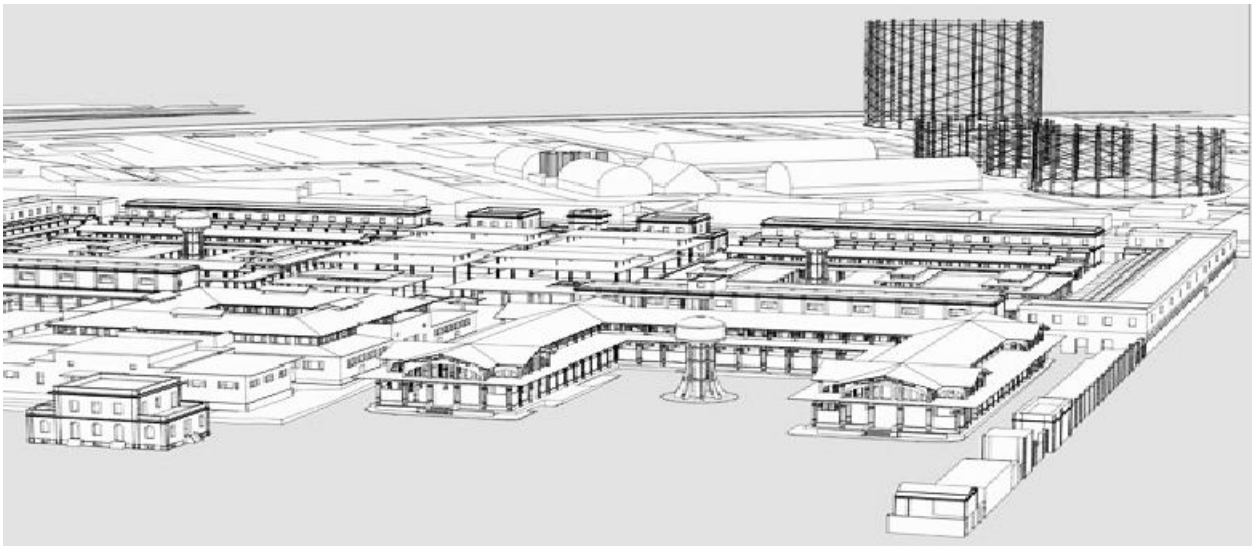
BEINAT GAS SOLUTIONS

Belonging to ANIE CONFINDUSTRIA

Control Unit 1 Conventional sensor BX150

Rev. 4



Through the connection of **1** remote sensor, the **BX150** control unit has been designed and built according to European regulations to flexibly detect the presence of ***toxic and/or explosive gas***.
A microprocessor is used to create a complete surveillance and control system with maximum flexibility.
Thanks to this and its other features, the **BX150** is suitable for civil and industrial applications.

The **BX150** control unit has two danger levels:
1st LEVEL, 1st Pre-Alarm. This is set at 13 % of L.E.L. for all probes.
2nd LEVEL, Main Alarm. This is set at 20% of L.E.L.

Other technical features make this control unit extremely versatile and reliable; for example, by using a series of micro-switches it is possible to:
Enable or disable the probe when not installed or when it's faulty;
Select the type of gas to be detected (toxic or explosive);
Choose the relay functioning mode (pulsed or continuous);
Choose the main alarm relay shut-down time.

A TEST button checks the efficiency of both the unit and the connected probe to ensure total control of the **BX150**.
Thanks to the Omega-type format both small and large systems can be built by using the modularity of the DIN rail in the previously set electrical panels.
In addition to the alarm signal light, it is fitted with an internal buzzer.

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.

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

INSTALL IN SAFE AREA, NO ATEX

CONFORMITY
IEC
EN 50194
EN 45544-1-3
EN 50270
EN 61010-1
Compliant EN 60079-29-1
Installation EN 60079-29-2
Reports issued by TUV Italia

