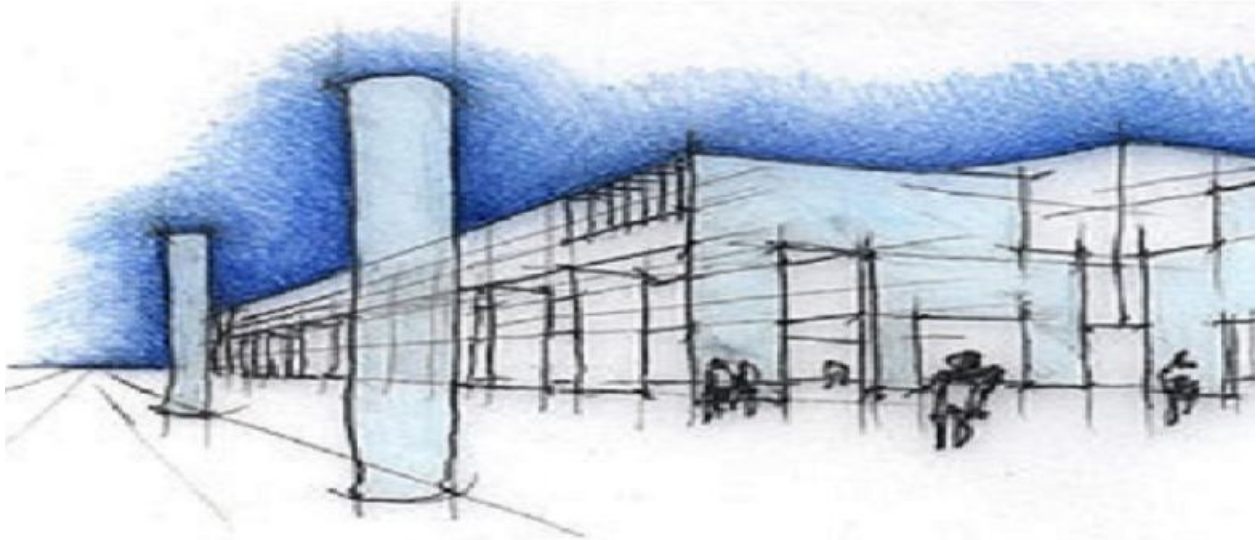


# Conventional Gas Sensor CO100r

V. 3



The **CO100/A** sensor is a **CO** gas detection unit with IP66 protection that, together with one of **BEINAT's** industrial type Control Units, detects the presence of TOXIC GAS such as: **Carbon Monoxide**.

The probe is fitted with an **Electrochemical Cell sensor** and is managed by a microprocessor which not only supplies an alarm signal to the Control Unit connected to it, but also allows execution of self-diagnosis in order to obtain the maximum detection accuracy at any time.

This device is useful when both the maximum CO admissible concentration threshold set to 300ppm is exceeded, and when low CO concentrations persist in the environment for lengthy periods, and which according to the principle of accumulation, could also damage the human organism.

The probe has a 0 ÷ 300ppm linear output conforming to the 4÷20mA standard.

When a serial transmission is required, an optional "**Card-MODBUS**" RS485 addressing card must be inserted.

## Essential instrument for the annual check of the sensors

### Instrument of testing TS1008

To facilitate the reading of the functional parameters of the sensor as well as the control of annual operating, **BEINAT S.r.l.** has built a new portable tester **TS1008**.

The tester allows to read all the data in the memory of the sensors and by serial transmission it prints the ticket that confirms the testing data.



**Important:** Assembly / maintenance of the appliance must be carried out by qualified personnel and in accordance with applicable laws and regulations.

The manufacturer assumes no responsibility for the use of products that have to comply with particular environmental and / or installation standards.



This equipment is designed to protect individuals from acute exposure to carbon monoxide.

This equipment will not completely protect the Individuals with specific medical conditions.

In doubt, consult a doctor.



### Important note

Before connecting the equipment, it is recommended that you read the instruction manual carefully and keep it for future reference. It is also recommended to perform the electrical connections correctly as per enclosed drawings, observing the instructions and the Standards.

