SYSTEM 32000

Analogue Addressable Fire Detection and Alarm System

Commissioning Manual

Version 3.4X
32399 Issue 2
April 1997
with Update 10_97

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Preface

This second issue of the manual with *10/97 Updates* cover version 3.4X features of system 32000, these are the new local and network fire plans, plus version 1.03 commissioning tool.

The first issue of the manual contained information compatible with version 3.3X software.
The manual is a guide to be read in conjunction with the recommendations in *BS5839:Part 1:1988,* which is the *code of practice for Fire detection and alarm system for buildings.* Where appropriate the site specific project specification should also be read.

Associated Documents

32199 Applications Manual for 32000 system
32299 User pack- for 32000 system
32499 Operating Manual for 32000 system

Conventions

NOTE: *A note highlights important text that is normally hidden in the main text.*

CAUTION: *A caution is given to prevent damage to equipment.*

WARNING: *A warning is given to advise of dangerous conditions that may result in injury or death.*

Issue Record

Section	Issue	Date	Comments
Prelims &1	2.1	10/97	The issue 2.1 (Update 10/97) contains information compatible with version 3.4X system software to cover the new fire plans and version 1.03 commissioning software tool
2	2	4/97	
3	2.1	10/97	
4-8	2	4/97	
9&10	2.1	10/97	
11&12	2	4/97	This first issue covered the Commissioning of 32000 systems with version 3.3X system software.
13 & App A	2.1	10/97	
App-B	2	4/97	
Parts	5	10/97	

Customer feedback

If you have any comments on this manual, then please provide them below. Post completed sheet to the address overleaf or pass on to your area sales representative.

Thanks

Your name:_____

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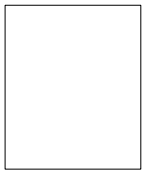
Manual number and title_____



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Pre-visit checks

Recommendation on commissioning the system

☐ This manual has been written to cover the needs of the end users who are responsible for the commissioning of System 32000 fire alarm system.

☐ The manual makes recommendations on the order in which the standalone and network systems should be commissioned.

Preparation

☐ Ensure accurate *as fitted wiring drawings* are available, 2 copies.

☐ Any damaged equipment on site has been noted for replacement.

☐ Ensure access will be provided to system equipment.

☐ The installer *electrical contractor* will be in attendance until the installation is proved.

☐ The site contact or representative will be available during the visit.

☐ Also see the commissioning software tool part of this manual.

☐ Carry spares such as:

- MCP glasses
- MCP test key
- equipment door keys
- printer paper.

Pre-commissioning

☐ Check the installation of fire alarm equipment with reference to the most recent *as fitted wiring drawings*.

☐ Get the feel of the operating condition of areas on site and:

- action the installer to carryout any rectification work plus
- report discrepancies for administration purposes.

☐ Where the operating condition of an area is not right for the equipment installed, then an appropriate replacement action must be taken.

☐ Ensure the equipment is installed in accordance with the appropriate standards, see project specification.

Points worth remembering

> ***WARNING:*** *Take appropriate action to guard against the risk of equipment having exposed live mains supply. Hazardous voltage remains even after the operation of protection fuse.*

EMC & LVD guidelines

☐ See the installation manual.

Mains supply

☐ The mains supply to the fire alarm control and indicating equipment must be via an *unswitched fused spur unit*.

5A - Control panel
3A - Repeat panel & Mains powered interface unit

☐ Ensure that the mains supply cable enters any mains powered equipment through a dedicated cable entry, located adjacent to the mains terminal block and is also segregated from any loop wiring.

☐ Each fire alarm equipment's' fused spur units must be from a *dedicated switch or protective device* at the local mains supply *distribution board*, which should be clearly labelled:

'FIRE ALARM - DO NOT SWITCH OFF'.

Earth leads

☐ All *earth leads* supplied with the system equipment must be securely fitted to maintain earth continuity and comply with EMC regulations.

Parts for later installation

☐ All unused parts should be retained in their respective container for safe keeping until required.

Loop wiring

☐ The loop cable should have been connected to the appropriate terminals at each device, as shown in the installation manual in accordance with the *as fitted wiring drawings.* The final loop End connections to the control panel are made during commissioning.

Enclosure

☐ Access into equipment enclosure is usually by means of opening an outer door and in some cases an inner door.

Unattended equipment

☐ Where equipment is to be left unattended, then it is important to secure its door and cover for safety.

Copper fingers

☐ Copper fingers are conductive spring like strips fitted in-between two metal assemblies, for example in-between door and backbox. This is done to shield against electromagnetic and radio frequency interferences.

> ***CAUTION:*** *Take care not to damage or remove the copper fingers, as this will render the apparatus non compliant with EMC regulations.*

☐ Ensure the copper finger strips are intact and no damage has occurred. Damaged fingers will re-introduce the gap to let in/out interferences.

Static precaution

☐ Anti-static procedures should be followed when handling *static sensitive boards.*

> ***CAUTION:*** *The discharge of static electricity can damage or degrade sensitive electronic components on printed circuit board.*

> ***WARNING:*** *Anti-static procedures must* ***not*** *be carried out on live equipment.*

Removal and disconnections

☐ Any disconnections of cables or removal of parts of an assembly must be replaced and restored.

Battery

☐ To prevent damage to battery and equipment, the terminals of the battery must not simultaneously touch any conductive part of the equipment enclosure.

☐ When powering-up an equipment always connect the mains supply before the battery supply. The power-down should be done in the reverse order.

> ***NOTE:*** *A small arcing may occur when the battery circuit is connected to the control and indicating equipment.*

Warning Buzzer

During the commissioning of the system it may be necessary to switch *Off* the warning buzzer in the control panel.

> ***NOTE:*** *It is important to ensure that the buzzer is switched On for normal operation after commissioning.*

The buzzer can be switched using the **[Test Eng]** menu in the *engineering mode.*

Fire plan

☐ The system should be tested in accordance with the project specification.

Sensor cover

☐ Each fire sensor should have been fitted with a *dust cover* during installation. The cover should be removed from each sensor after the panel loops have been satisfactorily powered-up and allocated.

Site specific installation

☐ Plant equipment interfaced to the system should be tested to the project specification.

Commissioning mode

☐ The control panels engineering facility will allow the system to operate in the commissioning mode. It is important to switch *Off* the mode after commissioning is over, to ensure the system operates normally.

Software version

☐ The products refereed to in this document are compatible with version 3.4X software. It is important check that the appropriate card and chips bear the correct software version.

Control panel power-up

Pre-power requirement

> ***NOTE:*** *Ensure all interface equipment on the loop circuit being commissioned have been* ***set up*** *before Control panel is powered-up, see Interface and Panel outstations part of this manual.*

Pre power-up preparation

☐ It is important to make *responsible persons* on site aware that the system is being commissioned.

1-2 Loop panel assembly

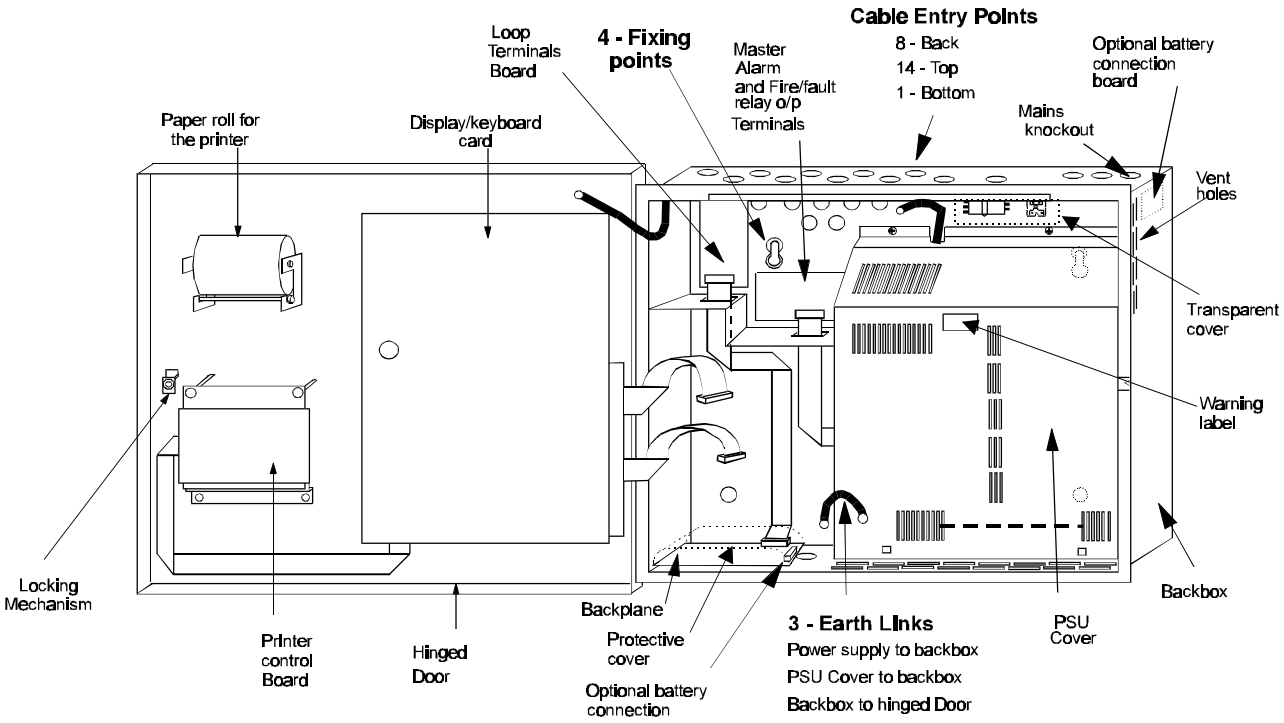

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Figure 2-1 Panel assembly

Visual checks

☐ Carry out visual inspection for obvious damage to the panel.

Paper roll

☐ Open the panel door and remove the elastic band used to secure the printer paper roll.

> ***CAUTION:*** *Ensure there is no damage to the copper fingers fitted to the* ***door*** *and* ***power supply cover.***

Power supply cover

☐ Remove the **earth lead** fitted from the *power supply cover to the back box* **.**

☐ Remove the *power supply cover* by removing the three fixing screws and loosening the two captive screws located at the top of the cover.

Power supply Unit

☐ Fit the *power supply unit* inside the panel enclosure. Use the five fixings provided.

Mains cable

☐ Ensure the internal mains supply wires from the filter to PSU terminal block are correctly fitted.

Internal cable connections

☐ Fit the plug-in end of the *battery cable assembly* to the *power supply board,* at P3 and P4.

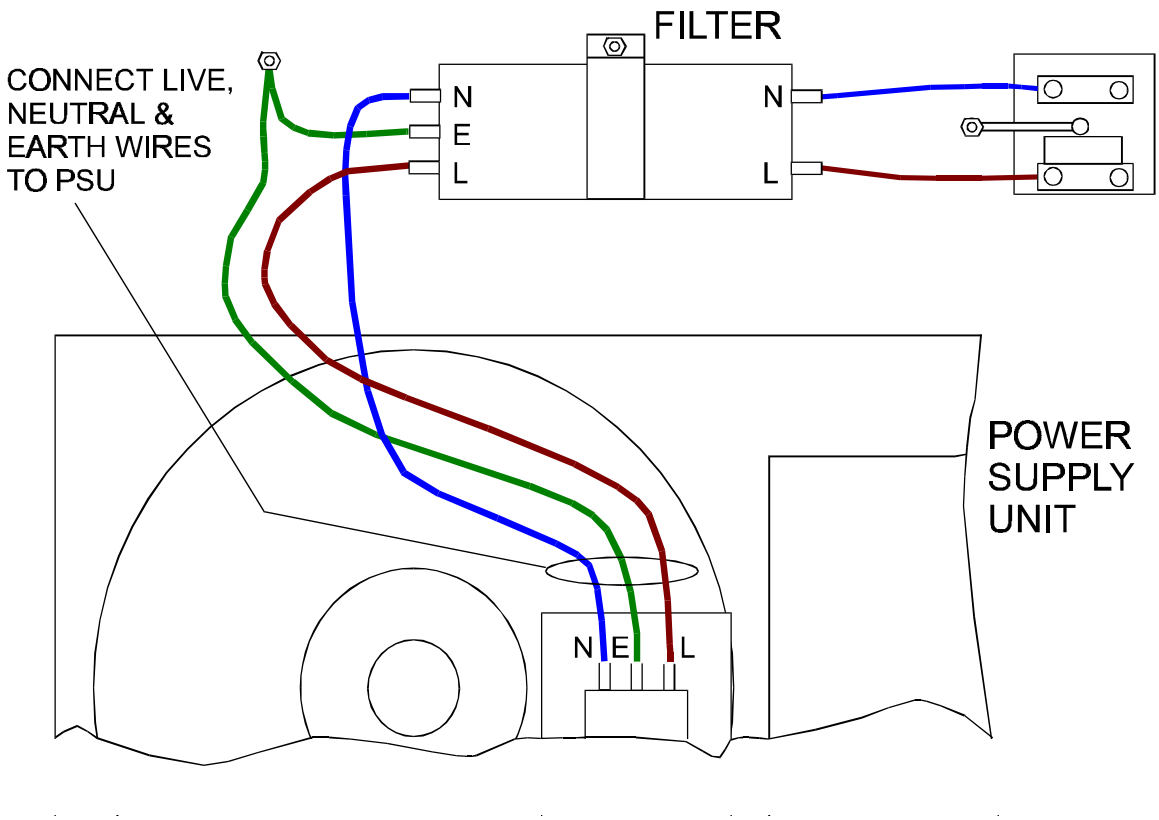

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Figure 2-2 Internal mains wiring

NOTE: *Where top battery cable entry is being used, remove the battery board from the panel to make the internal connection and then refit the board.*

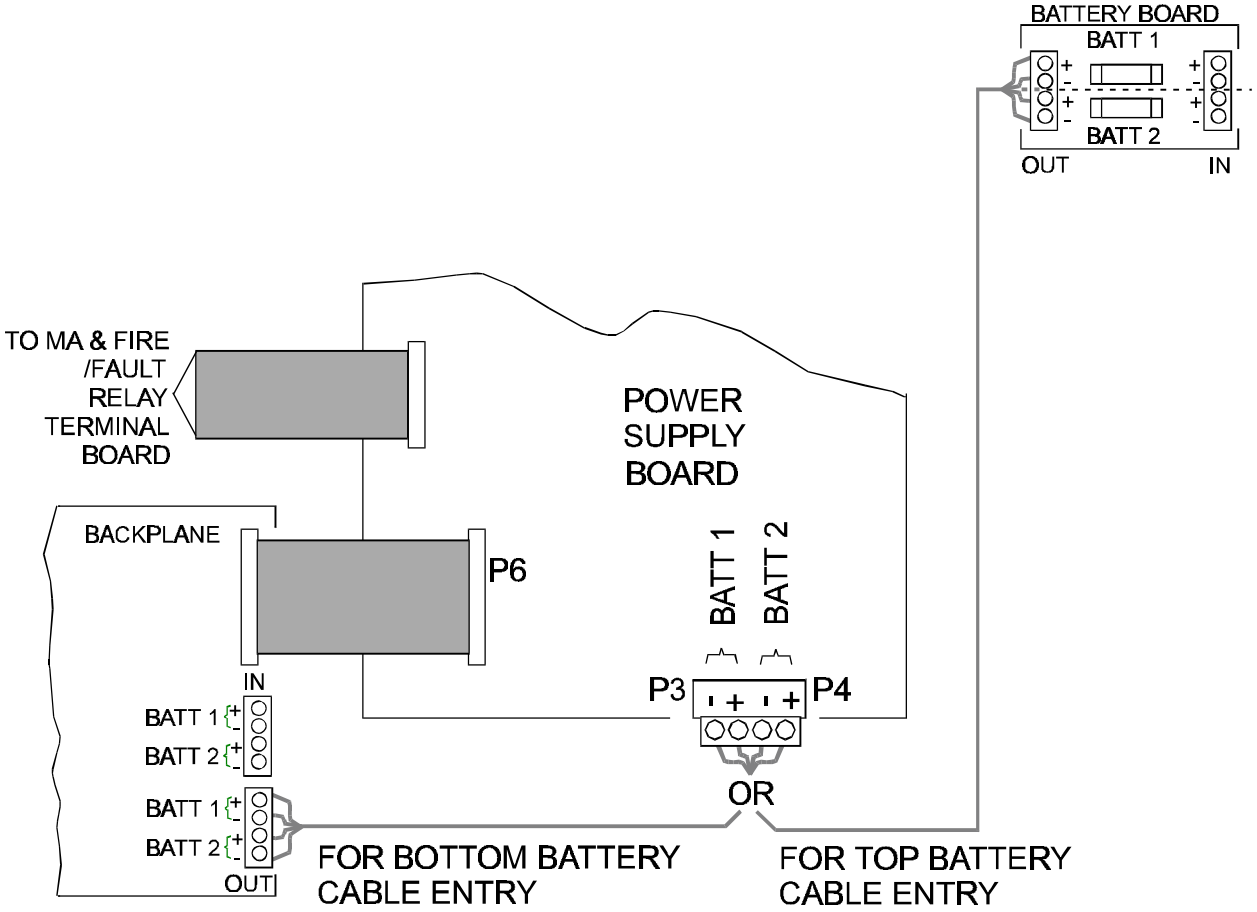

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Figure 2-3 Connecting the battery cable assembly

☐ Route the *battery cable assembly* for either top or bottom cable entry and then make the internal connections. Ensure the cable are not pinched by the PSU cover.

☐ Ensure the ribbon cables from *MA & Fire/fault relay terminal board* and *backplane board* are connected to the power supply board.

☐ Re-fit the power supply cover.

Paper roll

☐ Upon completion of all commissioning work a new paper roll should be fitted. For paper installation see diagram on the printer board cover.

Card Slot & Socket Positions

> ***CAUTION:*** *Completely power-down the control panel before removal and refitting of cards inside the panel.*

> ***CAUTION:*** *Always power-down the battery supply before the mains supply. The power-up should be in the reverse order.*

Card installation

☐ Remove the transparent *dust cover* fitted to the card connectors in the panel.

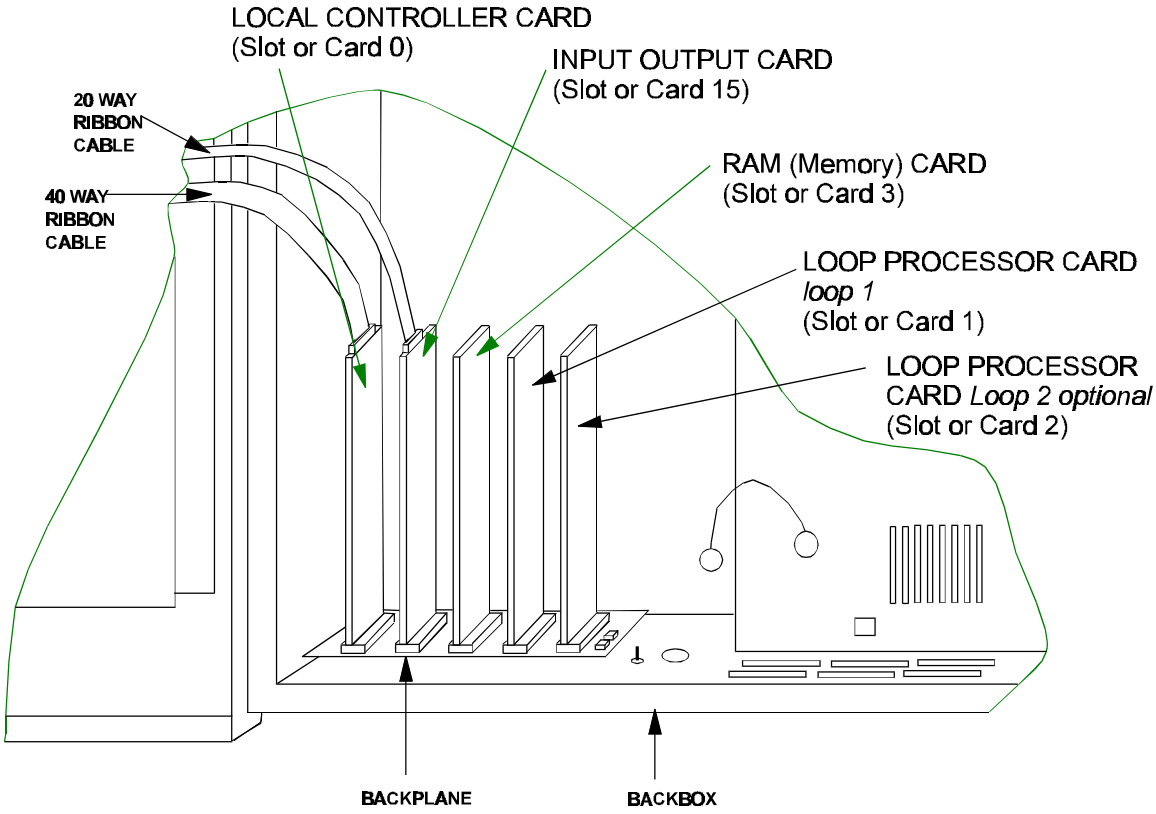

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Figure 2-4 Cards and position of installation

> ***CAUTION:*** *When installing the cards into the backplane always use anti static work procedures.*

> ***WARNING:*** *Do not use anti static procedures on live equipment.*

☐ Ensure all cards installed are firmly seated into the respective socket and engaged into the respective card guide on the backbox.

Local controller card (LCC)

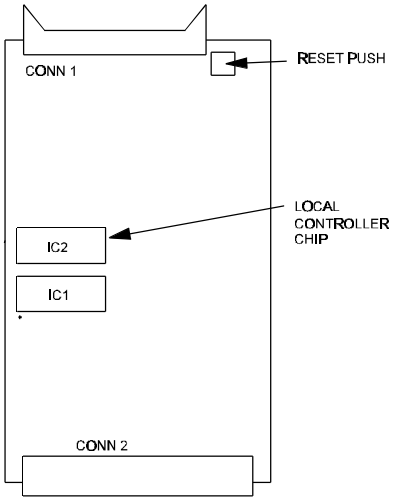

Figure 2-5 LCC card main components

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- ☐ Ensure IC2 holds the correct version of *local controller* software.
- ☐ The connector CONN 1 accepts a 40-way plug on a ribbon cable from the Display and keyboard card fitted to the panel door.
- ☐ The *reset push* button SW1 when pressed, provides a *warm reset* to all the cards in a control panel.

> ***CAUTION:*** *Access to the* ***reset button*** *on the LCC card is difficult. When necessary use a non conductive tool to press the reset button.*

Loop processor card (LPC)

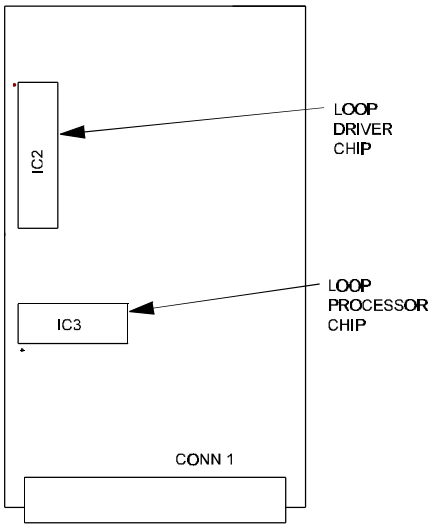

Figure 2-6 LPC card main components

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- ☐ Ensure IC2 and IC3 holds the correct version of *loop driver and loop processor* software.

Input Output cards (IOC)

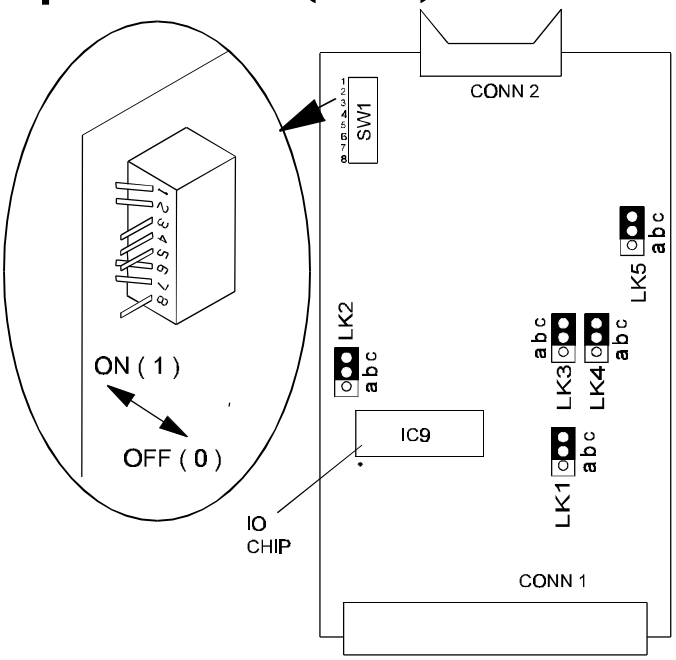

Figure 2-7 IO card components

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- ☐ Ensure IC9 holds the correct version of *input output* software.
- ☐ The connector CONN 2 accepts a 20-way plug on a ribbon cable from the Display and keyboard card (DKC).

DIL switches Switches SW1 are factory set for 9600 baud and domain address 6.

	Switch number		Switch number						
Baud rate	1	2	3	4	5	6	7	8	**Domain address**
1200	off	off	off	off	off	off	off	on	1
1800	off	off	on	off	off	off	on	off	2
2400	off	on	off	off	off	off	on	on	3
3600	off	on	on	off	off	on	off	off	4
4800	on	off	off	off	off	on	off	on	5
7200	on	off	on	off	off	on	on	off	6
9600	on	on	off	off	off	on	on	on	7
19200	on	on	on	on	on	on	on	on	up to 31

Card settings

For installation in the **control panel** set to the appropriate *panel domain address* and *baud 19200*

For installation in the **network interface** set to the appropriate *network domain address* and *baud 19200* (see network power up part of this manual)

Link settings

NOTE: *The IOC is factory set with all links in position* ***b-c.*** *Normally there is no need to re-configure these links.*

Link	Position	Meaning
LK1	a-b b-c	End station non end station
LK2	a-b b-c	8K EPROM 32K EPROM
LK3	a-b b-c	RS485 RS232
LK4	a-b b-c	RS485 RS232
LK5	a-b b-c	RS485 RS232

Random access memory card

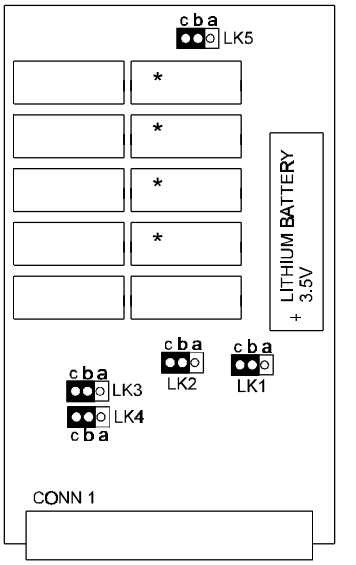

Figure 2-8 RAM card main components

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☐ Also referred to as RAM card or Memory card.

WARNING: *There is a risk of exploding the lithium battery if its terminals are shorted.*

Connect the battery

☐ Connect the lithium battery by placing the link LK5 into position **a-b**. The information stored on the RAM card will be retained in the event of power failure to the control panel.

Capacity

☐ The RAM card capacity is 128Kbyte.

Link Configuration

NOTE: *Do not connect the **battery** on the **RAM card** at this stage (link LK5), until all the panel loop devices have been setup correctly.*

Link	position	meaning
LK1	a-b b-c	RAM EPROM
LK2	a-b b-c	RAM EPROM
LK3	a-b b-c	RAM EPROM
LK4	a-b b-c	RAM EPROM
LK5	a-b b-c	Lithium battery connected Lithium battery disconnected

Checks before panel power-up

> ***NOTE:*** *All loop cables MUST BE left unconnected at this stage of commissioning.*

☐ Ensure the following circuits have been disconnected:

- both loop circuits
- clean contacts
- auxiliary circuits
- master alarms (the end-of-line resistor (22K ohm) may be fitted to inhibit a fault indication)
- RS232/RS485 (note a network is commissioned after individual systems are fully commissioned).

☐ Ensure all cards and appropriate cables have been securely fitted.

Panel battery and connection details

☐ Locate the batteries inside the external battery box.

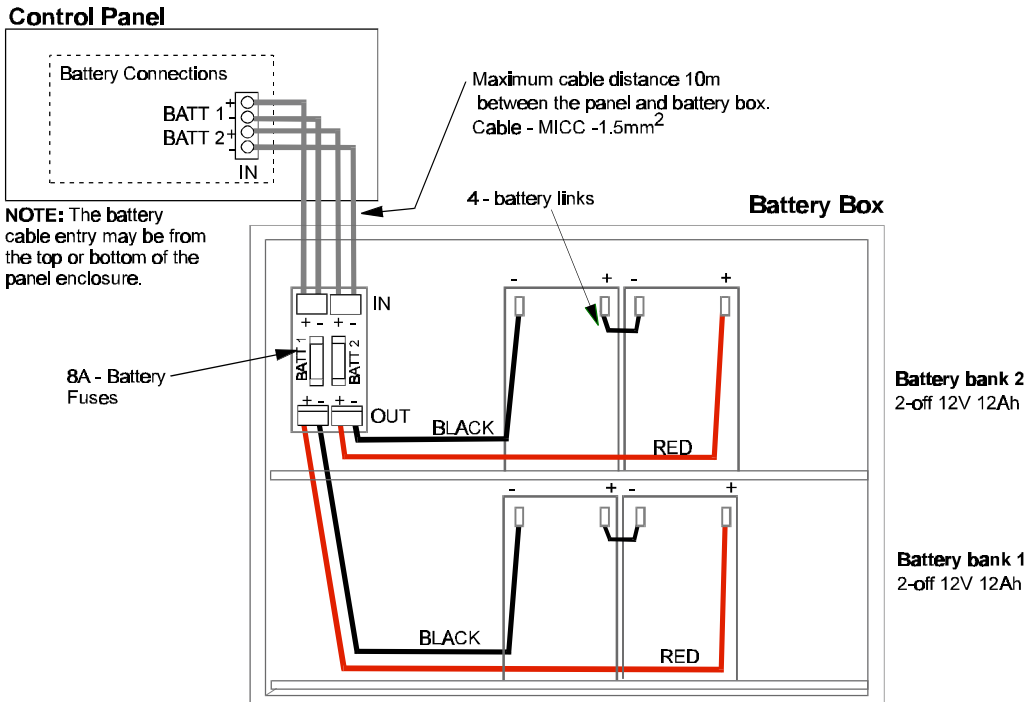

Figure 2-9 Battery connection

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☐ Install the battery cable harness.

