BX316/XP Control Unit - from 1 to 16 Sensor

The BX316 is available in two versions:

Omega bar 9 modules Size 158x90x58 **Code BX316/xp** or Size 280x340x160 **Code BX316/xp-BOXED**

The control unit **BX316/xp** has been designed and built to meet the current requirements of the Market and in compliance with European Standard for checking gas presence in a versatile and innovative using **conventional sensors** Up to16 remote sensors from 4 to 20 mA can be connected in **conventional** mode for a single area or divided into two zones: 8 sensors for every zone.

Gas concentration measured by each sensor is sequentially shown on display, with a description of its location.
When one of the coupled sensors exceeds the pre-alarm setpoint, the control unit generates a proportional sound signal, depending on the concentration of gas measured, and shows on the display the number of the sensor the amount of gas measured and its origin; the alarm triggered is saved in a memory **(Datalogger)**. The data stored can be printed (up to maximum 50 events).

The control unit features two levels of alarm:
1st LEVEL, pre-alarm. This data is variable. The technician can modify pre-alarm intervention for every sensor according to the type of plant to be controlled.
The level can be selected from 3% to 16% of L.E.L. or from 45 to 240 ppm
2nd LEVEL, general alarm. it is set to 20 % of L.E.L. or 300ppm
The control unit is equipped with two general alarm relays with/without Positive Safety Switch to enable further independent control of two solenoid valves. Finally, the Control Unit allows the user to control the actual operation of the sensors coupled.

Expansion Cards
Relay card: each card has 4 relays, it can connect up to 16 cards (Optional)
Converter card: Current Voltage

CAUTION!
Carefully read the following instructions prior to installation of this device. Always keep this pamphlet for future reference. Ensure that the gas detection system is wired correctly and is only used for the purpose for which it is intended.

User Guide	**CONFORMITY** EN 50194 EN 50291 EMC EN50270 DM 01/02/1986
Firmware Version 1.0	

Main specification

Set: Date and time
Select: The **number of probes**, and their disablement
Select: The Operating range of the **probes**, from 0 to 20%, or 0-100 of **L.E.L.**
Select: The **type of gas** that the probe must detect "**Toxic or Explosive"**
Set: The **Pre-Alarm level**, for every probe from 3% to 16%
Select: The quantity of zones, **"1-2"** divisible 8 probes per zone
Select: The operation of the relay " **pulsed or continuous"**
Select: The function of **Positive Safety Switch**
Select: The function of **saving** the alarm triggered
Select: The exclusion or insertion of **"external siren"**
Select: The exclusion or insertion of **"internal buzzer"** if an alarm is triggered
Read: The **history of alarms (data logger), failures or any important detection** , up to maximum 50 events.
Connection. Of a portable printer via USB port
LCD display in normal operating condition
Display: the Brand and the **serial number**
Display: Date and Time
Display: the probe being monitored
Display: automatic Explosive Gas and Operating range **L.E.L.** or Toxic Gas **ppm**
Display: the chart of the amount of gas detected
Display: **Warm up** on Display appears the "**count-down"** time
Front Panel
Push-buttons for **navigation** and confirmation of data set
Test push-buttons for total control of **BX316/xp** that check the performance of both the control unit and the probes connected to it.
Reset button used to reset alarm and failure memories
LED that displays the silenced external siren. This operation can be performed by entering the Password
All operation and alarm LEDs: read page 4 to find out their functions
LED that displays the charge **status** of **Buffer battery**

Technical specification

Main Power Supply **unboxed version** .....*12*/15 V.dc ± 10%
Main Power Supply **boxed version** ..... 110/240 V.ac 50/60 Hz ± 10%
Secondary power supply via battery **Max 2,2 Ah** (not supplied) ..... 12,7 V. dc ± 10%
Battery Charger **Max 2,2 Ah** ..... controlled
Power Demand ..... 30W Max 230V
Power Demand ..... 25W Max @ 12 V
Relay Contact Range ..... 10A 250V resistive - 5A 30VDC resistive
Dedicated Relay for external siren in alarm state at 20% of LEL .... 10A 250V resistive - 5A 30VDC resistive

ALARMS
1st Pre-Alarm ..... adjustable for every probe from 3% (450ppm) to 16% (240ppm) of L.E.L.
2nd Final alarm for every active area ..... set to 20% of LEL or 300 ppm CO
Monitored Gas Indication ..... Through illuminated display

INDICATIONS
Indication of mains power supplied, alarms, battery state, probe and battery over load, faults
Manual alarm indication ..... built-in
Siren ON indication ..... built-in
Duration of pre-heating phase via count-down ..... 90 seconds
Manual test ..... built-in
External siren and internal Buzzer silencing ..... via software operation

ALARM AND PROBES ZONES
Number of Selectable zones 2
Number of connectable probes 16
Probes connection/disconnection ..... via software operation
Connectable probes ..... Semi-conductor, Catalytic, Electrochemical cell, Pellistore, Infrared Rays
Faults detected by failure circuit ..... Interruption , short circuit or failure
Input signal ..... 4 ÷ 20 mA over 150 Ohm
Operating Range ..... 0-20% or 0-100% of L.E.L.
Equipment precision ..... 1% FS
Response time ..... < 2"

CONNECTIONS
Printer ..... through dedicated USB port
Relay expansion card ..... each card has 4 relays; it can connect up to a max of 16 connections card
Card BMS16 ..... Converter Current Voltage

GENERAL INFORMATION
Operating temperature ..... -10°C ÷ + 60°C
Maximum distance between probes and control unit .....100 m
Cable diameter for connecting probes ..... 1 mm^2
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**
Omega bar dimensions DIN EN 50092 9 modules ..... 158x90x58 mm
Degree of Protection ..... in air IP20
Dimensions installed on the **"Boxed"** ..... 330*340*160 mm
Degree of Protection on the **"Boxed"**..... IP65
Electromagnetic Compatibility **CE** Reference Standard ..... **EN 50270**

Useful Information

CHECK the integrity of the probe 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 **DUOMO LTD** therefore disclaims any responsibility for possible damages caused to people, animals or objects.

TERMS and EXPECTATIONS: The installation of the **BX316/xp**, its ordinary and extraordinary maintenance, and its out of service removal at the end of the functional life guaranteed by the manufacturer, must be carried out by **authorized and/or specialized personnel.**
Do not allow it to become wet.

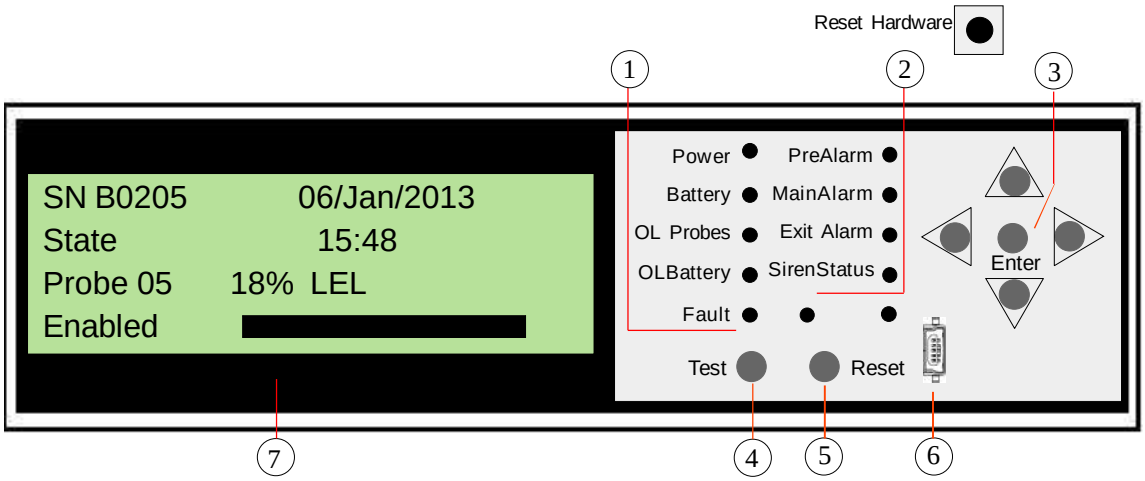
Do not drop it.
Heavy knocks or falls during transportation or installation can damage the appliance.

Avoid abrupt temperature fluctuations.
Sudden temperature variations can cause condensation and the probe could work poorly.

Cleaning
Never clean the device with chemical products. If necessary, wash with a moist cloth.
Absolutely avoid using any cloth dipped in thinners, alcohol and chemical detergents.
Disposal of the device
Concerning the conservation, the protection and the improvement of the quality of the environment, as well as for the protection of human health and the careful and rational use of natural resources, the device has to be the object of a selective collection for he disposal of electronic equipments and can not be disposed with the common domestic waste.
The user thus has the obligation to separate the device of the other waste to ensure that it is recycled in a sure way for preserving the environment For more details on the sites that are involved in the collection, contact the local administration or the distributor of this product.

