Phoenix Conventional Control Panel

Installation and Commissioning Manual

Contents

1. INTRODUCTION

THIS FIRE ALARM CONTROL PANEL IS CLASS 1 EQUIPMENT AND MUST BE EARTHED.

This equipment must be installed and maintained by a qualified and technically experienced person.

1.1 HANDLING THE PCBS

If the PCBs are to be removed to ease fitting the enclosure and cables, care must be taken to avoid damage by static.

The best method is to wear an earth strap, but touching any earth point (e.g. building plumbing) will help to discharge any static. Hold PCBs by their sides, avoiding contact with any components.

Always handle PCBs by their sides and avoid touching the legs of any components. Keep the PCBs away from damp dirty areas, e.g. in a small cardboard box.

1.2 USING THIS MANUAL

This manual explains, in a step-by-step manner, the procedure for the installation of the Phoenix Range of Fire Alarm Control Panels. For full operational and maintenance information, please refer to the user manual. It also contains a System set-up table, and Installation Certificate, that must be completed by the Commissioning Engineer prior to system handover.

Unlike the User Manual, this Installation Manual must not be left accessible to the User.

1.3 ABOUT THE PHOENIX FIRE ALARM CONTROL PANEL & INTEGRAL PSE

- The Phoenix Fire alarm control panel is available in 1,2,4, or 8 Zone sizes.
- The 1 & 2 zone panels have 2 x 250mA sounder circuits.
- The 4, 6 & 8 zone panels have 4 x 500mA* sounder circuits.
- It has a set of fire relay contacts (voltage free) rated at 1A SELV.
- It has a set of fault relay contacts (voltage free) rated at 1A SELV. This relay is normally powered to allow a fault output in the case of total power failure.
- It has the ability to disable any zone or the sounder circuits.
- It has a one man test mode, which resets the Zone in test after 5 seconds (EN54 option with requirements).
- It has a maximum battery capacity of 3.4Ah.
- It has an in built capability of operating with Diode bases (for line continuity on head removal).
- It will operate in ambient temperatures of -5 to 40°C.
- It will operate in a relative humidity of up to 93% (non-condensing).
- It will withstand vibrations between 5 & 150 Hz.
- It has a maximum capacity of 32 devices per zone.
- The PSE is a 35W Switch Mode cage with a nominal output of 30V.
- The battery is fused at 1.85A.
- The PSE will draw a maximum of 30uA from the battery in the event of mains failure (the FACP will continue to take around 40mA).
- The FACP & PSE should be maintained as described in the User Manual, Maintenance Guide & Log Book.

*On 4 and 8 zone panels the total available current for field devices is 800mA at 28VDC. This current must be shared between the auxiliary 24VDC supply and the four alarm circuits such that the total current drain across the five circuits does not exceed 800mA.

1.4 DESIGNING THE SYSTEM

This manual is not designed to teach Fire Alarm System design. It is assumed that the installer has an understanding of Fire Alarm System components and their use.

We strongly recommend consultation with a suitably qualified, competent person regarding the design of the Fire Alarm System. The System must be commissioned and serviced in accordance with our instructions and the relevant National Standards. Contact the Fire Officer concerned with the property at an early stage in case he has any special requirements.

If in doubt, read BS 5839: Pt 1: 2013 “Fire Detection and Fire Alarm Systems for buildings (Code of Practice for System Design, Installation, Commissioning and Maintenance)” available from the BSI, or at your local reference library.

1.5 EQUIPMENT GUARANTEE

If this equipment is not fitted and commissioned according to our guidelines, and the relevant National Standards, by an approved and competent person or organisation, the warranty may become void.

1.6 DEFINITION OF ACCESS LEVELS ON THE PHOENIX PANEL

ACCESS LEVEL	ACCESSED BY	ACCESS METHOD	FUNCTIONS ACCESSED
1	General public	Default state	View panel status LED test
2	Responsible person	Access code entered	Start/stop sounders Silence buzzer Reset panel Enable/disable sections of system Test mode
3a	Installer/Engineer	Installer password entered	Set panel configuration Reset a system fault
3b	Installer/Engineer	Open enclosure	Connect wiring during install Battery check during Maintenance Set configuration switches
4	Authorised Service Engineer	Open enclosure & PC programming software	Update panel firmware

1.7 FUNCTIONS REQUIRED BY EUROPEAN STANDARD EN 54 PART 2

The Phoenix 1 – 8 zone fire alarm control panel provides the following mandatory and optional functions as prescribed by the European standard EN 54 Part 2.

(a) Mandatory Functions

The mandatory functions and corresponding indications provided by this panel are:

- fire alarm
- fault warning
- disabled,
- quiescent

(b) Optional Functions

The options with requirements provided by this panel are:

- output to fire alarm devices (i.e. sounders)
- One Man Test Mode

2. FIRST FIX

All wiring must be installed to meet BS5839: Pt1: 2013 and BS 7671 (Wiring Regs) standards. Other National standards of fire alarm system installation should be adhered to where applicable.

2.1 RECOMMENDED CABLE TYPES AND THEIR LIMITATIONS

Screened cables should be used throughout the installation to help shield the Panel from outside interference and ensure EMC compatibility.

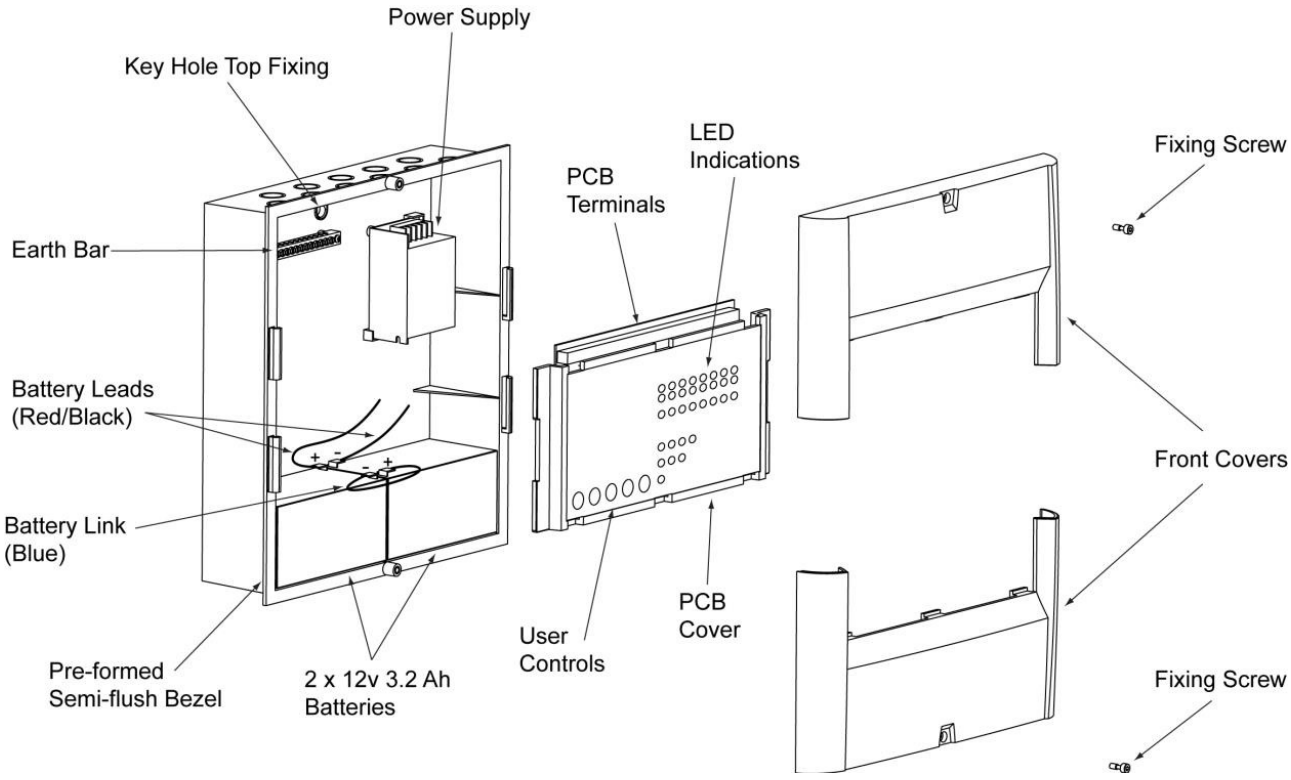
The two categories of cable according to BS5839: Pt1: 2013, Clause 26 "Fire Detection and Alarm Systems for Buildings (Code of Practice for System Design, Installation and Servicing)" are:

