



# **FIREBETA EXTINGUISHING CONTROL PANEL (ECP)**

# **INSTALLATION AND MAINTENANCE MANUAL**

**TM0037**

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# CHAPTER 1

## DESCRIPTION AND OPERATION

### 1.1 INTRODUCTION

The Extinguishing Control Panel (ECP) provides detection of fire and initiates release of an extinguishant. The panel is mains powered and also has standby batteries. It provides visible and audible indications of fire, fault and release of extinguishant.

The panel can cover two detection zones and one extinguishing area (2+1), four detection zones and one extinguishing area (4+1) or four detection zones and two extinguishing areas (4+2).



Figure 1: Extinguishing Control Panels

### 1.2 DESCRIPTION (Refer to Figure 1)

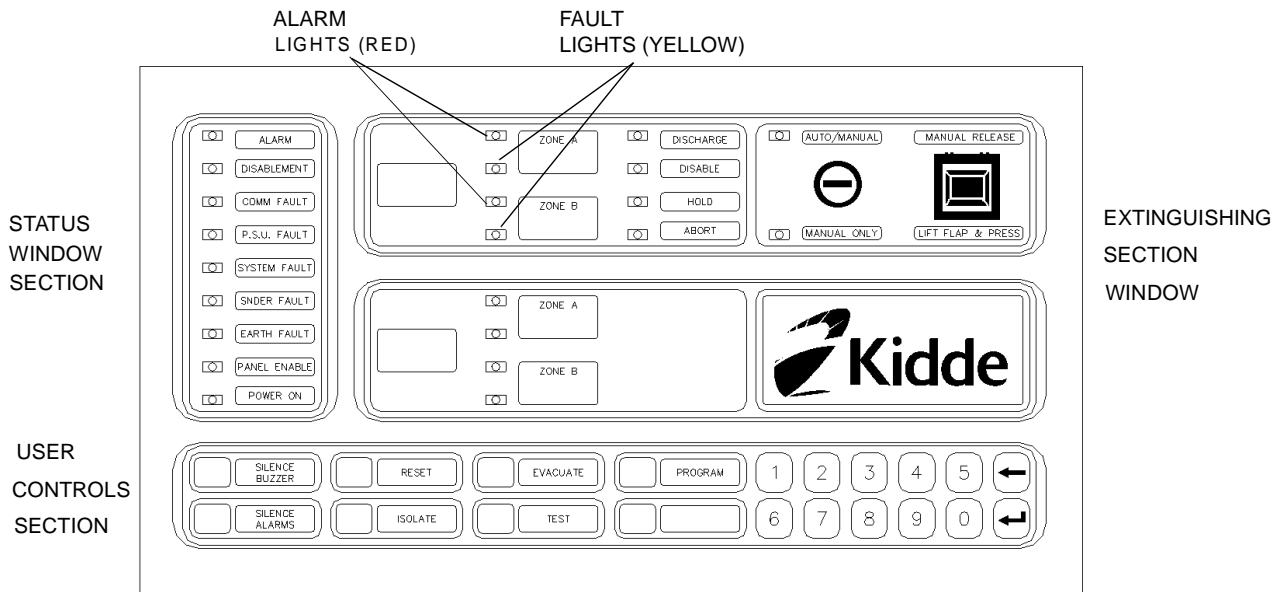
The Extinguishing Control Panel consists of a backbox with a battery bracket and includes twenty three pre-formed 20 mm knockouts for cable entry. The outer door is hinged on the left hand side with two 95 degree hinges that enable the door to be opened greater than 90 degrees. The door is retained with a locking catch and incorporates the panel display. The panel display has zone windows, status windows and user controls. The back of the backbox has a keyhole locating hole for positioning and can be secured through the four 6 mm indented holes located near each corner. The Extinguishing Control Panel is suitable for either surface or flush mounting by means of a mounting bezel.

#### 1.2.1 PANEL DISPLAY (Refer to Figure 2)

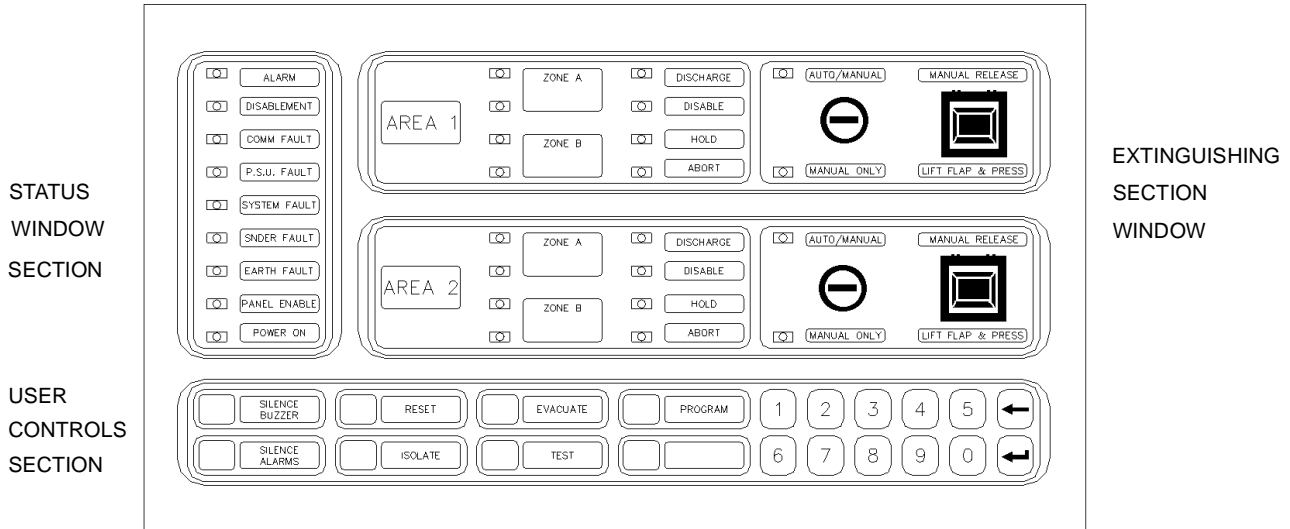
The panel is split into three specific sections:

The status section with lights, running down the left hand side which are applicable to the entire system with a single light next to each window. All lights are coloured yellow except the **POWER ON** light (green) and the **ALARM** light (red).

The extinguishing section, containing a fault light (yellow) and an alarm light (red) next to each zone window. A status window with a single light next to each window, the **DISCHARGE** light is coloured red, the other status window lights are coloured yellow. An **AUTO/MANUAL** selector with a yellow light and a green light to indicate the selection made and a **MANUAL RELEASE** button.



4+1 Panel



4+2 Panel

Figure 2: Fascia Display

The control section contains the control buttons for programming, test and maintenance and a numeric button key pad with a cancel ( ← ) and enter ( ↵ ) button.

### 1.3 OPERATION (Refer to Figures 3 to 7)

The system has two modes of operation, Manual and Auto/Manual. In Manual operation the extinguishant can only be released by pressing the **MANUAL RELEASE** button (refer to Figure 3) (**MANUAL RELEASE** units may be located external to the ECP). In Auto/Manual operation the extinguishant is released automatically after both zones in the detection area have been activated or the **MANUAL RELEASE** has been operated and the release timer has elapsed (refer to Figure 4). Under normal operating conditions, the green **POWER ON** light is on. The zone window lights are off.