Main Compatible Probes

PROBE	SENSOR	DEGREE Protec.	GAS Detected	RANGE Working Sensor	OUTPUT	ACCURATY	CALIBRATION Automatic	RELAY
SG500	Catalytic	IP30	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	NO	NO
SG544	Catalytic	IP44	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	NO	NO
SGM595	Catalytic	IP55	seepricelist	0÷100% LIE	4÷20 mA	±5 %	YES	NO
SGM595/A	Catalytic	IP65	seepricelist	0÷100% LIE	4÷20 mA	±5 %	YES	NO
SGM533	Catalytic	IP55	seepricelist	0÷100% LIE	4÷20 mA	±5 %	YES	YES
SG800	Catalytic	IP65	seepricelist	0÷100% LIE	4÷20 mA	±5 %	YES	YES
HCF100	Semiconduct.	IP55	FREON	0÷300% ppm	4÷20 mA	±5 %	NO	YES
SG895	Catalytic	ATEX	seepricelist	0÷100% LIE	4÷20 mA	±5 %	YES	NO
SG580	Catalytic	IP65	seepricelist	0÷100% LIE	4÷20 mA	±5 %	NO	NO
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	Electrochimical	IP64	H2S	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SGF110	Electrochimical	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	Electrochimical	IP55	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES
CO100Ar	Electrochimical	IP65	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES
SGM533^{duct}	Catalytic	IP65	CH4-LPG	0÷100% LIE	4÷20 mA	±5 %	YES	YES
CO200^{duct}	Electrochimical	IP65	CO	0÷300% ppm	4÷20 mA	±5 %	YES	YES

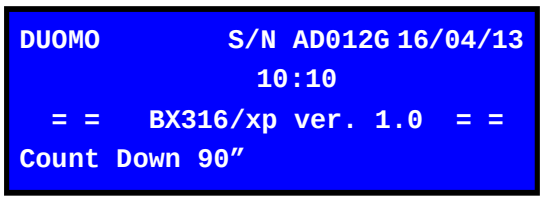


1) Signaling LEDS
a) MAINS LED. It turns on when network voltage is inserted.
b) Battery LED. It turns on when the equipment is powered by battery.
When the LED starts to flash it means that the battery is low.
c) The control unit is equipped with electronic safety devices called **OVER LOAD**, that are used to prevent permanent damage of the same. When these LEDs turn on it does not mean that the control unit is not working; it means that the equipment coupled to it (or the relative connections) are not working.
PROBE OVER LOAD LED: if this LED turns on, it indicates a short circuit or a high absorption of current by the probes and the relative connection cables. Check the battery and the connection cables.
BATTERY OVER LOAD LED: if this LED turns on it shows that the battery is connected incorrectly or there is an abnormal current absorption. Check the battery and the connection cables.
d) FAULT LED. This LED turns on and flashes when one of the probes coupled is damaged or the connection cables are interrupted or there is a connection error. When this LED is turned on, the equipment can no longer detect the gas and it activates the relays of both threshold levels (the 1st and the 2nd).
To restore operation, the probe must be repaired or removed by pressing RESET using the setting program.

2) Alarm LEDS
a) PRE-ALARM LED(PRE-ALARM). This LED turns on when gas concentration level reaches the pre-alarm value; the latter can be set from 8 to 16% of L.E.L. and closes the relay contact of 1st THRESHOLD.
b) MAIN ALARM (GENERAL ALARM) LED. This LED turns on when gas concentration reaches a value of 20 % of L.E.L. and closes the GENERAL ALARM relay contact.
c) MANUAL ALARM LED. This LED turns on when the remote alarm button is pressed.
d) LED for activating the **EXTERNAL SIREN**. It turns **RED** when the external siren is **disconnected.**

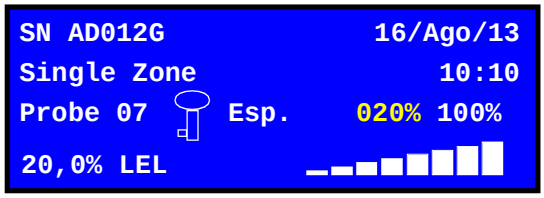
Push-Buttons
3) Navigation buttons group. These buttons are used to set the operation of the control unit**.**
4) RESET button. Press this button to reset all memories.
5) TEST button. By keeping this button steadily pressed you will simulate a gas leak.

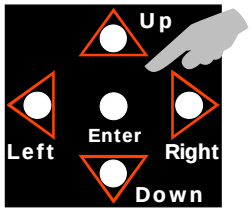
6) Printer USB port. Connection for printing the data stored in the memory.
7) Display.
The instrument is equipped with a high performance alphanumeric display with 4 lines for every 20 characters to facilitate reading all the events. Display background will always be lit up.



Screen displayed when turning on the **BX316/xp.** This screen remains on for 90 seconds.

Initial Screen



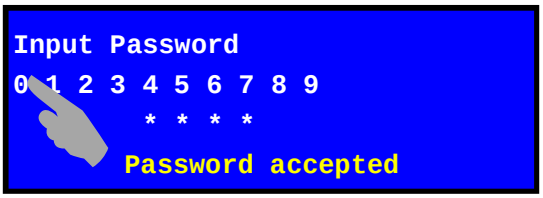


In normal functioning state, the display shows the following information:
a) Registration number
b) Current date and time
c) Currently detected zone; the control unit can be divided in zones: Single Zone - Zone 1 - Zone 2
d) The currently monitored probe, and the type of gas, explosive and/or toxic.
Each connected probe is shown every 8 seconds.

To accelerate the display of the probes press the **Left** and **Right** buttons.
To stop the sequence of probes, and analyse the functioning of a specific probe, press **"ENTER"**.
On the display you will see a key. To unlock it, press again **"ENTER".**
e) Display of the percentage of L.E.L. or ppm detected by the probe, and the bar graph of the quantity of gas.

Control unit setting

To access the **BX316/xp** setting program you should press the "ENTER" button for 5 seconds.



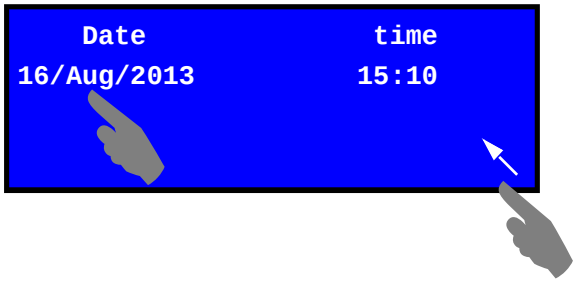
To continue you should enter a password.
The "password" is 1-2-3-4.
Note. The password can be changed by accessing the **"Advanced Functions"** in the **"General Functions"** section.
Use the **Left** and **Right** buttons to reach the desired number, and press **"ENTER"**.
Each time you enter a number you will see an a star, until all four a stars appear.
If the password is correct you will see **"Password accepted"**
If you made a code input mistake, you will see **"Wrong password"**.
You should re-enter the password. If you do not press any key, you will return to the previous screen.

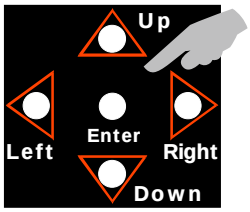
Selection of the setting

DATE and TIME SETTING
Use the **Left** and **Right** buttons to select **"Time Setting"**, and press **"ENTER".** You will access the current date and time setting program.
PROBE SETTING
Use the **Left** and **Right** buttons to select **"Probe Setting"**, and press **"ENTER"**.
You will access the program to select the quantity of zones (1-2-single).
Set the quantity of probes that can be connected, the type the pre-alarm gas percentage and the operative range of each probe.

