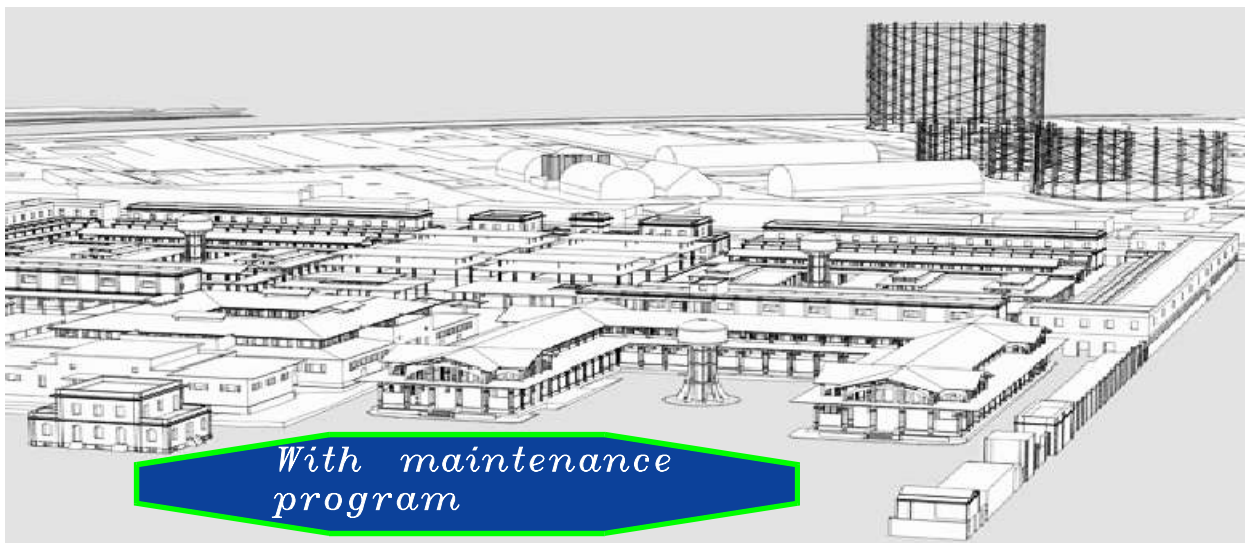


## Control Unit from 1 to 8 Conventional sensors **BX880-AX** Rev.1



Through the connection of **8** remote sensors, the **BX880-AX** control unit has been designed and built according to European regulations to detect the presence of **toxic and/or explosive gas** in a flexible way. A microprocessor is used to create a complete surveillance and control system with maximum flexibility. Thanks to this and its other features, the **BX880-AX** is suitable for civil and industrial applications.

The **BX880-AX** control unit has two danger levels:

**1<sup>st</sup> LEVEL, 1<sup>st</sup> Pre-Alarm.** It's set at **13 % L.E.L./200 ppm.**

**2<sup>nd</sup> LEVEL, Main Alarm.** It's set at **20% L.E.L./300 ppm.**

Other technical features make this control unit extremely versatile and reliable; for example, by using a series of micro-switches it is possible to:

**Select** or disable a sensor when not installed or faulty;

**Select** the gas type to be detected (toxic or explosive);

**Choose** the relay functioning mode (pulsed or continuous);

**Choose** deadband exclusion mode

A **TEST** button checks the efficiency of both the unit and connected probe to ensure total control of the **BX880-AX**

Thanks to the Omega-type format, small and large systems can be built by exploiting 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**

### CERTIFIED



**II (2) G EN 60079-29-1**

**FTZÚ 23 ATEX 0078X**

**EN 50270:2015 - EN 50271:2018**

**EN 60079-29-1:2016+A1:2022+A11:2022**



## 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 unit 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 allow it to become wet.**

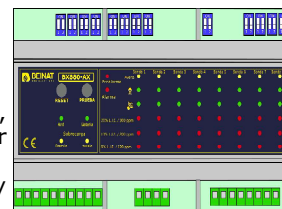
This unit is not waterproof, if immersed in water or exposed to humidity high levels, can be seriously damaged

**Do not drop it.**

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

**Cleaning**

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



## Technical Specifications

Mains Power ..... **110/230VAC** 50/60Hz  $\pm 10\%$

Secondary Power Through Battery **max 1.2 Ah (Optional)** not provided.....**12 V**  $\pm 10\%$

Battery Charger **max 1.2 Ah** ..... controlled by the microprocessor

**The battery does not need maintenance**

Power Demand ..... 18 W max @ **230V**

Power Demand ..... 17W max @ **12 VDC**

Relay Contact Range .....10A 250V

**Detection**

1st Pre Alarm ..... Set to 8% of L.E.L. or 120ppm CO

2nd Pre Alarm relay control..... Set to 13% of L.E.L. or 200ppm CO

Final Alarm relay control..... Set to 20% of L.E.L. or 300ppm CO

The LEL is calculated for Gas Methane ..... 5000 ppm = 5% V/V

Data refresh ..... 2 ms

Device Accuracy ..... 1% FS

Sensor's faults detected by Fault Circuit ..... Interruption, short circuit, or wear

OVER LOAD Check .....1 for each sensor

OVER LOAD Check ..... 1 for battery

Micro-switches to include or exclude the sensors ..... 8 built in

Max number of connectable sensor **8** ..... Catalytic, Pellistor, Electrochemical Cell, Semiconductor