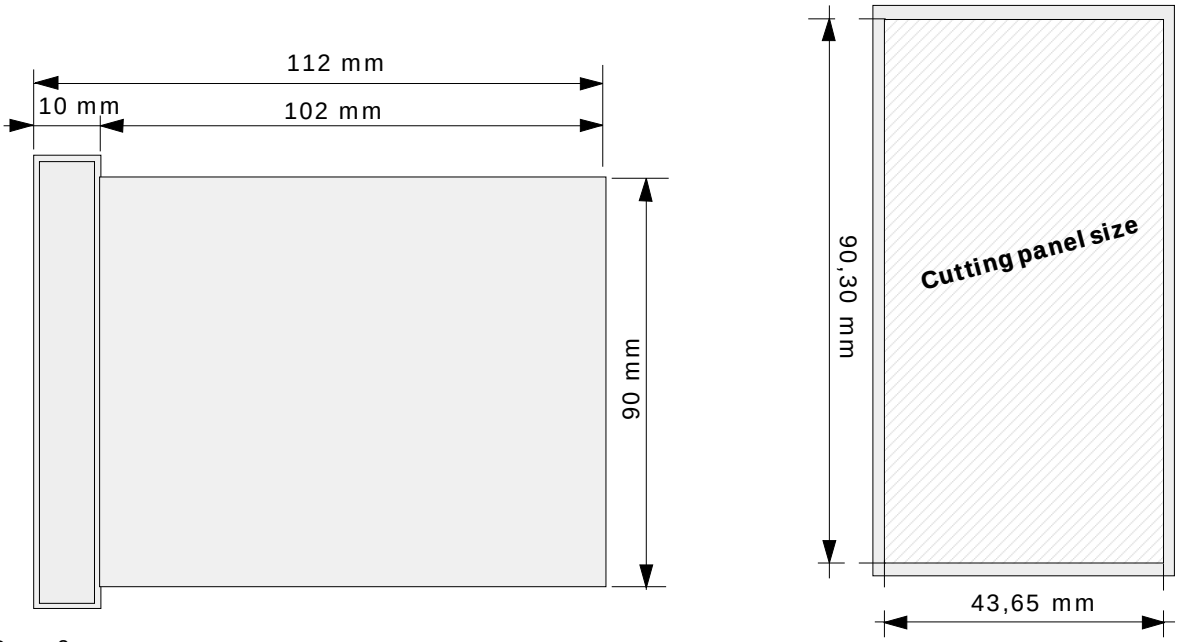
Electric connections also available on
Channel: Beinat gas solutions

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.
IMPORTANT: Do not test the device using the gas tap as this does not necessarily provide sufficient concentration to activate the main alarm.
TERMS and EXPECTATIONS: The installation of the control unit, 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.**
In order to achieve long and satisfactory use of your digital control unit, use it by respecting the following precautions.
Do not wet.
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

Mains Power ..... **230VAC** 50/60Hz ±10%
Secondary Power Through Battery **max 2.2 Ah** .....**12,7 V** ⎓ ±10%
Battery Charger **max 2.2 Ah** ..... By means of a microprocessor
Power Demand ..... 4 W max @ **230V**
Power Demand ..... 3 W max @ **12 V** ⎓
Relay Contact Range 10A 250V
Pre Alarm ..... Set to 13% of L.E.L. or 200ppm CO
Final Alarm ..... Set to 20% of L.E.L. or 300ppm CO
Sensor's faults detected by Fault Circuit ..... Interruption, short circuit, or wear
OVER LOAD Check .....1 for each probe and 1 for battery
Micro-switches to include or exclude the probes ..... 2 built in
Max number of probes that can be connected **2** ..... Catalityc, Electrochemical Cell, Semiconductor
Input Signal ..... 4 ÷ 20 mA on 220 ohm
Device Accuracy ..... 1% FS
Control Unit ..... 8-bit microprocessor
Functioning Temperature ..... -10°C ÷ +60°C
Waiting, blinking period ..... 90 seconds
Manual Test ..... Built in
Max. distance between probes and unit..... ..... 100 m
Cable diameter for connecting probes ..... 1 mm²
Connection: **The cable of connection of the probe must not be installed together with the power cables. Otherwise, make sure to use a shielded cable**
Case modular type size DIN EN 50092 ..... 112x96x44
Degree of Protection IP44



Main Compatible Probes

Probe	Sensor	Degree Protec	Suitable for ZONE	GAS Detected	Range Working	OutPut	Calibration	Calibration Automatic	Relay
SG500	Catalytic	IP30	*Hausold*	CH4-LPG	0÷100% LEL	4÷20 mA	±5 %	NO	NO
SG544	Catalytic	IP44	*Tertiary*	CH4-LPG	0÷100% LEL	4÷20 mA	±5 %	NO	NO
SGM595	Catalytic	IP55	*Tertiary*	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	Yes	NO
SGM595/A	Catalytic	IP66	*Zone 2*	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	Yes	NO
SGM533	Catalytic	IP55	*Tertiary*	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
SG800	Catalytic	IP66	*Zone 2*	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
HCF100	SemiConduct	IP55	*Tertiary*	Freon	0÷300% ppm	4÷20 mA	±5 %	NO	Yes
SG895	Catalytic	**ATEX**	***Zone 1***	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	Yes	NO
SG580	Catalytic	IP66	*Zone 2*	SeePricelist	0÷100% LEL	4÷20 mA	±5 %	NO	NO
SGF100	Catalytic	IP64	*Zone 2*	Methane	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
SGF102	Catalytic	IP64	*Zone 2*	LPG	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
SGF104	Optical Fluo	IP64	*Zone 2*	Oxigen	In %	4÷20 mA	±5 %	Yes	Yes
SGF106	SemiConduct	IP64	*Zone 2*	Freon	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
SGF108	Electrochimical	IP64	*Zone 2*	H2S	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
SGF110	Electrochimical	IP64	*Zone 2*	CO	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
SGF112	Catalytic	IP64	*Zone 2*	Hydrogen	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
CO100r	Electrochimical	IP55	*Tertiary*	CO	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
CO100Ar	Electrochimical	IP66	*Zone 2*	CO	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
SG800duct	Catalytic	IP66	*Zone 2*	CH4-LPG	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
CO200duct	Electrochimical	IP66	*Zone 2*	CO	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes

