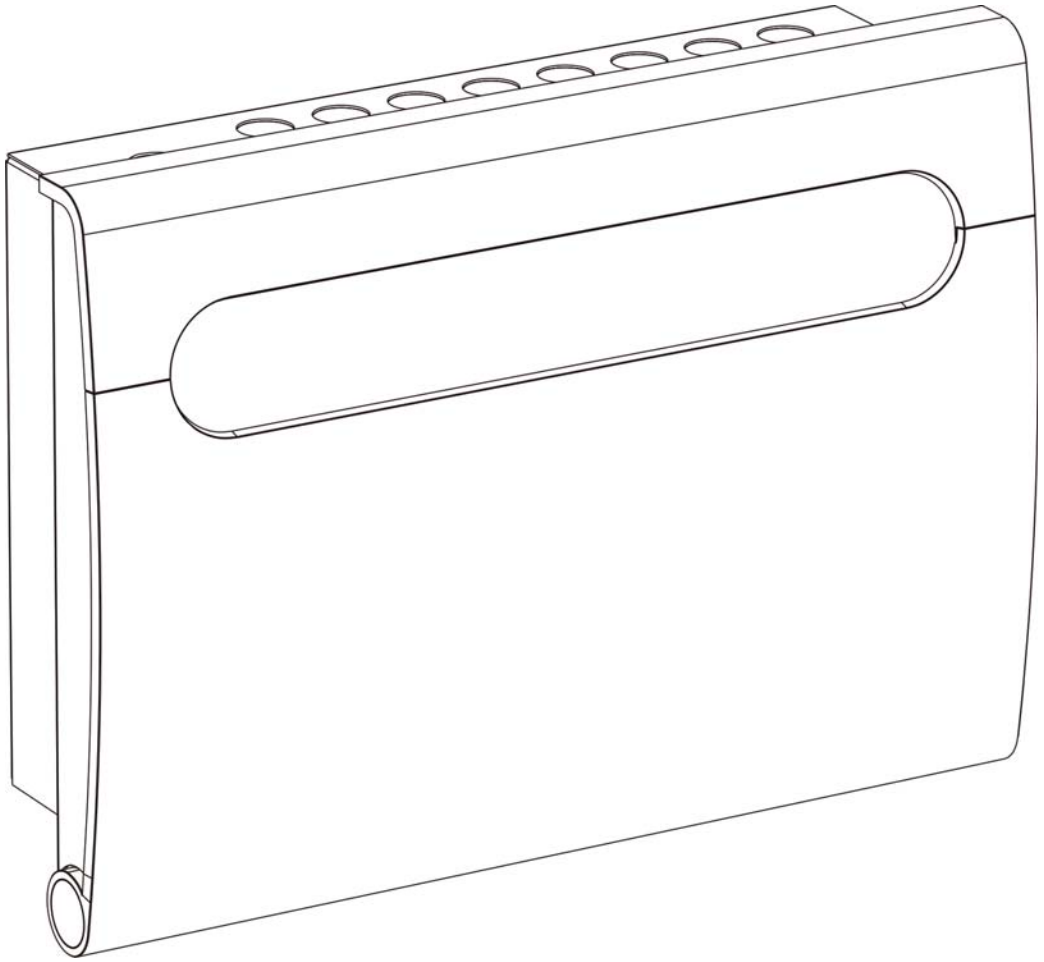
Installation and user manual for the CF5000, MF5000 and FXP5000 range of fire panels

16 zone panels



Powering Business Worldwide

Contents

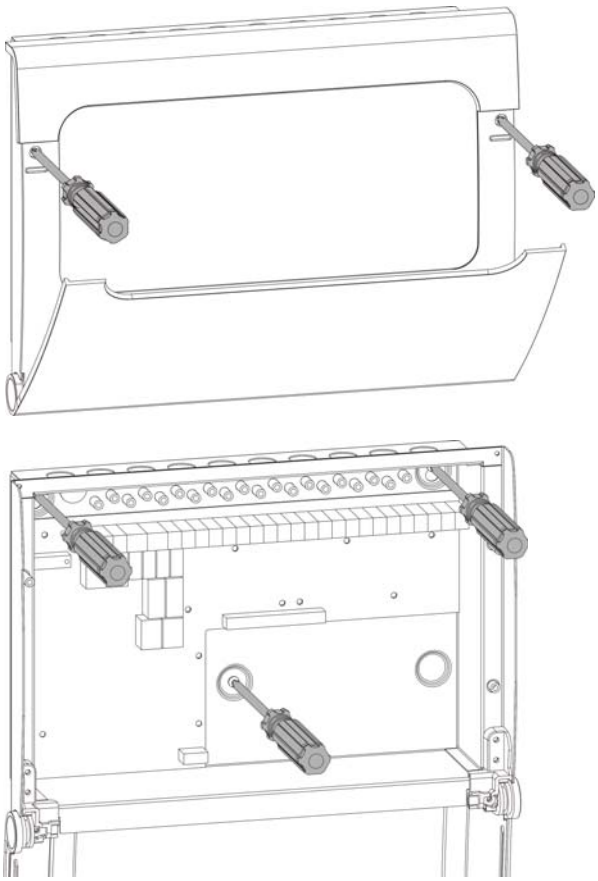
Panel Installation

Please read the following instructions before installing and wiring the fire alarm panel.

