Sigma

K1000 Series 1, 2, 4 & 6 Zone Fire Control Panels

Operation and Maintenance Manual

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SAFETY

IMPORTANT
READ THIS SECTION FIRST!

1.1 Suppliers of articles for use at work are required under section 6 of the Health and Safety at Work Act 1974 to ensure as reasonably as is practical that the article will be safe and without risk to health when properly used.An article is not regarded as properly used if it is used "without regard to any relevant information or advice" relating to its use made available by the supplier.

1.2 This product should be installed, commissioned and maintained by or under the supervision of competent persons according to good engineering practice and:-

i) IEE regulations for the electrical equipment of buildings.
ii) Codes of practice.
iii) Statutory requirements.
iv) Any instructions specifically advised by the manufacturer.

According to the provisions of the act you are therefore requested to take such steps as are necessary to ensure that any appropriate information about this product is made available by you to anyone concerned with its use.

1.3 This equipment is designed to be operated from 220-240V AC mains supplies and is of class I construction. As such it must be connected to a protective earthing conductor in the fixed wiring of the installation.

1.4 Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

INSTALLATION

2.1 Remove the front panel by unscrewing the two Socket screws with a key. This will expose the internal equipment and three fixing holes.

2.2 Place the circuit boards in a safe area for later installation.

2.3 Locate the unit on the wall in the agreed position and mark the fixing points through the dished mounting holes (see annex 2). Drill and fit suitable wall plugs and screw the panel to the wall.

2.4 Use the knockouts provided to make off the cables. Earth or drain wires should be kept as short as is practical and be connected to a metal cable gland making sound electrical contact with the enclosure.

2.5 If additional or larger cable entries are required, any swarf and debris must be cleared from the inside of the equipment. Failure to do this will result in equipment malfunction and could represent a danger to building occupants.

2.6 The mains fuse must only be replaced with a 2 amp fuse conforming to BS:4265.

INSTALLATION - *Continued*

2.7 This equipment is designed to be powered from the 220 - 240V C mains supply. The mains connection must include a protective Earth conductor to the requirements of BS:7671 (see annex 2).

2.8 The mains supply must be from a separate dedicated fused spur labelled **"FIRE ALARMS DO NOT SWITCH OFF".**

2.9 The installation should be carried out by or under the supervision of a competent person and in accordance with the requirements of BS:7671:1992 requirements for electrical installation, BS:5839: Part 1:1988 fire detection and alarm systems for buildings.

2.10 Connection of the 24V battery supply should be carried out with great care and respect. Misconnection or short circuiting of the battery terminals will result in **FIRE**.

2.11 The system fuse F2 should only be replaced with mains and battery disconnected.

FRONT PANEL CONTROLS

3.1 Enable Controls

No Controls are enabled unless the enable controls key is inserted. While the enable controls key is inserted the buzzer will beep every few seconds.

3.2 Silence Alarm Switch

To silence an alarm activated by operation of a detection zone, press the silence alarm button. The alarm silenced indicator will illuminate and the sounders will stop.
To mute the fault buzzer, press the silence alarm switch. The fault buzzer will now beep every few seconds.

3.3 Reset & Lamp Test Switch

All Indicators may be illuminated, for testing purposes, by pressing the reset and lamp test switch. If any Zones are in fire condition, these will reset provided that the silence alarms switch has first been operated and the input signal e.g. Break glass unit has been restored to normal.

3.4 Evacuate Switch

Press the evacuate switch to operate the Sounder Circuits. The Common Fire indicator will be illuminated and the buzzer will sound the alarm tone.

FRONT PANEL INDICATIONS

4.1 Supply Healthy Indicator

Under normal conditions only the green supply healthy indicator is illuminated. The system healthy indicator will extinguish in the event of:-

(1) Mains Failure
(2) Battery Disconnection.
(3) System Fuse Failure
(4) Total Power Failure
(5) Battery Fuse Failure

4.2 System Fault Indicator

The system fault indicator will illuminate under any abnormal condition. Certain conditions may be diagnosed without looking inside the enclosure as follows:-

(1) System Fault on. Supply Healthy off	=	Power failure or system fuse failure.
(2) System Fault on, Zone Fault on	=	Zone O/C or S/C in indicated zone.
(3) System Fault on, Zone test on	=	Zone indicated in test mode.
(4) System Fault on, Disabled Led on	=	Zone indicated in disabled/isolated mode.
(5) System Fault on. Sounder Fault on	=	Sounder Circuit O/C or S/C Fault.

