ESSER

by Honeywell

Installation, Configuration and Operating Manual

ESS PLUS

ES-MN-31002-01-2	Information in this document is subject to change without notice
30 July 2009	

Contents

1 Introduction

1.1 Manual purpose

The purpose of this manual is to provide the user with all recommended procedures and full technical details for the successful installation, commissioning and configuration of the PLUS control panel

Procedures described in this manual include appropriate warnings and cautions to guide the user towards adopting safe and methodical work practices during the installation, commissioning and configuration phases.

Important Note

This manual must be read, and its contents clearly understood, before proceeding with any work relating to the control panel. Damage to the control panel may result from NOT following the recommended procedures described in this manual.

If there are any areas of doubt, consult your supplier before continuing with the system installation, commissioning and configuration.

WARNING
¡High voltage!
Take suitable precautions to avoid electric shock.

1.2 Warnings and Cautions

Installation of this product must be carried out only by suitably-qualified electrical engineers.

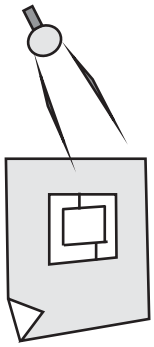
Installation: The control panel is easy to install providing the recommended procedures described in this manual are followed. It is assumed that the system, of which this control panel is a part, has been designed by a competent fire alarm system designer in accordance with the requirements of the applicable local codes of practice.

Before installing this control panel, please thoroughly read the Installation Section of this manual and the installation instructions of every each device, which provide detailed information on mounting, wiring, and installing the system.

Before working on mains connections, ensure mains power supply to the panel is disconnected.

Failure to f ollow the instructions of this manual could result in damage to the control panel.

Commissioning and Configuration. Read carefully the commissioning and configuration procedures of this manual. It is recommended by manufacturer to check the wiring lines before making any connection to the panel or equipment. Do not carry out any configuration functions without fully understanding of their operation.



1.3 System design and planning

It is assumed that the system, of which this control panel is a part, has been designed by a competent fire alarm system designer in accordance with the requirements of EN54 Part 14 (230007/14) and any other local codes of practice that are applicable. The design drawings should clearly show the positions of the field devices and the control equipment.

PLUScontrol panels are manufactured meeting national and local standards. The control panel complies with the requirements of EN54 Parts 2 and 4.

However, some installation and configuration practices may contravene the requirements of EN54. Where there is a possibility of such an occurrence, a suitable warning is given with brief details of the EN54 requirement. Refer to proper authorities to confirm the requirements.

CE

CE Marking

This panel is CE Marked to show that it conforms to the requirements of the following European Community Directives:

- Electromagnetic Compatibility Directive 89/336/EEC (and the amending Directives 92/31/EEC, 93/68/EEC)
- Low Voltage Directive 73/23/EEC (and the amending Directive 93/68/EEC).

1.4 General

PLUS control panels are factory-configured as 4, 8 or 12 zones.

The control panel can support an unlimited number of manual call points and a limited number or detectors by zone, according to the limits of the design and installation standards that are applicable.

The panel is self-contained with integral power supply and space provision for two sealed, lead-acid standby batteries and complies with the requirements of EN54 Parts 2 and 4.

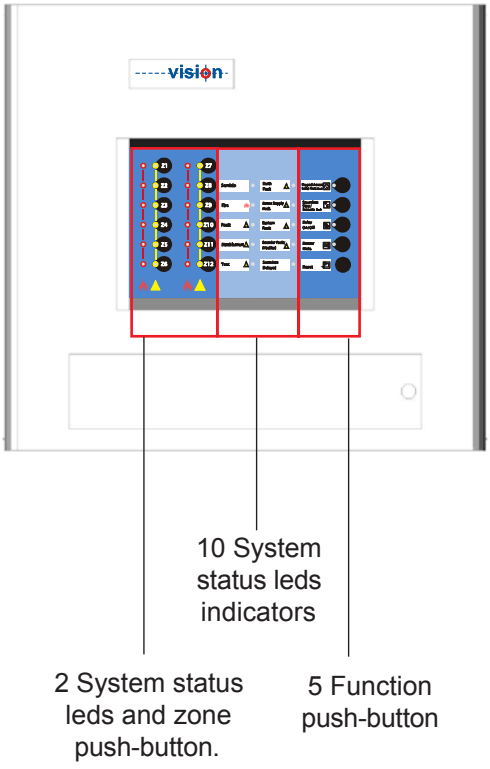
The panel functions are microprocessor controlled and there are some programming options in addition to those required by applicable st andards. Moreover, sounder delays, zone monitoring or test mode are also available. Check the default configuration before making any test.

1.5 Note

While every effort is made to ensure the accuracy of the content of this manual, the manufacturer reserves the right to change the information without notice.

2 Operation

2.1 Main Features



PLUS control panels have been designed to be easy to use and program and with the best quality and performance, providing users with an efficient and safe product which meets the current applicable standards.

Moreover, the control panel has a communication port for remote monitoring through telephone line or ethernet. TG graphic software, remote maintenance software or transmission of alarms to a Central Station.

System

The system is controlled by a processor with a software that monitors and ensures system's security, which increases its reliability.

System access is restricted by password or keyswitch (level 2).

Front indicator leds and buzzer show the current state of the system.

The panel has 10 system status leds indicators, zonal led indicators (alarm and fault/disable/test), zonal push-button (disable/test/enable zone) and 5 function push-button.

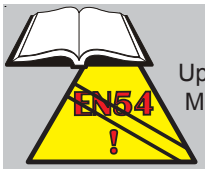
Mains supply

A 65W (2.5A) switch power supply with battery charger, is included in the control panel to provide power for both mains supply (220Vca) and/or batteries.

Power supply is monitored permanently by the CPU microprocessor. Mains supply fault is delayed 8 minutes to avoid warnings due to momentary power shutdowns.

Alarm zones

Plus control panels have 4, 8 and 12 detection zones. Up to 32 sensors (System Sensor) may be connected to each zone.



EN54-2:/D
Up to 32 fire detectors and or MCPs may be connected to one zone

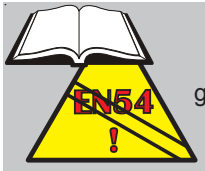
The control panel differentiates between an alarm from a sensor and from a call point.

The operation of a zone can be configured as:

-Normal zone: Immediate activation of alarms.

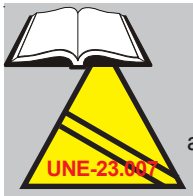
-Confirmed delay zone: the alarm must keep activated for 30 sec. (Not applicable to detectors).

-Verified zone: The zone is reset in the first alarm and keeps monitoring for 10 min. If a new alarm is generated within the verification time (10 minutes), the alarm is confirmed and the system is activated. Otherwise, the process is reset without indicating any alarm.



EN54-2: 8.2.4
A fault in zone must be generated as an indication of any short circuit or interruption

A short circuit in any zone may be configured to be detected as an alarm or fault (EN54/2).



Some standards may be more restrictive. UNE23.007:14 A wiring fault must not prevent the alarm from being activated in other zones.

Digital input

A digital input is provided for connection to ancillary equipment to provide the following remote functions: RESET, SILENCE SOUNDERS, ACTIVATE DELAYS AND EVACUATION, which are particularly useful when the systems is an integral part of a higher system.

Outputs

PLUS control panels have:

2 sounder outputs which can be configured to be activated by specific zones.Any zone alarm will activate all sounders, by default.

Relays: 1 alarm relay which is activated when an alarm is confirmed immediately and is latched together with the general alarm led: 1 fault relay which changes its state after any fault in the system or lack of power supply

Sounder delay

The user can start or stop the delays configured for sounders by pressing the ***Delay On/Off*** key

From access level 3 (programmer), 2 different delay times can be configured (10 minutes max.).

Time 1 (Acknowledge): During this time, the user must press the ***Buzzer Mute*** key to acknowledge the alarm; otherwise, sounders will activate. Configurable times: 0, 30, 60, 90, 120, 150, 180, 210, 240 and 300 sec.

Time 2 (Inspection):Additional time for considering the alarm. After this period of time, sounders will activate. Configurable times: 0,1,2,3,4,5,6,7,8,9 and 10 min.

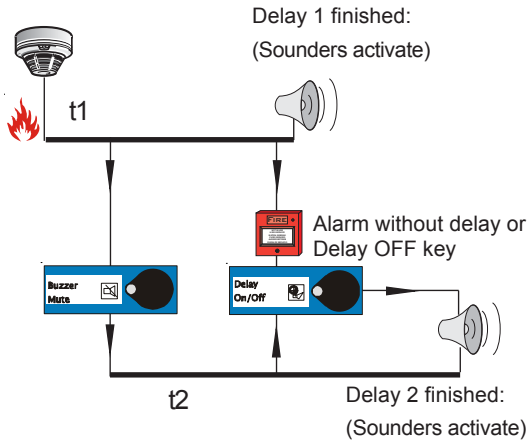
The activation mode of sounders can be configured by zone, with or without delay for manual call points or detectors. Sounders may also not be activated by a specific zone.

Moreover, 2 zones in alarm at the same time can also disable the operating delays.

Users can stop the operating delays from the Access level 1 by pressing the ***Delay On/Off*** key. When a manual call point is activated, the operating delays will be cancelled.

Delay operation

Alarm in a delayed zone

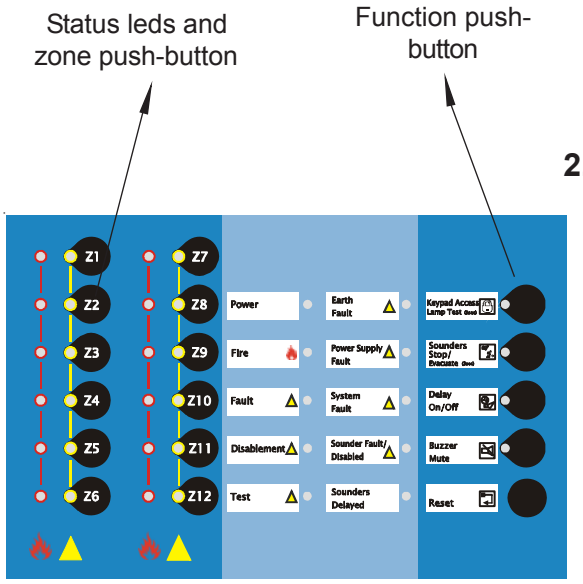


Auxiliary 24 V output

The control panel has two 24V power supplies for the connection of external low consumption devices (1A max. between both). One of the non-resettable and the other is resettable (power supply is interrupted for a few seconds when the system is reset).

Special operation

The control panel can be configured so that 220Vac and batteries fault indication is not generated, for example, in Marine systems which are powered at 24Vdc. That function must not be used in normal systems.



Configuration

The system can be configured from Access level 3 (programmer) to be adapted to the different requirements of installations.

The system configuration must be carried out by qualified people.

2.2 Keypad

Plus control panel has 5 function push-button and a push-button for each zone.

The access to functions and push-button is limited to 2 access levels for users and a third access level only for programmers.

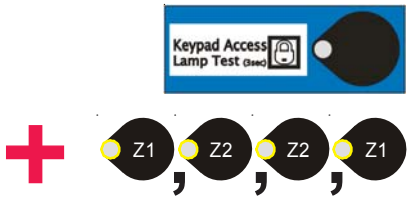
Functions available in Access level 1 (user)

In Access level 1, the user can only visualize the system status and silence the buzzer:

KEYPAD ACCESS/LAMP TEST: Press this key for 3 seconds to make a **led test**. All the leds an buzzer will activate for a few seconds.

BUZZER MUTE: Press this key to silence de Buzzer. If Buzzer Mute key is pressed while Time 1 delay (acknowledgement) is activated, Time 2 delay (Inspection) will start.

Press ***Delay On/off*** key to stop delays in operation



Access Level 2 (User)

All functions available in Access level 1 are also available in Access level 2.

Access level 2 (Enable keypad)

In order to have access to user functions (level 2) and enable the keypad, press the ***Keypad*** key while entering the access code 1221 **at the same time**, by pressing the zone keys **Z1, Z2, Z2 and Z1** in this order. Keypad push button led will be illuminated to indicate the access level 2. If no other push button is pressed in 3 minutes, the control panel will return to access level 1.

DELAY ON/OFF: If there are delays configured for sounders, the ***Sounders Delayed*** led will light. Press the ***Delay On/Off*** key, then the ***Delay On/Off*** led will be illuminated with the delays disabled. While delays are operating, press the ***Delay On/Off*** key in order to disable the delays and activate the sounders immediately

SOUNDERS STOP *(Evacuation 3s.):*

-Silence and activate sounders: Press the ***Sounders Stop*** key to silence the sounders, the Sounders Stop led will be lit. Press this key again to activate sounders again.

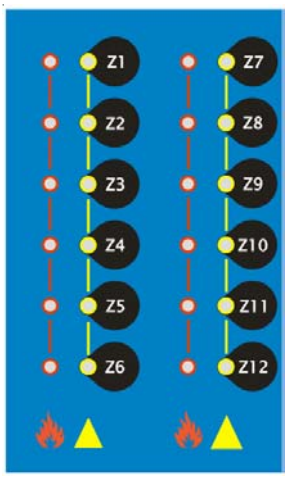
-Disable sounders: When no alarms are activated, press the ***Sounders Stop*** key once to disable sounders, the Disablement and Sounders fault/disabled leds will be lit. Press the Sounders Stop key again to activate the sounders.The disabled sounders will not be activated in case of alarm.

-Evacuation: Press the ***Sounders Stop*** key for 3 seconds to activate all sounders.

RESET: Press this key to reset the system.Any existing alarm or fault will be indicated again after resetting the system

NOTE: Check the alarm or fault cause before resetting the system.

ZONES KEYS



-*To disable a zone:* Press the zone key once.The Disablement and Zone keys leds will be lit.

If a zone is already disabled, no alarms or faults will be received from this zone.

If a zone with an event is disabled, this zone will be disabled for new events but the current alarm or faults will only disappear after a system reset.

-*To test a zone,* press a zone key from the previous disablement status. The test and zone key leds will flash to indicate the test status.

The alarms in zones being tested will activate all the sounders for a few seconds and the zone is reset automatically

While zones are tested, the fault relay changes its status to indicate the new condition.