These ranges of panels are EN54 parts 2 and 4 certified and have been designed to comply with BS5839 part 1:2002 installations. The panels have two optional features:

- FIRE ALARM DEVICES: (EN54 part 2 clause 7.8)
- TEST CONDITION: (EN54 part 2 clause 10.0)

In common with all electrical equipment the panel should be installed in a clean, dry, well-ventilated area, not in direct sun light and avoiding cold areas where possible. Note that temperatures in excess of 40°C and below -5°C will affect the panel operation. The panel should be located away from any potential hazard, in a position where it is readily accessible to authorised staff and the fire services. Ideally on the perimeter of a building near a permanent entrance.



Mount the panel, using pre drilled screw positions, to the wall. This will prevent any possible brick dust contamination of the panel internal circuitry. Use Three No.10 x 1 ¼" (5.0 x 30mm approx.) pan head screws. When using 20mm conduit entry direct to ensure a wide distribution of pressure when tightening the coupling.

Panel Wiring

Mains Power Supply

The mains supply should be exclusive to the fire alarm as detailed in BS5839 part 1 or applicable local standard. It is recommended that a double pole fused spur unit is used and marked "FIRE ALARM DO NOT SWITCH OFF", this should be for the sole use of the fire alarm. Within the panel, the mains supply should be isolated from the zone and alarm line wiring and should be connected to the terminal block marked MAINS.

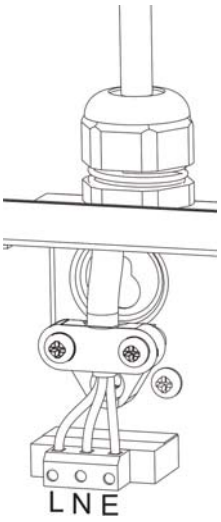
Recommended Wiring Types

The following cable type and size are recommended:

Mains wiring	1.5mm^2, 2 core, fireproof cable
Zone wiring	1.5mm^2, 2 core, fireproof cable
Sounder wiring	1.5 to 2.5mm^2, 2 core, fireproof cable
Fire/Fault Output Wiring	0.5mm^2, 2 core, fireproof cable

WARNING

DO NOT USE A
HIGH VOLTAGE TESTER
WHEN WIRING IS CONNECTED
TO ANY ELECTRONIC
EQUIPMENT



Fuse Ratings

Mains Fuse

Battery Fuse

Sounder Circuits

1.6A AT Anti Surge

6.3A AT Anti Surge

500mA PolySwitch device

Battery connection

The 16 zone panel requires two YUCEL 12V 4Ah Batteries (supplied).

Connect the red battery wire to the red battery terminal (+) of battery one.

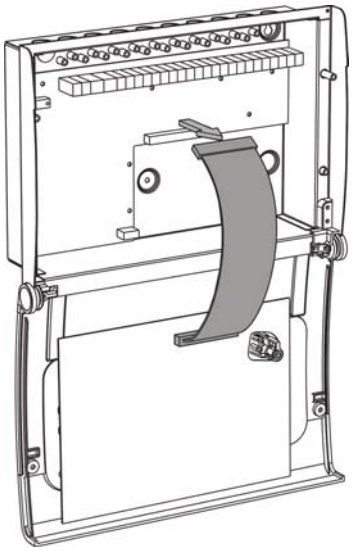
Connect the black battery wire to the black battery terminal (-) of battery two. Then connect the link cable as shown here.

Battery Installation

1. Ensure that the panel is disconnected from mains power.

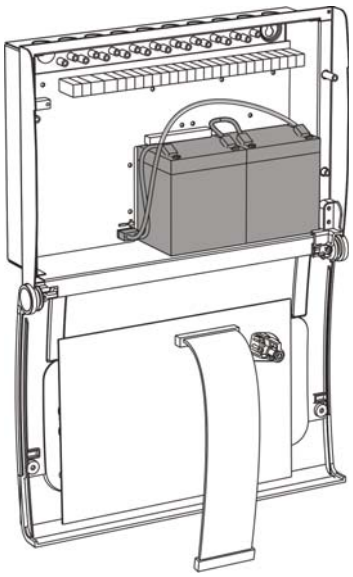
Carefully remove the ribbon cable from the main board.

Note: Do not attempt to remove the cable from the display board connector.



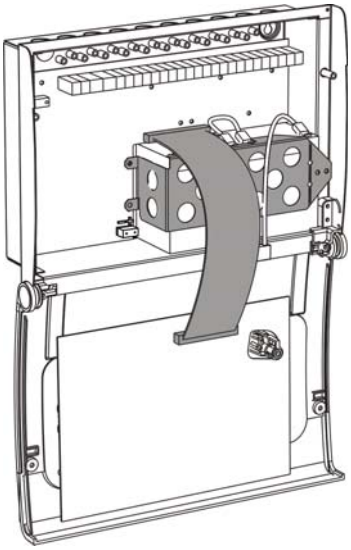
2. Attach battery cables to battery as shown in illustration above "Battery connection".