4.3 Alarm Silenced Indicator

The alarm silenced indicator should only be accompanied by one or more steady fire indicators, and indicates that the sounders have been silenced.
Operation of subsequent fire zones or the evacuate switch will extinguish the alarm silenced indicator.

4.4 Zone Fault Indicator

Illumination of a zone fault indicator may mean that one or more trigger devices are inoperative and requires immediate attention.
Zone fault indicators will illuminate in the event of:-

(1) Disconnection or severance of zone wiring
(2) Short Circuit on zone wiring
(3) Removal of a sensor from its base
(4) Disconnection of the end of line monitor resistor, or active end of line unit (LCMU)

4.5 Fire Indicators

Upon detection of a fire the red zone fire alarm indicator will flash to give warning of the area (zone) in fire and the common fire indicator will be illuminated. This will be accompanied by a pulsing buzzer within the control panel and the operation of the sounders.

4.6 Sounder Fault Indicator

The sounder fault indicator and the system fault indicator will be illuminated if a sounder circuit is open or short circuit.

4.7 Zone Test Indicator

The zone test indicator will be illuminated if one or more zones are in zone test mode.

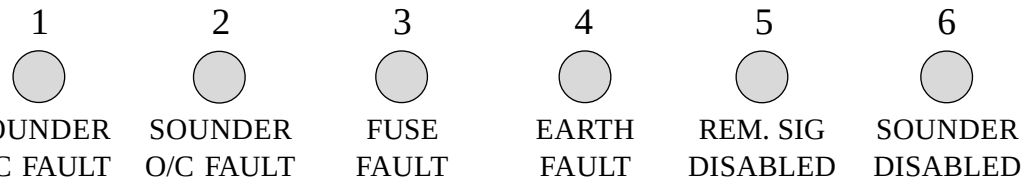
4.8 Disabled Indicator

The disabled indicator will be illuminated if :-
(A) one or more zones are in the disabled mode. This is accompanied by the zone fault indicator.
(B) The Sounder disable or remote signal, disable switch is operated. This Indicator will be accompanied by the system fault indicator.

4.9 Common Fire/ Evacuate Indicator

The common fire indicator will be illuminated if the panel is in an alarm condition or in an evacuate condition.

INTERNAL INDICATORS



5.1 Sounder S/C Fault Indicator
This indicator will illuminate in the event of a short circuit on one of the sounder lines.

5.2 Sounder O/C Fault Indicator
This indicator will illuminate in the event of a open circuit on one of the sounder lines.

5.3 Fuse Fault Indicator
This indicator will illuminate in the event of :-
(A) Auxiliary fuse failure.
(B) System fuse failure.

5.4 Earth Fault Indicator
This indicator will illuminate in the event of a positive or negative earth fault. (i.e. Field wiring connected to earth).

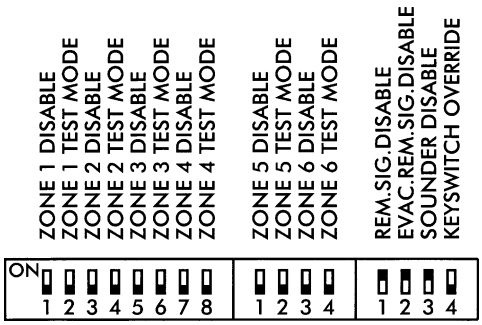
5.5 Rem Fire Sig disabled indicator
This indicator will illuminate in the event of the Rem Fire Sig disable switch being operated.

5.6 Sounder Disable Indicator
This indicator will illuminate in the event of the Sounder disable switch being operated.

INTERNAL CONTROLS

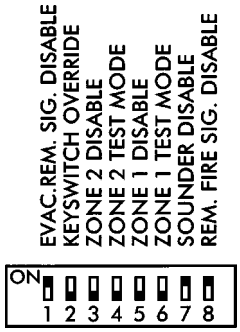
6.1 The panel has an internal DIL Switch, which provides the following functions:-