> ***NOTE: Do not*** *make the final connection to the batteries until the mains supply is powered-up, see Powering-up control panel.*

> ***NOTE:*** *To increase the battery standby extra batteries may be installed.*

Other connections to the control panel

Mains supply ☐ Remove the transparent cover fitted over the mains terminal block. Connect the external mains supply cable and refit the cover.

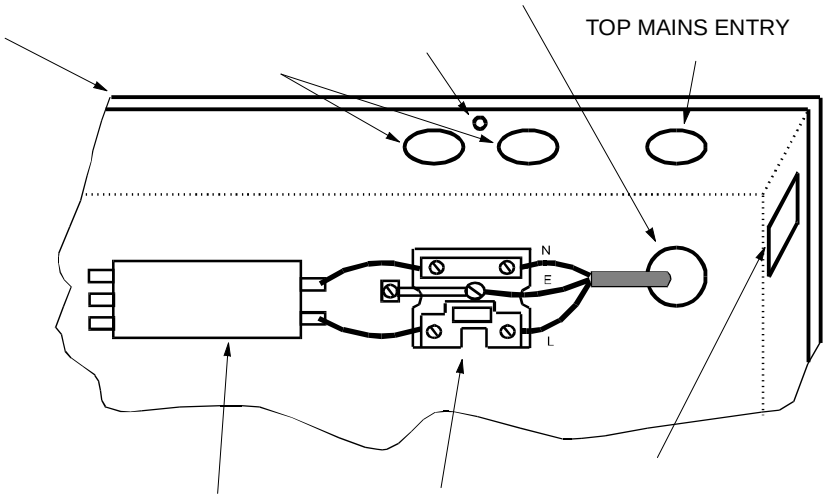

Figure 2-10 Panel mains connections

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Other connections ☐ Terminals to accept other external connections.

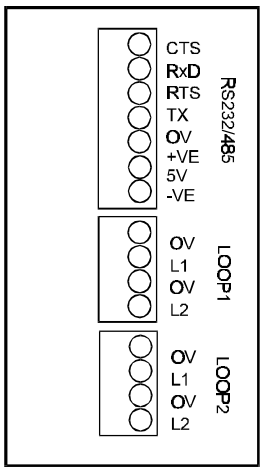
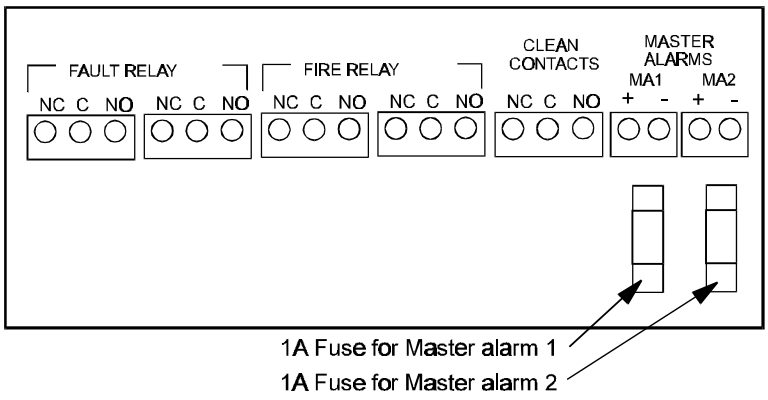


Figure 2-11 Terminals for other connections



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72 Hour standby battery supply

☐ To achieve 72 hours standby the following arrangements should be used. Where the cable length from the *battery cubicle / 5216 power supply /charger* and *control panel* should not exceed **20 metres.**

Power cables

☐ Power cables must be 4mm^2 MICC or flexible cable with mechanical shield i.e. conduit. Termination should be made into a connector which feeds the respective PCB with 2.5mm^2 cores. Keep the length of 2.5mm^2 cable as short as possible.

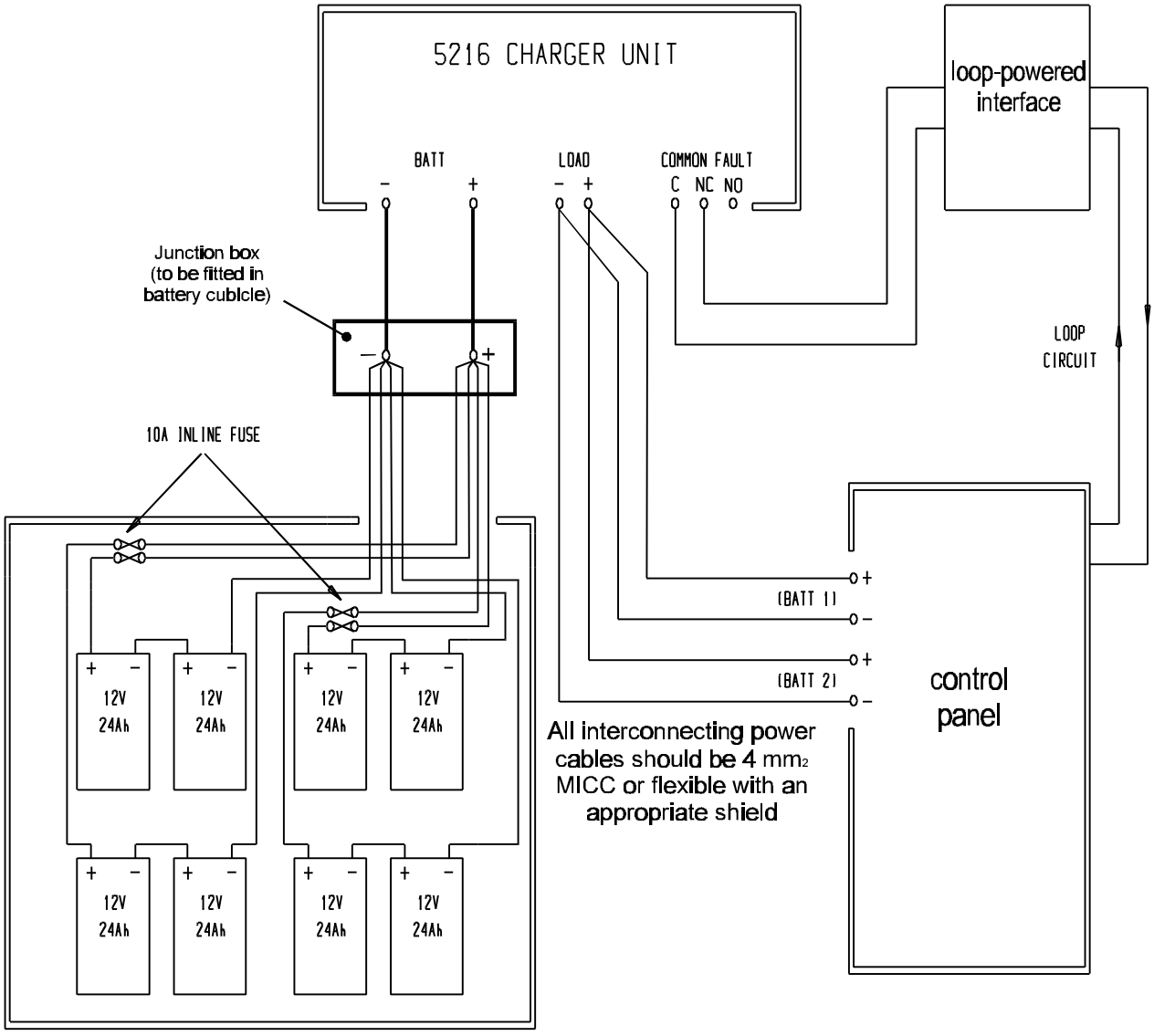

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Figure 2-12 72 hour standby for 1-2 Loop panel

Interface input

☐ A *5216 power supply /charger* fault can be signalled to the 32000 system. This signal is sent to a *loop powered interface* input . The input channel should be labelled `Check External Batteries`. The *control panel* to *charger* wiring is therefore also fault monitored.

> ***NOTE:*** *The original batteries supplied with the Control Panel as standard are not required.*

Modification to Panel PSU

Open the **control panel** *power supply cover* to gain access to the **power supply board**. Cut out resistors **R92, R96, R57 and R56** on the board, located near the bottom on either side of the heat sink.

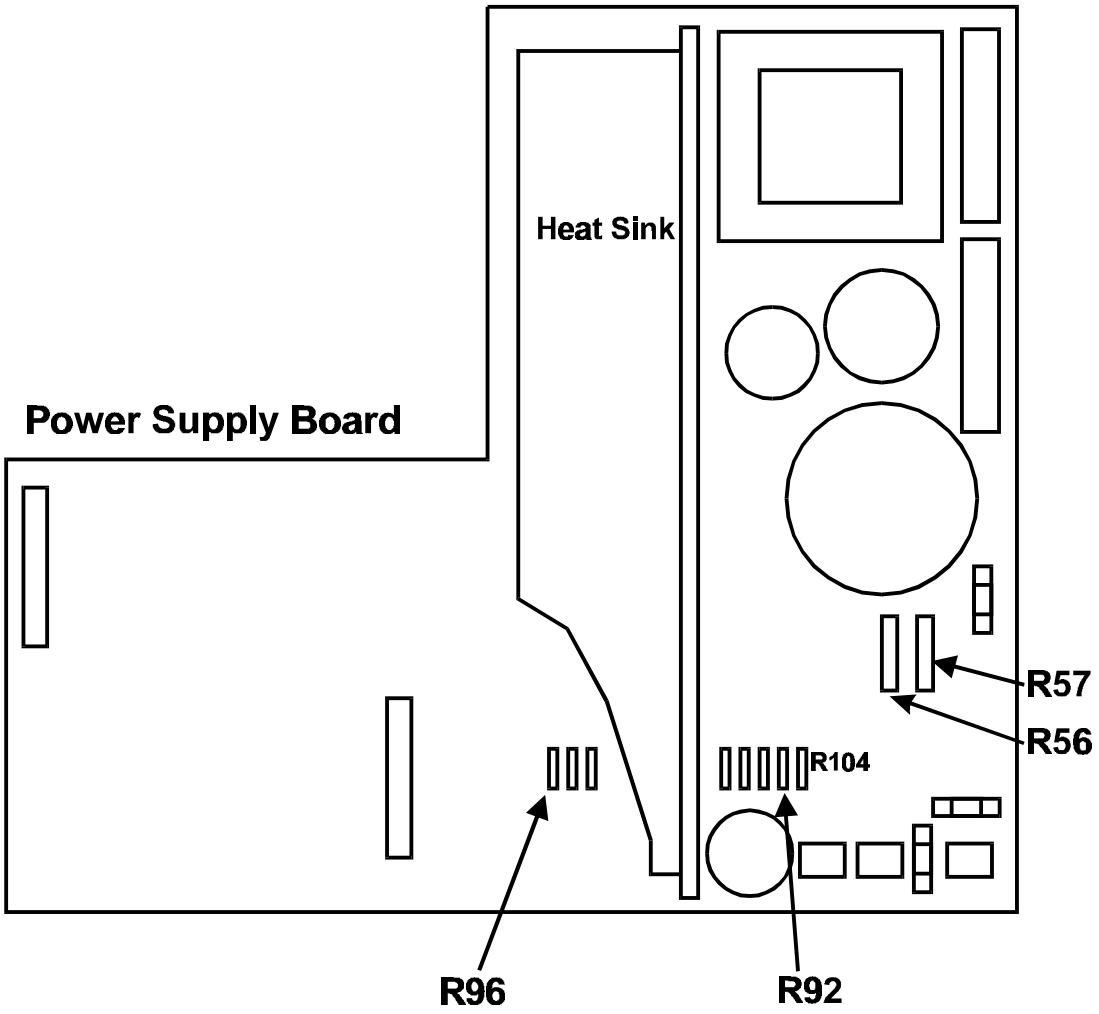

Figure 2-13 Location of resistors on PSU

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Indications on powering up the Control panel

☐ Switch *On* the mains supply to the panel.

☐ Connect the battery supply to the panel.

☐ Notice:

- the printer performs a line feed
- the local buzzer sounds and thereafter beeps until power-up is complete
- all lights on the facia remain lit for a short duration
- a message is displayed.

```
Powering up - please wait
```

- the warning light flashes. The warning light changes to steady indication when the power green light is lit.
- the display provides the following messages:

```
Time not set
Panel power up
Card found at Card 15 x.xx aa/bb/cc    IOC software version
Full keyboard fitted
Baud Rate 19200 at Card 15      Baud rate set at IO card -19200
New Domain Address 6 at Card 15    address set at IO card is 6
Card found at Card 1 x.xx aa/bb/cc     LPC version & date
Allocating Loop n        allocation has started at loop n
Printer Fitted at Card 15       Printer identified
RAM Card Found at Card 6        RAM card identified
RAM Card being initialised
Initialised RAM Card XXK Bytes found     RAM card capacity
RAM Card not protected          RAM card is not protected
Allocation: OK at Card X : Allocated Y       devices allocated
Starting Loop n
Loop started OK at Card X:Started Y    allocation is complete
```

☐ The warning buzzer will sound intermittently as the RAM Card is unprotected.

> ***NOTE:*** *In practice there may be system hardware and wiring faults during allocation, see message action list part of this manual.*

☐ Enable controls and then press ‘Cancel Fault Buzzer’ button to stop the local buzzer.

Menu Maps ☐ See Appendix A.

Initial control panel tests

Display ☐ Test the display using the **[Disp Test]** facility in the **[Test/Eng]** menu. All the lights and buzzer (including Backlight) will remain on for a short duration.

Clock ☐ Set up the time and date using the **[Set Clock]** facility in the **[Set Up]** menu.

When setting up the time ensure it is synchronised with a fixed time source. It may be necessary to fine-adjust the time a week later to action automatic compensate for fast/slow clock.

Printer ☐ Test the printer using the **[Printer]** facility in the **[Control]** menu.

Power ☐ Test the panel's mains and battery supplies by carrying out a temporary disconnection. Ensure indications are given of each disconnection and reconnection.

Master alarms ☐ Check indications are given of master alarm open and short circuit tests.

How to set up password access

A password restricts access to *controls* at the control panel:

> ***NOTE:*** *The* ***Customer*** *and* ***Engineering*** *passwords should be noted for future reference.*

☐ SECURITY - access is the door key

☐ ENGINEERING - PASSWORD 1
(access is available to all menu commands)

☐ CUSTOMER - PASSWORD 2

☐ Engineers password changes daily and is for Servicing org. use only.

> ***NOTE:*** *The* ***Engineering password*** *will provide the same access to the menu commands as that available with the* ***Servicing org. password.***

> ***NOTE:*** *There can be up to 15 characters used for a password.*

To set up an Engineering password ☐ The engineering password is for site engineering person, who is responsible for the fire alarm system.

From the top level menu select **[Test/Eng] -> [UserCode] -> [NewPass]** and then type a password and press the **Enter** key**.**

To set up a Customer password

☐ The engineering password must be set up before the customer password can be set. The customer password provides access to restricted menu options that cannot alter the configuration of the system.

From the top level menu select **[Test/Eng] -> [UserCode]** ***type*** **'2'-> [Enter] [NewPass]** and then type a password and press the **Enter** key**.**

Interface and panel outstations

Interface switch settings

It is important to **prepare** all *interface units and repeat panels* connected to the loop circuit(s) to be powered-up. This is necessary in order to minimise the number of system fault events being flagged up.

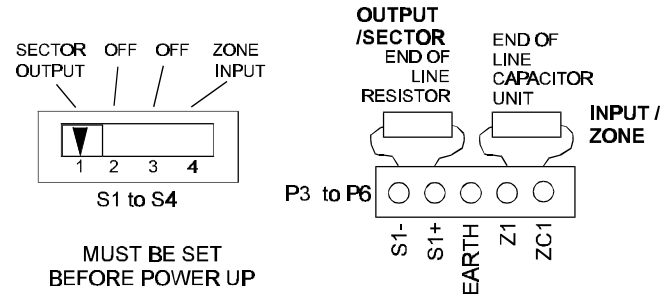
Changing switch settings

On changing the switch settings of an interface unit, the loop circuit on which the unit resides must be re-allocated.

> ***NOTE:*** *If the system data was previously saved to the RAM card, then there will be RAM recovery fault indication given.*

32440 (Mains powered) Fire alarm interface unit

> ***NOTE:*** *Always power-up this* ***interface unit*** *before allocating the loop to which it is connected, that is before powering-up the* ***control panel.***



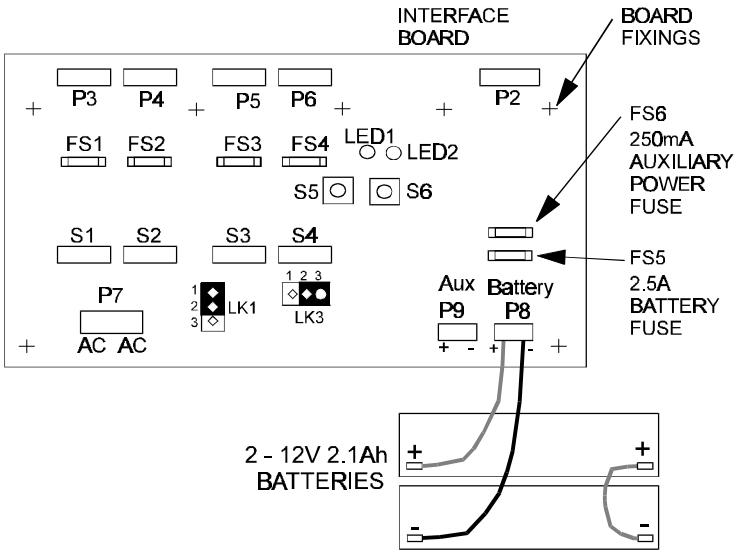


Figure 3-1 Interface board connections

cdn34

☐ Fit the interface board inside the interface unit using the fixing screws and washers supplied.

Ratings

Zone (input)	24V nominal 2mA maximum
Sector (output)	24V nominal 500mA maximum (500mA total for all sectors)
Auxiliary power output	24V nominal 250mA maximum
LED1 (green)	When lit it indicates local mains power is healthy
LED2 (yellow)	When lit it indicates communication with loop circuit has failed

LINK	POSITION	MEANING
LK1	1 - 2 #	Normal zone voltage
LK1	2 - 3	Low zone voltage 'Reduces the zone voltage by 4V for Thorn detectors'
LK3	1 - 2	Fails safe **disable**
LK3	2 - 3#	Fails safe **enable**

- factory settings

S5 - rotary switch	0 -GENT detectors #
S6	Reset push button (fail safe)

Dual-in-line switches

☐ Set the dual-in-line switches S1-S4 for *input, output or not used* (off) position.

Fail safe mode

In this mode, if there is a loop communication failure lasting over one minute duration, then all the outputs of the unit are activated, that is switched on. The outputs deactivate on restoration of communication. The outputs can also be deactivated by pressing the button on the pcb

If there are three communication failures over ten minutes duration, then the outputs will be latched on. In this case the unit must be powered down and the loop reallocated for normal operation.

End-of- line units

☐ Connect the end-of-line EOL units to IO lines to allow fault free IO lines to be seen for the allocation.

Links

☐ Set the links LK1 and LK3 plus the rotary switch on the interface board, as necessary.

> ***NOTE:*** *The mains terminals* ***may*** *be located behind a metal cover inside the interface unit enclosure.*

☐ Connect the mains supply and power-up the unit, notice that LED1 and LED2 will be lit.

☐ Connect the battery and fit the battery restraint bracket.

Rotary switch

The rotary switch can be set to any one of its 16 positions, from 0 to F.

☐ Normally the rotary switch is factory set for *conventional GENT detectors* connected to input lines. Other settings are available to allow detectors from other manufacturers.

> ***NOTE:*** *All input circuits must have a* ***System 32000 End-of-line*** *fitted, irrespective of manufacture of detector.*

Rotary switch (S5) setting	***detector manufacturer***	**detector range**	**comment**	**link LK1 on interface board**	***type of detectors tested***
0	GENT	7600 range		1-2	whole range
1	Hochiki or Apollo	CD range Series 20		1-2	optical and heat
2	Menvier	Series 700		1-2	optical
3	Nittan	NH-G Series		1-2	Heat
4	Notifier	EC range	**Without** resistor fitted to detector base	1-2	Heat
5	Thorn	Series 300		2-3	Optical
6	GENT	7600 range		1-2	whole range
7	GENT	7600 range		1-2	whole range
8	GENT	7600 range		1-2	whole range
9	GENT	7600 range		1-2	whole range
A	GENT	7600 range		1-2	whole range
B	GENT	7600 range		1-2	whole range
C	GENT	7600 range		1-2	whole range
D	GENT	7600 range		1-2	whole range
E	GENT	7600 range		1-2	whole range
F	Detects short circuits as fires - see following note				

Short circuit fire

> ***NOTE:*** *On certain sites, older type detectors and MCPs place a short across the zone when in fire. In order that these shorts are detected as fires and not short circuits, position 'F' must be used.*

Changing switch settings

> ***NOTE:*** *On changing the rotary switch setting the interface unit must be completely powered-down and then powered-up again. Also the loop on which the unit resides must be reallocated.*

Other manufacturers MCP

☐ Where an input circuit is required to have other manufacturers manual call points, then a ***3.9V zener diode*** should be fitted in series with the ***contacts*** of the call point. There should be no other components fitted to the call point contacts.

> ***NOTE:*** *Where NITTAN detectors and manual call point are installed on input circuit, the GENT System 32000 will not be able to differentiate between a fire from a call point or detector.*

Input Output Line tests

☐ Test the IO line as per project specification. The tests are based on the type of equipment interfaced, for example air conditioning system, escalator, fire door release or sprinkler system.

> ***NOTE:*** *All output equipment such as bells, sounders, beacons, relays etc... must be polarised and suppressed.*

> ***NOTE:*** *Faults may be generated if switch settings are altered on live interface equipment.*

32450 (Loop powered) Fire alarm interface unit

☐ Ensure the **cable** connecting to the IO lines of the interface unit is **EMC compliant**.

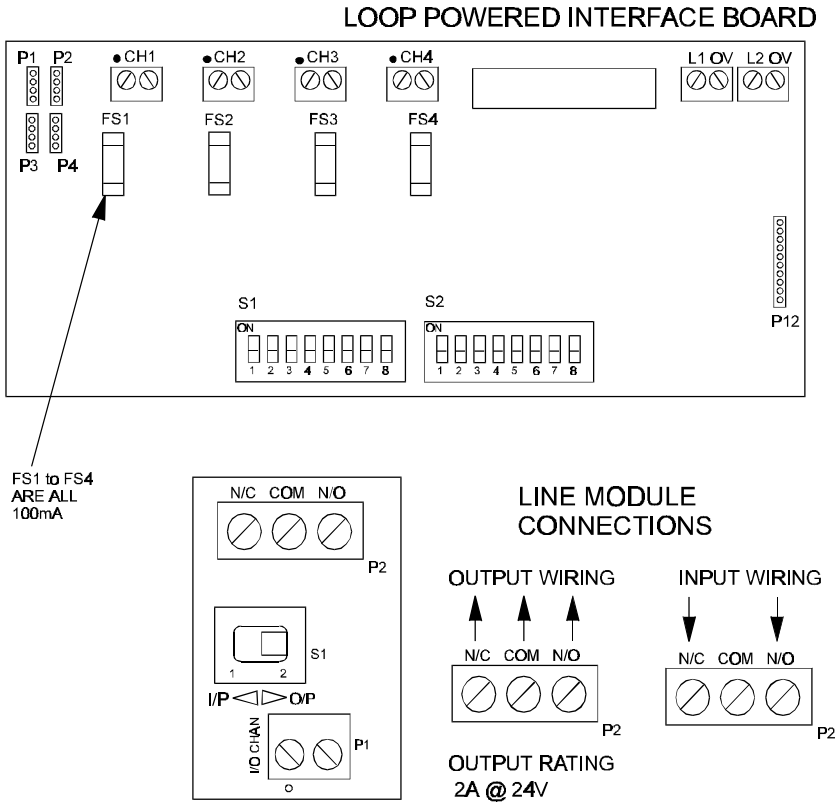
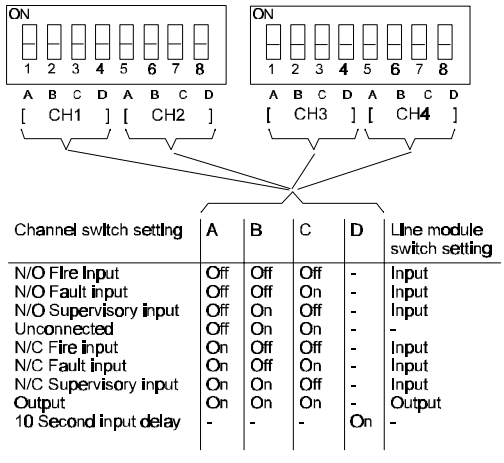


Figure 3-2 Mains interface & line-module boards

cdn49

☐ Fit the interface board and line-modules *(up to four maximum)* inside the unit using the fixing screws and washers supplied.



Channel switch setting	A	B	C	D	Line module switch setting
N/O Fire Input	Off	Off	Off	-	Input
N/O Fault input	Off	Off	On	-	Input
N/O Supervisory input	Off	On	Off	-	Input
Unconnected	Off	On	On	-	-
N/C Fire input	On	Off	Off	-	Input
N/C Fault input	On	Off	On	-	Input
N/C Supervisory input	On	On	Off	-	Input
Output	On	On	On	-	Output
10 Second input delay	-	-	-	On	-

Figure 3-3 Switch settings

fl221

Dual-in-line switches

☐ Set the dual-in-line switches S1 and S2 (on the interface board) for the required input or output.

> ***NOTE:*** *On changing the settings of the dual in line switches S1/S2, the loop must be reallocated*

Line module switch

- ☐ If a line module is used, set its switch S1 to the same setting, that is input or output, as the interface channel to which it is connected
- ☐ The line module may be installed in a remote location up to 100m cable distance away.

> ***NOTE:*** *A maximum of 1km cable usage per loop is allowed for the connection of line modules in remote locations and 19245-06 power supply input/output lines.*

Keyswitch door

- ☐ Where keyswitches are being used, they must be connected to connectors P1 (for channel 1), P2 (for channel 2), P3 (for channel 3) and P4 (for channel 4).
- ☐ Fit the keyswitch door if required to the interface unit. The door can accommodate 4 off 2-way keyswitches or 2 off 3-way keyswitches, see keyswitch door.

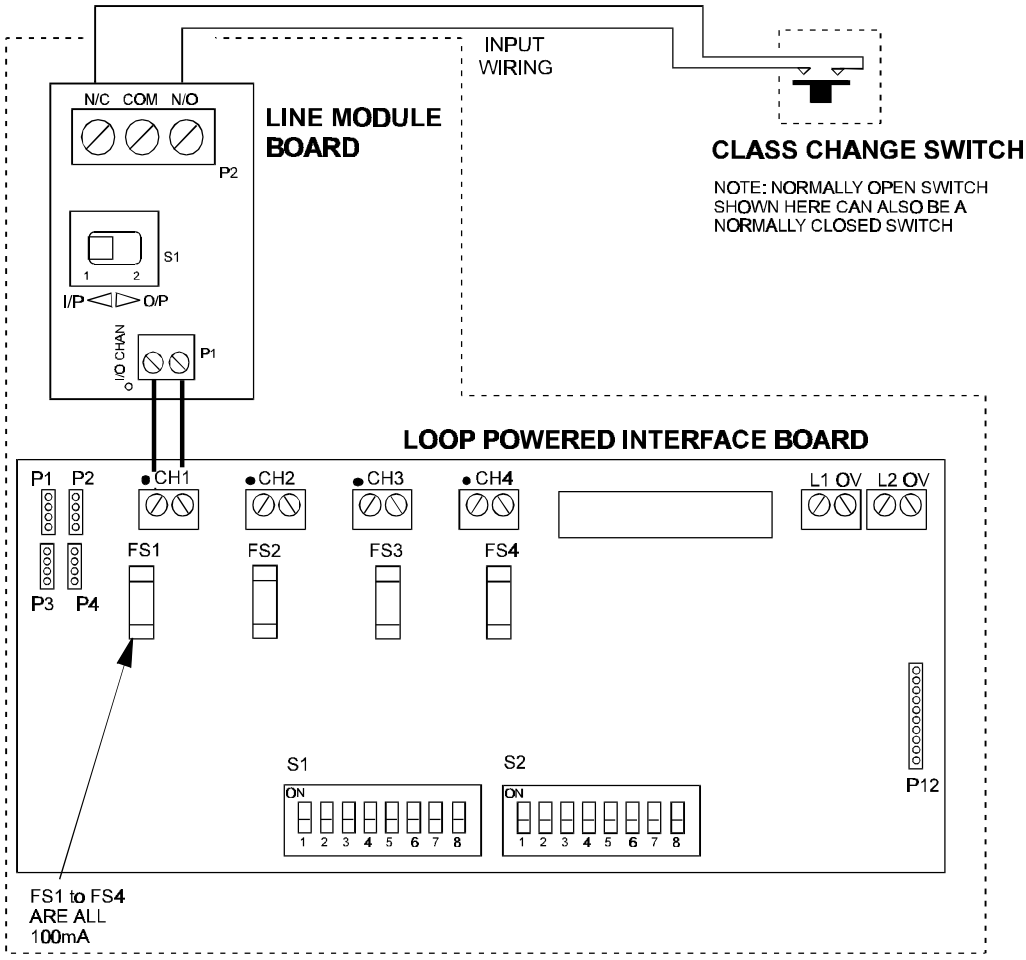
> ***NOTE:*** *A line module must not be connected on a channel that has a keyswitch connected to connectors P1, P2, P3 and P4.*

- ☐ For keyswitch input, the interface board dual in line switches S1/S2 must be set to a normally open input.