Note: Do not attach battery cables to main PCB before completing the next stage.



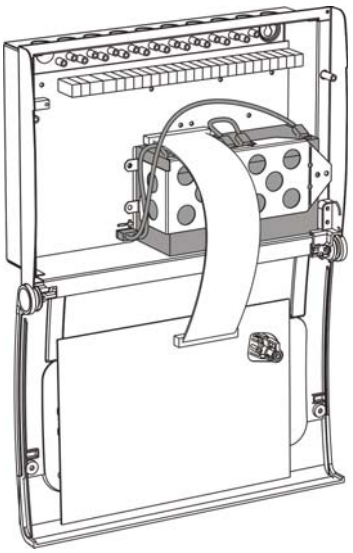
3. Carefully reattach the ribbon cable.

The 16 Zone panels have a battery bracket to secure the batteries this should be fitted before reattaching the ribbon cable.



4. Connect the mains cable and power up the panel.

Once powered up attach the battery cable to the main panel PCB following the illustration above "Battery connection".



Zone wiring

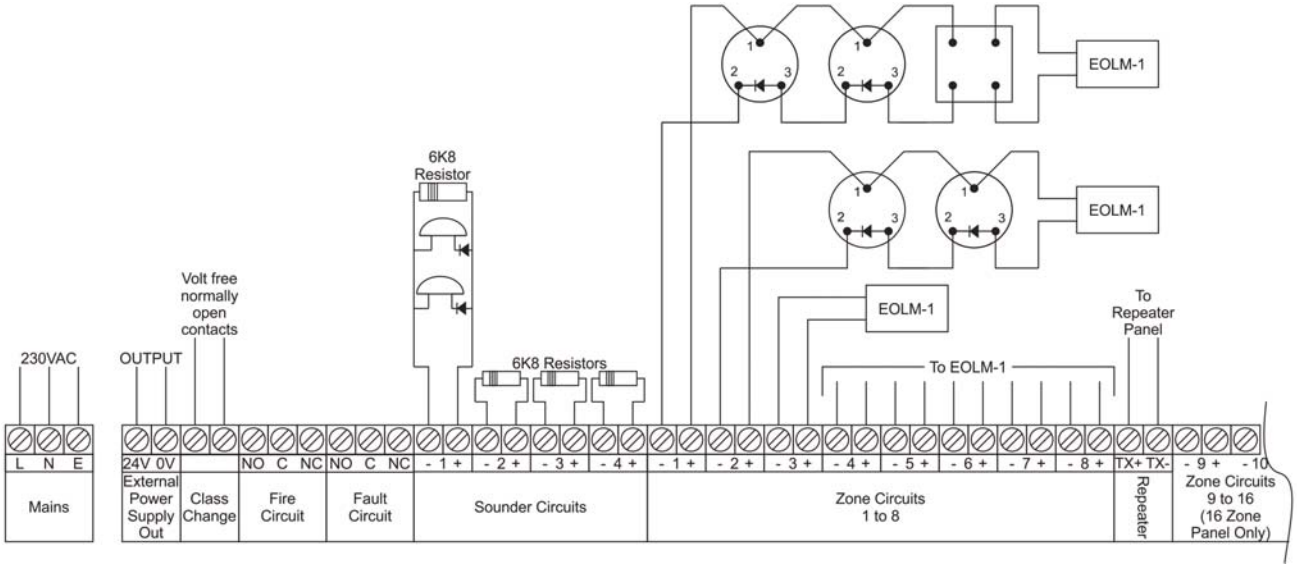
Each zone circuit is supplied with an End of Line Monitor unit (EOLM-1). All zone circuits must be terminated with an EOLM-1, taking care to observe the correct polarity.

Sounder wiring

The fire alarm control panel has four separately protected, line monitored, sounder circuits for use with polarised and suppressed bells, sounders, strobes, relays etc.

The wiring for each sounder circuit is to be a parallel circuit with the 6K8, end of line resistor (EOLR), fitted at the end of the installed sounder circuit wiring. No 'spurs' nor 'tee's' are permitted.

Wiring Connection Drawing



On-board Fault/Fire relay

Each panel has one Fire and Fault relay fitted.
The Fault relay provides a fused volt free set of change over contacts. These contacts are not monitored.

The relay has been designed to be 'fail safe', so that in the event of a total power loss, the relay contacts will be active. The Fire relay provides a fused volt free set of change over contacts. These contacts are not monitored.

The relays are fused with a PolySwitch device rated at 500mA / 60V DC.

Class change

The sounder circuits can be operated by an external volt free contact (Relay, Switch, Timer etc.). A short circuit at this terminal will activate the sounder circuit outputs (non-latching), removal of the short circuit will de-activate the sounder circuit output.

It should be noted that activation of the class change input will give no visual indication on the panel and will not operate the auxiliary relays.

Repeater panel

The panel has a RS485 repeater output as standard. The repeater panel has been designed to provide a cost effective installation solution, requiring only two interconnecting wires from the master panel. Several repeater panels can be installed from the master panel by 'cascading' each repeater panel; again only two interconnecting wires are required between each repeater panel.