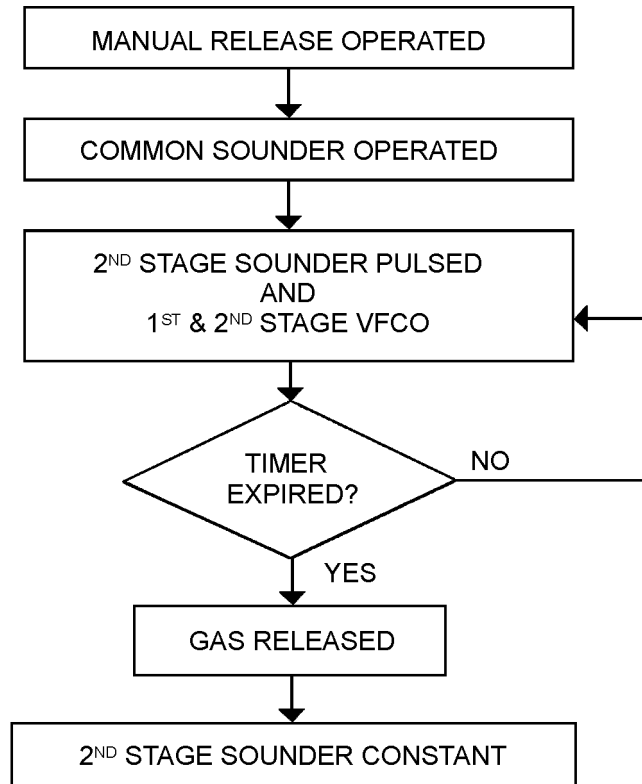


Figure 3: . Manual Only Mode/Manual Release Flow Chart

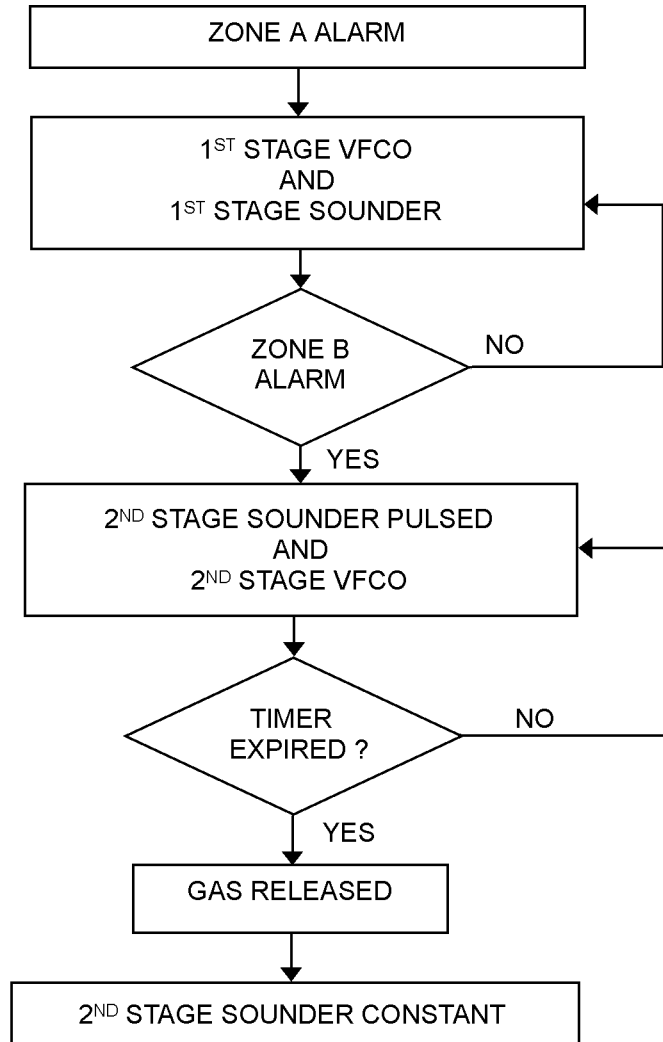


Figure 4: . Auto/Manual Mode Flow Chart



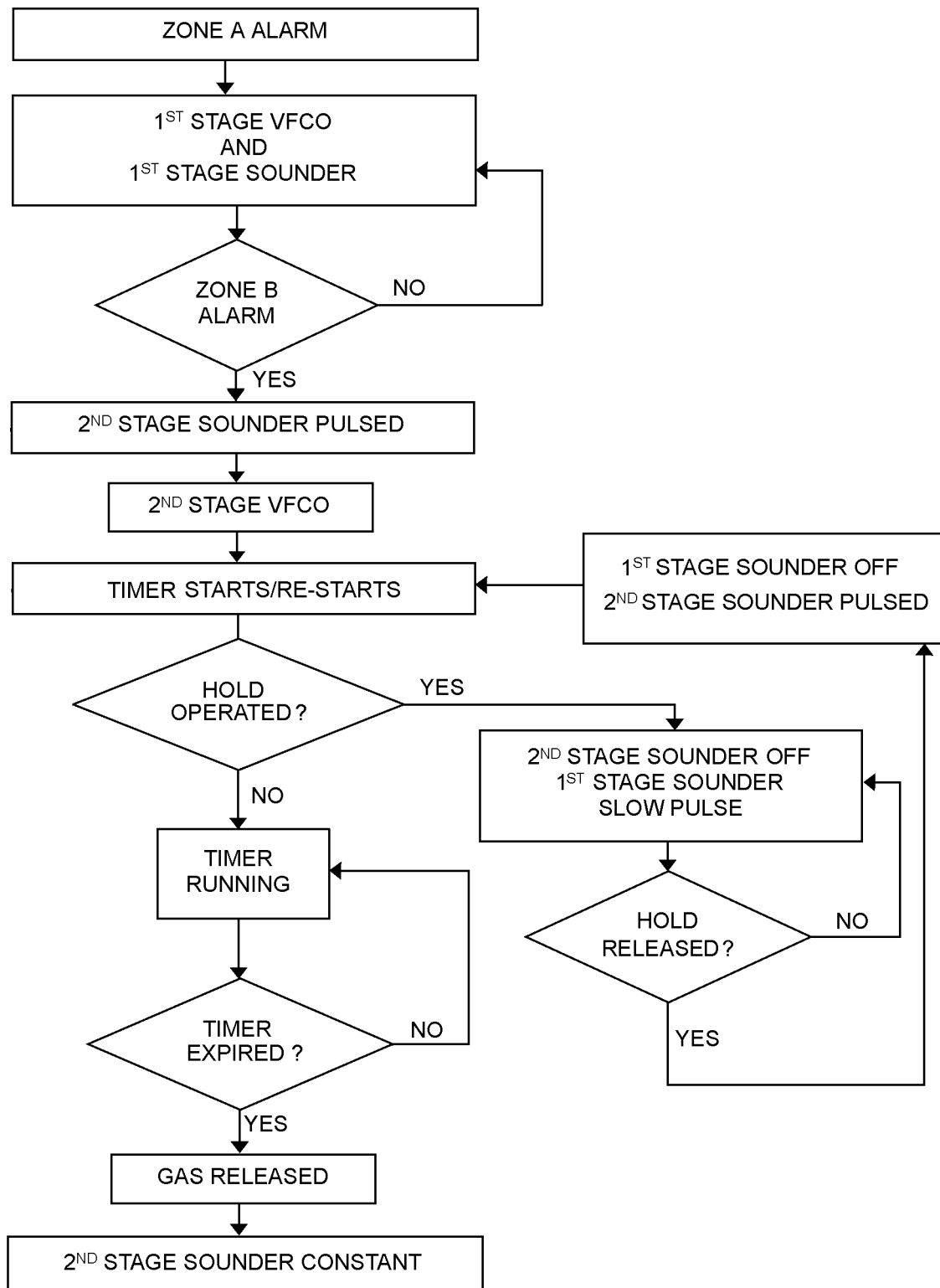


Figure 5: . Auto/Manual Mode With Hold Operated Flow Chart

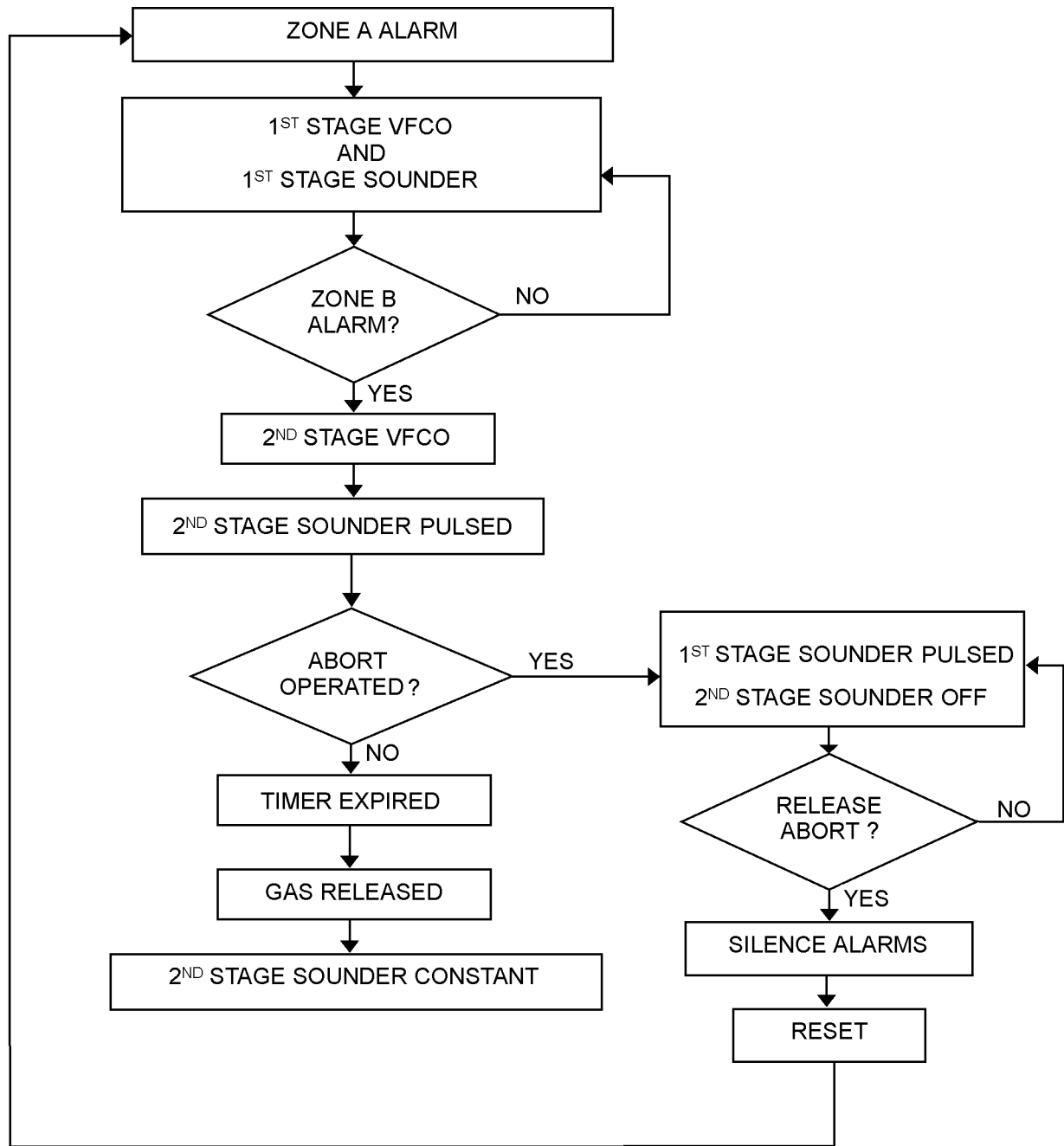


Figure 6: .Auto/Manual Mode With Abort Operated Flow Chart

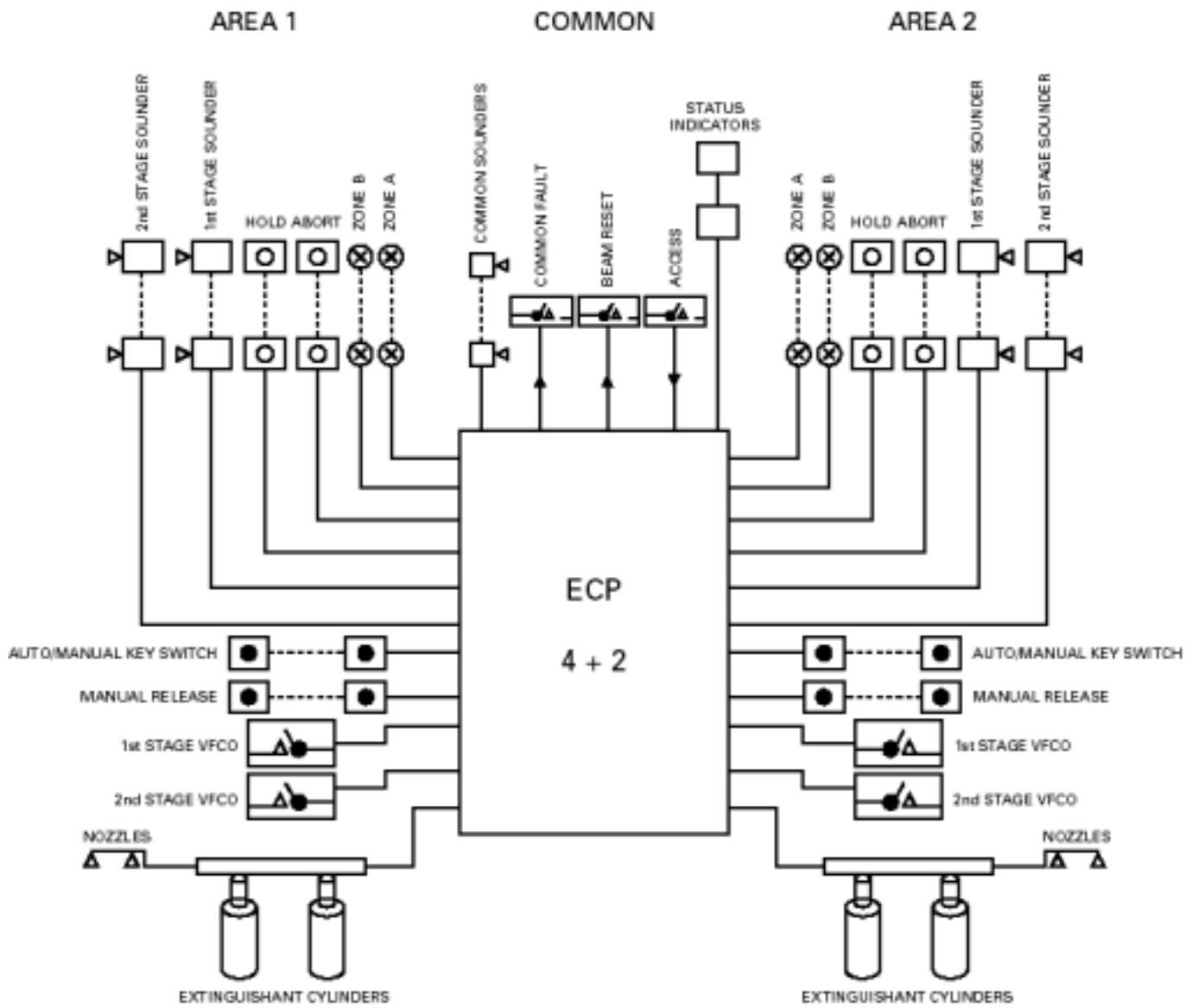


Figure 7: . System Schematic Diagram

To prevent accidental discharges, co-occurrence detection is used, which requires two independent detection zones to be activated. Stage 1 is when one detection zone has been activated and is indicated by the relevant zone alarm light flashing and the 1st stage alarm sounder activated (this is usually a bell). Stage 2 is when both detection zones have been activated and is indicated by the relevant zone alarm light flashing and the 2nd stage alarm sounder activated (this is usually an electronic sounder).

The release of the extinguishant is automatically delayed by the extinguishant release timer. The release of the extinguishant can be further delayed by operating a hold button (if fitted) (refer to Figure 5), which should be a momentary mushroom type push button, located within the protected area. Operation of the hold button will cause the 2nd stage sounder circuits to stop and the 1st stage sounder circuits to operate intermittently (1 second on, 3 seconds off). When the hold button is released the first stage sounder circuit will stop and the second stage sounder circuits will revert back to the gas release imminent mode of 1 second on and 1 second off. The extinguishant release timer will restart at the pre-determined level (default is 30 seconds).

Release of the extinguishant can also be aborted by operating an abort button (if fitted) (refer to Figure 6), which should be a latching type mushroom button, located within the protected area. Operation of the abort button will cause the sounder circuits to revert back to the 1st stage mode of operation. Following the operation of the abort button the extinguishant can only be released by resetting the abort button, resetting the system and allowing the co-occurrence detection to occur or operating the manual release. Operation of either the hold or abort buttons will be confirmed on the panel by the relevant light (yellow) coming on.

