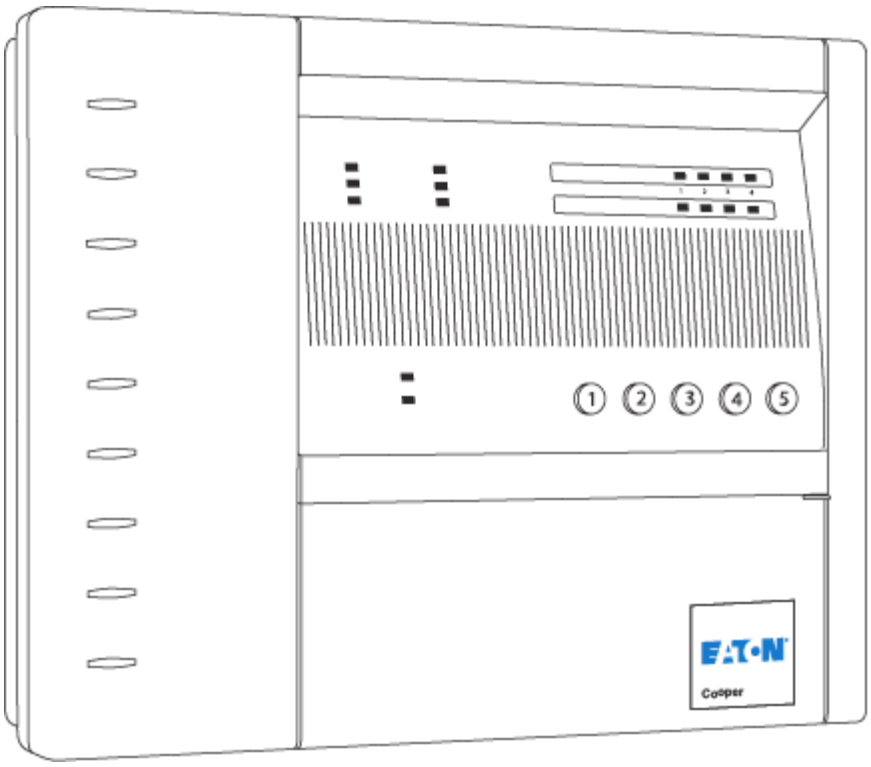
Technical Data **PR000-00-513-05**

Effective January 2018
Supersedes Oct 2014

Installation and User manual for the conventional range of fire panels

2 and 4 zone panels



Contents

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General

Installation

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

This range of panels is 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 sunlight and avoiding cold areas where possible. Note, temperatures in excess of 40°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.

