4. Install in a single-room apartment, as far as possible from the stove/heater, but close to the sleeping area.
5. If the fuel burning device is located in a rarely used room (e.g. boiler-room), install the detector just right outside this room, to make the alarm signal audible.

IMPORTANT! – please keep in mind that the alarm signal has highly elevated noise level!

Where not to install your CO detector!

1. Do not install within 60cm from any heating or cooking appliances.
2. Do not install outside the building.
3. Do not install in closed spaces (e.g. inside the cabinet, or under the cabinet).
4. Do not install near vents, flues, chimneys or any other forced/unforced air ventilation openings.
5. Do not install near ceiling fans, doors, windows or other areas directly exposed to the weather.
6. Do not install in dead-air spaces, such as peaks of vaulted ceilings or gabled roofs, where CO may not reach the sensor in time to provide early warning.
7. Do not install above the heat sources, e.g. heaters.
8. Do not install in covered areas, e.g. with curtains or furniture.
9. Do not install in areas where the detector could be damaged, knocked down or where it could be accidentally switched off or removed.
10. Do not install near paints, dissolvents, diluting agents or air-fresheners.
11. Do not cover the ventilation slots of the device.

1. Separate the fixing base from the device body by sliding it out of the fixing brackets.

2. Insert 3x AA, LR6 type power supply batteries into the device remembering the correct polarity.

3. Test the device by pressing the TEST button for a few seconds. When you hear intermittent beeps from the device's speaker, release the button. The presence of a series of several beeps from the speaker and the simultaneous flashing of the "Alarm" LED will indicate correct operation of the device.

4. Install the device on the wall. To do this, first attach the mounting base to the wall using dowels and fixing screws. Use the two holes in the mounting base for mounting. Then, the device body should be attached to it by inserting the four hooks into the four longitudinal holes in the body.

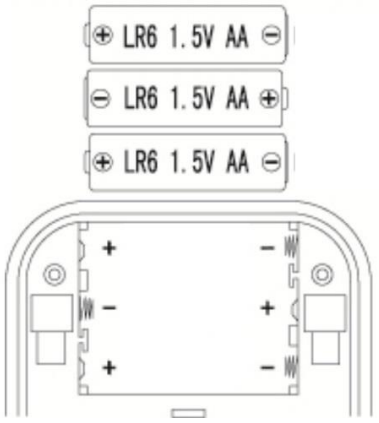


fig. 2

OPERATION

Once the power batteries have been inserted, the unit will beep once, light all three LEDs and display information on the LCD screen. The green 'Power' LED will then flash at approximately 45 second intervals and the display will show '000 ppm' indicating that the unit is operating normally. The unit will display the current room temperature when the CO concentration is below 25 ppm.

TEST THE DEVICE - Test the device regularly once a month

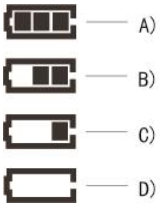
Pressing the TEST button on the housing will generate a series of short beeps, the red "Alarm" LED will flash cyclically and the LCD screen will be backlit to display the last highest recorded alarm CO concentration. This indicates that the device is operational.

"example"

When the device detects a dangerous concentration of carbon monoxide in the environment, it illuminates the screen and displays the concentration and starts generating an acoustic alarm (series of 4 sounds, at intervals of approx. 1 second) and visual alarm (LED "ALARM" flashes red).

It is recommended to test the device at least once a month using the "Test/Menu" button on the housing. The unit displays the CO concentration in the air between 25 - 550 ppm. Below 25 ppm it will display 0 ppm and above 550 ppm it will display Hco.

LOW BATTERY



When the battery is partially discharged, the device speaker generates 1 short beep and the green "Power" LED will flash. Additionally, the icon as in (C) will be displayed on the screen. In this situation, replace the battery with a new one immediately.

The device has a built-in self-diagnosis system. If a sensor is damaged, the device will generate an acoustic alarm (two signals every 10 seconds) and an optical alarm (the "Error" LED will blink yellow). Additionally, the screen will display the message Err.

The END message, a double beep and rapid double blinking of the ERROR and ALARM LEDs signal the end of the device's life.

ALARM MUTE FUNCTION

The device has the possibility of short term silencing of the alarm signalling (for a few minutes), while maintaining the optical signalling. To achieve this, during an alarm, press the "Test/Menu" button on the housing of the device.

ALARM MEMORY FUNCTION

The unit has a memory of the maximum and average CO concentration that occurred in a 24 hour period. To review the alarm memory, press and hold the TEST/MENU button until the display shows "Ph=". The information will be displayed automatically on five consecutive pages over a period of 10 to 30 seconds. If you wish to speed up browsing the memory press the TEST/MENU button.