When a fire condition is detected:

- the relevant red zone alarm light flashes
- the red **ALARM** light flashes
- the 1st stage alarm sounder circuits are activated and sound intermittently
- the 1st stage VFCO operates
- the common sounder circuit operates
- an audible buzzer on the panel sounds
- if the panel is set to **AUTO/MANUAL** and both zones covering the protection area are activated, the extinguishant is released automatically, after the release timer has expired
- when both zones that cover the protection area are activated, the 2nd stage alarm sounder circuits are activated and sound intermittently
- the 2nd stage VFCO operates
- the 2nd stage alarm sounder circuits on the panel change to a constant sound and the red discharge light comes on after the extinguishant has been released.

If a fault occurs in one or more zones:

- the relevant yellow zone fault light flashes
- the yellow **COMMON FAULT** light flashes
- an audible buzzer on the panel sounds intermittently.

If a status fault occurs:

- the relevant yellow status fault light flashes
- the yellow **COMMON FAULT** light flashes
- an audible buzzer on the panel sounds intermittently.

### 1.3.1 TO ISOLATE A ZONE

To isolate a zone from the protection system:

- enter Level 2 (the yellow **PANEL ENABLED** light comes on)
- press the **ISOLATE** button and enter the relevant zone number(s) on the numerical buttons (the relevant yellow zone light comes on and the **DISABLEMENT** light comes on). Repeat for the isolation of additional zones
- to-re-instate a zone into the protection system, enter Level 2, press the **ISOLATE** button and enter the relevant zone number(s) on the numerical buttons (the relevant yellow zone light goes off and the **DISABLEMENT** light goes off)

Note: Allow at least 10 seconds to elapse before activating a zone after isolation.

- Press ← (the panel reverts to Level 1).

### 1.3.2 TO ACTIVATE COMMON SOUNDER CIRCUIT

To activate the common sounder circuit:

- enter Level 2 (the yellow **PANEL ENABLED** light comes on)
- press the **EVACUATE** button (the buzzer will operate, the common sounder circuit will operate and the **ALARM** light flashes)
- to stop the alarms sounding, enter Level 2, press the **SILENCE ALARMS** button (the buzzer pulses, all alarms stop and the **ALARM** light stays on)
- to reset the system, press the **RESET** button (the panel reverts to status normal). Press ← (the panel reverts to Level 1).

## 1.4 ACCESS TO SYSTEM CONTROLS (Refer to Table 1)

There are four levels of system control:

Table 1 Access Levels

Access Level	Operating Level	PANEL ENABLED Light	Time Out	Pass Code
1	Restricted Use	Off	N/A	N/A
2	User	On constant	3 minutes	7179 (default)
3	Engineer	Flash (1 sec on/off)	3 minutes	7134 (default)
4	Engineer programming	Rapid flash	N/A	refer para 1.5.12

1.4.1 Pass codes are entered on the numeric button key pad. Each operation of the key pad operates an internal buzzer to confirm entry. When the last number is entered, the panel enters the relevant access level. If there is no operation of the panel control keys for a three minute period, the access level automatically times back to access Level 1.

1.4.2 Level 4 access is only used for programming of the panel. Access to Level 4 is via the cam lock on the right hand side of the fascia. An 827 key will allow entry inside the control panel.

1.4.3 An optional feature exists on the Main Control Processor card, where a set of terminals provide entry into access Level 2. Refer to section 1.10 for further operational information.

## 1.5 CONTROL BUTTONS

The operation of the control buttons is dependent upon the selected pass code, as certain keys only operate in specific access levels. Table 2 details the control keys and the access levels they are allowed to operate in.

Table 2 Control Buttons

Control Button	Access Level 1	Access Level 2	Access Level 3	Access Level 4
Numeric Keys	✓	✓	✓	✓
Cancel (←)	✓	✓	✓	✓
Enter (↵)	✓	✓	✓	✓
Silence Buzzer	✓	✓	✓	✓
Silence Alarms	—	✓	✓	✓
Auto/Manual Key Switch	✓	✓	✓	✓
Manual Release	✓	✓	✓	✓
Reset	—	✓	✓	✓
Isolate	—	✓	✓	✓
Evacuate	—	✓	✓	✓
Test	—	Lamp Test Indicator Light	One man test mode	✓
Program	—	—	—	✓

### 1.5.1 Numeric buttons (0 to 9)

Used mainly for the selection of access level pass codes, to select programming menu level options and for the entry of panel information.

### 1.5.2 Cancel

Allows the user to clear access Levels 2 and 3.

### 1.5.3 Enter

Used in Levels 2, 3 and 4 to enable the user to input numeric information.

### 1.5.4 Silence Buzzer

Used to silence the internal panel buzzer.

### 1.5.5 Silence Alarms

When an alarm condition is present operation of this button causes the flashing **ALARM** light and the relevant zone light to come on constantly. Operation of the **SILENCE ALARMS** button deactivates the common sounder circuit only.

#### 1.5.6 Auto/Manual Key Switch

Allows the user to switch between Automatic/Manual or Manual operation.

#### 1.5.7 Manual Release

Allows the user to manually release the extinguishant.

#### 1.5.8 Reset

Operation of the **RESET** key is only accessible at access Levels 2, 3 or 4. When operated, any activation existing on the control panel is cleared and the control panel returns to status normal.

#### 1.5.9 Isolate

Pressing the **ISOLATE** button followed by the relevant zone number causes the **DISABLEMENT** status light and the relevant zone fault light to come on constantly. The same operation must be repeated for isolation of further zones. For de-isolation of zone(s) the operation of the **ISOLATE** button and the isolate zone number reinstates the isolated zone. A time period of 10 seconds must be allowed between isolating and de-isolating a zone.

#### 1.5.10 Evacuate

This causes the common sounder circuit to activate, the **ALARM** status light operates in a pulsed mode and the internal panel buzzer operates constantly. When in the Evacuate mode the output operation remains until the **SILENCE ALARMS** button has been operated causing the **ALARM** light to come on constantly until the **RESET** button has been operated.

#### 1.5.11 Test

Operation of the **TEST** button within access Level 2 initiates a panel test of the lights and of the internal buzzer for 5 seconds. No other outputs within the control panel are operated.

Operation of the **TEST** button within access Level 3 allows the service engineer to carry out a One Man Walk Test of the detection zones. Operation of the **TEST** button followed by the required zone number causes the selected zone to enter the Test option. This causes the **TEST MODE** status light and the relevant zone fault light to flash.

When a zone is in test mode, activation of a detection device causes both the **ALARM** status light and the zone alarm light to flash.

Note: The ECP will automatically revert to **MANUAL ONLY** mode when test mode is selected.

The activated detection device light comes on for 5 seconds to confirm the alarm condition and is removed on automatic reset of the zone. The automatic reset allows the next detector in the zone under test to be activated.

Refer to section 3.3 for the output options during test mode. The outputs deactivate on automatic reset. Operation of the **RESET** button terminates the Test Mode facility.

#### 1.5.12 Program (Refer to Figures 8 to 10)

Program operations can only be carried out at Level 4. This enables the engineer to change the on site configuration data. To enter the programming menu option leaf 2 of the two way DIL switch SW1 located on the internal PCB must be in the "on" position.

Note: It is important that the ECP is not left in the programming mode, therefore leaf 2 of SW1 must be returned to the "off" position.