**N.B. Refer to the documentation in all cases where the symbol is on the side**



**Installation and  
user guide**

### CONFORMITY

EN 45544-1-3  
CEI 216-3  
EN 50270

Reports issued by TUV Italia

## Precautions

**CHECK** the integrity of the unit after having removed it from the box.  
 Check that the data written on the box correspond to the type of gas used.  
 When doing the electrical connections, follow the drawing closely.  
 Any use of the detector for purposes other than the intended one is considered improper, and as a result of which **BEINAT S.r.l.** therefore disclaims any responsibility for possible damages caused to people, animals or objects.

**TERMS and EXPECTATIONS:** The installation of the **CO100** Probe, its ordinary and extraordinary **maintenance, every six months**, and its out of service removal at the end of the functional life guaranteed by the manufacturer, must be carried out by **authorized or specialized personnel**.

**Do not wet it.**

The control unit can be seriously damaged as it is not waterproof either when immersed in water or exposed to high levels of humidity.

**Do not drop it.**

Heavy knocks or falls during transportation or installation can damage the appliance.

**Avoid abrupt temperature fluctuations.**

Sudden temperature variations can cause condensation and the control unit could work poorly.

**Cleaning**

Never clean the device with chemical products. If necessary, wash with a moist cloth.



## Technical Specifications

Power supply ..... **12÷24VDC** ± 10%  
 Power demand ..... In warm-up 15 mA In Alarm 80 mA max @ 13.8V DC  
 Switching alarm relay ..... 10 A 250V~ resistive 5A 30Vdc resistive **SELV**  
 Fault relay..... 10 A 250V~ resistive 5A 30Vdc resistive **SELV**

LEDS diode signals .... Regular operation green; Yellow fault; Red alarm 300 ppm; Cyan **TWA** alarm 8 hours; Magenta alarm **STEL** 15 minutes

Detection ..... Monoxide Carbon "CO"  
 Sensor ..... **Electrochemical cell**  
 Sensitive element working range ..... 0÷5000 ppm  
 CO detector range of measurement ..... 0÷300ppm

**TWA** alarm intervention **on an 8-hour** weighted average of Ciano color ..... **30 ppm**  
**STEL** Alarm intervention Maximum amount allowed n **15 minutes** Magenta signal ..... **200 ppm**  
 Alarm intervention **Immediate** Red signal ..... **300 ppm**  
**USB test socket** ..... **TS1008**

Analog output signal ..... 4÷20 mA standard tolerance  
 Detector accuracy ..... 1% FS  
 Long term shift in clean air ..... < ± 2ppm  
 Response Time ..... < 10"  
 Warm-up time..... 1,5 minutes  
 Time work regime ..... 4 minutes

Functioning humidity ..... 0-90% non condensed  
 Functioning temperature ..... -20°C to + 50°C  
 Control units that can be used; BXI32, BX444-Mc, BX449F, GS100M, BX280, BX180, GS300Mc, BX316xp, BX308xp

Maximum distance between sensor and control unit ..... 100 m  
 Section of connection cables ..... 1 mm

**Connection: The probe connection wires must not be laid together with the power cables. Otherwise, we recommend using a shielded cable.**

Probe's enclosure .....  
 ABS

Degree of protection ..... **IP66**  
 Size .....100x100x60 mm

### Technical Features CO100/A

Code	Type of Gas	Sensor	Working range	Temperature
CO100r	Carbon monoxide	Electrochemical Cell	0-300ppm	-20+50°C

**WARNING!**

The sensor **ELECTROCHEMICAL CELL** has a duration that can vary from about 5 to 6 years in clean air.  
 Do not bear a detection of over **5000 ppm**, risk to the natural death of the sensor.

**N.B.**

The operation test and eventual calibrazine must be performed at least 1 time **1 year** by qualified technician.