One zone Sigma
Normal switch positions

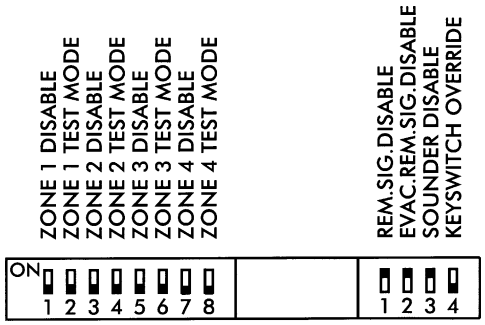


Six zone Sigma
Normal switch positions

INTERNAL CONTROLS - *Continued*



Two zone Sigma
Normal switch positions



Four zone Sigma
Normal switch positions

TERMINAL FUNCTIONS

Smoke Detection Circuits

7.1 One to six smoke detection circuits are provided and supply 28 Volts (+ 5%) for the operation of trigger devices, (smoke detectors or heat detectors). Terminals for the smoke detection circuits are labelled Z1+ and Z1- to Z6+ and Z6- for positive and negative connections respectively. It is important to observe the polarity of these connections for correct operation of the system.

7.2 A 6K8 end of line resistor must be fitted to the last device on the smoke detection circuit for correct operation of the monitoring functions. Alternatively for greater system integrity a line continuity monitoring unit (LCMU) may be fitted.

Sounder Circuits

8.1 Two sounder circuits outputs are provided and are labelled (S1 +&-) &(S2 + &-). These outputs will operate together upon activation of a smoke detection zone, operation of the evacuate switch or the remote Alarm input. Each sounder circuit is protected by a 500mA fuse.

8.2 Both outputs are monitored against open and short circuit faults in the field wiring. Any such faults are annunciated by the front panel system fault indicator immediately.

8.5 The sounder circuit is normally fitted with a 20K end of line monitoring resistor.

Fault VFCO Contacts

9.1 Volt free contacts are provided for remote signalling or plant shutdown on the occurrence of any fault condition.

Fire VFCO Contacts

10.1 Volt free contacts are provided for remote signalling or plant shut down on the occurrence of any fire condition or evacuate condition.

10.2 All contacts are rated at 30V DC 1 Amp maximum and should under no circumstances be used to switch greater voltages or currents (see annex 3).

TERMINAL FUNCTIONS - *Continued*

Remote Alarm Input

11.1 The sounder circuits may be operated remotely via the remote alarm input.

11.2 The input is labelled (Rem AL I/P) Connection of the AUX common negative to this point will operate the sounders. This input is non latching.

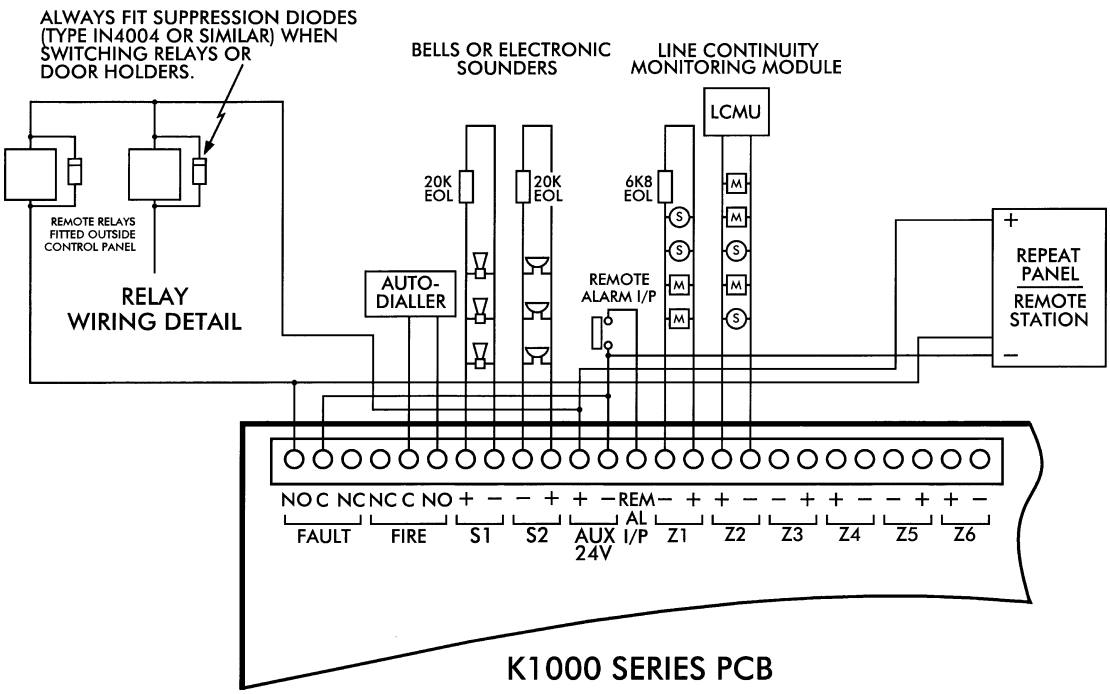
11.3 The AUX Common Negative Terminal is normally pulsing at around 2 second on, 2 second off. This will pulse the Sounders at this rate if connected to the remote alarm input. If continuous sounders (Evacuate) is required then link R143 should be removed as indicated on annex 3.