GENERAL FUNCTIONS
Use the **Left** and **Right** buttons to select **"General Functions"**, and press **"ENTER"** to access the program to select: relay functioning mode, intrinsic safety function activation, activation of the zone alarm lachting function, activation of the external siren in silent mode, and "Advanced Functions" menu.
By selecting **"Advanced Functions"** you can access a program to: change the password, read the datalogger, print the events, and test the probes.
To select **Exit** to return to the initial program

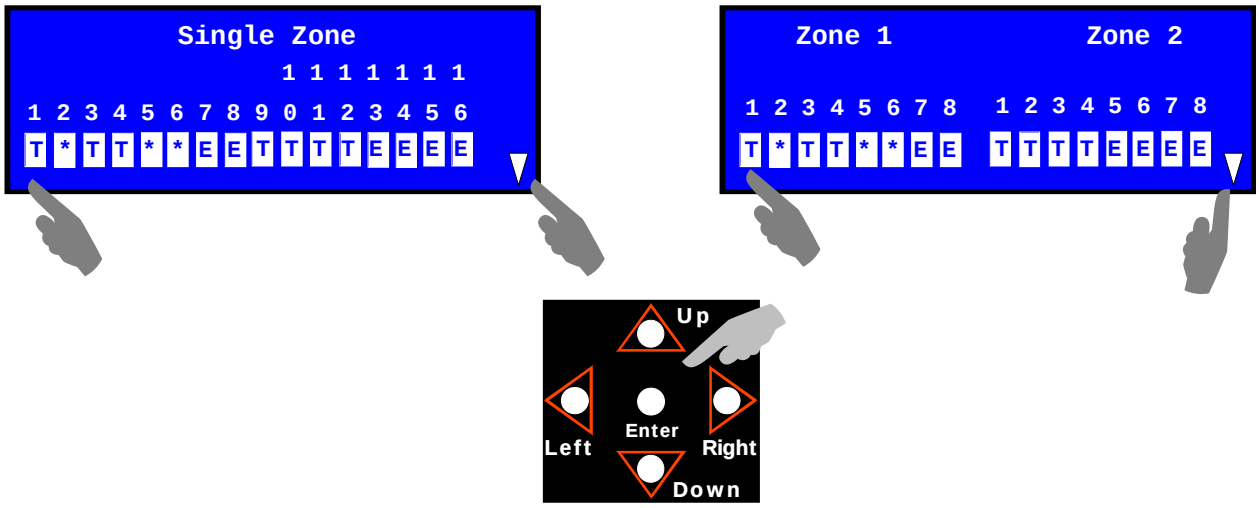
Date and Time Setting





To set the date and time, proceed as follows:
1) Use the **RIGHT** and **LEFT** buttons to select day, month, year, hour, minutes.
2) Use the ENTER button to find the desired day, month, year, hour, minutes.
Note. In case of blackout the **BX316/xp**, the set data are not lost.
If the backup clock battery is too low, you will get this error message "Err. bat. Clock" during the warmup phase.
EXIT button
To exit the program, select **" Return Arrow ".**

Probe Setting



Detection probe input
As explained above, you can divide the control unit in multiple zones in order to set one or more alarm handling modes.
Initially, this screen will display the **"Single Zone"** blinking message.
Press **"ENTER"** to replace the previous message with **"Zone 1 – Zone 2".**

In **Single Zone** mode, you will control a **single relay** for the **Main Alarm of all 16 probes.**
In **Zone 1-2 mode**, you will control **two relays** for the Main Alarm:
1st relay for probes 1 to 8 and **2nd relay for probes 9 to 16**

Activation/deactivation of probes, and type of gas selection: Explosive or Toxic
Press DOWN to get probe 1 blinking.
Now, each time you press **"ENTER"** you will get the following box:

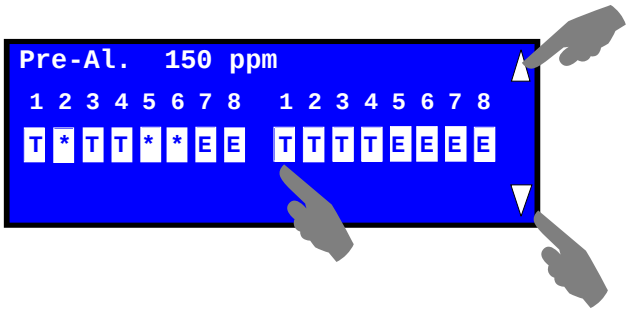
E, you have enabled a probe for explosive gas
T, you have enabled a probe for toxic gas
***** you have disabled the probe

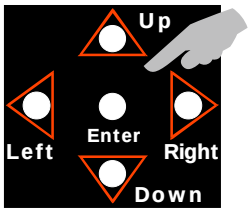
Use the **RIGHT** and **LEFT** buttons to select the desired probe, and repeat the operation outlined above.
This operation should be performed on all probes to be activated.
Use the arrow down to the right and press **"ENTER"** to access the setting program for the pre-alarm gas percentage.

Setting pre-alarm percentage

The **BX316/xp** program allows a different pre-alarm threshold per each connected probe.

Toxic gas Setting

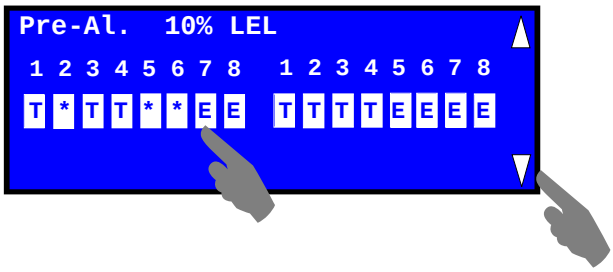




When this screen appears, the cursor goes on **probe 1**, (in this case **("T")**. On the first line you will see the gas percentage of **"150 ppm"**.

To change the percentage press **"ENTER"**. The percentage is increased each time of 15 ppm, starting from 45 ppm up to a maximum of 240 ppm.
The percentages are increased cyclically.

Explosive Gas Setting



To set other probes, use the **RIGHT** and **LEF**T buttons to move to **probe 7** (in this case) **("E")**. On the first line you will see the gas percentage of "10% LEL".

To change the percentage press **"ENTER"**.
The percentage is increased each time of 1%, starting from 3% of LEL up to a maximum of 16% of L.E.L.
The percentages are increased cyclically.

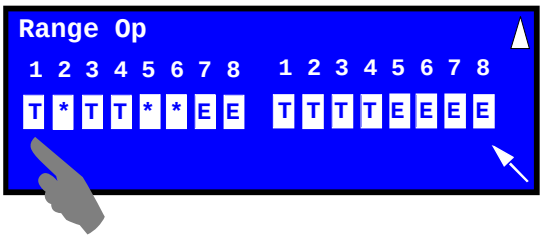
Use the arrow up to the right and press **"ENTER"** to return to the previous program.

Use the arrow down to the right and press **"ENTER"** to access the setting program for the **"OPERARTIVE RANGE".**

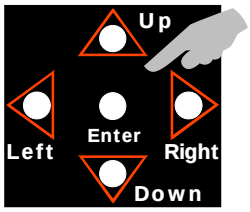
Setting the Percentage of Prealarm

The program of the control unit provides that each connected probe may have a pre-alarm threshold different one from the other. This operation is reserved exclusively for explosive gas.

Toxic Gas

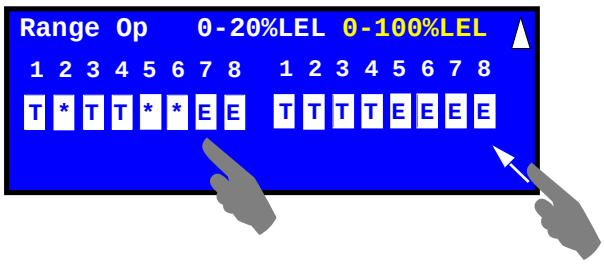


When this page is displayed, it the cursor is moved to **probe 1**, **"T"** in our case
The message "Range Op 0-20% -100% L.E.L." is not displayed because the Operating range cannot be modified.



Explosive Gas

Press **DOWN** and use **RIGHT** and **LEFT** buttons to the select the desined probe whict change the Operative Range. If you are on **probe 7** (in this case **"E"**) on the first line you will see the operative range of **"0-20%L.E.L."**.

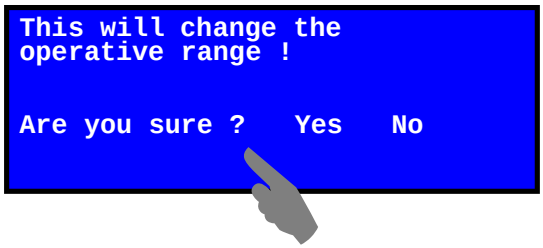


To change the value press **"ENTER"**:every time you press the button the percentage changes from **" Range Op 0-20%L.E.L."** to **" Range Op 0-100%L.E.L."** and vice versa.

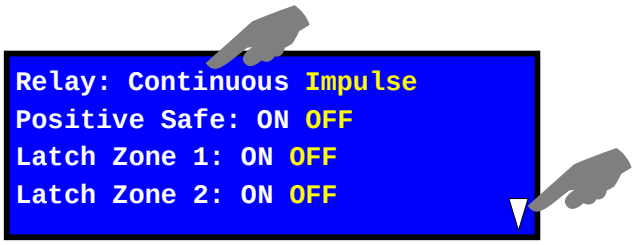
N.B. Please keep in mind that when this operation is peformed, the relative probes must also be setted to the same range.