IO line test

- ☐ Test the IO line as per project specification. The tests are based on the type of equipment interfaced, for example air conditioning system, escalator, fire door release or sprinkler system.

32457 Class change interface



cdn50

Figure 3-4 Interface used for class change application

☐ Ensure the **cable** connecting to the IO lines of the interface unit must be **EMC compliant**.

Dual-in-line switches

☐ Set the dual-in-line switches S1 and S2 (on the interface board) for the Supervisory input. There are two options available, *normally open N/O* input or *normally closed N/C* input.

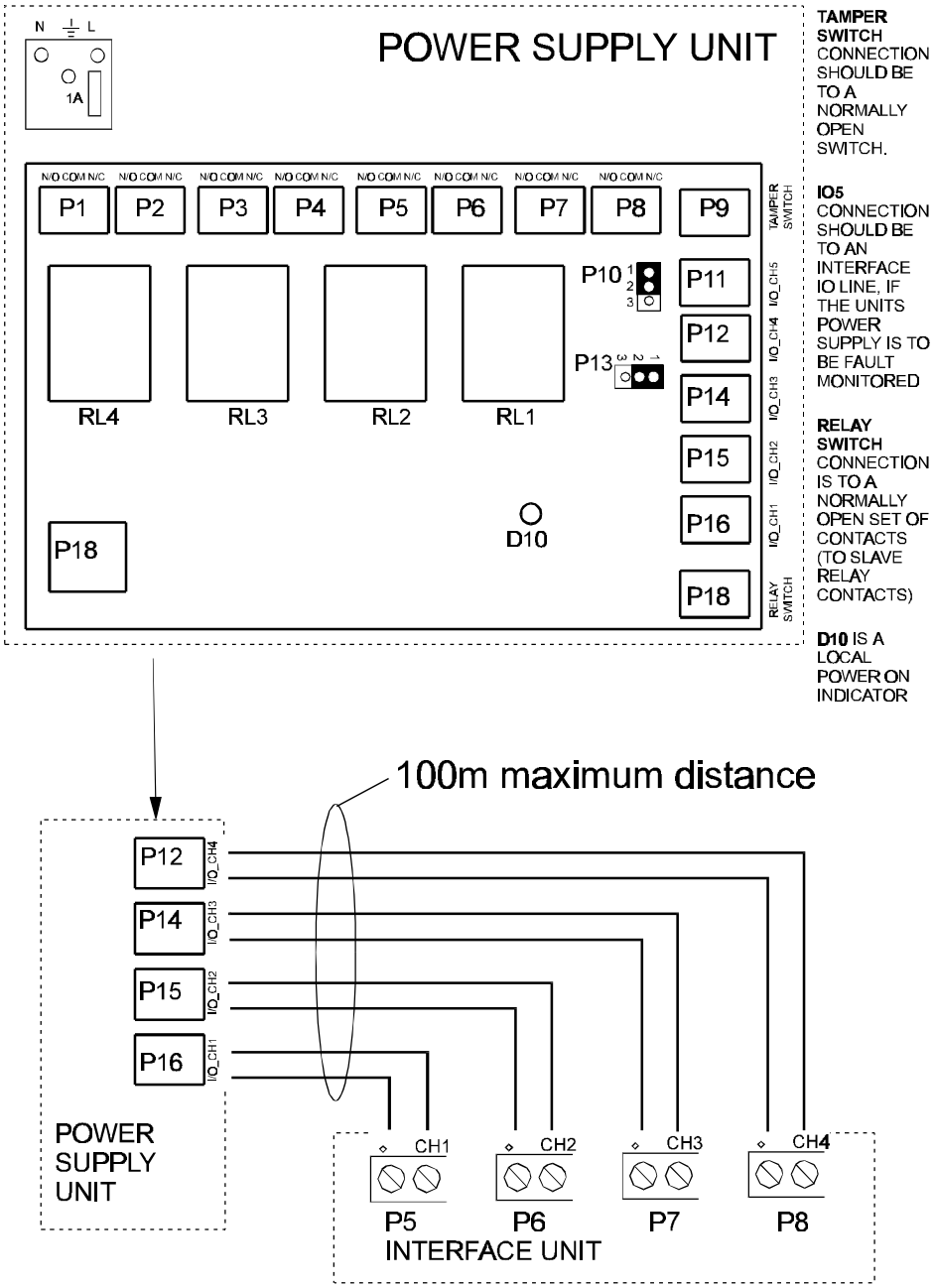
Line module switch

☐ Set the line module for *input*. The line module may be installed in a remote location up to 100m cable distance away.

> ***NOTE:*** *A maximum of 1km cable usage per loop is allowed for the connection of line modules in remote locations and 19245-06 power supply input/output lines.*

19245-06 Power supply unit (with relay)

☐ Connect wires from the interface to power supply unit.



cdn35

Figure 3-5 Interface to PSU board connections

NOTE: *A maximum of 1km cable usage per loop is allowed for the connection of line modules in remote locations and 19245-06 power supply input/output lines.*

PSU and interface connections

Interface unit		Power supply unit		
Channel	**terminals**	**Incoming**	**Relay**	**Outgoing**
1	P5	P16	RL1	P7 & P8
2	P6	P15	RL2	P5 & P6
3	P7	P14	RL3	P3 & P4
4	P8	P12	RL4	P1 & P2

Relays

☐ Remove the relays from the power supply board to disconnect the output circuits connected to the relay contacts. The output circuits should be tested as per project specification following allocation stage.

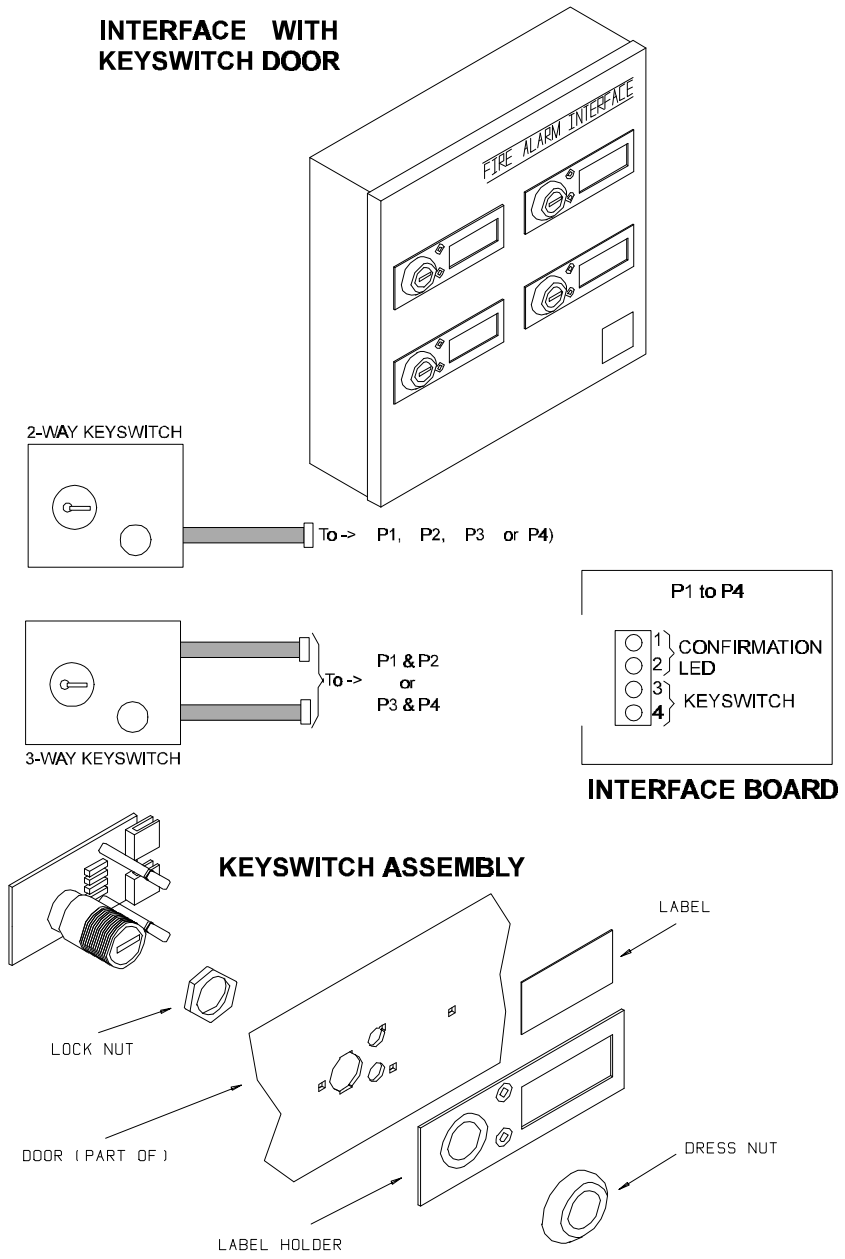
Link settings

☐ Configuring the links P10 and P13:

Link	Position	Function
P13	1-2	A *mains fault* on the *power supply unit* can be monitored via I/O_CH4 channel 4. If all IO lines are being used then a channel 4 will monitor dual faults, mains failure of *power supply unit* as well as IO line failure.
P10 plus P13	2-3 plus 2-3	The local power supply unit is fault monitored via I/O-CH5 terminals
P10	1-2	A normally open tamper switch can be monitored via I/O-CH5. The I/O-CH5 should then be connected to an input channel of the Interface Unit.

☐ A normally open contact can be monitored on external equipment via the RELAY SWITCH contacts to operate I/O-CH1.

Interface keyswitch door option



fl223

Figure 3-6 keyswitch interface doors

Assuming a *keyswitch door* is to be fitted to *loop powered interface unit.*

- ☐ Remove the appropriate *blanking plates* from the door.
- ☐ Fit the keyswitch, *lock nut, label holder and dress-nut* to the door.
- ☐ Exchange the interface door.
- ☐ Fit the wires from keyswitch to connectors P1 - P4 located on the interface board.

Tests

Interfaced equipment test

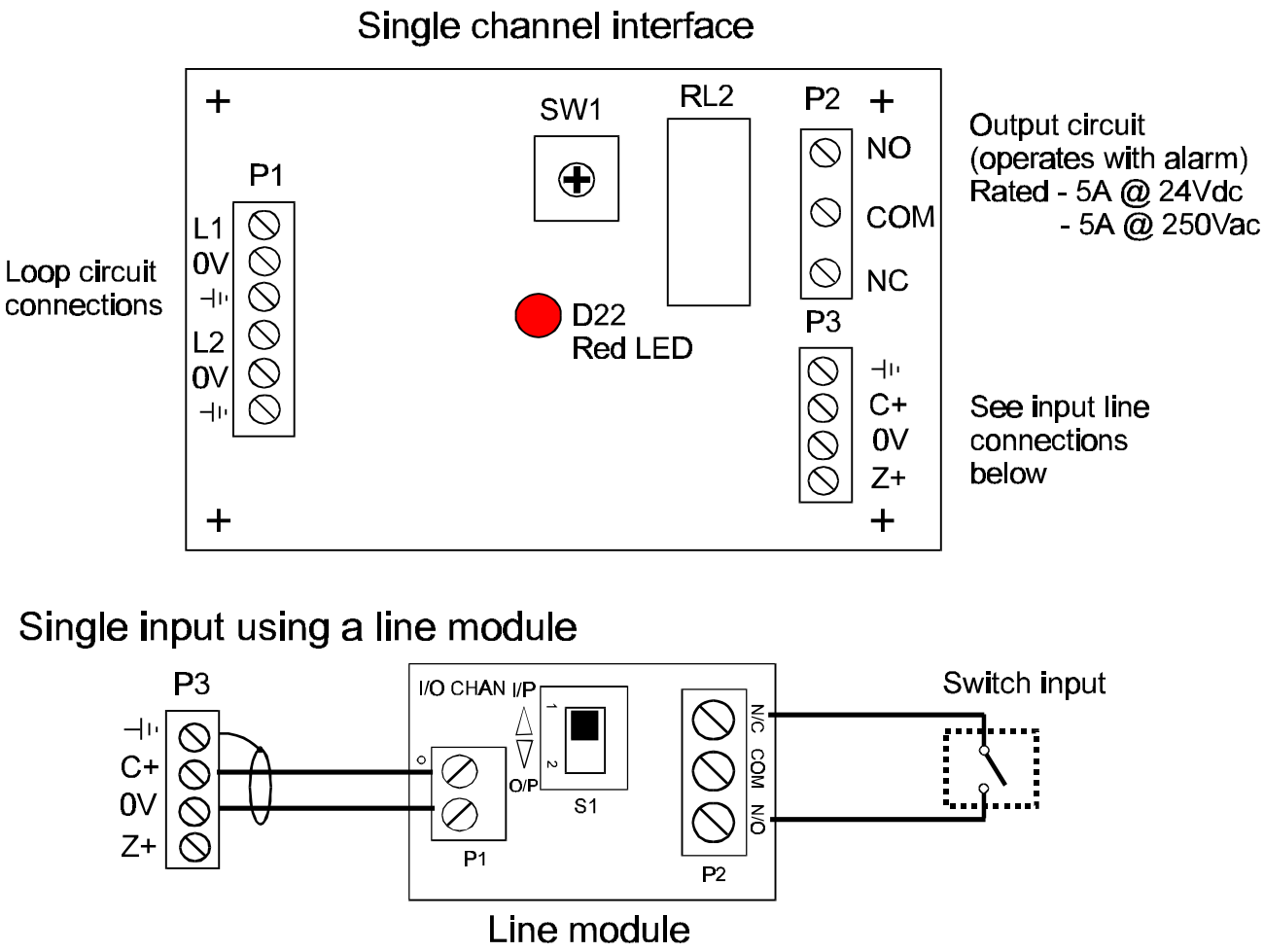
☐ Test the external input / output circuits connected via the *line modules.* The test should be as per project specification.

Keyswitches Tests

☐ Test each keyswitch as per project specification. The tests should be based on the type of action that should result from operating a switch, ie a class change input or a fault indication. Ensure also that the appropriate LED indicator is lit on operating a switch.

32415 Single channel interface

- ☐ Open the front cover.
- ☐ Make the cable connections to the loop circuit



cdm188

Figure 3-7 Single channel interface board

NOTE: *The loop and input line cable screens must be earthed.*

Rotary switch

☐ Set the rotary switch SW1 (on the interface board) for the required input.

Rotary Switch (SW1) position	Input circuit function. To monitor:	mode of input circuit operation	normal status of the input signal	delay (seconds) before signal is accepted
0	Off			
1	Off			
2	Multiple inputs	Fire	N/O	0s
3	Multiple inputs	Fire	N/O	30s
4	Single input	Fire	N/O	0s
5	Single input	Fire	N/O	30s
6	Single input	Fire	N/C	0s
7	Single input	Fire	N/C	30s
8	Single input	Fault	N/O	0s
9	Single input	Fault	N/O	30s
A	Single input	Fault	N/C	0s
B	Single input	Fault	N/C	30s
C	Single input	Supervisory	N/O	0s
D	Single input	Supervisory	N/O	30s
E	Single input	Supervisory	N/C	0s
F	Single input	Supervisory	N/C	30s

N/O = Normally open O/C = Normally closed

NOTE: *An input circuit is monitored for both open or short circuit fault.*

Configurations

The *single channel interface unit* can be configured to operate:

☐ Single input with output via relay change over contacts

☐ or Multiple input with output via relay change over contacts

Input/Output line test

At an appropriate stage of commissioning the interface input and output circuits must be tested as per project specification. The tests are based on the type of equipment interfaced.

Single input

When the *single channel interface unit* is configured to accept *single input* then a ***line module*** must be used.

NOTE: *A maximum of 1km cable usage per loop is allowed for the connection of line modules in remote locations and 19245-06 power supply input/output lines.*

Line module switch

- The line module may be installed in a remote location up to **100m** cable distance away. Its two position switch must be set to input.

Multiple inputs

NOTE: *When the single channel interface unit is configured for multiple inputs then an end-of-line capacitor unit must be used.*

NOTE: *The multiple inputs may be from manual call points with 470 ohms resistor in series with the contacts.*

Output circuit

The *single channel interface unit* output operation is via a relay. The relay contacts are voltage free and rated:

- 5A at 24V dc
- 5A at 250V ac

NOTE: *The relay output operates with the 32000 zone in which the single channel interface is installed.*

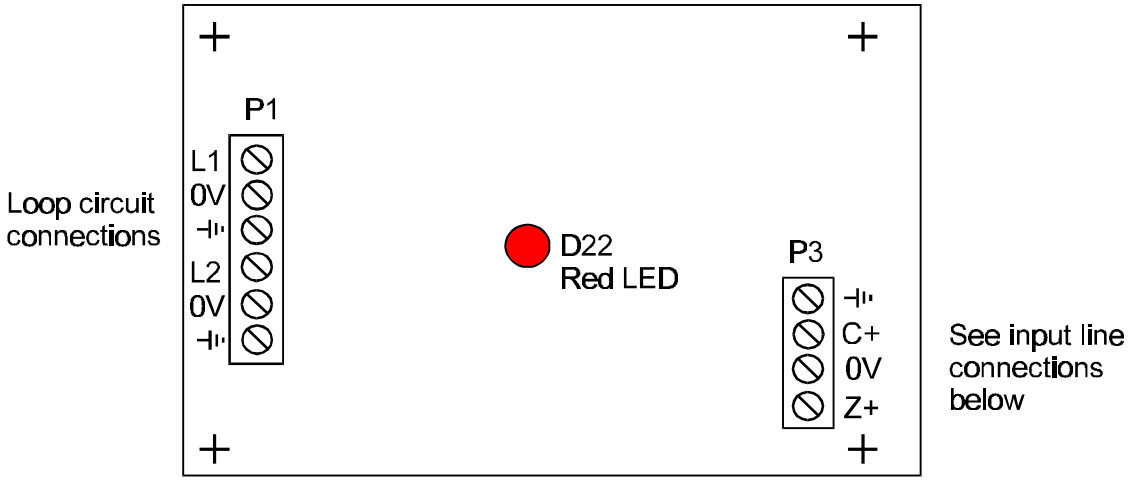
32410 Loop powered zone module

☐ Open the front cover.

☐ Make the cable connections to the loop circuit

NOTE: *The loop and input line cable screens must be earthed.*

NOTE: *An end-of-line capacitor unit must be connected to the end of the detection (zone) circuit.*



Detection (zone) circuit

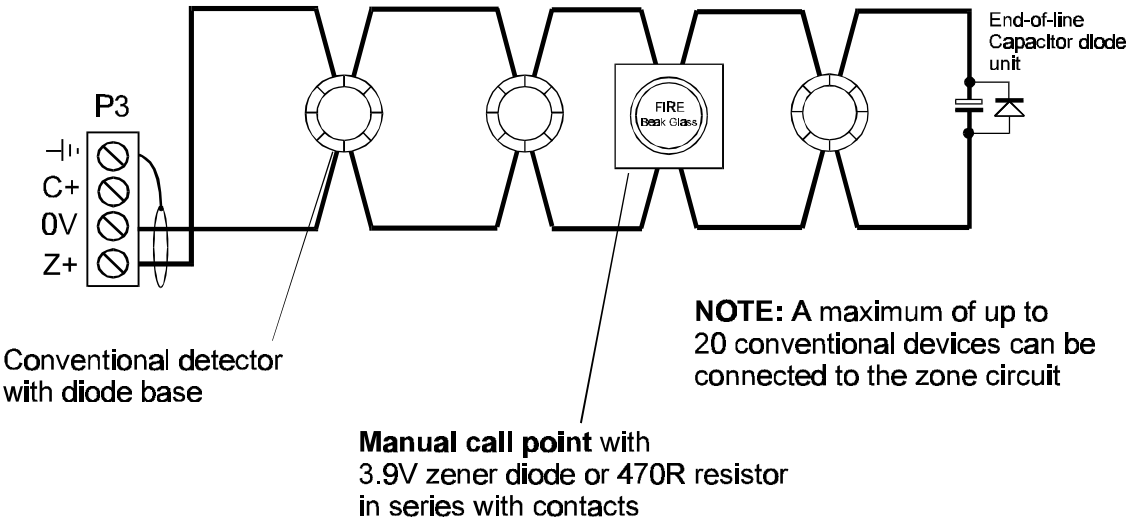


Figure 3-8 Loop powered zone module

cdm40

NOTE: *The 32000 system is unable to distinguish between a* ***fire input*** *from* ***manual call points and detectors*** *connected to the zone circuit of the loop powered zone module.*

Zone circuit

The zone circuit can accept up to **20 conventional detectors**, *such as GENT 7600 range of conventional fire detectors. There is no limit to the number of manual call points* connected. The MCPs must be fitted with 3.9V zener or 470 R resistor in series with its contact.

Detector head removel

CAUTION: *The removal of more than* ***five - detector heads*** *from their* ***detector bases****, connected to a zone circuit off a loop powered zone module i***s not allowed***, as this will result in an abnormal condition.***

Relay base

NOTE: *The 17600-04 relay base cannot be used for the 7600 range detectors on the zone circuit off a zone module.*

32520 Repeat panel

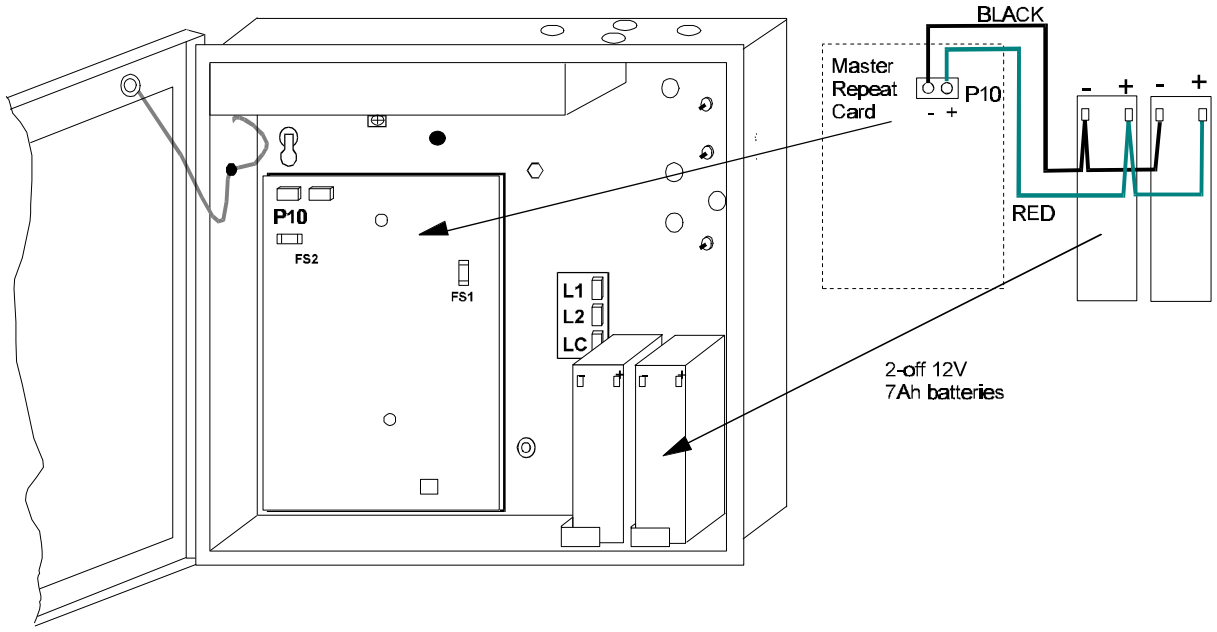
☐ Connect the mains supply. The terminals are located inside the inner box of the repeat panel.

☐ Power-up the panel and note:

- the green and amber LEDs on the Master repeat card are lit
- all lights on the panel facia are lit for a short duration
- a reset message appears on the display
- the local buzzer is on for a short duration
- a battery disconnected message appears
- the display shows:

```
MAIN PANEL OFF LINE
```

☐ Connect the battery supply to the panel.



fl320

Figure 3-9 Repeat panel battery connection

☐ See Appendix A for the menu map.

NOTE: *The repeat panel uses 2-off 12V at 7Ah battery connected in parallel.*

NOTE: *The full repeat panel menu map will only be accessible following the allocation of the loop on which the panel resides.*

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Address allocation

Cards

CAUTION: *Completely power-down the control panel before removing and refitting any of cards inside the panel.*

Power up

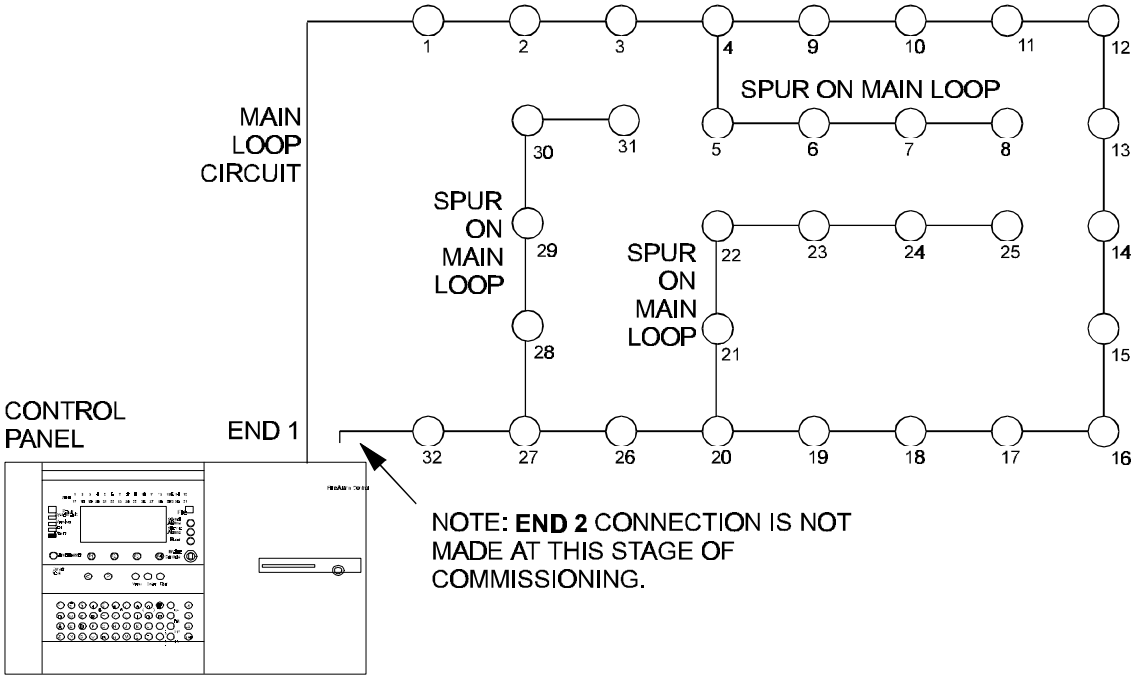
CAUTION: *Always power-down the battery supply before the mains supply. The power-up should be in the reverse order.*

Loop preparation

Main loop

☐ On initial allocation of any loop, End-2 must be disconnected.

☐ Normally, a loop circuit is powered automatically when the control panel is powered-up.



fl305

Figure 4-1 Address allocation

How to power a loop

A loop circuit must be powered down before working on the loop wiring.

To power down a loop

☐ Carry out a *reset card n* using the **[Test/Eng]** menu and then immediately press the *Menu* button. Check the loop has stopped using the **[Info] -> [CardStat]** menu.

To power up a loop

☐ Carry out a *reset card n* using the **[Test/Eng]** menu, note the loop is automatically allocated.

How addresses are allocated

The allocation of addresses start from End-1 of a loop circuit in a numerical order. On reaching a T breaker the circuit off is allocated addresses and on completion the process continues along the main loop.

Address

The control panel gives each 32000 loop connectable device an address, except for the **slave relay and LED units** which are not given addresses.

During allocation

The loop circuit is powered-down to allow all loop breakers to open. Then the first outstation is given an address and asked to provide its:

- digital status, to determine its input/output
- ident, to determine family of device
- serial status, to determine loop breaker status.

☐ On closing the loop breaker of an allocated device the process is repeated on the next device.

☐ The allocated loop is then mapped and short circuit delays are set up. A short circuit delay is required to close the second loop breaker of a T breaker device.

> ***NOTE:*** *The new map is checked against the last map held on the Memory card, if found to be different then a* ***warning*** *indication is given.*

Allocation Faults

A device with a hardware fault may have its LED lit.

```
Short at Card X
Short Circuit at OS X Loop Y
Allocation : HW Fault at OS X Loop Y'
Allocation : Tx Fault at OS X Loop Y
Allocation : Double Allocated at OS X Loop Y
Allocation : Map Error at OS X Loop Y
```

☐ An allocation fault that has been rectified will not be recognised until after reallocation of the loop.

☐ A loop with allocation faults will not be able to distinguish between a point type sensor and a call point.

☐ When a short circuit fault is found, the loop re-allocates to the device before the short circuit. The device loop breaker remain open and the device LED is lit and the loop is powered up to that point and basic communications are carried out.

During start up

A loop is started after allocation. Each device is set up to start operating normally based on its type, when analogue channels are read. This can only happen after a successful allocation, see appendix B for fault messages.