Legend

Households: Family Housing. Boiler rooms max 70 kW-h
Tertiary Rooms: Large Boiler Rooms, Offices, Material Deposits, Industrial Kitchens, Large Building Complexes, Factories.
Zone 2- Mixed IP65 ATEX: Locations with a high probability of leekage, High Risk Areas, Rooms for which the applicable Standards are in force.
Area 1- Hazard ATEX: High Risk Areas, Rooms for which Regulations are in force, Tank Deposits, Control Valves or Joint Railings

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.
- The disabling of the detector must be carried out by qualified personnel.

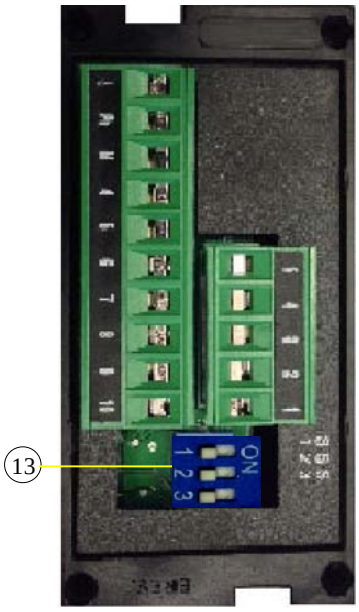
WARNING! Actions to be taken in case of alarm

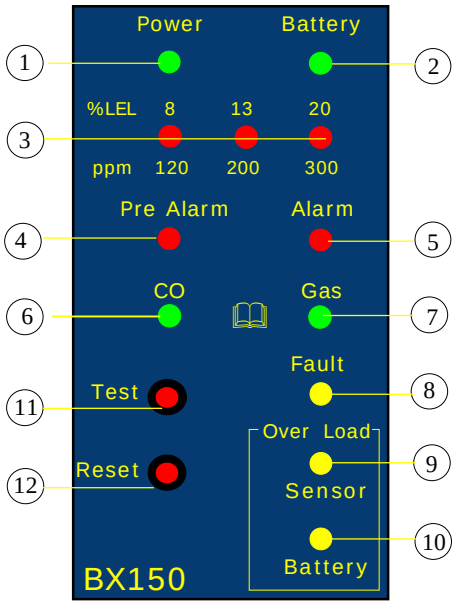
Gas
1) Put out all free flames.
2) Close the main gas tap or the LPG cylinder tap.
3) Do not turn any lights on or off; do not turn on any electrical device or appliance.
4) Open windows and doors in order to increase ventilation.
If the alarm stops, its cause must be found and the relevant consequent 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.)
IMPORTANT: The operation test should not be carried out with the gas tap as this does not guarantee a sufficient concentration to activate the general alarm.

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**, **or by an excess or deficiency of oxygen**

Installation of the detector does not exonerate. From the observance of all rules regarding the characteristics, installation and use of gas appliances. The ventilation of the premises and the discharge of the combustion products prescribed by UNI norms as from ART. 3 LAW 1083/71 and the relevant provisions of law.

Components and commands





1) MAINS LED. It lights up when electrical power is connected. Initially, this LED blinks for about 1 minute and a half waiting for the check.
When this LED is blinking the BX150 is not capable of detecting gas.
2) BATTERY LED. This LED lights up when no mains is present and the BX150 is powered by the battery. When this LED is blinking the battery is flat.

3) GAS CONCENTRATION SCALE LEDs. These LEDs light up in sequence according to the environment gas concentration level increase.
When the first LED turns on, the gas concentration level has reached **8% of LEL.**
When the second LED turns on, the gas concentration level has reached **13% of LEL** and the **1st THRESHOLD** relay contact is closed.
When the third LED turns on, the gas concentration level has reached **20% of LEL** and the **MAIN ALARM** relay contact is closed.
The 20% LED stays on to keep the alarm zone in the **MEMORY.**

4) PRE ALARM LED. This LED will light up when the gas concentration level has reached the preset 13% of LEL and the 1st THRESHOLD relay contact is closed.
5) MAIN ALARM LED. This LED will light up when the gas concentration level has reached 20% of LEL and the MAIN ALARM relay contact is closed.