As each repeater has its own mains supply and standby battery, the main panel standby time is not affected by the number of repeater panels installed. The repeater panel is suitable for up to 16 zones and displays all the same indications as the main panel, but with the addition of an indicator test and mute buzzer facility.

Wiring

Connect the repeater, RS485 TX+ and TX- terminals of the main panel, to the repeater panel positive and negative input terminals.

Main Panel		Repeater Panel
TX+	to	+ve input terminal
TX-	to	-ve input terminal

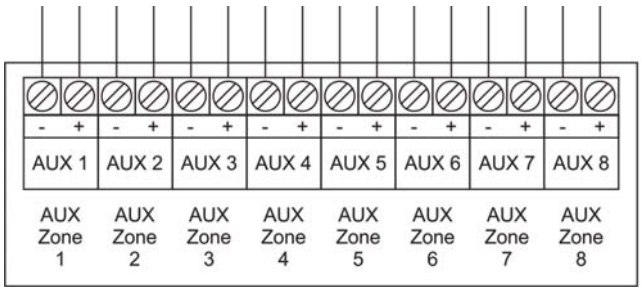
Auxiliary Relays

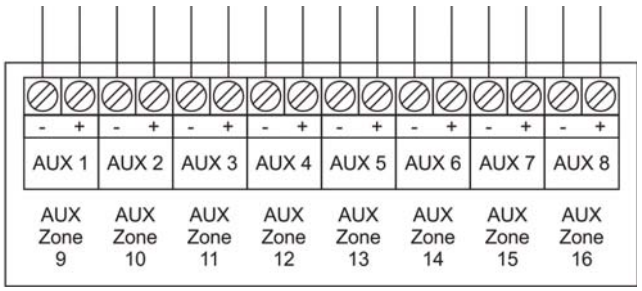
The Auxiliary ("Zonal") relays provide additional external fire indications per zone, for example AUX 1 will activate when there is a fire condition on Zone 1 and will deactivate when the fire condition is cleared.

The polarity of the auxiliary relay can be changed to either Normally Open or Normally Closed via the associated jumper on the auxiliary relay board.

Normally Open = Jumper across 1&2

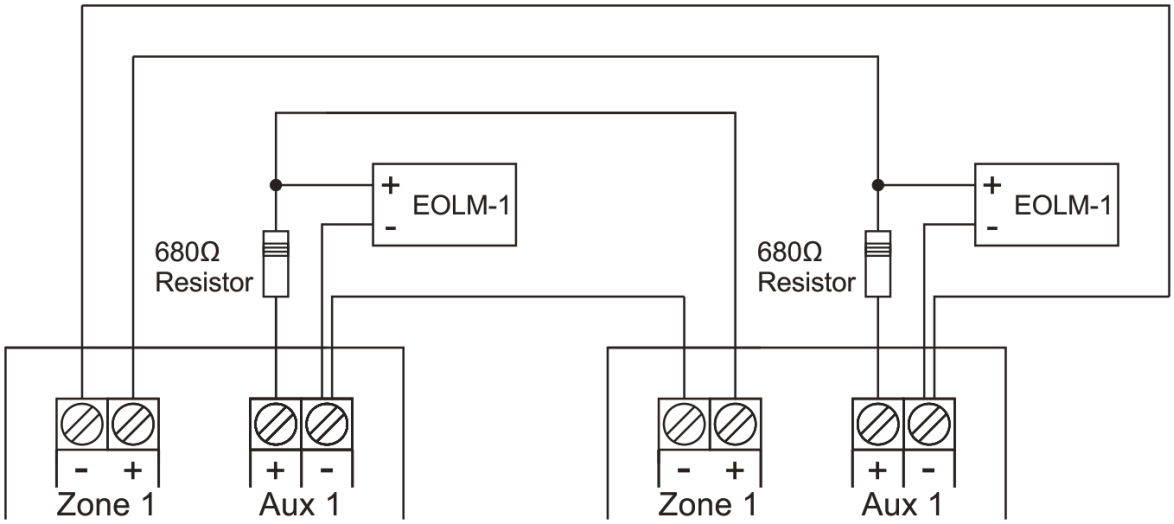
Normally Closed = Jumper across 2&3





Interlinking Panels

Two panels can be linked together as illustrated below.



Zone 1 of Panel 1 must be connected to AUX 1 of Panel 2, with and EOLM-1 and 680Ω resistor as shown in the diagram above.

Zone 1 of Panel 2 must be connected to AUX 1 of Panel 1, with and EOLM-1 and 680Ω resistor as shown in the diagram above.

Zone 1 on both panels must be configured to Non-latching mode. This changes the operation of AUX 1 so that it triggers on any zone fire condition excluding zone 1.

When Panel 1 detects a fire on zones 2-8/16, AUX 1 will activate placing the 680ohm resistor across Zone 1 of Panel 2. This will cause Panel 2 to go into fire but will not activate its AUX 1 output.

Likewise, when Panel 2 detects a fire on zones 2-8/16, AUX 1 will activate placing the 680ohm resistor across Zone 1 of Panel 1. This will cause Panel 1 to go into fire but will not activate its AUX 1 output.