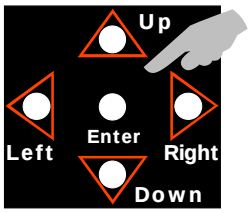
Select the top right arrow and press **"ENTER"** to return to the previous program.

Due to the sheer importance of this operation any change to the operative range shall be confirmed



END: to the exit program, select the **"Back Arrow"**.





Selecting the functioning mode of the Main Alarm Relay

According to the type of installation, you can select the relay functioning mode.
The relay functioning modes are two: continuous and impulse.
In the **"Continuous"** position, the relay remains closed until the alarm status continues, or until the alarm stops.
In the **"Impulse"** position, the relay remains closed for 20 seconds, and then disenergizes afterwards.

Selection
Use the UP and DOWN buttons to select Relay.

Each time you press **"ENTER"** the Continuous/Impulse message is changed.
Once you have selected it, use the **UP** and **DOWN** buttons to move to the next selection.

Selecting the Positive Safety

According to the type of installation, you can select the Positive Safety function.

Selection
Use the **UP** and **DOWN** buttons to select Positive Safety.
Each time you press **"ENTER"** the ON/OFF message is changed.

In the **"ON"** position, the Positive safety function is enabled.
In the **"OFF"** position, the Positive safety function is disabled.
Once you have selected it, use the UP and DOWN buttons to move to the next selection.

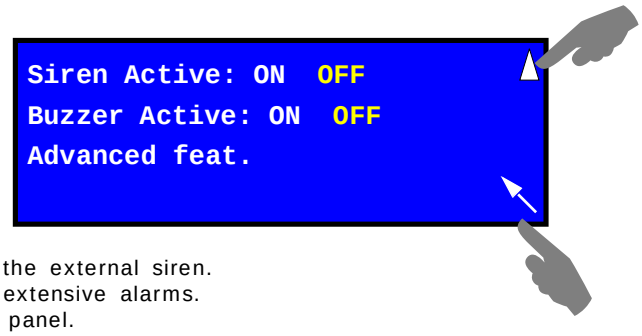
Selecting memorisation of Main Alarm

According to the type of installation, you can select the activation or deactivation of the Main Alarm Latching.
By selecting the Latching function, the relay remains closed until the RESET button is pressed.
By unselecting the Latching function, the relay won't remains closed when the alarm stops.
Note. The memorisation is subdivided in three ways:

1) Memorisation of single zone
2) Memorisation of first zone
3) Memorisation of second zone

Selection
Use the UP and DOWN buttons to select Latching (memorization).
Each time you press **"ENTER"** the ON/OFF message is changed.

In the **"ON"** position, the latching function is enabled.
In the **"OFF"** position, the latching function is disabled.
Once you have selected it, use the **UP** and **DOWN** buttons to move to the next selection.



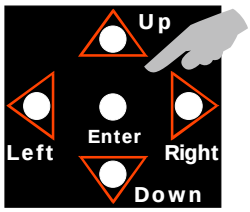
Siren and Buzzer Silent

Selecting the External Siren Silent Mode

The **BX316/xp** program allows the silent mode for the external siren.
The siren could be annoying during test phases, or extensive alarms.
The silencing is indicated by a red LED on the front panel.
Red LED on, means siren silenced - **Red LED off**, means siren working

Selection Use the **UP** and **DOWN** buttons to select Siren Silent Mode.

Each time you press **"ENTER"** the ON/OFF message is changed.
In the **"ON"** position, the siren is **enabled.**
In the **"OFF"** position, the siren is **disabled**.



Selecting the Buzzer Silent Mode

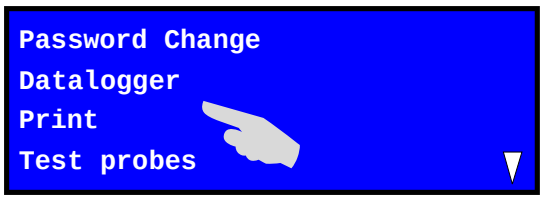
Selection Use the **UP** and **DOWN** buttons to select Buzzer Silent Mode.

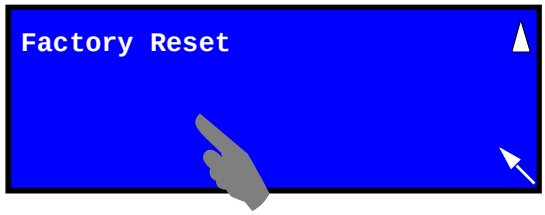
Each time you press **"ENTER"** the ON/OFF message is changed.
In the **"ON"** position, the siren is **enabled.**
In the **"OFF"** position, the siren is **disabled**.

Select Arrow and press **"Enter"** to return to the Menu.

Advanced Functions

Use the **UP** and **DOWN** buttons to select: **Change Password - Datalogger - Print - Test Probes**, and press **"ENTER"**.

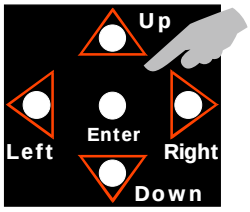




Password Change

Now you can change the factory set password (1234), and enter your own.
Use the **RIGHT** and **LEFT** buttons to reach the desired number, and press **"ENTER"**.
Each time you enter a number you will see the selected number, until all four numbers appear.
Once you have entered it, you will get the **"CONFIRMED"** message.
The program returns to the previous screen after 5 seconds.

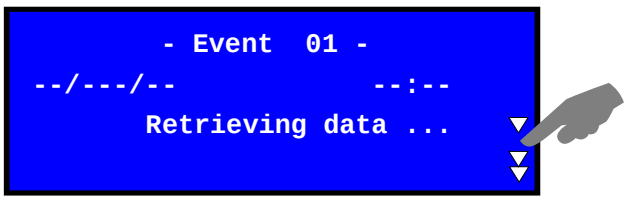
Save the password and do not forget it.
From now on you should enter the new password to access the **BX316/xp** programming.
If you forget the password, you can find the "PUK" number in the warranty certificate.

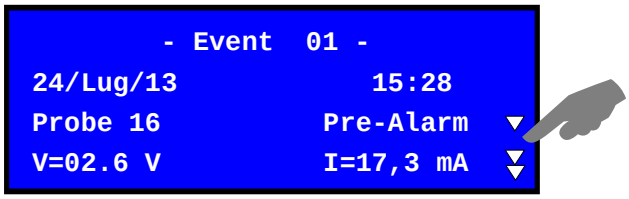


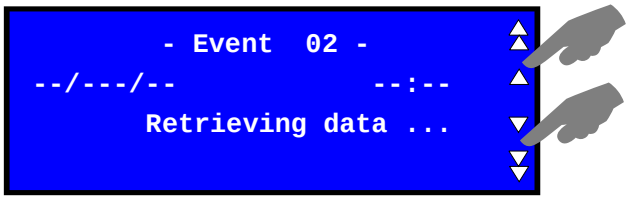
Datalogger

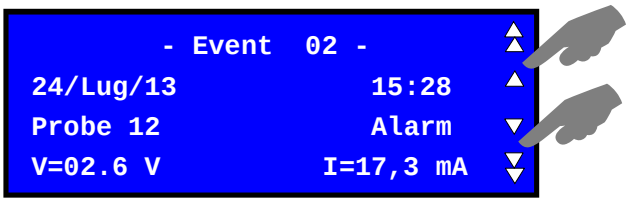
Use the UP and DOWN buttons to select Datalogger, and press **"ENTER"**.
You will get the screen displaying the last 50 detected events.
The displayed events, one per screen, are:
Pre-Alarm, Alarm, Fault, Blackout, Reset, Low Battery, Probe Enabled, Probe Disabled, Hard Reset.

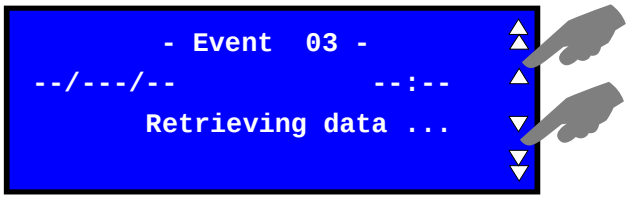
To view the other screens, use the **UP** and **DOWN** buttons to select the arrows on the right.