Input Signal ..... 4 ÷ 20 mA on 220 ohm

Functioning Temperature .....  $-10^{\circ}\text{C} \div +60^{\circ}\text{C}$

Waiting, blinking time ..... 90 seconds

Manual Test ..... Built in

Max. distance between sensors and unit..... 100 m

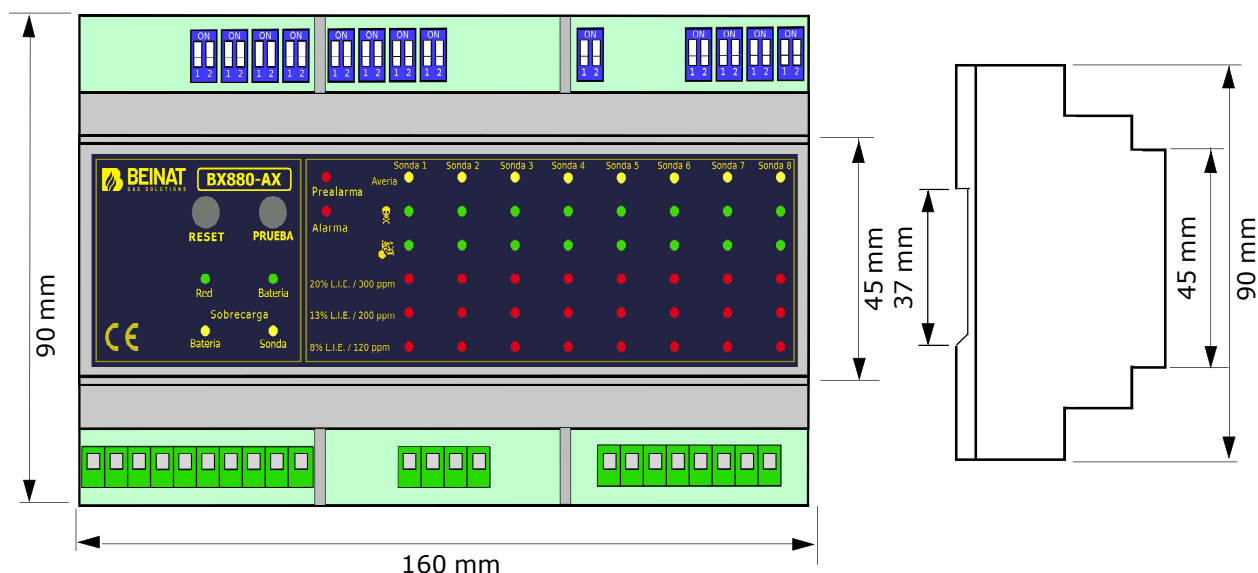
Max. distance between battery and unit..... 0,5 m

Cable diameter to connect the sensors ..... 1 mm<sup>2</sup>

Connection: **The cable of connection of the sensor must not be installed together with the power cables. Otherwise, make sure to use a shielded cable**

Omega-type size DIN EN 50092 9 modules ..... 160\*90\*58

Degree of Protection ..... IP20



## Main Compatible Sensors

Probe	Sensor	Degree Protec.	Suitable for Zone	Gas Detected	Range Working	Output	Precis.	Calibration Automatic	Relay
<b>SG500</b>	Catalytic	IP 30	Domestic Use	CH 4 - LPG	0÷100% LEL	4÷20 mA	±5 %	NO	N O
<b>SG544</b>	Catalytic	IP 44	Tertiary	CH 4 - LPG	0÷100% LEL	4÷20 mA	±5 %	NO	N O
<b>SGM595</b>	Catalytic	IP 55	Tertiary	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	N O
<b>SGM595/A</b>	Catalytic	IP 66	Zone 2	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	N O
<b>SGM533</b>	Catalytic	IP 55	Tertiary	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>SG800</b>	Catalytic	IP 66	Zone 2	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>HCF100</b>	SemiCondu	IP 55	Tertiary	FREON	0÷300% ppm	4÷20 mA	±5 %	NO	Yes
<b>SG895</b>	<b>Pellistor</b>	<b>ATEX</b>	<b>Zone 1</b>	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	N O
<b>SG580</b>	Catalytic	IP 66	Zone 2	See catalogue	0÷100% LEL	4÷20 mA	±5 %	Yes	N O
<b>SGF100</b>	Catalytic	IP 64	Zone 2	Methane	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>SGF102</b>	Catalytic	IP 64	Zone 2	LPG	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>SGF106</b>	SemiCondu	IP 64	Zone 2	FREON	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
<b>SGF108</b>	Elettrochimica	IP 64	Zone 2	H 2 S	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
<b>SGF110</b>	Electrochemical	IP 64	Zone 2	C O	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
<b>SGF112</b>	Catalytic	IP 64	Zone 2	Hydrogen	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>CO100r</b>	Electrochemical	IP 55	Tertiary	C O	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
<b>CO100Ar</b>	Electrochemical	IP 66	Zone 2	C O	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes
<b>SG800<sup>duct</sup></b>	Catalytic	IP 66	Zone 2	CH 4 LPG	0÷100% LEL	4÷20 mA	±5 %	Yes	Yes
<b>CO200<sup>duct</sup></b>	Electrochemical	IP 66	Zone 2	C O	0÷300% ppm	4÷20 mA	±5 %	Yes	Yes

**Application in:**

**Domestic:** family accommodation. Local boilers up to 70 kW-h

**Tertiary Areas:** Large Rooms Boilers, Workshops, Material Deposits, Industrial Kitchens, Large Buildings, Buildings.

**Zone 2** - Mixed IP66 ATEX: High probability of escape, high risk locations, premises for which applicable regulations apply.

**Zone 1** - Hazardous Area, High Risk Hazards, Rooms for Which Regulations, Tanks, Control Valves are in force.

## 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 disposal of the unit must be carried out by qualified personnel.

**N.B.**

We recommend to check and certify your gas safety system with our tester **TS1008**.



## 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.)

**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



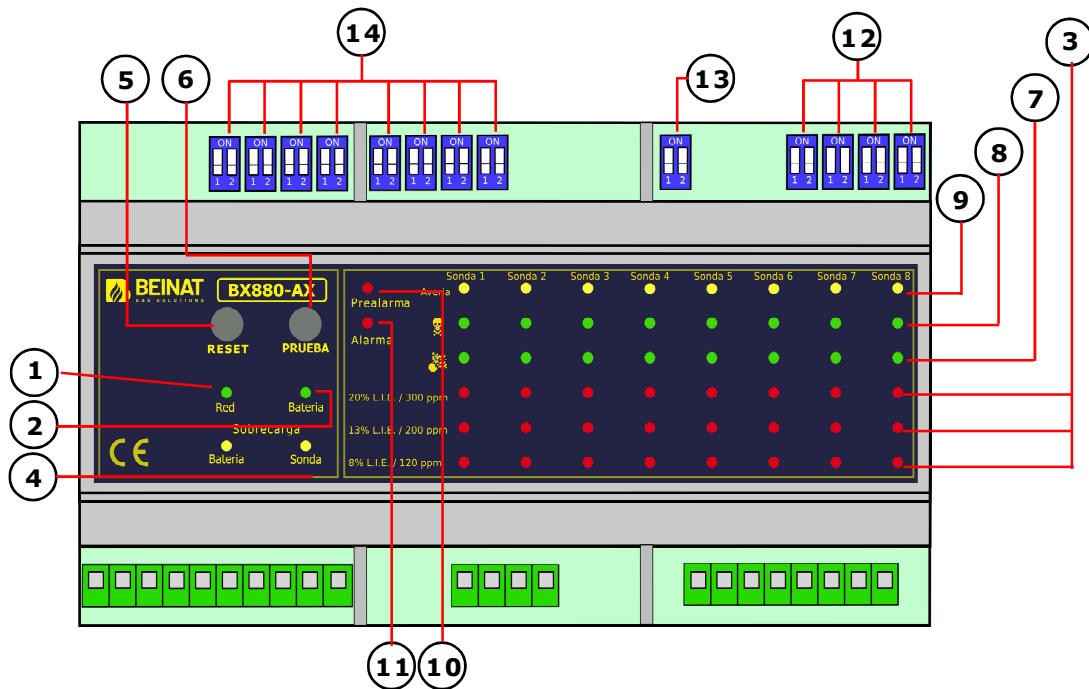
# Control Unit from 1 to 8 Conventional sensors BX880-AX

## Instruction manual

### {a} OVERVIEW

- Power supply 110/240 VAC
- Controls up to 8 remote sensors
- Manages explosive and toxic gases.
- Various possibilities of configuration parameters
- Status indications with LED.
- Output signals provided through 3 driving relays
- wall support 9 DIN modules.
- Conforms to the operating regulations EN60079-29-1

### {b} GENERAL DESCRIPTION



#### 1) POWER LED.

When it is on, the LED flashes for the first 100 seconds, which indicates that the control unit is in the warm up mode. After this phase, the control unit enters detection mode.