Starter faults

```
ASCII Outstation is Faulty, OS X Loop Y ASCII-Repeat panel
TX Fault on OS X Loop Y
```

Checking an outstation status

☐ List the status of all the outstations on the allocated loop using **[Outstation]**, **[Status]** under the **[Info]** menu. The printer will need to be switched On using the [Control] -> [Printer] menu.

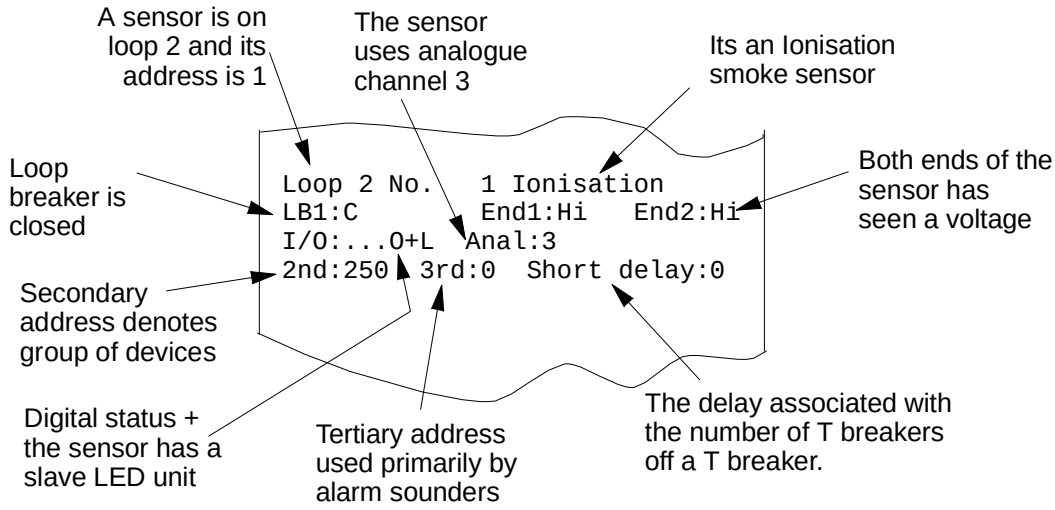


Figure 4-2 Outstation status

fl229

Outstation	**digital** (I/O)	**channels** (Anal)
Sounder	.00.	none
Repeat Sounder	.00.	
Interface unit mains powered)	all possible	1,2,3,4,5,6
Repeat panel		
Loop interface	all possible	1,2,3,4,5
Loop Powered Zone Module	1..0	1,5
Single Channel Interface	10.0	1,2,5
Analogue MCP	...0	6
Optical Sounder	.000	1
Heat Sounder	.000	2
Optical	...0	1
Heat	...0	4
Ionisation	...0	3
T breaker	...0	none

NOTE: *The correct device type may not be displayed if the loop circuit has allocation faults.*

☐ Check that the outstation (device) is of the correct type and is suitable for the area in which it is installed.

☐ Check the digital status of all devices.

Successful allocation

☐ Will have total number of outstations equal to amount installed. Also there will be a loop voltage on the unconnected end of the cable.

End-2 connection

☐ Power-down the loop before making any changes to the wiring.

☐ Connect the loop cable at End-2 and reallocate to check the allocation from end to end.

> ***NOTE:*** *A warning may be displayed to indicate that the loop map has changed due to End-2 being connected. Use* ***[Test/Eng]*** *menu and* ***[Clear]*** *facility to remove warning.*

☐ Check that the loop has started and is complete by viewing **[CardStat]** in the **[info]** menu.

☐ Repeat the procedure for other loop.

Checking a loop map

☐ A *loop map* is checked against the *as fitted wiring drawings.* This will confirm the exact location of each system device and its address.

☐ The following will be required:

- two way radio communication
- *as fitted wiring drawings* (2- copies) marked with device numbers.

☐ a printout of the loop map obtained using **[Print] [Loop Map]** facility in the **[Info]** menu.

Figure 4-3 Loop map printout

```
Map information for Loop 2
 Os Prev Next  Common  Position
 1  Slave
 1  End1   2           Main Loop
 2    1    3           Main Loop
 3    2    4           Main Loop
 4    3    5           Main Loop
 5  Slave               Main Loop
 5    4    6           Main Loop
 6    5    7           Main Loop
 7    6    8           Main Loop
 8    7    9           Main Loop
 9    8    10          Main Loop
 10   9    11          Main Loop
 11   10   End2        Main Loop
```

fl230

☐ Check the operation of any remote LED indicators if used.

☐ Check the suitability of each device for the area in which it is installed and the location of installation with reference to as fitted drawings.

Back up and recovery to RAM card

see also RAM card section in this manual

Back up of loop

☐ *A fully allocated loop should be backed up onto the system Memory (RAM) card using* **[Set up]->[Back up]** menu. Before doing this the write protect function will have to be switched *Off* using the **[Setup]** -> **[Protect]** menu.

Recovery of loop

☐ On power-up the information stored on the RAM card is automatically recovered to Local Controller and Loop Processor cards

☐ If there are loop map conflicts the display shows

```
Recovery failure      i.e. such as channel conflicts
```

> ***NOTE:*** *A warning will be displayed if a loop map is different to that previously backed up to the Memory (RAM) card.*

The configuration held by the cards

Local controller card

☐ Holds the status or configuration of:

- printer state - On / Off
- usercode - the user entry password
- auxiliary relay
- outstation - zone actions #
- zone linking
- fire plans (both standalone and network)
- setup #.

- some exceptions are held on the *loop processor/controller card*

Loop processor card

☐ Holds the status or configuration of outstations:

- labels
- outstation - zone actions #
- setup of sensor states.

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Loop tests

Check loop resistance and capacitance

☐ Power down and disconnect both ends of the *loop 0V* wiring at the control panel, whose resistance and capacitance are to be measured.

> ***NOTE:*** *The resistance and capacitance values quoted are absolute maximum. The operation of the system cannot be guaranteed if the values are exceeded.*

Resistance

☐ Using a *multimeter* to measure: check the resistance between the *loop 0V* (End 1) and *0V line* (End 2). In practice this should not be greater than **18 ohms.**

Capacitance

☐ Check the capacitance between the *loop 0V* and *cable screen*. The capacitance should not be greater than **1.0uF.** In practice, the cable end-1 and end-2 should read the same value.

Find outstations

☐ Devices on each loop can be made to indicate by using the **[Find OS]** facility in the **[Test/Eng]** menu.

Sensors and MCP

☐ A *fire sensor* or system *manual call point* will operate its LED for 0.5 second *On* and 0.5 second *Off* repeated. It does this for a period of 2 minutes.

Sounders

☐ Each system *alarm sounder* will provide an audible sound for 0.5 second *On* and 0.5 second *Off* repeated. It does this for a period of 2 minutes.

interface units

☐ Each *interface output* will in turn be activated for 0.5 second *On* and 0.5 second *Off* repeated. It does this for a period of 2 minutes.

> ***NOTE:*** *The Loop Powered Zone Module and the Single Channel Interface provide an indication by switching on the red LED (D22) located on the interface board.*

Outstation panels

☐ The *repeat panel* will display an outstation number.

☐ While a person operates the keys at the control panel, the other person will follow the loop wiring and confirms receiving an indication at each device.

☐ It is usual for the person confirming the loop map to mark his copy of the *as fitted wiring drawings* with the actual device address.

Loop short circuit test

A loop short circuit isolation test should be carried out during commissioning. To do this:

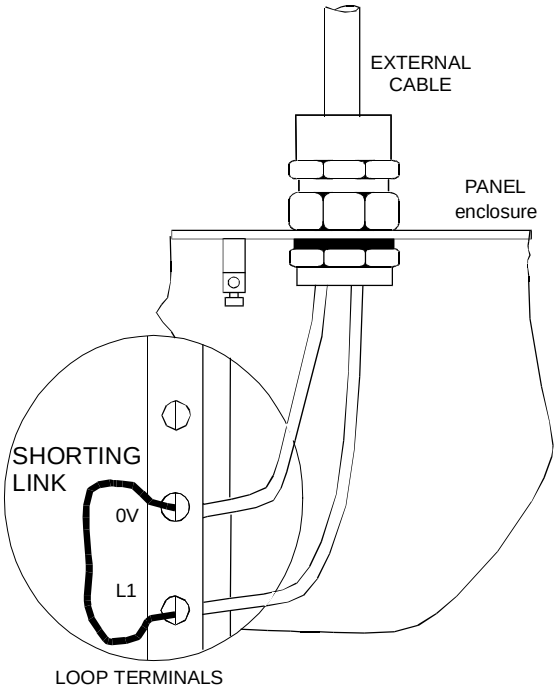

Figure 5-1 Shorting link

fl306

☐ Short circuit the pair of loop terminals at End-1. There should be no loss of any part of the system. The display shows

```
Wiring changed - short
Wiring changed - loop split
```

☐ After rectification action, a re-allocation of the loop circuit is required to clear the fault indication.

☐ The short circuit test should then be repeated for End-2 of the loop.

Short circuit isolation

When a short circuit is introduced onto a loop circuit, the control panel will:

- power down the loop causing all the devices to open their *loop breakers*
- the *loop processor* will close the loop breakers in each device in turn starting from End-1
- if a device closes its loop breaker and the line signal dips, then a short circuit is assumed to be beyond that point on the cable
- the process is repeated from End-2
- the devices at the boundaries of the *zone* in which the short circuit is detected are then isolated
- the isolation process takes approximately one second depending on the size of the loop circuit.

> ***NOTE:*** *Where a zone is across both loop circuits, then both zones boundaries are isolated. After rectification of the short circuit, both loops will have to be reallocated to clear the faults.*

Ground break test

A ground break test should be carried out during commissioning. To do this:

☐ Disconnect the *0V line* from End-1 of a loop circuit.

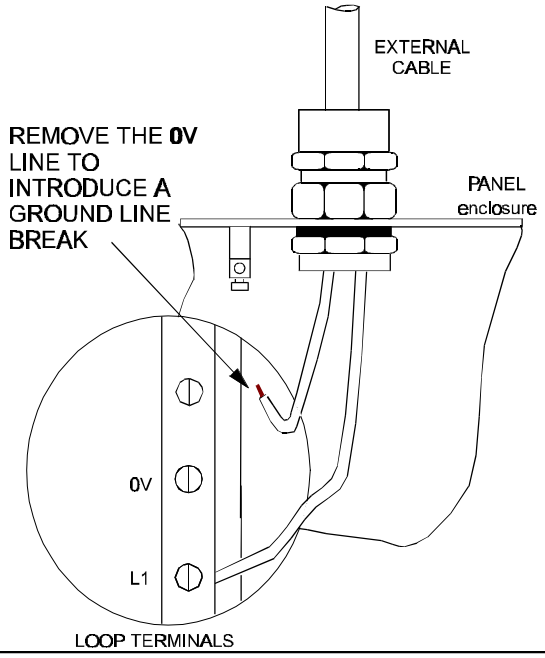

Figure 5-2 Removal of 0V line connection

fl308

NOTE: *A single 0V line break should not cause the loss of any part of the system.*

☐ This may have to be sustained for up to a minute. The display shows:

```
Wiring changed - ground break
```

☐ To clear the fault, the *0V line* should be reconnected and then the loop should be re-allocated.

☐ The ground break test should be repeat for the other end of the loop circuit, End-2.

Ground break monitoring

The control panel automatically carries out a *ground break test* on each loop every minute. It does this by:

- temporary disconnection of *OV line* at End-2
- the loop processor then checks to see if the loop signal is still present on the incoming cables of End-2
- if the signal is present then this indicates the *OV line* is intact. Otherwise a fault is indicated.

NOTE: *The exact location of a ground break is not known. The loop will run as normal until after the defective cable is repaired and the loop is re-allocated.*

NOTE: *A second ground break will cause partial loss of the loop circuit.*

Earth fault test

Earth fault tests should be carried on a loop circuit during commissioning. To do this:

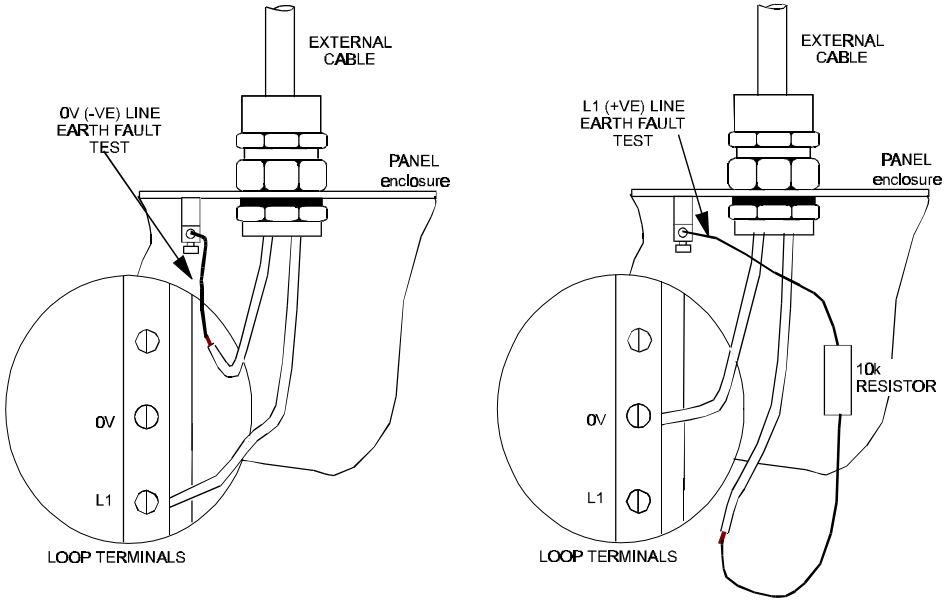

Figure 5-3 Simulating earth faults

fl309

0V-line earth fault test

☐ Connect the *0V line* to the earth of the control panel enclosure. This may have to be sustained for up to 1 minute for the fault to be detected.

```
Earth Fault
```

☐ Restore normal conditions. The display should show:

```
Earth Fault cleared
```

+ve line earth fault test

☐ Now connect the *+ve line* to earth via a **10K ohm** resistor. This may have to be sustained for up to 1 minute for the fault to be detected. The display shows an Earth fault message.

☐ Restore normal conditions. The display should show:

```
Earth Fault cleared
```

> ***NOTE:*** *If the resistance between Earth and Loop +ve is in the order of a few ohms then this will be registered as a 'short circuit'.*

Type of earth fault

Interrogate the **[PSU]** readings in the [**Test/Eng]** menu to establish the type of Earth fault.

Type of Earth fault	Earth (Ear) reading
No earth fault	around 60
+ve line and earth	greater than 75
-ve line and earth	less than 40

Earth fault monitoring

There is a connection at the control panel between the *+ve line*, *0V line* and the panel earth. This connection is disconnected momentarily during which an earth fault test is done, which happens once every minute.

Positive line break test

A positive line break test should be carried out during commissioning. To do this:

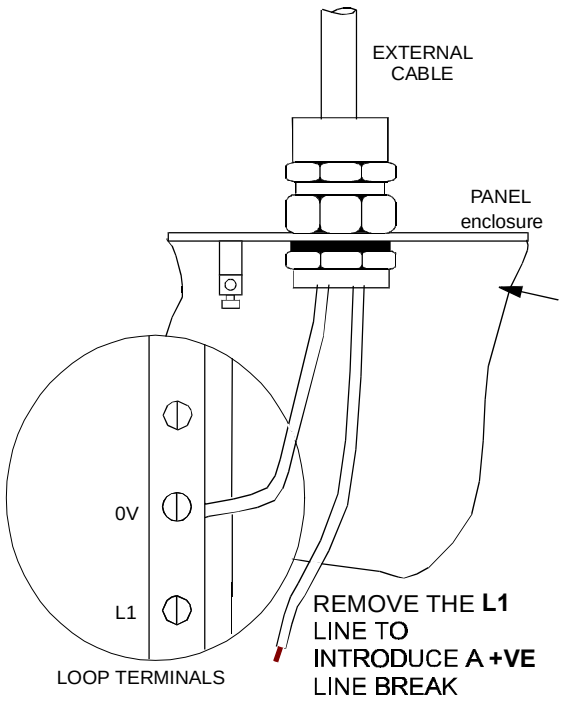

Figure 5-4 Removal of the +ve line wire

fl307

☐ Disconnect the *+ve loop* connection at one End of a loop circuit, the display shows:

```
Wiring changed - split'
```

> ***NOTE:*** *A single +ve line break should not cause the loss of any part of the system.*

☐ Reconnect *+ve line* to clear the fault.

> ***NOTE:*** *There may be a short delay before restoration and clearance of the fault.*

Positive line break monitoring

Each device on a loop sends information about itself to the respective loop processor. Using the serial information the Loop Processor can establish whether the device is communicating to both ends of the loop circuit. If the device is only communicating to one side of the loop then this is recognised as a fault.

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Outstations checks

Check the outstation status

☐ Use the **[Info]** menu and select -> **[Status]** and enter (device) outstation **[No]**.

Device type	**Digital channel**	**Analogue channel**	**Time average** Tnew
Optical **Optical Sounder** Heat Sounder	4 **...0** 4 **.000** 4 **.000**	1 - optical 1 - optical 2 - heat	200 - 235 200 - 235 180 - 210
T Breaker	**...0**	-	-
Slave			
Ionisation	4 **...0**	3	160 -180
Heat	4 **...0**	4	180 - 210
Sounder	4 - low frequency 3 - on/off **.00.**	-	-
Repeat Sounder	**.00.**	-	-
MCP	4 **...0**	6	-
Interface	Configurable I = input 0 = output **....**	1 - channel 1 2 - channel 2 3 - channel 3 4 - channel 4 5 - battery 6 - mains	- - - - - -
Loop Powered Zone Module	I..0	1 5	-
Single Channel Interface	I0.0 (O/P used) I..0 (O/P not used)	1 2 5	-
Repeat	-	-	-

Checking the time averages

The device environment may change time average readings. Use the **[Info]** menu and select -> **[Time Av]** -> channel **[No.]** -> and outstation **[No]**.

	Foreground (fast) time average readings					**Background (slow) time average readings**					
Tnew	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
On demand	80mS	320mS	1.28S	5.12S	20.48S	1.36min	5.46min	21.84min	1.45hr	5.82hr	23.3hr
	Normally reads 252, unless there is a threshold.										

Checking the sensor condition codes

What is a condition code

A condition code provides information about a sensor device. A code indicates small changes in the environmental condition, sensor mechanism and and how the sensor performs in the system.

To ensure that the sensor condition codes are meaningful, all existing codes must be cleared and the system must be left undisturbed for at least 24 hours.

Code definition

There are ten different conditions possible for each sensor type, although not all of them are defined. Each condition code has a range of **0-3**.

Condition Code	**Meaning**
0	This condition is OK. This code is not displayed unless another non zero code exists.
1 or 2	Suggests preventive maintenance may be required, where necessary, to avoid possible false alarms.
3	The sensor is faulty. A fault condition indication is given at the control panel. A message reading 'Sensor Out of Specification' is displayed.

***NOTE:** A sensor having **code 3** is automatically disabled by the system to prevent false alarms.*

Sensor condition code (sub fault) analysis

☐ Print the condition codes by using **[SubFaults] ,**under the **[Info]** menu.

Condition codes	Meaning	Action
1 0 0 0 0 0 0 0 0 0 **or** 0 1 0 0 0 0 0 0 0 0 **or** 1 1 0 0 0 0 0 0 0 0	This is the *sub-fire* band and if set should be taken as showing that the sensor is at their optimum sensitivity for their location.	No action need be taken.
2 0 0 0 0 0 0 0 0 0 **or** 0 2 0 0 0 0 0 0 0 0 **or** 2 2 0 0 0 0 0 0 0 0	A *sub-fire* has been generated which would suggest that the sensor was either too sensitive for its environment or that the sensor type may be incorrect for the location.	Action should be to check location and alter sensor state or type as required. This should only be done with the knowledge of the customer. Remember to re-backup all changes in state onto the RAM Card.
0 0 1 0 0 0 0 0 0 0 **or** 0 0 2 0 0 0 0 0 0 0	These codes indicate that the sensor is in a *windy location.* This will cause the chamber voltage to drop. Code Level 1 shows one drop only, Level 2 shows greater than one drop.	The location should be checked and a change in siting made, if required. Note: Wind will not cause the sensor to false alarm.
0 0 0 0 1 0 0 0 0 0 **or** 0 0 0 0 2 0 0 0 0 0 **or** 0 0 0 0 0 1 0 0 0 0 **or** 0 0 0 0 0 2 0 0 0 0	This shows that the sensor time averages are close to acceptable limits.	On commissioning the sensor should be replaced. A sensor with code 2 are worse than code 1. On maintenance sensors with code 2 should be replaced.
0 0 0 0 0 0 1 0 0 0 **or** 0 0 0 0 0 0 2 0 0 0 **or** 0 0 0 0 0 0 0 1 0 0 **or** 0 0 0 0 0 0 0 2 0 0	This shows that high frequency noise events have been detected by the system. A code 1 shows one event and a code 2 shows more than one event.	The outstation should be replaced. On maintenance, sensor with code 2 should be replaced. If it reoccurs then check the environment.
0 0 0 0 0 0 0 0 1 0 **or** 0 0 0 0 0 0 0 0 2 0	This shows outstation hardware faults. One for a code 1 and more than 1 for a code 2.	The sensor should be replaced.
0 0 0 0 0 0 0 0 0 1 **or** 0 0 0 0 0 0 0 0 0 2	This shows that transmission faults are being noted. Level 2 is worse than Level 1.	The outstation should be replaced. If it reoccurs then check the environment.

How to clear a condition code

This can be done by:

☐ Removal and replacement of the *sensor chamber*

☐ by re-allocation of the loop having the sensor

☐ or by using the **[Clear] [SubFault]** function in the **[Test/Eng]** menu.

> ***NOTE:*** *Cleared codes will return if the conditions are still true.*

Codes for *Optical sensor* or *Optical sounder*

Gen type	Pos No.	Description	Condition codes: normal band 0	sub fault band 1	sub fault band 2	fault band 3
ENVIORNMENT	1st	Optical subfire	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	2nd					
	3rd					
	4th					
	5th	Optical channel drift or out of range	OK		Close to acceptable limit **Low T_{11}<175** **High T_8>240** [clean]	Out of limits **Low T_{11}<165** **High T_8>245** [Clean/replace]
SENSOR	6th					
	7th	Optical channel noisy (High freq)	OK	Single HF noise event detected	Multiple HF noise seen (check location and report)	
	8th					
OUTSTATION	9th	Outstation firmware	OK	Isolated fault [Note/report]	Repetitive fault [Note/report/ replace]	Total failure [Replace]
	10th	Outstation transmission	OK	Low error rate	Medium error rate [Report]	High error rate [Replace]

Codes for *Heat sounder*

Gen type	Pos No.	Description	Condition codes: normal band 0	sub fault band 1	sub fault band 2	fault band 3
ENVIORNMENT	1st					
	2nd	Heat subfire	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	3rd					
	4th					
	5th					
SENSOR	6th	Heat channel drift or out of range	OK		Close to acceptable limit [Clean]	Out of limits **Low T_9>250** **High T_{11}<20** [Clean/replace]
	7th					
	8th	Heat channel noisy (High frequency)	OK	Single HF noise event detected	Multiple HF noise seen (check location and report)	
OUTSTATION	9th	Outstation firmware	OK	Isolated fault [Note/report]	Repetitive fault [Note/report/ replace]	Total failure [Replace]
	10th	Outstation transmission	OK	Low error rate	Medium error rate [Report]	High error rate [Replace]

Codes for *Heat sensor*

Gen type	Pos No.	Description	Condition codes: normal band 0	sub fault band 1	sub fault band 2	fault band 3
ENVIORNMENT	1st	Subfire background	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	2nd	Subfire foreground	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	3rd					
SENSOR	4th					
	5th	Drift out of range high	OK			Above upper limit **T9>250** [Replace]
	6th	Heat channel drift or out of range	OK			Below lower limit **T11<20** [Replace]
	7th	Noisy (High frequency)	OK	Single HF noise event detected	Multiple HF noise seen	
OUTSTATION	8th					
	9th	Outstation firmware	OK	Isolated fault [Note/report]	Repetitive Fault [Note/report/ replace]	Total Failure [Replace]
	10th	Outstation transmission	OK	Low error rate	Medium error rate [Report]	High error rate [Replace]

Codes for *Ionisation sensor*

Gen type	Pos No.	Description	Condition codes: normal band 0	sub fault band 1	sub fault band 2	fault band 3
ENVIORNMENT	1st	Subfire background	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	2nd	Subfire foreground	None	Small signal sensed [Check location, state & type]	Subfire [Check location, state & type]	
	3rd	Windy location	OK	One deviation away from normal [Check location, state & type]	More than one deviation away form normal [Check location, state & type]	
SENSOR	4th 5th	Drift out of range	OK		Close to acceptable limit **Low T_{11}<100** **High T_8>235** [Clean]	Out of limits low T_{11}<80 **High T_8>245** [Clean/replace]
	6th	Deviation from quiescent	OK	Sensed one deviation FET faulty [check]	2 Deviations [Note/report/ repair]	
	7th	Noisy (High frequency)	OK	Single HF noise event detected	Multiple HF noise seen	
OUTSTATION	8th 9th	Outstation firmware	OK	Isolated fault [Note/report]	Repetitive fault [Note/report/ replace]	Total failure [Replace]
	10th	Outstation transmission	OK	Low error rate	Medium error rate [Report]	High error rate [Replace]

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Sensors and interface input States

Loss prevention Council approved sensor states

- ☐ The **fire sensors** used in the system are under **test** at **Loss Prevention Council (LPC)**, there may be one or more sensor **states** under **approval**.

- ☐ If a sensor is configured to operate a non LPC approved state, then this will contravene the LPC approval.

> ***NOTE:*** *All the LPC states applicable to Fire Sensors are configured from the Control Panel.*

Device	**LPC STATE under approval**	Meaning
Optical sensor / Optical sounder	State 0	Detection to meet BS5445: Part 7
Heat sensor	State 0 State 1	Detection to meet BS5445:Part 5 Grade 2 Grade 1 fast
Ionisation sensor	State 0	Detection to meet BS5445: Part 7

On power-up the system selects **state 0** for all devices.

Optical sensor / Optical sounder states

State	Definition	Application
State 0 **(LPC approval)**	Optical smoke normal sensitivity	Suitable for most applications. Smoke detection to meet the requirements of BS5445:Part 7 .
State 1	High sensitivity optical	Used in areas or situations where airborne smoke or dust is unlikely to occur and therefore a more sensitive detection is available.
State 5	Medium sensitivity optical	As state 0
State 8	Medium sensitivity optical with 20 seconds time constant.	This state is useful in hotel bedrooms where low levels of signal could occur for short durations.
State 10	Medium sensitivity optical with time delay (20 second time constant).	As state 8
State 11	Low sensitivity optical	Used for smoke detection in areas where airborne particles or smoke are normally present.
State 15	No detection	This state can be used to provide total disablement on a timed or temporary basis.

Heat sounder states

State	Definition	Application
State 0	Medium sensitivity Heat grade 2	Suitable for general use in ambient temperatures up to 40^{o}C. Provides detection to the appropriate Grade performance as defined in BS5445 : Part 5
State 12	Grade 1 heat only.	
State 13	Grade 2 heat only.	
State 14	Grade 3 heat only.	
State 15	No detection	This state can be used to provide total disablement on a timed or temporary basis.

Heat sensor states

State	Definition	Application
State 0 **(LPC approval)**	(Default) Grade 2, rate of rise and fixed temperature	Suitable for general use in ambient temperatures up to 40^{o}C. Provides detection to Grade 2 performance as defined in BS5445 : Part 5
State 1 **(LPC approval)**	Grade 1, faster rate of temperature rise as well as fixed temperature.	Applicable for areas with normally very steady low ambient temperatures. A faster rate of rise can signal a fire below the normal set temperature at 58^{o}C.
State 2	Grade 1, limited rate of rise	Applicable for normal ambient temperature where temperature variations are expected up to 40^{o}C but faster response than grade 2 is required eg hotel bedroom.
State 5	High temperature **with** rate of rise	Provides detection as specified by **Range 1 BS5445:Part 8** for ambient temperatures up to 70^{o}C with rate of rise feature. Fixed temperature will operate at 84^{o}C.
State 6	High temperature **with no** rate of rise	Provides detection as specified by **Range 1 in BS5445:Part 8**, for ambient temperatures up to 70^{o}C with no rate of rise feature. Will operate at 84^{o}C.
State 15	No detection	No detection. This is a total disablement of the sensor.

Ionisation sensor states

State	Definition	Application
State 0 **(LPC approved)**	Default detection Medium sensitivity.	Detection in this state is at the same sensitivity as any other detector which will meet the requirements of BS5445:Part 7.
State 3	Medium sensitivity with 20 seconds time constant.	Where fast transients are required to be ignored.
State 5	Medium sensitivity with no background detection.	Same as state 0 but ignores smouldering fires, taking greater than 20 minutes to reach alarm levels. Used when mixed with optical smoke/heat sensors or in normally smoky environments.
State 10	Low sensitivity with 5 seconds time constant.	Lower sensitivity than state 0. Can be used where low levels of airborne smoke or dust are likely to occur.
State 12	Slow and Low sensitivity with 20 seconds time constant.	A lower sensitivity state than State 10, but ignores faster transients.
State 15	No detection.	No detection, total sensor disablement.

