

1-4 Zone Fire Alarm Control Panel

Installation Instructions

THIS EQUIPMENT MUST ONLY BE INSTALLED AND MAINTAINED BY A SUITABLY SKILLED AND TECHNICALLY COMPETENT PERSON. THIS EQUIPMENT IS A PIECE OF CLASS 1 EQUIPMENT AND MUST BE EARTHED.
DO NOT CHANGE ANY PANEL CONNECTIONS WITH THE PANEL'S POWER APPLIED (MAINS OR BATTERY POWER).

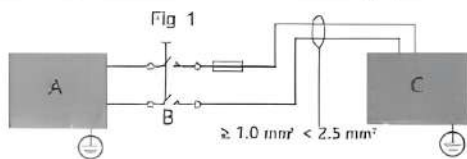
INSTALLATION PROCEDURE

All cables must be installed in accordance with all applicable national, regional or local standards. In the UK this is BS 7671 IEE Wiring Regulations and BS 5839-1, Fire detection and alarm systems for buildings: Code of practice for system design, installation and maintenance. Fire resistant, screened cable should be used throughout the installation and Mains wiring should be segregated from extra low voltage field wiring.

For PERMANENTLY CONNECTED equipment, a readily accessible disconnect device shall be incorporated external to the equipment.

The general requirement for the Mains supply to the panel is fixed wiring, using 3 core cable, (no less than 1mm² and no more than 2.5mm²), or a suitable three conductor system fed from an isolating switched fused spur, fused at 3A. The Mains supply must be exclusive to the panel.

HINT: As an alternative to a switched fused spur, a double pole isolating device (B) may be used in the Mains feed from the Main Distribution Board (A) to the panel (C), providing it meets the appropriate wiring regulations - see Fig 1.

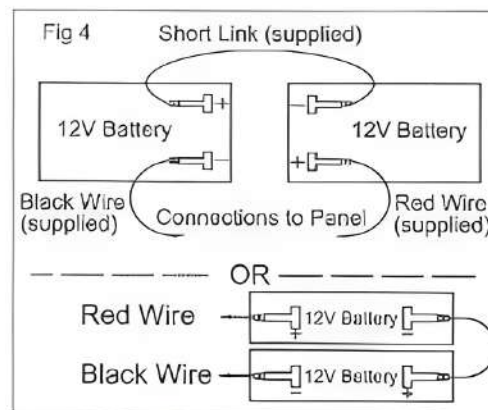
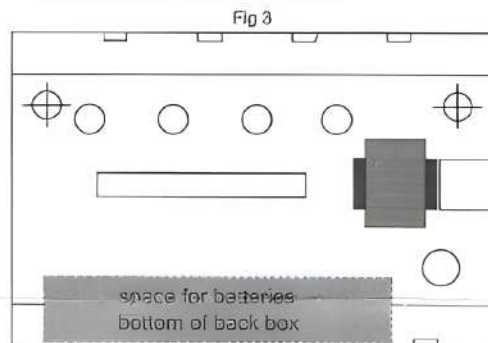
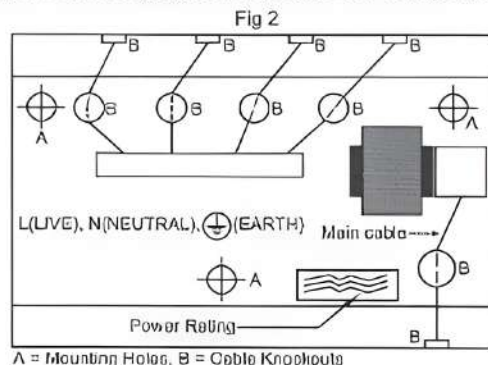


- Remove the panel's lid (disconnect attached loom connector).
- Fit the panel's back box securely to a wall using the mounting holes provided and suitable screw fixings. Remove required number of knockouts and fill holes with good quality cable glands - see Fig 2.
- Gland field cables and terminate all screens to the panel.
- CAUTION: DO NOT use an insulation tester (Megger) with any electronic devices connected as the test voltage will totally destroy the devices.**
- Test field cables and ensure they are fault-free, i.e. check continuity of cable runs (including screens).
- Connect external Mains cable to the panel's fused Mains terminal block (with Mains isolated) - see Fig 2.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

Also, if the battery leads are connected in reverse, the battery fuse (F3) will blow which may damage the panel and invalidate the warranty.