Installation Check

With the EOLM-1's and EOL resistors fitted in the main panel, connect the mains supply and battery. Check the green power on LED is lit and that no other indicators are lit.

Check that the panel operates correctly by entering the access code (3112), followed by silence, followed by reset, check all indicators light up momentarily. Check each zone and alarm line for open and short circuit fault monitoring.

Zone circuits

Disconnect the mains and battery supply, wire in the zone circuits, one at a time, with the EOLM-1 transferred to the end of the zone (check polarity) but with no detectors fitted. Power up the panel by connecting the mains supply and battery. Check that the last call point in each zone operates correctly by using the supplied call point test key. Reset the panel after each activation. Fit all the detectors (a zone at a time) and check that the panel shows a healthy state. If there is a problem (zone fault showing) check the faulty circuit for continuity, correct polarity and polarity of the base diodes.

(DO NOT USE A HIGH VOLTAGE INSULATION TESTER).

Sounder circuits

Disconnect the mains and battery supply. Wire in the sounder circuits, one at a time, transferring the end of line resistor to the end sounder/bell on each circuit. Power up the panel as before and verify that no fault shows. If there is a fault indication, check the affected circuit for short circuit, continuity and polarity.

(DO NOT USE A HIGH VOLTAGE INSULATION TESTER).

Commissioning the system

Assuming that the installation instructions and installation checks have been carried out successfully, the fire alarm system is ready for commissioning.

Each detector and call point should be tested in turn to ensure that it operates, indicates the correct zone fire LED and operates the alarm output correctly, ensuring all sounders/bells operate.

Walk test facility

A walk test function has been included in this range of panels to enable one person (electrical contractor or installer) to test the fire detection system without an assistant. This function is for the sole use of the electrical contractor or installer and not for normal operational use.

The walk test facility access code is located inside the fire detection control panel.

Once the walk test code has been correctly entered the 'test in progress' indicator will show and the buzzer will pulse, this sets a time window of 10 minutes.

If a detector or call point is triggered within this period the sounders will operate for a short time then the system will automatically reset ready for the next call point or detector activation.

If a detector or call point is not operated within the 10 minute period then the system will automatically reset and return to normal operation.

The walk test facility can be terminated at any time during test by pressing the 'reset' button.

User Information

There are 2 access codes used by the control panel:

- Access level 2 - client code (3112)
- Access level 3 - engineers code

These codes are displayed on the rear of the front panel. The access level 2 code is also shown on the panel key fob.

Level 2 access permits the following functions:

- Silence alarm

- Evacuate

- Enable and disable zones

- Enable or disable sounders

- System reset

The access code (level 2 or 3) is enabled by pressing the six control panel front buttons in the correct sequence.

❶ ❷ ❸ ❹ ❺ ❻

An audible signal indicates that the access code keyed in is correct.

Mute buzzer

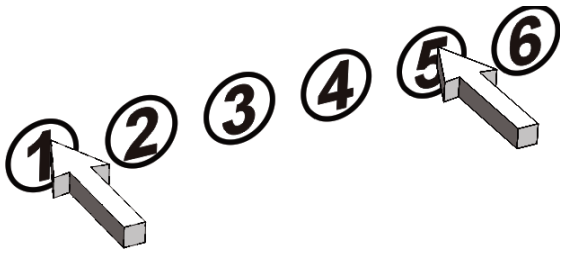
Silences control panel's internal buzzer

Access code level 2 + ❺

Silence alarm

Silences buzzer, resets the panel indicators, resets detectors and resets control relays

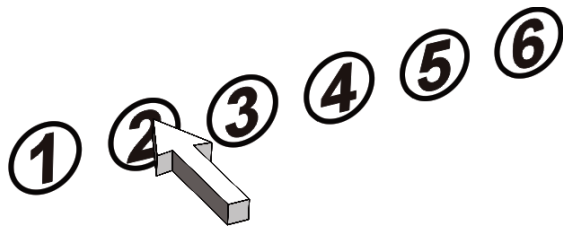
Access code level 2 + ❶ + ❺



Reset after fire alarm activation

Silences buzzer, resets the panel indicators, resets detectors and resets control relays

Access code level 2 + ❷

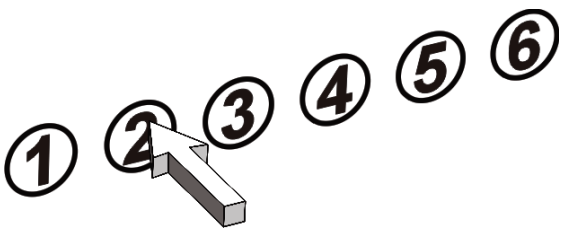


Reset without a fire activation

(e.g. to reset a fault indication when zone fault latch facility)