When this LED is blinking, the BX880-AX is not able to detect gas.

#### 2) BATTERY LED.

This LED lights up when the BX880-AX is powered by the battery in the absence of mains and flashes when the battery voltage is less than 10.8 V.

#### 3) LED SCALE CONCENTRATION GAS.

These LEDs light up in sequence, based on the increase to the gas dispersed in the environment.

a) When the first led turns on, the gas concentration level has reached the first pre-alarm threshold

b) When the second led turns on, the gas concentration level has reached the second pre-alarm threshold

c) When the third led turns on, the gas concentration level has reached the main alarm threshold

This LED is the "latching" type, it stays on to indicate the alarm presence stored in MEMORY, according to the current operating regulations

#### LED OVERLOAD

4) The control unit is equipped with electronic OVERLOAD protections, to avoid irreparable damage.

#### LED OVERLOAD SENSOR

This LED lights up when there is a short circuit or excessive absorption in the power supply.

#### LED OVERLOAD BATTERY

This LED lights up when there is a short circuit or excessive absorption in the backup battery supply

## 5) RESET BUTTON

A "RESET" button is provided to allow the user to cancel the events that occurred and are contained in the memory by an intentional manual reset.

## 6) TEST BUTTON

Pressing the "TEST" button, it is possible to perform a functional test for the "pre-alarm" relay and the "general alarm" relay, together with the warning lights and the acoustic alarm. Releasing the "TEST" button, it turns off the lights and stops the acoustic alarm.

## 7) EXPLOSIVE GAS selection LED.

Turning on this LED indicates that the input has been configured to detect explosive gases.

**WARNING!** The flashing of the LED can also indicate the presence of under/over range entering input.

## 8) TOXIC GAS selection LED.

Turning on this LED indicates that the input has been set to detect toxic gases.

## 9) FAULT LED.

This LED lights up when a short circuit or open circuit occurs on the signal line.

**WARNING!** The blinking of all "Fault" LEDs indicates the occurrence of software or a power failure.

## 10) PRE-ALARM LED

This LED lights up when the gas concentration level reaches the second pre-alarm threshold (13% LEL for explosive gases, 200 ppm for toxic gases).

This signal is "auto reset" type.

## 11) MAIN ALARM LED

This LED starts to blink when the gas concentration level reaches the main alarm threshold (20% LEL for explosive gases, 300 ppm for toxic gases).

This signal is "latching", according to current performance standards.

## 12) DIP-SWITCH of the deadband suppression of the sensor

Setting these four switches ON or OFF, it is possible to enable or disable the suppression of the signaling of any sub-range in the input signal in the corresponding input.

Instead, over ranges will always be reported.

Both conditions are indicated by the flashing of the "Explosive Gas" LED of the corresponding input. (7)

## 13) DIP-SWITCH OF POSITIVE SECURITY and RELAY MODE

Setting the first switch to ON or OFF, enables or disables the "positive safety" mode.

Setting the second switch to ON or OFF, switches to the main alarm mode CONTINUOUS or PULSE .

## 14) DIP-SWITCH OF SENSOR SELECTION and GAS TYPE SELECTION

Setting the first switch to ON or OFF enables or disables the corresponding input.

Setting the second switch to ON or OFF, switches to detecting gas from the explosive to the toxic.

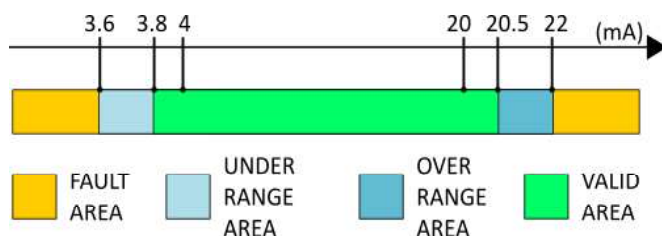
**WARNING! When a sensor is excluded, all memories will be restored.**

The control units, in addition to the interfaces described above, is equipped with 3 output relays:

- **FAULT RELAY:** this "latching" relay switches when there is an error signal from the connected sensor (see image below).

- **PRE-ALARM RELAY:** this "autoreset" relay switches when the detected gas concentration exceeds the second pre-alarm threshold.

- **MAIN ALARM RELAY:** this "memory" relay switches when the detected gas concentration exceeds the main alarm threshold.



## WARNING!

All relay outputs of the control unit are voltage free.

The maximum range of such contacts is specified in the next chapters.

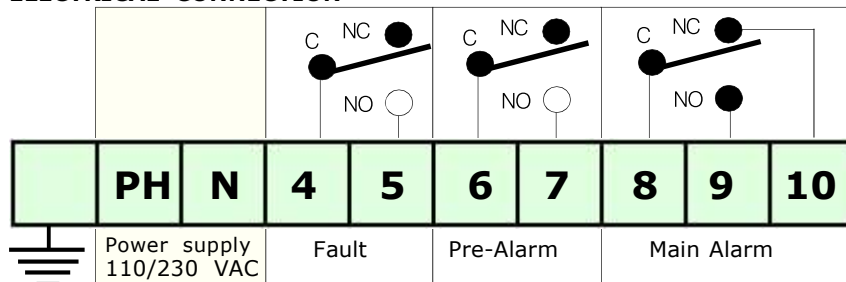
## {c} OPERATING INSTALLATION INSTRUCTIONS



### WARNING!

The installation parameters modification must be performed by qualified personnel. Be sure to disconnect the controller from the power supply before making changes to the connections.