- **Standard fire resisting cable – to PH30 classification of EN 50200**
- **Enhanced fire resisting cable – to PH120 classification of EN 50200**

(Note that all cables should be at least 1mm2 cross section

On the Phoenix Panel the general recommendation would be to use standard fire resistant cable, such as FP200, Firetuff™ , or an equivalent. These cables are screened, and will provide good EMC shielding when properly grounded at the panel. Certain system specifications may demand the use of a particular type of cable and due regard should be paid to this fact.

Depending on the environment, the cables may need mechanical protection (such as a conduit).



3. MOUNTING THE FIRE ALARM PANEL

It is recommended that the panel's door be removed to avoid accidental damage. Also, the PCB could be removed and stored in a safe place, while fixing the back box to the wall. The panel`s end of lines, spare fuses and battery leads are usually supplied in a bag. Keep this safe as you will need it to complete the installation.

3.1 PLANNING CABLE ENTRY

The diagram below shows the location of the cable entries to facilitate planning of wiring to be brought to the panel.

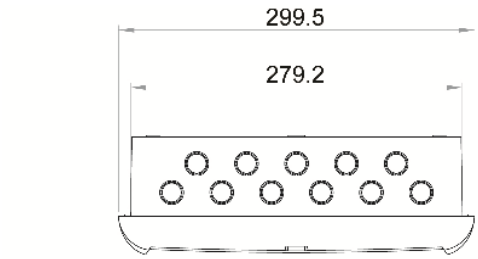
The Cable knockouts can be removed with a screwdriver, or by using a drill with a 20mm hole cutter.

When a knock-out is removed, a cable gland should be used to protect & secure the cable. If any knockout is removed, but subsequently not used, it should be covered up with a suitable blanking plug.

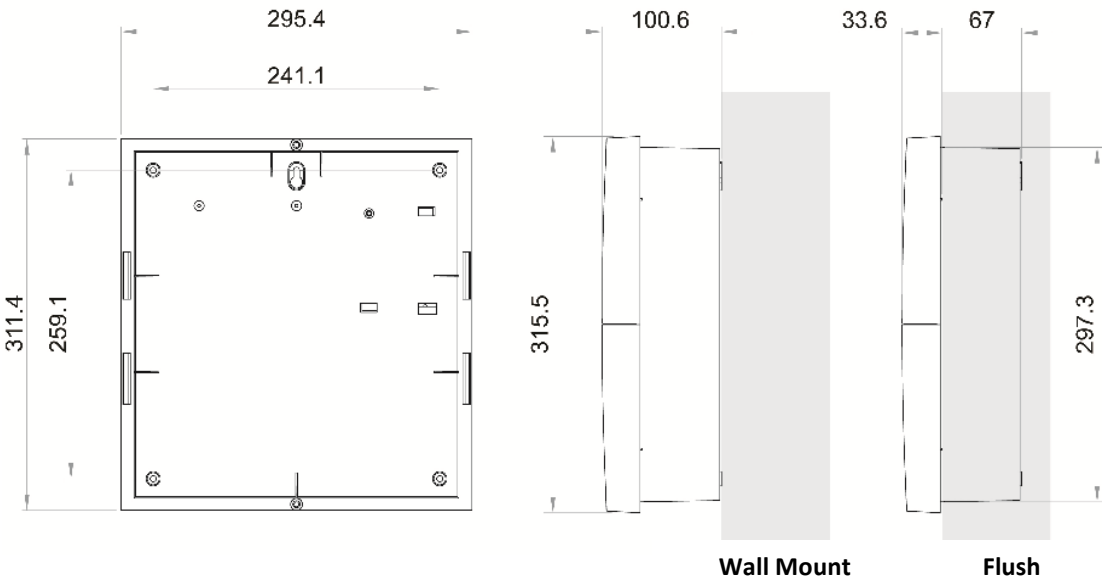
The 230Va.c. Mains cable must be fed into the enclosure via one of the cable entries at the top right corner of the back box. (Refer to "Connecting the Mains" in section 4).

3.2 FIXING THE BACK BOX TO THE WALL

Plan view inside the enclosure without PCBs. Side view for surface / flush installation.



11 x 20mm knock-out cable entries



Fix the enclosure to the wall using the mounting holes provided.

Check the build & condition of the wall to decide a suitable screw fixing.

The mounting holes are designed for No 8 roundhead or countersunk woodscrews (or similar).

Remove any debris from the enclosure.

Take care not to damage the FACP during installation.