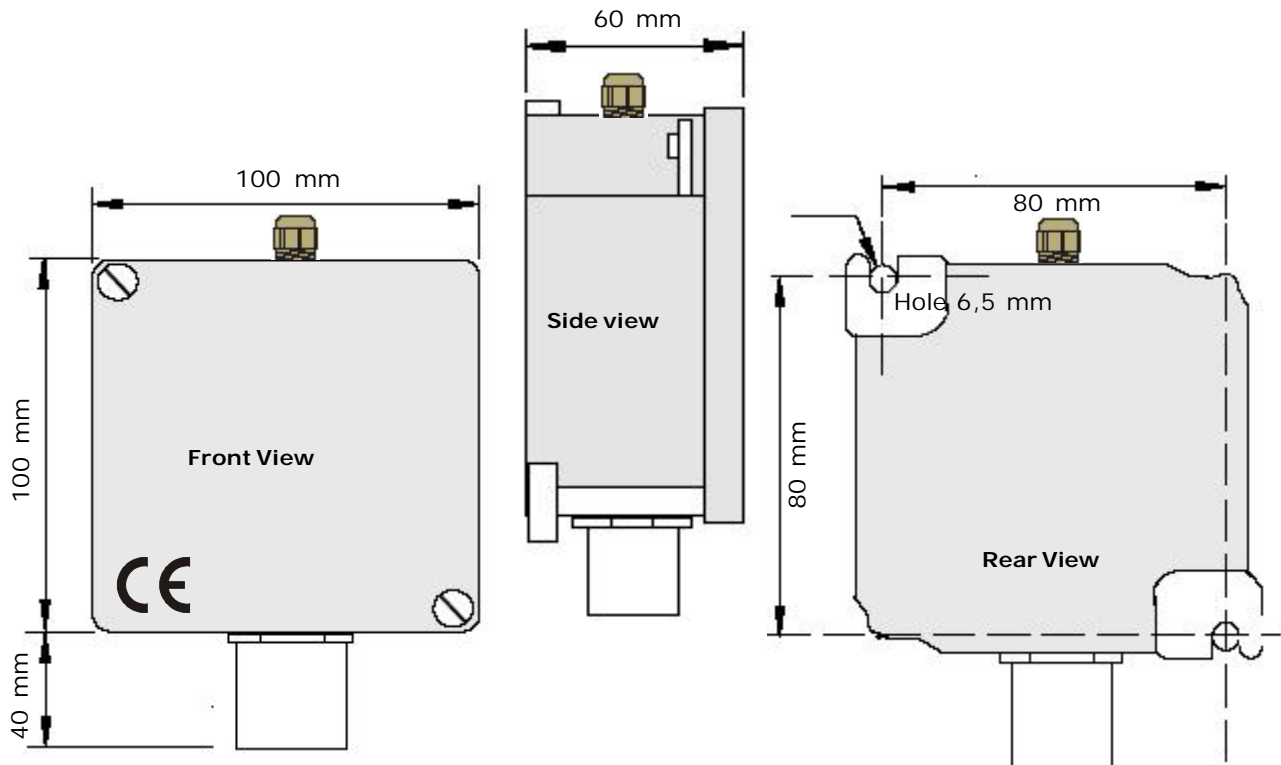
CONTROL UNITS	Mouting	Sensors	Degree protec.	Pre-alarms	Alarms	Positive Safety	Operating range
<b>GS100M unit</b> 1 zone	Wall/cabinet	1	IP44	2	1	YES	NO
<b>GS300Mc unit</b> 1 zone	Wall/cabinet	3	IP44	2	1	YES	NO
<b>BX444-MC unit</b> 1 zone	Wall/cabinet	4	IP44	2	1	YES	NO
<b>BX150 unit</b> 1 zone	Panel	1	IP42	1	1	YES	NO
<b>BX180 unit</b> 1 zone	Omega bar DIN	1	IP20	1	1	YES	NO
<b>BX280 unit</b> 1 zone	Omega bar DIN	2	IP20	1	1	YES	NO
<b>BX449F unit</b> 1 zone	Omega bar DIN	4	IP20	1	1	YES	NO
<b>BX308xp unit</b> 1 zone	Omega bar DIN	8	IP20	1	1	YES	YES
<b>BX308xp Box unit</b> 1 zone	Wall	8	IP65	1	1	YES	YES
<b>BX316xp unit</b> 2 zones	Barra Omega	16	IP20	1	2	YES	YES
<b>BX316xp Box unit</b> 2 zones	Wall	16	IP65	1	2	YES	YES
<b>BX132 Box unit</b> 1 zones	Wall	32	IP65	1	2	YES	YES

**MAINTENANCE**



The user periodically (every 6 months) must perform a check of the operation of the control unit by spraying a suitable test gas at the base of the probes connected until the alarm condition is reached.