The alarm of any zone in normal status, not under test, will disable the test mode and activate the system normal operation.

2.3 BUZZER

PLUS control panel has an inner buzzer to warn about events:

-*Buzzer steady:* Alarm registered in a zone or Evacuation activated.

-*Buzzer flashing*[*1]*:* System fault.

Press Buzzer mute fey from Access level 1 or 2 in order to silence the buzzer.

[*1] The buzzer has a 8 minute delay to indicate 220Vac faults.

2.4 Led indicators

PLUS control panel has 10 system indicator leds and 2 more leds for each zone.

System led indicators

***Power** (green):* This led is lit in green to indicate that the system is under normal operation.

-Led off: If the Power led is off, the system will not operate. Check the main power supply and the battery and their fuses.

***Fire** (red):* This led is lit when any zone is in alarm condition.

-Led on: The fire led illuminates in red to indicate that there is a fire alarm in any zone. Check the zone leds to identify which is the zone in alarm. Inspect the affected zone to identify the cause of the alarm. Press the ***Reset*** key (Access level 2) to make the system return to its normal status.

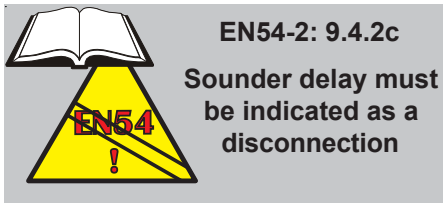
In case of Evacuation, only the fire led is on (zone leds off).

***Fault** (yellow):* The fault led is lit when there is a fault in the system or zones.

-Led on: The fault led illuminates in yellow to indicate that there is a fault in the system. Check the system led indicators that are on and the zone leds or Sounder fault/disabled led flashing quickly in order to identify the fault. Fix the fault and press the Reset key (Access level 2) in order to make the system return to its normal status.

***Disablement** (yellow):* This led indicates that any zone or sounder output circuits are disabled.

If there are Sounder delays, the Disablement led will be lit together with the Sounders delayed led (EN54/2). However, from Access level 3 (programmer), it is possible to programme that the sounder delays do not light the Disablement led.



-Led on: This led indicates that there are zones or sounders disabled or delayed. In order to disable delays temporarily press the ***Delay On/Off*** key from Access level 2 (the led of the appropriate key will be lit). Check that the yellow Zone and the Sounder fault/disabled leds illuminate in steady mode. Enable the disabled zones or sounders by pressing the relevant ***Zone*** key or the ***Sounders Stop*** key (disablement led will be turned off). Delays can be enabled again, if required.

***Test** (yellow):* This led indicates that a zone is under test.

-Led on (flashing slowly in Access level 2): This indicates that a zone is under test. Check the Zone leds illuminated (flashing slowly with Test led in Access level 2). Press the relevant ***Zone*** key (Access level 2) in order to restore its normal status.

***Earth fault** (yellow):* This led indicates that an earth leakage has been detected in zone or sounder circuits, digital input or Aux. 24V.

-Led on: System earth leakage fault. Please contact the installing company. Earth leakages imply a high risk for the system. Once the earth leakage condition has disappeared, press ***Reset*** key (Access level 2) to make the system return to its normal status.

Power Supply Fault *(yellow):* This led indicates that there is a fault in the control panel power supply.

-Led on: Power supply fault. Check the 220 Vac power supply and batteries, the fuses of both and the Aux. 24V output. When the fault cause has been cleared, press the ***Reset*** key (Access level 2) to make the system return to its normal state.

System Fault *(yellow):* A serious system fault has been detected.

-Led on: System fault. Switch off the 220V power supply and batteries until the Power led is off and connect the power supply again. If the fault continues, contact your supplier.

Sounder Fault/Disabled *(yellow):* There is a fault in the sounder circuits or sounders are disabled.

-Led flashing quickly: This indicates that there is a fault in the sounder circuit due to a short circuit, open circuit or overload. Check the circuits and the end of line resistance; check also the sounder fuses. Once the fault cause has been cleared, press the ***Reset*** key (Access level 2) to make the system return to its normal status.

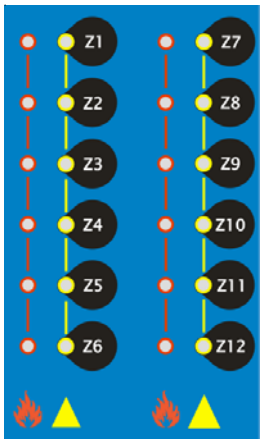
-Led on (and Disablement led also on): Sounders are disabled. Enable the sounders by pressing the ***Sounders Stop*** key (Access level 2) until the zone yellow led is off.

Sounders delayed *(yellow):* This led indicates that the sounders are programmed with delays for detector alarms in a zone.

-Led on: There are delays configured for sounders.

-Led flashing: Delays operating. When delays are finished, sounders are activated. Press the ***Delay On/Off*** key to stop the operating delays. Sounders are activated immediately when there is an alarm in the system.

Zone leds



Zone fault/disabled/test *(yellow):* The relevant zone is in fault, test or disabled.

-Led flashing quickly (and Fault led also on): The zone is in fault condition. Check the zone wiring. Once the fault cause has been cleared, press the ***Reset*** key (Access level 2) to make the system return to its normal status.

Led on (and Disablement led also on). The zone is disabled. Enable the zone by pressing the ***Zone*** key (Access level 2) until the zone yellow led is off.

-Led on (and Test led also on) / (flashing slowly with test led on in Access level 2): The relevant zone is being tested. Press the ***Zone*** key (Access level 2) until the zone yellow led is off.

Zone alarm *(red):* This led indicates that there is a device under alarm condition in this zone.

-Led flashing: There is a detector in alarm.

-Led on: There is a call point in alarm.

Check the alarm cause and press the ***Reset*** key (Access level 2) to make the system return to its normal status.

3 Installation Guide

3.1 How to use this guide

Only fit the electronics modules after all the other trades have completed their tasks.

This Installation Guide provides you with simple guidelines to install a fire control panel system, quickly and safely. The guide does not describe panel configuration procedures as it is covered by the relevant section of this manual.

For each stage in the panel installation and commissioning procedures a brief description is given of its purpose, complete with detail drawings, flow diagrams and/or other graphics, wherever possible, to make the instructions easy to follow.

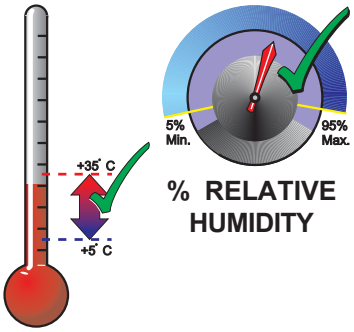
3.2 Pre-installation Check List

Check for suspected damage before proceeding with the installation

After removing the control panel from its packaging, and before you proceed with installing in its chosen location, check for any damage that may have been caused during transit. In the unlikely event that the panel has been damaged in transit, you MUST NOT install it but contact your supplier for their returns procedure.

Before installing your control panel or fitting detectors, you must first ensure that the following criteria have been met. Failure to do this may not only result in damage to the equipment, but may also cause problems when commissioning the equipment or adversely affect its performance.

3.2.1 Some panel DO's and DON'Ts



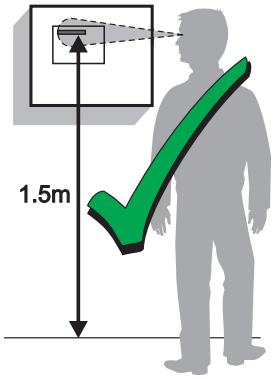
Before selecting a location for the panel and detectors, DO make sure that:

a) The ambient temperature is in the range:

+5˚C to 35˚C and

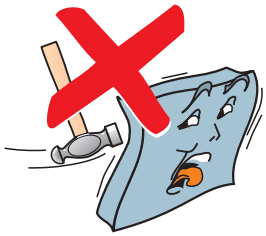
b) The relative humidity is between:

5% and 95% (non-condensing)

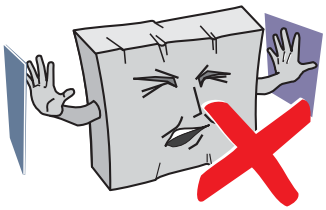


c. The panel is wall mounted in a position which allows clear visibility of displays and easy access to operating controls. The height above floor level should be chosen such that the middle of the panel is just above normal eye level (approximately 1.5 metres).

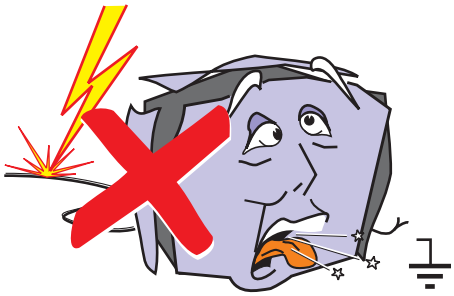
d) DO NOT locate the panel where it is exposed to high levels of moisture.



e) DO NOT locate the panel where there are high levels of vibration or shock.



f) DO NOT site the panel where there would be restricted access to the internal equipment and cabling/wiring connections.



3.3 Transient Protection

This equipment contains transient-protection devices. Although no system is completely immune from lightning transients and interference, for these devices to function correctly, and to reduce susceptibility , this equipment must be earthed correctly.

As with all solid state devices, this system may operate erratically or can be damaged if subjected to lightning-induced transients.

The use of outside aerial wiring is not recommended due to the increased susceptibility to nearby lightning strikes.

3.4 Batteries replacement

Batteries have a limited life. Mark the installation date of batteries in order to know their life span.

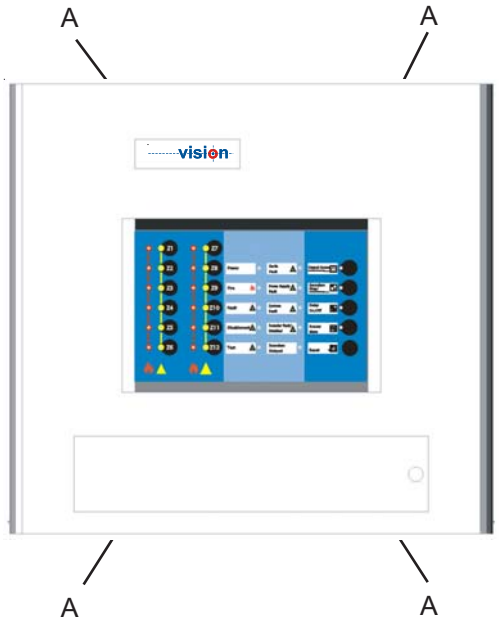
In case of replacement, use only batteries recommended by manufacturer and old batteries should always be disposed of in accordance with local regulations.

Refer to Specifications Section in this manual for more information.

4 Back box installation

4.1 Removing the cover

Remove the four front cover screws (A). Store the cover and screws safely until required for refitting.



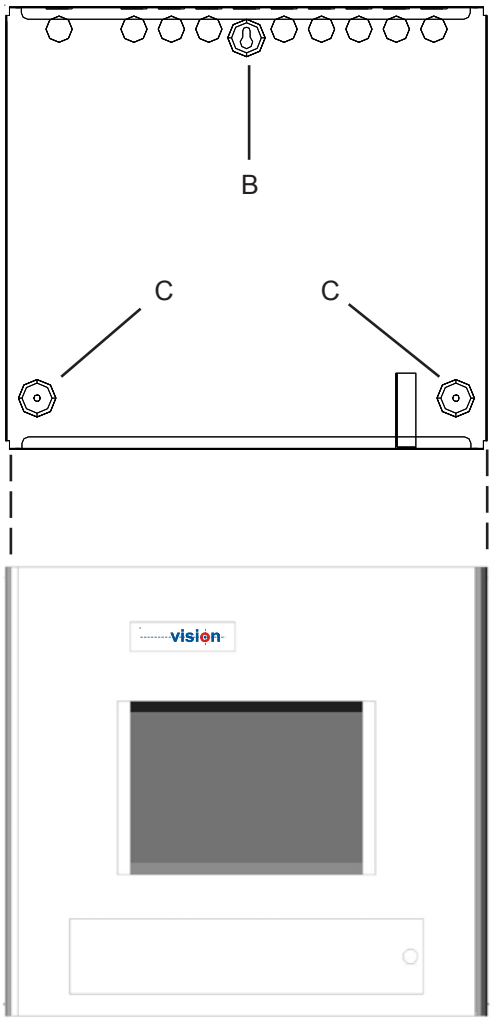
4.2 Preparing cable holes

When a suitable location has been found for installing the control panel, prepare holes required for cable access. Open the required knockouts by means of a slot-ended screwdriver inclined towards you. While in this position, use something suitable to strike the top of the screwdriver to achieve a clean break of the knockout. To open knockouts, the box should rest on a suitable surface, like a working table to avoid being bent.

If you need to drill any new holes in the box, boards and power supply should be removed first and be kept safely to be refitted later.

Remove any debris with a brush before refitting the boards.

4.3 Back box fixing



The back box must be fixed to the wall with the screws at three fixing locations (see drawing) following the procedure described below (refer to Specifications Section for more information about back box dimensions):

Use 5 mm screws and appropriate studs.

Hold the back box assembly in the required position against the wall and mark the position of the keyhole (B).

Drill a hole and fit a 5 mm screw.

With the panel supported by the top screw and ensuring that it is level, mark the other two screw positions (C).

Remove the back box and store safely. **Do not use the back box as a template while drilling holes.**

Drill holes and plug.

Screw the panel back box to the wall using three fixing holes and 5 mm screws.

Connect the wiring into the back box using cable glands and the appropriate conduits.

5 Cabling

5.1 Cabling instructions

All wiring should comply with current IEE wiring regulations or the applicable local wiring regulations. Note also the requirements of EN54-14 (23007/14) for cabling and interconnection of a fire detection and alarm system and the relevant parts of the low voltage regulation (LVR) .

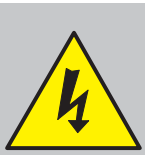
EMC Requirements: To meet the EMC requirements of the European Directives, it is necessary to ensure that a screened or metal sheathed cable is used.

Cable conductor size should be a minimum of 1 mm ^{2}. Terminals accept 1 to 2.5 mm^2 stranded or solid conductor.