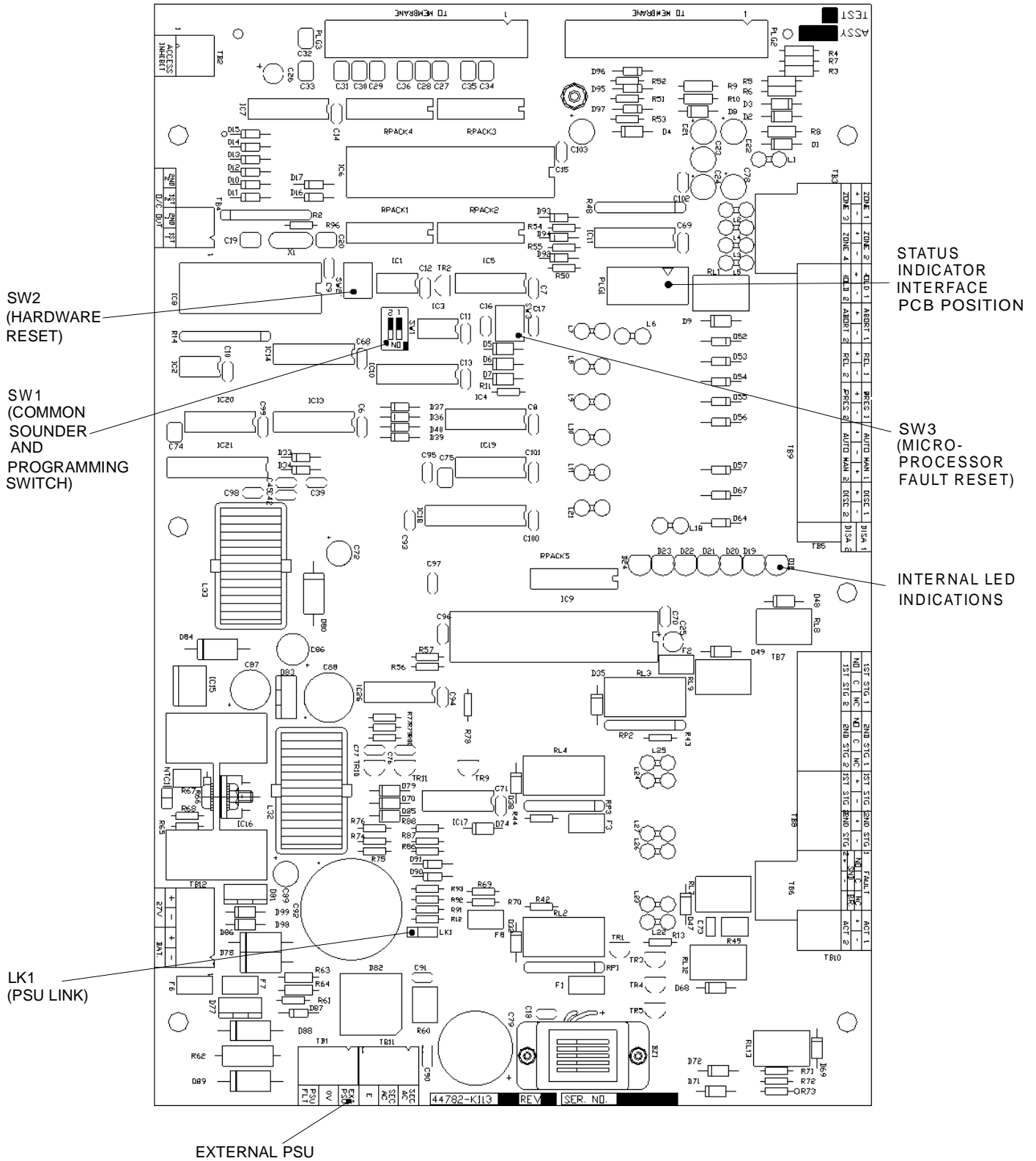


Figure 9: PCB Layout ECP 4+1

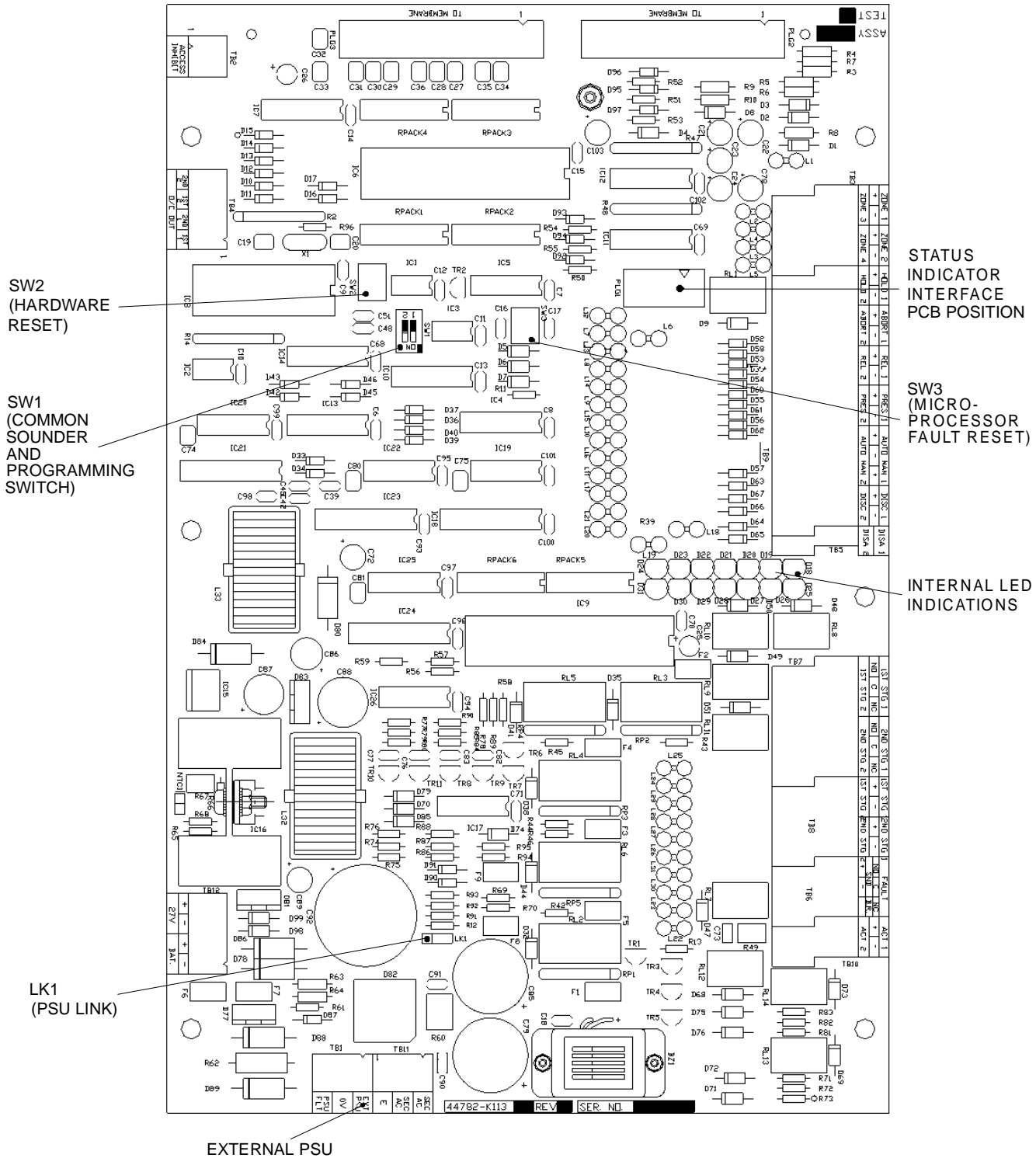


Figure 10: PCB Layout ECP 4+2

## 1.6 INTERNAL CONTROLS

Three switches, SW1, SW2 and SW3 are used on the Master Control Processor PCB. SW1 is a 2 way DIL switch, SW2 and SW3 are momentary push buttons.

Leaf 1 of SW1 in the off position makes the common sounder circuit operate intermittently, in the on position makes the common sounder circuit operate in a constant mode. Leaf 2 of SW1 in the on position puts the panel into programming mode, the off position terminates this mode.

SW2 is used to restart the micro-processor, hardware reset. When operated the control panel restarts, brings the **SYSTEM FAULT** status light on and sounds the internal panel buzzer constantly. To remove the **SYSTEM FAULT** and stop the internal buzzer, operate SW3 (processor watch dog circuit).

SW3 is used to reset the micro-processor fault signal.

## 1.7 INTERNAL LINK SELECTION

LK1 is a three position link, in the parked position (top pin exposed) the ECP operates from the on board power supply. In the made position (bottom pin exposed) the ECP can be powered from an external 24V dc supply.

## 1.8 INTERNAL INDICATIONS

The ECP has the following internal fault indications displayed by LED's located in the top centre of the PCB. For the fault conditions listed in Table 3, the **COMMON FAULT** status light comes on intermittently and the specific fault indication will be given at access Level 4.

Table 3 Internal Indications

Area 1		Area 2	
Fault Description	PCB Designation (2+1 and 4+1) Location	Fault Description	PCB Designation Location
Hold	D18	Hold	D25
Abort	D19	Abort	D26
Low Pressure	D20	Low Pressure	D27
Discharge	D21	Discharge	D28
Manual Release	D22	Manual Release	D29
Actuator	D23	Actuator	D30
Auto/manual	D24	Auto/manual	D31

## 1.9 INTERNAL FUSES

Table 4 details the control panel's internal fuses.

Table 4 Internal Fuses

Fuse Reference	Rating	Type
F1 - Common Sounders	0.5 A	Sub Miniature
F2 - Area A 1st stage sounder	0.5 A	Sub Miniature
F3 - Area A 2nd stage sounder	0.5 A	Sub Miniature
F4 - Area B 1st stage sounder	0.5 A	Sub Miniature
F5 - Area B 2nd stage sounder	0.5 A	Sub Miniature
F6 - Battery	1.0 A	Sub Miniature
F7 - 28v auxiliary	1.0 A	Sub Miniature
F8 - Area A actuator	1.6 A	Sub Miniature
F9 - Area B actuator	1.6 A	Sub Miniature
Mains Fuse	1.0 A	20 mm semi delay

Note: Sub miniature fuses are of the plugin type which have a 5mm pitch and are of the F type (quick blow). The leads of the fuses will need to be cut down prior to being mounted in their sockets.

## 1.10 ADDITIONAL CONNECTIONS

A set of terminals labelled **ACCESS INHIBIT** are positioned on the Main Control Processor card which, when shorted out via a switch, causes the control panel to enter into access Level 2. Only by removal of the short on these terminals will the access level be terminated.

# CHAPTER 2

## INSTALLATION AND COMMISSIONING

---

### 2.1 GENERAL

Installation of the fire detection and alarm system must comply with the current editions of:-

1. The IEE Wiring Regulations.
2. The British Standard for Fire Detection and Alarm Systems for Buildings BS 5839: Part 1.
3. Fire Protection for Electronic Data Processing Installations BS 6266.

Take care not to install cables in the proximity of high voltage cables or in areas likely to induce electrical interference. Junction boxes should be avoided but if they have to be installed then they must clearly be labelled "Fire Alarm". Refer to Figure 11 for External Wiring Diagram.

#### **WARNING:**

**The static handling procedures must be adhered to and extreme caution must be exercised when working inside the control panel due to the presence of mains voltage 230 V AC.**

#### 2.1.1 Static Sensitive Devices

A static sensitive device is any transistor or integrated circuit that may be permanently damaged due to electrostatic potentials and is generally encountered during routine handling, repair and transportation. Static electricity is produced almost every time plastics or textiles are stroked or separated.

Static charges are collected on adjacent conductors and are delivered in the form of sparks passing between conductors through insulating space or material. The sweat layer on the human skin is a sufficient medium to store induced static charges and deliver them to any receptive conductor such as a component or printed circuit board. Static discharges can be reduced by following these guide lines:

1. Always use conductive or anti-static containers for transportation and storage.
2. Wear an earth wrist strap while handling, ensuring a good earth connection is maintained.
3. Never subject a static sensitive device to a sliding movement over any surface and avoid any direct contact with the pins.
4. Avoid placing sensitive devices on plastic or vinyl surfaces.
5. Minimize the handling of sensitive devices and PCB's.

All static sensitive devices are marked accordingly, but it is good engineering practice to treat all components and boards with the same degree of protection.

### 2.2 INSTALLATION

The keyhole location provides a provisional means of fixing the back box to its desired location that allows alignment. Final fixing is accomplished by utilizing the four indented holes.

Protect the enclosure and the outer door during installation.

All external cables must enter the control panel using compression glands (refer to Figure 12) via the 20 mm pre-formed knockouts located on the top of the enclosure. When the installation of all cables has been completed, clean the interior of the enclosure ensuring that all debris is removed.

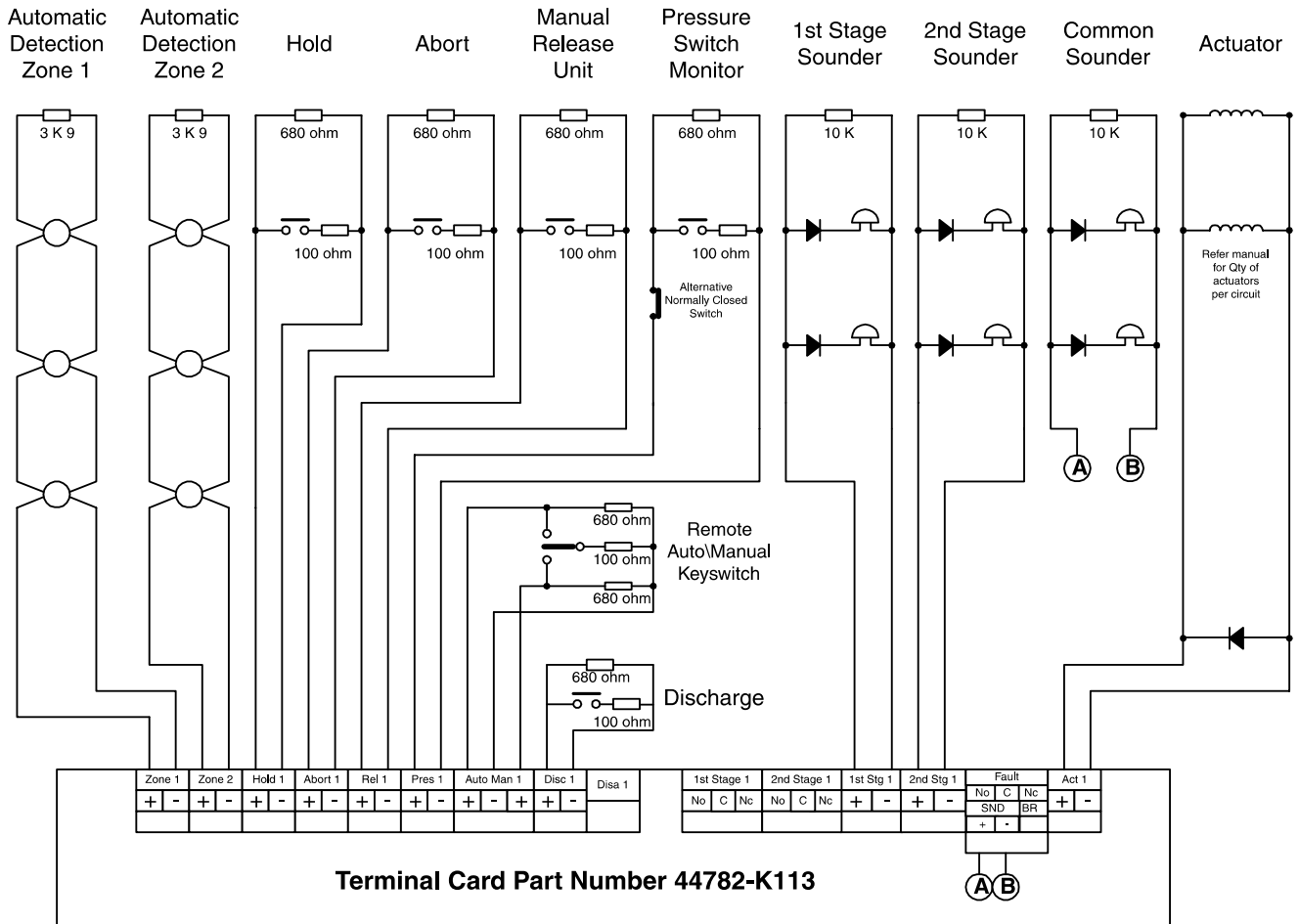


Figure 11: External Wiring Diagram

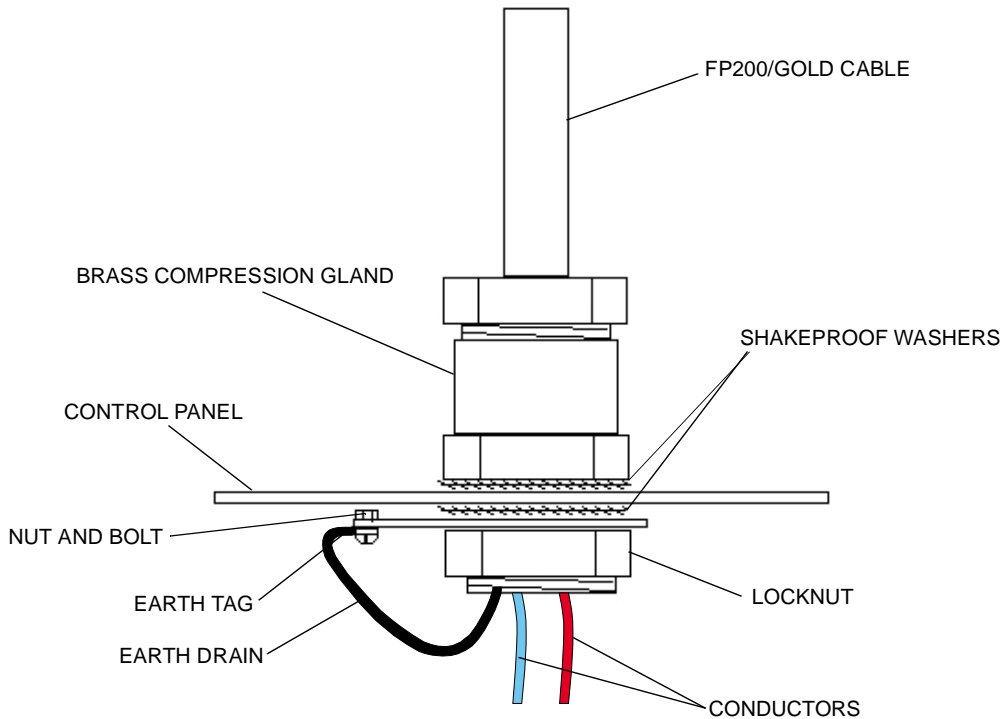


Figure 12: Installation of Compression Gland

**WARNING:**

**Do not connect the actuator until the system has been fully commissioned.**

It is important that the guidelines in Table 5 are adhered to fully.