- Position and connect the panel's two internal 12V sealed lead acid batteries (with battery supply isolated) - see Fig 3 & 4.
- Connect zone circuit to the panel - see Fig 5.
- Connect sounder circuits to the panel - see Fig 5.
- Connect ancillary connections to the panel.
- Refit the panel's lid (re-connect loom connector).
- Apply Mains and battery supply to power up the panel.
- The panel should be in normal mode. If not, investigate and rectify any faults indicated on the panel.
- Finally, test the panel - see pages 2 & 3.



TYPICAL ZONE CIRCUIT - Call points wired before detectors
- Detector base diodes not needed.

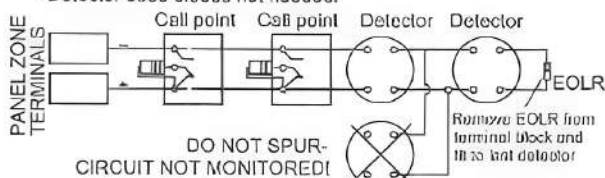
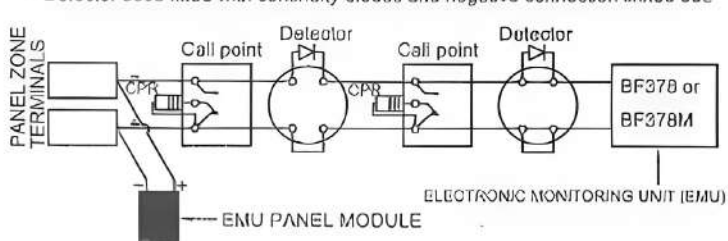
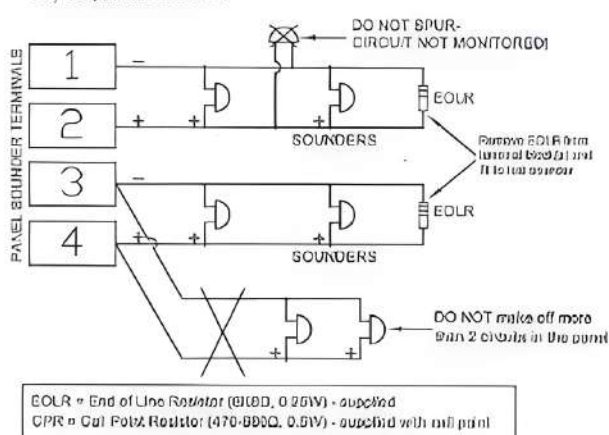


Fig 5

TYPICAL ZONE CIRCUIT - With mixed order call points and detectors
- Detector base fitted with continuity diodes and negative connection linked out.



TYPICAL SOUNDER CIRCUITS
Only use patented sounders!



TESTING THE PANEL

When testing the panel with the panel lid open, always isolate the Mains and disconnect the batteries. The panel can be tested before connecting field wiring. If testing before installation, ensure the end-of-line resistors are fitted in the panel's sounder and detector terminal blocks.

Position and connect two suitable 12V batteries in the panel as shown in Fig 3 and Fig 4 (page 1). When the batteries are connected, the BATTERY/POWER SUPPLY FAULT indicator will light and the warning beeper will sound. Connect the Mains wiring and turn the Mains supply on. The MAINS ON indicator will light, the BATTERY/POWER SUPPLY FAULT indicator will go out and the warning beeper will silence (providing the batteries are not flat).

WITH THE KEYSWITCH AT NORMAL POSITION

The MAINS ON indicator is lit. No other indicators are lit. No sounders are active. The push buttons are inoperative.

TURN THE KEYSWITCH TO ARM CONTROLS POSITION

Note: None of the panel's push buttons are operative unless the key switch is in the ARM CONTROLS position.

Press RESET. The ZONE FAULT and internal OPEN CIRCUIT FAULT indicators will light and the warning beeper will sound. The MAINS ON indicator will remain lit. All the other indicators will NOT light. Release the push buttons and the panel will return to normal.

TEST THE POWER SUPPLY MONITORING CIRCUIT

Switch off the Mains. The BATTERY/POWER SUPPLY FAULT indicator will light, the MAINS ON indicator will extinguish, and the warning beeper will sound. Press SILENCE ALARM/FAULT SOUNDERS and the warning beeper will silence but the BATTERY/POWER SUPPLY FAULT indicator will remain lit. Reconnect the Mains and after a short time the panel will revert to normal.

Disconnect the battery. THE BATTERY/ POWER SUPPLY FAULT indicator will light and the warning beeper will sound. Reconnect the battery and after a short time the panel will revert to normal (i.e. only the MAINS ON indicator light on). Note: This test should be carried out with a set of new and fully charged batteries - deteriorated cells will show a fault even when connected and charged up.