Silences buzzer, resets the panel indicators, resets fault relay

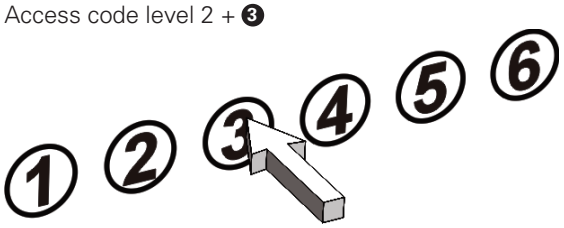
Access code level 2 + ❶ + ❷



Evacuate

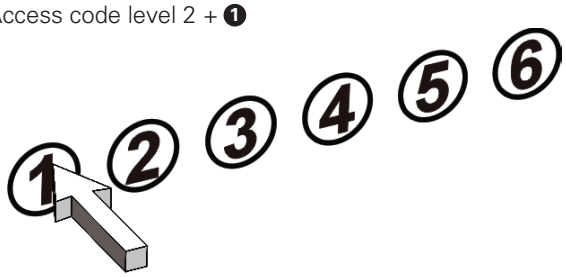
Operates the control panel's sounder circuits and fire relay(s)

Access code level 2 + ❸



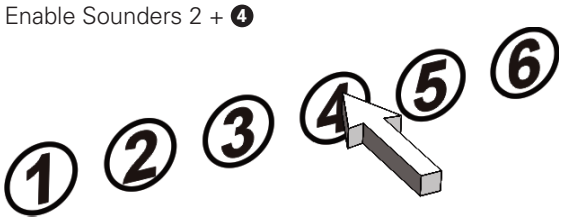
Operates the control panel's sounder circuits and fire relay(s)

Access code level 2 + ❶



Enable Sounders

Enable Sounders 2 + ❹



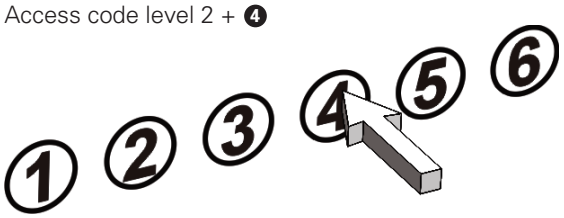
Internal buzzer will rapidly pulse. Push button several times until sounder LED turns off.

Push button ❶ to confirm enable sounders

Disable Sounders

Isolates sounder circuits from the system

Access code level 2 + ❹



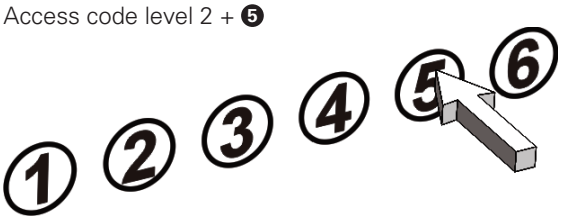
The yellow LED of the zone 1 will light and the internal buzzer will pulse rapidly, push button several times until both the disabled and sounders disabled yellow LED's are lit.

Push button ❶ to disable sounders.

The internal buzzer will pulse at a slow rate and the disabled and sounders disabled LED's will remain lit.

To silence the internal buzzer

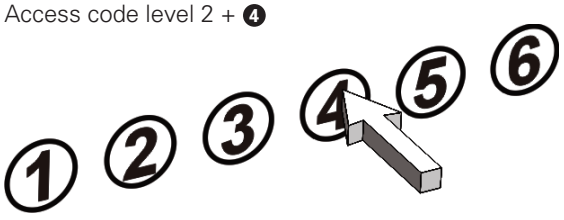
Access code level 2 + ❺



Disable a zone

Isolates required detection zone from the system

Access code level 2 + ❹



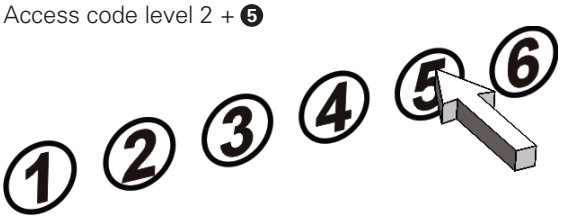
The yellow LED of the zone 1 will light up and the internal buzzer will pulse rapidly, push button several times until both the required zone and disabled yellow LED's are lit.

Push button ❶ to disable the indicated zone. Repeat this procedure to disable further zones.

The internal buzzer will pulse at a slow rate and the disabled and zone disabled LED's will remain lit.

To silence the internal buzzer

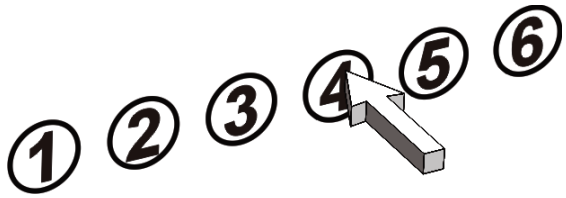
Access code level 2 + ❺



Enable Zone

Operates the control panel's sounder circuits and fire relay(s)

Access code level 2 + ❹



Maintenance General

It is vital that the fire alarm system is checked for correct operation as per the requirements of BS5839 or applicable local standard.

Daily inspection (by user)

The panel should be visually inspected daily to ensure that the green 'power on' indicator is lit and that no fault indication is showing.

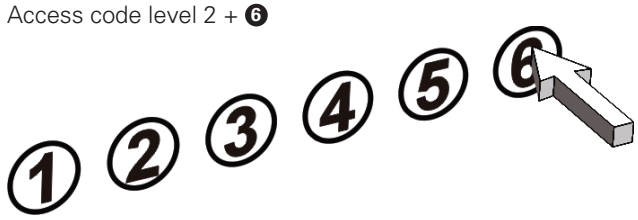
Notify any fault indication to your maintenance company.