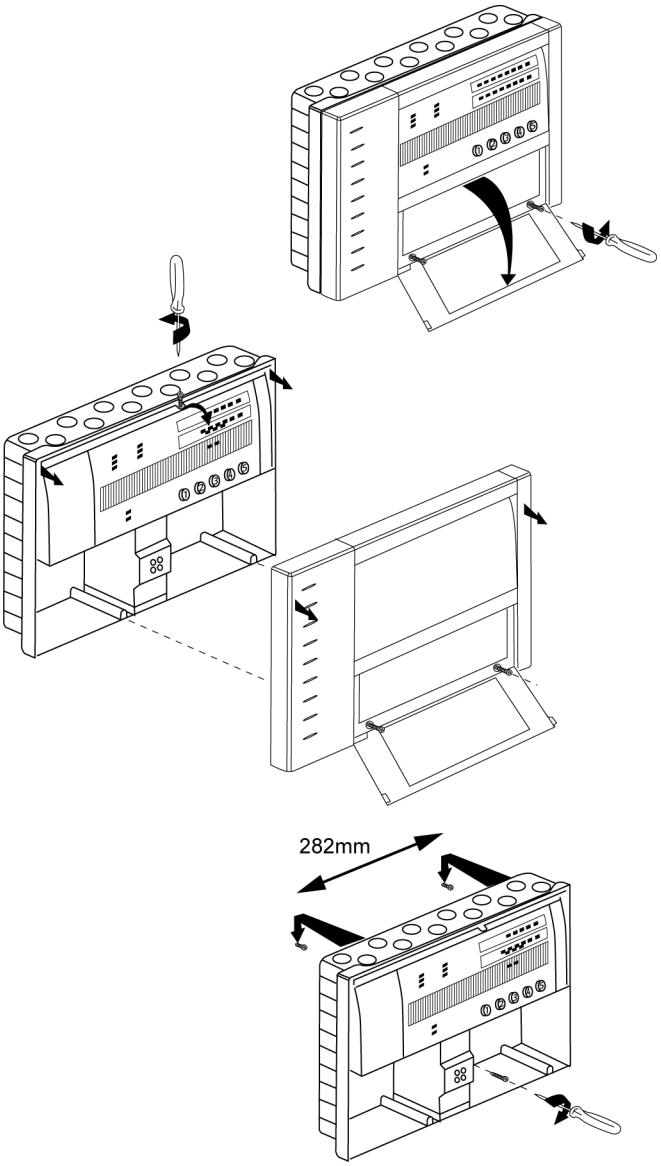


Figure 1. Panel installation

Mount the panel, using pre drilled screw positions, to the wall. This will prevent any possible brick dust contamination of the panel internal circuitry.

Fit a 20mm gland to all cable entry points in use.

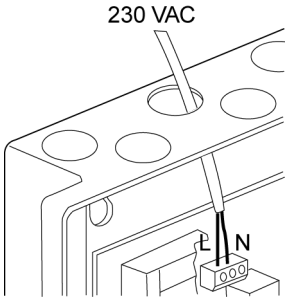
Wiring

Mains power supply

The mains supply should be exclusive to the fire alarm as detailed in BS5839 part 1. 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.

Figure 2. Mains power connection



Battery connection

The 2 & 4 zone panel requires a single battery (supplied)

*Note: For -NB variants, purchase batteries seperately

2 and 4 zone panels: 1x12v 3.2Ah

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

Connect the black battery wire to the black battery terminal (-).

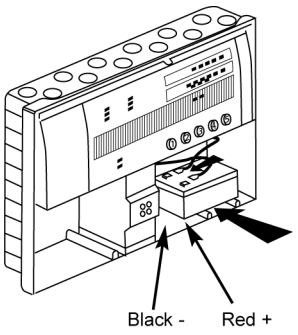


Figure 3. Battery Connection location

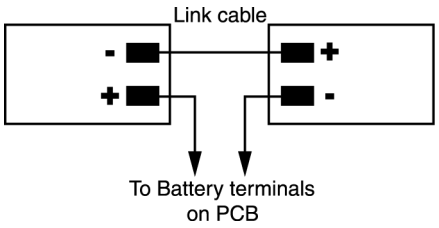


Figure 4. Battery Connection schematic

Wiring

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:- 1.5mm^2 to 2.5mm^2, 2 core, fireproof cable

CAUTION

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

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, connected at the end of the installed zone wiring, taking care to observe the correct polarity.

Figure 6. End of Line Monitor unit wiring

Do not fit any other component such as an end of line resistor to the zone circuits.

The EOLM-1 works in conjunction with a diode fitted in each detector base so that all call points continue to function should a detector head be removed.

This range of control panels can support up to 30 detectors (max per zone) and an unlimited number of call points per zone.