- At least once a year make a more accurate check by a specialist technician.
- Disabling the detector must be carried out by qualified personnel.

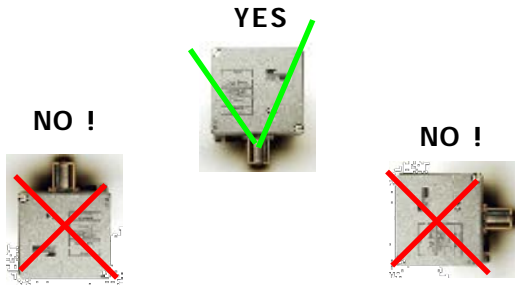


he installation of the detector is not exempt from ..... The compliance with all regulations concerning the characteristics, installation and use of gas appliances. The ventilation of the spaces and the elimination of combustion products are described in the UNI norms according to ART. 3 LAW 1083 / 71 and relevant legal provisions.

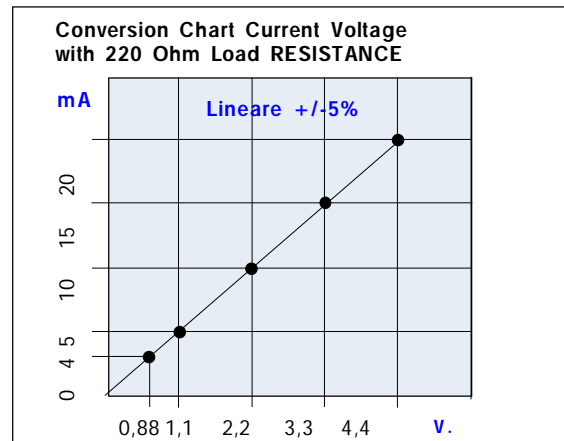
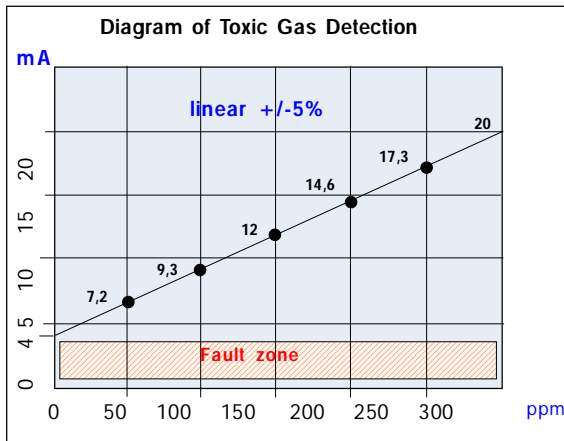
## Positioning of the Probe

The position of the probe is a crucial factor for its correct functioning. The probe must be placed at a height of: **160 cm** from the lowest point on the floor up to **30 cm from the ceiling**, and in all cases at an average height in the monitored area.

The probe **must not be placed** near the following: furnaces, fuel-burning kitchen appliances, fireplaces, ranges, suction fans, and should not be affected by smoke, vapour as these could distort its measurement. The probe **must not be placed** away from sources of heat, suction fans, ventilation fans, windows, doors, etc. that can distorting the detection, should be placed away from heat sources and away from aspirators or fans.