As a general rule, **1.5 mm^2 cable is recommended.**

Cables should be brought into the back box through the 20mm knockouts provided on the top or the rear part.

Mains supply



WARNING. Risk of electric shock. Before working on mains connections, ensure mains power supply to the panel is disconnected.

The supply to the panel must be provided with a suitable and readily-accessible, double-pole, mains-disconnect device. The mains supply must be suitable fused and rated according to the specifications.

Always ensure that the mains cables are brought into the back box separately to the low-voltage wiring.

All the low-voltage cables should have a minimum 300Vac rating.

The termination of earth mains wiring must be done before the termination of any external cable screens.

Ensure incoming earth is connected to the appropriate terminal.

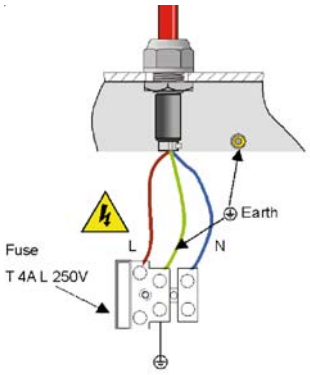
Cable screen wires

Cables should be screened. Screen wires should be terminated inside the back box as follows:

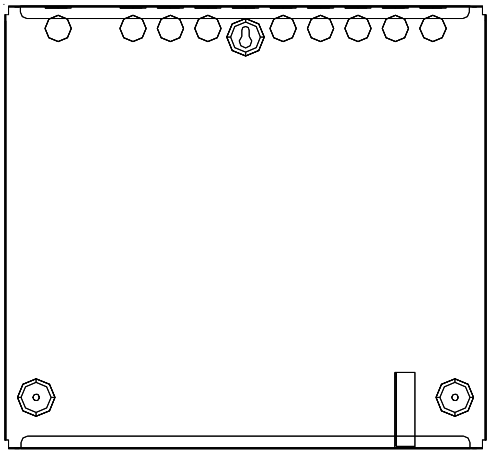
a. Screen tails should be of sufficient length to connect to the earth post at the commissioning stage. Once all screen wires have been terminated at the earth post, use the M4 nut, spring washer and two plain washers either side of the screen wires to make sure a good earthing bond is created.

b. Use insulation sleeving on the tails between the cable entry position and the earth post. Run the tails close to the rear wall of the back box.

Nota: In case there is a need to reduce the number of cable screen tails being routed through the panel, an alternative method is to fit a suitable earth block (not provided).



a b c c d d d d e



5.1.1 *Cable Terminations*

This section provides guidance on where to bring cables into the back box for ease of termination.

a. The mains supply should be brought into the control panel such that the live (L) and neutral (N) cable path to the mains termination block (MTB) is kept as short as possible. Refer to *6.3 Powering the Panel* Section for the recommended method of terminating the mains wiring and safety earth. This must be done before terminating all other panel wiring.

b. All zone and ancillary cable terminations should be brought into the panel at suitable positions and routed tidily between entry and termination points.

The drawing on the left shows recommended points of entry so that the following cabling can meet these requirements.

a. Mains supply cable
b. Relay circuits
c. Sounder circuits and/or 24V aux.
d. Zone circuits 1 - 12
e. Communication circuits

5.2 Quality of cable and cable installation

It is important that good quality cable is used, and that correct installation techniques are followed. In general, the following cable installation requirements must be met:

a. All cable sections must be circular to allow effective cable clamping using the cable glands.

b. The cable must be screened (sheathed) to provide protection against Radio Frequency Interference (RFI) and the screen must be connected to the earthing point in the back box.

c. The screen must be continuous.

d. Cable recommended for use is MICC with a LSF PVC overcovering, a fire resilient cable to BS7629 or PVC/ SWA/PVC to BS6387.

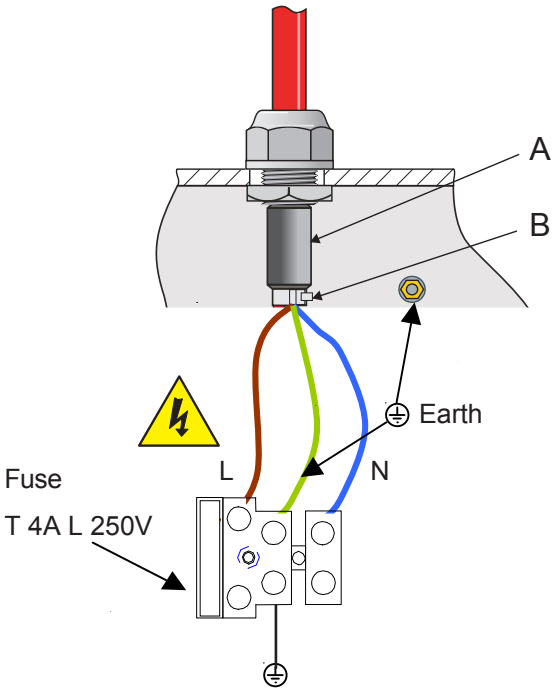
e. Cables for fire detection systems should not be installed in areas with RFI presence nor be run through other system conduits. The required distance between other conduits should be kept to avoid interferences.

Recommended Cables

Manufacturer	Product Name	Part Number	Type (1)
AEI	MICC	2L1.5	Enhanced
AEI	Firetec	298-052	Standard
Draka	FiretufPlus	FTPLUS2E1.5RD	Enhanced
Draka	Firetuf	FTZ 2E1.5	Standard
Pirelli	FP Plus	FP Plus 2x1.5 Red	Enhanced
Pirelli	FP200 Gold	FP200 Gold 2x1.5 Red	Standard
ASCABLE	2 x 1,5 LHR	2 x 1,5 LHR	Fire resistant and halogen free
ASCABLE	2 x 2,5 LHR	2 x 2,5 LHR	Fire resistant and halogen free

(1) For a definition of 'Standard' and 'Enhanced' cable requirements and their different applications, refer to BS 58391, Section 26. Enhanced cable is typically required for spur sounder outputs while standard cables may be adequate for other fire-related I/O, provided there is diverse cable routing.

5.3 EMC considerations



Following the above instructions and by using suitable screened cables EMC problems will be avoided.

In particularly difficult EMC environments, or where non-preferred cabling is used, it is possible to fit ferrite sleeves to cables entering the panel, in particular the power supply input, sounder and auxiliary output cables.

The ferrite sleeves (A) should be fitted over all the conductor(s) and as close as possible to the entry point of the cable. If required, use a cable tie (B) - not supplied - to hold the ferrite in position.

6 Commissioning

6.1 Introduction

It is recommended that the control panel is powered up and tested before connecting the field devices. In order to do this, fit the EOL devices at each zone and sounder connector. Apply power and check the control panel status. Refer to the operating section of this manual for more information.

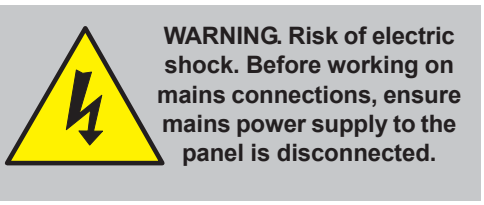
6.2 Preliminary checks

Before connecting the mains power to the panel, the following must be checked:

1 Verify that the earth lead from the safety earth post is connected to the earth tag on the Main PCB and that the earth monitoring jumper (EARTH FAULT) is fitted.

2 Check that the EOL devices are correctly terminated in the zone input and sounder output terminals and no external wiring terminations have been made.

3 Apply power (main power supply and batteries) as indicated below and make a reset from level 2 (user access). Check if the control panel is on stand-by. Refer to the operating section of this manual for more information.



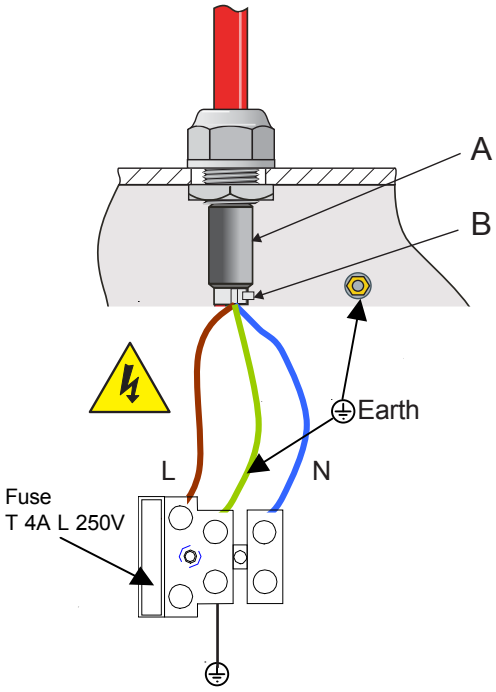
WARNING. Risk of electric shock. Before working on mains connections, ensure mains power supply to the panel is disconnected.

6.3 Powering the panel

Before applying mains power to the control panel make sure that you carry out the following checks and procedures:

Make sure that main supply wiring is brought into the cabinet separated from low voltage wiring.

Check that power supply has been removed. For safety reasons, remove the mains fuse and keep and put it away in a safe place until all the wiring connections are finished.



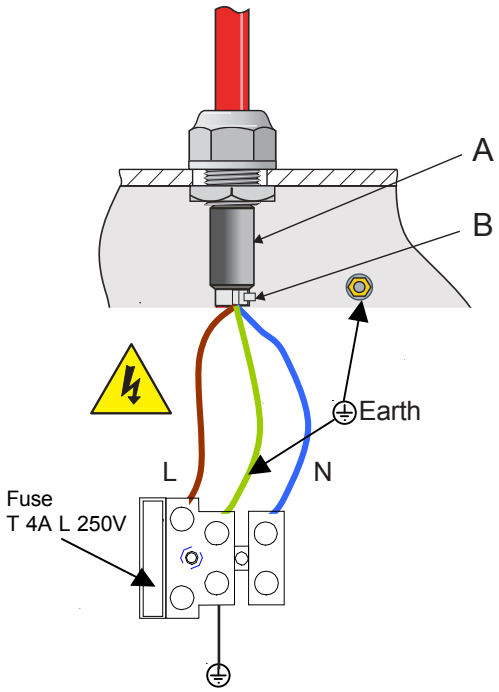
1 Check that you carried out all the instructions described in **Preliminary Checks** section.

2 Prepare the mains supply wiring for connection as follows:

i Remove the outer cable sheath to provide sufficient slack, approximately 80mm, in the wiring to assist termination.

ii Form each wire in a ‘pigtail’ before taking it to its termination point. Route the L and N wires such that there is separation from the safety earth.

iii Connect the L and N wires directly to the MTB (left and right terminals, respectively). The safety earth wire must be terminated at the central terminal. See drawing on the left.



Mains power supply

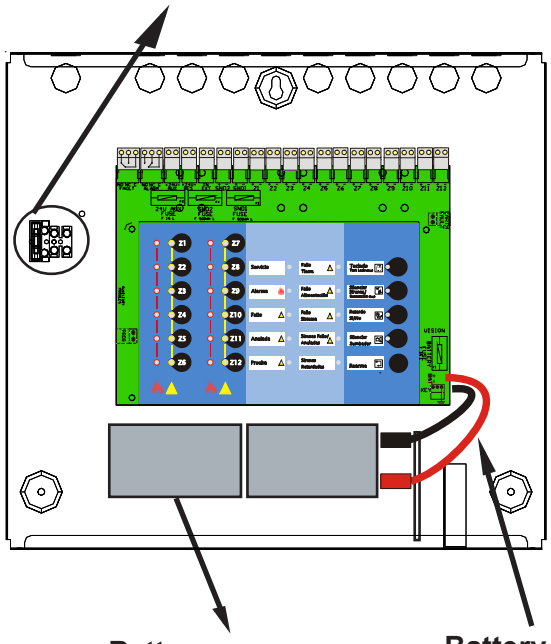
Note: Terminals accept 1 to 2.5mm² cables.

In particularly difficult EMC environments, it is recommended to fit ferrite sleeves A (not supplied) to cables entering the panel. Fix it with a clamp B (not supplied)

6.4.1 Batteries

The panel back box can hold up to two 12V, 2.5Ah batteries. The batteries are not supplied with the panel. Refer to **Specification** Section for details of recommended batteries.

Note: The panel can function satisfactorily on batteries only, if required, when mains power is not available. However, this should only be done for short periods to avoid inadvertent discharge of the batteries.



To install the batteries:

1 Install the batteries in the back box. The batteries should be positioned so that their terminals are close enough to allow connection of the short interlink cable.

2 Connect the batteries using the provided items:

   a. Red battery lead (1)

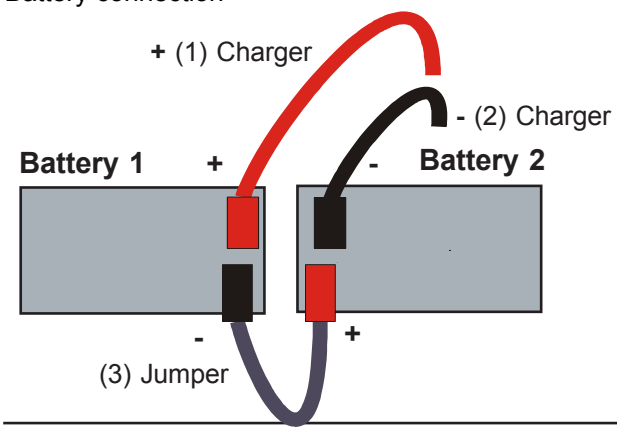
   b. Black battery lead (2)

   c. Short battery interlink lead (3).

   One end of each battery lead is fitted with a connector. The other end of the red and black battery leads should be connected to the battery charger termination block located at the bottom, right-hand corner of the Main PCB: The red lead to the **+ve** connection and black lead to the **-ve** connection.

   Connect the other end of the red lead to the **+ve** terminal of one battery and the black lead to the **-ve** terminal of the other. Connect one end of the short interlink lead to the **+ve** connector of one battery (refer to drawing on the left).