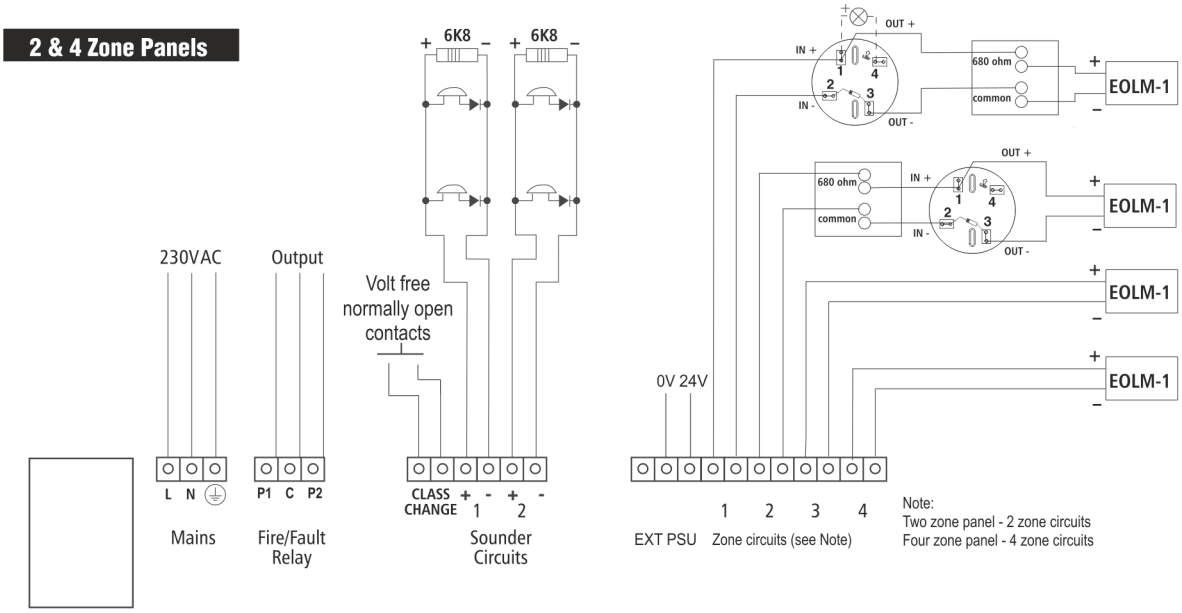


Figure 5. Wiring connection drawing

Sounder Wiring

The standard 2 and 4 zone fire alarm control panels have two separately protected, line monitored, sounder circuits for use with polarised and suppressed bells, sounders, strobes, relays etc.

The 8 zone 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' or 'tees' permitted.

Fault/Fire Relay (2-zone & 4-zone)

The 2 & 4 zone panels have one auxiliary relay fitted that provides a fused volt-free set of change over contacts. These contacts are not monitored.

The relay has been designed to 'fail-safe', so that in the event of total loss of power the relay contacts will be active.

The auxiliary contacts are fuse protected at 5 Amps (F2) and rated at 30V dc.

The wiring connections can be found on the main board and are labelled 'Auxiliary Circuit'.

The auxiliary relay is factory configured as a fault relay but can be configured to operate as a general fire relay using LK1 (Figure 7). This can be found on the display PCB and will need to be removed from the door in order to gain access to it.

LK1	Mode	Panel Healthy	Panel in Fault	Panel in Fire
Position AB	Fault Relay	Continuity between C and P2	Continuity between C and P2	Continuity between C and P1
Position BC	Fire Relay	Continuity between C and P2	Continuity between C and P1	Continuity between C and P2

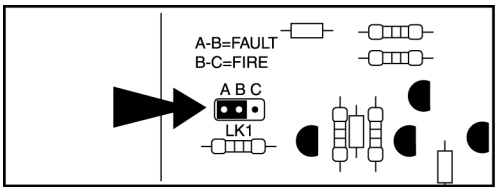


Figure 7. 2 & 4 zone panel Auxiliary relay

CAUTION

POWER DOWN THE FIRE PANEL BEFORE YOU CHANGE ANY RELAY SETTINGS

J1	Mode	Panel Healthy	Panel in Fault	Panel in Fire
Not Fitted	Fault Relay	Continuity between C and N/C	Continuity between C and N/C	Continuity between C and N/O
Link Fitted	Fire Relay	Continuity between C and N/C	Continuity between C and N/O	Continuity between C and N/C

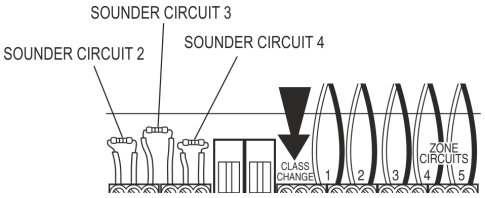


Figure 8. Class change input

Repeater panel

The 8 zone panel has a RS485 repeater output as standard. Some 2 and 4 zone panels have been factory configured with a repeater panel as a special order, however this facility is no longer provided for new panels.

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 8 zones and displays all the same indications as the main panel, but with the addition of an indicator test and mute buzzer facility.