TEST THE SOUNDER MONITORING CIRCUITS

DO NOT carry out this test with the ZONE FIRE indicator lit as sounder fuses F1 & F2 could blow. Ensure the end -of-line resistor is connected across each of the sounder circuits on terminals 1 & 2, 3 & 4. Short the sounder terminals 1&2. The SOUNDER FAULT indicator will light and the warning beeper will sound.

Press SILENCE ALARM/FAULT SOUNDERS and the warning beeper will silence but the SOUNDER FAULT indicator will stay on. Remove the short and the panel will revert to normal. Open circuit the sounder terminals 3 & 4 by disconnecting one leg of the end-of-line resistor. The SOUNDER FAULT indicator will light and the warning beeper will sound. Press SILENCE ALARM/FAULT SOUNDERS and the warning beeper will silence but the SOUNDER FAULT indicator will stay on. Remake the circuit and the panel will revert to normal.

TEST THE DETECTOR MONITORING CIRCUIT

Make sure an end-of-line device (EOLD) is connected across the zone circuit terminals. The EOLD would either be a Resistor or Electronic Monitoring Unit (EMU) and associated Panel Module depending on the installation. Refer to Fig 5 (page 1) & EMU instruction for connections.

The following four conditions can exist on the detector monitoring circuit:

1. **Normal Condition:** Current flows round the detector loop via the EOLD to monitor the wiring.
2. **Open Circuit Fault:** The wiring is broken at some point and the monitoring current can't flow through the EOLD. When the wire connection is ok, and the control panel reports an open fault, you can adjust the potentiometer (VR1) to adjust the voltage of zone.
3. **Short Circuit Fault:** A short circuit exists at some point and too much monitoring current flows.
4. **Fire Condition:** A partial short exists and the monitoring current increases but not enough to show a short circuit fault. Most smoke detectors make a partial short when they are triggered but manual call points and other normally open switches need to have 470 or 680Ω resistors connected in series in order to give a partial short. (Check-Resistor may be built into the Call Point - see Fig 5, page 1.)

OPEN CIRCUIT FAULT TEST

Open circuit the zone circuit terminals by disconnecting one wire of the EOLD. The ZONE FAULT indicator and internal OPEN CIRCUIT FAULT indicator will light. The warning beeper will also sound. Press SILENCE ALARM/FAULT SOUNDERS and the warning beeper will silence but the indicators will stay on. Reconnect the EOLD and the panel will revert to normal.

SHORT CIRCUIT FAULT TEST

Short circuit the zone circuit terminals. The ZONE FAULT indicator and internal SHORT CIRCUIT FAULT indicator will light. The warning beeper will also sound. Press SILENCE ALARM/FAULT SOUNDERS and the warning beeper will silence but the indicators will stay on. Remove the short and the panel will revert to normal.

FIRE CONDITION

Simulate a Fire condition by connecting and activating a Manual Call Point, or by fitting a 470 to 680Ω resistor across terminals of ZONE. The sounder outputs will operate. The ZONE FIRE indicator will light and the warning beeper will sound. Press SILENCE ALARM/FAULT SOUNDERS. The sounder outputs will return to normal but the ZONE FIRE indicator will still be lit and the warning beeper will still sound. Press RESET and the panel will go back into alarm as the Fire condition is still present. Remove the Fire condition from the detector loop. Press SILENCE ALARM/FAULT SOUNDERS, then RESET, and the panel reverts to normal.

Notes:

- 1) Pressing RESET when in the unsilenced Fire condition (i.e. Sounder Outputs energised) has no effect. The sounders MUST be Silenced first before Reset is active.
- 2) When the Alarm Sounders are silenced, the warning beeper will sound and can't be silenced.
- 3) Resetting the system from the Silenced Fire state with the fire condition still existing will retrigger the alarm.

EVACUATE

Press EVACUATE. The Sounder Outputs will be energised, the ZONE FIRE indicator will light and the warning beeper will sound. Press SILENCE ALARM/FAULT SOUNDERS and the Sounder Outputs will return to the normal state. The ZONE FIRE indicator will still be lit and the warning beeper will still be active. Press RESET to return the panel to normal state.

TESTING THE SYSTEM

Check each detector and sounder on the system, and check the functions of the panel. Check all circuits for open and short circuit faults. If continuity diodes are fitted remove each head in turn and check that call points are still operative. When testing is complete return the key switch to NORMAL position.

