

Gas and fire control unit

BX449F



The new **BX449F** is born from the elegance and prestige that has always distinguished **BEINAT S.r.l.** and from the home fitness concept. The device has the capacity of controlling, through its connected probes, the presence of: "**explosive gas, toxic gas, fire**".

Gas detection

The control unit has two danger levels:

1st LEVEL, pre-alarm. This is set at 13% of L.E.L. (200ppm) for all probes.

2nd LEVEL, main alarm. This is set at 20 % of L.E.L. (300ppm) for all probes.

To facilitate event readings, the control unit has a front panel with 4 LEDs indicating which probe is currently being monitored in rotation, and a display showing the gas concentration measured on each pass.

Fire detection

To the **BX449F** you can connect up to 6 fire probes per each zone, either temperature or optical smoke detectors, through a balanced line.

The control unit's microprocessor checks the detectors and connection line efficiency, open or short-circuited.

When the probes detect a fire, they will switch the proper relay.

The **BX449F** is fitted with a TEST button to ease the system global check.

The Omega-type external structure, protection IP20, occupies 9 modules when installed on the panel gets the same protection of the panel itself.

In addition to the alarm signal light, it is fitted with an internal buzzer.

Configurations

Zones MAX 4

GAS configurations

Connection of one or more probes, for different GAS types up to a **max. of 4 probes**, 1 per each zone.

GAS-FIRE configurations

You can connect only GAS or only FIRE detection, indistinctly.

FIRE configurations

You can connect up to a **max. of 5 probes** per each zone, even combined, smoke or temperature, for a **total max. of 20 probes**.

Automatic detection of the type of **connected probe**, either GAS or FIRE.

Installation and user guide

Firmware Version 1.0

CONFORMITY

EN 54-2
EN 50194
EN 50291
EMC EN50270
EMC EN 50130-4

Important Note

Before connecting the unit careful reading of instruction booklet is recommended, and it is kept in a safe place for future reference. Furthermore, the correct electrical connections according to the enclosed drawings, complying with instructions and Regulations in force, is recommended.

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 **BX449F** 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 **BX449F** digital control unit, use it by respecting the following precautions.

Do not allow it to become 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.