Repeater panel wiring

Connect the repeater, RS485 TX+ and Tx- terminals of the main-panel, to the repeater panel positive and negative input terminals (Figure 11).

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

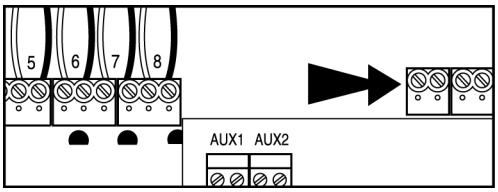


Figure 9. Repeater panel connections

The minimum required cable size is 1mm² with a maximum length of 2km.

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 the panel operates correctly by entering the access code (3112), then silence, then reset, check all indicators show 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 the panel shows healthy. If there is a problem (zone fault showing) check the faulty circuit for continuity, correct polarity and polarity of the base diodes.

CAUTION

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

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 faults show.

If there is a fault indication check the affected circuit for short circuit, continuity and polarity.

CAUTION

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

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 code level 2 - client code (3112)

and

- access code 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 five control panel front buttons in the correct sequence.

①②③④⑤

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

Mute buzzer

Silences control panel's internal buzzer.

- Enter access code level 2, then press button ⑤

Silence alarm

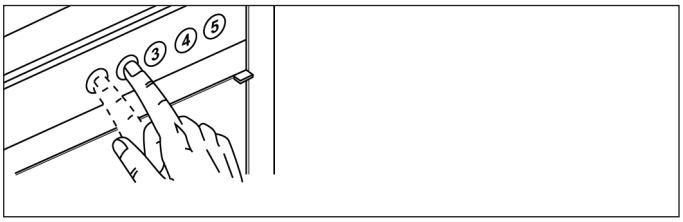
Silences external sounders and mutes internal buzzer

- Enter access code level 2.
- Then press button ① followed by ⑤

Reset after fire alarm activation

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

- Enter access code level 2.
- Then press button ① followed by ②



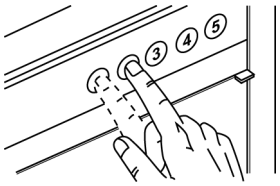
Ensure any smoke still in the activated detector is blown clear, as the control panel will activate back into alarm should any smoke remain.

Reset panel without a fire activation

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

Silences buzzer, resets the panel indicators and resets faults relay.

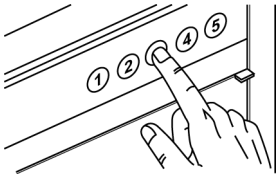
- Enter access code level 2
- Then press button ① followed by ②



Evacuate

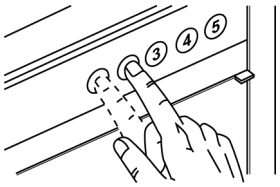
Operates the control panel's sounder circuits and fire relay(s)

- Enter access code level 2, then press button ③



To silence the alarm during evacuate period

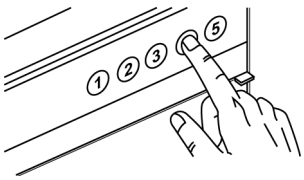
- Enter access code level 2
- Then press button ① followed by ②



Disable zone

Isolates required detection zone from the system

- Enter access code level 2, then press button ④



The yellow LED of the zone 1 will light and the internal buzzer will pulse rapidly.

Push button ④ several times until both the required zone and disabled yellow LEDs are lit.

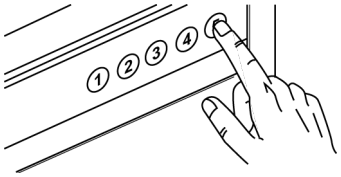
Push button ① to disable the indicated zone.

Repeat this procedure to disable further zones.

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

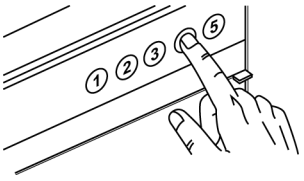
To silence the internal buzzer

- Enter access code level 2, then press button ⑤



Enable zone

- Enter access code level 2, then press button (4)



Yellow led of the first zone is flashing.