For flush mounting use the appropriate bezel: refer to Table 12.

Table 5

Circuit Type	
Input	Description
Zones	Wired in parallel so that the detector makes the circuit in each base, therefore enabling a detector removal fault to be indicated. The end of line resistor is to be installed across the output terminals of the last detector (A true line configuration with no spurs or "T's").
Low Pressure	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Hold	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").

Table 5

Circuit Type	
Input	Description
Abort	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Discharged	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Manual Release	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Auto/Manual Key Switch	A normally open contact, which when closed puts a 100 ohm resistor across the sensing circuit. The last device on the line must have the 680 ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Output	Description
Common Sounder	A parallel circuit for 24 V dc-polarised sounders where the last device on the line must have the 10k ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
First Stage Sounder	A parallel circuit for 24 V dc-polarised sounders where the last device on the line must have the 10k ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Second Stage Sounder	A parallel circuit for 24 V dc-polarised sounders where the last device on the line must have the 10k ohm end of line resistor fitted (A true line configuration with no spurs or "T's").
Actuator	Parallel circuit for 24 V dc 1amp actuators with an internal resistance of less than 120 ohms.

### 2.3 COMMISSIONING

Check that all external wiring is correctly identified and, using a multimeter, check that the cables are free from fault conditions (earth, short-circuit and open-circuit).

Connect the external wiring into their respective terminals replacing any end-of-line resistors to the last device on the circuit.

Before connecting the mains supply use a multimeter to ensure that the supply is not present and take precautionary steps to avoid accidental application of the supply. Connect the supply cables into the mains input terminals and remove the local mains fuse located in the top right hand corner of the enclosure.

#### **CAUTION:**

**Always apply mains power first. Do not power up using the battery first as this may damage critical components.**

Before powering up the panel, carry out these preliminary checks:

1. Check for any visible signs of damage that may have been caused during the installation.
2. Verify that all installation instructions have been adhered to.



3. Physically check that the main PCB is secure in its mounting.
4. Check that the ribbon cable is secure and correctly connected.
5. Check that all cable terminations are secured, with the exception of the batteries and the actuator.

All damage/faults must be rectified before proceeding.

At this stage a resistor can be connected across the battery terminals (10k ohm 2.5 W).

Apply the mains supply from the remote source. Using a multimeter check that the supply voltage is present at the on-board mains terminal (230 V ac +10% -15%), insert the mains fuse and check that the panel performs the functions detailed in Table 6.

Table 6

Indication/Output	Facia	PCB	Cause
Power On	✓		Power applied to the panel
Common Fault	✓		Faults exist on the panel
System Fault	✓		Processor out of programme
PSU Fault	✓		Batteries not connected
Actuator Fault		✓ D23 and/or D30	Actuator not connected
Manual Only	✓		Panel powers up into the safest mode of operation
Buzzer	✓		Constant due to system fault on the panel
Fault Relay	✓		De-energises due to faults on the panel

The system fault status light can be reset by the operation of SW3, system fault reset switch (refer to section 1.6), positioned on the main control processor card. No other fault indications should be present at this stage and if faults exist they will require clearing before continuing.

Place the multimeter probes across the battery terminals (with the resistor still in place) and check that the output voltage is between 27.2 and 27.7 V.

Note: The power supply providing the charging voltage for the batteries is temperature compensated. Changes in temperature will cause the output voltage to change. This output is factory set and should not be adjusted.

Enter access Level 2, refer to section 1.4, checking that the **PANEL ENABLE** status light comes on and remains on until access has been terminated. Check that access to Level 2 can be terminated either by pressing the **CANCEL** button or the time-out function (which is set at 3 minutes).

Operate the **EVACUATE** button and check that the sounder circuits operate continuously and when the **SILENCE ALARM** button is pressed, that the sounder circuits de-activate.

Enter access Level 3, refer to section 1.4, checking that the **PANEL ENABLE** status light flash until access has been terminated. Check that access to Level 3 can be terminated either by pressing the **CANCEL** button or the time-out function (which is set at 3 minutes).

The input circuits must be checked for the correct operation, the test should be carried out in the quiescent condition (**POWER ON** and **MANUAL ONLY** lights on), the panel should record the changes in status as indicated in Table 7.

Table 7

Input Circuit	Additional Visual Indications	Common Fault	Power On	Manual Only
Zone	Relevant Zonal alarm light	-	✓	✓
Low Pressure	Internal fault light on PCB	✓	✓	✓
Hold	Hold light on membrane facia and internal fault light on PCB	✓	✓	✓
Abort	Abort light on membrane facia and internal fault light on PCB	✓	✓	✓
Discharged	Discharge and Common Alarm light on membrane facia. Note that the Common and 2nd stage sounder circuits will operate	-	✓	✓
Manual Release	Common Alarm and Area 1 Zone A & B Alarm lights on membrane facia. Note that the Common sounder circuit the 2nd stage sounder circuit and the actuator output will operate	-	✓	✓
Auto/Manual Key Switch	Operation of these two circuits will toggle the Manual Only and the Auto/Manual lights	-	✓	-

### 2.3.1 Supply Checks

Before installing the batteries carry out the following procedures:

1. Check batteries for transit damage.
2. Check battery open-circuit terminal voltage.
3. Record the installation date.

2.3.2 Remove the resistor from the battery terminals and make sure that the **PSU FAULT** status light flashes, the **COMMON FAULT** status light flashes and that the internal buzzer operates intermittently.

Note - the **POWER ON** status light should remain on.

### 2.3.3 Installing Batteries

#### **CAUTION:**

**Ensure that the combined battery voltage is not less than 21 V dc before installation.**

To install the batteries on the Extinguishing Control Panel (Refer to Figure 13):

1. Place the batteries (1) in the bottom of the enclosure with the terminals towards the outside.
2. Connect the two lower terminals, positive and negative together with the link wire (2).
3. Connect the positive and negative wires from the PCB to the battery terminals (3) ensuring the correct polarity (+ve to +ve and -ve to -ve).
4. Install the battery bracket (4) and secure with the nuts (5).

Note: In later installations self adhesive Velcro pads applied to the batteries and the enclosure replace the battery bracket (4) and the nuts (5). The pads should be applied before installing the batteries.

Press the **RESET** button and check that the panel reverts to the normal condition and the **POWER ON** status light is on.

The control panels have a thermistor, part of the PCB, which monitors the temperature of the batteries and automatically adjusts the charging current accordingly. The batteries should be allowed to charge for a full 24 hours.

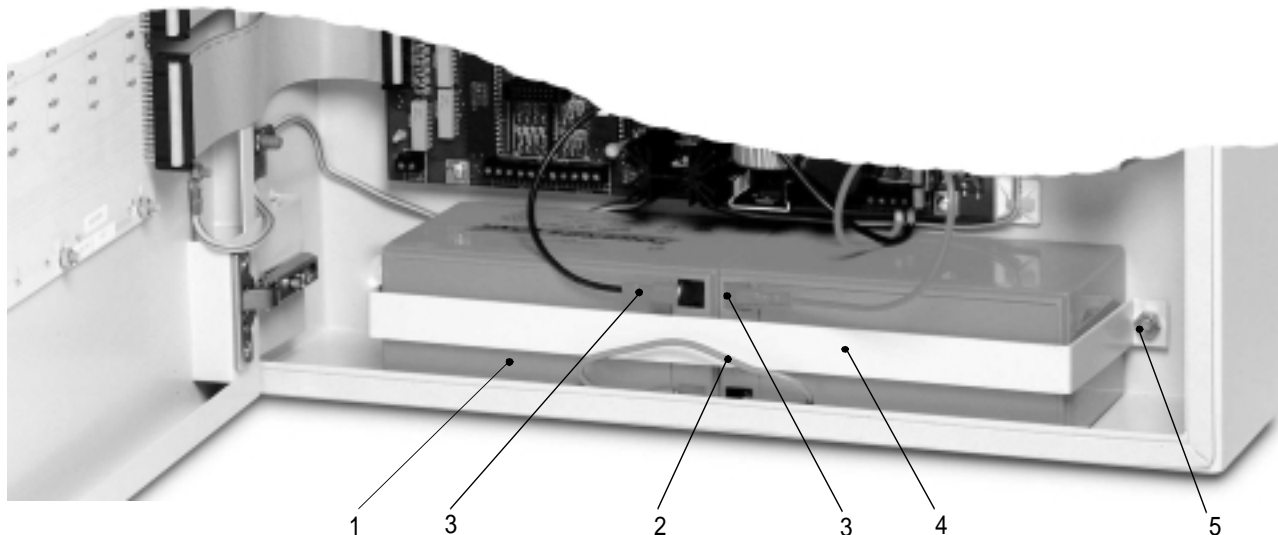


Figure 13: ECP Battery Installation

### 2.3.4 Zone Checks

For each detection zone carry out the following procedures:

1. Remove one leg of the external wiring (or end-of-line resistor) and check that the correct zone fault light (Yellow) flashes in sympathy with the **COMMON FAULT** status light as well as the internal buzzer sounding intermittently. Operate the **SILENCE BUZZER** button and check that the internal buzzer is inhibited. Replace the wiring (or end-of-line resistor). The panel automatically resets the fault condition. Check that the panel reverts to the normal status, i.e. the **POWER ON** and **MANUAL ONLY** lights will be on.
2. Induce a short-circuit condition to the external wiring (or end-of-line resistor) and check that the correct zone fault light (Yellow) flashes in sympathy with the **COMMON FAULT** status as well as the internal buzzer sounding intermittently. Operate the **SILENCE BUZZER** button and check that the internal buzzer is inhibited. Remove the short circuit; the panel automatically resets. Check that the panel reverts to the normal operating condition i.e. the **POWER ON** and **MANUAL ONLY** lights will be on.
3. All of the input circuits must be checked for open and short circuit conditions. The tests are all to be conducted in the quiescent condition (**POWER ON** and **MANUAL ONLY** lights on), the panel should record the changes in status as indicated in Table 8.