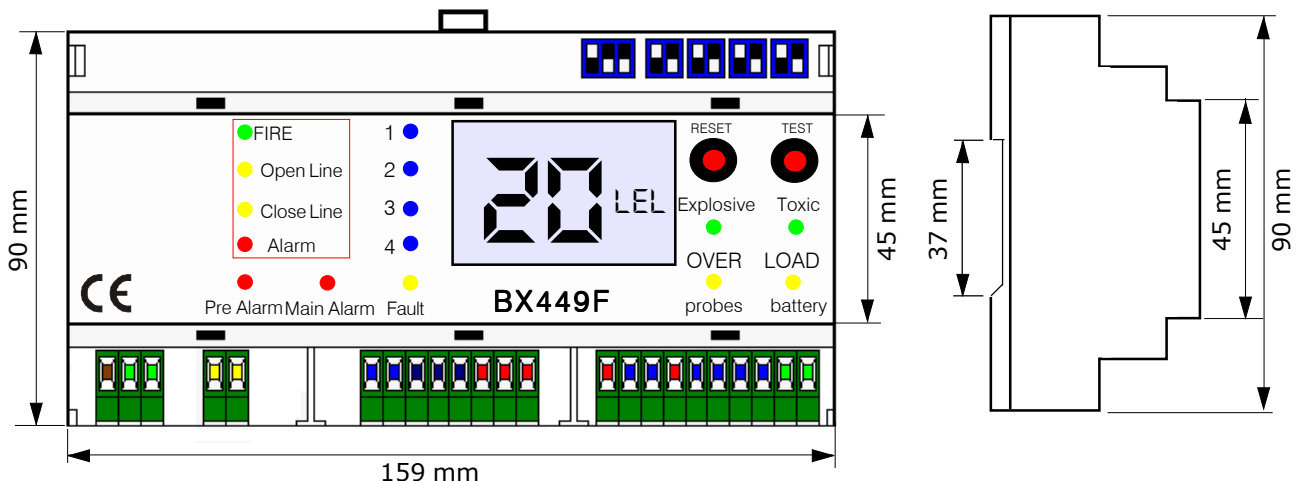
Cleaning

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

Technical Specifications

Main power	240Vac 50/60Hz ±10%
Secondary power through battery max 2.2 Ah (optional)	12Vdc ±10%
Battery charger max. 2.2 Ah	Controlled
Power demand	11W max. 230V
Power demand	6W max. @ 12 V
Range of the contacts on the gas pre-alarm relay	10A 250V resistive - 5A 30Vdc resistive
Range of the contacts on the gas alarm relay	10A 250V resistive - 5A 30Vdc resistive
Range of the contacts on the fire alarm relay	10A 250V resistive - 5A 30Vdc resistive
Range of the contacts on the fault relay	5A 250V resistive - 2A 30Vdc resistive
Pre alarm	13% (200 ppm ref. CO) of L.E.L.
Final alarm	Set to 20% (300 ppm ref. CO)of L.E.L.
Zones	4
Number of GAS probes that can be connected	4 (1 for each zone)
Types of GAS probes that can be connected	Semiconductor, Catalytic, Electrochemical cell, Pellistor
Number of FIRE probes that can be connected	20 (5 for each zone)
Types of FIRE probes that can be connected. Optical smoke - fixed temperature - temperature rate of rise	
Micro-switches to include or exclude the probes	1 for each zone
Type of faults detected by fault circuit	Interruption, short circuit, or wear
Input signal GAS.....	4 ÷ 20 mA on 220 Ohm
Input signal FIRE.....	Max 5V.
Device accuracy	1% FS
Response time	< 2"
Control unit	Microprocessor
Functioning temperature	-10°C ÷ +60°C
Waiting, blinking period (warm-up)	About 2 minutes
Manual test	Built in
Max. distance between probes and unit	100 m
Cable diameter for connecting probes	1 mm ²
Omega-type size DIN EN 50092 9 modules	158*90*58
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	
Degree of protection	IP20

Dimensions



Main Compatible Probes

PROBE	SENSOR	DEGREE Protec.	GAS Detected	RANGE Working Sensor	OUTPUT	ACCURATY	CALIBRATION Automatic	RELAY
SG500	Catalytic	IP 30	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	N O	N O
SG544	Catalytic	IP44	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	N O	N O
SGM595	Catalytic	IP55	seeprielist	0÷100% LIE	4÷20 mA	±5 %	YES	N O
SGM595/A	Catalytic	IP65	seeprielist	0÷100% LIE	4÷20 mA	±5 %	YES	N O
SGM533	Catalytic	IP55	seeprielist	0÷100% LIE	4÷20 mA	±5 %	YES	YES
SG800	Catalytic	IP65	seeprielist	0÷100% LIE	4÷20 mA	±5 %	YES	YES
HCF100	Semiconduct.	IP55	FREON	0÷300% ppm	4÷20 mA	±5 %	N O	YES
SG895	Catalytic	ATEX	seeprielist	0÷100% LIE	4÷20 mA	±5 %	YES	N O
SG580	Catalytic	IP65	seeprielist	0÷100% LIE	4÷20 mA	±5 %	N O	N O
SGF100	Catalytic	IP64	METHANE	0÷100% LIE	4÷20 mA	±5 %	YES	YES
SGF102	Catalytic	IP64	LPG	0÷100% LIE	4÷20 mA	±5 %	YES	YES
SGF104	Optical Fluo	IP64	Oxygen	In %	4÷20 mA	±5 %	YES	YES
SGF106	Semicondut.	IP64	FREON	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SGF108	Electrochemical	IP64	H2S	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SGF110	Electrochemical	IP64	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SGF112	Catalytic	IP64	Hydrogen	0÷100% LIE	4÷20 mA	±5 %	YES	YES
CO100r	Electrochemical	IP55	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES
CO100Ar	Electrochemical	IP65	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SG800 ^{duct}	Catalytic	IP65	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	YES	YES
CO200 ^{duct}	Electrochemical	IP65	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES

Warnings

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: Iproof operation should not be carried out with the gas tap since this does not guarantee a sufficient concentration to activate the alarm.

Fire

*Keep calm

*Open the windows and request assistance

*Do not turn lights on or off, do not operate electrically powered equipment and devices

*If possible, press the nearest emergency button.

*If possible use the nearest fire extinguisher, do not use foam extinguishers or water near electrical devices or directly on switchboards.

*If the fire developed in an environment, get out, closing the door.