6) TOXIC GAS selection LED. This LED lights up when the internal micro-switch is switched to "CO".
7) EXPLOSIVE GAS selection LED. This LED lights up when the internal micro-switch is switched to "GAS".
8) FAULT LED. This LED will light up when the connected probe is faulty, if there is an interruption in the cable connection, or if an error was made during wiring.

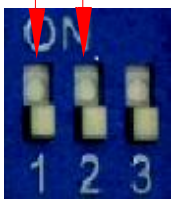
9) OVER LOAD LED (probe overload): If this LED turns on, it means there is a short circuit or high current absorption in the probes, and the corresponding connection cables. Please check the battery and the connection cables.
10) OVER LOAD BATTERY LED (battery overload): If this LED turns on, it means the battery is not connected properly, or it has an anomalous voltage absorption. Please check the battery and the connection cables

11) TEST BUTTON. Pressing and holding down this button, you can obtain a gas leakage simulation. This way, all pre-alarm LEDs until the final alarm LED will light up in sequence, switching the correspondent relays.
12) RESET BUTTON. This button is pressed to reset all memories.
13) Switches. These switches are used to select the type of gas toxic or explosive, to select the relay functioning mode and to select the the positive safety.

Description of Micro-switches

Positive Safety- Working mode of the relay and the main alarm

Micro-switches **1** Positive safety
Micro-switches **2** Working mode of the main alarm relay



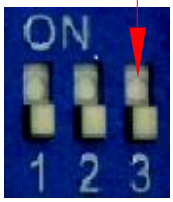
Switch 1 – Selection of the positive safety
In the **ON** position, the positive safety function is enabled.
The relay is energized after performing the step of waiting and switches when the BX150 is main alarm
In the **OFF** position, the positive safety function is disabled.
The relay is energized only when the BX150 goes into the mainl alarm

Switch 2 - Working mode of the main alarm relay.
In the **ON** (continuous) position, the relay remains closed until the **N** button is pressed.
In the **OFF** (impulse) position, the relay remains closed for 20 seconds, and then disenergizes afterwards.

Selecting the type of gas monitored for each sensor

The switch **number 3** is used to select reading the type of gas that the probe is connected to detect.
The LEL reading is obtained by shifting the switch to ON. **Explosive gas.**
The ppm reading is obtained by shifting the switch to OFF. **Toxic gas.**

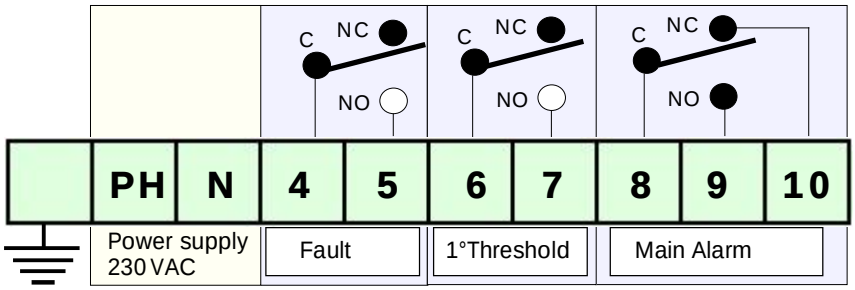
Micro-switch **(3)** to select the type of gas monitored.
*Positione **ON** reading in LEL **- Explosive gas***
*In posizione **OFF** lettura in ppm **- Toxic gas***



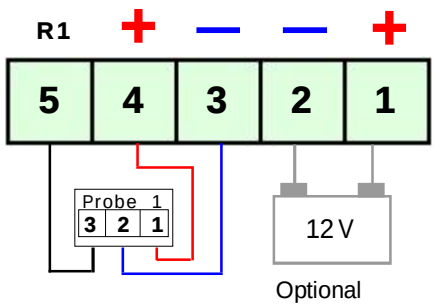
Electrical Connections

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 **signal cables should be separated from power cables.**
An automatic cut-off switch (appropriately identified as device sectioning of the detector) should be incorporated in the electrical system, adequately located and easily accessible.