Auxiliary 24V Output (Max. O/P Current = 100mA)

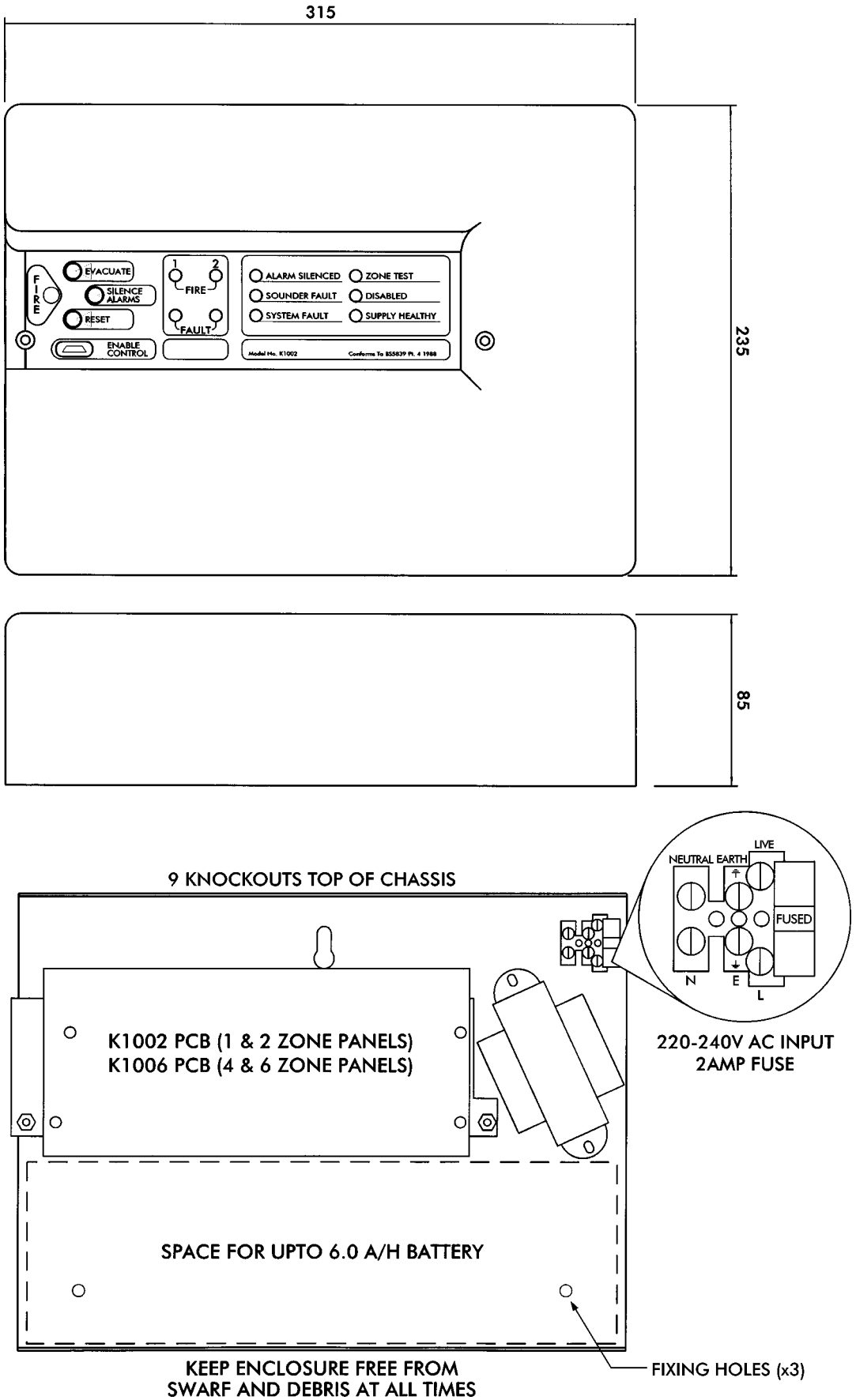
12.1 The auxiliary 24V output is provided to power any additional equipment which is fitted to the system such as remote shutdown relays. This output is individually fused to protect the main system fuse in the case of inadvertent overloading of the auxiliary 24V output.