Push button (4) several times until the yellow led of the relevant zone is flashing.

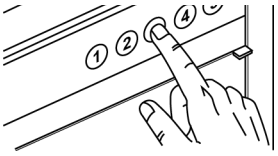
Push button (1) to enable the relevant zone.

Repeat this procedure to enable further disabled zones.

Disable sounders

Isolates sounder circuits from the system

- Enter access code level, then press button (4)



The yellow LED of the zone 1 will light and the internal buzzer will pulse rapidly.

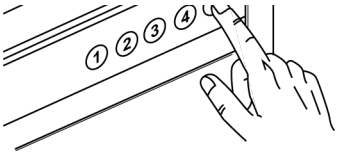
Push button (4) several times until both the disabled and sounders disabled yellow LEDs are lit.

Push button (1) to confirm disable sounders.

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

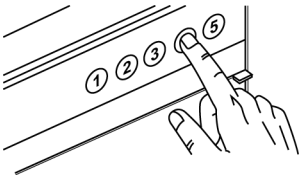
To silence the internal buzzer

- Enter access code level 2, then press button (5)



Enable sounders

- Enter access code level 2, then press button (4)



Internal buzzer will rapidly pulse.

Push button (4) several times until sounder LED turns off.

Push button (1) to confirm enable sounders

Self check detectors

This function is no longer available on new panels, however it may be available on existing panels.

Detector LED function (applies to self check detectors only)

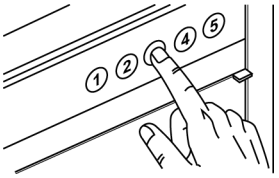
Self check detectors incorporate self check intelligence enabling them to monitor their own status and to generate a fault signal at the panel in the event of a malfunction.

Should a detector develop a fault, the zone to which the detector is connected will indicate a zone fault and the status LED on the faulty detector will illuminate amber.

Should the detector fail completely, it is possible to instruct the panel to illuminate the LEDs of the healthy indicators instead.

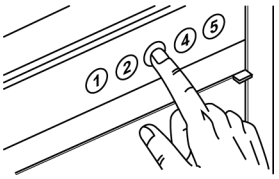
To activate this function

- Enter access code level 3 (engineer's code)
- Then press button (3)



To cancel this mode

- Enter access code level 3 (engineer's code)
- Then press button (3)



The LED control facility can also be used to diagnose faults in the external zone wiring. Should a zone open circuit occur, activate the LED test mode as described above. The LEDs of all detectors which still have a healthy connection to the panel will flash, making it easier to identify the location of the break.

Follow the instructions above to cancel LED indicator mode.

Maintenance

General

It is vital that the fire alarm system is checked for correct operation to comply with the requirements of BS5839.

Daily inspection (by user)

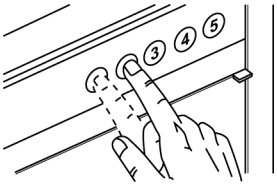
The panel should be visually inspected daily to ensure that the green 'power on' indicator is lit and that no fault indication is showing. Notify any fault indication to your maintenance company.

Weekly Test (by user)

Visually inspect panel as per daily inspection.

Test panel indicators

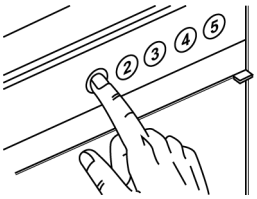
- Enter access code level 2
- Then press button ① followed by ②



All indicators will light and panel internal buzzer will sound

Weekly Call Point Test (by user)

Enables call point test with automatic system reset



- Enter access code level 2.
- Then press button ①

The test in progress LED will light, the panel is now in a 'oneshot' 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 different call point is tested each week to ensure that all call points are tested in rotation.

Log test results in log book.

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.

If a vented battery is installed, visually inspect the battery and battery connections. New units supplied by Eaton are supplied with sealed batteries, and vented batteries are no longer available as original equipment.

Carry out battery load test by disconnecting the mains supply and check the battery is capable of supplying the alarm sounder load by activating a call point.

Log test results in log book.

Six monthly 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 checked for correct operation.