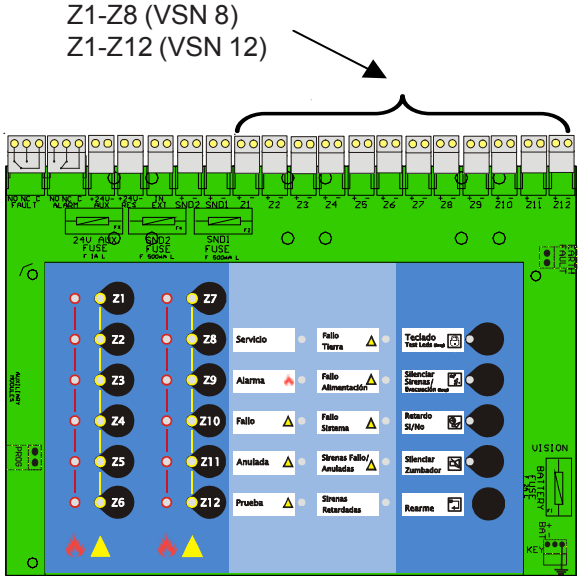
Battery connection

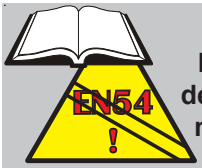


CAUTION - ENERGY HAZARD! NEVER short the battery terminals

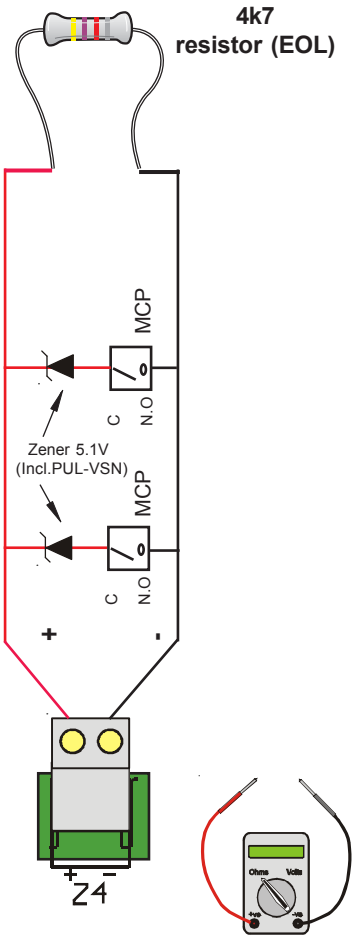
Detection zone terminals

Z1-Z4 (VSN 4)
Z1-Z8 (VSN 8)
Z1-Z12 (VSN 12)





EN54-2:Appendix D
No more than 32 fire detectors and/or MCPs may be connected to one zone



6.4 Zone wiring

Detector and call point wiring must be separated from other conduits with different voltage or usage .

PLUS control panel has four, eight or twelve alarm zones.

Detectors and Call Points can be connected to the same zone wire, and the system identifies through the zone led if the alarm comes from **detectors (flashing led)** or **call points (steady led)**. Moreover, call point alarm may clear programmed delays, in compliance with EN54/2.

However, when installing detectors and call points in the same zone line, please, make sure other local regulations are followed.

Plus control panels support an unlimited number of call points per line but some local regulations may limit this number. Please, check the current and applicable regulations before installing alarm devices.

End of Line Resistor

Zone lines must be terminated with the supplied 4K7 EOL resistor at the last device. This EOL resistor makes the zone stable to 24V (normal/quiescent status).

The EOL resistor must be installed in each zone.

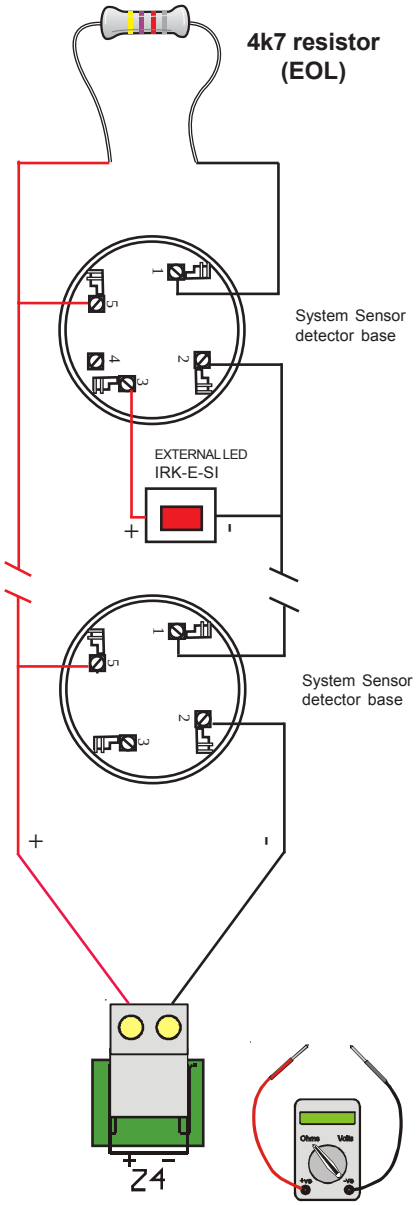
Connecting Call Points

Alarm call points are connected to the zone line by means of a 5.1V/0.25w Zener Diode (not supplied). PUL-VSN call points include this Zenner Diode.

Plus control panels can support an unlimited number of call points in each zone but, according to EN54-14, no more than 32 fire detectors and/or MCPs may be connected to one zone.

Each call point must be series connected with a 5.1V ($^1/_4$W min.) Zenner Diode between positive and negative (refer to the drawing on the left). This Zenner Diode is included in PUL-VSN call point.

Before connecting the cable to the zone, use a meter to check that between positive and negative, the value for the zone wiring must fit the EOL resistor value (4K7Ohms).



Connecting Detectors

Fire detectors are connected directly to the zone line and are powered by this circuit.

A detector removal from the zone line must be indicated as a fault (EN54/2). For this reason, an EOL resistor must be installed in the output connection of the last detector, between zone positive and negative poles.

32 detectors can be connected to each line of a PLUS control panel; however there may be local regulations more restrictive as for the quantity of detectors.

Please read carefully the detector's manuals before connecting them. Refer to the technical specifications section of this manual to know what number of detectors are supported by zone.

According to EN54-2, the highest number of detectors supported by a zone is 32. Moreover, the detectors consumption must not exceed 3 mA (3000 µA) with an EOL installed. That means that the number of detectors to be installed must be calculated depending on their consumption without exceeding the number of 32 detectors. For example, if the consumption of detectors is 0.2 mA (200µA), the maximum detectors number will be 15.

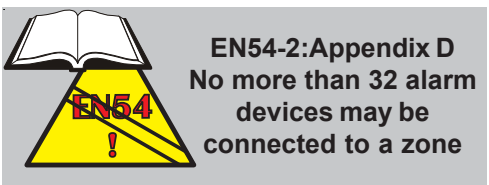
$$\text{Max. detectors number} < \frac{3000\ \mu A}{\text{each detector consumption } (\mu A)}$$

Before connecting the cable to the zone, use a meter to check that between positive and negative, the value for the zone wiring must fit the EOL (4K7).

Example: Max. number of detectors by zone, using System Sensor detectors. Max. consumption: 80 µA in standby.

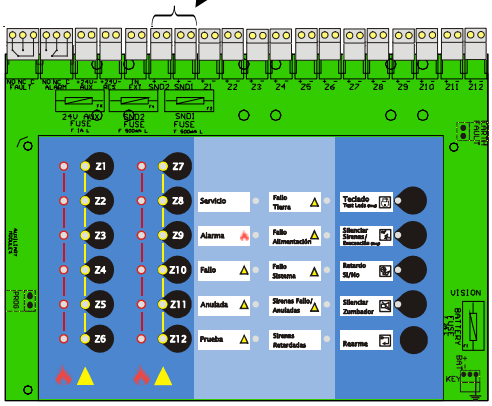
$$\text{Max. detectors number} < \frac{3000\ \mu A}{80\ \mu A}$$

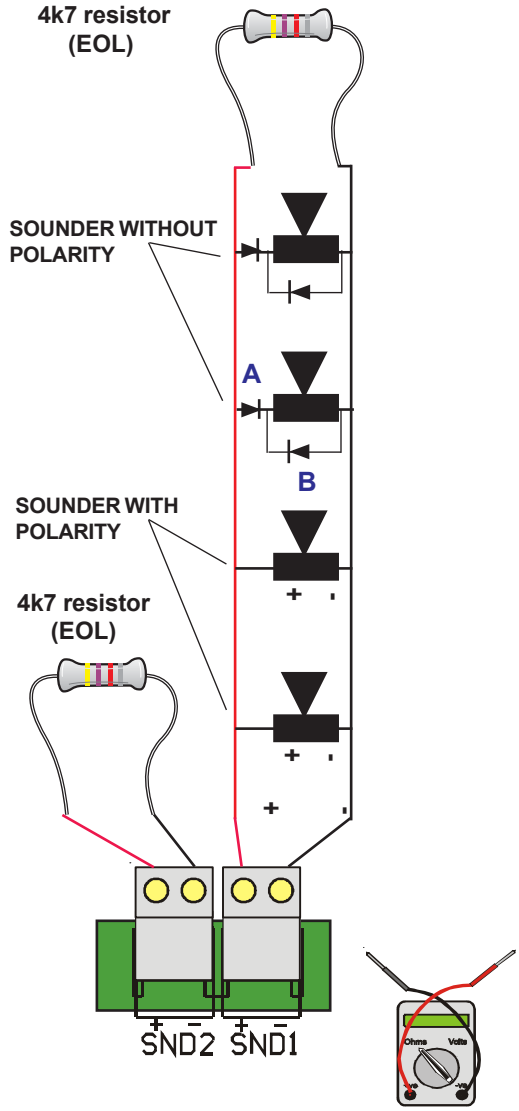
Max detectors = 37. However, as there cannot be more than 32 detectors in a zone, in this case, the max. number of ECO1000 detectors connected will be 32.



6.5 Sounder circuits

Sounder connectors:
Sounder 1 (SND1)
Sounder 2 (SND2)





Local regulations may determine the installation. UNE23.007/14. Minimum 2 sounders must be installed in a building

Two sounder output circuits are provided.

Sounder circuit wiring must be separated from other cables.

There are some local requirements for Notification Appliance Circuits. Sounder circuits require to be activated for more than 1 minute after fire and must be fire resistant for, at least, 30 minutes, according to UNE-23.007-14.

Alarm sounders are connected directly to sounder's line. A fault in the sounders wiring must be detected (EN54/2) by installing an EOL resistor in the last sounder of the line between positive and negative poles.

Both sounder output circuits should have an EOL resistor even if it is not used.

The system reverts polarity of output in standby (-11V with EOL resistor fitted) due to sounders consumption in standby.

Each sounder circuit supports **a maximum of 500mA when activated**, being protected by fuse (SND1 FUSE and SND2 FUSE). Check the device loads in order not to exceed the maximum allowed. Refer to Specifications section.

Connect the circuit to the panel output while observing correct polarity. When sounders without polarity are used, a polarity diode must be used in the power supply of each sounder in the current way (A) and another one in parallel to the sounder in the reverse current way (B) (see drawing on the left). On the contrary, a short-circuit fault will be indicated in the sounders line.

If there are any reversed devices, the panel will indicate a fault.

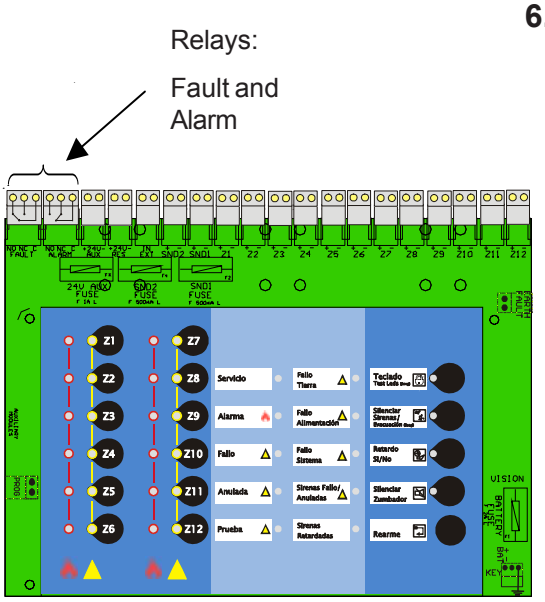
Connect sounders **after** finishing all connections to avoid false alarms.

When the output circuits have been connected, they may be tested by using the ***Sounders Stop/Evacuation*** push-button for 3 seconds, from Level 2 (entering the password or turning the keyswitch to the right). Sounders will turn on. Press the push-button again to silence sounders.

Before connecting the sounders, with the meter connected in reverse polarity (+ve to -ve and -ve to +ve), the reading should be 4k7.

Any fire in any zone activates sounders by default, but sounders may be configured to be activated by zone with delays. Refer to Configuration section in this manual.

6.6 Alarm and fault relays connection



PLUS control panel has two voltage free relays (C, NC, NO): fault relay and alarm relay.

Alarm relay is activated when an alarm is generated at the control panel (the Alarm led also turns on). Once activated, it is necessary to reset the control panel in order to reset the alarm relay and revert it to its normal status.

The system allows to be configured so that the alarms are verified during a period of time. If an alarm is not confirmed, the alarm relay will not be activated. Refer to the operating and zone configuration sections of this manual.

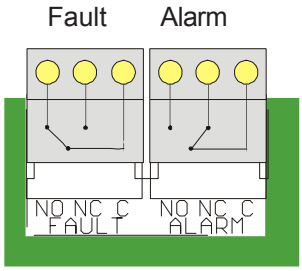
The fault relay is activated in standby and becomes deactivated when a fault is generated at the control panel or the panel power supply is cut.