ANNEXE 1

Typical wiring connections & use of Aux.24V output

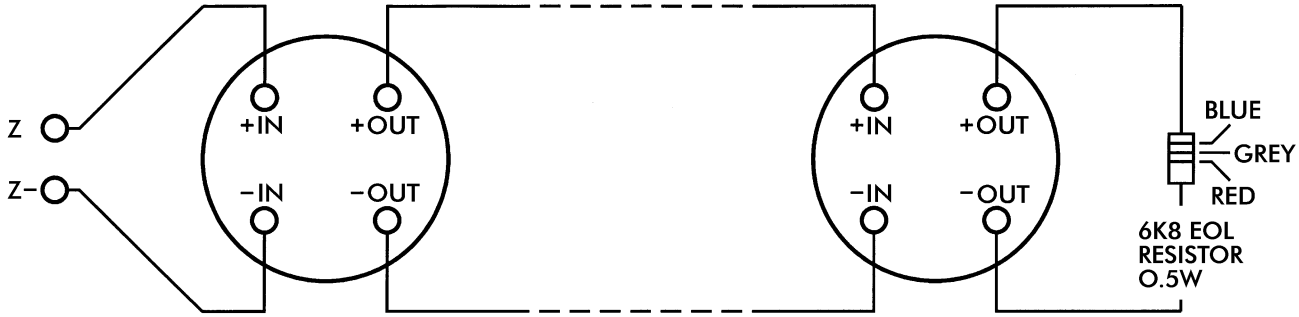


ANNEXE 2

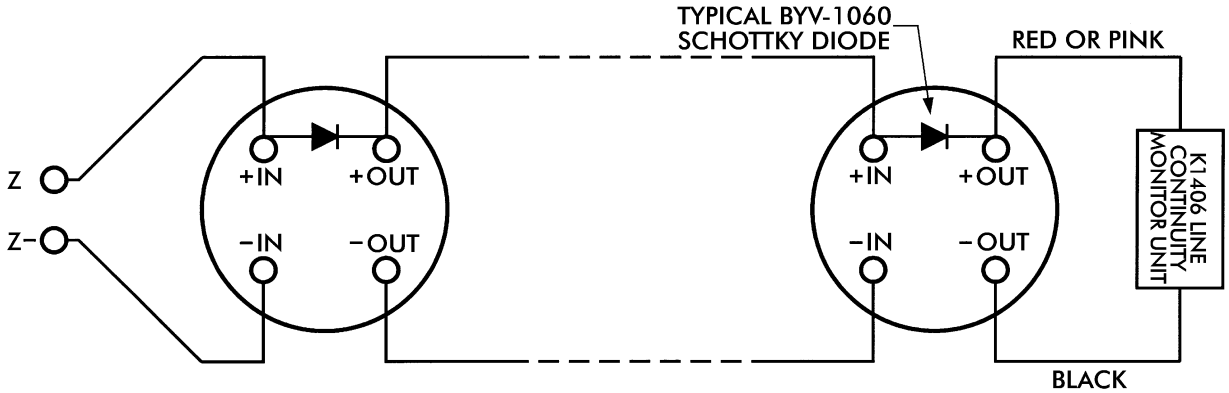

315
235
85
EVACUATE
SILENCE ALARMS
RESET
ENABLE CONTROL
FIRE
1
2
FIRE
FAULT
ALARM SILENCED
ZONE TEST
SOUNDER FAULT
DISABLED
SYSTEM FAULT
SUPPLY HEALTHY
9 KNOCKOUTS TOP OF CHASSIS
K1002 PCB (1 & 2 ZONE PANELS)
K1006 PCB (4 & 6 ZONE PANELS)
SPACE FOR UPTO 6.0 A/H BATTERY
KEEP ENCLOSURE FREE FROM
SWARF AND DEBRIS AT ALL TIMES
LIVE
NEUTRAL
EARTH
FUSED
N
E
L
220-240V AC INPUT
2AMP FUSE
FIXING HOLES (x3)