Table 8

Input Circuit	Additional Visual Indications	Common Fault	Power On	Manual Only
Zone	Relevant Zonal fault light	✓	✓	✓
Low Pressure	Internal fault light on PCB (D20 and/or D27)	✓	✓	✓
Hold	Hold light on membrane facia and internal fault light on PCB (D18 and/or D25)	✓	✓	✓

Table 8

Input Circuit	Additional Visual Indications	Common Fault	Power On	Manual Only
Abort	Abort light on membrane facia and internal fault light on PCB (D19 and/or D26)	✓	✓	✓
Discharged	Internal fault light on PCB (D21 and/or D28)	✓	✓	✓
Manual Release	Internal fault light on PCB (D22 and/or D29)	✓	✓	✓
Auto/Manual Key Switch	Internal fault light on PCB (D24 and/or D31)	✓	✓	✓

4. The input circuits must be checked for the correct operation, the tests are all to be conducted in the quiescent condition (**POWER ON** and **MANUAL ONLY** LED's on), the panel should record the changes in status as indicated in Table 7.
5. Using a 510 ohm resistor apply an alarm condition to the zone terminals, check that the correct zonal alarm light (red), the **ALARM** status light flashes and that the internal buzzer operates in a constant mode. Check that the common sounder circuits operate constantly and the internal buzzer is inhibited when the **SILENCE BUZZER** is operated. A single zone alarm condition will operate the related area 1st stage sounder circuit pulsed and the common sounder circuit (dependent upon SW1 leaf 1 position).
6. Enter access Level 2, refer to section 1.4, and operate the **SILENCE ALARMS** button causing the common sounders to de-activate. The relevant zone alarm light and the **ALARM** status light operate in a constant mode. Press the **RESET** button and check that the panel reverts to the normal operating status i.e. the **POWER ON** status light only will be on. Sounders relating to the extinguishing area will remain active until reset, only common sounders de-activate on **SILENCE ALARMS**.
7. The remainder of the input circuits must be activated with a 100 ohm resistor. All peripheral devices connected to the control panel must be tested for correct operation and designation.
8. Any earth faults will cause the **COMMON FAULT** and the **EARTH FAULT** status light to come on, on the control panel membrane and the internal buzzer to operate intermittently.

### 2.3.5 Sounder Circuit Checks

For each sounder circuit carry out the following procedures:

1. Apply a short-circuit condition to one of the sounder circuits and ensure that the **COMMON FAULT** and the **SOUNDER FAULT** status light comes on and the internal buzzer operates intermittently. Clear the fault condition and check that the panel reverts to the normal operating condition i.e. the **POWER ON** and **MANUAL ONLY** lights on.
2. Apply an open-circuit condition to a sounder circuit and ensure that the **COMMON FAULT** and the **SOUNDER FAULT** status light comes on and the internal buzzer operates intermittently. Clear the fault condition and check that the panel reverts to the operating condition i.e. the **POWER ON** and **MANUAL ONLY** lights on.
3. Apply an open-circuit condition to the actuator circuit and ensure that the **COMMON FAULT** and the relevant internal fault indication status lights come on and the internal buzzer operates intermittently. Clear the fault condition and check that the panel reverts to the operating condition i.e. the **POWER ON** and **MANUAL ONLY** lights on.
4. The audibility level of the sounders should be checked to ensure that they conform to BS 5839 Part 1, or the relevant national standard.

### 2.3.6 Key Pad Tests

Enter the programming menu option. Leaf 2 of the two way DIL switch SW1 located upon the internal PCB must be in the “on” position. The **PANEL ENABLE** status light will flash rapidly. Enter programming option 11. This will enable the key pad tests facility. Ensure the key pad operations are as shown in Table 9.

Table 9

Key Reference	LED Designation	Key Reference	LED Designation
Silence Buzzer	Alarm	3	Area 1 Zone A Fault
Reset	Common Fault	4	Area 1 Zone B Fire
Evacuate	System Fault	5	Area 1 Zone B Fault
Programming	Earth Fault	6	Area 1 Discharge
Silence Alarms	Disablement	7	Area 1 Disable
Isolate	PSU Fault	8	Area 1 Hold
Test	Sounder Fault	9	Area 1 Abort
Spare	N/A	0	Area 1 Auto/Manual
1	Power On	Enter	Area 1 Manual only
2	Area 1 Zone A Fire	Cancel	Quits Programme

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# CHAPTER 3

## PROGRAMMING OPTION

### 3.1 GENERAL

The control panel must be in User Level 4 to give access to the programming option. Access to Level 4 is via the cam lock on the right hand side of the fascia (install the key reference number 827 in the cam lock). This will allow entry inside the control panel. Leaf 2 of SW1 in the on position puts the panel into programming mode, the off position terminates this mode. Once within the programming position the **PANEL ENABLE** status light flashes rapidly. To cancel the programming menu return leaf 2 to its normal "off" position. Operation of the **CANCEL** button aborts the selected programming menu at any stage in the process and, unless the **PROGRAM** button has been operated, any modified data reverts to its previous settings.

The 10 programming options are detailed in Table 10.

Table 10 Programming Functions

Option	Programming Function	Default Setting
01	Edit user pass code	7179
02	Test mode inhibit	Inhibit aux relay only
03	Co-incident	Z1+Z2 = release (4+1 only)
04	Extinguishing Timer #1	30 seconds
05	Extinguishing Timer #2	30 seconds
06	Fault inhibit release	No faults inhibit
07	Not used	N/A
08	Set all programming options back to default	N/A
09	Status indicator selection	Area 1
10	Actuator operation (0.5 seconds or 8 seconds)	0.5 seconds

An audible confirmation will be heard at each key stroke in addition to the visual indications

### 3.2 EDIT USER PASS CODE - 01

This allows the default code for selection of access Level 2 to be changed.

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 01 programming option	0	
	1	
b) Select new 4 digit pass code	Enter number	Zone 1 Alarm light constant
	Enter number	Zone 1 Fault light constant
	Enter number	Zone 2 Alarm light constant
	Enter number	Zone 2 Fault light constant

c) Confirm selection	<b>PROGRAM</b>	All zone lights go out
d) Return to programming options	<b>CANCEL</b>	Repeat Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.3 TEST MODE INHIBIT FUNCTION - 02

This option allows the selection of operation of both the common sounders and Auxiliary VFCO relay outputs during zonal test mode.

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 02 programming option	0	
	2	Zone 1 Alarm constant - default
b) Select option	Enter no.	
Inhibit sounder, buzzer and auxiliary output	2	Zone 2 Fire light constant
Operate Sounders & Auxiliary outputs	0	Zone 1 and 2 Fire light constant
Inhibit Auxiliary Relays only (Default)	1	Zone 1 Alarm constant
c) Confirm selection	<b>PROGRAM</b>	Internal buzzer pulses once
d) Return to programming options	<b>CANCEL</b>	Selected zone alarm light goes off Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.4 CO-INCIDENCE DETECTION - 03

This option selects which of the input zones are to vote towards the discharge of the extinguishing agent. The selection of this option is limited to the 4+1 version only. The default position for this option is that Area 1 zone A and zone B vote towards the release of the agent.

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 03 programming option	0	
	3	Z1 fire light on - default
b) Select option	Enter no.	
Z1 + Z2 = Release (default)	0	Z1 Fire light constant
Z1 or Z2 + Z3 or Z4 = Release	1	Z2 Fire light constant
Any two zones in alarm = Release	2	Z1 + Z2 Fire light flashes
c) Confirm selection	<b>PROGRAM</b>	Internal buzzer pulses once
d) Return to programming options	<b>CANCEL</b>	Selected zone alarm light goes off Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		



### 3.5 EXTINGUISHING RELEASE TIMER FOR AREA 1 - 04

This option is available to all ECP variants and controls the time delay period prior to the release of the extinguishant. The time delay has a default setting of 30 seconds, but is selectable from 0 to 60 seconds as required.

Once a different time delay has been selected the **COMMON ALARM** LED will flash to confirm a non-default setting has been selected. A 3 digit entry is required i.e. for 20 seconds (020).

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 04 programming option	0	
	4	
b) Select option	Enter no.	
c) Select time required	0	Area 1 zone A alarm led comes on
	2	Area 1 zone A fault led comes on
	0	All zone lights go off and the common alarm light flashes
d) Confirm selection	<b>PROGRAM</b>	Confirmation of data and audible confirmation
e) Return to programming options	<b>CANCEL</b>	Common alarm light goes off Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.6 EXTINGUISHING RELEASE TIMER FOR AREA 2 - 05

This option is only available to the 4+2 version of the ECP and controls the time delay period prior to the release of the second extinguishant. The time delay has a default setting of 30 seconds, but is selectable from 0 to 60 seconds as required.

Once a different time delay has been selected the **DISABLEMENT** LED will flash to confirm a non-default setting has been selected. A 3 digit entry is required i.e. for 40 seconds (040).

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 05 programming option	0	
	5	
b) Select option	Enter no.	
b) Select time required	0	Area 1 zone A alarm led comes on
	4	Area 1 zone A fault led comes on
	0	All zone lights go out and the Disable light flashes
c) Confirm selection	<b>PROGRAM</b>	Confirmation of data and audible confirmation
d) Return to programming options	<b>CANCEL</b>	Disable light goes out Buzzer operates for short time.
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.7 FAULT INHIBIT RELEASE - 06

This programming option allows the engineer to inhibit the release of extinguishant under certain fault condition.

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 06 programming option	0	
	6	Area 1 zone alarm lights come on - default
b) Sounder or hold faults do not inhibit release (default)	0	Zone 1 fire light comes on
Sounder fault inhibits release	1	Zone 2 fire light comes on
Hold faults inhibit release	2	Zone 1 and zone 2 fire lights comes on
Sounder or hold fault inhibit release	3	Zone 1 and zone 2 fire lights flash
c) Confirm selection	<b>PROGRAM</b>	Confirmation of data and audible confirmation
d) Return to programming options	<b>CANCEL</b>	Area 1 zone A and B Alarm lights go off Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

Note: Sounder and hold faults will only inhibit the relevant extinguishing area.  
Options selected are global for all extinguishing areas.  
All faults are non-latching.

### 3.8 MENU LEVEL - 07

Not used.

### 3.9 SET ALL OPTIONS BACK TO THE DEFAULT SETTINGS - 08

This options provides the engineer with a means of clearing the programmed information back to the default settings

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 08 programming option	0	
	8	Earth fault light comes on
b) Select 1 on keypad	1	Earth fault light flashes
c) Confirm selection (This will remove previous data)	<b>PROGRAM</b>	Earth fault light goes off
d) Return to programming options	<b>CANCEL</b>	Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.10 SELECT STATUS INDICATOR AREA - 09

This option provides the engineer with a means of selecting which area of extinguishing release is to have the status indicators connected, this function is only available on the 4+2 panel. The default on this option is Area 1.

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 09 programming option	0	
	9	Earth fault and Area 1 zone A fire lights come on to indicate default setting
b) Select 2 on keypad to change area	2	Area 1 zone A fire light flashes
Select 1 on keypad to revert back to Area 1	1	Area 2 zone A fire light flashes
c) Confirm selection	<b>PROGRAM</b>	Buzzer pulses once
d) Return to programming options	<b>CANCEL</b>	Earth fault and Area 1 (or Area 2) zone A fire lights go off Buzzer operates for short time
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

### 3.11 SET ACTUATOR MODE - 10.

This option allows the engineer to set the actuator operation, either to operate for 0.5 seconds or 8 seconds upon expiration of the delay timer. This option is global for both area actuators (4+2 panel version).

Programming Step	Keypad Operation	Visual Confirmation
<b>Set switch 1 leaf 2 on the Master Control Processor to the programming position (refer section 1.6).</b>		
a) Select Level 10 programming option	1	
	0	Earth fault light comes on, Area 1 zone A light flashes to indicate the panel in default setting
b) Select 1 on keypad to change Actuator operation time to 8 seconds	1	Earth fault and Area 1 zone A fire light constant
Select 0 on keypad to change Actuator operation time back to default setting	0	Earth fault constant and Area 1 zone A fire light flashes - default
c) Confirm selection	<b>PROGRAM</b>	Buzzer pulses once
d) Return to programming options	<b>CANCEL</b>	Earth fault and Area 1 zone A fire lights go off Buzzer operates for short time.
<b>Return switch 1 leaf 2 to the off position or select a new programmable menu option.</b>		

The cancel key must be operated if any changes have been made to the program before Level 4 access is cancelled.

When programming of the control panel has been completed leaf 2 of the two-way DIL switch SW1 located on the Master Control Processor should be returned to its default position as detailed in section 1.6. On return to its default position access Level 4 is cancelled and the panel returns to its access Level 1 setting.

If the **ACCESS INHIBIT** terminals have been shorted out via the switch (refer to para 1.10), this should also be returned to the default position before securing the panel with the cam lock.