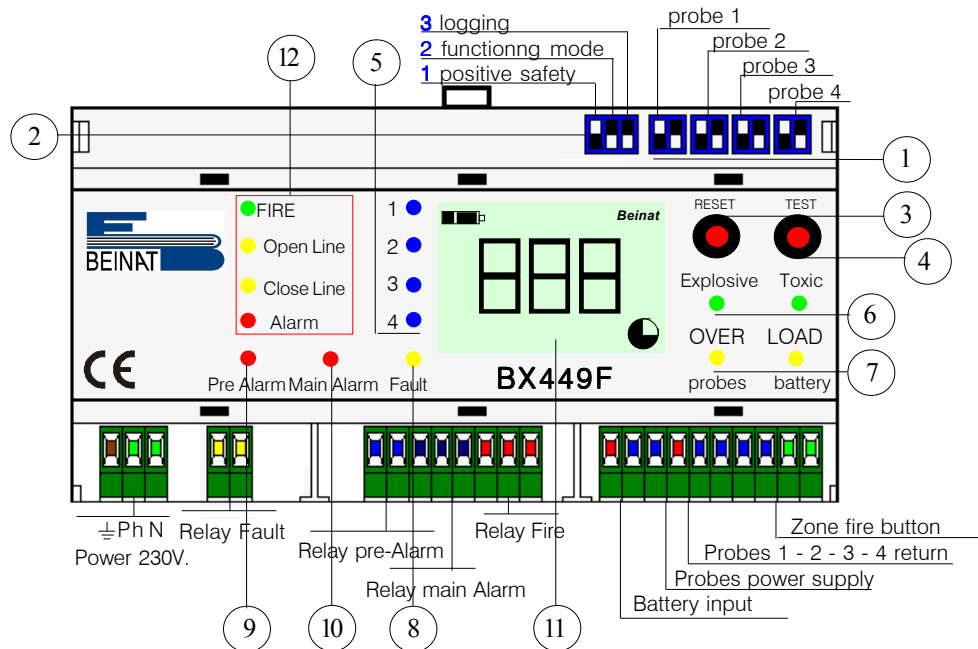
*If the fire is in another room and the smoke makes impracticable stairs and corridors, close well the doors and try to seal fissures using possibly wet cloths.

*If the smoke makes breathing difficult, filter the air through a handkerchief, (better if wetted), lie on the floor (if the smoke tends to rise to the top).

*If the alarm stops, is necessary to identify the cause that provoked and act accordingly.

*If the fire continues and the cause is not vacate the building and abandon the building and call the emergency services when outside

The installation of the detector does 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.



1) Group of 8 switches, two per each probe. (See chapter on page 6-7).

2) Group of 3 switches. To select the control unit functioning mode. (See chapter on page 7).

The micro-switch **1** is used to toggle the memory logging on/off.

The micro-switch **2** is used to select the final alarm relay functioning mode: pulsed or continuous.

The micro-switch **3** is used to enable or disable the intrinsic safety.

3) RESET button: The button has two types of function, **one** for the resolution of the **gas** detection and one for the resolution of **fire** detection.

RESET GAS

Press once the button to reset the alarm memory or to restore the control unit after an event of failure.

RESET FIRE

For compatibility with the rule **EN54-2** to restore a fire alarm must be:

Press the button **three times** within **5 seconds**.

4) TEST button: Pressing and holding down this button, you can obtain a gas leakage simulation. In order to perform this operation no failures or alarms should be present.

5) PROBE LEDs: Each LED represents a connected probe.

These LEDs turn on cyclically or at each pass and indicate the quantity of gas detected on the display.

6) PPM - LEL indication LED. (See chapter on page 7).

If the TOXIC GAS ppm LED turns on: The probe is set to detect CO toxic gas (Carbon Monoxide).

If the EXPLOSIVE GAS LEL LED turns on: The probe is set to detect Methane, LPG and others explosive gas.

7) OVER LOAD BATTERY and OVER LOAD PROBES LED.

If the Battery LED turns on, it means the battery is not connected properly, or it has an anomalous voltage absorption.

If the Probes LED turns on, it means there is a short circuit or high current absorption in the probes.

8) FAULT LED. This LED blinks when one of the connected probes is faulty, if there is an interruption in the cable connection, or if an error was made during wiring.

When this LED is on, the device is no longer capable of detecting, and stops.

To reactivate the device, the damaged probe must be repaired or disabled using the internal micro-switch, and then the RESET button must be pressed. (See chapter on page 6).

9) PRE ALARM LED. This LED will light up when the gas concentration level has reached 13% of LEL, or 20ppm (ref. CO), and the 1st threshold relay contact is closed. The buzzer will issue a low frequency sound.

Note. The relay disexcites when dropping below the 13% of LEL, or 200ppm (ref. CO) threshold.

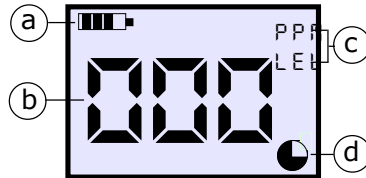
10) MAIN ALARM LED. This LED will light up when the gas concentration level has reached 20% of LEL, or 300ppm (ref. CO), and close the contact oh MAIN ALARM. The buzzer will issue a low frequency sound.

Note: The relay disexcites only when you press the RESET button.

Components and commands - continue

11) DISPLAY. The display illustrated below has all segments on.