ANCILLARY FACILITIES (Links and internal features are shown in Fig 6 below)

TO REVERT TO SHORT CIRCUIT = FIRE

This facility overrides the short circuit fault monitoring and allows the panel to be used on older installations which do not have Call Point Resistors fitted. It produces a short circuit Fire condition when activated. To enable this facility cut the wire link on the main PCB.

AUXILIARY EXPANSION PLUG (not included)

The panel provides Auxiliary Expansion Inputs and Outputs to interface with external equipment. A "Class Change" input is provided that will activate the alarm sounder outputs from an external command. A Fire output and a Fault output are also provided. Connections are made via the Ancillary Connections. The connections are then transferred to PL2 on the main PCB by a cable.

The Ancillary Connections are as follows:

• Auxiliary Fault Output

PL2 (Pin 1) - This output is normally open circuit. In any Fault condition this output is driven to 24V, enabling a supply to an external load. When all faults are cleared it returns to the normal state.

• External Sounder Activate ("Class Change")

PL2 (Pin 2) - This normally open input when connected to 24V (available from Pin 4 of PL2) will activate the Alarm Sounder circuits. When the signal is removed the sounders are reset. No panel indication is given during the sounder activation.

• Auxiliary Fire Output

PL2 (Pin 3) - This output is normally open circuit. In any Fire condition this output is driven to 24V, enabling a supply to an external load. When the panel is Reset it returns to the normal state.

• 24V Supply

PL2 (Pin 4) - Supply for use with "Class Change" input.

• 0V Available from Sounder Terminals 1 or 3

Supply for use with Auxiliary Fire and Fault Outputs.

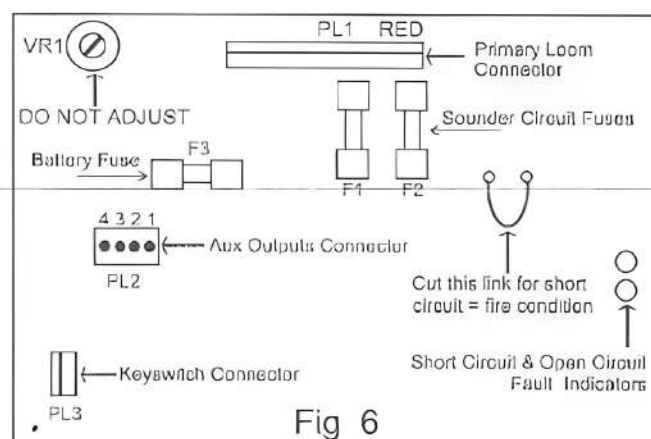


Fig 6

TECHNICAL SPECIFICATION

CONTR.

- RESET
- SILENCE/ALARM/FAULT SOUNDERS
- EVACUATE

INTERNAL

- Revert to short circuit=fire(no resistors in Call Points)

EXTERNAL INDICATORS

- MAINS ON
- ZONE FIRE
- ZONE FAULT
- FAULT
- BATTERY / POWER SUPPLY FAULT

INTERNAL INDICATORS

- OPEN CIRCUIT ZONE FAULT
- SHORT CIRCUIT ZONE FAULT

OUTPUTS

- 2 sounder circuits (Alarm relay contacts can be obtained by connecting an RLP-24 relay to a sounder circuit).
- Latching Auxiliary Fire Output-24V DC 30mA max., drives one RLP-24 relay to control door holding magnets
- Auxiliary Fault Output - 24V DC 30mA max., drives one RLP-24 relay.