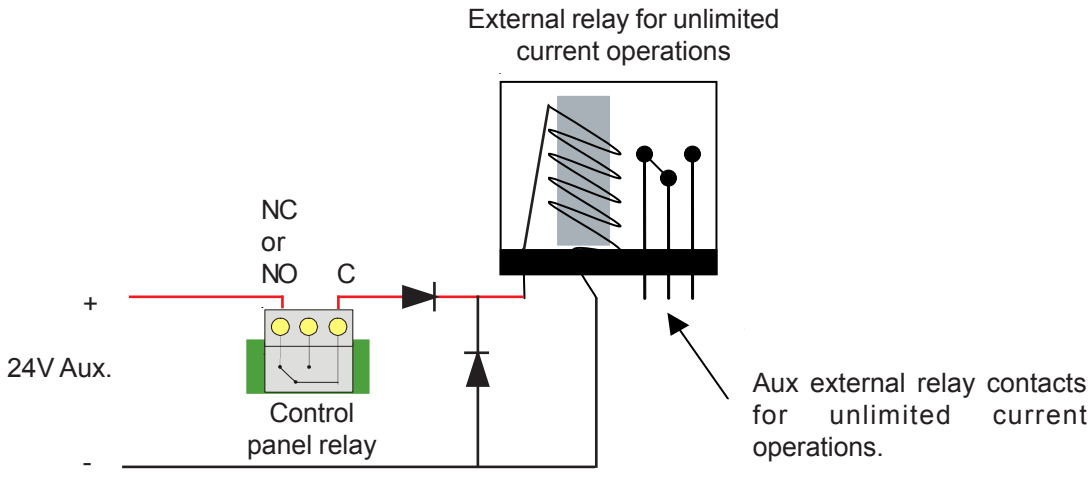
Faults may be configured as latched or resettable. By default, faults are latched and it is necessary to reset the control panel so that the fault relay comes back to its normal (standby) status. On the other hand, resettable faults automatically revert the fault relay to its normal (standby) status, in case the fault is cleared.

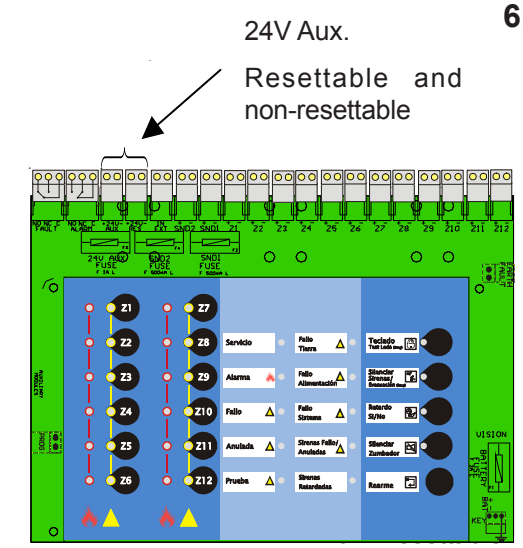
VISION PLUS control panels support 12 additional relays by means of up to three 4-relay boards (VSN-4REL).

Each relay supports 1 A max. For high current or 240Vac, please use external double relays with a polarity diode and a protective diode to avoid return spikes from coils. See the drawing below.

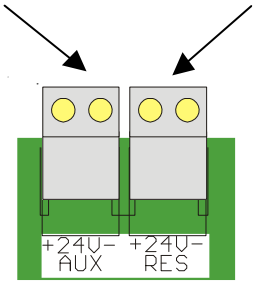
Relay status in standby
(no faults / no alarms)







24V Aux. non-resettable



6.7 Aux. 24V Outputs (resettable and non-resettable)

PLUS control panels have two 24 Vdc outputs, supplied from the control panel power supply.

Max. power between both outputs is 1A at 24Vdc, protected by fuse (24V AUX. FUSE).

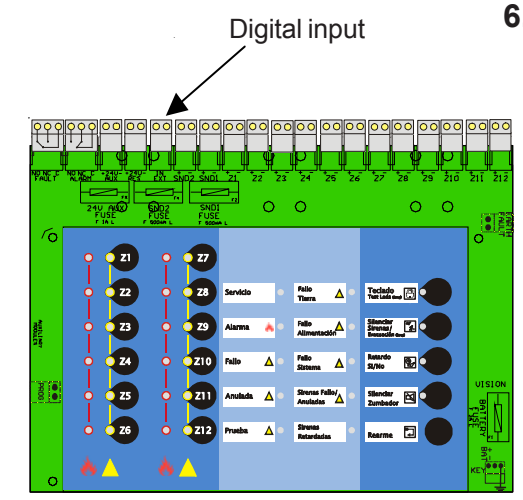
24 V AUX fixed output provides 24V non-resettable from mains supply or batteries.

Resettable *24VAux.:* Voltage goes down to 0V for aprox. 5 seconds, each time the control panel is reset. This output is used to supply external devices that need to cut the power supply to be reset.

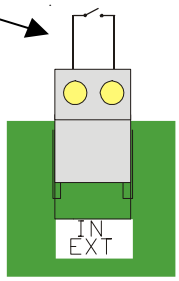
Before connecting any external current to the control panel, check the max. current allowed for the devices that are going to be connected.

Please, consider the time that the system must remain in standby and in alarm. Make sure that the control panel power supply and batteries have enough power. Otherwise, use external power supply to support these rates.

Please, refer to the diagram, on the previous page, to connect coils, relays or valves. Otherwise, the control panel may become seriously damaged.



External voltage free contact.



6.8 Digital input

A digital input circuit is provided for external configurable contact in order to control the panel from another external system.

The following functions are available through a NO or NC external contact (voltage free):

RESET

EVACUATION

MUTE SOUNDERS AND BUZZER

DELAY ON / OFF

MUTE BUZZER

Connect the ends of the external voltage free contact to the digital input contacts *IN EXT.*

Do not use live contacts or cables in the digital input or the panel will be irreparably damaged!

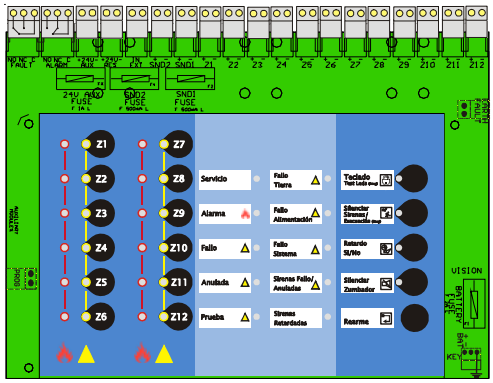
6.9 Keyswitch. Level 2

PLUS control panel has a switch to connect the optional keyswitch (not included) in order to make the level 2 access easier, without a password.

Keyswitch can be supplied separately with a terminal switch to be connected to the control panel board.

The access is made when the keyswitch contact is closed. The control panel remains at Level 2 (user functions) until the keyswitch changes its position.

Alternatively, Level 2 may be accessed by means of a password. Refer to the operating sections of this manual.



Level 2 Access switch for keyswitch connection

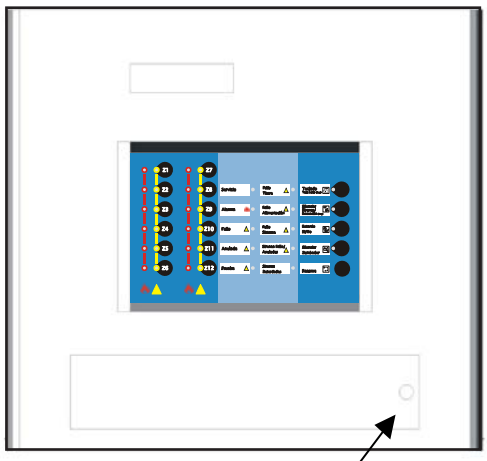
Keyswitch installation.

Replace the front cover label with the one supplied with the keyswitch.

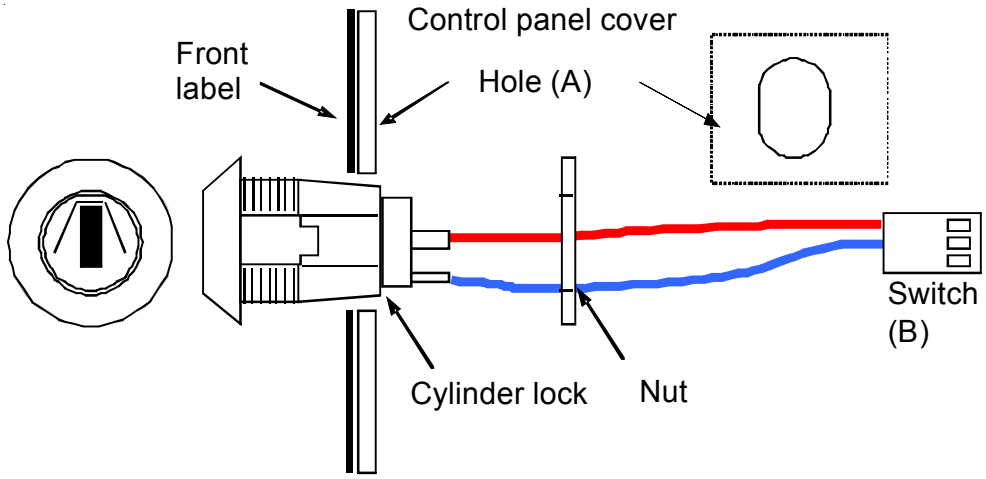
To fit the key, remove nuts and washers from the cylinder lock and introduce the cylinder with cables into the keyswitch hole (A) from the outside of the cover.

Keep the cylinder lock in its position, completely fitted into the hole (A) and fit washers and nuts from the inside of the cover, through the cable up to their position in the cylinder. Tighten with a proper wrench until the cylinder cannot be moved.

Connect the cable to the switch (B) and close the cover carefully making sure that the cables do not get caught. Finally fit the cover to the rear box with mounting screws.



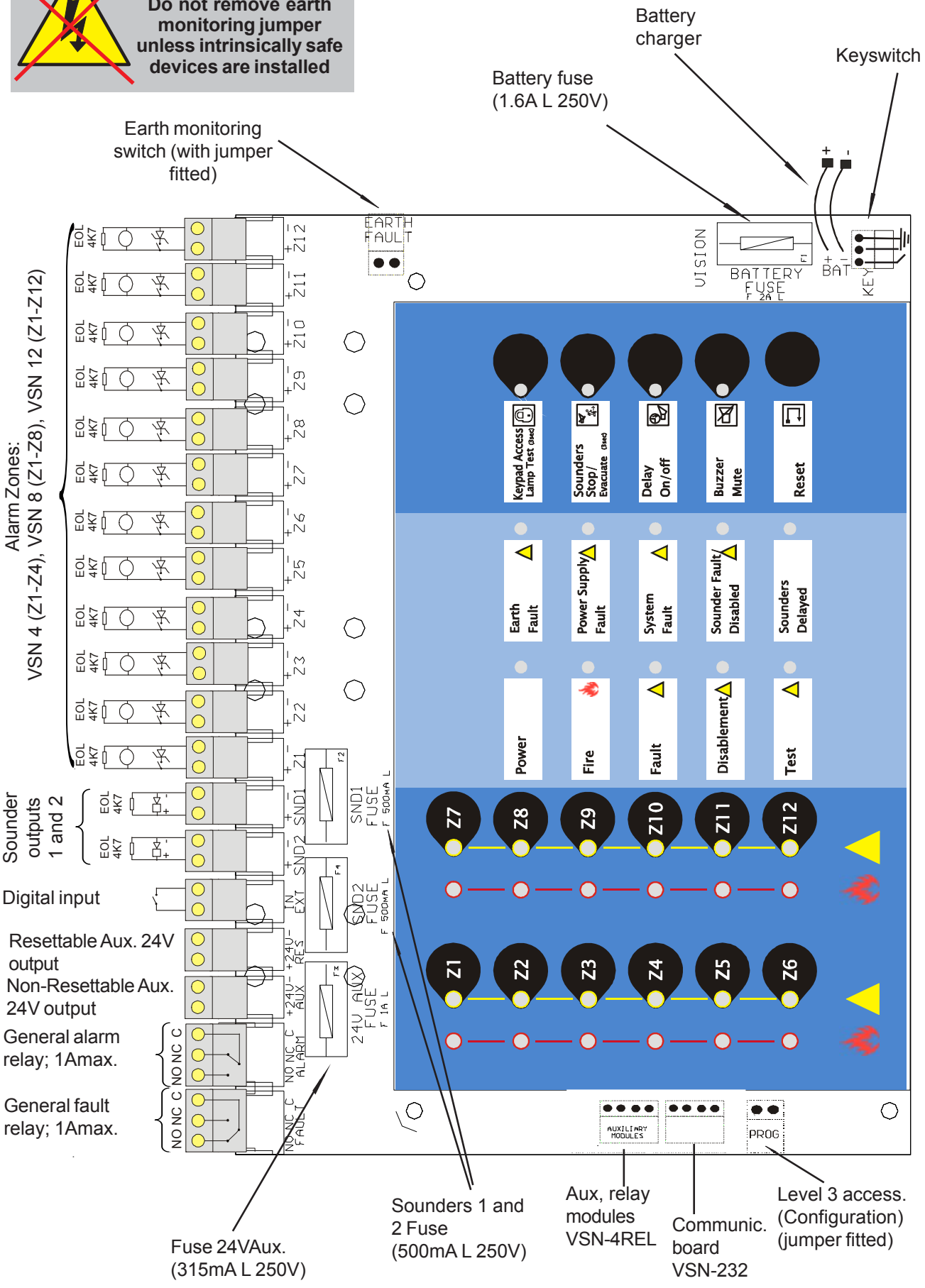
Keyswitch hole (A)



6.10 Board Diagram

CAUTION

Do not remove earth monitoring jumper unless intrinsically safe devices are installed



7 Configuration

7.1 Introduction

Access level 3 allows input, output and control functions to be configured.

Before changing the panel configuration, read this section carefully. Do not make any changes in the configuration unless you have completely understood the operation of the panel.

The default configuration is valid for most installations and does not need to be modified.

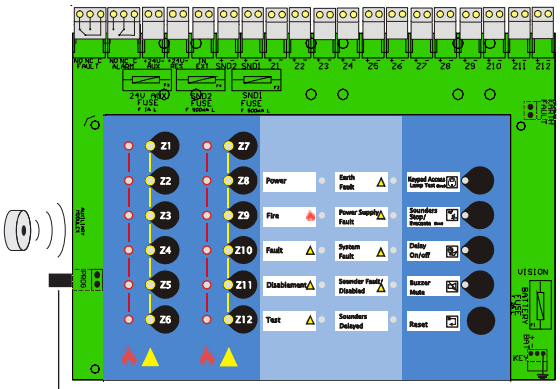
Please observe that some configurable functions available may contravene local applicable regulations.

7.2 Level 3 access (configuration)

Inside Level 3, the system leds and push-buttons have special functions. Check each option to know its meaning and usage.