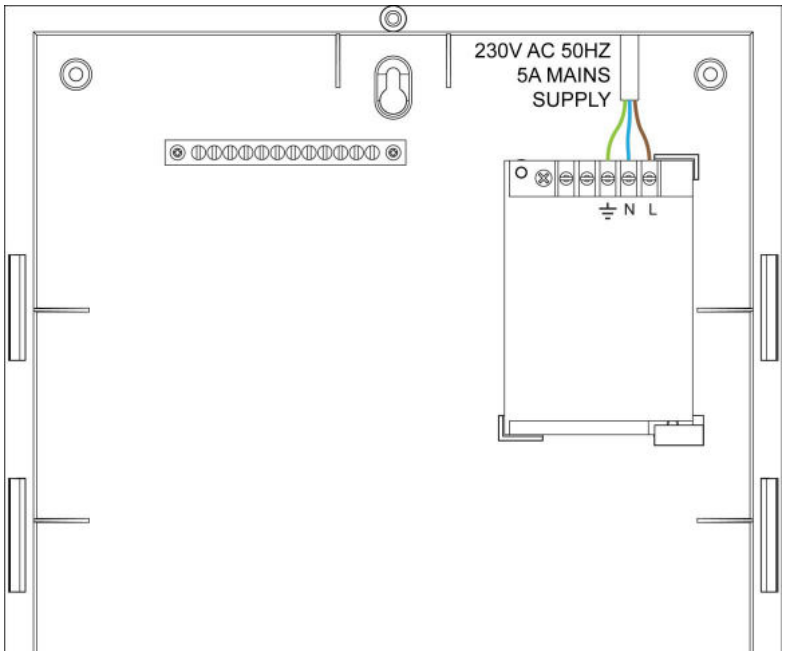
4. CONNECTING MAINS & BATTERY POWER

4.1 CONNECTING THE MAINS POWER

MAINS ISOLATION:

An appropriate lockable double pole disconnect device shall be provided as part of the building installation.

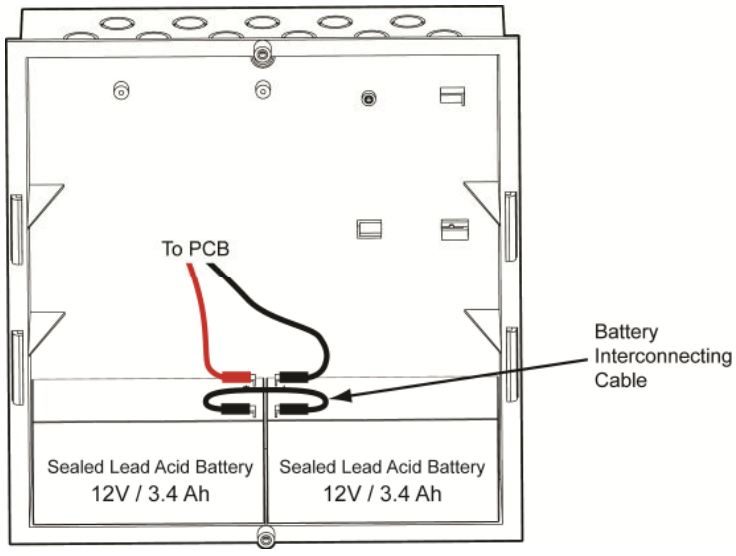
The Mains supply to the FACP is fixed wiring, using **Fire resisting** 3-core cable (Between 0.8 mm² and 4.0mm²) or a suitable 3-conductor system, fed from an isolating double pole switch fused spur, fused at 5A. This should be secure from unauthorised operation and be marked 'FIRE ALARM: DO NOT SWITCH OFF'. The supply must be exclusive to the Fire Panel. It is recommended to have a mains isolating switch close to the fire panel to allow simple mains disconnection. Use only mains cable compliant to BS6004, BS6500, or equivalent.



The cable must be protected by a 5A fuse at the source

4.2 CONNECTING THE BATTERIES

Figure 4: Battery location and connection details



CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO BATTERY MANUFACTURERS INSTRUCTIONS