# CHAPTER 4

## MAINTENANCE

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### 4.1 GENERAL

Maintenance of equipment extraneous to the control panel will be detailed in the appropriate manufacturer's literature.

The back up batteries are maintenance free but should be replaced every 4-5 years.

The components of the control panel are designed to last for 15 years. All printed circuit boards are self-monitoring and therefore should only be replaced as required.

### 4.2 ROUTINE MAINTENANCE

Routine maintenance should be carried out in accordance with BS 5839 Pt 1 section 4 clause 29.2 or the relevant national standard.

All performance checks undertaken should be recorded in a system log book.

As a minimum, the following performance checks must be undertaken on each maintenance visit.

#### **WARNING:**

**The static handling procedures must be adhered to and extreme caution must be exercised when working inside the control panel due to the presence of mains voltage 230 V AC.**

1. Carry out checks described in 2.3.1; 2.3.2 and 2.3.4 in section 2.3 Commissioning.
2. Remove dust and dirt from the panel exterior using a soft brush or a lint cloth. A solvent, which is harmless to the finishes of metal and plastic, may be applied to more stubborn stains.
3. Examine the exterior of the enclosure for any signs of damage or loose cable glands and rectify any faults found.
4. Remove any dust or dirt from the interior of the control panel using a soft brush or a vacuum cleaner,
5. Examine the printed circuit boards for signs of over-heating or damaged tracks. Replace any defective items.
6. Examine the battery terminals for security and for signs of corrosion. Replace or repair as required, refer to 2.3.3 in section 2.3 Commissioning.

### 4.3 TEST MODE

The **TEST** button has two functions depending upon the access level entered; Lamp Test and Zone Test.

#### 4.3.1 Lamp Test

To test the panel lights and audible buzzer:

1. enter Level 2 (the yellow **PANEL ENABLED** light comes on)
2. press the **TEST** button
3. make sure that all panel lights come on for five seconds and then go off and the audible buzzer sounds for five seconds and then stops
4. press the **RESET** button (the panel reverts to Level 1)

#### 4.3.2 Zone Test

The zone test facility is limited to access Level 3. To place a zone in Test Mode, operate the **TEST** button and select the required zone number on the numeric keypad. This causes the **PANEL ENABLE** status light to flash slowly and the **TEST** and selected zone light to flash rapidly. The connected zone detectors can then be tested which causes the red **ALARM** and the zone Alarm lights to come on for approx 5 seconds then automatically go off. The detector base light comes on to confirm the device is being tested and clears on the automatic reset controlled by the panel. The common sounders activate (default operation) whilst the device is in alarm and deactivate on automatic reset. The automatic reset allows the next detection device to be tested.

To clear the Test Mode from a selected zone, operation of the **PANEL RESET** button returns the panel to normal with only the **POWER ON** light and the **PANEL ENABLED** light on. It is possible to individually disable the operation of the internal common sounder circuits and the auxiliary VFCO relay outputs whilst in test mode. These are only selectable in access Level 4. Refer to Chapter 3 of this manual.

#### 4.4 POWER SUPPLY UNIT

The Extinguishing Control Panels come complete with an internal power supply unit, incorporating mains fuse block and transformer which connects into TB11 on the main panel processor board. The panel can also be powered from an external PSU, by changing the position of LK1 and connecting the 24 V dc from the external source into TB1. A fault terminal is also given on TB1 for the fault monitoring of the external PSU.

For both internal and external power supplies, battery input terminals are given on TB12 of the processor board. If no batteries are connected, a 10k ohm 2.5 W resistor should be connected across the battery terminals of TB12 to clear the PSU fault report.

There is also a thermistor (NTC1) located on the bottom of the PCB, used for temperature compensated charging of the standby batteries.

#### 4.5 BATTERY REPLACEMENT

Refer to 2.3.3 in section 2 Installation and Commissioning for the installation of new batteries.

#### 4.6 FAULT FINDING

The following table details possible fault conditions and the likely causes:

<b>Fault Condition</b>	<b>Cause</b>
Low Pressure fault	Open or short circuit condition on the circuit End of line resistor missing Extinguishing agent level low
Hold circuit fault	Open or short circuit condition on the circuit End of line resistor missing Out of sequence operation of the hold device
Abort circuit fault	Open or short circuit condition on the circuit End of line resistor missing Out of sequence operation of the abort device
Discharge fault	Open or short circuit condition on the circuit End of line resistor missing
Manual Release fault	Open or short circuit condition on the circuit End of line resistor missing
Actuator fault	Open circuit condition on the circuit

Fault Condition	Cause
Detection Zone fault	Open or short circuit condition on the circuit End of line resistor missing Point type detector removed from base
Sounder circuit fault	Open or short circuit condition on the circuit End of line resistor missing Sounder connected reverse polarity
Auto/Manual fault	Open or short circuit condition on the circuit End of line resistor missing
Earth fault detected	External connection to earth to be diagnosed by a process of elimination, i.e. disconnect each circuit in turn until the fault clears
PSU fault detected	Loss of mains supply, check local and remote fuses, take extreme caution when investigating the mains supply and only proceed if suitably qualified. Open or short circuit condition on the batteries Check battery fuse
System Fault light on	Processor has gone out of programme, operate SW3 to clear, if fault persists replace the PCB
Panel enabled light (rapid flashing)	Panel left in programming mode, return SW1 leaf 2 to the off position
Panel enabled light (constant)	Panel in access Level 2, check access Level 2 override terminals. TB2
Auto/Manual key switch not functioning	Check plug in connectors to membrane PCB Replace key switch
Manual release not functioning	Check plug in connectors to membrane PCB Replace manual release unit
Zone isolated & common disablement lights on	Zone isolated, enter access Level 2 operate the isolate key then the relevant zone number to clear.
Zone light rapid flashing	Zone left in test mode, enter access Level 3, operate Test button and relevant zone number to clear
No lights on	Total loss of power, check mains and battery supplies Loss of mains supply, check local and remote fuses, take extreme caution when investigating the mains supply and only proceed if suitably qualified. Open or short circuit condition on the batteries Check battery fuse
Random lights on	Check that the panel has not been left in programming mode. Perform a hardware reset on the panel
Status Indicators not working	Check 24 V dc supply Open or short circuit condition in the circuit Check for Status indicator R5485 driver card (top left hand corner) main PCB RS 485 terminating resistors not enabled by switches on SI board

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# CHAPTER 5

## DATA

### 5.1 COMPARISON TABLE

Table 11 Data

Description		2+1	4+1	4+2
<b>INDICATIONS</b>	13 status Indications defined by EN54 part 2/BS7273 Pt 1.	✓	✓	
	17 status Indications defined by EN54 part 2/BS7273 Pt 1.			✓
	Fire and Fault indication per zone.	✓	✓	✓
<b>CURRENT VALUES</b>				
Quiescent Current (Normal Status)	77 mA.	✓		
	84 mA.		✓	
	93 mA.			✓
Alarm Current (Normal Status)	1.0 A	✓	✓	✓
<b>POWER SUPPLY</b>	3.1 A (all versions).	✓	✓	✓
Mains Block Input	Live, Neutral & Earth. 230 V ac mains input + 10% & - 15%	✓	✓	✓
Mains Block Fuse	1 amp 20mm ceramic (Semi delay).	✓	✓	✓
Battery Fuse Rating	1 amp sub-miniature (all versions)	✓	✓	✓
Battery EOL	+ & - connections. (10k ohm @ 2.5 W resistor. No batteries connected)	✓	✓	✓
Aux Supply Output	+ & - connections. 1A sub-miniature (all versions).	✓	✓	✓
Batteries	2 x 7 ampour 24 V (Normal Status), 24 V (Mains Off)	✓	✓	✓
<b>PHYSICAL</b>				
Dimensions	Refer to Table 12	✓	✓	✓
Enclosure Finish	Semi Gloss Ash Grey - BS4800 00A01	✓	✓	✓
Cable Entry	Refer to Table 12	✓	✓	✓
Weight	7.2 kg	✓	✓	✓
IP Rating	IP 31 - BS/EN60529	✓	✓	✓
<b>ZONE INFORMATION</b>	+ & - connections each zone may contain a maximum of 32 detectors. Each Zone must contain compatible detector types as described within this manual.	✓	✓	✓
Zone EOL	3K9 ohms.	✓		✓
Active End of Line Unit	To comply with BS 5839 part 1 detector removal the AEOL part number 23911-K063 should be used in conjunction with Schottky diode bases. One unit per zone located after the last item	✓	✓	✓
Zone Rating (Normal Status)	32 Detectors attached - 7.2 mA.	✓		✓
	No Detectors attached - 3.6 mA.	✓		✓
Zone Rating (Mains Off)	32 Detectors attached - 6.4 mA.	✓		✓
	No Detectors attached - 2.8 mA.	✓		✓
Zone Voltage	22.5 V (Normal Status), 22 V (Mains Off)	✓		✓

Table 11 Data

Description		2+1	4+1	4+2
<b>INPUTS</b>				
<b>MONITORED INPUTS</b>				
	Detection Zones (Max 32 detectors per zone)	2	4	4
	Hold Circuit (Requires 100 ohm resistor)	1	1	2
	Abort Circuit (Requires 100 ohm resistor)	1	1	2
	Low Pressure Circuit (Requires 100 ohm resistor)	1	1	2
	Manual Release (Requires 100 ohm resistor)	1	1	2
	Auto/Manual Key Switch (Requires 100 ohm resistor)	1	1	2
	Discharged (Requires 100 ohm resistor)	1	1	2
	External PSU Fault (Failsafe configuration 28 V)	1	1	1
<b>NON-MONITORED OUTPUTS</b>				
	Access Level 2 override (Link across TB2)	1	1	1
	Disable (0 V input)	1	1	2
<b>OUTPUTS</b>				
<b>MONITORED OUTPUTS</b>				
	Actuator (Rated at 24 V dc 1 A)	1	1	2
	First stage sounder (Rated at 24 V dc 500 mA)	1	1	2
	Second stage sounder (Rated at 24 V dc 500 mA)	1	1	2
	Common sounder (Rated at 24 V dc 500 mA)	1	1	1
	Common fault (Failsafe rated at 30 V dc 1 A)	1	1	1
<b>NON-MONITORED OUTPUTS</b>				
	First Stage VFCO (Rated at 30 V dc 1 A)	1	1	2
	Second Stage VFCO (Rated at 30 V dc 1 A)	1	1	2
	First Stage Open collector (Rated at 0 V 60 mA)	1	1	2
	Second Stage Open collector (Rated at 0 V 60 mA)	1	1	2
	Beam reset (Rated at 30 V dc 1 A)	1	1	1
	Buzzer Output (60 dB at 1 meter)	1	1	1
<b>CABLES</b>				
Zone	MICC or Pirelli FP200.	✓	✓	✓
Sounders	Any screened cable which is approved by the current British Standard for "Prolonged Operation in a fire condition".	✓	✓	✓

Note: - Access Level 2 Override is for internal use only  
- Disable input is for internal use only

Note: - Actuator circuits are only monitored for open circuit due to the resistance of the actuators  
- Open collector outputs are for internal use only  
- Common fault relay is normally energised and de-energised for any fault condition.

5.2 PANEL SPECIFICATIONS

Table 12 Panel Specifications

Ref	Dimensions	Knock Outs	Weight including batteries (kg)
ECP 2+1	398(h) x 438(w) x 128(d)	1 bottom (mains entry), 6 back, 23 top	7.2
ECP 4+1	398(h) x 438(w) x 128(d)	1 bottom (mains entry), 6 back, 23 top	7.2
ECP 4+2	398(h) x 438(w) x 128(d)	1 bottom (mains entry), 6 back, 23 top	7.2
Mounting Bezels			
<b>Panel</b>			<b>Part Number</b>
ECP 2+1 Flush Mounting			35100-K121
ECP 4+1 Flush Mounting			35100-K121
ECP 4+2 Flush Mounting			35100-K121

5.3 DETECTION CAPABILITIES AND COMPATIBILITY

5.3.1 The output circuits shall be capable of detecting the following fault conditions:

1. open circuits
2. short circuit - see note (1)
3. earth fault - see note (2)
4. out of sequence operation - see note (3)

Note 1 Actuator circuit may not be capable of detecting a short circuit due to the low impedance of certain actuators.

Note 2 Earth fault detection required, illumination of common fault earth fault light's on the membrane shall be acceptable.