ANNEXE 3

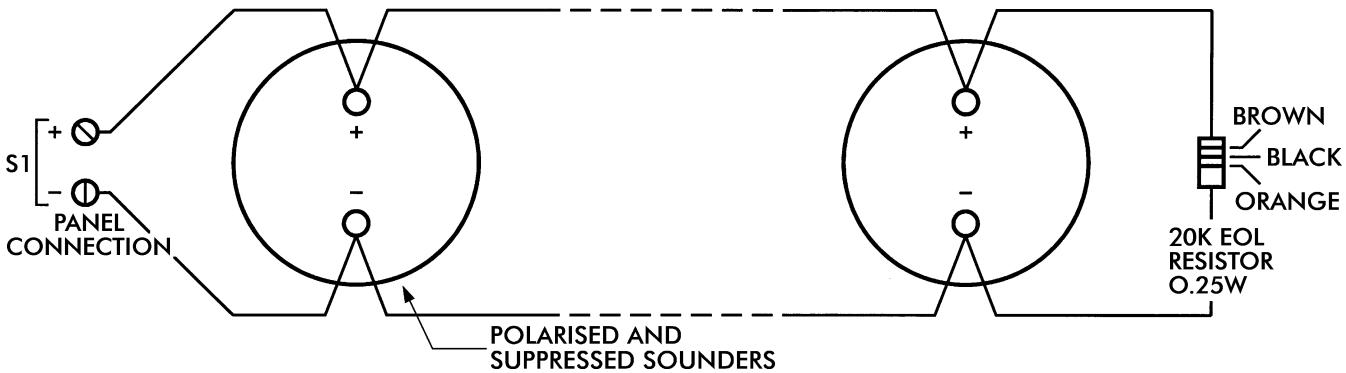
Resistor monitoring wiring. Standard bases are used. Removal of a detector indicates fault but detectors beyond the removed one will be inoperative.



Line continuity unit wiring. Diode bases are used. Removal of a detector indicates fault and detectors beyond the removed one remain operative.



Connections to sounders.



ANNEXE 4

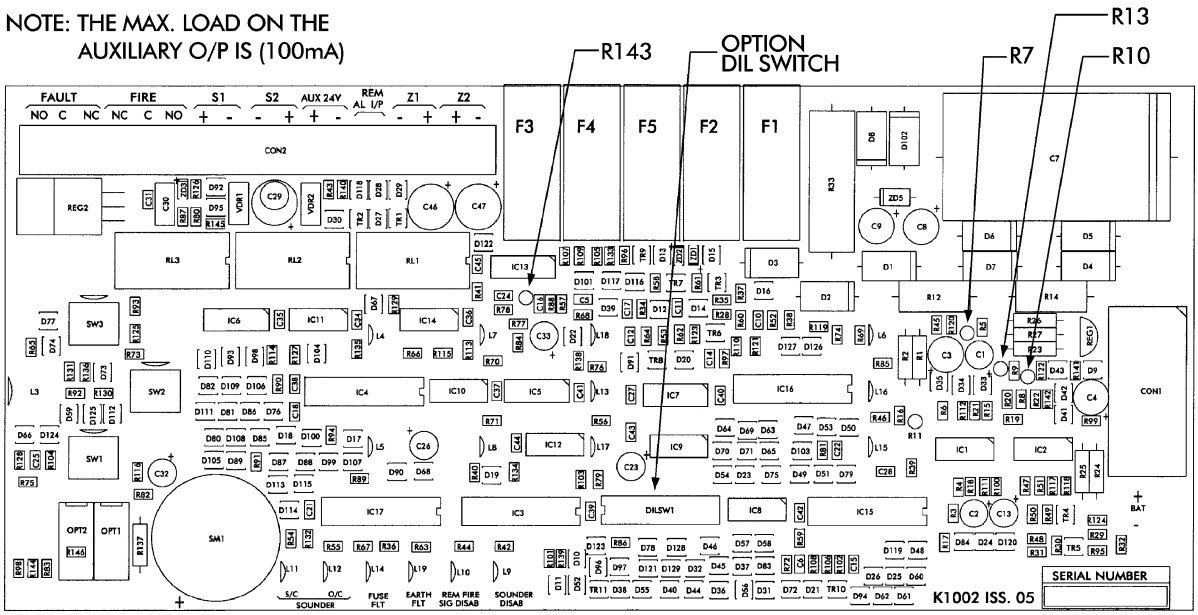
K1002 PCB layout - 1 & 2 zone Sigma, fuse & option resistor locations