POWER SPECIFICATION			PARAMETER		
MAINS SUPPLY VOLTAGE	FREQUENCY	RATED CURRENT	AC 220-230V	50 Hz / 60 Hz	130 mA
INTERNAL POWER SUPPLY			DC 27V nominal		
LINE FAULT MONITORED FOR OPEN CIRCUIT			YES		
TOTAL OUTPUT CURRENT LIMITED TO			400 mA		
AUXILIARY POWER OUTPUT			DC 27V nominal		
MAINS SUPPLY MONITORED FOR FAILURE			YES		
BATTERY CHARGER MONITORED FOR FAILURE			YES		
BATTERIES MONITORED FOR DISCONNECTION/FAILURE			YES		
DETECTOR CIRCUIT SPECIFICATION					
NUMBER OF CIRCUITS			1~4		
LINE FAULT MONITORED FOR OPEN CIRCUIT			YES		
LINE FAULT MONITORED FOR SHORT CIRCUIT			YES (can be disabled)		
LINE FAULT MONITORED FOR DETECTOR REMOVAL			Yes, if End of Line Monitoring Unit fitted in place of End of Line Resistor		
END OF LINE RESISTOR (SUPPLIED)			6.8K Ω , 5% tolerance, 0.25W (color code - blue, grey, red, gold)		
DETECTOR CONTINUITY DIODES			Silicon 1N4001 or Schottky type (required if End of Line Monitoring Unit fitted)		
CALL POINT RESISTOR (NOT SUPPLIED)			470 to 680 Ω , 0.25 or 0.5 W		
MAXIMUM NUMBER OF SMOKE/HEAT DETECTORS PER ZONE			20 (based on a total detector current of 2mA; each detector consuming 100uA). Note: if End of Line Monitoring unit is fitted, for correct operation max. voltage drop must not exceed 12 volts.		
MAXIMUM NUMBER OF MANUAL CALL POINTS PER ZONE			No limit		
SOUNDER CIRCUIT SPECIFICATION					
NUMBER OF CIRCUITS			2		
END OF LINE RESISTOR (SUPPLIED)			6.8K Ω , 5% tolerance, 0.25W (color code - blue, grey, red, gold)		
LINE FAULT MONITORED FOR OPEN CIRCUIT			YES		
LINE FAULT MONITORED FOR SHORT CIRCUIT			YES		
OUTPUTS FUSED AT			400 mA		
MAXIMUM TOTAL OUTPUT CURRENT (ALL OUTPUTS)			400 mA		
MAXIMUM NO. OF BELLS @ 25mA EACH			16		
MAXIMUM NO. OF ELECTRONIC SOUNDERS @ 20mA EACH			20		
FUSE - ALL FUSES COMPLIANT TO IEC (EN 60127 PT2)			These quantities are examples only. Divide 400 by the consumption of each sounder/bell in mA to calculate the maximum number.		
MAINS TERMINAL BLOCK			200 mA T 20 mm		
SOUNDER OUTPUTS (F1,F2)			400 mA F 20 mm		
BATTERY FUSE (F3)			1.0 A F 20 mm		
AUXILIARY FIRE AND FAULT OUTPUTS					
OUTPUT TYPE			Intended to drive external 24 V relays.		
MAX. SOURCE CURRENT			30 mA (relay resistance must be greater than 800 Ω and relay must have "back EMF" diode fitted).		
DOOR RETAINING MAGNETS			Use a RLP-24 relay driven from the Latching Fire Output. <u>DO NOT</u> USE PANEL POWER SUPPLY AS YOU WILL DRASTICALLY REDUCE BATTERY STAND-BY TIME.		
CONNECTION BLOCK					
LARGEST ACCEPTABLE CONDUCTOR SIZE			2.5 mm ²		
SMALLEST ACCEPTABLE CONDUCTOR SIZE			0.75 mm ²		
PHYSICAL					
ENCLOSURE (WIDTH * HEIGHT * DEPTH)			275*200*75 mm		
BATTERY VOLUME DIMENSIONS (WIDTH * HEIGHT * DEPTH)			170*70*65 mm (will accept typically 1.2 or 2.0 Ah sealed lead acid batteries)		
WEIGHT (WITHOUT BATTERIES)			2.3 Kg		
IP RATING (to EN 60529)			IP30 (when correctly installed)		
ENVIRONMENTAL					
OPERATING TEMPERATURE			-10°C to +50°C		
HUMIDITY			5% to 95% RH (non-condensing)		

QUIESCENT CURRENT / BATTERY STAND-BY TIME (HRS)

QUIESCENT CURRENT

40 mA (FAULT BEEPER ACTIVE)

25 mA (FAULT BEEPER MUTED)

STAND-BY TIME WITH 1.2Ah BATTERIES

30 hrs (FAULT BEEPER ACTIVE)

48 hrs (FAULT BEEPER MUTED)

STAND-BY TIME WITH 2.0Ah BATTERIES

50 hrs (FAULT BEEPER ACTIVE)

80 hrs (FAULT BEEPER MUTED)

The quiescent currents listed are for the following conditions - Mains Supply failed, detector and sounder End of Line resistors fitted, no other loads supplied by the panel. The battery stand-by times are guidelines only based on the above conditions. Additional loads that increase the quiescent current in the normal state and sounder loads must be considered when calculating stand-by time. Batteries in poor condition greatly reduce stand-by time.

E&OE. No responsibility can be accepted by the manufacturer or distributors of this equipment for any misinterpretation of this instruction, or for the compliance of the system as a whole. The manufacturers policy is one of continuous improvement and we reserve the right to make changes to product specifications at our discretion and without prior notice.