Interface unit inputs states

State	Definition	Applications
State 0	Default - all Inputs enabled	Normal use
State 1	Input 1 disabled	Selective disablement and enablement of interface input circuits NOTE: Where an input circuit is used for fire detection application, the call points on the circuits will remain operational on disablement of the circuit.
State 2	Input 2 disabled	
State 3	inputs 1 and 2 disabled	
State 4	Input 3 disabled	
State 5	Inputs 1 and 3 disabled	
State 6	Inputs 2 and 3 disabled	
State 7	Inputs 1, 2 and 3 disabled	
State 8	Input 4 disabled	
State 9	Inputs 1 and 4 disabled	
State 10	Inputs 2 and 4 disabled	
State 11	Input 1, 2 and 4 disabled	
State 12	Inputs 3 and 4 disabled	
State 13	Inputs 1, 3 and 4 disabled	
State 14	Inputs 2, 3 and 4 disabled	
State 15	All inputs disabled	interface input disablement

Single Channel Interface input states

These include the loop powered **single channel interface** and **loop powered zone module.**

State	Definition	Applications
State 0	Default - Input enabled	Normal use
State 1	Input 1 disabled	Selective disablement and enablement of interface input circuit **NOTE:** Where the input circuit is used for fire detection applications, the call points on the circuits will **NOT** remain operational on disablement of the circuit.
State 15	Input disabled	Interface input disabled.

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Assigning Outstations to Zones

See Appendix A - Set up menu map

Preparation

The following should be made available to assist with the commissioning of the System 32000 :

- ☐ accurate *as fitted wiring drawings*
- ☐ device labels & zone schedule.

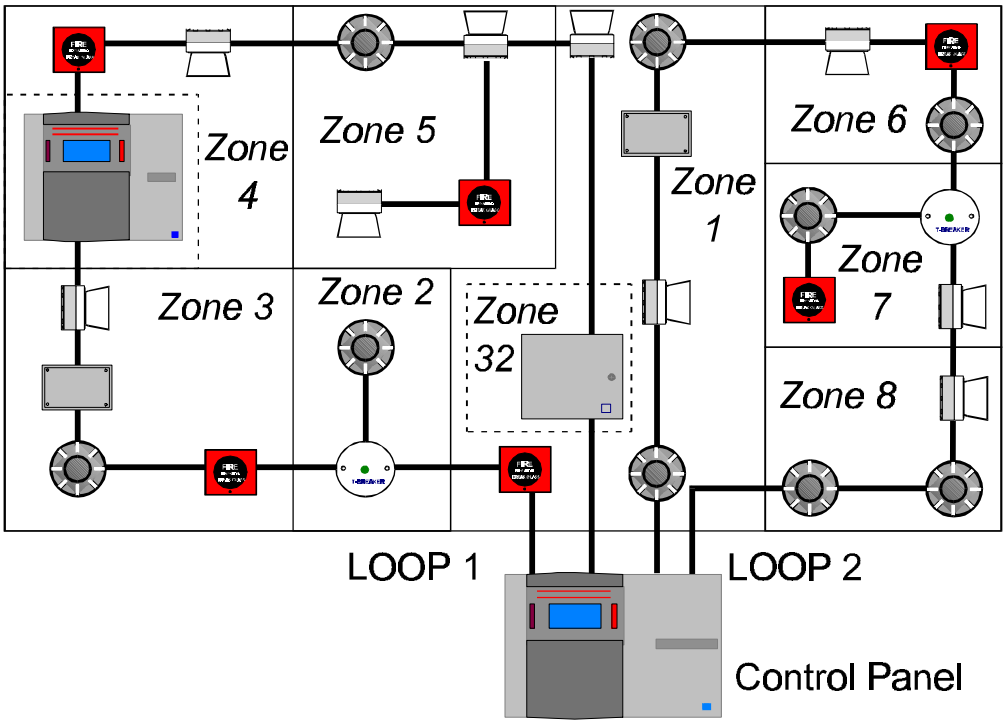
Guidelines on Zoning

> ***NOTE:*** *In a System 32000 a* ***zone*** *is for* ***detection*** *as well as for* ***alarm*** *application.*

A zone will consist of an area in the premises protected by manual call points, fire sensors and interface input lines, and containing sounders, sensor sounders and interface output lines.

BS5839 - Zone

The recommendations for zoning are given in BS5839:Part 1:1988.



cdn62

Figure 8-1 Zone definition

Uses of Zones

- ☐ **Fire annunciation** - the appropriate **zone LED** illuminates and the **zone label** is displayed, if zone labels have been set up.
- ☐ **Short circuit isolation** - a short circuit on the loop wiring will only isolate the zone that it occurs within.

Zone Rules

- ☐ **32 zones** available per panel.
- ☐ Upto **48 zone** boundaries maximum.
- ☐ Each device can only be assigned to **one zone**.
- ☐ Devices not in sequential order can be assigned to the same zone (see *Zone 1* above). Also, devices from both loops can be assigned to the same zone (see *Zone 1* above).
- ☐ Any number of devices can be in a zone.
- ☐ **All** the devices on a **spur**, including the device that the spur is taken from (e.g. T-breaker or 3-way Sounder)**, must** be assigned to the **same zone** (see *Zone 2* above).
- ☐ **Zone 32** is reserved for **plant control**. It does not activate when the *Sound Alarms* button is pressed or when class change is operated. It also is always activated by a fire in **any zone**.
- ☐ If sufficient zones are available, it is good practice to assign **Repeat panels** to a **separate zone**.
- ☐ Class change only operates sounders in zones 1 to 20.

Assigning outstations to zones

Each outstation (device) in the System 32000 should be assigned to a zone. This is done using the **[Set Up]** -> **[Assign]** menu at the control panel. For each device to be assigned to a zone, enter its outstation and loop number.

Example For the illustrated system the zone assignment is as follows:

Outstation number(s)	on **loop number**	is / are **assigned to zone number**
1, 15 1, 2 , 3 & 4	1 2	1
2 & 3	1	2
4, 5 , 6 & 7	1	3
9 & 10	1	4
11, 12, 13 & 14	1	5
5, 6 & 7	2	6
8, 9, 10 & 11	2	7
12, 13 &14	2	8
16	1	32

Local FIRE Plans

Preparation

☐ The selected local fire plan should be in line with the site evacuation procedures.

Local alarm controls

☐ A **control or repeat panel** located in the local system will operate *sound alarms, silence alarms and reset* controls throughout the local site.

Local Fire relay operation

☐ The **fire relay** will always be activated in the event of a fire detected in any zone of the local control panel.

Local Fire plans

A standalone System 32000 can be configured to work with one of the five selectable fire plans. The fire plans operate as follows:

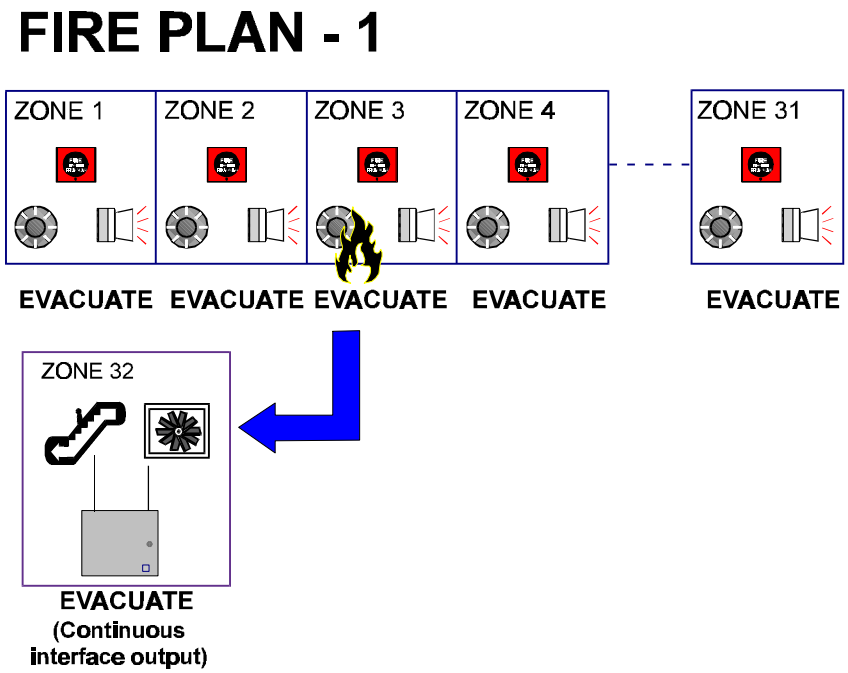


Figure 9-1 Operation of Fire plan 1

cdn190

☐ Evacuate all zones when a fire is detected in any zone.

☐ Immediately action all interface units in Zone 32 to provide a continuous output.

FIRE PLAN - 2

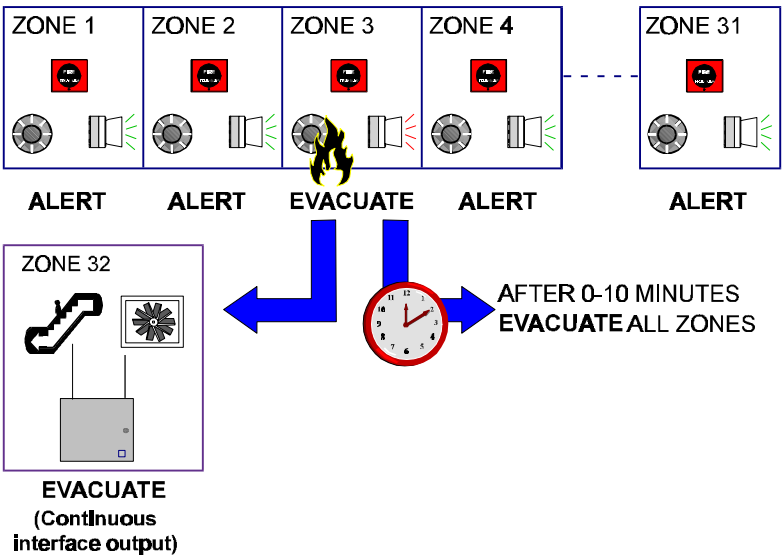


Figure 9-2 Operation of Fire plan - 2

cdn191

- ☐ Evacuate the zone in fire
- ☐ Immediately action all interface units in Zone 32 to provide a continuous output
- ☐ Alert all *other zones*
- ☐ Either after a pre-defined delay (0-10 minutes) or any second fire condition, evacuate all alerting *zones*

FIRE PLAN - 3

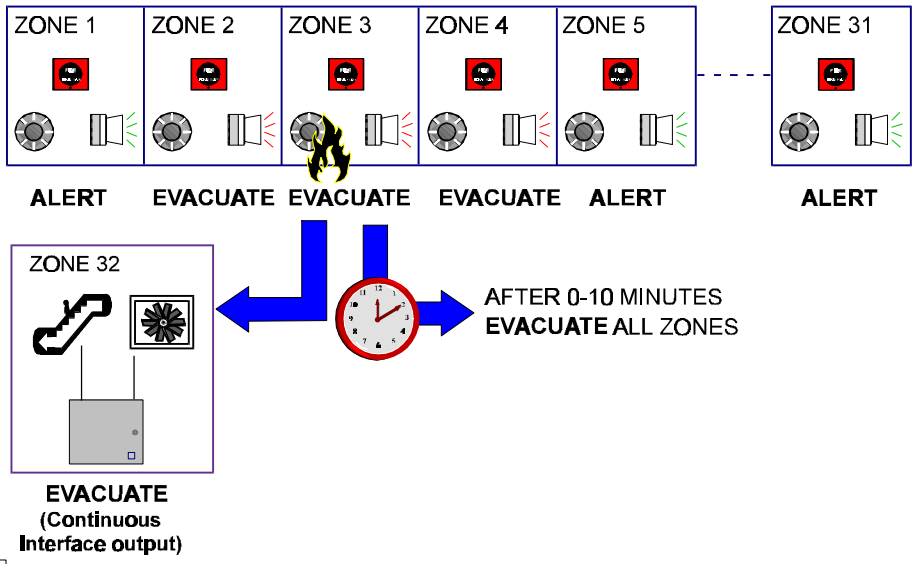


Figure 9-3 Operation of Fire plan - 3

cdn192

- ☐ Evacuate the zone in fire and zones numerically adjacent to that zone (Zone 1 will evacuate zones 31 and 2. Zone 31 will evacuate zones 30 and 1).
- ☐ Immediately action all interface units in Zone 32 to provide a continuous output.
- ☐ Alert all *other zones*
- ☐ Either after a pre-defined delay (0-10 minutes) or any second fire condition, evacuate all alerting *zones*.

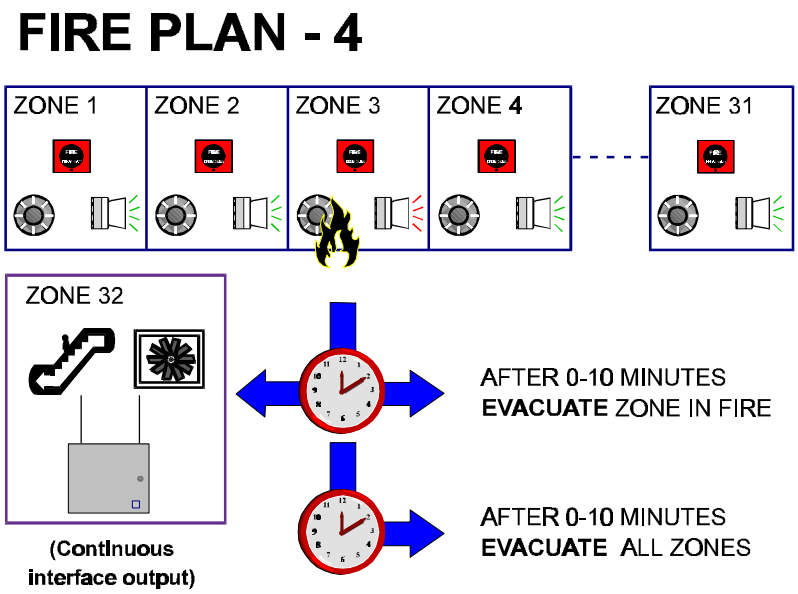


Figure 9-4 Operation of Fire plan - 4

cdn189

With a fire in a zone

- ☐ after a pre-defined delay (0-10 minutes) or any second fire - Evacuate the zone in fire condition and zone 32
- ☐ either after another identical delay of (0-10 minutes) or any second fire condition - evacuate all *other zones.*

Operation of Zone 32 with local Fire plan 5

> ***NOTE:*** *On selecting local Fire plan 5 the Zone 32 operates like Zones 1 to 31, with the exception that it is not affected by* ***Silence alarms*** *and* ***Sound alarms*** *buttons of the control panel.*

General rule

As a general rule **zone 32** should be reserved for **interface units** to control plant equipment, and therefore should not have detection alarm devices assigned to the zone.

With this rule the user can change to another **local fire plan 1,2,3 or 4** without affecting **zone 32** operation.

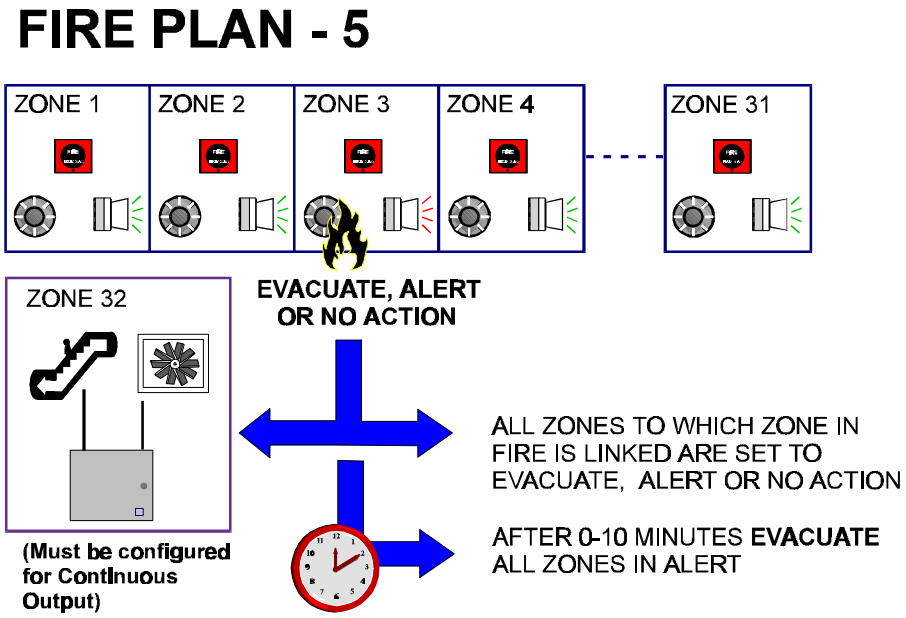


Figure 9-5 Operation of Fire plan - 5

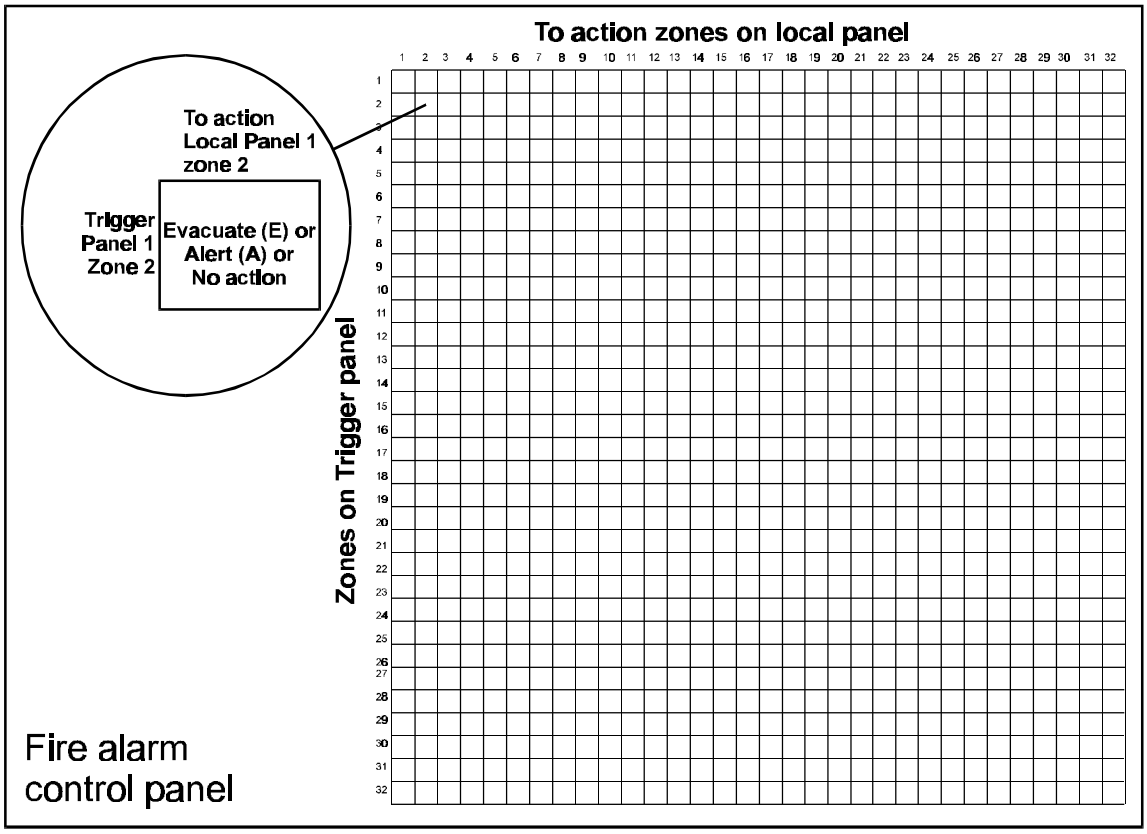
cdn167

- ☐ *Evacuate / Alert / No action* (as pre-defined) the zone in fire condition
- ☐ Immediately *Evacuate / Alert / No action (as pre-defined)* all *other zones* to which the Zone in fire is linked.
- ☐ Either after a pre-defined delay (0-10 minutes) or any second fire condition, evacuate all alerting *zones.*

> ***CAUTION:*** *With local* ***Fire plan 5****, if* ***Zone 32*** *is used to control plant equipment, then the zone 32 must be configured for Evacuate operation in the event of a fire in any zone.*

Zone linking with local FIRE plan 5

The local **fire plan 5** alarm actions can be configured to meet site specific needs. In the event of a fire in a local zone the system alarms can be configured to action *evacuate, alert or no action* on selected local zone(s).



cdm176

Figure 9-6 Local zone links

What is a trigger Zone

A **trigger zone** is the zone that has detected a fire, in this case it is a zone of the local panel. The fire may be detected in any one of its **1 to 31 zones and zone 32 with fire plan 5, see Operation of Zone 32 with local fire plan 5.**

Example: Assuming a manual call point is operated and it is located in zone 2 of the local panel, then the trigger is zone 2 of the local panel.

What are action Zone(s)

The **action zone(s)** can be on any of **1 to 32 zones** of the local panel. The action itself can be to signal *evacuate or alert or no action* on alarm sounders and interface outputs in selected zone(s).

> ***CAUTION:*** *If* ***Zone 32*** *is to control plant equipment then the zone 32 must be configured for Evacuate action in the event of a fire in any zone.*

Example: Assuming zone 2 has triggered due to a manual call point operation, then its action may be to *evacuate* **zone 2** and *alert* **zones 1, 3** and **30**.

How to select a local fire plan

A local fire plan can be selected without the commissioning tool using the keys at the control panel.

> **NOTE:** *The default local fire plan is always* ***local Fire plan - 1.***

Fire plan

The control panel can be configured to operate **local fire plan 2,3,4 or 5.**

- ☐ Another local fire plan can be selected using:
  [Set Up] ->[Set Up] -> [Fire plan] -> [Local] -> **[Number]** menu at the control panel.

Delay-fireplan operation

The **local fire plans 2,3,4 and 5** can be configured to operate with a ***delay*** of 0 - 10 minutes.

- ☐ The delay period for fire plans 2,3,4 or 5 can be entered using:
  [Set Up] -> [Set Up] -> [Fire plan] -> [Local] -> **[delay]** menu at the control panel.

How to select a sound signal

The **evacuate** and **alert** sounds are normally pre-set to provide a default output signals to alarm sounders in the local system. These sound signals can be changed to any one of five pre-defined outputs.

> ***NOTE:*** *A change to the evacuate and alert sound signals can only be made using the commissioning tool.*

How to set up the zone links

See also **Operation of Zone 32 with local fire plan 5**.

With local fire plan 5 it is possible to link the local zone actions.

> ***NOTE:*** *It is strongly advised that the panel is commissioned using the commissioning tool.*

With local fire plan 5 it is possible to link the local zone actions using the keys at the control panel, but this can be very time consuming.

- ☐ A local trigger zone can be set to action selected zone(s) of the local panel to signal evacuate or alert.:
  [Action] -> [Zone(s) (action)] from -> [Zone (trigger)] to
  -> **[Evac]/[Alert] .**

How to test the local Fire plan

Check the control panel has been set to the required local fire plan. This can be done by:

☐ **[Info]-> [Status] -> [FirePlan] -> [Local]** menu at the control panel.

If local Fire plan 5 has been selected then printout the zone links of zones 1 to 32.

☐ **[Info]-> [Print] -> [Status] -> [ZoneLink]** menu at the control panel.

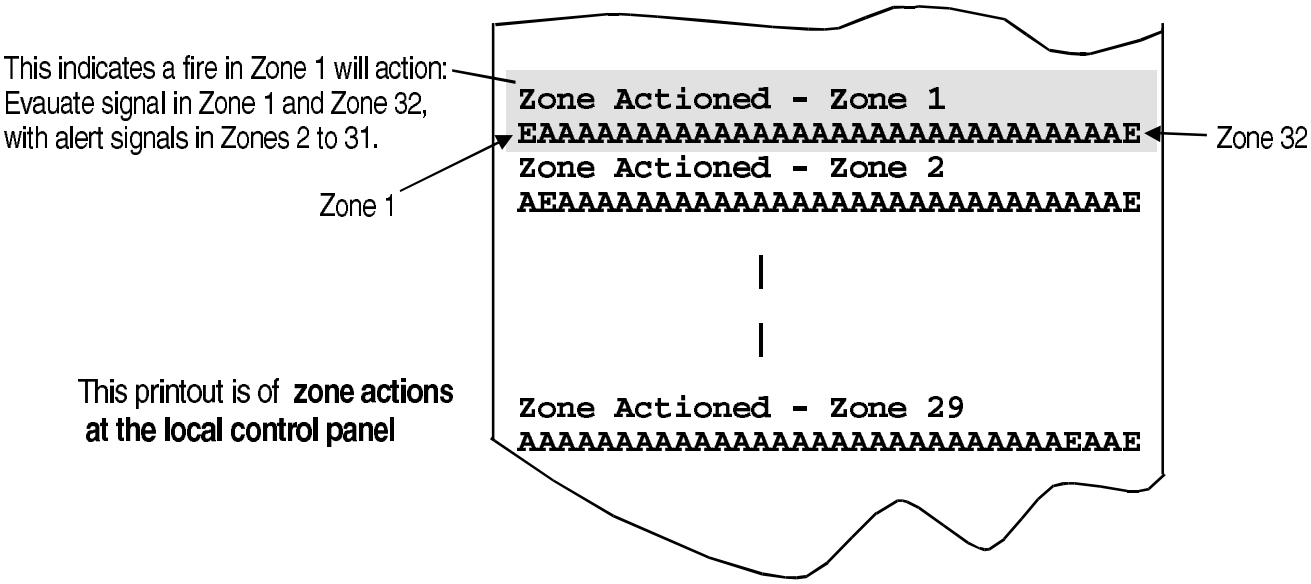


Figure 9-7 Zone link printout

cdm173

System operation

☐ Check the operation of the system in accordance with the selected fire plan operation.

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Commissioning software tool

Preparation

It is essential to have the following:

☐ The commissioning computer with leads to connect to control panel, printer (if used) and mains supply

☐ Printer- *to print labels and configuration information*

☐ System 32000 commissioning software
(software version 1.03 or later if zone linking is to be used.)

☐ If using local fire plan 5 and network fire plan 6 then ensure the:

☐ As fitted wiring drawings - *showing devices (outstations) on loops*

☐ Customer agreed site specific information:

- Device (outstation) and zone labels
- Local and network Fire plans - with delayed operation information
- Evacuate and Alert sound signals
- Zone linking information

Control panel software

> ***NOTE:*** *The control panel(s) will only operate* ***Local (standalone) Fire plan 5 or Network Fire plan 6*** *with the correct version of Local controller and loop processor software.*

☐ Local Controller Card software must be **version 3.41** or later

☐ Loop Processor Card software must be **version 3.45** or later.

Guidelines for Labeling

Each System 32000 device (Outstation) is given a name (label) to identify its location in the system:

- A **Fire Sensor** can be given a **32 characters** label. The label is for fire and fault annunciation purposes, if however a zone label has been set up then a fire condition will only display the zone label.

- An **Alarm Sounder** can be given **32 characters** label. The abbreviation **SNDR** (to represent the device) should be included before the specific name. The label is for fault annunciation purpose.

- A **Manual Call Point** can be given a label of up to **28 characters** in size. The abbreviation **MCP** will automatically precede the specific name. The label is for fire or fault annunciation purposes.

- An **Interface Unit** can be given a label of up to **32 characters** in size. The abbreviation **INTR** should be included before the specific name. The label is for fault annunciation purpose.

  The **32440** and **32450 Interface Units** have **four channels**, each can be configured as an **input** or an **output:**

  - As an **input** channel it can accept conventional fire detection devices and can be given a label of up to **32 characters** long. If MCPs are also used with the detection devices then the label can be up to **28 characters** long.
  - As an **output** channel it is used to operate conventional sounders or relays and can be given a label of up to **32 characters** long.

  The **32457 Class change interface unit** is configured to accept a normally open switch and can be given a label of up to **32 characters** long.

  The **32415 Loop powered zone module** is a single channel **input** to accept conventional fire detection devices and can be given a label of up to **32 characters** long.

  The **32410 Single channel interface unit** is a single channel **input** to accept switches and can be given a label of up to **32 characters** long**.**

A 32000 system zone may also be given a label to identify the area that it covers.

> ***NOTE:*** *If both zone and device labels are used, then only* ***zone label*** *will be displayed when a fire is annunciated.*

- Each **Zone** may be given a label of up to **32 characters** long.

Other configurations

Fire plans

The 32000 system has two ranges of pre-defined fire plans.

- There are **five-local fire plans** and **six-network fire plans**, where appropriate fire plans may also operate with a delay of between 0-10 minutes.

Custom Label

The custom label is normally the site name/location, which is displayed on the control panel after power up and display test.

- The custom label can be up to **32 characters** long.

Node (Local or Panel) label

This label is displayed with event information to identify the panel (standalone system) in a network.

- The panel (local or node) label can be up to **32 characters** long.

Sound signals

- The **evacuate and alert** sound signals of a local system can only be changed using the commissioning tool to operate to site specific requirement. There are five standard sound patterns for selection, these include the default evacuate and default alert sounds.