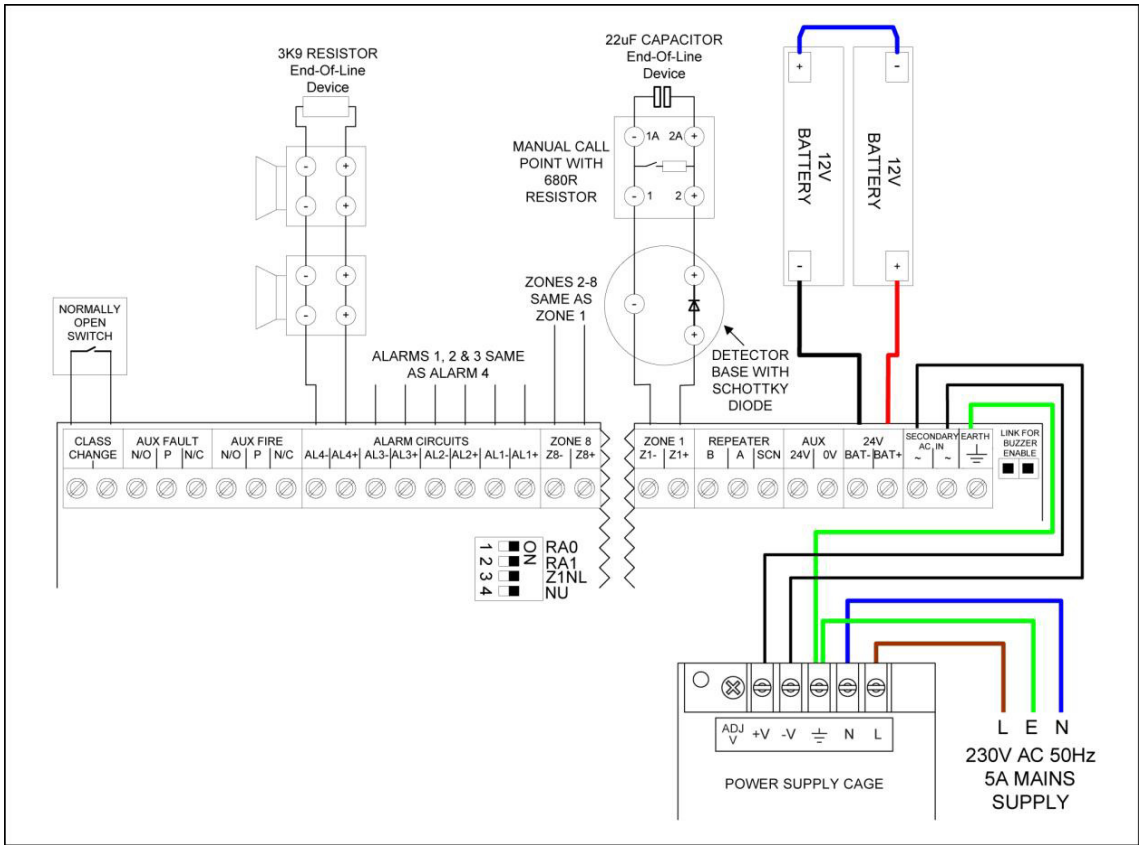
Figure 4

See IMPORTANT NOTES ON BATTERIES in Section 13

5. FIELD DEVICE TERMINATION

5.1 TERMINATING THE DETECTION AND ALARM (SOUNDER) CIRCUITS

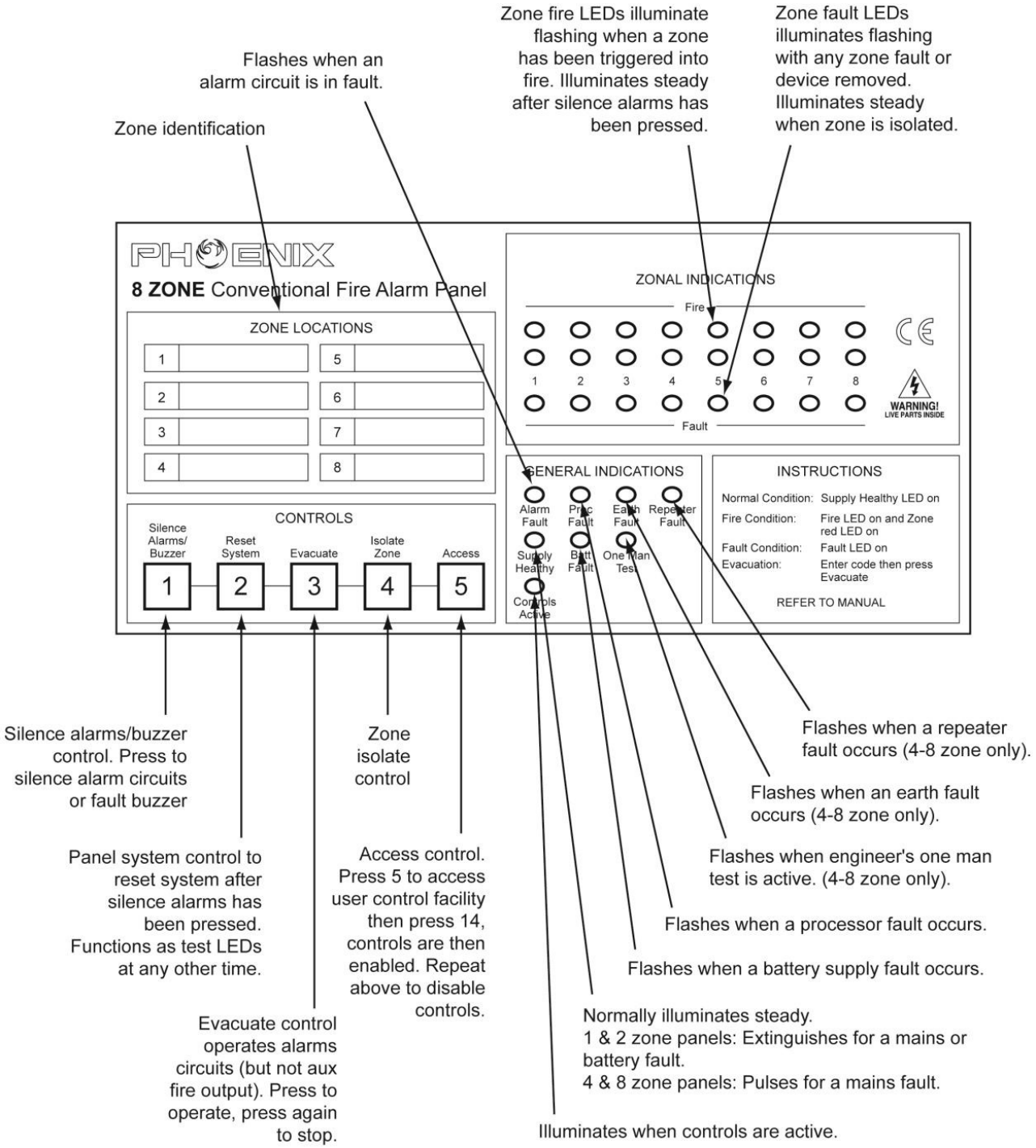
All cables entering the enclosure should use cable glands. The Detector and Sounder circuits should be connected to the appropriate connector block on the Termination PCB as shown below.



6. CHECKING AND CONFIGURING THE PANEL

6.1 Familiarize yourself with the Panel

See section 15 for Access code Information.



6.2 Checking the Panel

1) Ensure the mains supply has been inspected and tested in line with BS5839 Part 1 and the current IEE regulations. Ensure that the system is correctly earthed.

2) Leave all resistors and zone capacitors in place and switch on the 230 volts AC mains only. The control panel should react as follows:

i) The GREEN “Supply Healthy” LED illuminates
ii) The GREEN “Controls Active” LED illuminates

3) No other indications should be present at this time. If there are, identify the fault and rectify it by checking that the end of line devices are connected correctly in the terminals on each zone, alarm circuit and battery terminals. Also check that all DIL switches on the control board are in the OFF position. 4) Remove the resistor from the battery terminals on the control panel. The panel should react as follows:

i) On 1 & 2 zone panels, the AMBER “General Fault” LED illuminates; on 4 & 8 zone panels, the AMBER “Batt Fault” LED illuminates
ii) On 1 & 2 zone panels, the GREEN “Supply Healthy LED is extinguished.
iii) The control panel internal buzzer sounds
iv) The Fault Relay output operates

5) Connect the Red battery lead to the BATT+ terminal on the panel and connect the Black battery lead to the BATT- terminal on the panel. Connect the other end of the Red lead to the Red (+) terminal on one battery and connect the other end of the Black lead to the Black (-) terminal on the other battery. The control panel should react as follows:

i) The buzzer silences and the fault indications are cleared
ii) The GREEN “Supply Healthy” LED re-illuminates (1 & 2 zone panels)

6) Press and hold the “Test Lamps/System Reset” button on the display and check that the control panel reacts as follows:

i) All LEDs on the display illuminate whilst the switch is operated
ii) The internal buzzer sounds

7) Release the Test Lamps/System Reset button and observe that the panel returns to it’s previous state.

8) Press the “Evacuate” switch on the display and check that the control panel reacts as follows:

i) The panel buzzer operates
ii) 28V DC can be measured across each of the alarm circuits
iii) Press the “Evacuate” switch again to return the panel to normal

9) Switch off the 230V AC supply to the control panel and check that the control panel reacts as follows:

i) On 1 & 2 zone panels, the “General Fault” LED illuminates and the “Supply Healthy” LED extinguishes; on 4 & 8 zone panels, the “Supply Healthy” LED flashes
ii) The internal buzzer in the control panel sounds
iii) The Fault Relay output operates
iv) The “Supply Healthy” LED extinguishes

Re-instate the 230V AC supply and check that the panel returns to normal.

10) Check that the zone detection circuits are monitoring the wiring for faults correctly, as follows:

i) Open circuit (to simulate a break in the circuit wiring) – remove the negative leg of the zone capacitor
ii) Short circuit (to simulate a short between cores) – reconnect the negative leg of the capacitor & s/c the zone terminals

Simulate the faults described above and check that the control panel reacts as follows:

i) The appropriate AMBER “Zone Fault” LED pulses
ii) The internal buzzer on the control panel sounds
iii) The fault relay operates

11) Check that the alarm circuits are monitoring the wiring for faults correctly, as follows:

i) Open circuit - remove end-of-line resistor
ii) Short circuit - replace resistor & short circuit the alarm circuit terminals

Simulate the faults described above and check that the control panel reacts as follows:

iii) The “General Fault” LED illuminates (1 & 2 zone panels only)
iv) The “Alarm Fault” LED illuminates (all panels)
v) The internal buzzer in the control panel sounds
vi) The fault relay operates

6.3 Configuring the Panel

The Phoenix conventional panel has an internal buzzer disable link located at the top of the PCB. This link is not monitored (so the panel will not display if its buzzer is disabled. It is intended for use in commissioning and maintenance only, where circumstances prohibit repeated noise from the panel`s buzzer during testing. **Always check that the buzzer is correctly enabled before closing the panel cover.**

6.3.1 Earth Fault Enable/Disable (4 & 8 zone panels only)

With engineer's controls active, press 2 to enable/disable earth fault monitoring. When in engineer's mode, the "Earth Fault" LED will illuminate when earth fault monitoring is enabled.