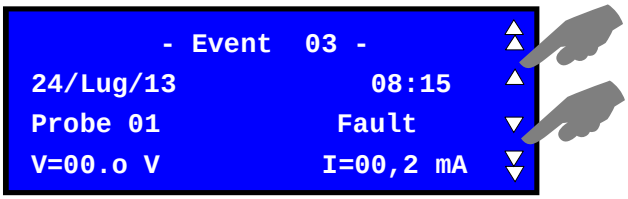


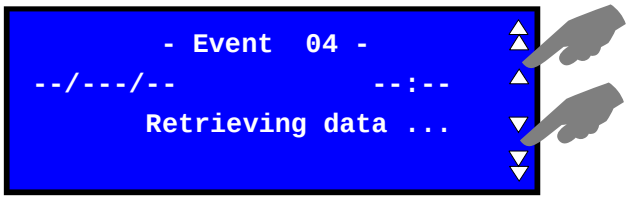


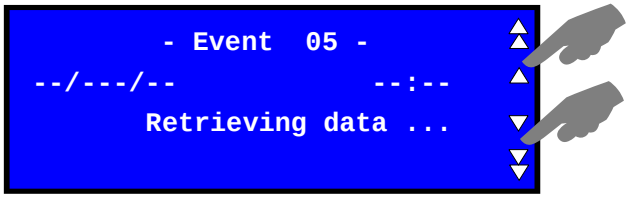


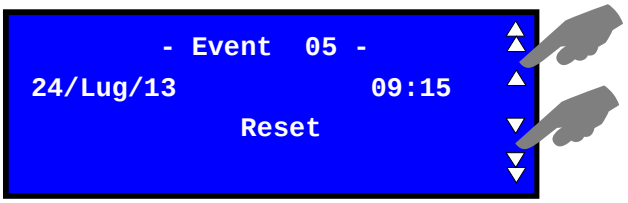


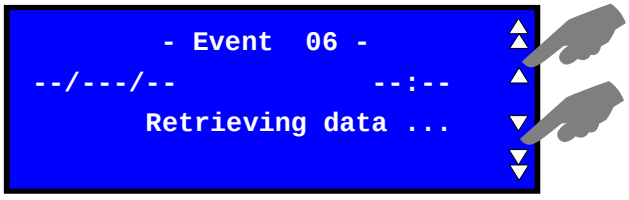


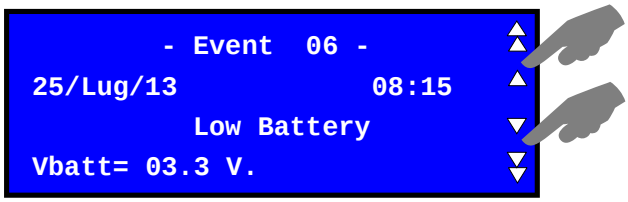








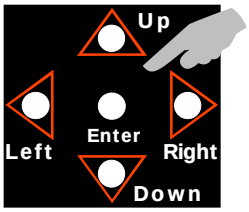


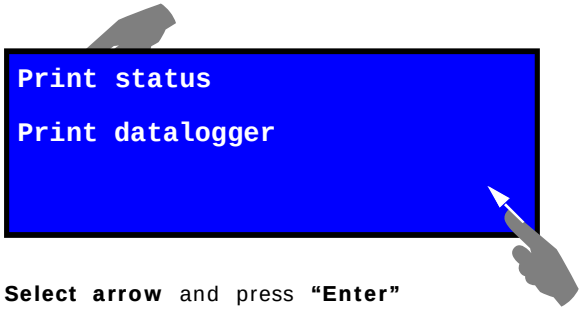


General Functions (continue)

Print

Use the **UP** and **DOWN** buttons to select Print, and press **"ENTER"**.
Now you can print the following:
The events on the current state of the **BX316/xp** for all probes.
All the events in the datalogger.





Select arrow and press **"Enter"** to return to the Menu.

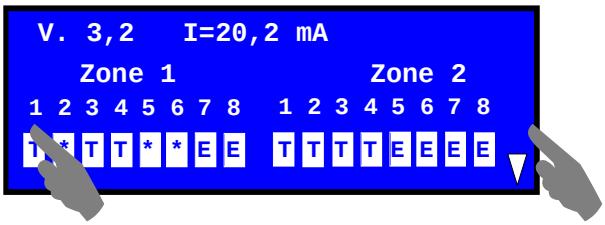
```
        DUOMO LTD
        == BX316/xp ==
 Ver: 1.0    S/N Sample
Serial number:  0102
    Date              Hour
07/MAY/13           10:00

      State probes
--------------------------
Probe 01            Zone 1
Gas Type:  Explosive
Gas Level:     02.9 LEL
Meas.Current:  06.2  mA
Status:  Normal
--------------------------
Probe 02            Zone 1
        Disabled
-------------------------
Probe 03            Zone 1
        Disabled
--------------------------
Probe 04            Zone 1
        Disabled
--------------------------
Probe 05            Zone 1
        Disabled
--------------------------
Probe 06            Zone 1
        Disabled
--------------------------
Probe 07            Zone 1
        Disabled
--------------------------
Probe 08            Zone 1
        Disabled
--------------------------
Probe 12            Zone 2
Gas Type:  Explosive
Gas Level:     10.7 LEL
Meas.Current:  12.3  mA
Status:  PRE:ALARM
--------------------------
Probe 13            Zone 2
       Disabled
--------------------------
Probe 14            Zone 2
       Disabled
--------------------------
Probe 16            Zone 2
       Disabled
```

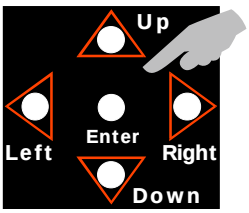
```
        DUOMO LTD
        == BX316/xp ==
 Ver: 1.0    S/N Sample
Serial number:  0102
    Date              Hour
07/MAY/13           10:00

      Datalogger
-----------------------
        - Event 01 -
06/jun/2010         08:27
         Reset
------------------------
        - Event 02 -
07/jun/2010         10:11
         Hard Reset
------------------------
        - Event 03 -
07/jun/2010         10:27
         Vbat=11.8V
-----------------------
        - Event 04 -
07/jun/2010         11:27
         Black-out
------------------------
        -Event 05-
06/jun/2010         09:27
      Probe 16 Fault
V=00.1 V I=01.1 mA
------------------------
        -Event 06-
06/jun/2010         22:27
     Probe 15 Disabled
-----------------------
        -Event 07-
06/jun/2010         22:27
     Probe 15 Disabled
-----------------------
        -Event 08-
06/jun/2010         22:27
     Probe 15 Enabled
-----------------------
        -Event 09-
06/jun/2010         22:27
     Probe 15 Enabled
-----------------------
        -Event 10-
06/jun/2010         22:27
     Probe 15 Enabled
```

Test Conventional Probes

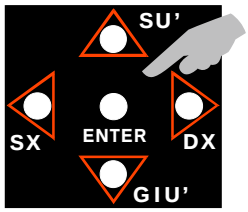
Use the **UP** and **DOWN** buttons to select Test Probes, and press **"ENTER"**.

Check voltage of probes
This screen is used by technicians to check the voltage detection state compared to the room gas concentration.
The cursor goes on probe 1. The voltage and current detected by the probe are shown.
To read other probes, use the RIGHT and LEFT buttons to reach the desired probe.





Select arrow and press **"Enter"** to return to the Menu.

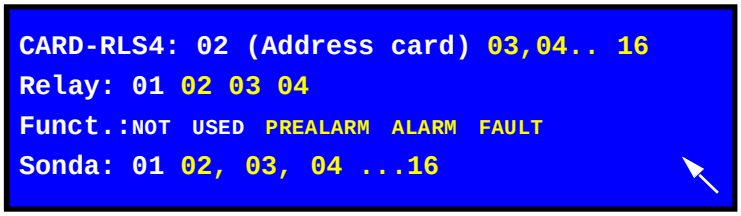


Factory Reset

Before proceeding be sure to want to do it, all previously set data will be reseted.

Select **"Factory Reset"**. Pressing **"ENTER"** the message starts blinking.
By holding the **"ENTER" b**utton for 4 seconds, you will view a frame with 10 empty rectangles that will gradually fill. At the end, the **BX316/xp** will be totally reset and a new **countdown** of **90 seconds** will begin.
Use the arrow down to the right and press **"ENTER"** to return to the previous program

Expansion cards



The control unit can be connected up to a maximum of 16 cards Expansion Relay **CARD-RLS4**.
On each card there are 4 relays which can be associated with the desired probe.
To each relay it can be assigned:
1) The probe, from 1 to 16
2)The functions of activation of the relay: PREALARM, ALARM, FAULT

Display

CARD-RLS4- Indicates the address set in the card reading.
Press to choose the card to set
Relay. Press "ENTER" to choose the relay (1, 2, 3, 4) to be associated to a function.
Function. Press "ENTER" to choose the function to be associated: NOT USED-PREALARM-ALARM
PROBE. Press "ENTER" to choose the probe that you must associate the function of relay

Once you set **to save** just choose back with the return arrow.