Diagram of the terminal block relay

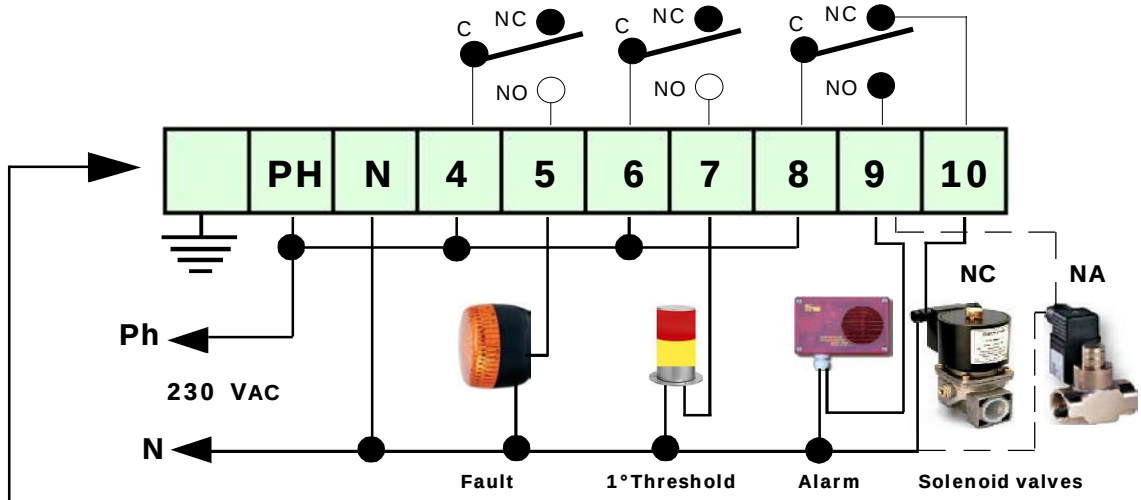


Connection of probes and eventual battery

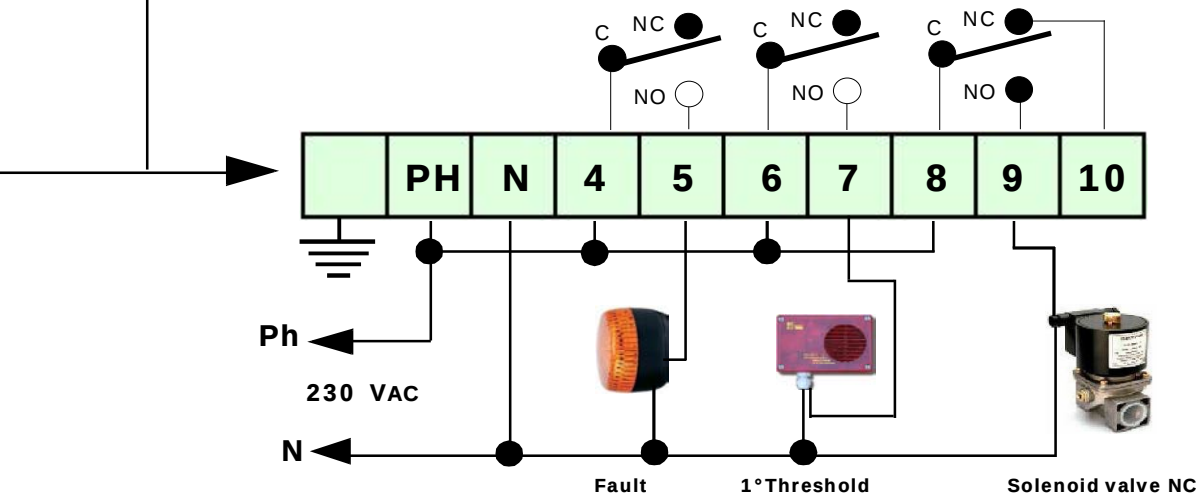


Connection examples

Connections of a solenoid valve Normally Closed without Positive Safety

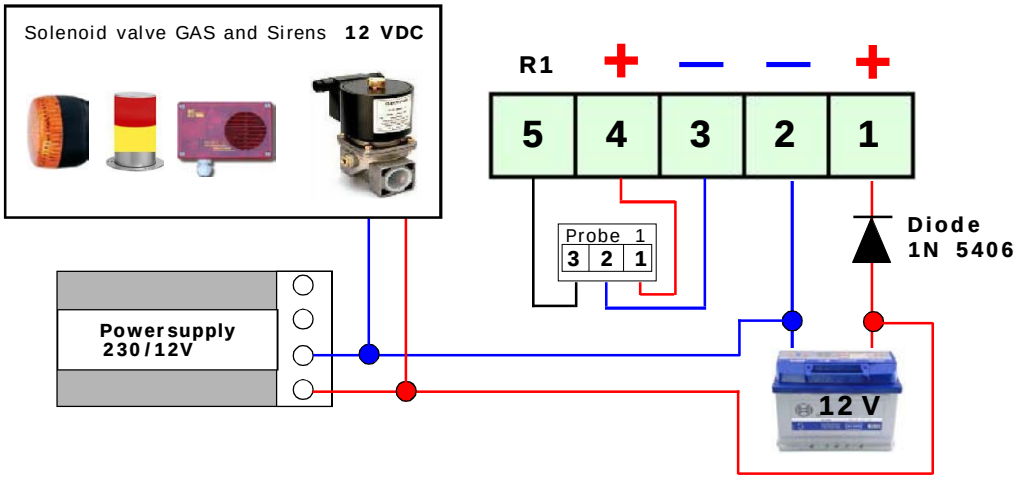


Connections of one solenoid valve Normally Closed with Positive Safety



If a 12Vdc solenoid valve, which does not work well, is connected to the BX150.
Direct connection of 12VDC solenoid valves or sirens to the **BX150** is not permitted.
An external power unit must always be used. The BX150 M gives a **max** current **of 50mA**.