6.3.2 Processor Fault Indication

1 & 2 Zone Panels:

If the processor stops, the "Proc. Fault" LED will illuminate. Press the "Processor. Reset" button (top right hand corner of the PCB) to re-start the processor. To clear the processor fault LED, press the "Proc. Fault Reset" button adjacent to the "Processor Reset button (make sure controls are enabled).

4 & 8 Zone Panels:

If the processor stops, the processor will be re-started automatically and the "Proc. Fault" LED will pulse. To clear the LED indication, first enter the engineer's access code (5324) and then press 4.

6.3.3 Zone 1 Non-latch Configuration (4 & 8 Zone panel only)

Zone 1 can be configured to operate in a non-latching fire indication mode by setting the "Z1NL" DIL switch to the ON position.

In this mode, if a fire condition occurs on zone 1 the panel will indicate the fire condition and operate the alarms. The auxiliary fire relay contacts will not be operated. When the fire condition is cleared from zone 1, the zone 1 fire indication is cleared and, as long as no other zones are in fire, the alarms are also cleared. If any other zone is in a fire condition the panel will remain in the fire condition until manually reset.

The zone 1 non-latch enable switch is identified in section 5.1

7. COMMISSIONING

7.1 Introduction

The following equipment should be available where possible to minimise the commissioning period:

(i) VHF/UHF 2-Way Portable Radio System (for two engineers)
(ii) Multi-meter capable of measuring voltages and resistances

7.2 Checklist

Before commissioning, the engineer should check the following:

i) All field wiring has been inspected and tested in accordance with the manufacturer's wiring recommendations, BS5839 part 1 and current IEE wiring regulations.
ii) All field cables are glanded into the control panel cabinet.
iii) Detector bases are linked through but detector heads are not fitted. Any devices with electronic components are not fitted. Terminations to devices with electronic components should be linked through to maintain cable continuity.
iv) Call points are not connected but the cable is linked through to maintain continuity.
v) No end-of-line devices are fitted (except at the panel terminals).

The following information should be available to the commissioning team:

(i) Zone detection layout drawings
(ii) Wiring schematic diagram
(iii) Installation manuals for all equipment connected to the system

Tracing wiring faults on long circuits that are routed through risers etc. can be difficult without prior knowledge of the wiring route. It is recommended that the electrical installer is available until basic wiring continuity is proven. A minimum of 2 persons (e.g. engineer & mate) is recommended for efficient commissioning.

7.3 An Overview of the Commissioning Procedure

The approach to be used when commissioning a fire alarm system is to check each circuit and function in turn to ensure correct operation of the entire system. In this way any faults may be located quickly and accurately. The general procedure is as follows:
1) Alarm circuits should be checked first. The operation of each sounder should be checked for correct audibility as specified in BS5839 pt 1, using the "EVACUATE" facility on the control panel.

2) Zone Detection circuits should be commissioned next. The requirement is to verify the correct operation of each device and check for correct indication at the control panel.

3) Finally, any auxiliary circuits should be tested.

WARNING: *Before testing, the engineer must be aware both of the operation of all devices fitted to the auxiliary circuits and of the consequences of their operation.*

7.4 Pre-Commissioning Wiring Check

NOTE: *This pre-commissioning wiring check procedure should be followed in order to test all wiring prior to specific commissioning of any detection, alarm and auxiliary circuits.*
The following assumes that the control panel has been installed in accordance with the installation procedure and is powered with only the "Supply Healthy" and "Controls Active" LEDs illuminated. Do not connect field wiring at this stage.
1) Ensure that no devices are connected to the zone and alarm circuits but the cables are linked through at the device locations to achieve a continuous circuit.

2) Ensure that resistance of all cables to earth and between cores is more than 1MΩ. Check the following:

i) Positive to earth resistance is greater than 1MΩ

ii) Negative to earth resistance is greater than 1MΩ

iii) Positive to negative resistance is greater than 1MΩ

iv) Connect a wire link as the end-of-line device on each of the zone and alarm circuits. At the panel end, measure the resistance across the positive & negative ends of the cables for each of the circuits; ensuring the value does not exceed 20Ω. Remember to remove the wire links after the tests.
3) Correct polarity throughout all circuits must be maintained. Rectify any faults.

4) All bells, detector heads and call points should now be connected and the correct end-of-line devices fitted. Use the spare end-of-line devices supplied and leave the EOL devices in the panel terminals at this stage. Remember to remove any links fitted to detector bases. Be very careful to maintain correct polarity at each device.

7.5 Alarm Circuits

After completion of the pre-commissioning wiring check, the following procedure should be followed:
1) Remove the resistor from the first alarm circuit terminal and connect the first alarm circuit wiring to the terminals, observing correct polarity. Check that any alarm fault indications clear after a few seconds.

2) Enter the access code to enable the controls and press the “Evacuate” switch. Check that all sounders connected to the alarm circuit operate.

3) Press the “Evacuate” switch again and check that the alarms silence.

4) Repeat steps 1 to 3 for the remaining alarm circuits.

7.6 Zone Circuits

NOTE: *Remember to enable the controls using access code 514 before using any of the controls.*
1) Remove the capacitor from the zone 1 terminals and connect the cables of the zone 1 circuit to the panel terminals, observing the correct polarity. Check that any zone 1 fault indications clear after a few seconds.

2) Check that the zone detection circuits are monitoring the wiring for faults correctly. To do this the wiring on the zone detection circuits must be placed into the following conditions:

i) Open circuit (disconnect the EOL capacitor)
ii) Short circuit (short circuit the EOL capacitor)

Return the EOL capacitor to normal and check that the panel returns to normal.

3) Operate the first manual call point (BGU) on the zone and check the following:

i) The zone 1 fire LEDs pulse
ii) The internal buzzer sounds
iii) The alarms sound
iv) The auxiliary fire relay operates

Reset the break glass unit to its normal condition. Press the “Silence Alarms” button and then the “System Reset” button on the panel’s display board and check that the control panel returns to it’s normal state.

4) Repeat step 3 for all BGUs on the zone.

5) Operate the first detector on the zone and check the following:

i) The zone 1 fire LEDs pulse
ii) The internal buzzer sounds
iii) The alarms sound
iv) The auxiliary fire relay operates
v) The LED on the detector illuminates

Press the “Silence Alarms” button and then the “System Reset” button on the panel’s display board and check that the control panel returns to it’s normal state.

6) Repeat step 5 for all detectors on the zone.