Installation and positioning of the probe

The most essential factor for the proper functioning of the **BX316/xp** is its correct installation.
By following the instructions in this paragraph high accuracy can be obtained, together with the absence of false alarms.

Control unit

The **BX316/xp** is designed so that it can be mounted externally or built into electrical panels and has an IP20 gpowered to **15 VDC**
The BX316/xp-boxed full cabinet is a device adapted to be mounted to a wall and is powered to 110/ 240 VAC with protection IP65
During installation the normal precautions required for electronic devices should be maintained and therefore:

- Install the device away from sources of heat.
- Prevent liquids from coming into contact with the **BX316/xp**; The external structure has an **IP20 grade of protection, or IP65 when it is in our Boxed version originally supplied has IP65**

Position of the detection probes

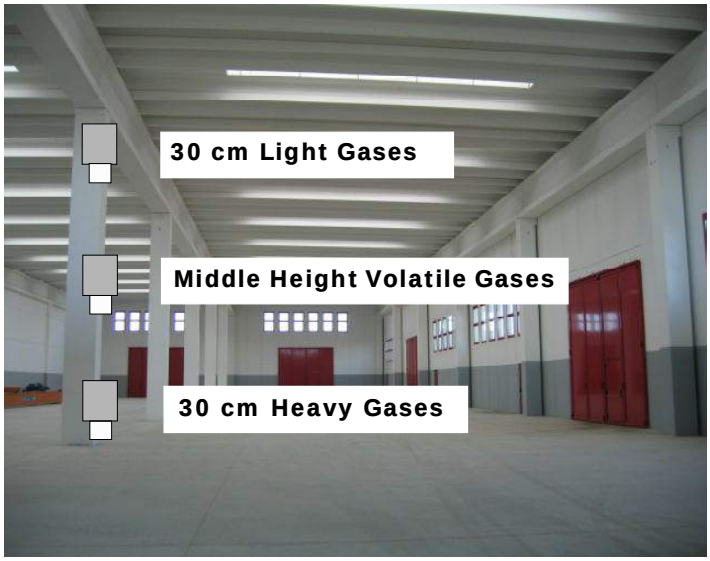
You can connect many types of remote probes to this unit. Therefore, they should be positioned at different heights depending on the type of gas to be detected.

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 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.

PROBE INSTALLATION INFORMATION

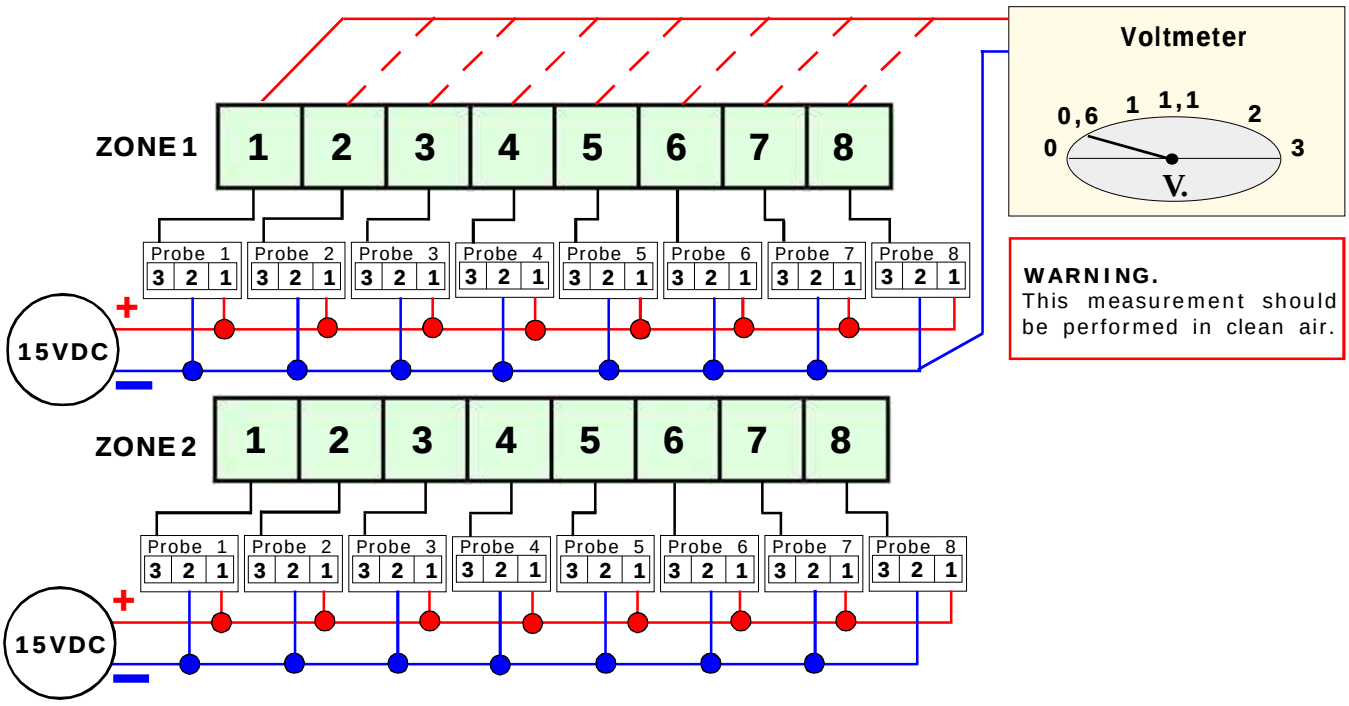


Turn - on

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:
- 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.
- Later, it will light up the 20% L.E.L. or the 300ppm (with reference to CO) LED, 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.
When releasing the TEST button, you will see the opposite: Only the blinking MAIN ALARM and the 20% L.E.L. LEDs will remain ON.
When the latching is enabled, the main alarm will continue until the RESET button is pressed, clearing the alarm from the memory.
5) To complete the test, carefully read the probe instruction manual and perform the sensor test by issuing gas from a pre-calibrated gas bottle
6) If you want to simulate a zone FAULT, you only need to disconnect the return cable of one or all the probes. Reconnect the return cable and press RESET to restore the control unit functioning.

Before calling a technician, check...

If the device does not start up.
Check that the power supply is correctly connected at 230/240V. 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 **BX316/xp** to the probes are intact, that the probes are properly powered, and that the signal cable is correctly connected.



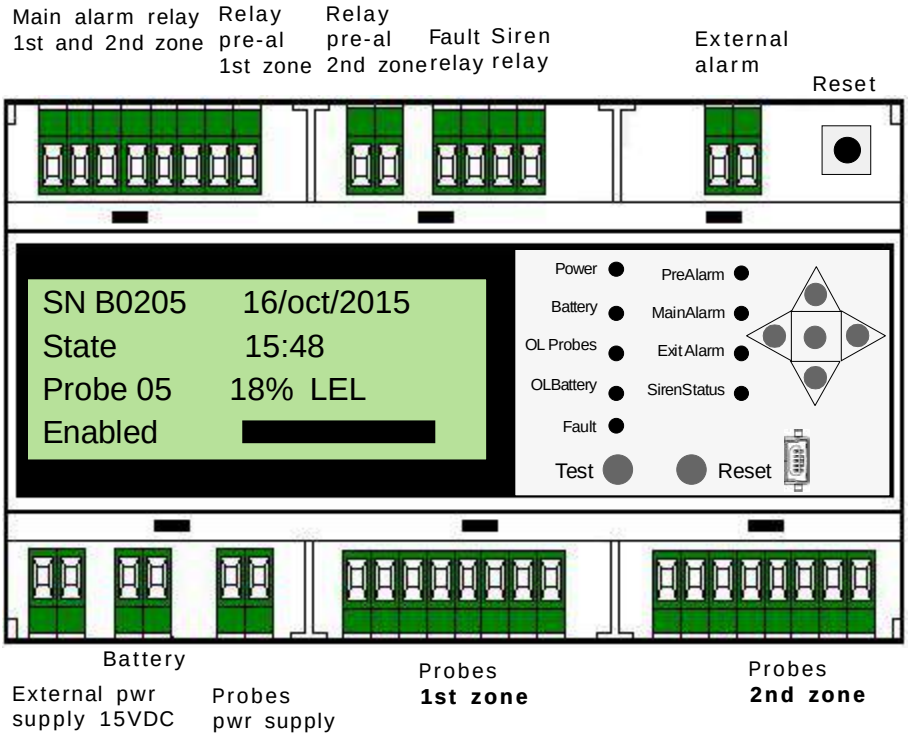
If the Over Load Probe LED lights up.
Check: that the power polarity has not been inverted, that no short-circuit is present, that the probes were not damaged during installation, that no excessive current absorption is present.
If the Over Load Battery LED lights up.
Check that the connection cables 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.
N.B. All relays are free of voltage. Controllare il disegno di collegamento.
If the BX316/xp is a solenoid valve connected to 12VDC and is not working well.
BX316/xp can be connected directly to the solenoid valves, sirens to 12 VDC. with an absorption **maximum of 400 mA**. In case of major absorptions it must use a hight power supply.