- a)** The battery icon will turn on when the BX449F is powered by an external battery. The illustrated battery indicates also the external battery's charge status; when blinking it means the battery is running low.
- b)** The numbers on the display indicate the gas concentration measured. The data exchange for each connected probe is made about every 4 seconds.
- c)** The ppm message will turn on when the chosen probe is detecting toxic gas. The LEL message will turn on when the chosen probe is detecting explosive gas.
- d)** The timing symbol will turn on when the BX449F is in the warm up phase, meanwhile the count down will be shown.



12) GROUP CONCERNING FIRE DETECTION

In this panel are housed 4 LEDs indicating:

GREEN LED: It lights up only when a fire probe is connected.

OPEN LINE YELLOW LED: It lights up when the probes connection line is interrupted or when the detector does not work, or when the end line resistance is missing.

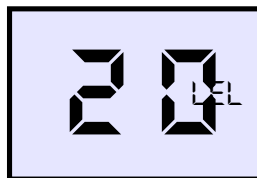
CLOSED LINE YELLOW LED: It lights up when the probes connection line is short-circuited or the detector does not work.

RED LED: It lights up only when an alarm is detected, it closes the assigned relay contact and the buzzer will issue a high frequency sound.

Description of Displays

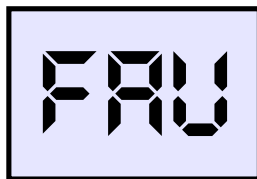
At BX449F has been adapted for a display to read the concentration of gas detected. The data exchange for each probe connected happens every 4 seconds.

The recognition of which probe the display is reading is indicated by the blue LED in the field PROBES.



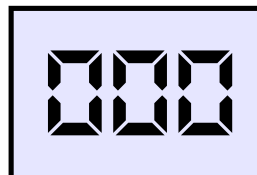
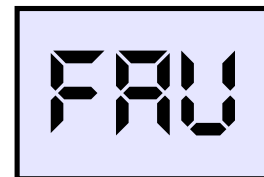
The display shows a concentration of explosive gases in% LEL.

The display shows a concentration of toxic gases ppm



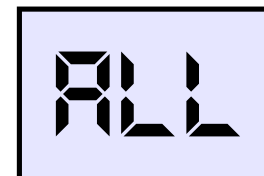
The display shows a fault of the probe that detects explosive gas