7) Remove the first detector from zone 1 and observe the following:

i) The appropriate amber zone fault LED illuminates
ii) The internal buzzer sounds
iii) The fault relay operates

Operate a break glass unit between the detector that has been removed and the EOL capacitor. Check that the panel reacts as described above for a fire condition. Refit the detector, reset the BGU, press the “Silence Alarms” button and then the “System Reset” button on the panel’s display board and check that the control panel returns to it’s normal state.
8) Repeat step 7 for all detectors on the zone.

9) Repeat steps 1 to 8, one zone at a time, until all the zones are commissioned.

10) Any faults that are found must be traced and rectified before proceeding.

8. ZONE DISABLEMENT

Zone Isolation can only be performed at the control panel. Enable the controls then follow the instructions below. Isolated zones are indicated by a steady amber fault LED.

1 & 2 zone panels:

(i) Press “Zone Isolate” to isolate zone 1

(ii) Press & hold “Zone Isolate” for more than 5 seconds to isolate zone 2

De-isolate the required zones using the same process.

4 & 8 zone panels:

(i) With controls active, press “ZONE ISOLATE”. The Zone 1 Fault LED will pulse rapidly every 2 seconds (flashing cursor mode).

(ii) Press “ACCESS” (button 5) to move the cursor to the required zone.

(iii) Press “ZONE ISOLATE” to isolate or de-isolate the required zone.

(iv) Repeat (ii) and (iii) for any further zones.

(v) Press “RESET” to clear the flashing cursor mode.

9. One Man Test

9.1 One Man Test: 1 & 2 Zone Panels

This Engineer's control is located on the top right hand corner of the PCB. The functions of the switch are described below.

One-man Test mode:- press and hold for more than 5 seconds. Check that the control panel reacts as follows:

i) "General Fault" LED flashes

ii) The fault buzzer sounds

iii) "Supply OK" LED flashes

Press the one-man test switch briefly to return panel to normal mode.

NOTE: The control panel will automatically de-select the one-man test after 10 minutes of non-operation.

9.2 One Man Test 4 & 8 Zone Panels

1) Enter the engineer's access code (5324), the "Controls Active" LED will flash. To exit engineer's mode, press 5. If no controls are operated for 10 seconds the panel will automatically exit engineer's mode.

2) One-man Test - with engineer's controls active, press 1 to enable One-man Test. Check that the control panel reacts as follows:

i) "One-Man Test" LED flashes

ii) The fault buzzer sounds

3) Press 1 again to clear.

NOTE: The control panel will automatically de-select the one-man test after 10 minutes of inactivity.

10. GENERAL FAULT FINDING

10.1 Zone Fault

This section presumes that a zone fault is indicating on the control panel, an amber zone fault LED is flashing and the internal fault buzzer is sounding.

i. Check that the end of line capacitor is present in the last device on the zone. If it is present, check that it is the correct value – 22uf, 35V. If the above are correct, proceed to (ii).

ii. Disconnect the zone wiring from the control panel terminals and connect a 22uf, 35V end of line capacitor into the zone terminals. If the fault disappears from the panel, the cause is on the zone wiring - proceed to (iii). If fault is still present, the control panel is damaged.

iii. Check the zone wiring with a Multimeter to ensure that no short circuits, open circuits or earth shorts are present on the zone wiring. If wiring faults are found, check the zone circuit at various points until the fault is found.

10.2 Alarm Fault

This section presumes that the Alarm Fault LED is flashing and the internal buzzer is sounding.

i. Check the end of line resistor is present in the last device on the alarm circuit. If it is present, check it is the correct value - 3k9. If the above are correct, proceed to (ii).

ii. Disconnect the alarm circuit wiring from the control panel terminals and connect a 3k9 end of line resistor into the alarm circuit terminals. If the fault disappears from the panel, the cause is on the alarm circuit wiring - proceed to (iii). If the fault does not disappear, the control panel is damaged.

iii. Check the alarm circuit wiring with a Multimeter to ensure that no short circuits, open circuits or earth shorts are present on the alarm circuit wiring. If wiring faults are found, check the alarm circuit wiring at various points until the fault is found.

10.3 Power Supply Fault

This section presumes that the Supply Healthy LED is off and the internal buzzer is sounding.

i. Using a Multimeter, check that the correct mains input voltage is present at the mains input terminals. If this is correct, proceed to (ii).

ii. Check that the mains input fuse is intact and of the correct value. If this is correct, proceed to (iii).

iii. Check that the voltage at the terminals marked “SECONDARY AC IN” on the control board is more than 29 volts DC. If it is less than 28 volts, then the PSU Cage is low. Check if it can be adjusted with its trimmer. If it can`t the cage is damaged. If it is more than 28 volts, proceed to (iv).

iv. Check that the battery is drawing current from the charger by inserting a Multimeter in series with the battery. The battery should be drawing between 3 and 30mA (fully charged). If this is correct, proceed to (v). If not, replace the battery.

v. Check the voltage at the battery input terminals. This should be between 27 and 28 volts DC with battery connected. If it is less than 27 volts, adjust the charger voltage using the potentiometer provided (The control board must be removed from the plastic front plate to access the potentiometer). If the voltage is within the range, the control panel is damaged.

10.4 Earth Fault (4-8 Zone Panels Only)

This section presumes that the Earth Fault LED is flashing and the internal buzzer is sounding.

i. Disconnect all field wiring from the panel. If the earth fault disappears, check all field wiring with a Multimeter to ensure that no earth shorts are present on the field wiring. If an earth short is found, check the wiring on that circuit at various points until the fault is found.