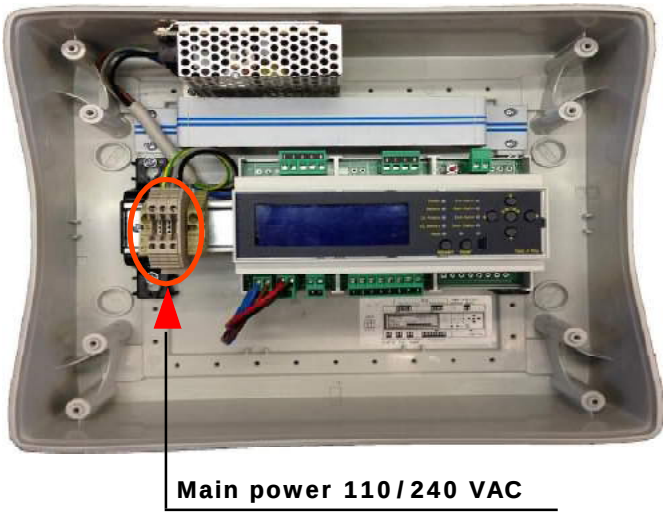
If other problems arise, a specialised and/or authorised technician and/or the Distributor of **DUOMO LTD** should be contacted directly.

Electrical Connections

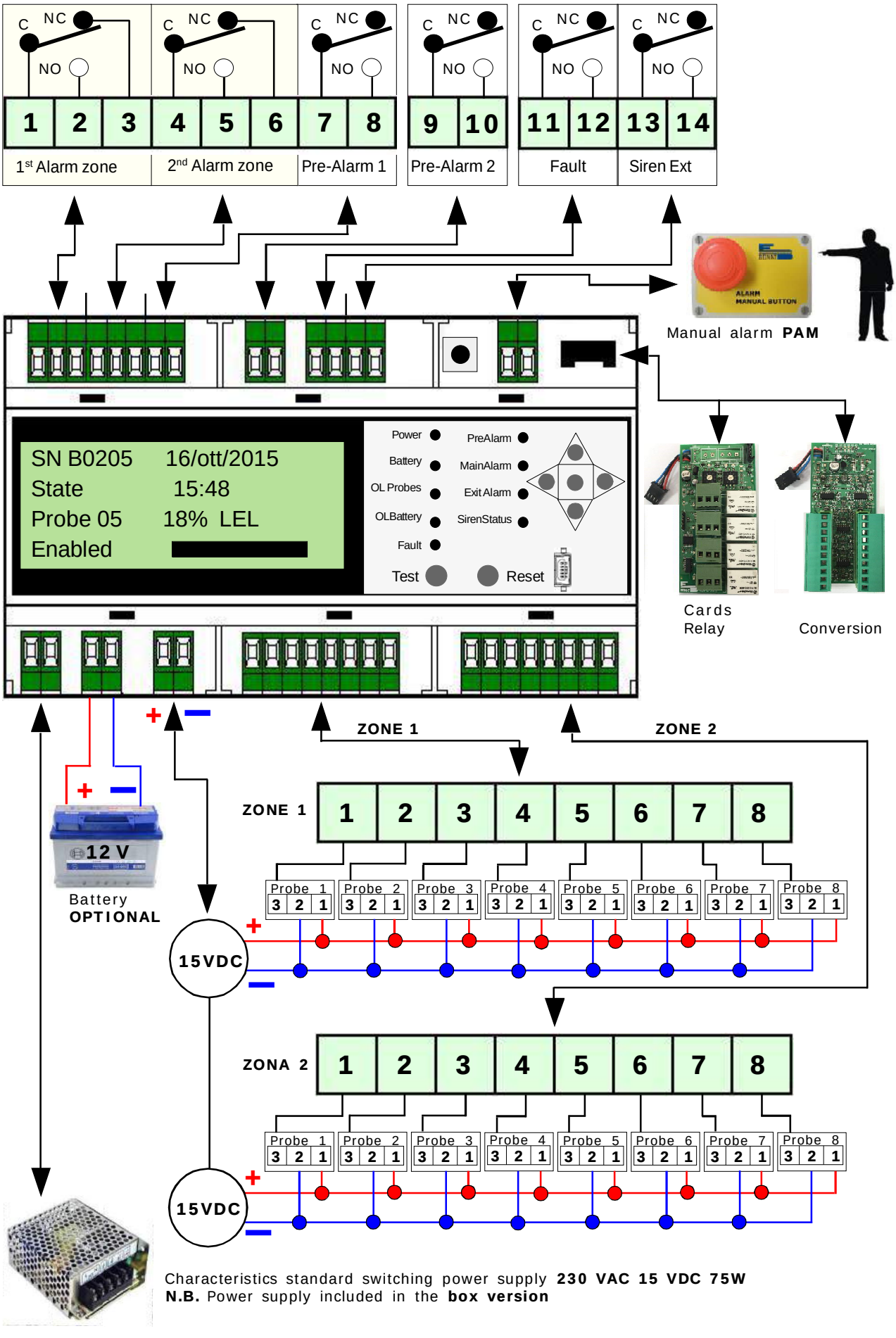
WARNING.
Before connecting to the mains power, ensure the voltage is correct.
Carefully follow the instructions and the connections according to Regulations in force, keeping in mind that the signal cables should be laid separate from the power cables.

Attention. !! All relays are voltage free.
Contact capacity 10 A resistives





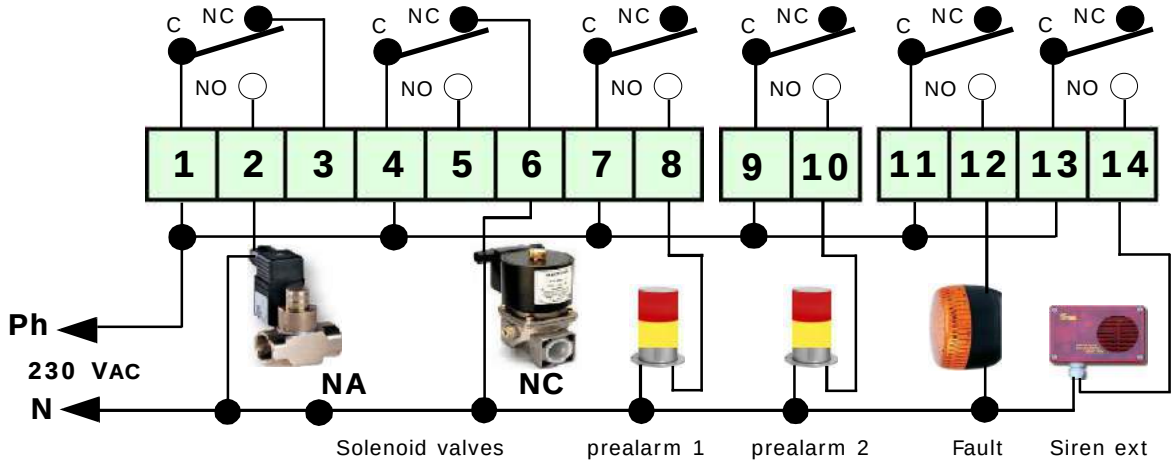
Electrical Connections



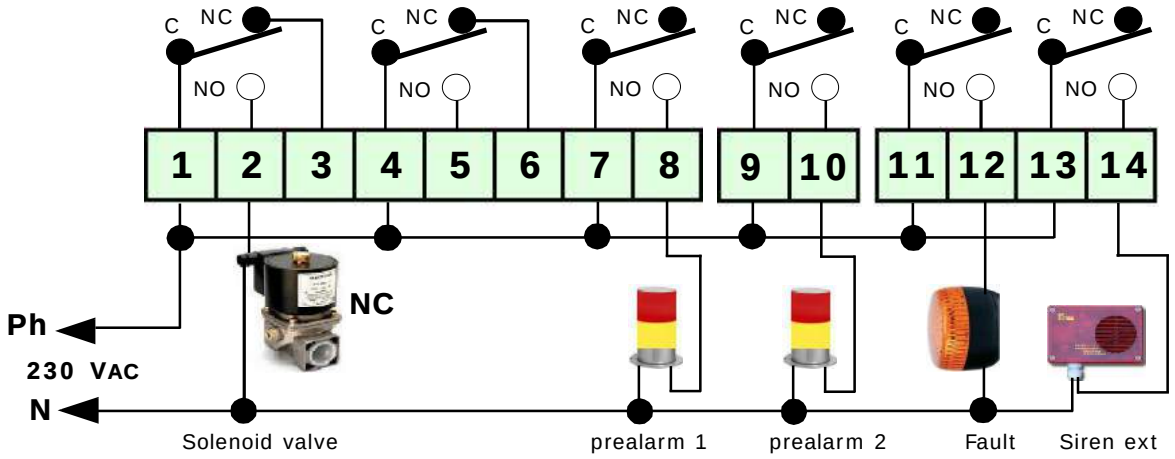
Characteristics standard switching power supply **230 VAC 15 VDC 75W**
N.B. Power supply included in the **box version**