The display shows a fault of the probe that detects toxic gases



The display shows the fire probe not alarm

The display shows the probes FIRE in alarm



The display shows the line FIRE faulty open

The display shows the line FIRE faulty in short circuit



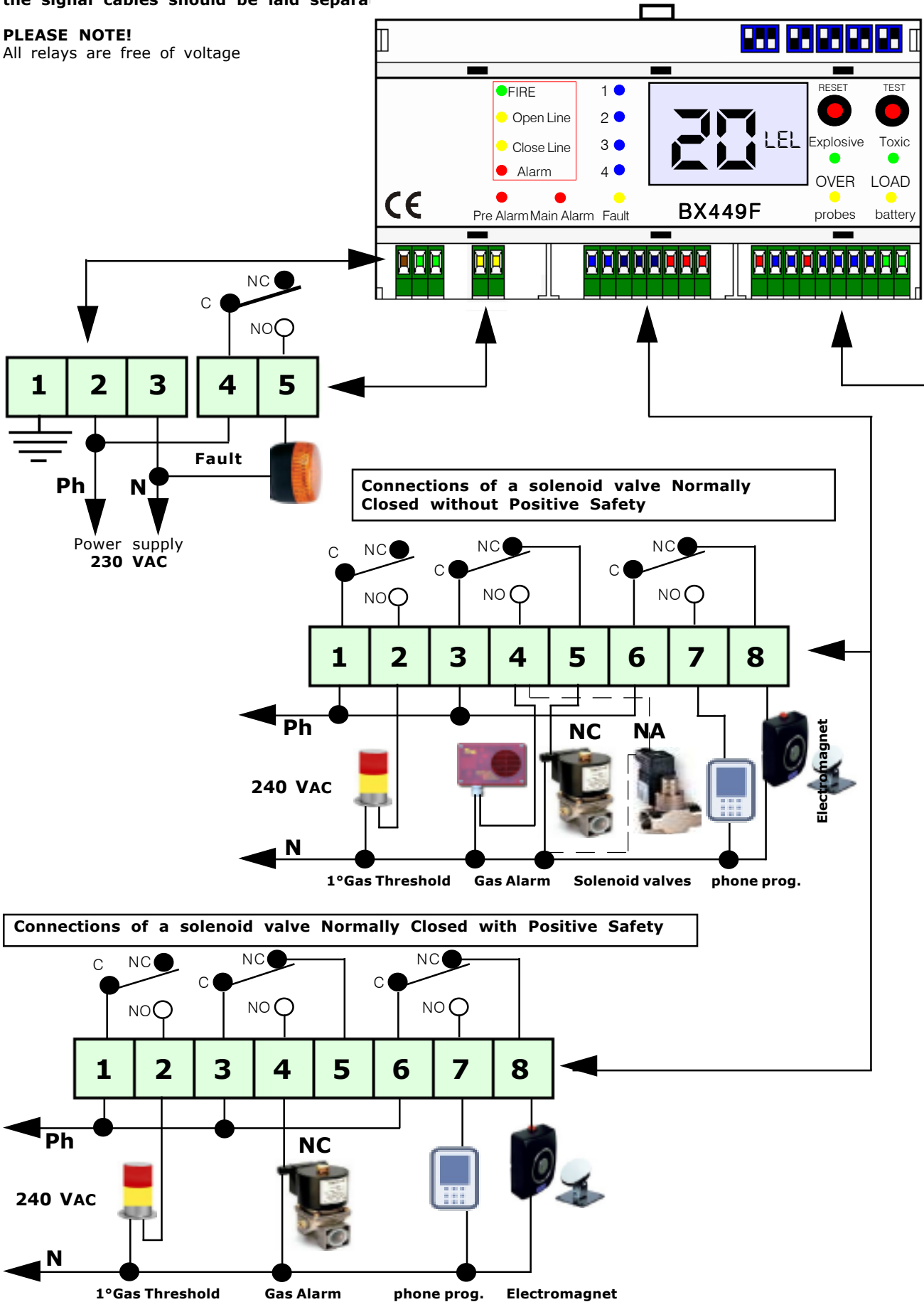
Electrical Connections

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 separately**

PLEASE NOTE!