Control unit power supply and connection of one solenoid valve with sirens to 12 VDC trough an alternative source and recharge battery.



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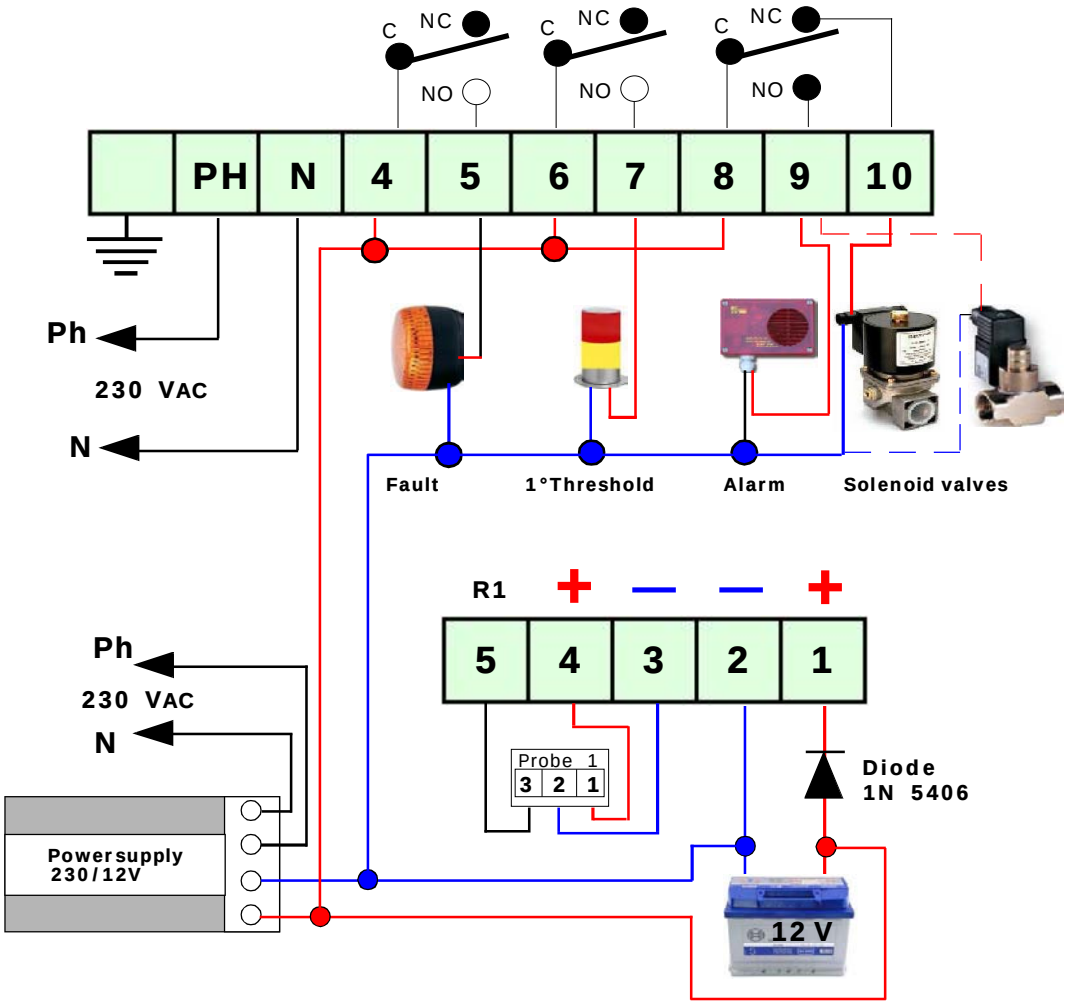
Connections to Positive Safety disabled **and an external power supply for valve control and siren 12 V DC**



Installation and positioning of the Control Unit

The **BX150** control unit belongs to group II and must be installed in a safe area;
Outside the ATEX zone, however, not in boiler rooms or engine room.
The control unit must be accessible and visible to the user.