Weekly Test (by user)

Visually inspect panel as per daily inspection.

Test panel indicators:

Access code level 2 + ❻



All indicators will light up and the panel internal buzzer will sound.

The test in progress LED will light up, the panel is now in a 'one- shot' auto reset mode. The call point can now be activated using the test key, the sounders will operate for a short period (3 seconds) after which the panel will automatically reset and return to normal operation. If a call point or detector is not operated within a short period, the panel reverts to normal operation and the test is abandoned.

It is advised that a different call point is tested each week to ensure that all call points are tested in rotation.

Log test results in log book.

The yellow LED of the zone 1 is flashing. Push button ❹ several times until the yellow led of the relevant zone is flashing.

Push button ❶ to enable the indicated zone.

Repeat this procedure to enable further disabled zones.

Inspection and servicing (by service provider) Quarterly Test

Check log book entries since last visit and verify that remedial action has been taken (if required). Visually inspect panel as per daily inspection. Carry out weekly test. Visually inspect battery and battery connections. Carry out battery load test by disconnecting the mains supply and check that the battery is capable of supplying the alarm sounder load by activating a call point. Log test results in log book.

Bi-yearly Test

As per quarterly test.

Visual inspection of site to check for compliance of system to recommendations of local standard.

All controls and indicators of control panel need to be checked for correct operation.

All external circuits should be tested for correct fault monitoring.

Log test results in log book.

Annual Test

As per by-yearly test

Also all call points on the system should be tested and the automatic fire detectors should be visually inspected to ensure they have not been damaged or painted over. The automatic detectors should then be test- operated.

Log test results in log book.

Every 5 years

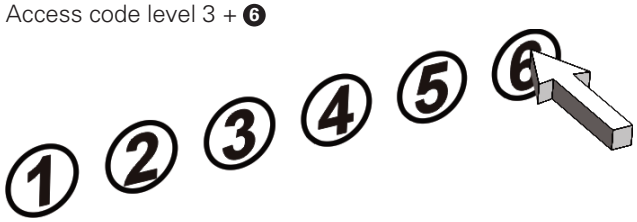
Replace sealed lead acid battery every 5 years (recommended).

Maintenance Engineers code facilities

The engineering access code label can be found in the panel back box (internal).

One man walk test facility

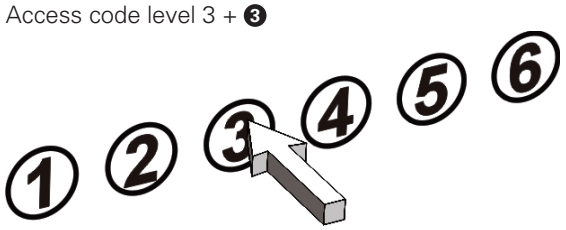
Access code level 3 + ❻



Individual zone test facility

This enables the engineer to test a relevant zone while the other zones can still be activated upon a fire event.

Access code level 3 + ❸



The test in progress LED will light up, the yellow LED of zone 1 will light up and the internal buzzer will pulse rapidly: push button ❸ several times until the required zone is selected.

Push button ❶ to confirm the indicated zone.

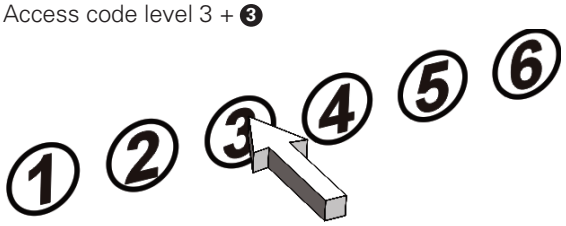
The internal buzzer will pulse at a slow rate and the corresponding zone LED's will remain lit.

The call point can now be activated using the test key, the sounders will operate for a short period (3 seconds) after which the panel will automatically return to test mode operation. If a call point or detector is not operated within a short period the panel reverts to normal operation and the test is abandoned.

It is advised that a different call point is tested each week to ensure that all call points are tested in rotation.

Log test results in log book.Repeat the process for all zones. Once finished use

Access code level 3 + ❸



Toggle to the zone in test- use button ❶ to cancel the zone test.

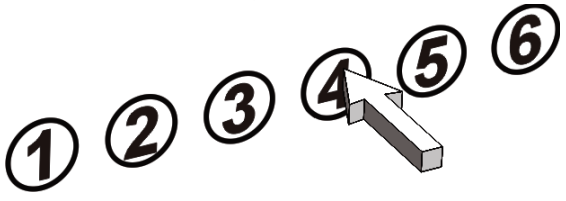
If another zone sees a fire event then the panel will over-ride the individual zone test and go into full fire.

Latch on zone fault facility

This does not meet the requirements of EN54-2

All zone faults will latch on the panel

Access code level 3 + ❹



Test in progress LED will light up. Panel will now 'latch until reset' on all faults.

The latch on fault facility can be terminated at any time by pressing the 'reset' button.