All relays are free of voltage

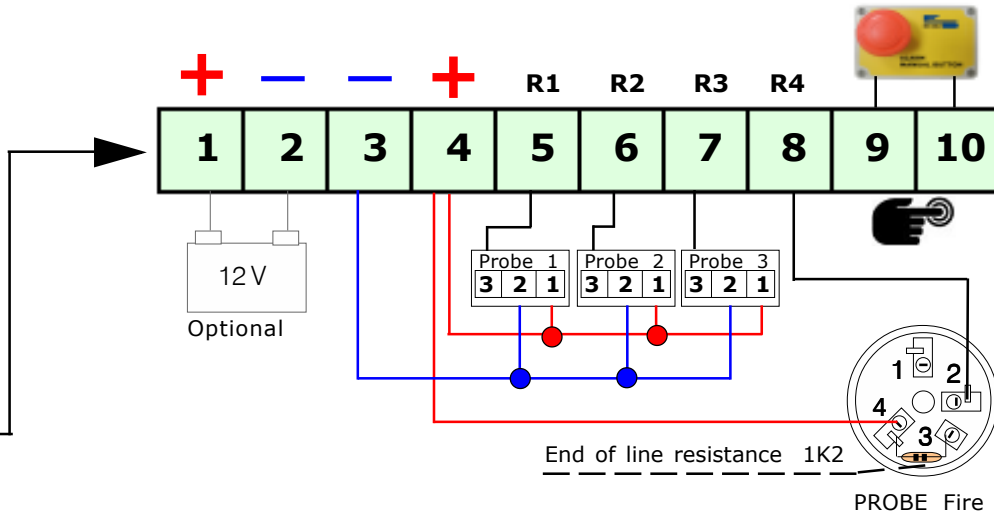


Connection of probes and eventual battery

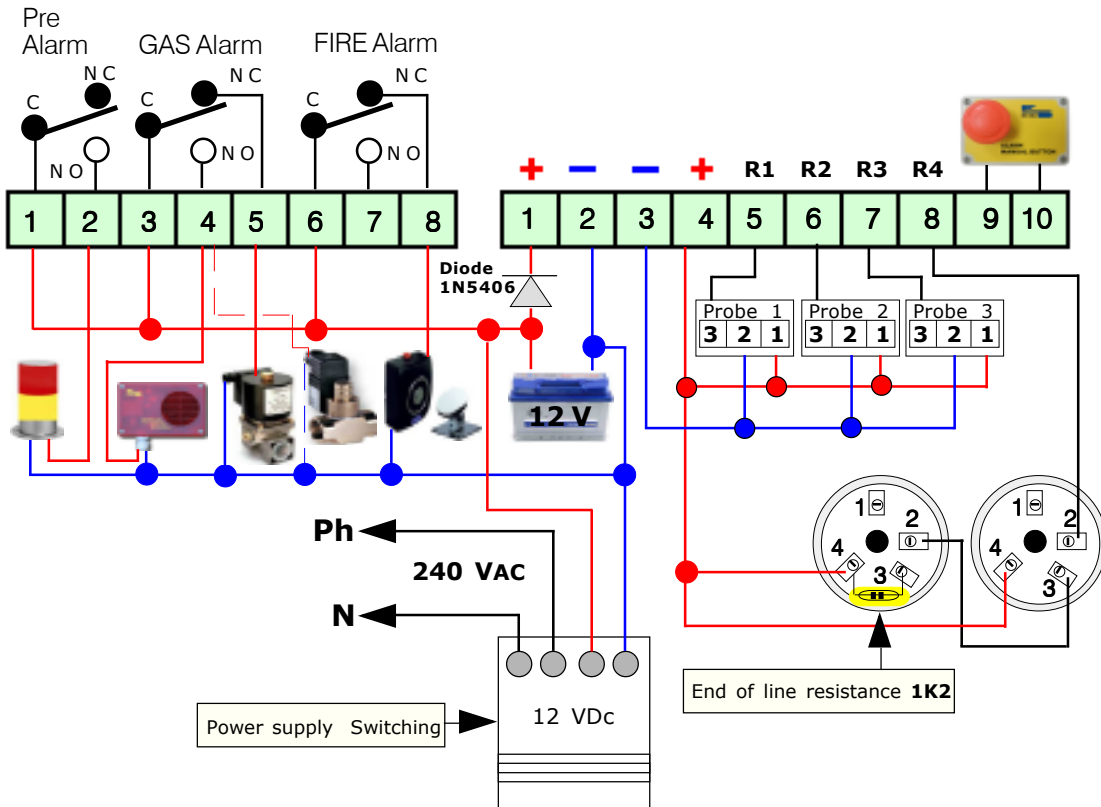
PROBES Terminal block

In this diagram they are connected three probes GAS and one of fire.

N.B. at each input you can connect: 1 GAS probe
1 Group probes fire from 1 to 5 max



Connections of a solenoid valve normally closed without Positive Safety and auxiliary to 12VDC through a power Switching



Components and commands - continue



A series of LEDs numbered **from 1 to 4** and called PROBES has been fitted on the **BX449F**. These LEDs light up with a 4 second frequency showing the connected probes, and indicating the probe being read on the display.

In case of alarm: The LED that represents the probe stops for about 15 seconds. This is done in order to identify the relevant zone or zones easily. Meanwhile, the gas percentage measured by the probe appears on the display. On the next pass, the LED (probe) will be maintained again and the alarm will be issued.

In case of fault: The LED of the concerned probe will start blinking and remain lit, the **FAU** (fault) LED will turn on and the buzzer will issue a continuous sound until:

- 1) The repair has been carried out;
- 2) The relevant probe has been disabled using the micro-switch.

Description of the Micro switches

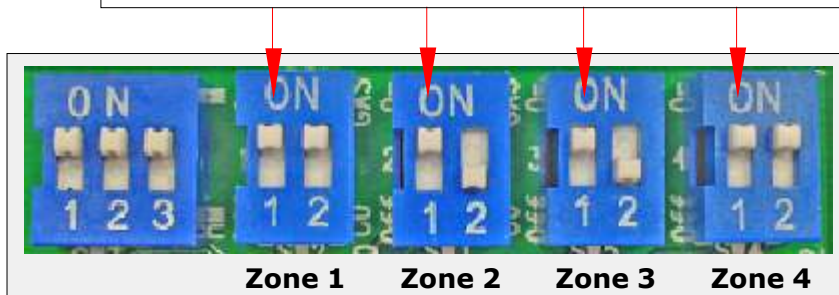
Installing, uninstalling or disabling the zones

Using the proper micro-switches on the **BX449F** you can enable or disable 4 zones; to each zone you can connect **4 gas probes** (1 per each zone) or **20 fire probes** (5 per each zone). The probes' detection GAS or FIRE is performed automatically.

Note. The micro-switches are also used to disable the probe in case of failure.

Micro-switches **(1)** to enable or to disable the probes.

Position **ON** enabled - Position **OFF** disabled



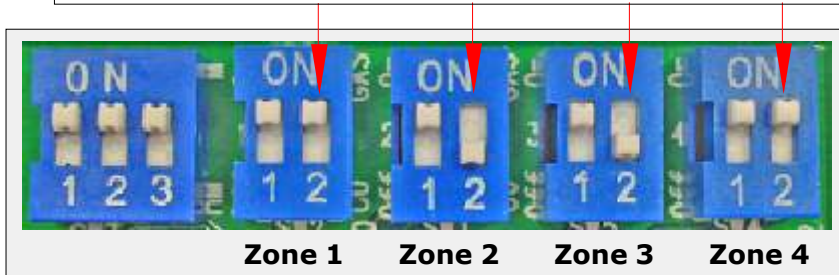
Selection of the type of gas monitored by each probe

The **BX449F** is fitted with four micro-switches in order to select the type of gas that the connected probes should monitor.