Page 1 display Ph=1, which means that the last maximum CO concentration that was detected will be displayed

Page 2 displays the maximum CO concentration that was detected

	Page 3 means that the average CO value that has occurred in 24 hours will be displayed
	Page 4 displays the average CO value that has occurred in 24 hours. The word PPM will flash.
	Page 5 means that the stored values can be deleted. If you press the TEST/MENU button on this page for a long time until the message on page 1 appears, the values on pages 2 and 4 will be deleted.

NOTE: The detector only signals danger after it has been fitted. The alarm is activated when carbon monoxide enters the sensor within the specified time and concentration.

Alarm signalling response time

(according to the requirements established in EN 50291-1:2010)

30/33 ppm no alarm within 120 minutes

50/55 ppm, the unit will sound an alarm within 60-90 minutes

100/110 ppm, the unit will sound an alarm within 10-40 minutes

300/330 ppm, the unit will sound an alarm within 3 minutes

WHAT TO DO WHEN THE ALARM SOUNDS?

If CO concentration detected in the air exceeds the allowable level, the device will shortly beep 4 times every 5 seconds and the red ALARM diode will flash!

(1) If it is possible, immediately leave the area/room where the exceeded concentration has been detected.

(2) Open doors and windows to air the room. This will help to disperse the concentration of CO before the emergency services arrive, and the device will stop alarming. Even if the problem seems temporally solved, a real source of CO leak has to be detected.

(3) If someone reveals poisoning symptoms (nausea, head ache), immediately seek medical attention.

(4) Consult the situation with appropriate services (e.g. fire service).

(5) After following steps 1-4, if the alarm reactivates within 24-hour period, repeat steps 1-4 and call a qualified appliance technician to investigate sources of CO from fuel burning equipment and appliances, and to check proper operation of the detector.

(6) If alarm occurs, press TEST button to deactivate it. If the CO condition that caused the alert in the first place continues, the alarm will reactivate. If the device alarms again within five minutes, it is detecting high levels of CO which can quickly become a dangerous situation.

(7) If the device is giving false alarms, check if it has been installed in a proper place.

MAINTENANCE AND PRECAUTIONS

1. Detector does not work without proper batteries in working order.
2. **After installing the batteries, press the TEST button to test the device!**
3. Run regular tests of the device, at least once per month.
4. Vacuum the detector cover regularly to remove the accumulated dust, especially the air inlet and the front panel with diodes. Turn off the power before vacuuming.
5. Avoid spraying any chemical cleansers directly on the cover of the device.
6. Do not let water get inside the case of the device.
7. Do not cover the appliance with paint. When painting a room, remove the unit from the wall.
8. Never use detergents or solvents to clean the detector. Chemicals can permanently damage the device.
9. The work of the device may be interrupted in prolonged exposure to cigarette smoke, alcohol, perfume, petrol, paint or varnish and other organic vapours.
10. Do not use or store the device in a place where it is exposed to mutually interacting gases.
11. Do not open the housing of the device and do not make any repairs or modifications on your own, as it may damage the device.
12. Do not allow children to play with the device.
13. Replace the device after the date specified on the side label.
14. CO detector cannot replace a smoke detector.
15. CO detector does not detect natural gas (methane), LPG gas (propane-butane) or any other combustible gases.
16. When testing the unit, check that the sound is clearly audible from all sleeping rooms.

17. Never use an open flame to test the device.
18. Never put the device to your ears during detection or testing as this may cause hearing damage.
19. Store the device in a dry and dark place.
20. During transport, do not throw the unit or subject it to mechanical damage.
21. The device may not prevent the causes of chronic exposure to carbon monoxide.
22. Expected service life of the battery is 72 months from the first usage and depends on alarm frequency.

Due to technical conditions (e.g. battery failure, equipment failure, etc.) and the specificity of the rooms in which CO presence detectors are installed, these devices do not give total certainty of detecting dangerous CO, but only significantly increase the probability of earlier detection of its dangerous concentration. Therefore, you should remember that these devices should be tested in accordance with the attached manual and that you should periodically inspect the condition of ventilation, chimney installations and devices that may emit carbon monoxide.

The service life of the internal sensor is approximately 7 years from the date of manufacture of the device (determined by technical installation conditions, number of alarm activations, temperature, humidity, dust). The device must be undeniably replaced when "END" is displayed on the screen, which indicates end of service life of the battery, or before "use by" date of the device expires – whichever occurs first.