The **BX150** is designed so that it can be mounted into electrical panels.
The **Control Unit** complete cabinet is an equipment suitable for wall mounting and is powered by **110/240 VAC** with **IP44** protection

When installing, it is good to use the normal care that an electronic equipment requires:
- Install the equipment away from excessive heat sources.
- Avoid liquids coming into contact with the control unit, remembering that its external structure has IP20 degree of protection **if installed on the Boxed version (cabinet) supplied to the source is ....**

The sensor must be selected with an IP degree depending on the area to be controlled (Kitchens, Boiler Rooms, Laboratory, etc.) by selecting one of the probes from Beinat from IP30 to ATEX. see page 3

Position of the detection sensor

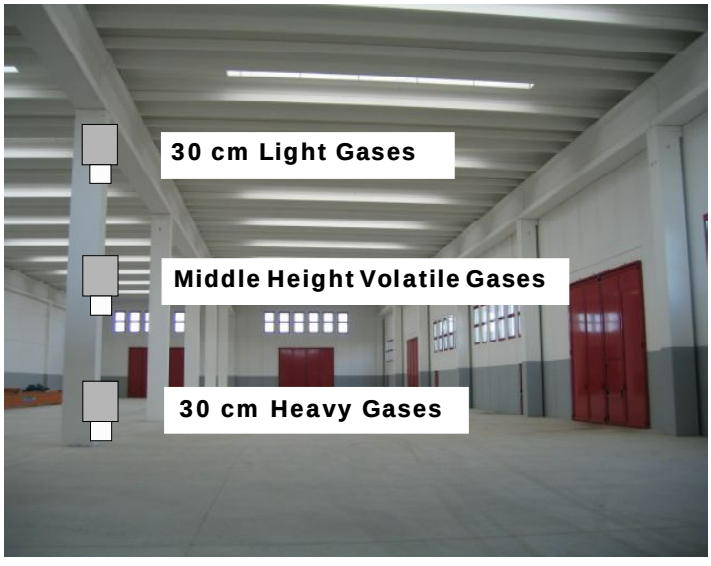
You can connect many types of remote probes to this unit. Therefore, they should be positioned at different heights depending on the type of gas to be detected.

These heights are:
- **30 cm** from the lowest point of the floor in order to detect: ***Heavy gases (L.P.G. etc.)***
- **30 cm** from the highest point of the ceiling in order to detect: ***light gases (Methane, etc.)***
- **160 cm** from the lowest point of the floor in order to detect: ***volatile gases (CO, etc.)***

It is important to note that the remote probes should be installed according to the following restrictions:

1) The sensor hould not be placed near the appliances to be controlled (boilers, burners, industrial kitchens, etc.) but on the opposite side.
2) The sensor should not be affected by smoke, vapour, and moving air, as they could distort their measurement.
3) The sensor should not be placed near sources of heat, ventilators or fans.
It should be noted that the internal GAS sensors of the probe are perishable components with a variable average life span from 5 to 6 years (you can request the relative table). Therefore, after this period of time has elapsed it is advisable to replace them.
4) The control of operation and maintenance and / or extraordinary **must be carried** at least once a year. good to keep
When turning on leds fault is necessary make the replacement of the probe by a specialized technician.

PROBE INSTALLATION INFORMATION



Turning on

1) Apply power using the proper switch. This switch should be fitted with protection fuses.
2) You will notice that some LEDs will light up in turn for about 20 seconds, so as to test the LEDs.
3) The COUNTDOWN begins that lasts about 90 seconds (warm up) afer this the unit is ready to detect.
4) By pressing the MANUAL TEST button, you get the simulation of a gas leak and the unit carries out the following:

a) The Pre-alarm LED lights up calibrated to 13% LEL or 200 ppm (referred to CO) switching the relay the buzzer will issue a low frequency sound

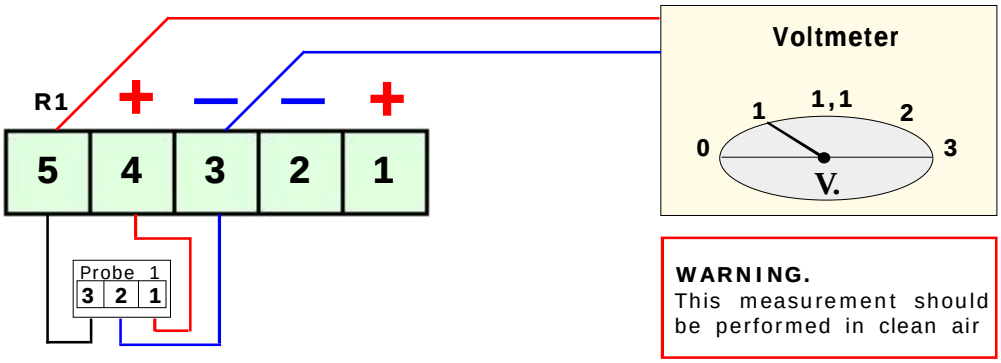
b) The Main alarm LED lights up calibrated to 20% LEL or 300 ppm (referred to CO) switching the relay. The Main alarm LED starts flashing; the buzzer will issue a hight frequency sound