## Detection Diagrams Data



### According to the EN 45544 regulation

Weighted average of detection over 8 hours

**TWA CO = Alarm at 30 ppm after 8 hours**

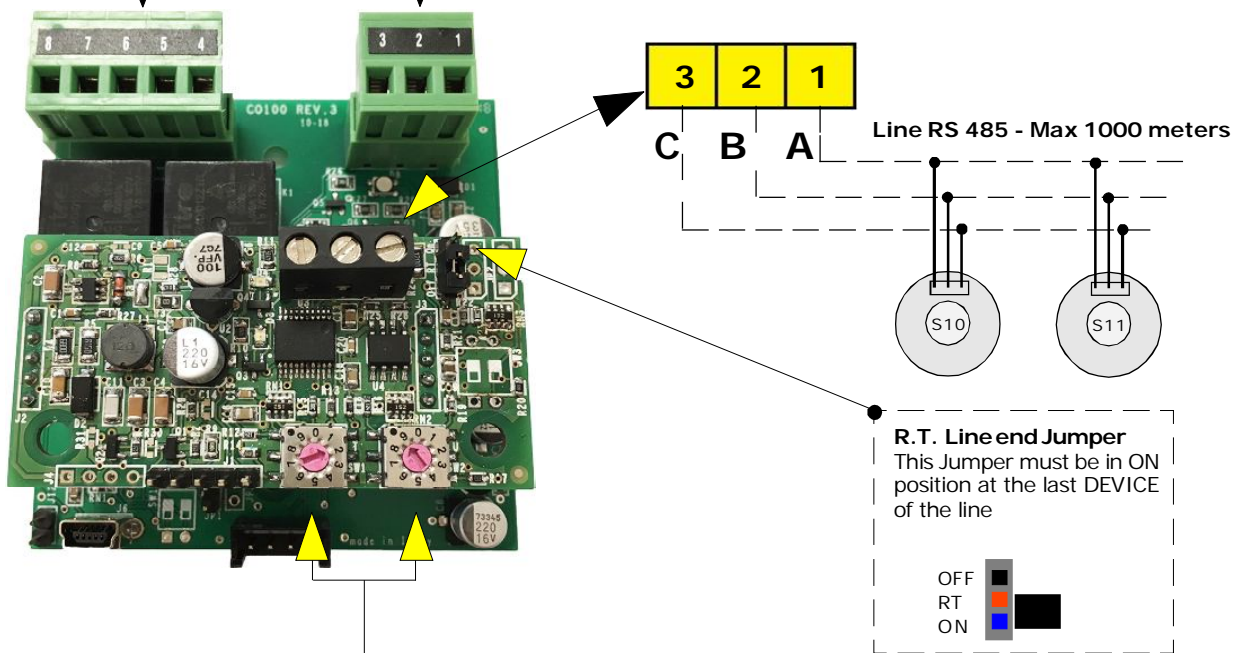
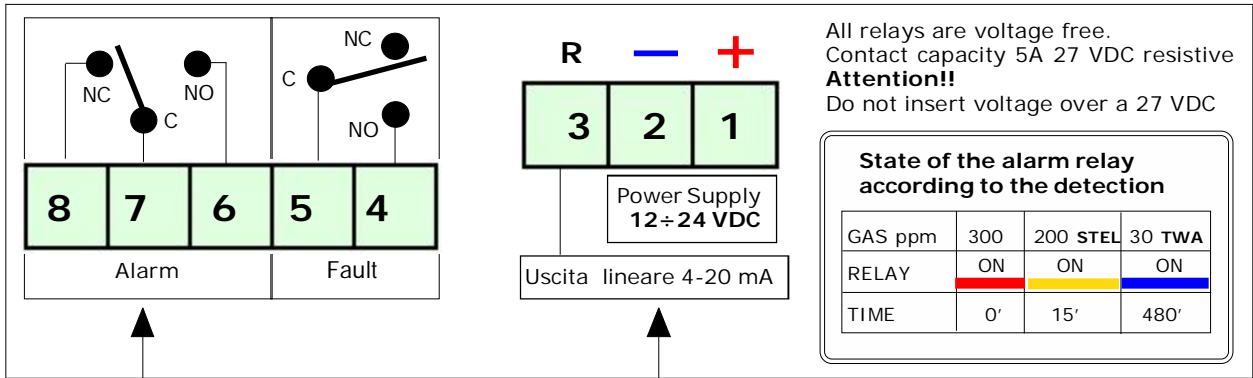
Maximum amount allowed in 15 minutes