All external circuits should be tested for correct fault monitoring

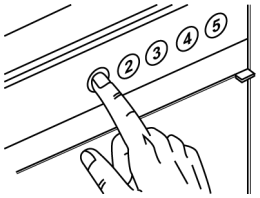
Log test results in log book.

Annual Test

As per six monthly 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).

Engineers code facilities

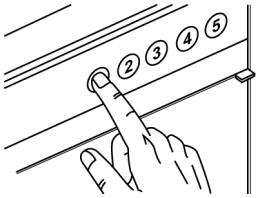
The engineering access code label can be found in the panel back box (internal).

One man walk test facility

- Enter access code level 3, then press button ①

The 'test in progress' indicator will light and the panel internal 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 ②

Latch on fault facility

All systems faults will latch on panel

- Enter access code level 3, then press button ④

Test in progress LED will light. 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 fire/fault indicators

LED flashing ❖
LED illuminated ●
Internal buzzer intermittent --------
Internal buzzer steady ———

	Fire	General Fault	Disable	Power On	Charger fault	System fault	Disable/ Fault zone	Disable/ Fault counter cct	Test	Buzzer
Normal condition				●						--------
Zone wiring open/ short		●		●			❖			--------
Zone disabled			●	●			●			--------
Sounder cct. disabled			●	●				●		--------
Sounder and zone cct. disabled			●	●			●	●		--------
Power supply fault		●		●	❖					--------
Sounder circuit open/ short		●		●				❖		--------
Panel in test				●					●	--------
System fault						●				———
Panel button pressed				●						--------
Battery open circuit/ reverse polarity		●		●	❖					--------
Battery high/low voltage		●		●	❖					———
Fire	●			●						———
Evacuation	●			●						———

Technical Specifications

Panel Specification		2-Zone	4-Zone
Zone Circuits			
Number of Zones		2	4
Devices per Zone		30 Detectors/Manual Call Points	
End of Line Termination		EOLM-1 Only	
Sounder Circuits			
Number of Sounder Circuits		2	2
Maximum Loading		300mA total (share)	800mA total (share)
Fuse Protection		400mA Polyswitch (PTC2, PTC3)	1.1A Polyswitch (PTC2, PTC3)
End of Line Termination		6K8 resistor	
Unmonitored Outputs			
Fire/Fault Relay	Type	Volt-Free, Change Over Contacts	
	Rating	5 Amps @ 30V dc	
	Fuse	5 Amp Glass Fuse (F2)	
	Located	Main board	
	Mode	Configurable as Fire or Fault Relay	
Fire Relay	Type	N/A	
	Rating	N/A	
	Fuse	N/A	
	Located	N/A	
	Mode	N/A	
Auxiliary Output	V	24V dc	
	Imax	30 mA	
	Fuse	Polyswitch (PTC5)	
	Located	Main board	
Unmonitored Inputs			
Class Change		Open Circuit = Normal Panel Operation Short Circuit = Activate All Sounders	
Communication Ports			
Repeater Port	Type	RS485	
	Nodes	Cascading	
Environmental			
Operating Temperature	°C	-5°C to +40°C	
Relative Humidity	%	75% non-condensing	
IP Rating		IP30	
Mechanical			
Dimensions	mm	332 (W) x 270 (H) x 90 (D)	
Weight	kg	5.2	5.8
Material		PC ABS Front and Rear	
Cabling			
Cable Access		12 x 20mm positions 4 x slots for rear cable entry	
Cable Type		Firetuf FT120 / FP200	
		Cable type 2 core 1.5mm, screened fire rated cable	
Compliance			
Compliance to Standards		EN54 Part 2 CIE and Part 4 PSE, BS5839, part1	

Technical Specifications (cont.)

PSE Specification		2-Zone	4-Zone
Mains Voltage	V ac	230 -10% / +15%	
Number of Batteries*		1	
Voltage	V	12	
Capacity	aH	3.2	
Standby Time		24 hour standby + 30 minute alarm	

EOLM-1 Specification		
Operating Voltage	V	18.75-30.7
Nominal Current	mA	1.4

*NB suffix variants are shipped without battery. Battery can be ordered separately under material code MBAT3A212

Installation and User manual for the conventional range of fire panels

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