The LEL **explosive gas** reading is obtained by shifting the switch to **ON**.

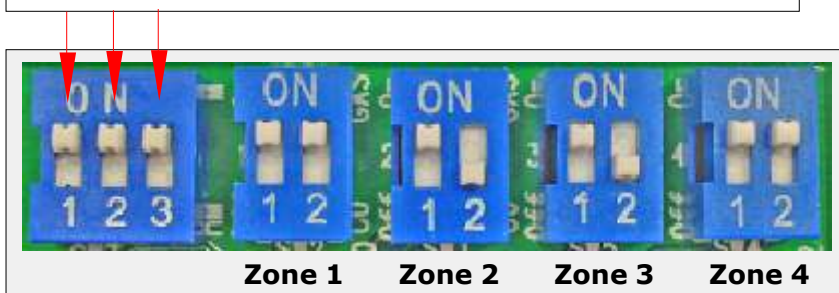
The ppm **toxic gas** reading will be obtained by shifting the switch to **OFF**.

Micro-switches **(2)** to select the type of gas monitored
Position **ON** reading in LEL - **Explosive gas**
Position **OFF** reading in ppm - **Toxic gas**



Relay's working mode and the memory of the Main alarm

Micro-switches **1** Positive Safety
Micro-switches **2** Working mode of the Main alarm relay
Micro-switches **3** Memory logging



Switch 1 – Selection of the intrinsic safety

In the **ON** position, the intrinsic safety function is enabled.

In the **OFF** position, the intrinsic safety function is disabled.

Switch 2 – Functioning Mode

In the **OFF** (continuous) position, the relay remains closed until the RESET button is pressed.

In the **ON** (impulse) position, the relay remains closed for 3 seconds, and then disenergizes afterwards.

Switch 3 – Alarm memory logging

By setting the micro-switch to **ON**, the device **WILL LOG** the alarm, maintain the relay closed, and the main alarm LED will blink, until the RESET button is pressed.

By setting the micro-switch to **OFF**, the device **WILL NOT MAINTAIN** the alarm memory.

In compliance with Law this function is enabled only when you select the toxic gas detection (reading in "ppm")

Installing and positioning the probes

The most essential factor for the proper functioning of the **BX449F** is its correct installation.

By following the instructions in this paragraph high accuracy can be obtained, together with the absence of false alarms.

The **BX449F** should be flush mounted on a switch board, keeping in mind its Omega-type format (it takes 9 modules).

During installation the normal precautions required for electronic devices should be maintained:

- Install the device away from sources of heat.
- Prevent liquids from coming into contact with the **BX449F**; the external structure has an IP20 grade of protection (when installed into the switch board, it will get the same grade of protection).

GAS probes

You can connect many types of GAS 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.)**

Fire detection probes

Having a correctly sized **fire system** means selecting the ideal number of sensors for the monitored space. In the following drawings, we will specify the maximum area that the different models can check when positioned at a height of **4 meters**.

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

1) The probes should not be placed near the appliances to be controlled (boilers, burners, industrial kitchens, etc.) but on the opposite side.

2) The probes should not be affected by smoke, vapour, and moving air, as they could distort their measurement.

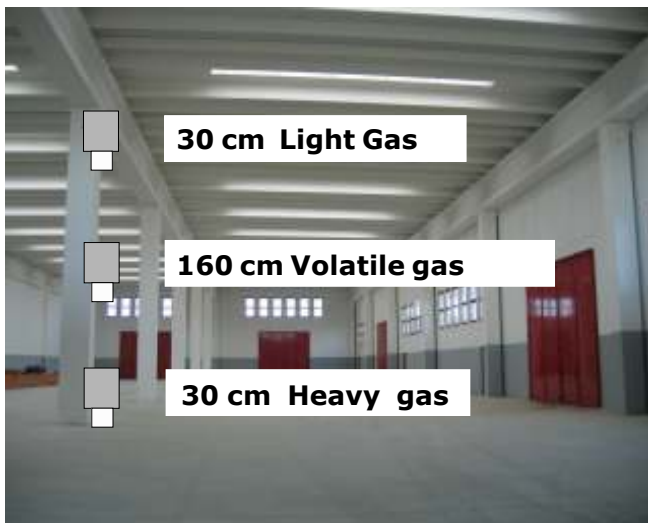
3) The probes should not be placed near sources of heat, ventilators or fans.