Configuration access (PROG)

In order to enter the configuration menu, connect the supplied jumper between the PROG connector pins on the main board. **The buzzer will sound briefly every 10 seconds to indicate the access to level 3. The fault relay will remain activated while the panel is in level 3.**



Level 3 access jumper (CONFIGURATION)

The system leds indicate the configuration of the first option (Digital input).

Follow the steps of each option to modify their values.

Exit configuration

Once the configuration is finished, remove the jumper from the PROG connector on the main board and the configuration will be saved in the inner memory.

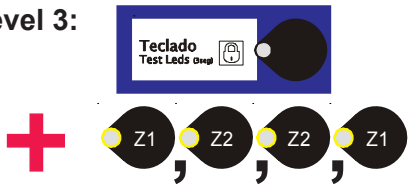
7.3 Default configuration

PLUS is supplied with the following configuration, suitable for most installations. Refer to configuration options for further information:

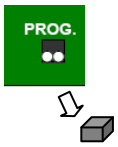
- Digital input: Panel **Reset**.
- Sounders **without delays** (Delay 1= Delay 2 = 0 sec).
- **Zona type = Normal (all): Immediate activation of zone alarm.**
- **Zone short circuit = Fault.**
- **All zones activate all sounders. Detectors perform delays and call points not.**
- **Disablement led on with delays**.
- **2 Zones in alarm do not cancel delays**.
- **Latching faults**.
- **Monitored main power supply and batteries**.

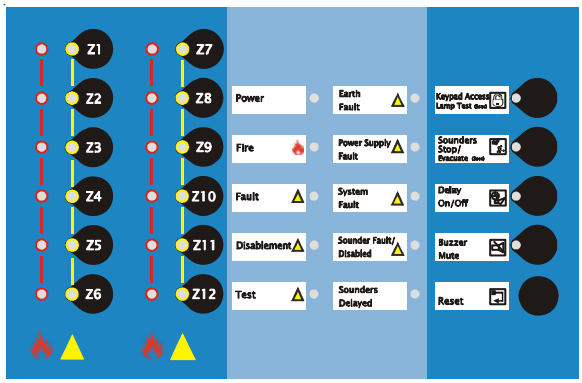
i)

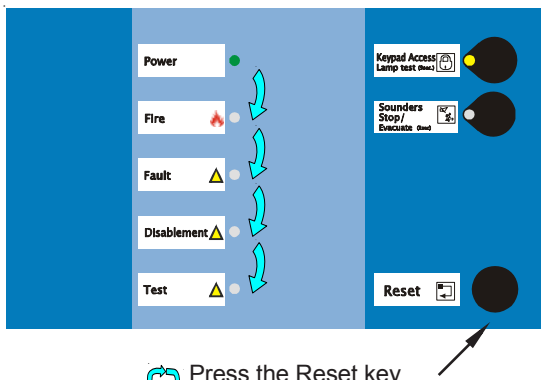
ii) **Level 3:**



iii)







Press the Reset key to change the function of the digital input

To restore the default configuration to the control panel:

i) Fit the configuration jumper (Level 3)

ii) Keep the Keypad Access push-button pressed while you are entering the access code (1221) by pressing the zone keys in this order (Z1, Z2, Z2 and Z1). Control panel quits the configuration mode and the buzzer activates with a quick intermittent sound.

iii) Remove the programming jumper . The default configuration is saved.

7.4 Configuration options

At Level 3, the panel leds indicate the configuration for each option. In order to select one option, the relevant push-button must be pressed, following the lighted keys.

System leds (two central columns) indicate the selected configuration.

In order to change a function, press RESET or the relevant **ZONE key**, depending on the indications. The central leds will show the selected option by lighting cyclically. Select the led corresponding to the desired option in each menu. On removing the level 3 access jumper (PROG), the control panel saves the configuration automatically.

When entering configuration, you will always access at the Option 1 configuration (Digital Input). Select the key for the desired option and modify or check the configuration following the instruction bellow

7.4.1 Digital input

The digital input of the control panel activates by close contact (by default) or open contact (configurable option). When the contact is closed/opened between digital input terminals (IN EXT), the following functions will be achieved in the control panel.

- **Reset (by default**)
- Evacuation
- Silence sounders and buzzer
- Delays on/off
- Buzzer mute

Digital input configuration:

Select by pressing the ***KEYPAD*** key.

The cyclic change of the function is made by pressing the ***RESET*** key.

Led 1 Power (green)	**= ON**	**Reset (by default)**
Led 2 Fire (red)	= ON	Evacuation
Led 3 Fault (yellow)	= ON	Sounders Stop
Led 4 Disablement (yellow)	= ON	Delays On/Off
Led 5 Test (yellow)	= ON	Mute Buzzer

Select activation through NO/NC:

Press keys: Keypad=ON + Sounders Stop=ON

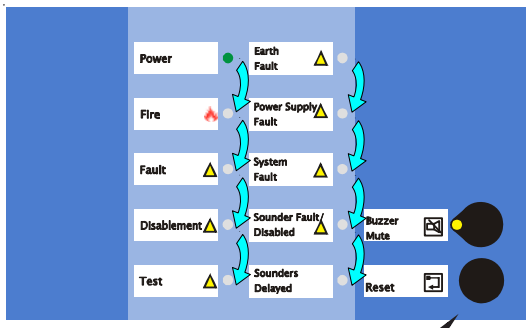
The cyclic change of the function is made by pressing the ***RESET*** key.

Led 1 Power, green = ON; NC contact
Led 2 Fire, red = ON; NO contact (default)

7.4.2 Delay 1 (Primary delay -Alarm acknowledge)

Delay 1: Maximum time to press ***Buzzer Mute*** key in order to acknowledge (accept) the alarm and start Delay 2. If the Buzzer Mute key is not pressed, sounders will be activated when the delay 1 time is finished. It is possible to configure a period of time from 0 seconds (only delay 2 is performed) to 300 seconds (5 minutes) at 30 second intervals.

- **0 sec (only Delay 2 or Secondary Delay)**
- 30 sec.
- 60 sec. (**by default**)
- 90 sec.
- 120 sec.
- 150 sec.
- 180 sec.
- 210 sec.
- 240 sec.
- 270 sec.
- 300 sec.



Press RESET to change the primary delay (Delay 1)

NOTE: The sounder outputs operation depends on the zone configuration. Refer to the “Sounder activation by zone” paragraph for more information.

Primary delay configuration:

Select Delay 1 by pressing ***Buzzer Mute*** **(ON)** push-button. Then, press ***RESET*** push-button to change cyclically the led to be on and, consequently, the period of time.

Configured time indication:

No leds on = 0 sec. Only Delay 2 (by default)

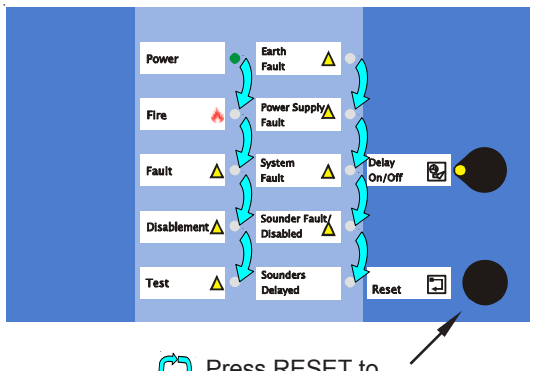
Led 1 Power (green)	= ON = 30 sec.
Led 2 Fire (red)	= ON = 60 sec.
Led 3 Fault (yellow)	= ON = 90 sec.
Led 4 Disablement (yellow)	= ON = 120 sec.
Led 5 Test (yellow)	= ON = 150 sec.
Led 6 Earth fault (yellow)	= ON = 180 sec.
Led 7 Power supply fault (yellow)	= ON = 210 sec.
Led 8 System fault (yellow)	= ON = 240 sec.
Led 9 Sounder fault/disab. (yellow)	= ON = 270 sec.
Led 10 Sounders Delayed (yellow)	= ON = 300 sec.

7.4.3 Delay 2 (Secondary delay -Alarm inspection)

Delay 2: Period of time available to check the alarm cause after pressing ***BUZZER MUTE*** push-button. After this time, sounder outputs will activate. ***SOUNDERS STOP*** push-button should be pressed to cancel sounders activation.

It is possible to configure a period of time from 0 sec. (only Delay 1 is performed) to 10 minutes at 1 minute intervals.

- **0 min. (only Delay 1)**
- 1min. (**by default**)
- 2 min.
- 3 min.
- 4 min.
- 5 min.
- 6 min.
- 7 min.
- 8 min.
- 9 min.
- 10 min.



Press RESET to change the secondary delay (Delay 2)

NOTE: The sounder outputs operation depends on the zone configuration. Refer to the “Sounder activation by zone” paragraph for more information.

Secondary delay configuration:

Select Delay 2 by pressing***Delay On/Off***push-button. Then, press ***RESET*** push-button to change cyclically the led which has to be on and, consequently , to change the period of time.

Configured time indication:

No leds on = 0 sec. Only Delay 1 (by default)

Led 1 Power (green)	= ON = 1 min.
Led 2 Fire (red)	= ON = 2 min.
Led 3 Fault (yellow)	= ON = 3 min.
Led 4 Disablement (yellow)	= ON = 4 min.
Led 5 Test (yellow)	= ON = 5 min.
Led 6 Earth fault (yellow)	= ON = 6 min.
Led 7 Power supply fault (yellow)	= ON = 7 min.
Led 8 System fault (yellow)	= ON = 8 min.
Led 9 Sounder fault/disab. (yellow)	= ON = 9 min.
Led 10 Sounders Delayed (yellow)	= ON = 10 min.

DELAYED OPERATION:

Total delay time, Delay 1 and Delay 2, is 10 minutes (EN54-2) and this is indicated, in level 1 or 2, at the control panel by means of *Sounders Delayed* and *Disablement* leds.

By default, PLUS control panel is delivered without delays. If only a delay is configured, the control panel performs this delay even though *BUZZER MUTE* is pressed.

While the delay is running, the *Sounders Delayed* led is flashing before sounders are activated.

At Level 1 or 2,***DELAY ON/OFF*** push-button can be pressed in order to cancel operating delays. In standby mode, the ***DELAY ON/OFF*** push-button may be used to enable or disable the «delayed mode» at access level 2.

7.4.4 Zone type

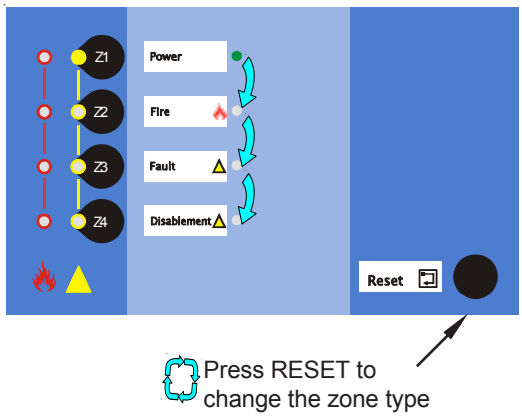
Zone operation may be configured as follows:

- ***Normal* operation (by default):** Zone alarms are activated immediately.
- **Delayed contact:** (*470Ω*). To be used with flow switches or contacts with *470Ω* alarm resistor which require that the alarm condition remains for 30 seconds before the control panel indicates an alarm. Call Points activate the alarm immediately.
- **Verification:** This option requires a second acknowledge/confirmation within 10 minutes or the activation of the same or any other zone. After the first alarm, the zone is reset and the alarm is confirmed if a new alarm occurs in the next 10 minutes.
- **Delayed contact:** *(470Ω)* and Zenner. Both alarm contacts with *470Ω* alarm resistor and call points must keep the alarm condition for 30 seconds, otherwise the alarm will not be indicated.

<u>Zone type configuration:</u>

Select the desired zone by pressing the relevant zone push-button ***ZONE = ON*** (red or yellow). The zone led will be lit in red or yellow , depending on the short circuit option configuration for zones (alarm or fault). See also the 7.4.5 *Fault/Alarm by short circuit* section.

Change zone type cyclically by pressing ***RESET.***



<u>Zone configuration:</u>

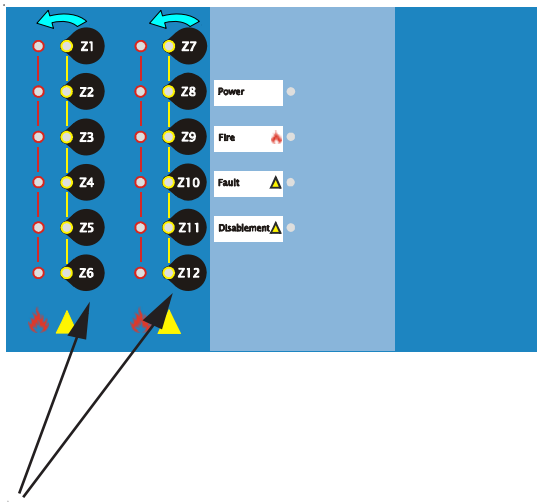
Led 1 Power (green)	**= ON = Normal (by default)**
Led 2 Alarm (red)	=ON = Delay contact. 30sec. (*470Ω*). Zener, immediate activation
Led 3 Fault (yellow)	=ON = Verification. 10 min.
Led 4 Disablement (yellow)	=ON = Delay contact. 30sec. (*470Ω*) and Zenner.

NOTE: The sounder outputs operation depends on the zone configuration. Refer to the “Sounder activation by zone” paragraph for more information.

7.4.5 Fault/Alarm by short circuit

A short circuit in a zone may indicate a short circuit fault (EN54) or an alarm. Therefore configuration options are:

- o **No (by default):** A short circuit in zones is reported as a fault (EN54-2).
- o Yes: A short circuit in zones activates an alarm.



Press the zone key to change its operation

Zone short circuit configuration: Fault/Alarm:

Select a zone by pressing the relevant zone push-button ***ZONE = ON*** (red or yellow). The zone led will be lit in red or yellow , depending on the short circuit option configuration for zones (alarm or fault).

Centre leds indicate the zone type. Refer to *Zone Type* paragraph of this section.