Electrical examples

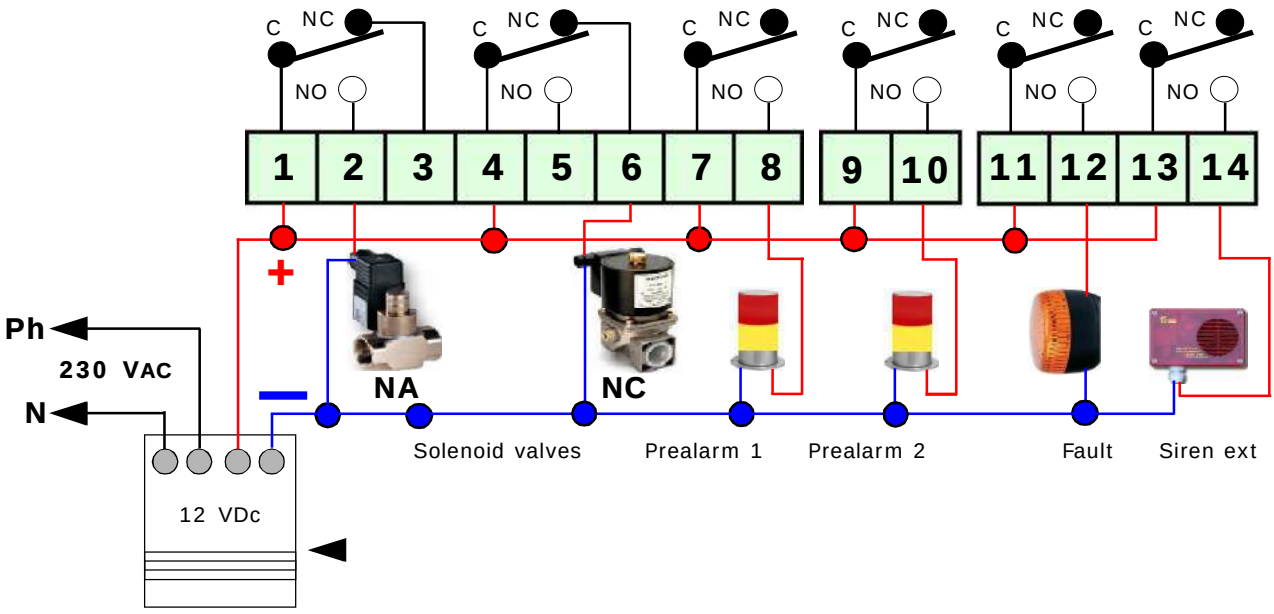
Connections of a solenoid valve Normally Closed without Positive Safety



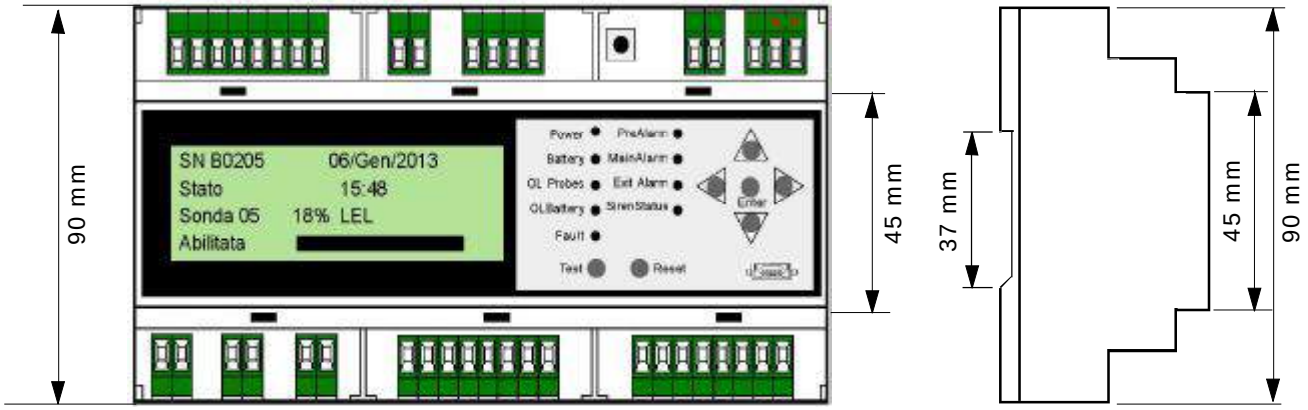
Connections of a solenoid valve Normally Closed with Positive Safety



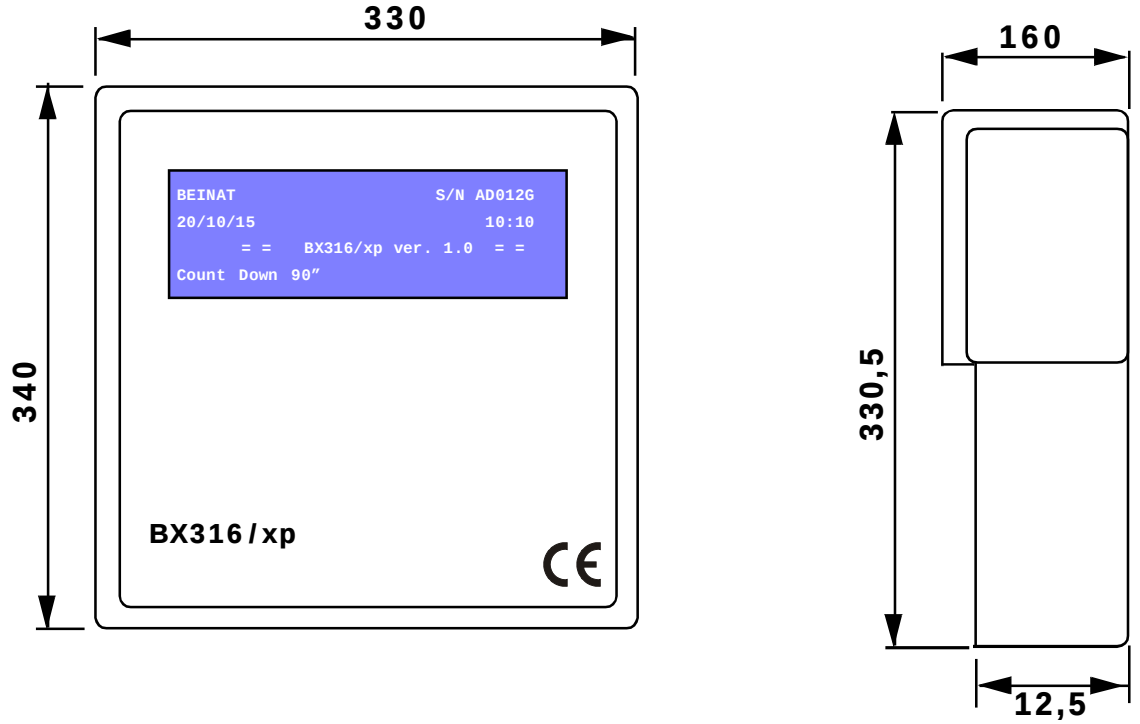
Connecting a Solenoid valve with sirens to 12 VDC, via a power switcing. The power supply should be adequate to the consumption of the components



Omega-type size DIN EN 50092 9 modules Dimension



Measurements and dimensions of the control unit in box IP65



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

Warranty

The warranty term is 2 years - extendable to 3 years by registering this product online at www.duomo.co.uk - 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 be returned to **Duomo (UK) Ltd 5 The Furlong Berryhill Industrial Estate Worcestershire, England.**

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

Disposal of old electrical and 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 IP65 Made in Italy

BX316/xp

Purchase date	Stamp and signature of the dealer
Registration number	

In agreement with its continuous development policy, **DUOMO Ltd** reserves the right to modify its products without notice.

DUOMO

BE-Rev 1.0 15 47