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.

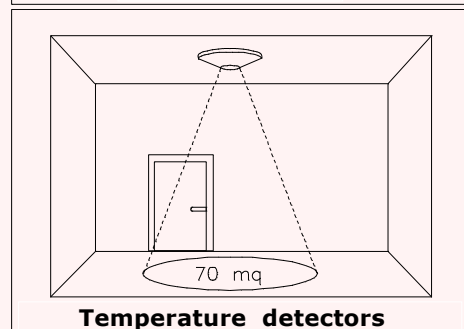
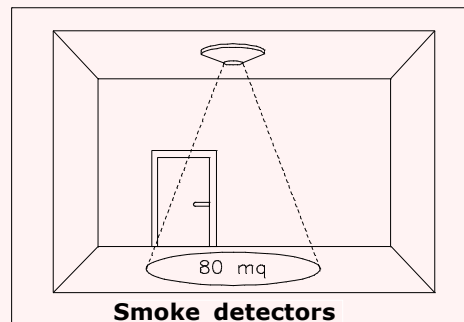
4) The control of operation and maintenance and / or extraordinary **must be carried** at least once a year. good to keep

When turning on leds fault is necessary make the replacement of the probe by a specialized technician.

GAS PROBE INSTALLATION



FIRE PROBE INSTALLATION



Turn On

- 1) Apply power using the proper external 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.
- 3) The display will start the COUNT DOWN of about 90 seconds (warm up). At the end the control unit is ready for detection.
- 4) Pressing and holding down the TEST button, you can obtain a gas leakage simulation. The control unit will carry out the following:
 - a) It will light up the 13% LEL or the 200ppm (with reference to CO) LED, and the **PRE ALARM LED**, switching the 1st threshold relay. The buzzer will issue a low frequency sound.
 - b) Later, it will light up the 20% LEL or the 300ppm (with reference to CO) LED, and the **MAIN ALARM LED**. In addition to maintaining the PRE ALARM relay switched, it will also switch the MAIN ALARM relay. The MAIN ALARM LED will start blinking and the buzzer will issue a higher frequency sound.
- 5) To complete the test, carefully read the probe instruction manual and perform the sensor test by issuing gas from a pre-calibrated aerosol.
- 6) If you want to simulate a zone **FAULT**, you only need to disconnect the signal cable of one or all the four probes. The control unit will carry out the following:
 - The FAULT and MAIN ALARM LEDs will light up and blink;
 - The buzzer will issue a continuous sound;
 - The FAULT and MAIN ALARM relays will switch.Reconnect the signal cable and press RESET to restore the control unit functioning.

Troubleshooting and solutions before calling a technician

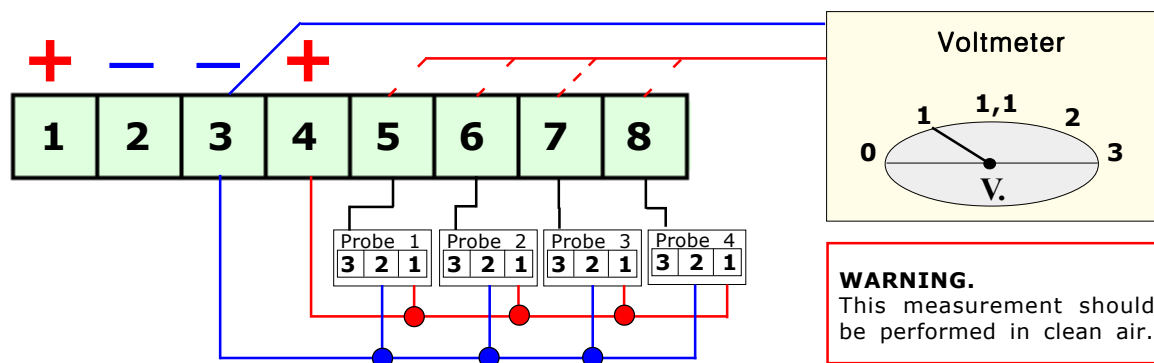


If the device does not start up.

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 **BX449F** 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 are free from electrical power.** Check the drawing of the connections.

If a 12Vdc solenoid for valve, which does not work well, is connected to the BX449F.

Direct connection of 12Vdc solenoid valves or sirens to the **BX449F** is not permitted.

An external power unit must always be used.

The **BX449F** gives a **max current of 100mA**.

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

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 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.



Control Unit **BX449F**

Lo styling è della b & b design

Purchase date

Stamp and signature of the dealer

Registration number

In agreement with its continuous development policy, we reserve the right to modify its products without notice.

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