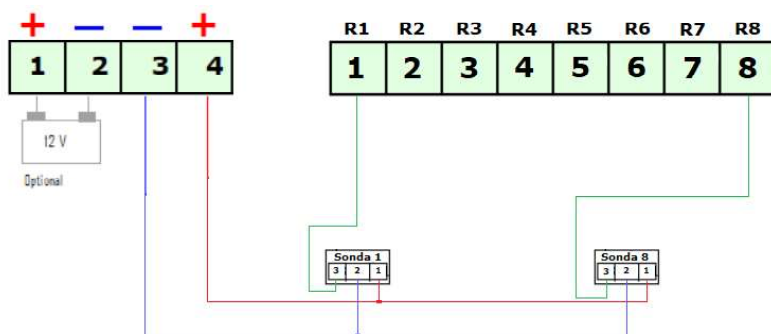
### ELECTRICAL CONNECTION



The signal terminal block (previous figure) is composed as follows:

- Terminals 1, 2 and 3: Main power supply
- Terminals 4 and 5: Fault relay contacts
- Terminals 6 and 7: Pre-alarm threshold relay contacts
- Terminals 8, 9 and 10: Main alarm relay contacts

- a) Connect terminal 1 to ground, terminal 2 to phase, terminal 3 to neutral.
  - b) Power the system only when all the parameters have been configured.
  - c) Connect the desired utilities to the output relays described above according to your needs.
- Then connect the sensors and the battery (optional) to the signal terminal block.



The signal terminal block (previous figure, left side) is composed as follows:

- Terminals 1 and 2: optional back-up battery connection.
- Terminals 3 and 4: sensor power supply. The voltage is generated by the control unit.

The return terminal block (previous figure, right side) is composed as follows:

- Terminals 1 to 8: Return signal from remote sensor 1 to remote sensor 8.

**WARNING!** The optional battery is charged directly by the control unit.

### ACTIVATION AND DEACTIVATION OF THE SENSORS

To enable/disable the sensor 1 act on the first switch of SW1 (first DIP-SWITCH from left).  
 To enable/disable the sensor 2 act on the first switch of SW2 (second DIP-SWITCH from left).  
 To enable/disable the sensor 3 act on the first switch of SW3 (third DIP-SWITCH from left).  
 To enable/disable the sensor 4 act on the first switch of SW4 (fourth DIP-SWITCH from left).  
 To enable/disable the sensor 5 act on the first switch of SW5 (fifth DIP-SWITCH from left).  
 To enable/disable the sensor 6 act on the first switch of SW6 (sixth DIP-SWITCH from left).  
 To enable/disable the sensor 7 act on the first switch of SW7 (seventh DIP-SWITCH from left).  
 To enable/disable the sensor 8 act on the first switch of SW8 (eighth DIP-SWITCH from left).  
 When a sensor is excluded, all the memories will be restored.

### SELECTION OF THE TYPE OF GAS MONITORED FOR EACH SENSOR

The second switch of the DIP-SWITCHES previously mentioned allows to select between detection of explosive / toxic gases.

Move the switch to **ON** for reading in **LEL**.

Move the switch to **OFF** for reading in **ppm**.

**Explosive gas.**

**Toxic gas.**





## RELAY SETTINGS

SW9 DIP-SWITCH allows to choose between various relay settings.

### Switch 1 – Selection of the positive safety

Position **ON**: the positive safety function is enabled.

The relay is energized after the warm up phase and turns off when the **BX880-AX** is main alarm

Position **OFF**: the positive safety function is disabled.

The relay is energized only when the **BX880-AX** goes into the main alarm

### Switch 2 - Working mode, selection of the main alarm relay

Position **OFF**: the relay remains closed until the RESET button is pressed. (continuous)

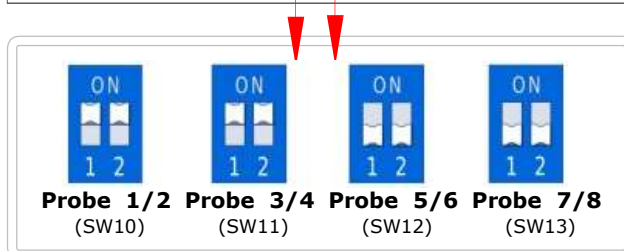
Position **ON**: the relay remains closed for 20 seconds, and then disenergizes. (impulse)



## DEAD BAND SUPPRESSION ENABLED/DISABLED

From the setting of **SW10**, **SW11**, **SW12** and **SW13** it is possible to enable/disable the suppression of the signaling of any under-range in the input signal in the corresponding zone.

SW10.1:	ON/OFF:	Sensor 1	dead band suppression	DISABLED/ENABLED
SW10.2:	ON/OFF:	Sensor 2	dead band suppression	DISABLED/ENABLED
SW11.1:	ON/OFF:	Sensor 3	dead band suppression	DISABLED/ENABLED
SW11.2:	ON/OFF:	Sensor 4	dead band suppression	DISABLED/ENABLED
SW12.1:	ON/OFF:	Sensor 5	dead band suppression	DISABLED/ENABLED
SW12.2:	ON/OFF:	Sensor 6	dead band suppression	DISABLED/ENABLED
SW13.1:	ON/OFF:	Sensor 7	dead band suppression	DISABLED/ENABLED
SW13.2:	ON/OFF:	Sensor 8	dead band suppression	DISABLED/ENABLED



After making all the connections and configurations, the system can be powered



## WARNING!

> This control unit is **NOT** built for installation in ATEX classified areas

> To meet the requirements as a control unit according to the standard EN 60079-29-1: 2016, the DIP switches on the control unit must be set to: SW9.1: ON, SW9.2: OFF, SW8.2: ON, SW7.2: ON, SW6.2: ON, SW5.2: ON, SW4.2: ON, SW3.2: ON, SW2.2: ON, SW1.2 ON.

> All the wiring of the remote sensors must be made using wires with a minimum section of 1.5 mm<sup>2</sup> and no longer than 25 m. Do not use the same conduit for signal and power cables.

> To ensure correct and stable operation, which complies with EMC directives, it will be necessary to insert a ferrite on each connection cable (power supply, backup supply and signal cables) to reduce external disturbances.

> In case of installation in the presence of strong EMC disturbances, the shielded cables use is strongly recommended. The screen must be connected to the 'Gnd' terminal of the interested area only on the side of the control unit.

> The appliance must be connected to the power supply by means of a switch capable of disconnecting the poles in compliance with current safety standards and with a contact separation of at least 3 mm in all poles.

> The installation and electrical connections of this appliance must be carried out by qualified technicians and in compliance with the current technical and safety standards.

> Be sure to turn off the power before wiring the device.

> Safety depends on the installer (whose responsibility is to set up a detection system in compliance with existing standards, both European and national) to choose the correct type of loads to be connected to the control unit and the correct configuration of the system parameters. In case of doubt, please contact the distributor.