5) To complete the general test, issue gas from a pre-calibrated aerosol

6) If you want to simulate a zone **fault**, you only need to disconnect the return cable of the corresponding probe.
-lights up the flashing LED and FAULT led of the MAIN ALARM led;
-the buzzer emits a continuous sound;
-the fault relay and the main alarm relay will switch.
Reconnect the return cable and press the RESET button to restore the functioning of the control unit.

Troubleshooting and solutions before calling a technician

If the device does not start up.
Check that the 230/240V mains power is correctly connected. If powered by the battery, check that the 12Vdc power is correctly connected.
If the Fault LED lights up.
Check that the connecting cables from the **BX150** to the probes are intact, that the probes are properly powered, and that the signal cable is correctly connected.



If the Over Load Probe LED lights up.
Check: that the power polarity has not been inverted, that no short-circuit is present, that the probes were not damaged during installation, that no excessive current absorption is present.
If the Over Load Battery LED lights up.
Check that the connection cables are not short-circuited, that the polarity has not been inverted, or that the battery is not damaged
If the Control Unit is repeatedly issuing an alarm.
Check that there are no gas leaks. If the alarm signal and the FAULT indicator light turn on together, check the probes.
If the Control Unit is issuing an alarm and does not shut off the devices connected to it.
Check that the wiring is correct and that the jumper that carries power to the relay has been set properly. **All relays must be free from electrical power**.
Check the drawing of the connections.
If a 12Vdc solenoid valve, which does not work well, is connected to the BX150.
Direct connection of 12Vdc solenoid valves or sirens to the **BX150** is not permitted. An external power unit must always be used. The **BX150** gives a **max** current **of 50mA**.

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


NOTES

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.

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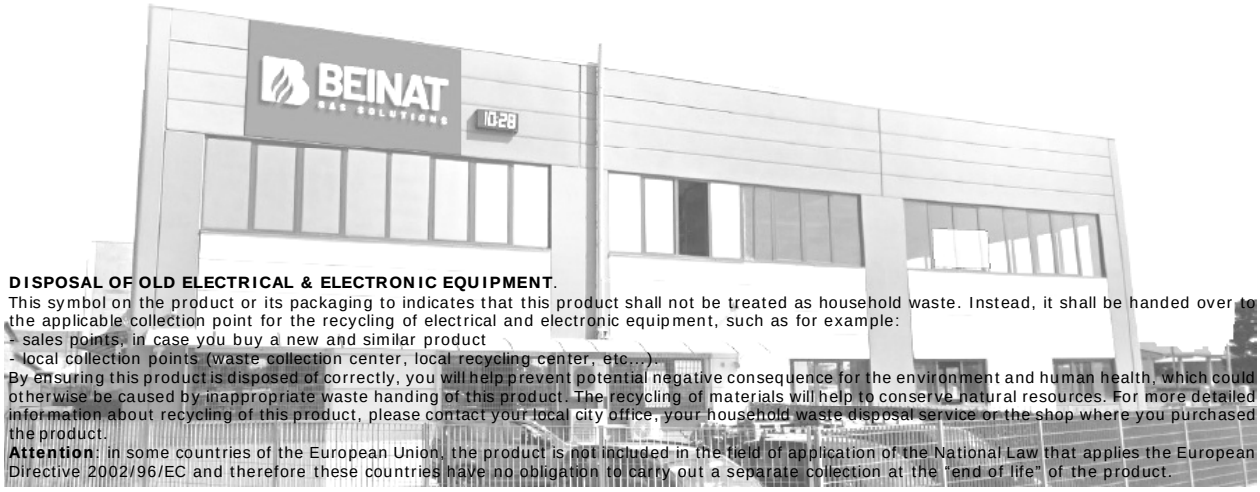

DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.
This symbol on the product or its packaging to indicates that this product shall not be treated as household waste. Instead, it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment, such as 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 consequence for the environment and human health, which could otherwise be caused by inappropriate waste handing 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.

CE RoHS Compliant IP44 Made in Italy

Control unit BX150

Lo styling è della b & b design

Dealer stamp

Purchase date: .....

Serial number: .....

Beinat S.r.l. following the purpose of improving its products, it reserves the right to modify the technical, aesthetic and functional characteristics at any time and without giving any notice.

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