**STEL CO = 200 ppm in alarm after 15 minutes**

Electrical connections for **CO165** Version

**WARNING**

Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to Regulations in force, keeping in mind that the signal cables should be laid separate from the power cables



Each connected Probe must have a unique address so as not to create conflicts in the transmission of data. To enter the addresses of each probe or board you must act through the rotary switches that each device has, up to a **maximum of 99 addresses.**

**Tens**

**Units**

**Example of selecting an address**  
Turn the tens switch until you find the desired Ten, **example: 1**  
Turn the Unit Switch until you find the desired unit, for **example: 6**  
**By doing so you will get as address "16"**

Remember to insert the end of line closure to the last probe or card

Electrical connections for **CO100/A** version

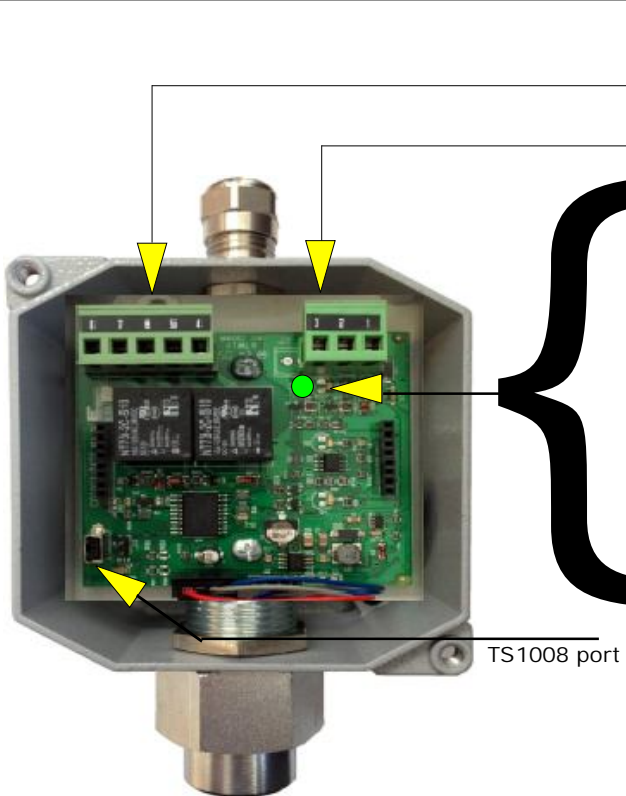
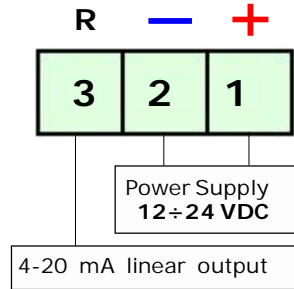
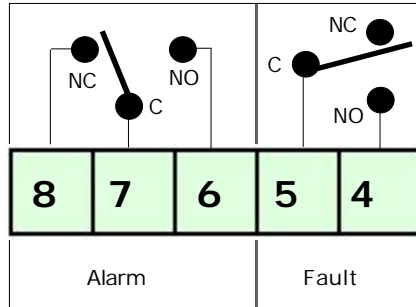
**WARNING**

Before connecting to the mains power, ensure the voltage is correct. Carefully follow the instructions and the connections according to Regulations in force, keeping in mind that the signal cables should be laid separate from the power cables.

All relays are voltage free.  
Contact capacity 5A 27 VDC resistive  
**Attention!!**  
Do not insert voltage over a 27 VDC

**State of the alarm relay according to the detection**

GAS ppm	300	200STEL	30 TWA
RELAY	ON	ON	ON
TIME	0'	15'	480'



**LED OPERATION**

The integrated LED on the probe has four functions:

- 1) **Green Led.** Work smoothly; While waiting, the LED flashes
- 2) **Led Cyan.** TWA Alarm Status After eight hours
- 3) **Magenta LEDs.** STEL Alarm Status After 15 minutes
- 4) **Red Led.** Alarm status; The lighting frequency changes according to the percentage of gas monitored.
- 3) **Yellow Led.** The probe detects an anomaly, FAULT

Maintenance and gas sensor replacement

Before performing this operation disconnect the power to the probe



Probe with sensor to be replaced



Probe with sensor removed



Sensor



Probe with sensor remounted

**Test after replacing the sensor.**

Reconnect the power, the probe starts blinking to the waiting time (Warm-up). After waiting you can proceed to test the functioning inputting the sample gas.