## {d} OPERATIONAL LIMITATION

01. This device can be set for explosive and toxic gases
  02. For transverse sensitivities refer to the remote sensor user manual.
  03. Response time T90: 1 second \*
  04. Temperature operating range:  $-10^{\circ}\text{C} \div +60^{\circ}\text{C}$
  05. Humidity operating range:  $0 \div 90\%\text{ RH}$  not condensed
  06. Pressure operating range:  $800 \div 1100\text{ hPa}$
  07. Power supply: 110/230VAC 50/60Hz
  08. Absorption: 18W
  09. Electrical wiring: see paragraph (c)
  10. Batteries: max 1.2 Ah
  11. Sample scope: Not applicable
  12. Warm-up time: 100 seconds
  13. Stabilization time: not applicable
  14. Contact rating: 10A 250V
  15. 1st interval pre-alarm range: for explosive gases set at 8% of L.E.L.  
for toxic gases set at 120 ppm
  16. 2nd interval pre-alarm range: for explosive gases set to 13% of L.E.L.  
for toxic gases set at 200 ppm
  17. Alarm 1 threshold interval: for explosive gases set at 20% of L.E.L.  
for toxic gases set at 300 ppm
  18. Protective rating: IP20
  19. Weight: 260 g
  20. ATEX protection: this device must be installed in NON-CCLASSIFIED ATEX areas.
- \* The response time of the entire system is determined by the response time of all parts of the equipment within the gas detection system.  
The maximum delay time of a special status in case of transmission errors until insertion.

## {e} % L.E.L. to % v/v CONVERSION

Refer to the remote sensor user manual

## {f} TEST

Once activated, the control unit starts warm up for 100 seconds.  
In this phase all the LEDs flash, waiting for the connected probes to go into full speed.  
The power LED flashes until the warmup done.  
Once started, the control unit enters detection mode: the power LED is on, even with the LEDs of the type of gas selected on the zones enabled, based on the configuration of the DIP-SWITCHES.  
It is therefore possible to carry out a first check of the system by pressing the test button: keeping this button pressed, the control unit simulates a concentration of gas gradually increasing from the enabled sensors, and it is therefore possible to control the switching on and off of the LEDs and that all switch relay, enabling the loads connected to them.

## {g} WORKING CONDITIONS

Depending on the input signal of the remote sensors, the control units can be found in the following working condition:

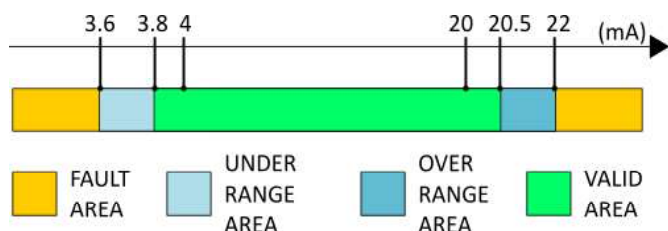
**NORMAL MODE:** the control unit receives a signal from the sensors corresponding to a gas level between 0% and 8% of LEL for explosive gases and between 0 ppm and 120 ppm for toxic gases.  
The relays are off and no alarm or fault LED lights up. The buzzer is off.

**1st PRE-ALARM:** the control unit receives a signal from the sensors corresponding to a gas level between 8% and 13% of LEL for explosive gases and between 120 ppm and 200 ppm for toxic gases.  
The relays are off and the red "8/120" LED lights up. The buzzer is off.

**2nd PRE-ALARM:** the control unit receives a signal from the sensors corresponding to a gas level between 13% and 20% of LEL for explosive gases and between 200 ppm and 300 ppm for toxic gases.  
The pre-alarm relay changes state and the red LED "13/200" and "pre-alarm" also lights up  
The pre-alarm relay is energized. The buzzer is on (low frequency).

**MAIN ALARM:** the control unit receives a signal from the sensors corresponding to a gas level higher than 20% of LEL for explosive gases and greater than 300 ppm for toxic gases.  
The main alarm relay changes state and the red "20/300" LED also lights up, the "Main alarm" LED flashes. The main alarm relay is energized. The buzzer is on (high frequency).

**OVER/UNDER RANGE:** the control unit receives an under/over range signal. This condition is signaled through two different flashing frequencies of the explosive gas LEDs.  
The relays are off and no alarm or fault LED lights up. The buzzer is off.



**FAULT:** the control unit receives a "short circuit" or "open circuit" signal.  
The yellow fault LEDs are on. The fault relay is energized. The buzzer is on (fixed sound).

**SYSTEM ERROR:** the control unit is blocked due to an internal fatal error.  
The yellow error LEDs flash. Relays are OFF. The buzzer is on (LED frequency).



## {h} TROUBLESHOOTING

### Problem.

If the error LED lights up, the system reports an error status.

Possible cause: The input current loop is broken or the transmitter is not powered.

### Solution:

Check the connections between the transmitter and the control unit for interruptions. Check with a multimeter the presence of a voltage around 12 VDC between the "+ V" and "GND" terminals of the reference input.

## {i} PERIODIC CONTROL

### MAINTENANCE

A periodic service must include the following operations:

**a)** (every 6 months): Check the correct operation of the detection system by applying calibrated gas to each remote sensor and checking the value.

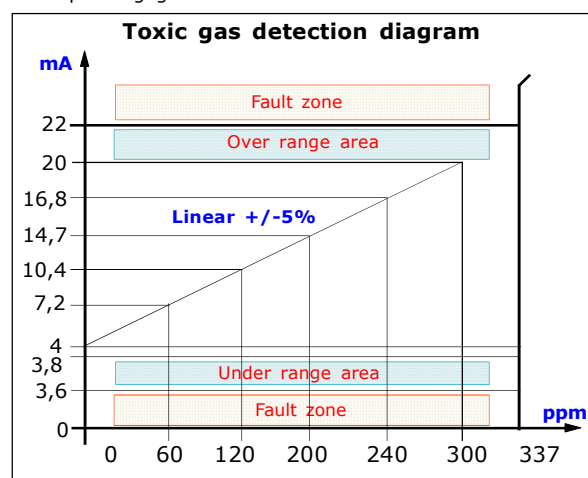
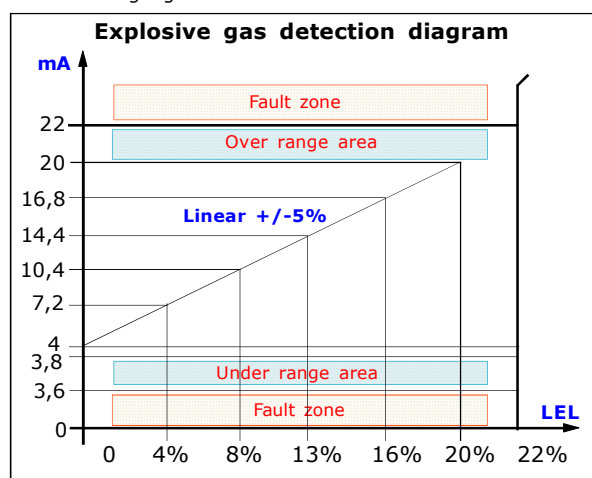
Refer to the user manual of the sensors for more information.