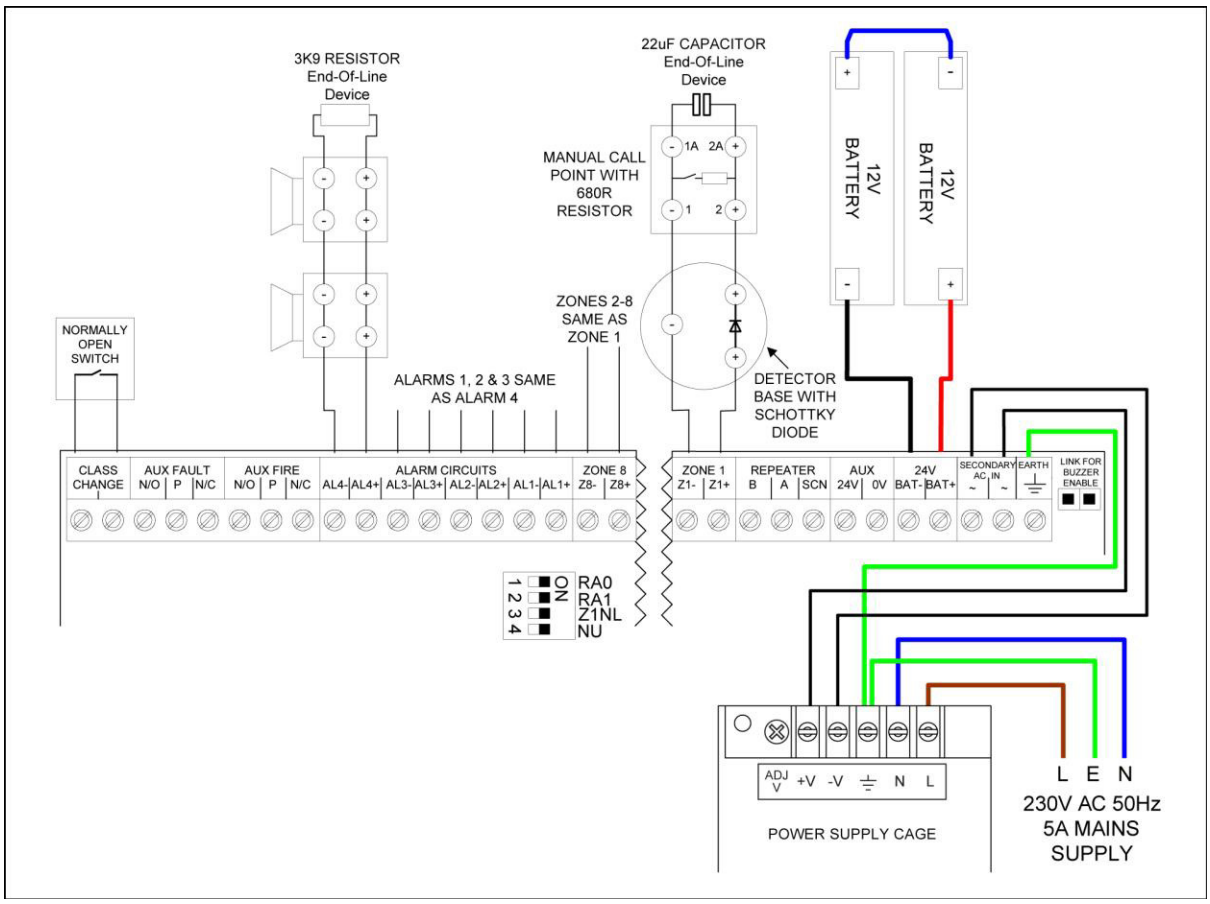
10.5 Alarms Do Not Operate

This section presumes that when either a fire condition is present or the Evacuate switch is operated, the sounder devices connected to the alarm circuits do not operate.

i Using a Multimeter, check that voltage is present on the alarm circuit terminals. If no voltage is present, the control panel is damaged. If voltage is present, proceed to (ii).

ii. Operate the Evacuate switch. The voltage at the alarm circuit terminals should
Reverse and measure 28 volts DC. If this is correct, then the fault is either on the field wiring or with the sounder device itself.

11. PCB TERMINATION CONNECTIONS



11.1 FUSES

DESCRIPTION	RATING C1P, C2P	C4P, C8P
Sounder circuit 1	250mA thermal fuse	500mA thermal fuse
Sounder circuit 2	250mA thermal fuse	500mA thermal fuse
Sounder circuit 3	N/A	500mA thermal fuse
Sounder circuit 4	N/A	500mA thermal fuse
Battery Fuse	1.85A thermal fuse	1.85A thermal fuse

12. PANEL SPECIFICATIONS

12.1 ENCLOSURE SPECIFICATIONS

DESCRIPTION	VALUE
ENCLOSURE SIZE	300 X 300 X 100 mm
TOP CABLE ENTRIES	11 x 20 mm DIA knock outs

12.2 ELECTRICAL SPECIFICATIONS

DESCRIPTION	C1P	C2P	C4P	C8P
MAINS VOLTAGE	100-240V AC +/-10% @ 50/60 Hz	100-240V AC +/-10% @ 50/60 Hz	100-240V AC +/-10% @ 50/60 Hz	100-240V AC +/-10% @ 50/60 Hz
BATTERY VOLTAGE	24V DC (2 X 12V SLA BATTERY)	24V DC (2 X 12V SLA BATTERY)	24V DC (2 X 12V SLA BATTERY)	24V DC (2 X 12V SLA BATTERY)
SYSTEM VOLTAGE	24V DC NOMINAL (18 – 32 V)	24V DC NOMINAL (18 – 32 V)	24V DC NOMINAL (18 – 32 V)	24V DC NOMINAL (18 – 32 V)
NUMBER OF ZONES	1	2	4	8
MAXIMUM ZONE CAPACITY	32 DEVICES PER ZONE	32 DEVICES PER ZONE	32 DEVICES PER ZONE	32 DEVICES PER ZONE
ZONE END OF LINE DEVICE	22uF 50V Capacitor	22uF 50V Capacitor	22uF 50V Capacitor	22uF 50V Capacitor
ZONE VOLTAGE				
MAXIMUM FIELD EQUIPMENT LOAD:	800mA	800mA	800mA	800mA
AUXILIARY 24VDC OUTPUT:	250mA	250mA	250mA	250mA
MAINS FAILED CURRENT CONSUMPTION:	35mA @24VDC	35mA @24VDC	40mA @24VDC	40mA @24VDC
MAXIMUM BATTERY CHARGER OUTPUT:	500mA @27.5 VDC	500mA @27.5 VDC	500mA @27.5VDC	500mA @27.5VDC
COMMON FIRE OUTPUT:	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.
COMMON FAULT OUTPUT:	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.	Volt-free contacts - 1A, 30V DC max.
ALARM CIRCUIT OUTPUT:	2 x 250mA @28VDC	2 x 250mA @28VDC	4 x 500mA @28VDC	4 @ 500mA @28VDC
SOUNDER END OF LINE DEVICE	3K9 RESISTOR	3K9 RESISTOR	3K9 RESISTOR	3K9 RESISTOR
BATTERY SIZE:	2 x 12V 2.1AH sealed lead acid	2 x 12V 2.1AH sealed lead acid	2 x 12V 2.1AH sealed lead acid	2 x 12V 2.1AH sealed lead acid
WEIGHT (EXCLUDING BATTERIES):	2.3kg	2.3kg	2.3kg	2.4kg

NOTE:
On 4 and 8 zone panels the total available current for field devices is 800mA at 28VDC. This current must be shared between the auxiliary 24VDC supply and the four alarm circuits such that the total current drain across the five circuits does not exceed 800mA.

13. IMPORTANT NOTES ON BATTERIES:

DANGER: Batteries are electrically live at all times, take great care never to short circuit the battery terminals.

WARNING: Batteries are often heavy; take great care when lifting and transporting batteries. For weights above 24 kilos, lifting aids should be used.

DANGER: Do NOT attempt to remove the battery lid or tamper with the internal workings of the battery. Electrolyte is a highly corrosive substance, and presents significant danger to yourself and to anything else it touches. In case of accidental skin or eye contact, flush the affected area with plenty of clean, fresh water and seek immediate medical attention.

Valve Regulated Lead Acid (VRLA) batteries are "low maintenance", requiring no electrolyte top-up or measurement of specific gravity.