How to connect the computer to Control panel

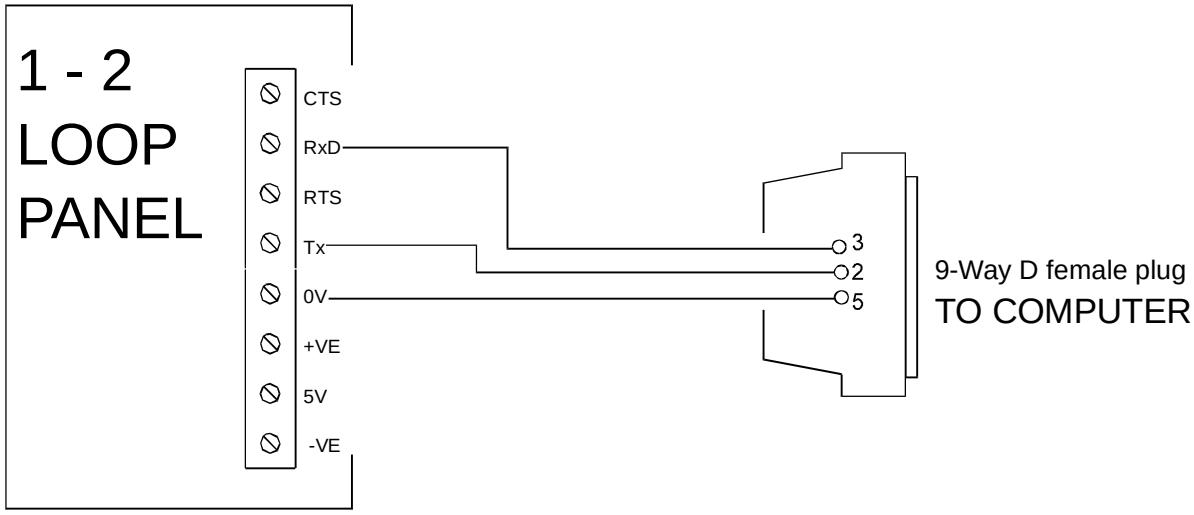


Figure 10-1 Panel to PC connection

How to Install Commissioning software

Computer powered-up

Assuming the computer is powered-up and is showing the DOS drive prompt then:

a) Insert the *Commissioning software install disk* into **drive A**.

b) At the DOS prompt type **A:** and press the <Enter> button.

c) Type INSTALL and press the <Enter> button.
The computer will then automatically create a directory called 32000 and copy the commissioning software and demo files to the computer hard disk.

Computer powered-down

Assuming the computer is configured with the GENT SHELL and is switched off:

a) Insert the 32000 Commissioning software install disk into drive A.

b) Switch the computer On and the relevant files will be automatically copied to the respective directory.

Demonstration files

The version 1.03 Commissioning software is supplied with demo files:

- **demo.cfg** - which contains labels and configuration data
- **demo.dat** - which contains the sound signals and zone linking data.

> ***NOTE:*** *The previous versions of Commissioning software only makes use of the* ***.cfg*** *file.*

'Labeller' commissioning software files

A file created on previous version of commissioning software has a **'.cfg'** extension, which can be opened and worked on using the new version 1.03 commissioning software.

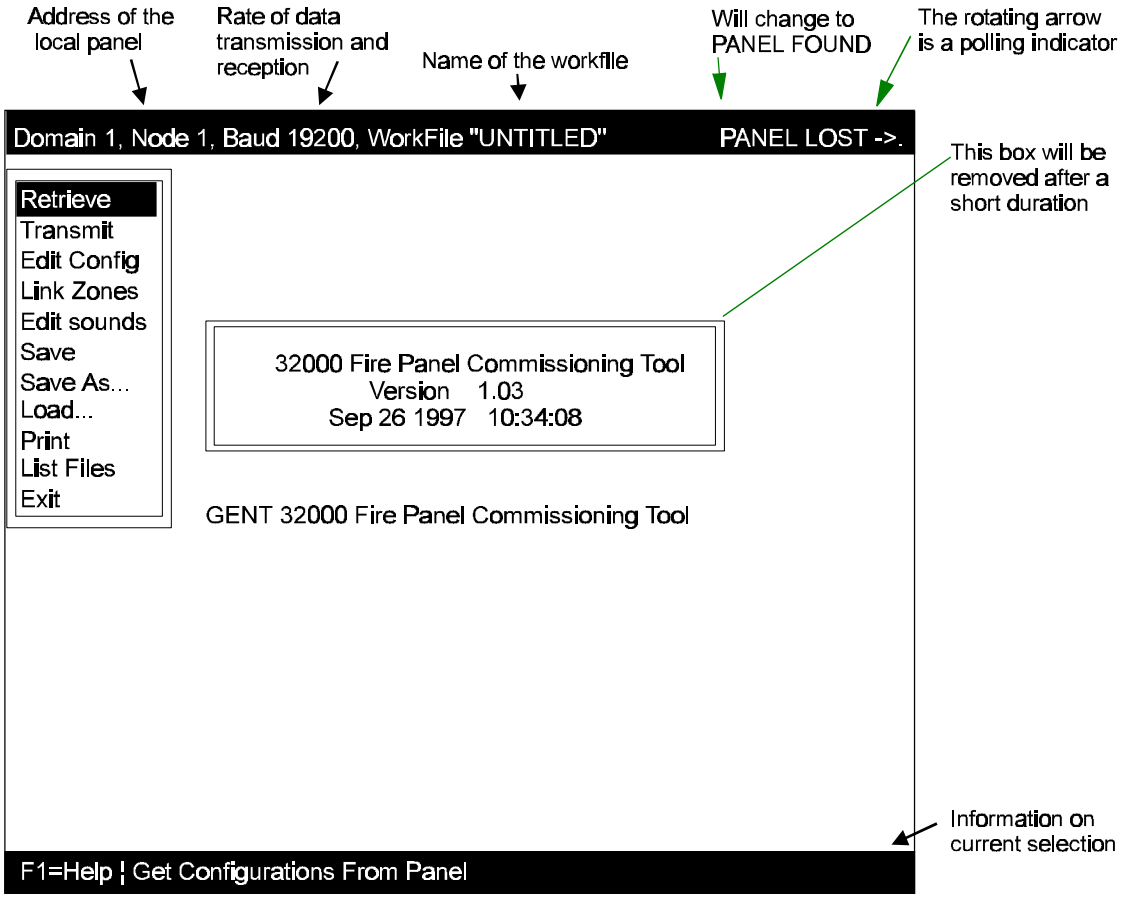
The commissioning features of local fire plan 5 and network fire plan 6 are not applicable to a system where the local controller and loop processor card software have not been upgraded, see Control panel software section.

Running the Commissioning software

Assuming the PC is powered up and GENT SHELL has been selected.

a) From the **GENT SHELL** select the **32000 Labeller configurer** and press the <enter> key.

> ***CAUTION:*** *The software cannot be run whilst running windows.*



cdm175

Figure 10-2 Power-up screen

How to create a WorkFile

There are two ways of creating a “WorkFile”:

- the normal method is to connect the computer to the control panel and then use the **[retrieve]** command to get the system’s labels and configuration.

  The retrieved data should then saved to a WorkFile using the **[SaveAs]** command.

- the other method is to plan a fire system using the demonstration file. This is done by using **[Load]** to call up the DEMO file and to save it under another name using the **[Save As]** command. The file can be altered to match a proposed system.

What are the main commands

(Retrieve) This command allows the panel data to be retrieved to the computer. The data includes *outstation and loop numbers* of each system device, plus preset configurations and panel hardware information.

(Transmit) This command transmits an open WorkFile to the control panel. The transmitted data include *devices and zones* labels plus fire plan information.

(Edit Config) This command opens a page for entry of *device (outstation) and zone labels*, plus the selection of *local and network fire plan* with delay options.

(Link Zones) This command opens the **Zone linking table** page to allow editing of zone alarm action links, applicable to local fire plan 5 and network fire plan 6.

(Edit Sound) This command allows the selection of **evacuate** and **alert** sound required in the system, from a range of pre-defined sound signals.

(Save) This command will save data of an open WorkFile under an existing name.

(Save As...) This command will ask for a new name for currently open WorkFile. The filename should be relevant to the site or panel location. To save to a different drive, prefix the filename with the dive letter followed by a colon, i.e. A:Filename

(Load...) This command allows an entry of the name of an existing file to be opened.

(Print) This command prints to a connected printer the data of an open Workfile. An Epson based printer should be used for printing.

(ListFile) This command lists the files on disk.

(Exit) This option quits the Commissioning software.

Help For help at any time press the Function key F1.

☐ **Deleting of files is only possible using the DOS 'DEL' command.**

How to retrieve system data

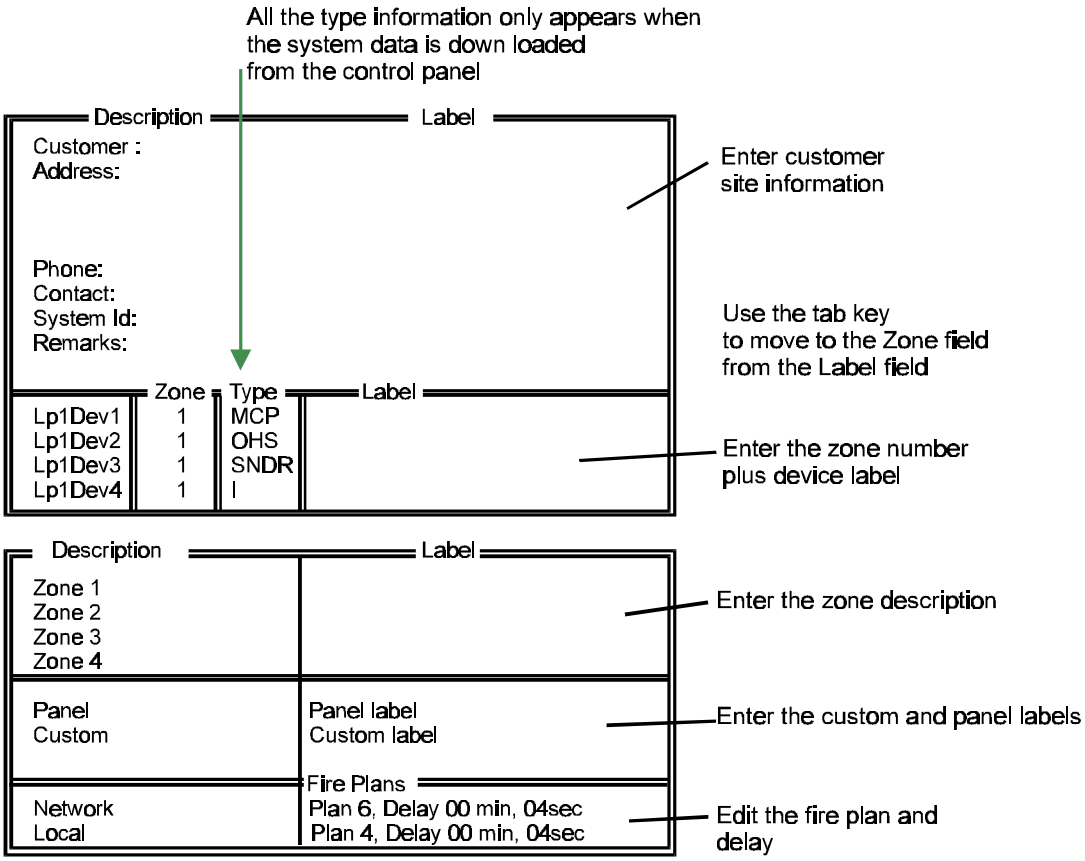
☐ Wait until the PANEL FOUND message appears on the screen and then select the **[retrieve]** command.

> ***NOTE:*** *In case of difficulty when receiving system information check the baud rate, which should be 19200.*

If the communication between the panel and computer fails, then check the baud rate on Control panel IO Card (card 15) and alter if necessary and reset the card using the **[TestEng]->[Reset]** option.

Editing the configuration

☐ Select the **[Edit Config]** command which will open the following page.



cdm180

Figure 10-3 Edit configuration page

Site Details ☐ enter customer name, address, contact and site ID, if known.

Loop devices ☐ enter labels of devices (outstations) and interface channels, plus their **zone number**

Zone details ☐ enter the zone labels, if used.

Panel and custom labels ☐ enter a panel label, this is normally the name given to the local panel

☐ enter a custom label, this is the site name that is normally displayed on control panel.

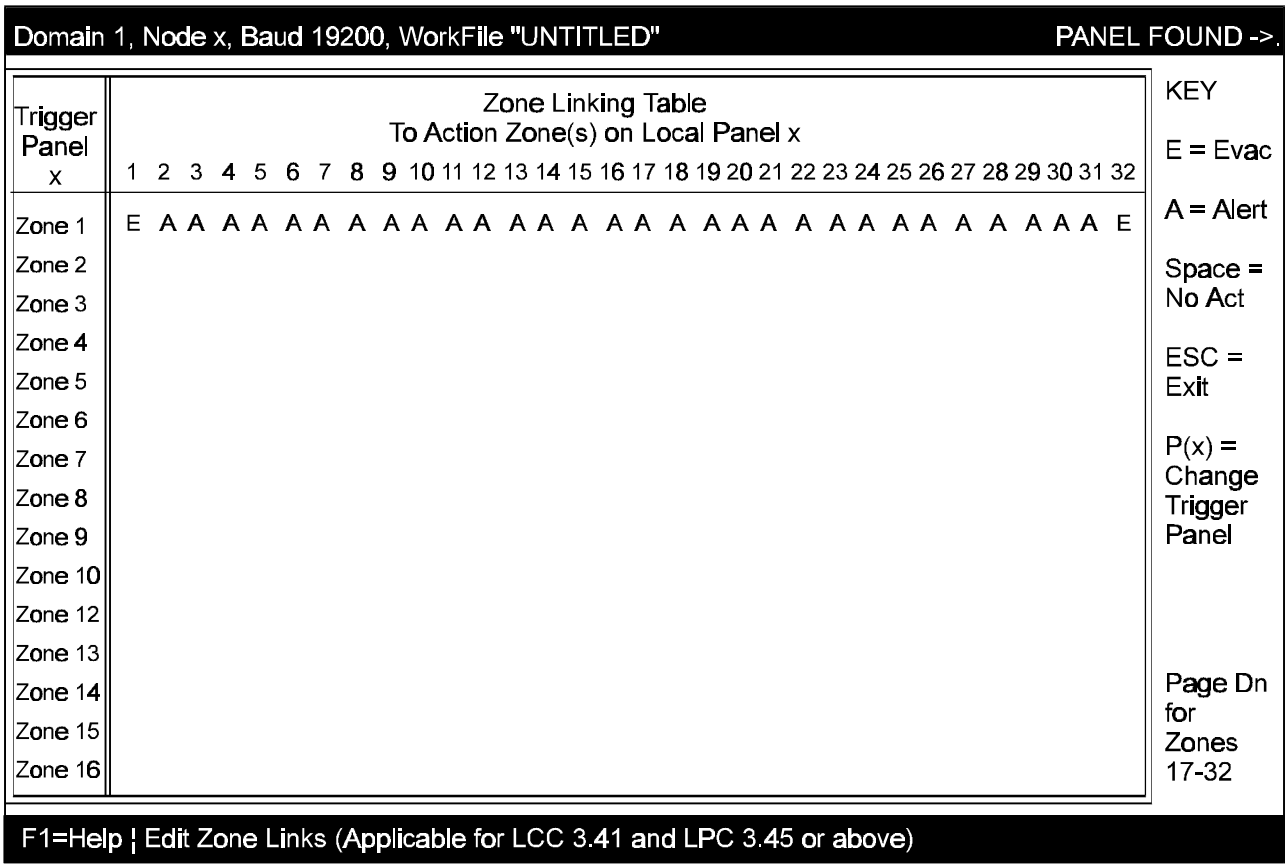
Fire Plans ☐ enter the required local and network fire plans numbers (the defaults are fire plans 1).
plus enter the required delay in minutes and seconds for the appropriate fire plan.

Tip ☐ When entering labels with same similar names use the *copy and paste* facility to save time:

- to copy text press **CTRL INSERT** and to paste text to the desired position press **SHIFT INSERT**

Linking zone actions

☐ Select the **[Link Zones]** command which will open the following page.



This example shows a fire in Zone 1 of the trigger panel x will action Evacuate signal in Zones 1 and 32 plus Alert signal all the remaining Zones of Panel x

Figure 10-4 Zone linking configuration page

cdm178

> ***NOTE:*** *This page initially displays zones 1 to 16 of the trigger panel. The zones 17 to 32 can be viewed by pressing the page down button.*

What is a trigger panel zone

The **trigger panel zone(s)** are the zone(s) of the panel that can detect a fire. The fire may be detected in any one of its 1 to 31 zones. Note zone 32 is reserved for output only application and has no detection devices.

The trigger panel is normally set to be the **local panel**, but can also be one of the networked panels. To change the trigger panel press **P** followed by the **node number** of the networked panel.

What are action Zone(s)?

The **action zone(s)** are the **zones 1 to 32** of the local panel, where the action is on the alarm sounders and interface outputs of the selected zone(s). The action is initiated by a trigger zone going into a fire condition.

The action can be to signal *evacuate or alert or no action* on alarm sounders and interface outputs in the selected action zone.

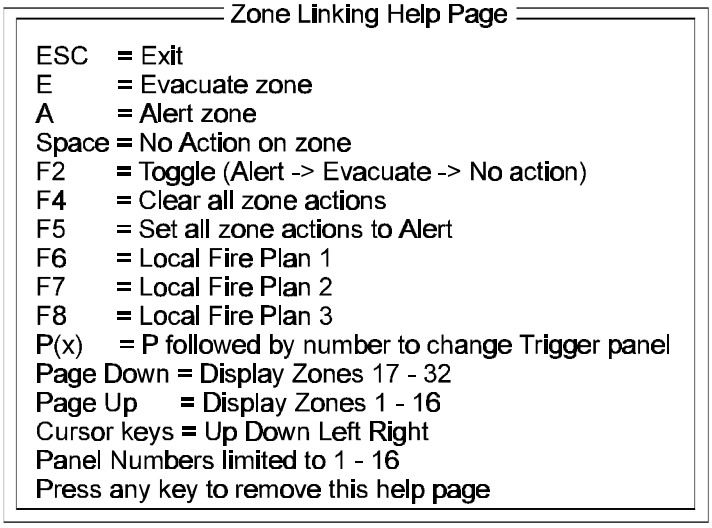


Figure 10-5 Zone linking help

cdm179

Sound signal selection

The standard **evacuate** and **alert** sounds are normally pre-set to provide outputs to alarm sounders in the local system. These sounds can be changed to any one of five pre-defined outputs using only the **commissioning tool**.

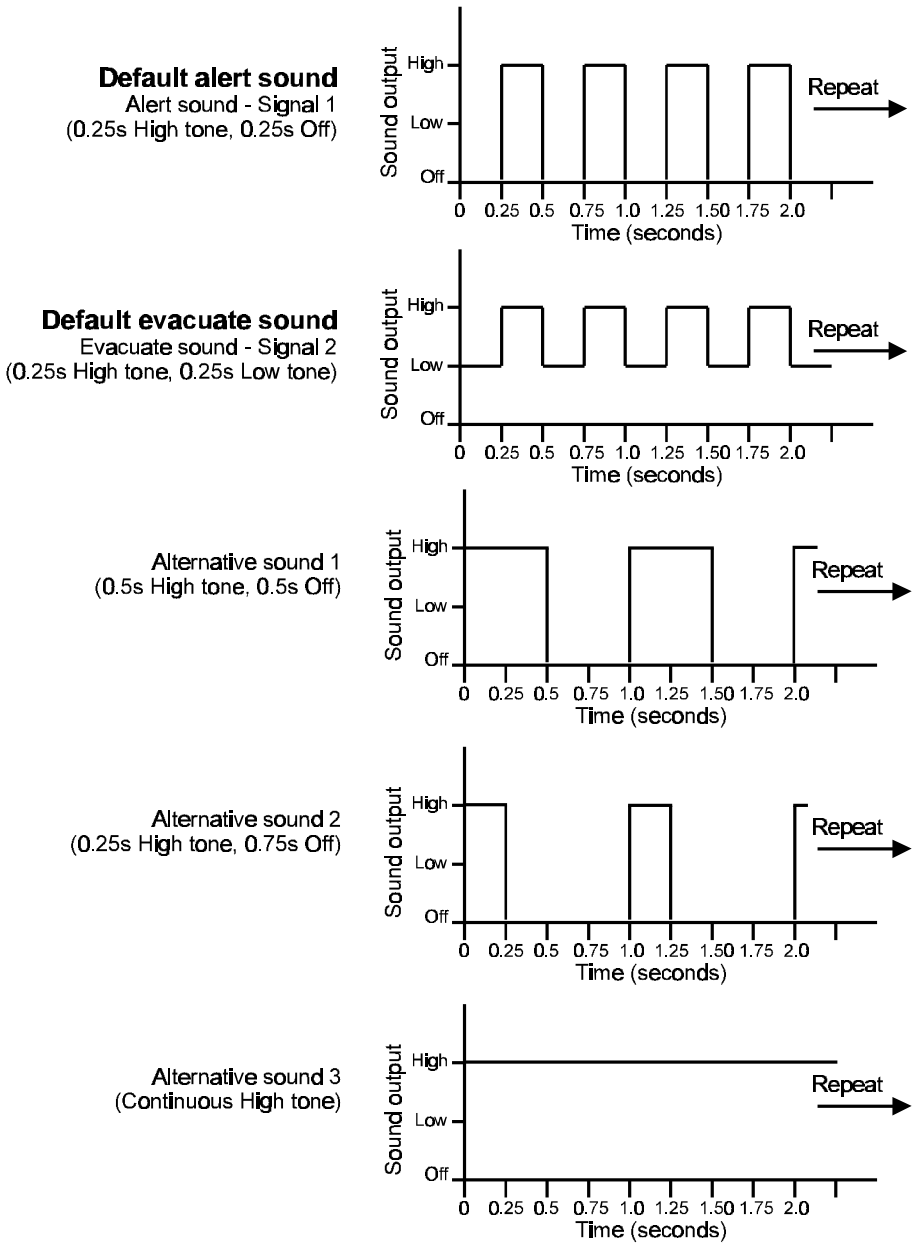


Figure 10-6 Pre-defined sound signals

cdm169

Select the **[Edit Sound]** command which will open the following page.

Sound Signal Selection

Alert (A) = **0.25s HIgh 0.25s Off (Default Alert)**
Evacuate (E) = 0.25s High 0.25s Low (Default Evacuate)

Up Cursor to select Alert Action
Down Cursor to select Evacuate Action
Left and Right to cycle signal types
Press any other key to remove this dialogue

Figure 10-7 Sound signal selection

Select the required evacuate and alert sounds.

Printing the labels and configurations

☐ Select the **[Print]** command to print all the labels and configurations data held in the workfile.

Where a **workfile** is saved from retrieved system data the printout will include other information about the control panel. Along with the **custom** and **panel labels** there will be:

- panel node address
- domain address
- details of the **cards** in the control panel to include their location, software version and date of release
- plus baud rate and diagnostic information
- sound signal settings
- zone links (only for panels that have links setup).

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Installed equipment tests

Preparation

☐ Check to ensure *access* will be provided to areas where installed equipment is to be tested, such as in locked or secure areas.

☐ Where *dust covers* are fitted on sensor heads, then these need to be removed.

☐ Tests may be made easier by having: smoke poles, smoke canister, heat gun, sensor removal kit and MCP test key, plus keys to open system equipment.

Communication to site occupant

☐ Before undertaking any of these tests and to prevent unnecessary building evacuation, ensure:

- all affected personal on site are informed via a responsible person that the fire alarm system is being commissioned.
- where there is a link to a manned centre, the appropriate action should be taken to ensure they are informed that test are being carried out on the system.

Deviations from standards

☐ The results of system *tests* carried out must be in accordance with the *relevant standards and project specification.*

☐ Any deviations must be documented and reported for approval.

Commissioning mode

☐ Set the main panel in to commissioning mode. The commissioning mode is accessible under the **[TestEng]** menu. This will control the sounders in the system to sound for a short duration as each fire sensor is tested.

> ***NOTE:*** *On leaving a fully commissioned site it is important to switch Off the commissioning mode.*

Auxiliary equipment

☐ Prior to any functional tests on the system, all auxiliary equipment should be isolated.

Tests

☐ Tests should be carried out following customer consent. It may be also be necessary to obtain third party consent depending on the equipment connected to the auxiliary contacts.

☐ All these tests on auxiliary equipment should have been agreed during the project design stage.

Fire Sensors

WARNING: *When testing heat sensors DO NOT operate the heat gun in a hazardous environment.*

CAUTION: *When using a heat gun avoid spot heating as this may overheat and damage the sensor.*

CAUTION: *When smoke testing fire sensors using artificial smoke, avoid excessive spray to prevent accumulation of sticky residue on sensor.*

The BS5839:Part 1 Section 26.5 (b) recommends that all sensors are tested for correct operation.

☐ Unless otherwise instructed all sensors should be tested.

☐ Each sensor should also be checked for any physical obstacles that would inhibit the operation of the sensor in the event of a fire.

☐ Where practical, each *conventional flame detector* operating via an interface unit should be functionally tested.

Manual Call Points

☐ Each Call Point should be tested for correct initiation of a fire event.

Sounders

NOTE: *The Sensor sounder has a blue band running around the central outer moulding to ease identification.*

☐ Each sounder should be tested, for correct operation in the event of fire.

☐ The sound levels in the areas should be tested in accordance with the British standard requirements and to meet the site specific needs agreed with the customer.

For standard sounder

☐ Where lower sound levels are required the link P2 should be shorting positions 2-3 to enable the sound output to be varied using RV1.

Interface Units

CAUTION: *In some instances it may not be possible to functionally test input/output circuits of interface units, such as when interfaced to plant systems.*

CAUTION: *Ensure the contact rating of interface output circuits are adequate for the ancillary equipment load requirement.*

NOTE: *Fit a mains voltage warning label where mains supply are being switched.*

Ancillary equipment

☐ Tests should be carried out following customer consent. It may be also be necessary to obtain third party consent

☐ All these tests on ancillary equipment should have been agreed during the project design stage.

NOTE: The loop powered single channel interface output is not fault monitored, in this case the output tests are not applicable.

Tests

☐ Each interface should be tested for the following:

- Battery disconnection *
- Mains supply disconnection *
- Input line open circuit
- Input line short circuit
- Input line fire & fault tests #
- Output line open circuit ~
- Output line short circuit ~
- Output line operation ~

* Not applicable for the **loop powered interface units**, but input tests are applicable to the **loop powered zone module**.

A fire from a **manual call point or detector** connected to a loop powered zone module input cannot be differentiated.

~ The output of the **single channel interface** operates with the zone in which the unit is located and is a set of **voltage free contacts.** The contacts are therefore not fault monitored.

Interfaced equipment test

☐ The external equipment connected to the system via an interface unit should be tested as per project specification.

Keyswitches

☐ Where the interface unit has a keyswitch door fitted, then the keyswitches should be tested as per project specification.

☐ The operation of a keyswitch should also light the LED indicator.

Repeat Panel

Each *repeat panel* should be tested for the following:

☐ Sound Alarms

> ***CAUTION:*** *Operating the SOUND ALARM button will activate the alarm sounders in the system.*

☐ Silence Alarms

☐ Reset

☐ Cancel Fault Buzzer

☐ Battery disconnection

☐ Mains supply disconnection

☐ Display of Fire events

> ***NOTE:*** *If there are two fires or more having same label, then only one fire label is displayed.*

☐ Display of Fault events

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Network power-up

Preparation

- ☐ Each standalone system to be networked should be commissioned.
- ☐ Check correct use of twisted pair cable for the network connection, see Installation manual for details.

Addressing a System 32000 network

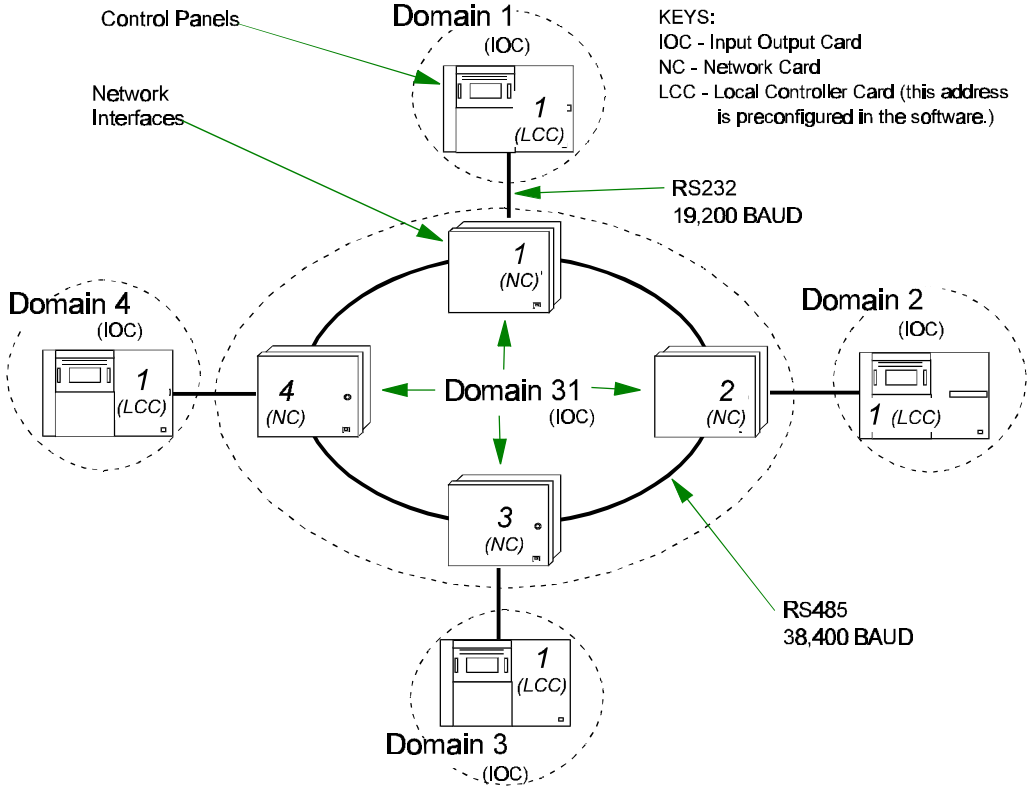


Figure 12-1 Domain, Panel and Node addresses

fl311

Control panel

- ☐ **Domain address** is set by the **IO card**.
- ☐ **Node or panel address** is set up and held by the *local controller card* and it is always **1**. There is no manual setting up required of the address.

Network Interface

- ☐ **Domain address** is set by the **IO card** which should be set to **31**.
- ☐ **Node or panel address** is set by the **Network card** which should be the same as the **IO card** address of the connecting control panel.