**b)** (every 12 months): revision of the control unit transfer function and correct detection of anomalous situations.

This can be done by disconnecting the sensors and forcing through a suitable calibrator the input current of each zone to the significant values for example:

0 mA:	open circuit,
3,7 mA:	under range,
4-20mA:	normal operation,
21 mA:	Over range
23 mA:	fault.

The following figure shows the conversion between mA and the corresponding gas concentration.



## {j} STORAGE

Temperature operating range: -10° C to + 60° C

Humidity operating range: 0 ÷ 90% RH not condensed

Pressure operating range: 800 ÷ 1100 hPa

## {k} CONTAMINANTS

Not applicable to the control unit. For the remote sensor, refer to the remote sensor user manual

## {l} AUTOMATIC RESET

The pre-alarm relay state is automatically reset when the concentration drops below the pre-alarm threshold. On the contrary, the alarm relay state CANNOT be automatically reset and remains in memory until the control unit is reset by the user. Refer to the section for details.

## {m} BATTERY MAINTENANCE

This control unit is equipped with input terminals (1 and 2) for backup of the external 12 VDC power supply. The control unit charges the battery up to 1.2 Ah.

Battery maintenance operations must be based on the manufacturer's technical information.

## {n} SPARE PARTS

This control unit has not user serviceable parts.

## {o} ACCESSORIES

This control unit has not compatible accessories.

## {p} WARRANTY


With a view to the constant development of its products, the manufacturer reserves the right to modify technical data and functions without prior notice.

The consumer is guaranteed for any lack of conformity pursuant to European Directive 1999/44 / EC, as well as to the manufacturer's document about the warranty policy.

The full text of guarantee is available on request from the seller.

## {q} MARKING

### Example of a label



**BEINAT**  
GAS SOLUTIONS

BEINAT S.R.L.  
Via Fatebenefratelli 122/C  
10077 S.Maurizio C/se (TO), Italia  
www.beinat.com

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**Gas control unit with eight inputs**

Model: BX880-AX  
Serial Number: 000001  
Date: 03 2023

**Technical features**  
 Power supply: 110/240 VAC  $\pm$  10% 50/60 Hz  
 Battery powered: 12 VDC  $\pm$  10% 1.2 Ah  
 Maximum consumption at 240 VAC: 18W  
 Maximum consumption at 12 VDC: 17W  
 Analog signal input: linear 4-20 mA  
 Working temperature: -10 °C +60 °C  
 Degree of protection: IP 20  
 Conformity: EN 50270 - EN 50271 - EN 60079-29-1  
 Insulation class: II

CE UKCA FTZÚ xx ATEX XXXX X CML xx UKEX XXXX X

RoHS Compliant Made in Italy

CE

## {r} INSTALLATION EXAMPLES

### 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 the signal cables should be laid separate from the 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.

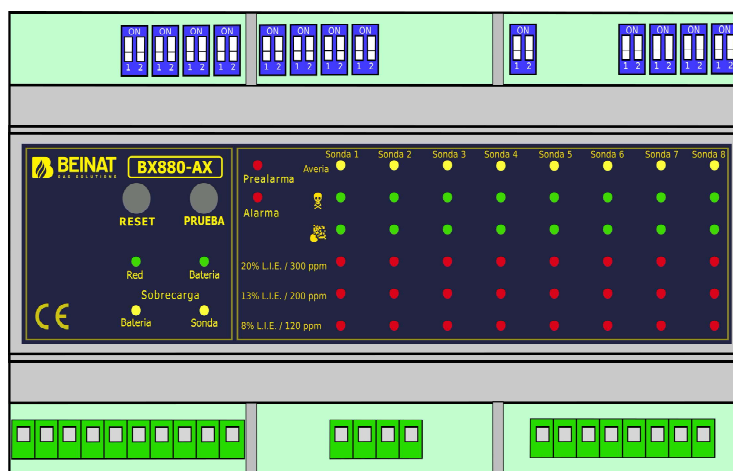
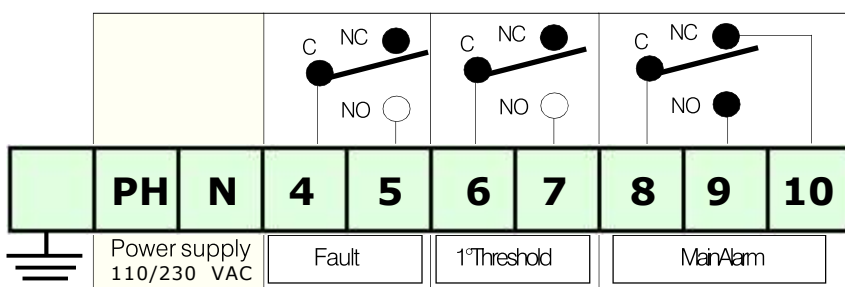
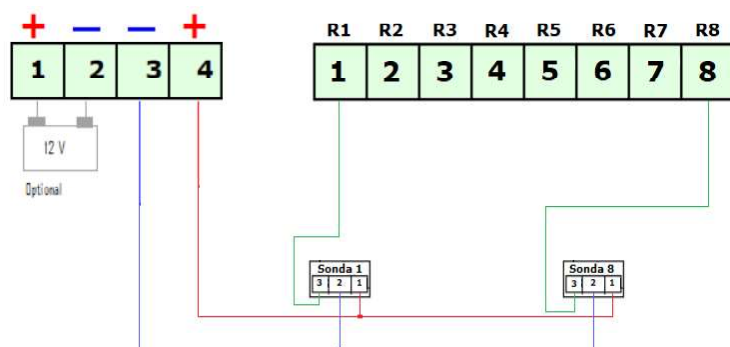