**WARNING !!** From this moment on for all the duration of 24 hours of self-calibration, the probe must stay in clean air without loss of GAS.

**Troubleshooting** before calling a technician

**Attention!!**

The regulations described in this paragraph must be performed by authorized and specialized technicians. They are susceptible to compromise the safety of the survey.



**If the device does not start up.**

Check that the **12/24 VDC** power is present, and that positive and negative polarity has not been inverted.

**If the Fault LED lights up.**

If the fault signal reaches the control unit connected to the probe.

Check that the cables are connected according to the drawing, and that the wire isolation sheath has not been pinched. Check the voltage at the terminals 1-2. It must be higher than 11VDC and lesser than 25VDC.

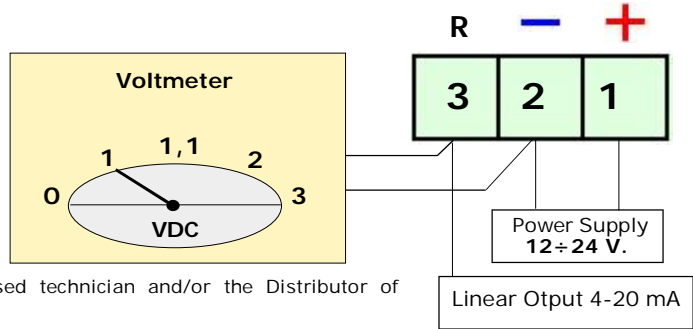
**Check** the voltage at the terminals 2-3. It must be from a minimum of 0.8 VDC to a maximum of 1.1 VDC.

**WARNING.**

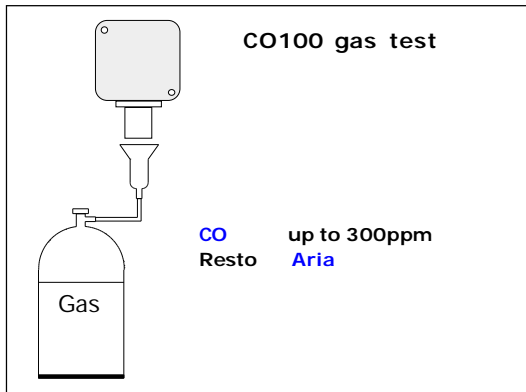
These measurements should be performed in clean air.

Moreover, this test must be performed only with the probe connected to a control unit, or with a 220 Ohm resistance installed between terminal 2 and terminal 3.

If other problems arise, a specialised and/or authorised technician and/or the Distributor of **BEINAT S.r.l.** should be contacted directly.



**Gas Test**



The installation of the **CO100** sensor, its ordinary and extraordinary maintenance and the decommissioning at the end of the operating period guaranteed by the manufacturer must be performed by authorized or specialized personnel.

The general inspection test must be performed by emitting gas from a pre-calibrated can within the indicated percentages.

This test is recommended to be performed at least once a year.

**WARNING! Actions to be taken in case of alarm**

- 1) Put out all free flames.
- 2) Close the main gas tap or the LPG cylinder tap.
- 3) Do not turn any lights on or off; do not turn on any electrical device or appliance.
- 4) Open windows and doors in order to increase ventilation.



If the alarm stops, its cause must be found and the relevant consequent measures taken.

If the alarm continues and the cause of gas presence cannot be found or removed, abandon the building and call the emergency services when outside (fire department, distributors, etc.)

**Warning !!**

If you have the following symptoms: vomiting, sleepiness, or else, go to the closest first aid station and inform the operators that you could have been poisoned by **Carbon Monoxide**.