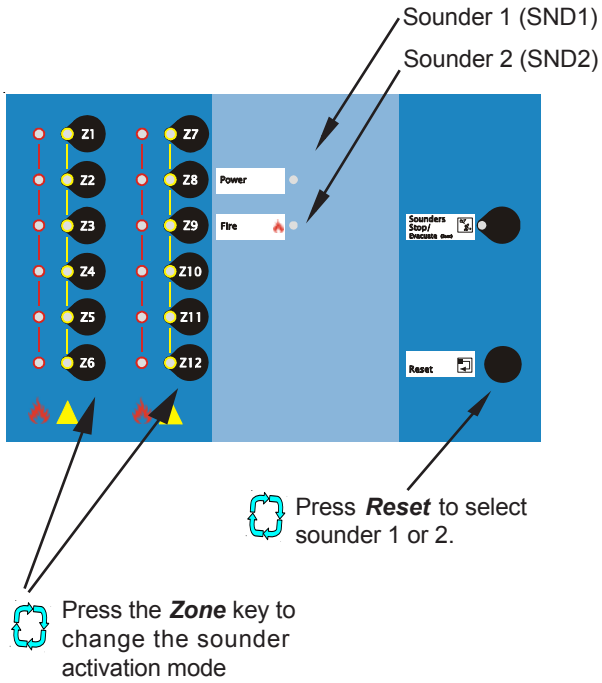
Change short circuit reporting options cyclically by pressing ***Zone*** push-buttons.

Zone Led - Yellow = ON = Zone Short Circuit = Fault (by default).EN54-2.

Zone Led- Red = ON = Zone Short Circuit = Fire

7.4.6 Sounders activation by zone

Sounders activation in zones can be configured independently for detectors and call points: delays operation (Delay 1 and 2) and whether the zone activates or not the sounder.



Press ***Reset*** to select sounder 1 or 2.

Press the ***Zone*** key to change the sounder activation mode

Sounders activation by zones:

Select sounders configuration menu by pressing ***SOUNDERS STOP/EVAC.*** push-button.

Change the selected sounder by pressing ***Reset***:

Led 1 Power, green = ON = Sounder SND 1

Led 2 Fire, red = ON = Sounder SND 2

For the selected sounder:

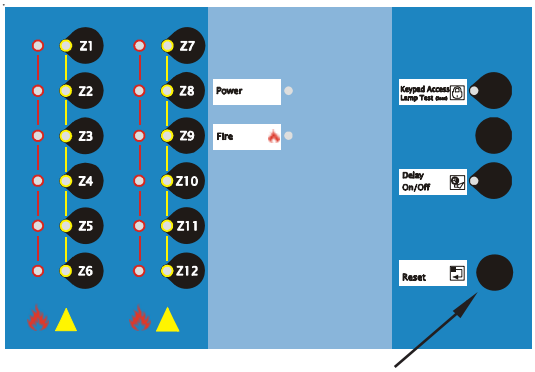
Press the ZONE key to select the sounder activation mode for each zone, according to this table:

Red	Yellow	Activation mode by zone
off ●	on ○	**Detectors with delay / MCP without delay**
on ●	off ●	Detectors and MCP with delay
on ●	on ○	Detectors and MCP without delay
off ●	off ●	Sounder is not activated

All zones activate all sounders by default , allowing delays 1 and 2 for detectors (yellow led only) and MCP without delay.

Note: To exit this option, press ***SOUNDERS STOP/ EVAC***. push-button again. The control panel will return to configuration 1 option **(Digital Input).**

7.4.7 Disablement led indication with delay



Press Reset to change the operation of Disablement with delays.

By default, the disablement led is lit when a delay is activated. The control panel can be configured so that the delay turns on the Disablement led (EN54-2) or only the Sounders Delayed led.

- **Yes (by default)**
- No

Configuration of disablement led with delays:

Select the sounders configuration menu by pressing at the same time the following keys: ***KEYBOARD*=ON + *DELAY ON/OFF*=ON**

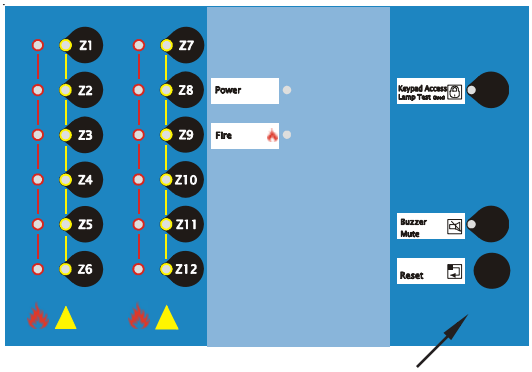
Cyclical change of disablement led option with **RESET** key:

Led 1 Power, green	**= ON = *Disablement led ON with delays (by default) (EN54-2)*** (both leds on: Sounders Delayed and Disablement)
Led 2 Fire, red	= ON = *Disablement led ODD with delays (only Sounders Delayed led is ON)*

7.4.8 Cancel delays with 2 zones in alarm

In case of zone alarms with delays, the zones in alarm can be configured to cancel delays.

- **No (by default)**
- Yes. When there are two zones in alarm, the sounders activate immediately event though there are delays already configured or operating.



Press Reset to change the option of cancelling delays with 2 zones in alarm

Configure: 2 Zones cancel delays

Select the configuration menu of cancel delays with zones in alarm by pressing at the same time the following keys: ***KEYBOARD=ON + BUZZER MUTE=ON***

Cyclical change of Disablement led option with ***RESET***.

Led 1 Power, green	**= ON = 2 Zones in alarm do NOT cancel delays (By default)**
Led 2 Fire, red	= ON = 2 Zones in alarm cancel delays

8 Special Functions (do not meet EN54)

Special configuration for installations which do not require EN54 compliance

The control panel allows special configurations for resettable faults, operating only with 24V in marine applications or at 220 Vac as a dependent system. These configurations do not comply with EN54-2/4 and can only be used for special performances.

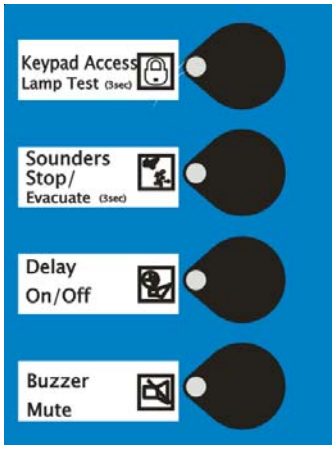
The manufacturer recommends not to use these special configurations because the system will not operate properly and will not comply with EN54-2/4

Only with the consent of the competent authorities, the user may use these special configurations for marine or special applications.

Special functions configuration:

To configure special functions, switch off the control panel (mains supply and batteries disconnection), then connect the jumper at PROG switch (on the left side of the PCB) and connect again the control p anel as usual. S pecial functions leds will be lit, according to their configuration.

Press the push-button you want to change until you obtain the required configuration (see settings below). Then, remove the PROG jumper and the control panel will save the configuration and show the current status of the system.



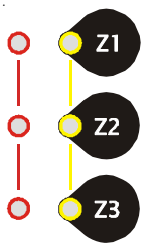
Keyboard led **= ON = Latched faults. Faults need to be RESET (by default).**
=OFF= Resettable faults. Faults RESET automatically when the fault has disappeared.

Sounder Stop led **=ON = 220V Power supply faults are indicated (by default).**
=OFF= 220V Power supply faults are not indicated.

Delay On/Off led **=ON = Battery faults are indicated (by default).**
=OFF= Battery faults are not indicated.

Buzzer Mute led =ON = RS232 port is monitored.(Only from TG).
=OFF= RS232 port is not monitored (by default) (Only from TG).

1 VSN-4REL
2 VSN-4REL
3 VSN-4REL



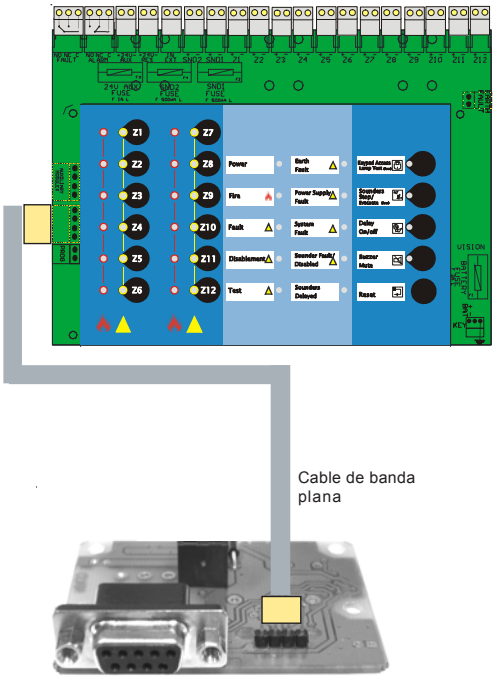
Z1 Alarm led (red)	Cards fitted
Z1 + Z2 + Z3 = OFF	= 0 VSN-4REL cards
Z1 = ON	= 1 VSN-4REL cards
Z1+ Z2 = ON	= 2 VSN-4REL cards
Z1 + Z2 + Z3 = ON	= 3 VSN-4REL cards

Z3 Fault led = ON = Fault relay activates with Fault and Digital Input activated.
= OFF = Fault relay activates only with General Fault (by default)

9 External devices and accessories

PLUS control panel can be connected to a PC with the Configuration Tool MK-VSN or graphic sof tware TG inst alled through RS-232 port connection. Moreover , it is possible to connect relay optional modules.

9.1 Communication port



PLACA VSN-232

VISON PLUS control panel has a port to install a**VSN-232** card in order to connect the control panel to other systems. .

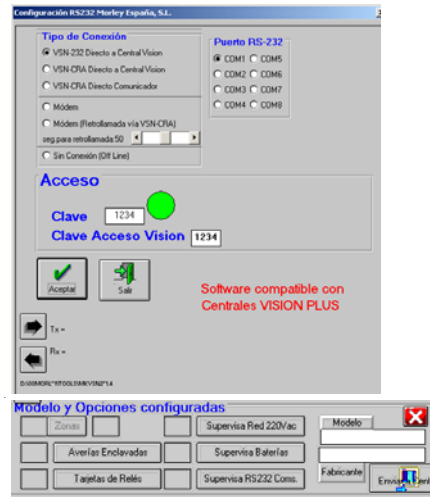
The control panel has not a RS-232 direct output. DO NOT connect any external device directly to the card port.

The communication port of the control panel only accepts the connection to the VSN-232 communication card (RS-232 port).

9.1.1 Wiring and configuration

VSN-232 card (RS-232 port) is connected by means of a ribbon cable to the communication port of the control panel.

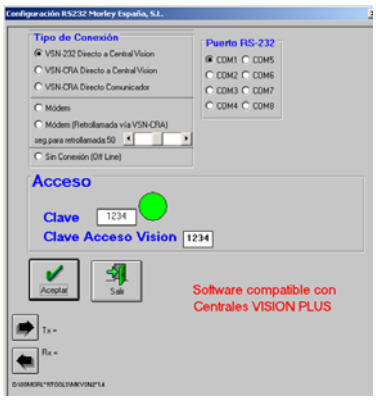
The control panel allows the connection monitoring of the VSN-232 card. If the option is selected from the control panel, a remote communication fault or communication port fault will be indicated.



In order to modify the communication port monitoring:

The DSub9 terminal of VSN-232 card must be connected to the series port of a compatible PC with the MK-VSN configuration tool already installed.

i) Run the MK-VSN programme, select the PC series port and direct connection to the Plus control panel.
ii) Once the communications have been established, a table will appear, at the bottom of the sof tware window, with the current control panel options. Click on «Monitor RS232 Coms» to select «YES» and then click on «Send to control panel».



To check if the control p anel has been configured to monitor communications:

i) Disconnect the control panel (mains supply and batteries).
ii) Connect again the control panel. Function leds will be lit for 4 seconds to indicate the configuration options:

Buzzer mute led **=ON = RS-232 port is monitored (by default.** Only compatible versions)
=OFF= RS-232 port is not monitored.

Note: Plus communication do not depend on the communication monitoring selection. If the communications are monitored, the control panel will indicate a fault (System Fault) when there are no communications at RS-232 port.

Refer to the MK-VSN manual to know more details about the RS232 monitoring option.

9.1.2 Compatible options

The control panel has a specific protocol which allows a bidirectional connection of the control panel to different system accessories.

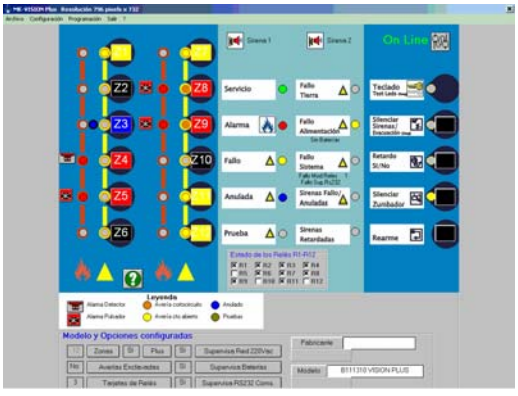
The optional RS-232 communication card (VSN-232) is required to connect directly the following accessories:

MK-VSN: Configuration tool.
This configuration software is required to modify the default configuration of additional relay cards. Refer to the relay cards and MK-VSN manuals for more details.

The MK-VSN software allows the configuration of all the options described in the Configuration Section of this manual.

MK-VSN tool can check the voltage of the current status of the control panel and the remote connection through external modem for Remote Maintenance.

TG Graphic Software : Bidirectional graphic management software.
This software can be installed in a local or remote PC and shows the real status of the control panel and the detection zones. The system components are shown graphically on the installation plan. A number of comp atible Honeywell local or remote systems can be connected to the TG graphic software.



Main screen of MK-VSN tool

VSN-IP: Net connection card via IP (Intranet).
VSN-IP net connection card is required to connect the control panel to the MK-VSN configuration tool and to the TG graphic software via Intranet. Refer to VSN-IP manual for more information.

VSN-CRA: Reporting to Central Station
VSN-CRA card is required to connect the control panel to the MK-VSN configuration tool and to a Central Station, compatible with standard protocol Contact ID, via the telephone line. Refer to VSN-CRA manual for more information.

9.2 PORT FOR OPTIONAL RELAY CARDS BUS

Up to 3 cards of 4 relays (**VSN-4REL**) can be connected to the PLUS control panel port in order to have a maximum of 12 relays.

The relays are configured from factory . However the default settings of the external relays by means of the MK-VSN configuration tool.