Diagram of the terminal block relay

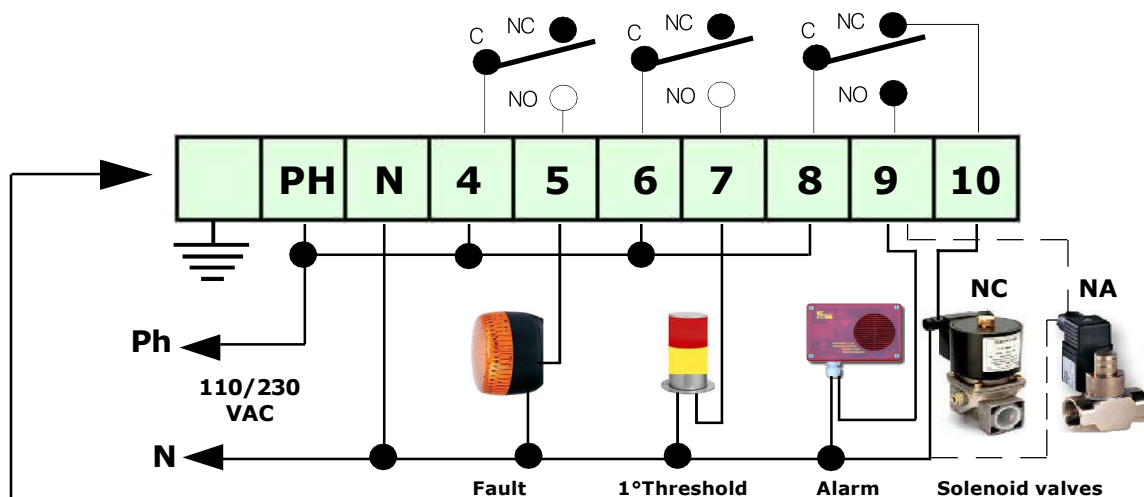


Connection of probes and eventual battery

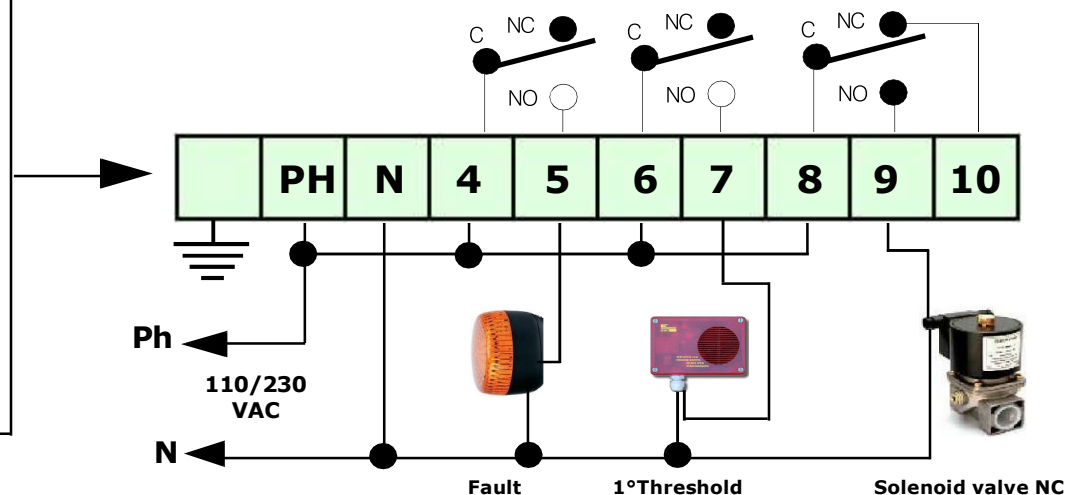


## Electrical connection example

### Connections of a solenoid valve Normally Closed without Positive Safety



### Connections of one solenoid valve Normally Closed with Positive Safety

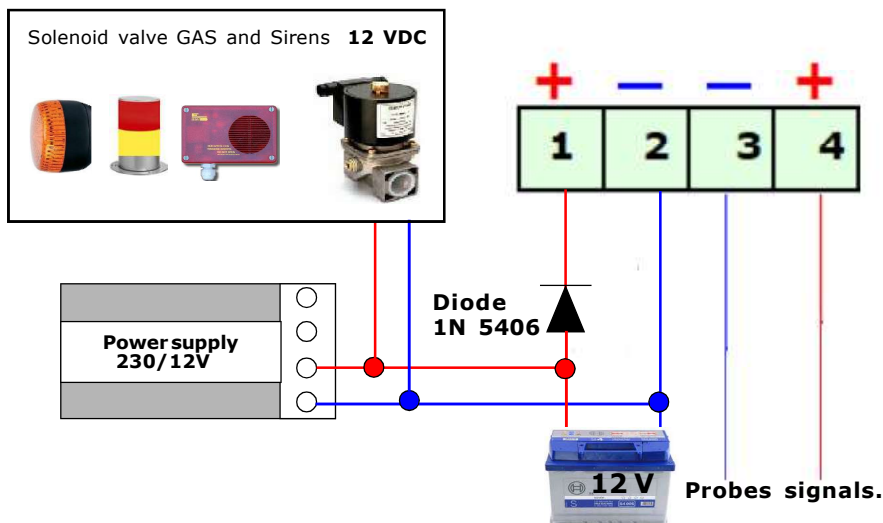


**If a 12Vdc solenoid valve is connected to BX880-AX and it does not work well.**

Direct connection of 12VDC solenoid valves or sirens to **BX880-AX** is not possible.

An external power unit must always be used. **BX880-AX** gives a **max** current of **50mA**.

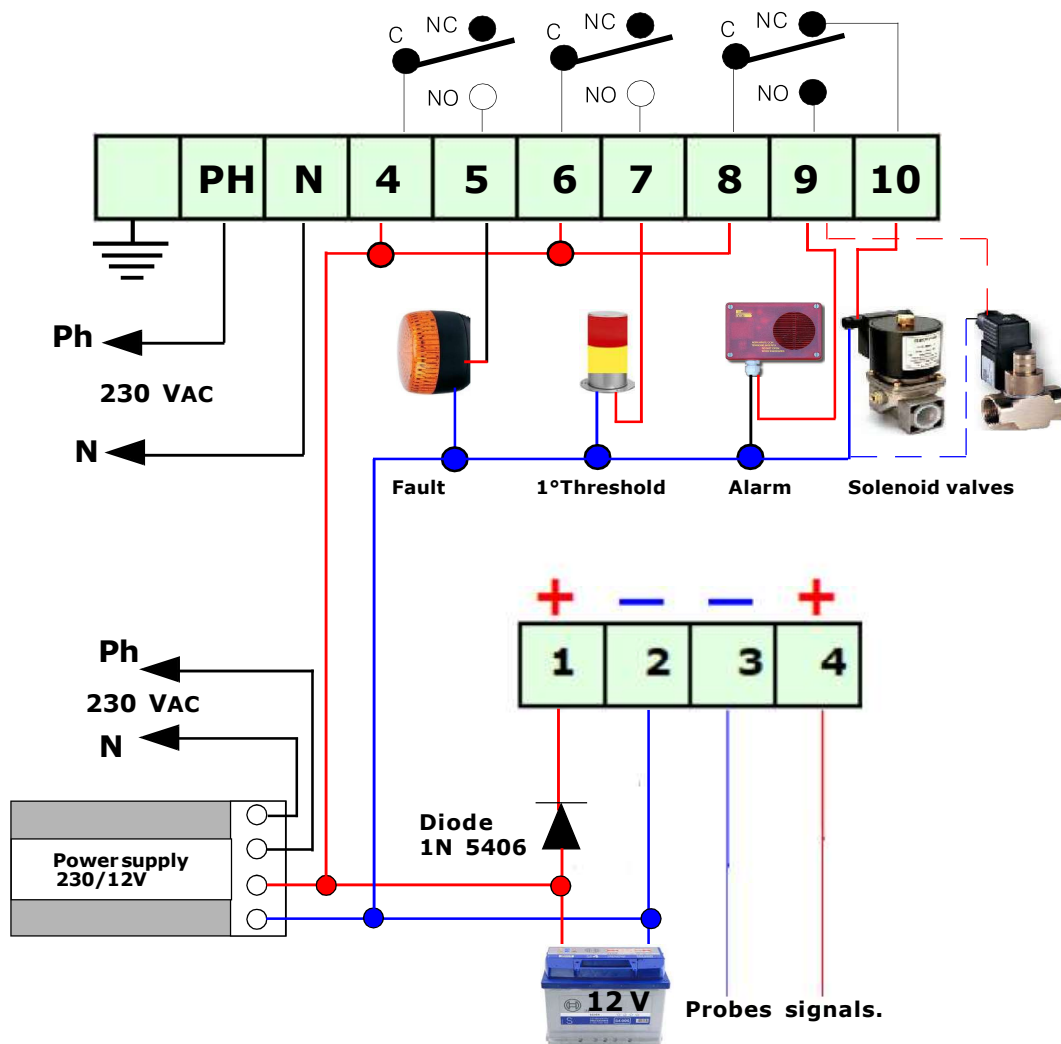
**Control unit power supply and connection of one solenoid valve with sirens to 12 VDC trough an alternative source and recharge battery.**