Symptoms of Carbon Monoxide "CO" poisoning	
<b>ppm</b>	
150	HEADACHE within 2 hours
250	HEADACHE within 3 hours
450	STRONG HEADACHE
800	CONVULSIONS within 30 minutes
1500	DEATH within 2 hours
5000	DEATH within 20 minutes

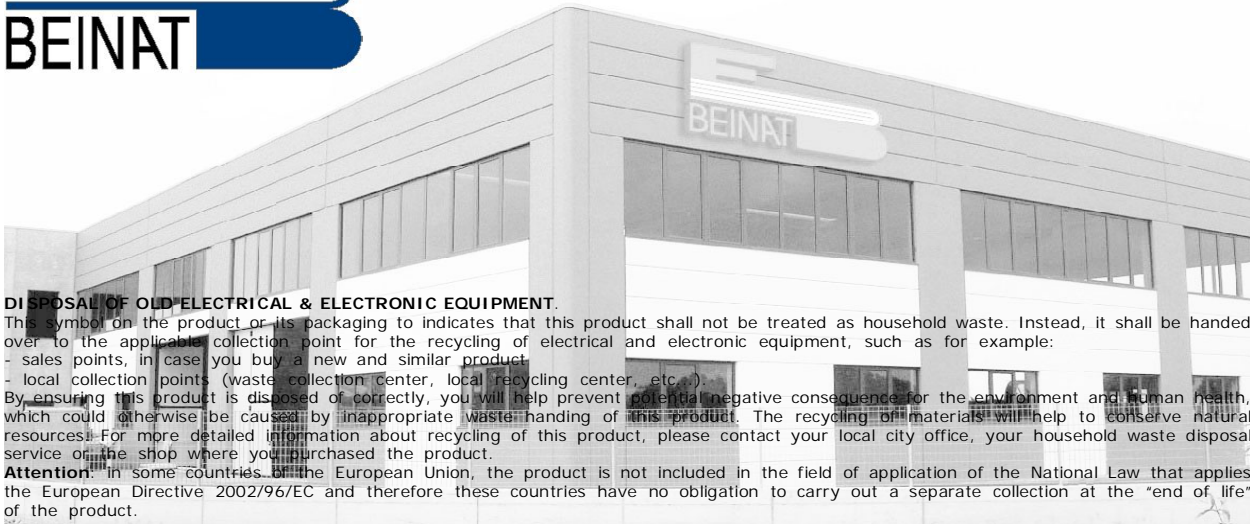
**INSURANCE.** This device is insured by the SOCIETÀ REALE MUTUA for the PRODUCT'S GENERAL LIABILITY up to a maximum of 1,500,000.00 EURO against damages caused by the device in case of failures in functioning.

**WARRANTY.** The warranty term is 3 years from manufacturing date, in agreement with the following conditions. The components acknowledged as faulty will be replaced free of charge, excluding the replacement of plastic or aluminium cases, bags, packing, batteries and technical reports.

The device must arrive free of shipment charges to **BEINAT S.r.l.**

Defects caused by unauthorized personnel tampering, incorrect installation and negligence resulting from phenomena outside normal functioning shall be excluded from the warranty.

**BEINAT S.r.l.** is not liable for possible damage, direct or indirect, to people, animals, or things; from product faults and from its enforced suspension of use.



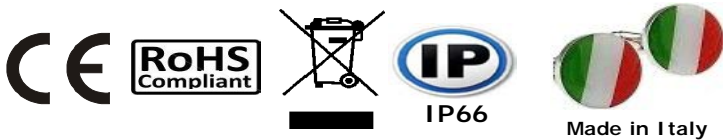
**DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.**

This symbol on the product or its packaging indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment, such as for example:

- sales points, in case you buy a new and similar product;
- local collection points (waste collection center, local recycling center, etc.).

By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

**Attention:** in some countries of the European Union, the product is not included in the field of application of the National Law that applies the European Directive 2002/96/EC and therefore these countries have no obligation to carry out a separate collection at the "end of life" of the product.



**Sensor CO100/A** *Lo styling è della b & b design*

Stamp and signature of the dealer

Purchase date: .....

Serial Number : .....

The Beinat S.r.l. following the targhet to improve its products, reserves the right to modify the technical features, aesthetic and functional any time without prior notice.

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