Panel Programing Options

Switch setting facility

The dip switches installed on the PCB allow certain programming options to be selected by the installation engineer.

- Optional zone monitoring
- Non latching zones
- Sounder configuration (see diagram)

Note

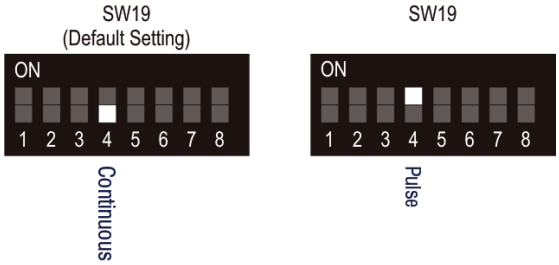
These DIP switches are only read at power-up and not after a reset.

Please note the white blocks represent the switch position

Optional Sounder Configuration

The sounder circuits can be programmed to have a continuous or pulsed tone.

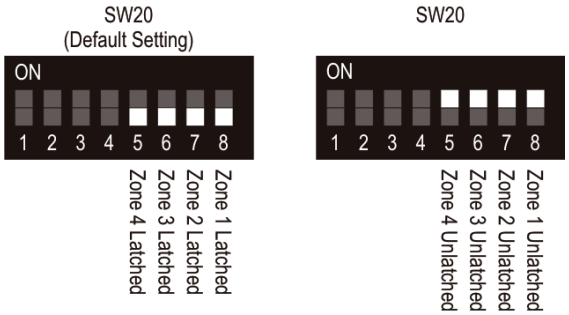
The alarm panel must be programmed, via switch 4 of the DIP switch SW19 for the sounder settings required.



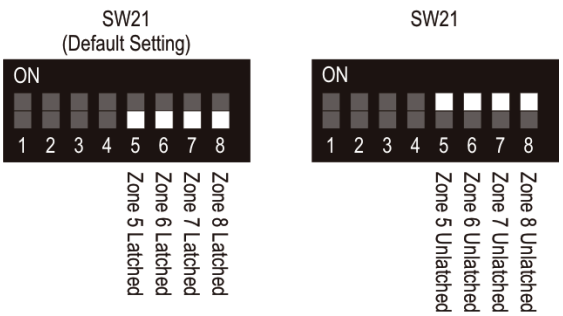
Non latching zones

Each zone circuit can be configured to be latched or unlatched. This can be done by setting the switches on DIP switches SW20 (Zones 1-4) and SW21 (Zones 5-8) as illustrated below.

Zones 1 - 4



Zones 5 - 8



Panel Fire/Fault Indicators

Indication

Situation	Fire	General Fault	Disable	Power On	Charger Fault	System Fault	Disable/Fault Zone	Disable/Fault Sounder circuit	Test	Buzzer
Normal Condition				●						- - -
Zone Wiring Open/Short		●		●			◎			- - -
Zone Disabled			●	●			●			- - -
Sounder circuit Disabled			●	●				●		- - -
Sounder and Zone circuit Disabled			●	●			●	●		- - -
Power Supply Fault		●		●	◎					- - -
Sounder Circuit Open/Short		●		●				◎		- - -
Panel in Test				●					●	- - -
System Fault				●		●				———
Panel Button Pressed				●						- - -
Battery Open Circuit/Reversed Polarity		●		●	◎					- - -
Battery High/Low Voltage		●		●	◎					———
Fire	●			●						———
Evacuation	●			●						———

● LED Flashing

◎ LED Illuminated

- - - Internal Buzzer Intermittent

——— Internal Buzzer Steady

Technical Specification

Power Supply

Mains Voltage		230VA +10% -15%
Nominal Current		70mA
Maximum Current		200mA
Input Fuse		1.6A AT Anti Surge
Ripple Voltages		24V 500mV
		24V Raw - 600mV
		5V O/P 100mV
Output Voltages		24V 24V +/-5%
		24V Raw - 24V +/-5%
		5V O/P 5V +/-5%
Maximum Load	Imaxb	24V 650mV
		24V Raw - 2000mA
		5V O/P 300mA
Standby Current	Imaxa	24V 100mA
		24V Raw - 80mA
	Imin	24V 25mA
		24V Raw - 25mA
		5V 20mA

Batteries

Number of Batteries	2
Part Number (Manufacturer)	Yucell Y4-12 (Yuasa)
Capacity	4Ah
Battery Fuse	6.3A AT Anti Surge
Max Battery Charge Current	500mA
Stand By Current	220mA
Float Voltage	27.1V
Battery Switching Off Threshold (Reinstatement Voltage)	19.98V (22.4V)+/- 200mV
Battery Internal Resistance	1 Ohms

Inputs

Panel Type	16 Zone
Detection Zones	16
Detectors per Zone	30

Outputs

Alarm Lines	4	
Sounder Circuit Maximum Alarm Line Load	400mA per Alarm Line	
Sounder Circuit Minimum Alarm Line Load	15mA per Alarm Line	
Fire/Fault Relay	Yes 500mA Maximum Current	
24V External power supply output	Yes 300mA Maximum Current	
Zonal Inputs Load	Quiescent	3.5mA
	Fire Indication Load	35mA