## Electrical Connections

**If a 12VDC solenoid valve is connected to BX880-AX and it does not work well.**  
 Direct connection of **12VDC** solenoid valves or sirens to the **BX880-AX** is not possible.  
 An external power unit must always be used. The **BX880-AX** gives a **max current of 50mA**.

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



## Control unit installation and positioning

The **BX880-AX** 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 **BX880-AX** 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 **IP20** protective rating

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 protective rating **if installed in the electrical panel, it takes the panel protective rating**

## Sensors installation and positioning

**The sensors 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 sensors

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 that the remote sensor must be installed bearing in mind that:**

- 1)** The sensors **should not be placed** near the appliances to be controlled (boilers, burners, industrial kitchens, etc.) but on the opposite side.
- 2)** The sensors should **not be affected** by smoke, vapour, moving air, as they could distort their detection.
- 3)** The sensors should **not be placed** near sources of heat, ventilators or fans.  
It is necessary to warn that the sensors of the gas detection probes are perishable components, whose average duration varies from 5 to 6 years (ask for a possible table) therefore after this period, they must be replaced.
- 4)** The operation check and the ordinary and/or extraordinary maintenance must be performed at least once a year.  
When the fault LED turns on, the sensor must be replaced by a specialized technician.

## PROBE INSTALLATION INFORMATION



- 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) after this the unit is ready to detect.
- 4) By pressing the 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 high 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 sensor.
  - 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

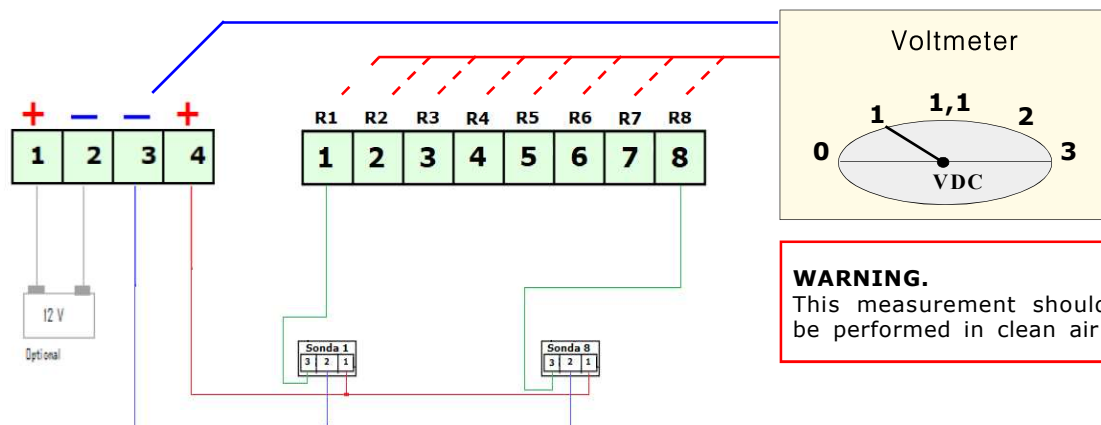


#### If the device does not start up.

Check that the 230V 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 **BX880-AX** 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 BX880-AX.

Direct connection of 12VDC solenoid valves or sirens to the **BX880-AX** is not permitted.

An external power unit must always be used.

The **BX880-AX** 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.

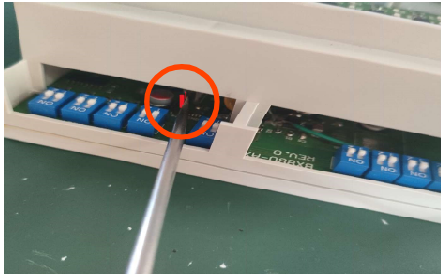


## Plant maintenance

To enable maintenance mode based on regulations, a manual command must be performed. Follow the instructions below.



To proceed with the insertion of maintenance it is necessary:  
Identify two electrical contacts, shown here with two red parallel bars



As you can see, make a short circuit with a screwdriver or other,  
Here on the side marked by two red parallels

Once the manual command has been executed, proceed as follows:

### Maintenance Test



The simultaneous and prolonged pressing for 5 seconds of the **"TEST"** and **"RESET"** keys enables the test-on mode.

in which the control unit does not switch the general alarm relay for a period of 15 minutes; Not even by pressing the external manual button. A further press of the keys in the same mode extends the time by 15 minutes up to a maximum of 60 minutes.

In this mode, the string **"tEst-On"** (scrolling) is displayed before each passage from the current channel to the next, followed by the minutes of the general alarm relay being decommissioned.

You can terminate this mode before resetting the control unit by pressing 3 consecutive times and within 5 seconds the **RESET** button



**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.



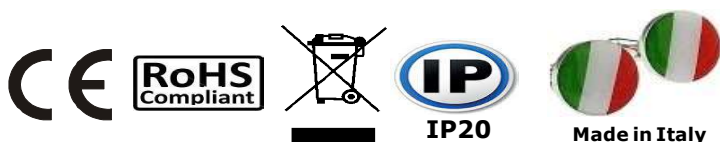
**DISPOSAL OF OLD ELECTRICAL & ELECTRONIC EQUIPMENT.**

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 consequence 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.



Control Unit **BX880-AX**

*Lo styling è della b & b design*

Dealer stamp

Purchase date: .....

Serial number: .....

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

**BEINAT S.r.l.**

Via Fatebenefratelli 122/C 10077, S. Maurizio C/se (TO) - ITALY

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