F1 - BATTERY FUSE (500mA)
F2 - SYSTEM FUSE (2A)
F3 - AUXILIARY 24V OUTPUT FUSE (250mA)
F4 - SOUNDER 1 FUSE (500mA)
F5 - SOUNDER 2 FUSE (500mA)

PULSING AUX.24V O/P = R143 IN
CONTINUOUS AUX.24V O/P = R143 OUT

REMOVE RESISTORS FOR USE WITH IS BARRIERS
Z1 = R11 & R7 Z2 = R13 & R10

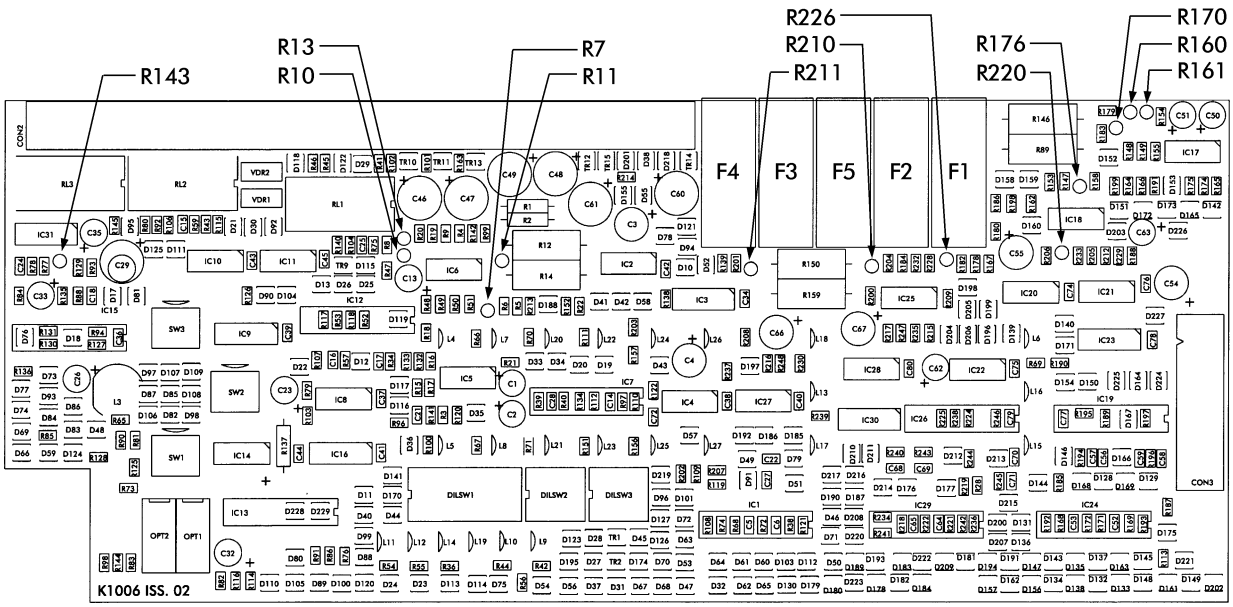
NOTE: THE MAX. LOAD ON THE AUXILIARY O/P IS (100mA)



K1006 PCB layout - 4 & 6 zone Sigma, fuse & option resistor locations

F1 - BATTERY FUSE (500mA)
F2 - SYSTEM FUSE (2A)
F3 - AUXILIARY 24V OUTPUT FUSE (200mA)
F4 - SOUNDER 1 FUSE (500mA)
F5 - SOUNDER 2 FUSE (500mA)

PULSING AUX.24V O/P = R143 IN
CONTINUOUS AUX.24V O/P = R143 OUT

REMOVE RESISTORS FOR USE WITH IS BARRIERS
Z1 = R11 & R7 Z2 = R13 & R10 Z3 = R161 & R170
Z4 = R160 & R176 Z5 = R211 & R220 Z6 = R210 & R226

NOTE: THE MAX. LOAD ON THE AUXILIARY O/P IS (100mA)