WARNING: Only clean the battery case with a cloth that has been soaked or dampened with distilled water. Do not use organic solvents (such as petrol, paint thinner, benzene or mineral spirits) or other materials that can substantially weaken the case. Do not use a dry cloth as this will generate static electricity, which in turn may lead to an explosion.

WARNING: Avoid operating temperatures outside the range of -15°C/5°F to +50°C/122°F for float/standby applications.
The recommended normal operating temperature is 20°C.
HIGH TEMPERATURE will reduce battery service life. In extreme cases this can cause Thermal Runaway, resulting in high oxygen/hydrogen gas production and battery swelling. Batteries are irrecoverable from this condition and should be replaced.
LOW TEMPERATURE will prolong battery life but reduce output capacity.

DANGER: Do not incinerate batteries. If placed in a fire, the batteries may rupture, with the potential to release hazardous gases and electrolyte. VRLA batteries contain substances harmful to the environment.
Exhausted batteries must be recycled. Return them to the battery manufacturer or take them to your Council waste disposal site for appropriate disposal.

14. ELECTRICAL SAFETY:

The volt-free relay contacts provided within the panel must not be used to directly switch any voltage that exceeds 50VAC or 75VDC. (Please also refer to relay rating data).

This equipment requires a 230V AC supply. All installation work should be carried out in accordance with the recommendations of BS5839 Part 1 and the current edition of the IEE regulations by suitably qualified and trained personnel.

15. ACCESS CODE Functions

The functions available at the USER and ENGINEER access levels are listed below.

1 & 2 Zone Panels:

USER ACCESS CODE: 5 1 4
USER CONTROLS:
1. Silence Buzzer
2. Silence Alarms
3. Manual Evacuate
4. System Reset
5. Zone Isolate/De-isolate

ENGINEER'S ACCESS CODE: No access code, the upper panel cover must be removed to gain access to the switches.
1. One-Man-Test ON/OFF
2. Processor Reset
3. Zone 1 Non-Latch Enable/Disable

4 & 8 Zone Panels:

USER ACCESS CODE: 5 1 4
USER CONTROLS:
1. Silence Buzzer
2. Silence Alarms
3. Manual Evacuate
4. System Reset
5. Zone Isolate/De-isolate (Panel only)

ENGINEER'S ACCESS CODE: 5 3 2 4
1. One-Man-Test ON/OFF (button 1) (Panel only)
2. Earth Fault Monitoring Enable/Disable (button 2) (Panel only)
3. Processor Fault Reset (button 4)

The following Engineer's functions are available by removing the upper panel cover and setting the DIL Switches:
1. Number of connected Repeaters/Repeater Address
2. Zone 1 Non-Latch Enable/Disable (Panel only)

16. Phoenix Panel Compatible Zone Devices

The **Phoenix** panel is designed to operate with the following devices. Detectors marked * have been tested for compatibility. The remainder have electrical characteristics that are similar enough to the tested units to be listed as compatible.

Manufacturer	Part no.	Description	Maximum Per Zone
Apollo	53541-151	Series 30 ionisation detector	32 *
Apollo	53551-201	Series 20 optical detector	32 *
Apollo	53531-221	Series 30 Grade 1 heat detector	32
Apollo	45681-007	Series 20/30 mounting base	32 *
Apollo	55000-200	Series 60 ionisation detector	32 *
Apollo	55000-210	Series 60 integrating ion detector	32
Apollo	55000-100/101/102	Series 60 Grade 1/2/3 heat detector	32
Apollo	55000-103/104	Series 60 Range 1/2 heat detector	32
Apollo	55000-300	Series 60 optical detector	32 *
Apollo	55000-380	Series 60 optical/heat detector	32
Apollo	45681-200	Series 60 mounting base	32 *
Hochiki	SLK-E	CD Range optical detector	32 *
Hochiki	SIH-E	CD Range ionisation detector	32 *
Hochiki	DFE-60E / DFE-90E	CD Range 60/ 90 heat detector	32
Hochiki	DCC-1EL / DCC-2EL	CD Range Grade 1/2 heat detector	32
Hochiki	DCC-1REL	CD Range R1 heat detector	32
Hochiki	YBK-RL/4H1	CD Range mounting base	32 *
Hochiki	SLR-AS	CDX Range optical detector	32 *
Hochiki	SIJ-E	CDX Range ionisation detector	32
Hochiki	DFJ-60E / DFJ-90E	CDX Range 60 / 90 heat detector	32
Hochiki	DCD-R1E	CDX Range Grade 1 heat detector	32
Hochiki	DCD-1E	CDX Range Grade 2 heat detector	32
Hochiki	DCD-2E	CDX Range R1 heat detector	32
Hochiki	YBN-R/4SK	CDX Range mounting base	32 *
Honeywell	TC804E-1022	Optical detector	32 *
Honeywell	TC805E-1005	Ionisation detector	32 *
Honeywell	TC830-1004	Heat detector	32
Honeywell	14506587-005	Mounting base (Diode version)	32 *
Nittan	80000	Sensortec ST-I ionisation detector	32
Nittan	80100	Sensortec ST-P optical detector	32
Nittan	82012	Sensortec STB-4SDR base	32
System Sensor	1151E	Ionisation detector	32 *
System Sensor	2151E	Optical detector	32 *
System Sensor	5451E	Grade 1 heat detector	32
System Sensor	4451E	Range 1 heat detector	32
System Sensor	1451E	Ionisation detector	32 *
System Sensor	2451E	Optical detector	32 *
System Sensor	B401RSD	Mounting base	32 *
Zeta Alarm Systems	FEO2000	Fyreye Optical Detector	32 *
Zeta Alarm Systems	FEH2000	Fyreye Heat Detector	32 *
Zeta Alarm Systems	FEHH2000	Fyreye High Heat Detector	32 *
Zeta Alarm Systems	FE-CB / FE-DB	Fyreye common / Diode Base	32 *
Zeta Alarm Systems	MKII-OP	Fyreye MKII Optical Detector	32 *
Zeta Alarm Systems	MKII-OH	Fyreye MKII Opto-heat Detector	32 *
Zeta Alarm Systems	MKII-HR	Fyreye MKII A2R Heat Detector	32 *
Zeta Alarm Systems	MKII-HF	Fyreye MKII A2S Heat Detector	32 *
Zeta Alarm Systems	MKII-CB	Fyreye MKII Common Base	32 *
Zeta Alarm Systems	MKII-DB	Fyreye MKII Diode Base	32 *
Zeta Alarm Systems	ZT-CP3	Zeta Conventional Surface Mount MCP (Red)	32 *
Ziton	Z630-1	Optical detector	32 *
Ziton	Z610-1	Ionisation detector	32 *
Ziton	Z6BS2A	Mounting base	32 *
KAC	KR9-680	Manual call point	32 *

17. Installation Manual Modification History

ISSUE	DATE	CHANGES
001	10/3/2016	Initial Release
002	27/5/2016	Restructured manual into standard format.
003	13/9/2016	Added detector compatibility chart