Note 3 Applicable to hold and abort circuits only.

Table 13 Releasing Devices

Description	Part No.	Actuator Setting	Maximum Qty per Output Circuit
KIDDE FIRE PROTECTION ACTUATORS ONLY			
Electric control head	B6793-701	0.5 second	1
Electric & cable operated control head	B6793-702	0.5 second	1
Electric & cable operated control head, flameproof	B6793-703	0.5 second	1
Explosion proof, electric control head, stackable	B6793-709	8.0 second	5
Electric/Manual release head for Klem valve	D8521-002	0.5 second	1
Direct acting CO2 solenoid	D8522-001	0.5 second	2

Note: Actuator setting is selectable between 0.5 & 8 seconds, refer to Paragraph 3.11 for additional information.

5.4 INTERNAL CONTROLS AND INDICATIONS

Table 14 Internal Controls

Switch Reference	Switch Type	Designation
SW2	Momentary push button	Restarts the micro-processor, hardware reset
SW3	Momentary push button	Resets the micro-processor fault signal
SW1	2 way DIL switch	Leaf 1 in the off position will make the common sounder circuit operate in a pulsed mode. Leaf 1 in the on position will make the common sounder circuit operate in a constant mode Leaf 2 in the on position will put the panel into programming mode; the off position will terminate this mode.
LK1	3 position link	In the parked position (top pin exposed) the ECP will operate from the on board power supply. In the made position (bottom pin exposed) the ECP can be powered from an external 24 V dc supply.

5.5 SOFTWARE VARIANTS

Table 15 Software Variants

Panel Part Number	Software Part Number	Default Actuator Duration Setting	Comments
ECP2+1	P60300-10x	0.5 seconds	Standard Kidde extinguishing control panel for use with control heads detailed in table 13.
ECP4+1	P60200-10x		
ECP4+2	P60100-10x		
ECP2010	P60350-10x	120 Seconds	Ginge Kerr variant for use with Argonite suppression systems. Provides longer actuation duration and revised pressure switch monitoring.
ECP4010	P60250-10x		
ECP4020	P60150-10x		
ECP2+1A	P60350-10x	120 Seconds	Kidde variant for use with Argonite suppression systems. Refer Ginge Kerr for control head details.
ECP4+1A	P60250-10x		
ECP4+2A	P60150-10x		

# CHAPTER 6

## STATUS INDICATORS AND ACCESSORIES

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### 6.1 STATUS INDICATORS

6.1.1 The status indicators come in three versions:

Type 1 with indication lights only

Type 2 with indication lights and auto/manual key switch

Type 3 with indication lights, manual release and auto/manual key switch.

6.1.2 The status indicator's have three indication lights:

RED - Discharged

YELLOW - Auto/Manual mode

GREEN - Manual only

6.1.3 The **AUTO/MANUAL** key switch and the **MANUAL RELEASE** have the same function and operation as previously described in section 1.5.6 and 1.5.7

The status indicators consist of a backbox containing the PCB and a detachable lid containing the membrane fascia (refer to Figure 14).

Note: When a status indicator is connected to an Extinguishing Control Panel, a 44782-K074 Status Indicator Interface PCB has to be installed in the ECP.

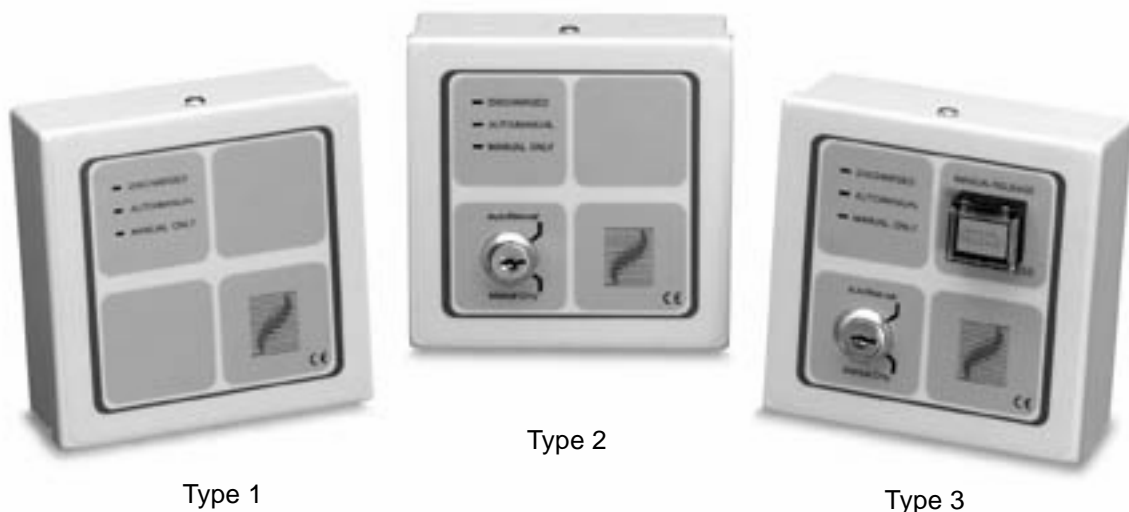


Figure 14: Status Indicators

The status indicator comes in two sizes (123(w) x 123(h) x 46(d) mm) for surface mounting or (143(w) x 143(h) x 46(d) mm) for flush mounting. The paint specification is the same as the ECP (Semi Gloss Ash Grey - BS4800 00A01).

A maximum of six status indicators can be connected to an ECP over a maximum distance of 1 km. As the status indicators provide safety critical information they should be wired in fire resistant cable. Each status indicator has the provision for terminals for incoming and outgoing connections as detailed in Table 15. Refer to Figure 16 for Wiring Diagram.

Table 16

Terminals	Connection	Description
4	Receive	RS485 communication from the ECP and out to the next status indicator.
2	0v, 24 V dc	Supply from an external source
4	Manual release	Input and output terminals
6	Auto/Manual key switch	Input and output terminals

Each status indicator has the facility to provide open collector outputs, rated at 0 V dc at 60 mA each. The outputs are for internal use only. The designation of each output is shown in Table 16..

Table 17

O/P #	Designation	Operating Mode
1	Discharged	Constant
2	First Stage	Constant
3	Second Stage	Constant
4	Disabled	Constant
5	Abort	Constant
6	Hold	Constant
7	Auto/Manual	Constant
8	Manual Only	Constant

It is only possible to have status indicators connected to Area 1 or Area 2 and the selection of which area is taken in programming Level 09. (Area 2 is only available on the 4+2 ECP).

The status indicators have two internal controls, SW1 a momentary push button for micro-processor reset and SW2 a momentary push button for indication light test.

The status indicators have a terminating resistor network for the RS485 communication, the jumper selection must be as detailed in Table 17.

Table 18

Jumper	Intermediate SI	Last SI
1	IN	OUT
2	OUT	IN
3	IN	IN
4	IN	IN
5	OUT	OUT
6	IN	IN

Table 19 Status Indicators

Description	Part No.
Status Indicator Type 1	53836-K178-01
Status Indicator Type 2	53836-K178-02
Status Indicator Type 3	53836-K178-03
Status Indicator Interface PCB: Note: The driver card for the status indicators has two way DIL switch SW1 located on the board. With leaves 1 & 2 in the ON position the board will drive in both directions. With leaves 1 & 2 in the OFF position the board will drive in one direction only	44782-K076
Semi-flush Mounting Bezel for Status Indicator	35100-K132

6.2 HOLD BUTTON, PART NUMBER 53836-K179 (Refer to Figure 15)

The hold button is of the mushroom type, 35 mm red and configured as a non latching switch, twist to release with two sets of single pole, single throw contacts rated 5A at 30 V dc. The screw type terminals can accept conductors up to 4 sq mm. The contacts house a 100 ohm alarm resistor that is introduced into the circuit when the button is operated. The dimensions of the button is 108 x 108 mm and 85 mm to the top of the button.

6.3 ABORT BUTTON, PART NUMBER 53836-K180 (Refer to Figure 15)

The abort button is of the mushroom type, 40 mm red and configured as a latching switch, twist to release with two sets of single pole single throw contacts rated 5A at 30 V dc. The screw type terminals can accept conductors up to 4 sq mm. The contacts house a 100 ohm alarm resistor that is introduced into the circuit when the button is operated. The dimensions of the button is 108 x 108 mm and 85 mm to the top of the button.



Hold Button



Abort Button

Figure 15: Hold and Abort Buttons



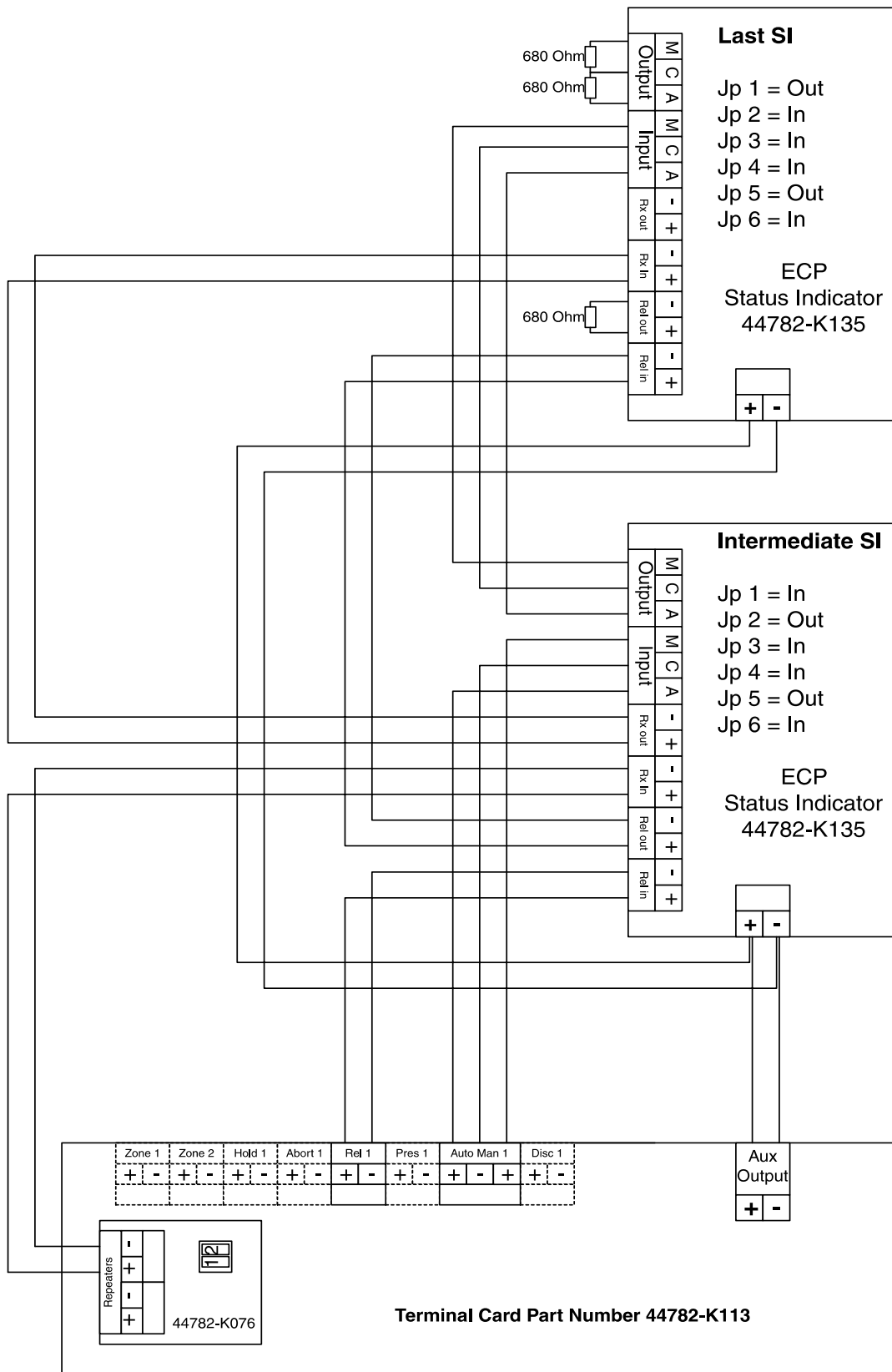


Figure 16: Status Indicator Wiring Diagram



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