Guideline on Domain

- ☐ All *Network Interfaces* should be in **Domain 31**. This is achieved by setting the **network interface IO card** address to address 31.
- ☐ Each networked *Control panel* should be in a **specific Domain**. This is achieved by setting the **control panel IO card** address to a specific address.

How to connect the twin twisted pair cable

If using twin twisted pair cable, then ensure that Rx and Tx use the same twisted pair. The cores of the second pait are joined together to make the 0V (reference) connection.

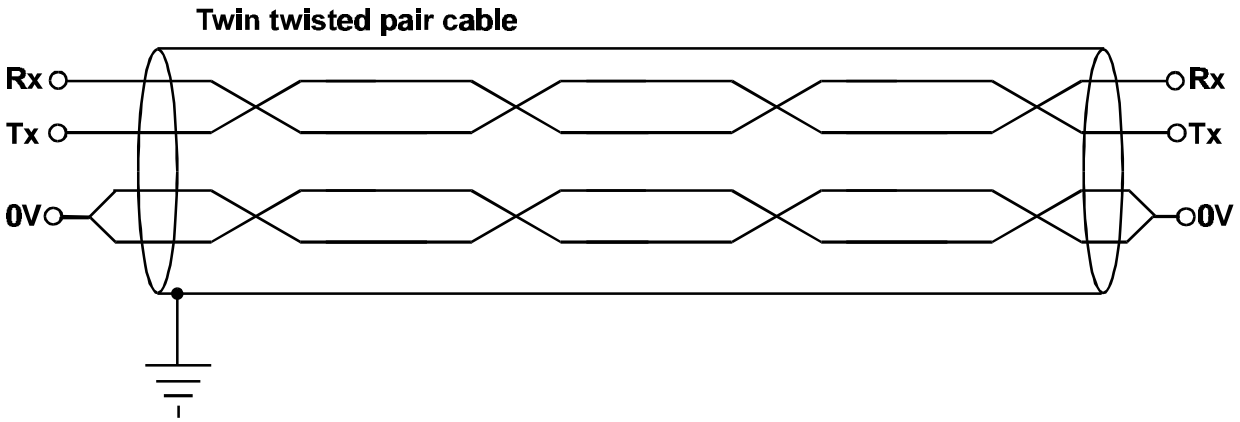


Figure 12-3 Connecting twin twisted pair cable

Network earthing arrangement

☐ Check the network cable **earth** connections are correct, see the installation manual

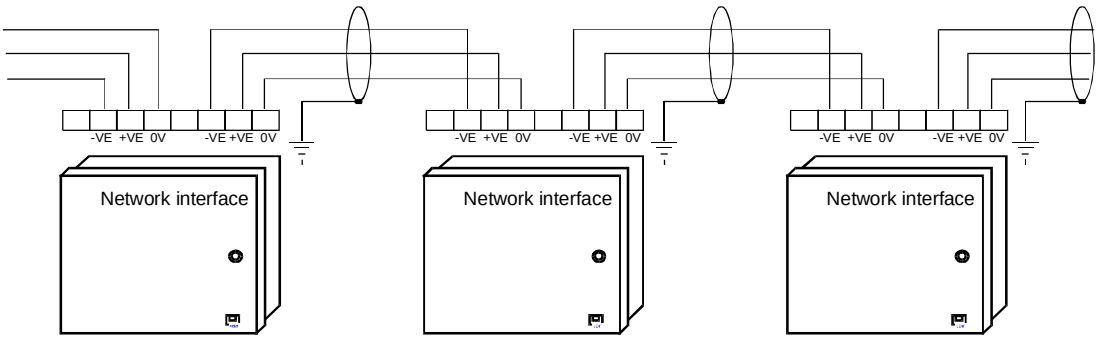


Figure 12-2 Network cable connections

fl312

How to setup the Network Card (NC)

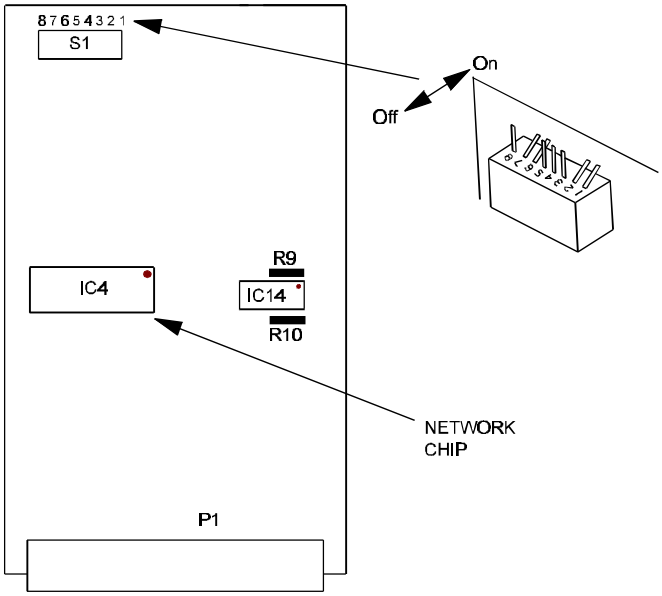


Figure 12-4 Network card

fl239

Dual-in-line switch

☐ The Network card is factory set for 38.4K baud with address 4.

Card address	Switch Number 8	7	6	5	4	3	Switch Number 2	1	Baud rate
64	off	off	off	off	off	off	off	off	2400
1	on	off	off	off	off	off	on	off	9600
2	off	on	off	off	off	off	off	on	19.2K
3	on	on	off	off	off	off	on	on	38.4K
4	off	off	on	off	off	off			
63	on	on	on	on	on	on			

***NOTE:** The network card in the Network interface and connecting control panel IO card should be set to have the same address.*

☐ Ensure IC4 and IC6 holds the correct version of network software.

Communication

☐ The *panel to node* communication link should be set for RS232 at *baud* rate (4800, 9600,**19200 (normally chosen)** and 38400)**.**

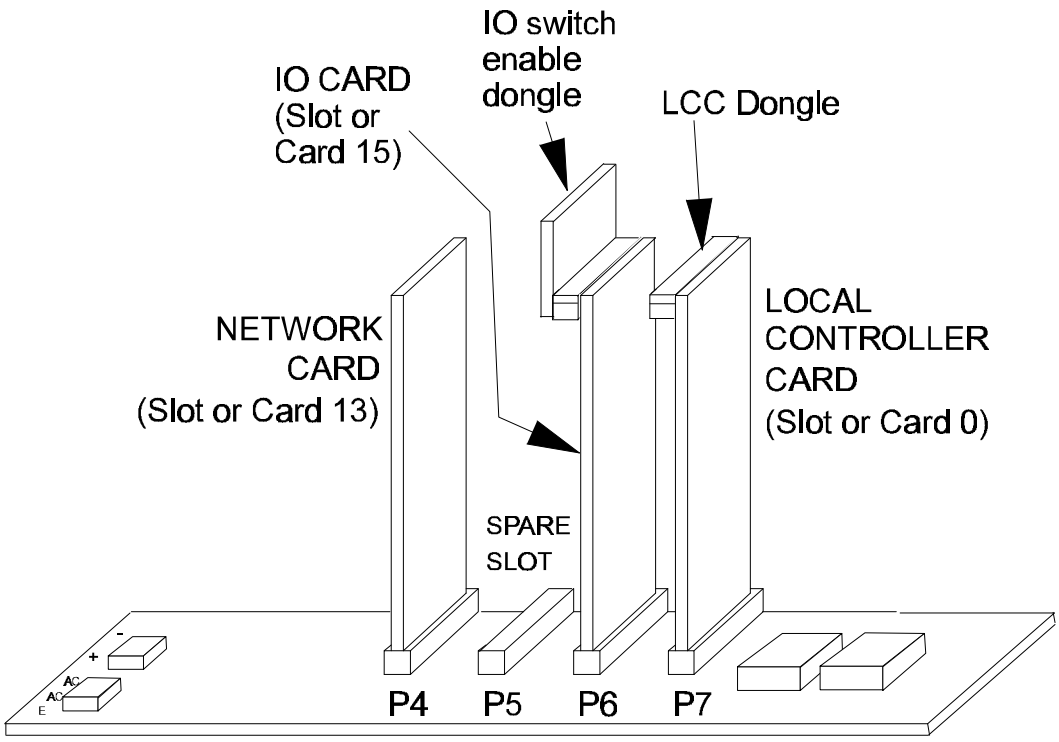
☐ The *network interfaces* communication links should be set for RS485 at *baud* rate (4800, 9600,19200 and **38400 (normally chosen).**

IO Card details

☐ See the *Control panel power-up* part of this manual for information on how to set up the IO card.

Where to install the cards in a Network Interface

- ☐ The network card should be fitted inside *each Network interface.*
- ☐ The *network card* should be fitted in socket P4 (slot or card no. 13) of a Network interface



fl321

Figure 12-5 Terminal node backplane

NOTE: *The IO card and Local controller card must have the correct dongle fitted.*

Powering-up a Network Interface

It is assumed the control panel to be connected to respective network interface has been commissioned.

☐ Connect the control panel to the network interface.

☐ Connect and switch On the mains supply and battery supply to the network interface

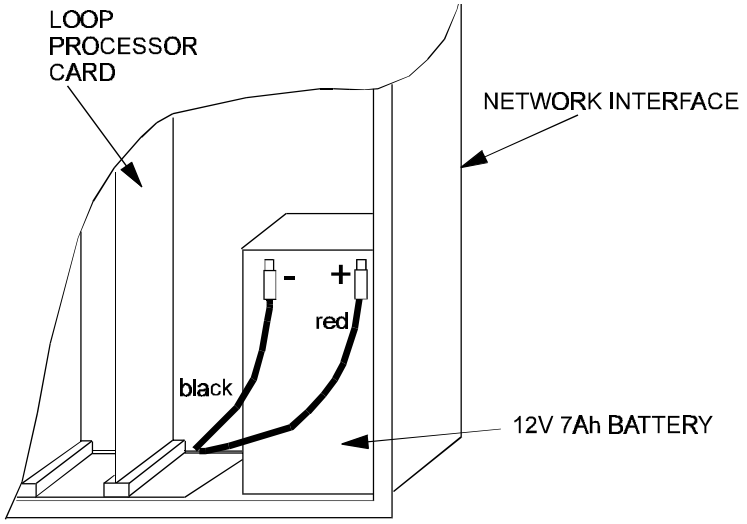


Figure 12-7 Battery connections

fl317

Test

☐ At the control panel use **[Card Status]** in the **[Info]** menu to print and check the status of card 15.

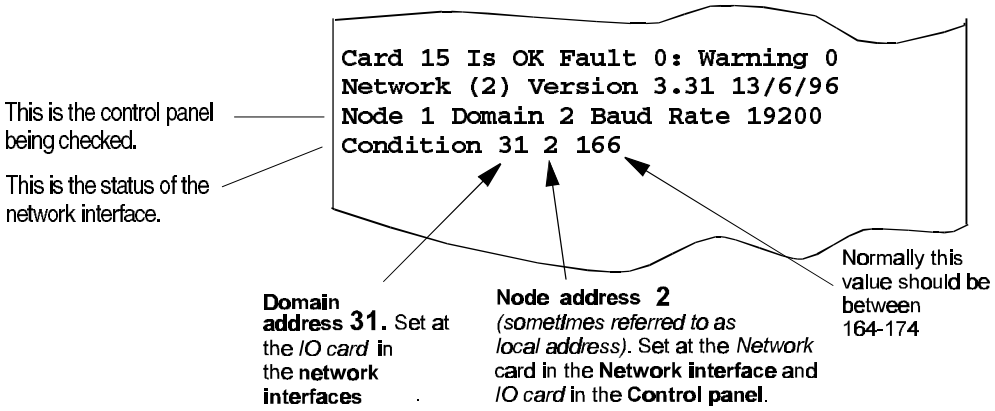


Figure 12-6 Network interface IO card status

cdn68

NOTE: *A zero condition indicates the network interface is not communicating with the control panel.*

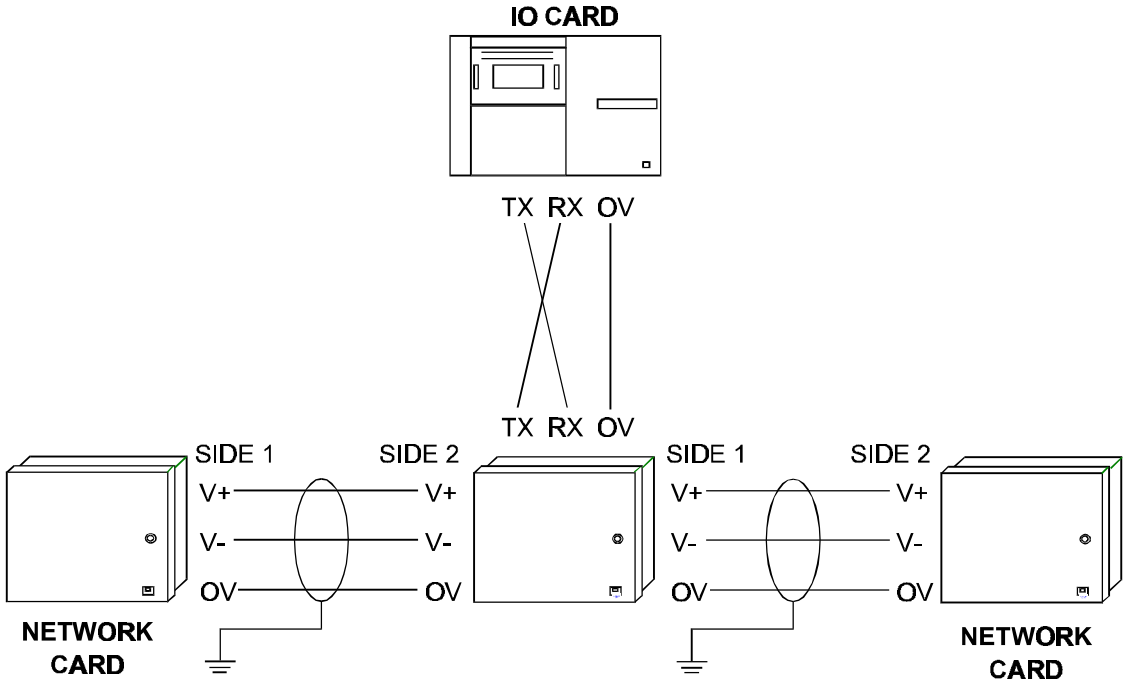
NOTE: *If any switch setting is changed then power down and then power up the network interface. Following this the control panel card 15 should be reset.*

☐ Check and rectify for faults on the network interface

☐ Repeat the above for all other *control panel/network interface* of the network.

Connecting a secure Network

It is assumed that the each *network interface* and connecting *control panel* have been tested.



fl318

Figure 12-8 Network connections

☐ Connect all the *network interfaces* together to form a secure network.

☐ Check the network after having left enough time for it to initialise. Use the **[Info]** -> **[Map] -> [Net Map]** menu.

> ***NOTE:*** *The network map only shows network interfaces, it gives no indication of whether the panels are connected.*

Panel test

☐ Make sure the panels are aware of each other. A simple test can be done pressing the *Silence alarm* button on a control panel and by checking the command is received at all other networked panels. Repeat the test on other panels.

☐ Check the panels are communicating. Check the status of **card 0** using **[Info]->[Card Status]** ->**[Node]** menu. Ensure the panel and domain numbers correctly entered.

> ***NOTE:***
> *A **control panel** (panel, node or local) address will always be **1** and the domain address can be from **1 to 16.***
> *A **network interface** (panel, node or local) address can be from **1 to 16** and should have a domain address of **31**.*

How to check Network Card status

☐ Using the **[Info] [Cardstat] [Node]** menu enter the network card equipment (panel) address and domain address. The display will confirm:

- addresses of the network card
- address of network interface
- and a set of condition codes:

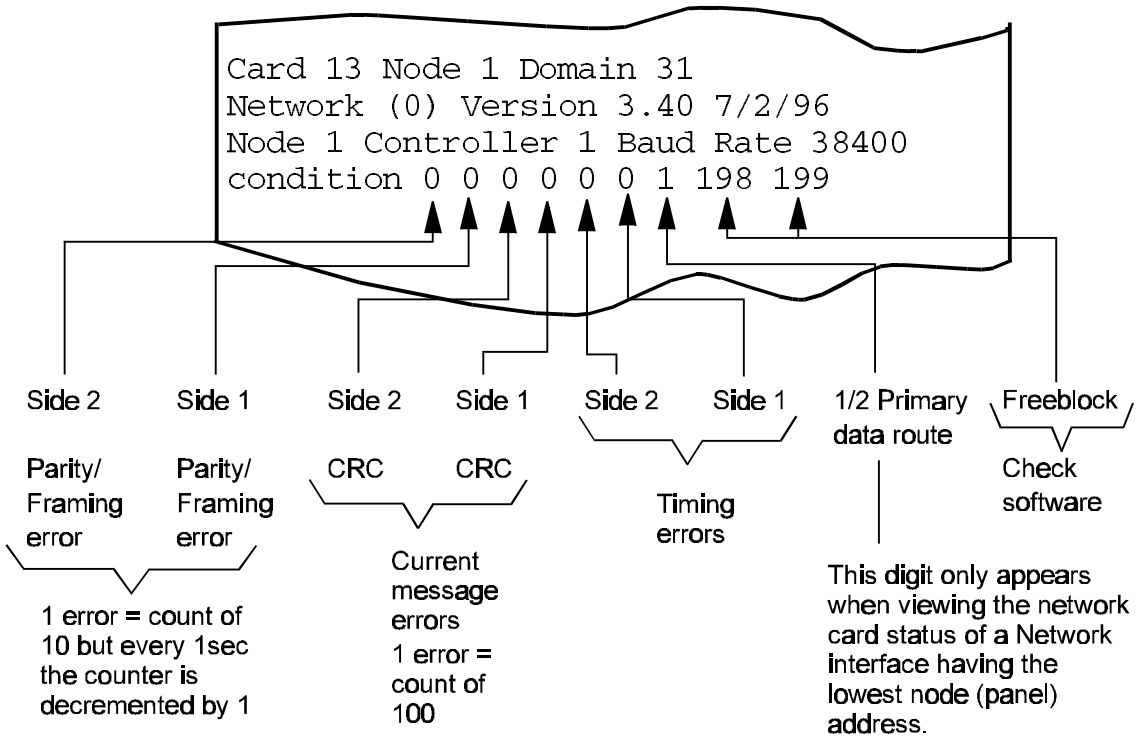


Figure 12-9 Network card status

Errors	meaning
Parity	Parity is incorrect, data corrupted.
Framing	8- bit transmitted incorrectly and the data line does not return to logic 1 at the end of the transmission.
CRC	Cyclic redundancy code. When a message consisting of a number of 8 bit transmissions is sent, a calculation is carried out to check that data corruption has not occurred.
Time out error	Where an 8 bit transmission block is not fully received, the network card will time out ready to receive the next message. Time out error will also be generated for each parity/ framing error.
Freeblock	Free memory blocks available to temporarily store messages waiting to be processed. The maximum number = 199, although it may drop as low as 175 - 180 on a highly populated network. A lower value may indicate a high error value and will require rectification.

Fault Finding

- ☐ The communication path in a secure network is from *Side 1* of the network controller.
- ☐ The network will be non secure until the last panel/terminal node is connected and powered-up.

High errors:

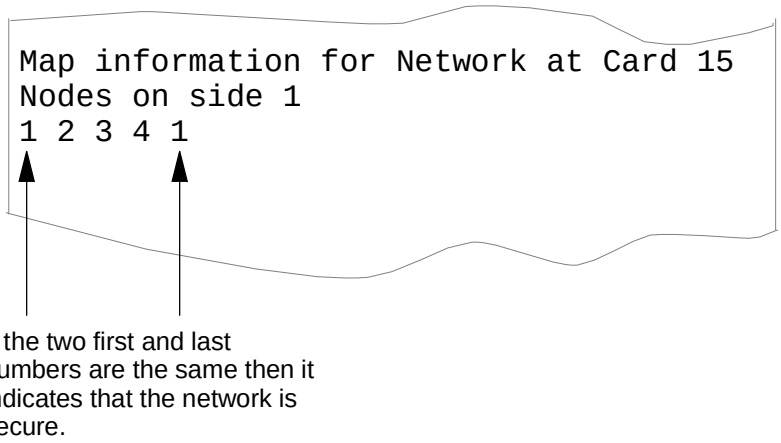
- ☐ Check cable lengths and type used.
- ☐ Check wiring, connections and earthing arrangements.
- ☐ Replace network card at point of failure.
- ☐ Check the addresses and baud rates of the input output and network cards of the network panels/terminal nodes.
- ☐ Check the network cable is correctly earthed to the equipment.
- ☐ It may be necessary escalate an investigation to:
  - look at the noise voltage between conductors, screen and earth.

***NOTE:** Always reset the Network Card first when rechecking for errors.*

How to check a network is secure

- ☐ To check the network is secure use the **[Info]->[Map]->[Netmap]** at Card 15.

Figure 12-10 Network map information



fl327

How to disable a control panel

- ☐ A control panel can be removed from the network by disabling the communications at card 15. This can be done by using the **[Control]** -> **[Disable]** -> **[Comms]** menu.

- ☐ A warning indication will be given.

```
Comms Disabled at Card 15
Comms stopped at card 15
```

- ☐ Other panels will sound the warning buzzer and display the communications stopped message.

Network FIRE Plans

Preparation

☐ The selected network fire plan should be in line with the site evacuation procedure.

☐ Each ***network interface*** and the connecting ***control panel*** operate their own ***network fire plan***. Therefore each panel must be configured with its own network fire plan.

Network alarm controls

☐ A **control or repeat panel** located in **domain 1** of a network will operate *sound alarms, silence alarms and reset* controls globally throughout the networked site.

NOTE: *All* ***control and repeat panels*** *in* ***other domains*** *will operate their sound alarms, silence alarms and reset controls* ***locally.***

NOTE: *The panel domain numbering must take into consideration the requirement of panel network operation and site fire evacuation procedures.*

Network Fire relay operation

☐ The **fire relay** in the control panel in **domain 1** will be activated in the event of a fire detected by any networked control panel.

NOTE: *The fire relay in any networked control panel will not operate when network* ***fire plan 2*** *is selected.*

☐ With **network fire plan 5 or 6** selected the **fire relay** in the control panel in all the domains will activate in the event of a fire detected by any networked control panel.

Network Fire plans

☐ A networked System 32000 can be configured to work with one of the six selectable fire plan.

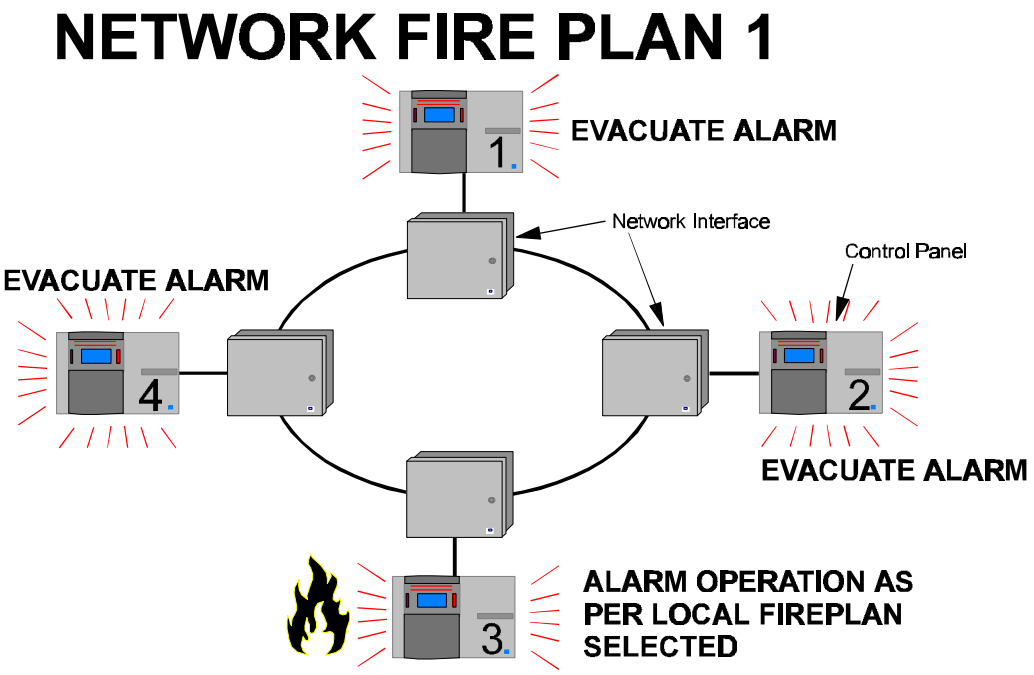


Figure 13-1 Operation of network Fire plan 1

cdn193

Operation ☐ Evacuate all zones from any external fire.

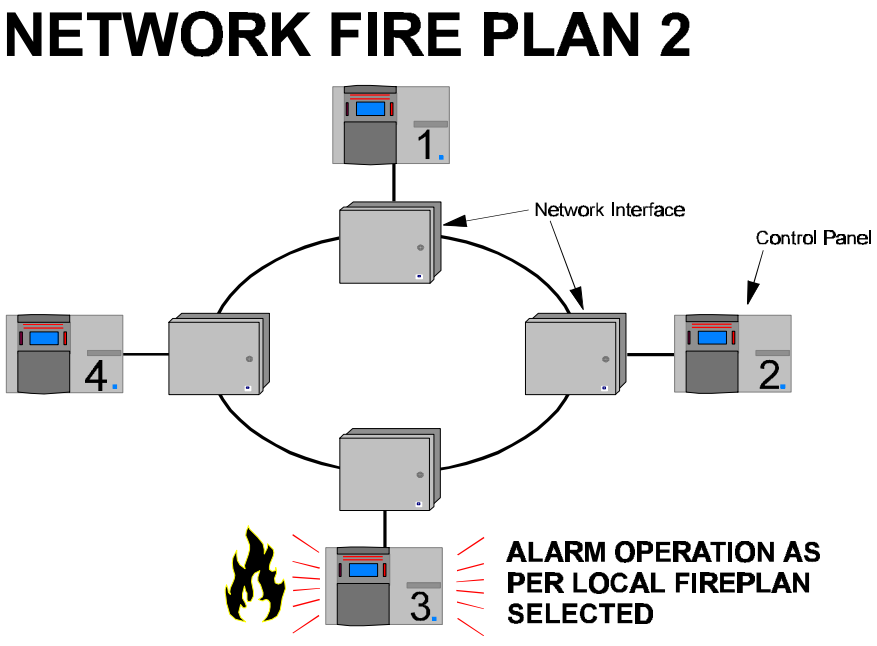


Figure 13-2 Operation of network Fire plan - 2

cdn194

Operation ☐ Ignore external fire events.

NETWORK FIRE PLAN 3

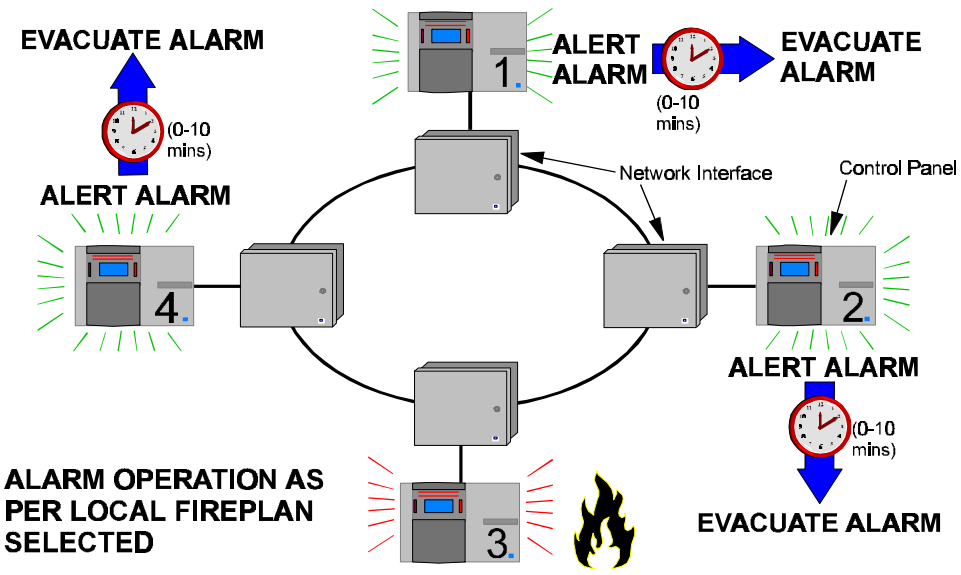


Figure 13-3 Operation of network Fire plan - 3

cdn195

Operation

- ☐ Alert all zones from any external fire.
- ☐ After a configurable delay (0-10 minutes) or any second fire - evacuate all zones.

NETWORK FIRE PLAN 4

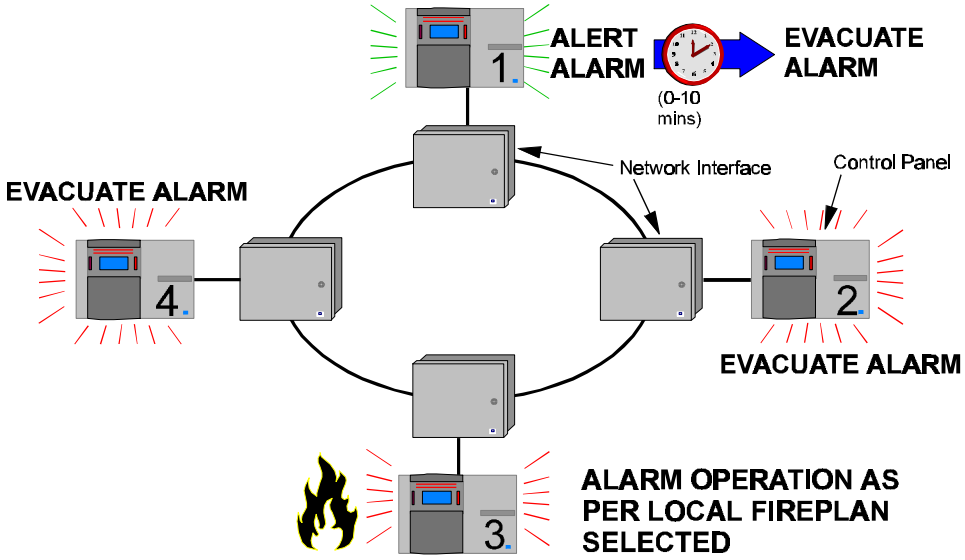


Figure 13-4 Operation of network Fire plan - 4

cdn196

Operation

- ☐ Evacuate all zones if panel domain address is numerically adjacent to the panel in fire.
- ☐ Alert all other zones on other panels. After a configurable delay (0-10 minutes) or any second fire - evacuate all zones.