Each relay supports a maximum current of 1A @ 30Vdc. An auxiliary external is required for higher consumption or unlimited current or 220 Vac.

Each NO or NC contact can be configured by means of a selection jumper.

9.2.1 Wiring and configuration

The default configuration of the relay cards is the following:

Relay 1 **Activation by matrix 3: Immediate activation only with Zone 1 (Zone 1= ON)**

Relay 2 **Activation by matrix 4: Immediate activation only with Zone 2 (Zone 2= ON)**

Relay 3 **Activation by matrix 5: Immediate activation only with Zone 3 (Zone 3= ON)**

Relay 4 **Activation by matrix 6: Immediate activation only with Zone 4 (Zone 4= ON)**

Relay 5 **Activation by matrix 7: Immediate activation only with Zone 5 (Zone 5= ON)**

Relay 6 **Activation by matrix 8: Immediate activation only with Zone 6 (Zone 6= ON)**

Relay 7 **Activation by matrix 9: Immediate activation only with Zone 7 (Zone 7= ON)**

Relay 8 **Activation by matrix 10: Immediate activation only with Zone 8 (Zone 8= ON)**

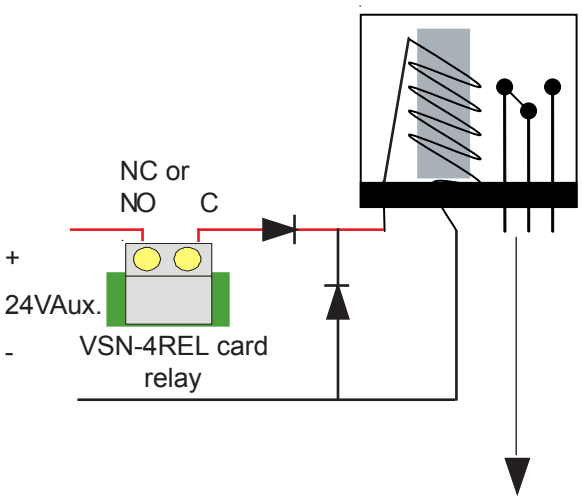
Relay 9 **Activation by matrix 11: Activation with any zone disablement**

Relay 10 Activation by matrix 12:Activation when there are at least 2 zones in alarm (all coincident zones).

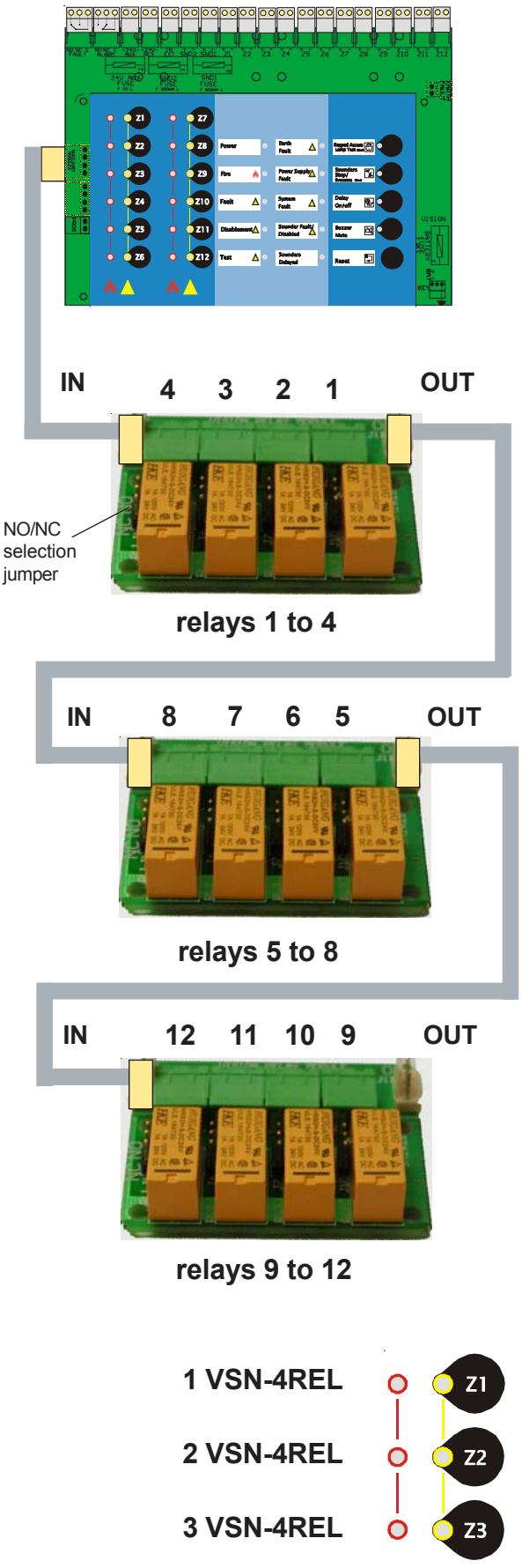
Relay 11 Activation like sounder 1. Activation by Matrix 1: with delay for detector alarms and without delay for call points alarms in any zone.

Relay 12 Activation like sounder 1. Activation by Matrix 1: with delay for detector alarms and without delay for call points alarms in any zone.

External relay for unlimited current:



External auxiliary relay contacts for unlimited current



The relay cards are connected to the control panel relay bus by means of a ribbon cable. Refer to VSN-4REL for more information.

VSN-4REL card has two ribbon cable connector (IN and OUT). The relays are numbered automatically following the order of the cards in the bus.All the cards have 4 relays (1 to 4).

Card 1: The first card has 4 relays numbered from 1 to 4 and the relays configuration will be: R1, R2, R3 and R4.

Card 2: The second card has 4 relays numbered from 1 to 4 and the relays configuration will be: R5, R6, R7 and R8.

Card 3: The third card has 4 relays numbered from 1 to 4 and the relays configuration will be: R9, R10, R11 and R12.

CONFIGURATION OF VSN-4REL CARD NUMBER

The relay cards have to be enabled and configured in the control panel.

To select the number of VSN-4REL cards installed:

i) Switch off the control panel (mains supply and batteries).

ii) Connect the jumper at PROG switch and connect again the control panel. Special functions leds will be lit, according to their configuration.

iii) Press Zone 1 key until you select the number of installed cards, following the Z1, Z2 and Z3 leds.

Zone 1, 2 and 3 leds:

Z1 Alarm led (red)	Cards fitted
Z1 + Z2 + Z3 = OFF	= 0 VSN-4REL cards
Z1 = ON	= 1 VSN-4REL cards
Z1+ Z2 = ON	= 2 VSN-4REL cards
Z1 + Z2 + Z3 = ON	= 3 VSN-4REL cards

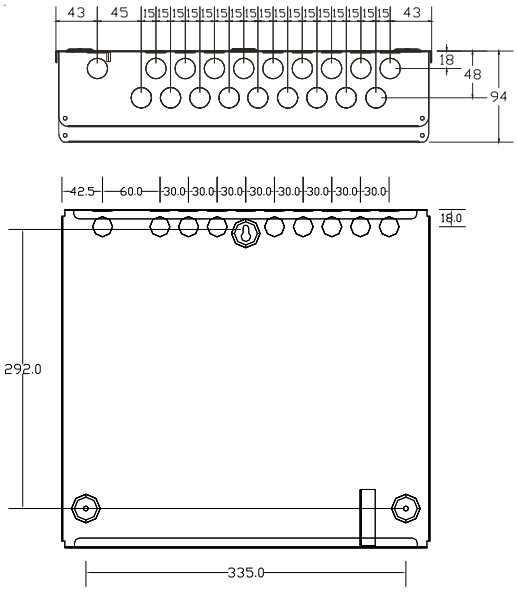
10 Specifications

General

PLUS control panels have been designed to comply with EN54 Part 2/4 requirements.

This panel complies with the European Low Voltage Directive 73/23/EEC (and the amending Directive 93/68/EEC), by the application of the safety standard EN 60950.

The panel conforms to the essential protection requirements of the EMC Directive 89/336/EEC (and the amending Directives 92/31/EEC and 93/68/EEC) by the application of EN 50081-1, (emissions) and EN 50130-4, (immunity).



Dimensions in mm

Mechanical:

Construction:	Lacquered steel box and cover
Dimensions (mm):	357 (h) x 382 (w) x 94 (d)
Approx. Weight:	4 kg (no batteries)

Environmental:

Operating temperature:	-5°C to +45°C, (recommended: +5°C to 35°C)
Humidity:	5% to 95% R.H.
Height above sea level:	Maximum, 2000 m
Panel sealing:	IP 30, (EN 60529)
Vibration:	EN 60068-2-6, 10-150 Hz at 0.981ms^{-2}, 0.1g_n (Meets EN 54-2/4 requirements)
EMC:	Emissions: EN 50081-1 Immunity: EN 50130-4
Safety:	EN 60950

External connections:

Cable entry:	6 x 20 mm knockouts on top face and 5 x 20 mm knockouts on rear wall of back box.

Fuses:

Mains supply:	F 4A L 250V
Batteries:	F 2A L 250V
Sounders:	F 500mA L 250V
Aux. 24V	F 1A L 250V

LED indicators:

LED status indicators*[1]: FIRE, Zone Fire, Zone Fault, Power, General Fault, General Disablement, Test, Earth Fault, Power Supply Fault, System Fault, Sounder Fault/ Disabled, Sounders Delayed.

LED indicators in keys*[1]: Level 2 access, Sounders Stop, Delays Off, Buzzer Mute, Disabled Zone or in Test.

*[1] In Access Level 3, panel leds have special indication functions.

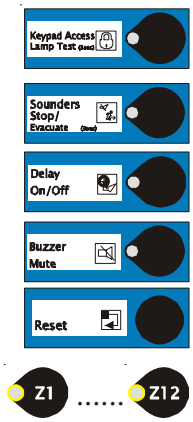
Control keys:

Optional two-position keyswitch:

Level 1 (key removed)

Level 2 (key turned 90º clockwise)

Push-buttons are provided for the following functions*[2]:



Keypad Access: Level 2 with password/lamp test

Sounders Stop: Silence/Reactivate/Disable Sounders o ***Evacuation***

Delay On/Off: Activate/Cancel delays

Buzzer Mute: Silence internal buzzer

Reset: Control panel reset

Zone push-buttons: Disable/Test/Service

*[2] Push-buttons have selection functions in Access Level 3.

Configuration jumpers: Earth leakage monitoring jumper (EARTH FAULT) and Level 3Access jumper (PROG).

Supply rating:

Mains supply to the panel is to be provided via an external, double-pole, mains-isolation unit. The supply rating is:

230V~ (ac) ±15%, 50/ 60Hz, 65W (2.4A)

Power supply specification:

Input fuse rating: T 4A L 250V (5 x 20 mm)

Output ratings:

Output voltage: 27Vdc +/-7%

Output current: 2.4A (maximum load in external circuits 2A: 24 V Aux., zone and sounder circuits)

Output ratings - Charger:

Charger voltage: 27.3V at 20°C (temperature compensated)

Charger current: 260mA

Battery can be charged to 80% of its capacity in 24 h: 7Ah

EMC: EN55022 Clase B; EN61000/2/3,3; EN61000/4/2,3,4,5,6,8,11; ENV50204

Safety: UL60950-1

Recommended battery size:

12V 7Ah sealed lead-acid type without maintenance.

Note 1: Internal sealed lead-acid type batteries supplied from Honeywell are recommended.

Note 2: Batteries must be replaced every four years at the latest. Battery life span depends on the environmental temperature. Refer to manufacturer 's technical specification for guidance.

Note: Total current in alarm (sounders + standby and alarm devices + auxiliary output) **must not** exceed the maximum load, 1.3A.

External circuits:

Zone circuits

PLUS control p anels can be supplied with four , eight or twelve detectors and/or call points zone circuits. The control panel is designed to be compatible with most brands. System Sensor detectors are recommended.

PLUS control panel supports 32 System Sensor detectors per zone and an unlimited number of call points.

Max. voltage in zone 27.5Vdc (Normal) at 21Vdc.

Status zone values are indicated in approximate % with regard to the normal max. zone voltage (27.5 Vdc).

Short circuit fault*1	0% - 7% of 27.5V (< 1.9Vdc / > 54mA)
Call point alarm:	7% - 27% of 27.5V (range:1.9Vdc/54mA at 7.4Vdc/42mA)
Detector alarm*2:	27% - 70% of 27.5V (range: 7.4Vdc/42mA at 19Vdc/17mA)
Standby:	70% - 93% of 27.5V (range: 19Vdc/17mA a 25.5Vdc/4mA)
Open circuit:	93% - 100% of 27.5V (> 25.6Vdc)

*1 Max. current in zone: 57mA

*2 Special function for alarm with low power detectors (27% - 87%). To select alarm for low power detectors, such as **ESSER 9000 Series**, switch off the control panel and connect again with the PROG jumper fitted. Press Z2 push-button to select the right option which will be indicated through the Z2 yellow led:

Normal zone: Zone 2 yellow led = OFF
ESSER Zone: Zone 2 yellow led = ON

Remove the PROG jumper. The control panel will save the configuration and show the current status of the system.

2 sounder circuits:

The control panel provides two monitored and configurable outputs. Maximum load: 0.5A in alarm, protected by fuse.

2 alarm and fault relays:

Contacts: C, NC, NO max. 30Vdc/ 1A.

Auxiliary 24V outputs:

Two 24V Aux outputs: 24V continuous and 24V resettable

18.5 - 28.5Vdc (24Vdc nominal)/ max. 1A between both outputs

Digital input:

Monitoring voltage 560mV. Activation by external dry contact NO or NC.

Accessory cards:

Port to connect VSN-CRA and/or VSN-4REL cards.

Communication port:

Bidirectional port to connect VSN-232 card.

Honeywell Life Safety Iberia

Barcelona Tel.: 93 4973960 Fax: 93 4658635
Madrid: Tel. 91 1314800 Fax 91 1314899
Sevilla: Tel 95 4187011 Fax 95 5601234
Bizkaia: Tel.: 94 4802625 Fax: 94 4801756
Portugal: Tel.: 00 351218162636 Fax: 00 351218162637
www.honeywelllifesafety.es

Honeywell Life Safety France

Export: Tel +33 810 10 66 10 – Fax +33 139 96 49 51
www.esser-ackermannclino.fr