NETWORK FIRE PLAN 5

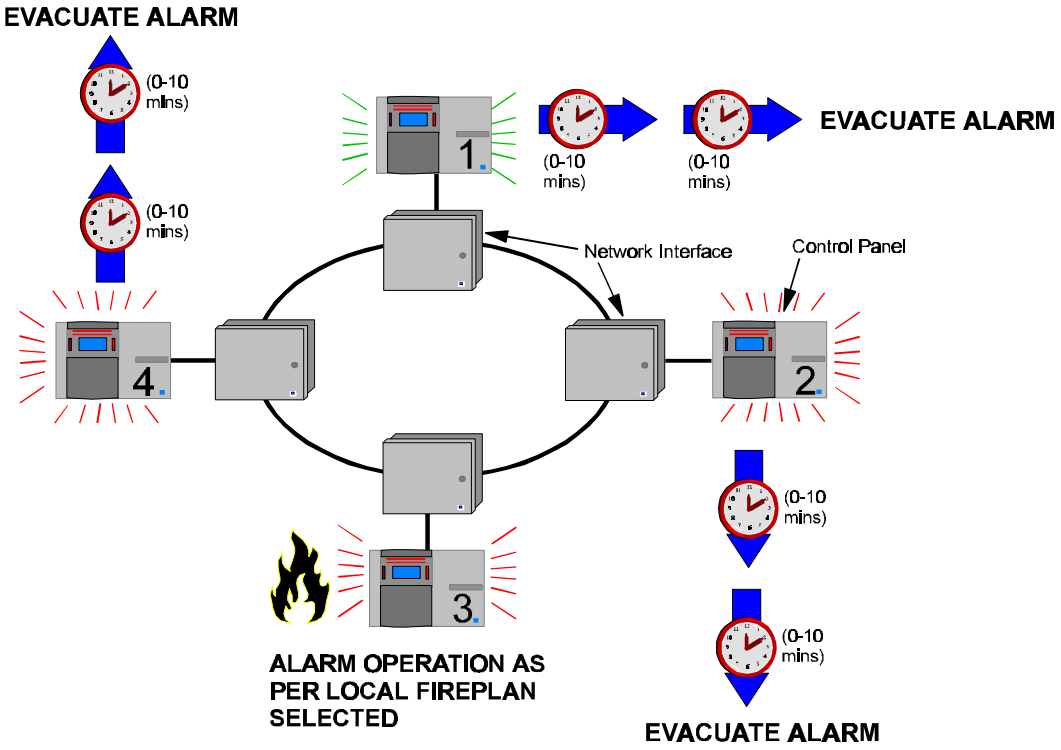


Figure 13-5 Operation of network fire plan 5

cdn168

Operation

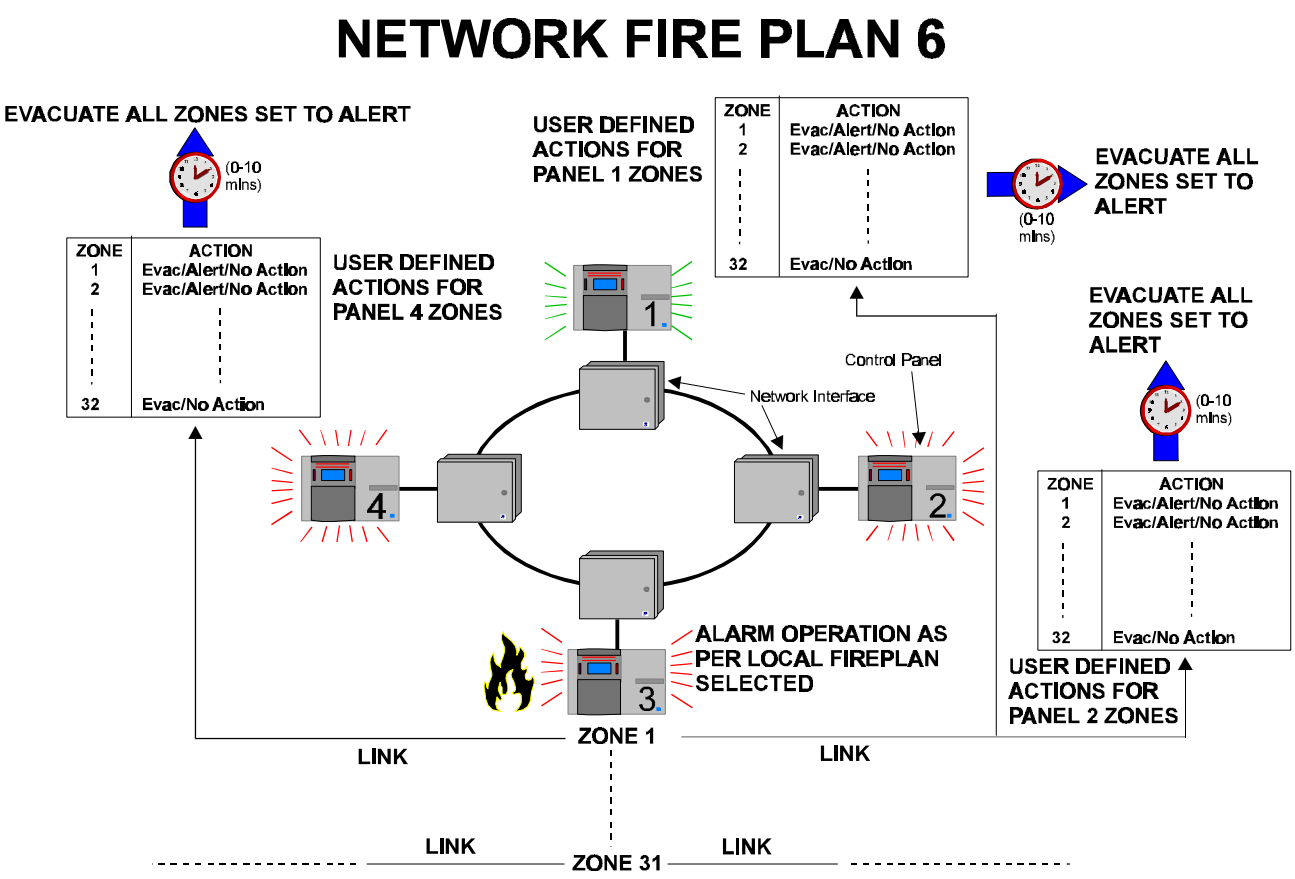
☐ After two consecutive **delays** or any second fire - **evacuate** all zones of all networked panels. The delay period is individually set at each networked panel.

Operation of Zone 32 with network FIRE Plan 6

> ***NOTE:*** *On selecting network Fire plan 6 the Zone 32 operates like Zones 1 to 31, with the exception that it is not affected by* ***Silence alarms*** *and* ***Sound alarms*** *buttons of the control panel.*

General rule

As a general rule **zone 32** should be reserved for **interface units** to control plant equipment. The benefit of doing this is that the user can change to another **network fire plan 1,2,3,5 or 6** without affecting Zone 32 operation.



cdn169

Figure 13-6 Operation of network fire plan 6

> ***NOTE:*** *The illustration shows* ***network fire plan 6*** *operation that assumes Zone 32 is for interface outputs to control plant equipment.*

Operation

- ☐ Any zone of any panel in the network can action any zone of any networked panel to either evacuate, alert or no action.
- ☐ Plus after a **delay** or on the occurrence of any second fire event - **evacuate** all alerting zones.

Zone Linking with network FIRE Plan 6

With **network fire plan 6** selected the alarm actions can be configured to meet site specific needs. In the event of a fire in any *zone* of any *networked panel* the local system alarms can be configured to action *evacuate, alert or no action* on selected local zone(s).

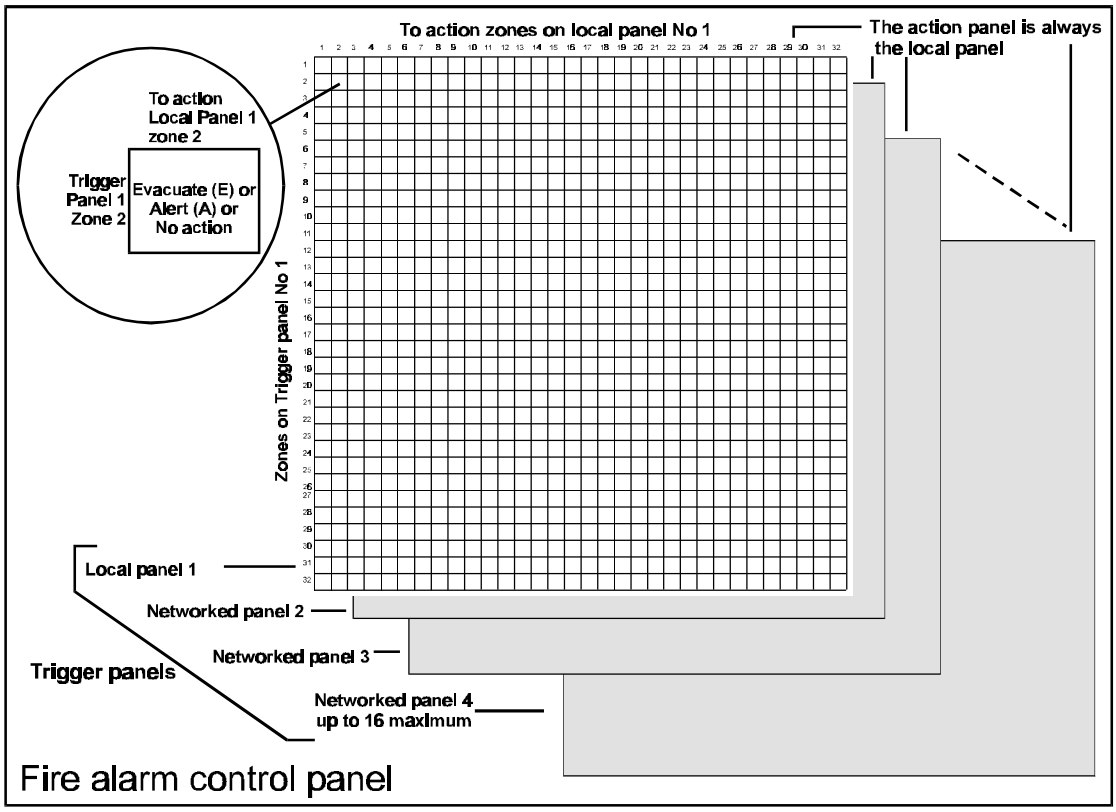


Figure 13-7 Network zone links

cdm182

What is a trigger zone

A trigger zone can be any zone of a panel in a network that has detected a fire. The fire may have been detected in any one of its **1 to 31** zones, plus **zone 32** with network fire plan 6, see Operation of zone 32 with network fire plan 6.

Example: Assuming a call point is operated and it is located in zone 2 of the network panel 2, then the trigger is zone 2 of the network panel 2.

What are action Zone(s)

The action zone(s) can be on any of **1 to 32 zones** of the local panel. The action itself can be to signal *evacuate or alert or no action* on alarm sounders and interface outputs in selected zone(s).

> ***CAUTION:*** *If zone 32 is to control plant equipment, then the zone 32 should be configured for* ***evacuate operation*** *in the event of a fire in any zone of any networked panel.*

Example: Assuming zone 2 of network panel 2 has triggered due to a manual call point operation, then its action on the local panel may be to *evacuate* **zone 2** and *alert* **zones 1, 3 and 30**.

How to select a network fire plan

A network fire plan can be selected without the commissioning tool using the keys at the control panel.

> ***NOTE:*** *The default network fire plan is always* ***network Fire plan - 1.***

Fire plan

The control panel can be configured to operate **network fire plan 2,3,4, 5 or 6.**

- ☐ Another network fire plan can be selected using: **[Set Up] ->[Set Up] -> [Fire plan] -> [Network]** -> **[Number]** menu at the control panel.

Delay-fireplan operation

The network fire plans 2,3,4 5 and 6 can be configured to operate with a ***delay*** of 0 - 10 minutes.

- ☐ The delay period for network fire plans 2,3,4, 5 or 6 can be entered using: **[Set Up] -> [Set Up] -> [Fire plan] -> [Network]** -> **[delay]** menu at the control panel.

How to set up the network zone links

> ***NOTE:*** *It is strongly advised that the panel is commissioned using the commissioning tool.*

It is possible to link zone actions of panels in a network when using the **network fire plan 6**. This can be done without the commissioning tool using the keys at the control panel, but can be time consuming.

- ☐ A trigger zone of any networked panel can be set to action selected zone(s) of any other networked panel to signal evacuate or alert using: **[Action] -> [Zone(s) (local panel)] from -> [Node (trigger panel)] -> [Zone (trigger panel)]** to -> **[Evac]/[Alert]** menu.

How to test the network Fire plan

Check the control panel has been set to the required network fire plan, this can be done by:

☐ **[Info]-> [Status] -> [FirePlan] -> [Network]** menu at the control panel.

If network Fire plan 6 has been selected then printout the zone links of zones 1 to 32.

☐ **[Info]-> [Print] -> [Status] -> [PanelLink]** menu at the control panel.

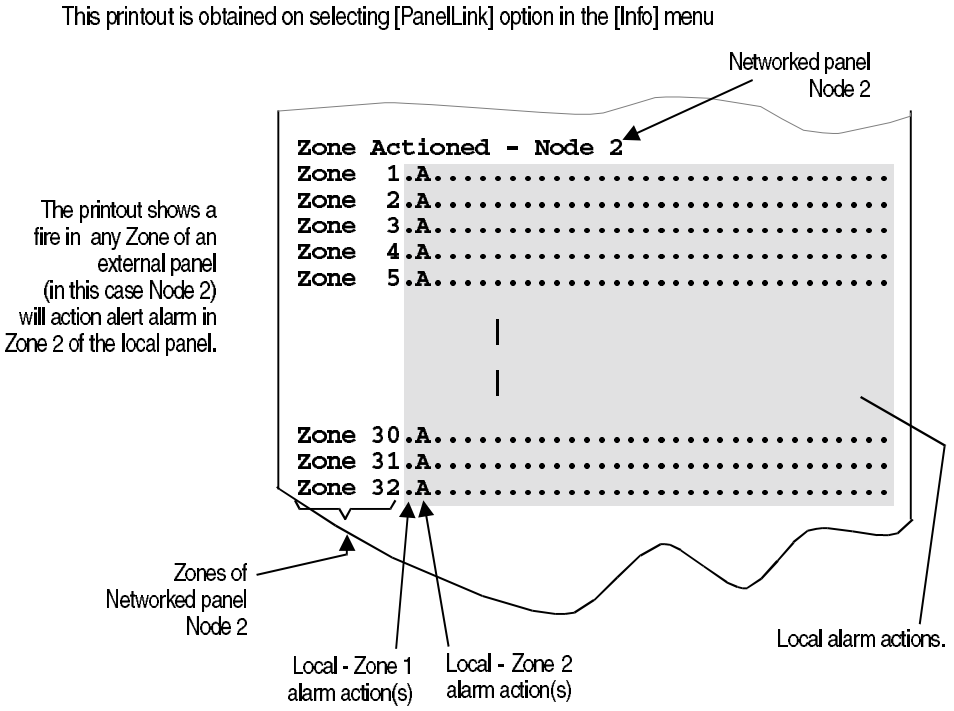


Figure 13-8 Printout of network zone links

cdm174

System operation

☐ Check the operation of the system in accordance with the selected fire plan operation.

Appendix A - Menu maps

Maps

The following pages show all the options that are available under:

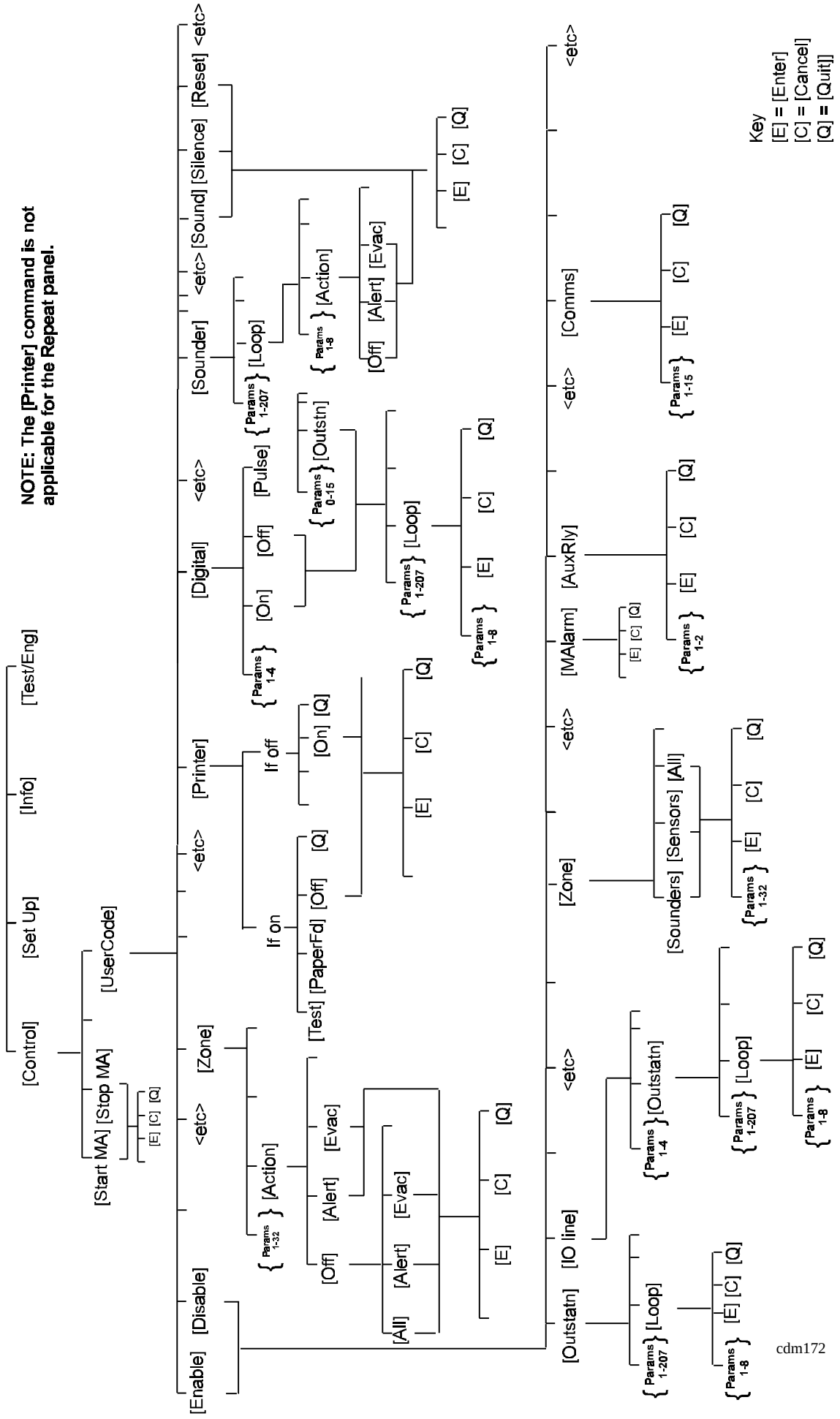
- Control
- Setup
- Information
- Test / Engineering menus

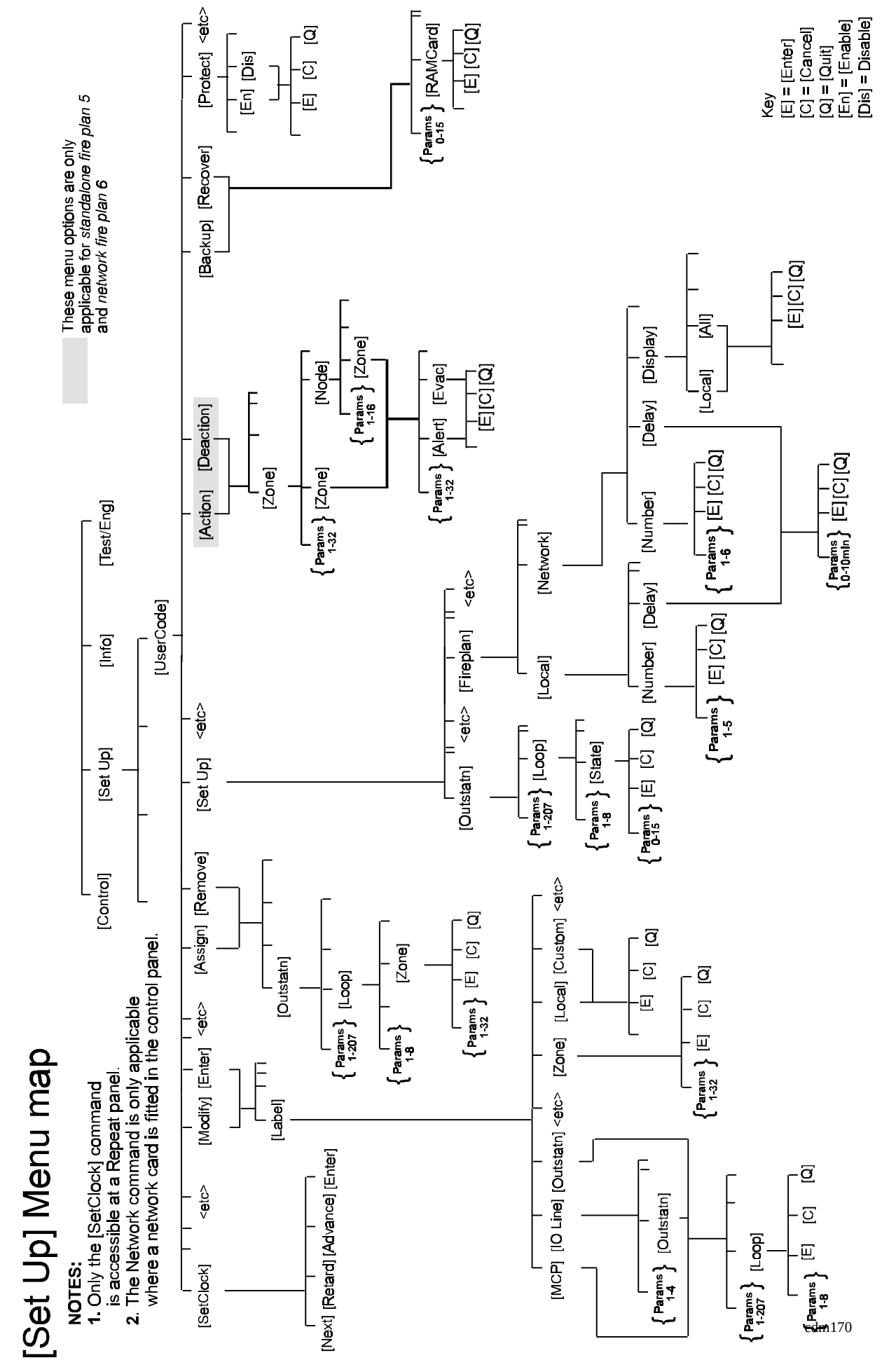
Equipment

The equipment covered include:

- 1 - 2 Loop control panel
- Repeat panel

[Control] Menu map




[Set Up] Menu map
NOTES:
1. Only the [SetClock] command is accessible at a Repeat panel.
2. The Network command is only applicable where a network card is fitted in the control panel.
These menu options are only applicable for standalone fire plan 5 and network fire plan 6
[Control]
[Set Up]
[Info]
[Test/Eng]
[UserCode]
[SetClock]
<etc>
[Modify]
[Enter]
<etc>
[Assign]
[Remove]
[Next]
[Retard]
[Advance]
[Enter]
[Label]
[Outstatn]
Params 1-207
[Loop]
Params 1-8
[Zone]
Params 1-32
[E]
[C]
[Q]
[Set Up]
<etc>
[Action]
[Deaction]
[Zone]
Params 1-32
[Zone]
[Node]
Params 1-16
[Zone]
Params 1-32
[Alert]
[Evac]
[E][C][Q]
[Backup]
[Recover]
[Protect]
<etc>
[En]
[Dis]
[E]
[C]
[Q]
Params 0-15
[RAMCard]
[E][C][Q]
[Outstatn]
<etc>
[Fireplan]
<etc>
Params 1-207
[Loop]
Params 1-8
[State]
Params 0-15
[E]
[C]
[Q]
[Local]
[Network]
[Number]
[Delay]
[Display]
Params 1-5
[E]
[C]
[Q]
[Number]
[Delay]
Params 1-6
[E]
[C]
[Q]
[Local]
[All]
Params 0-10mln
[E]
[C]
[Q]
[E][C][Q]
[MCP]
[IO Line]
[Outstatn]
<etc>
[Zone]
[Local]
[Custom]
<etc>
Params 1-4
[Outstatn]
Params 1-32
[E]
[C]
[Q]
Params 1-207
[Loop]
Params 1-8
[E]
[C]
[Q]
Key
[E] = [Enter]
[C] = [Cancel]
[Q] = [Quit]
[En] = [Enable]
[Dis] = Disable]
edm170

[Info] Menu map

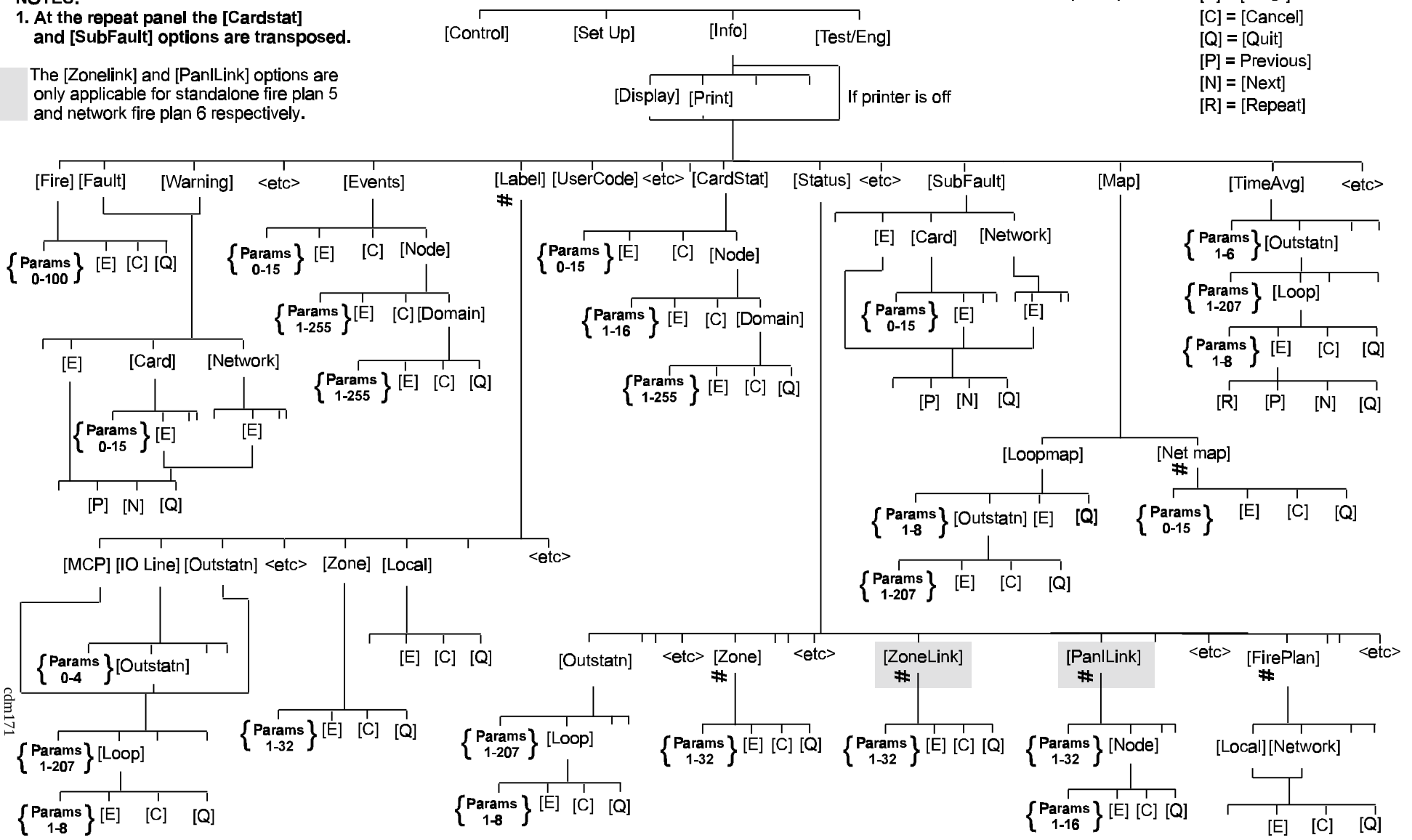
NOTES:

1. At the repeat panel the [Cardstat] and [SubFault] options are transposed.

The [ZoneLink] and [PanlLink] options are only applicable for standalone fire plan 5 and network fire plan 6 respectively.

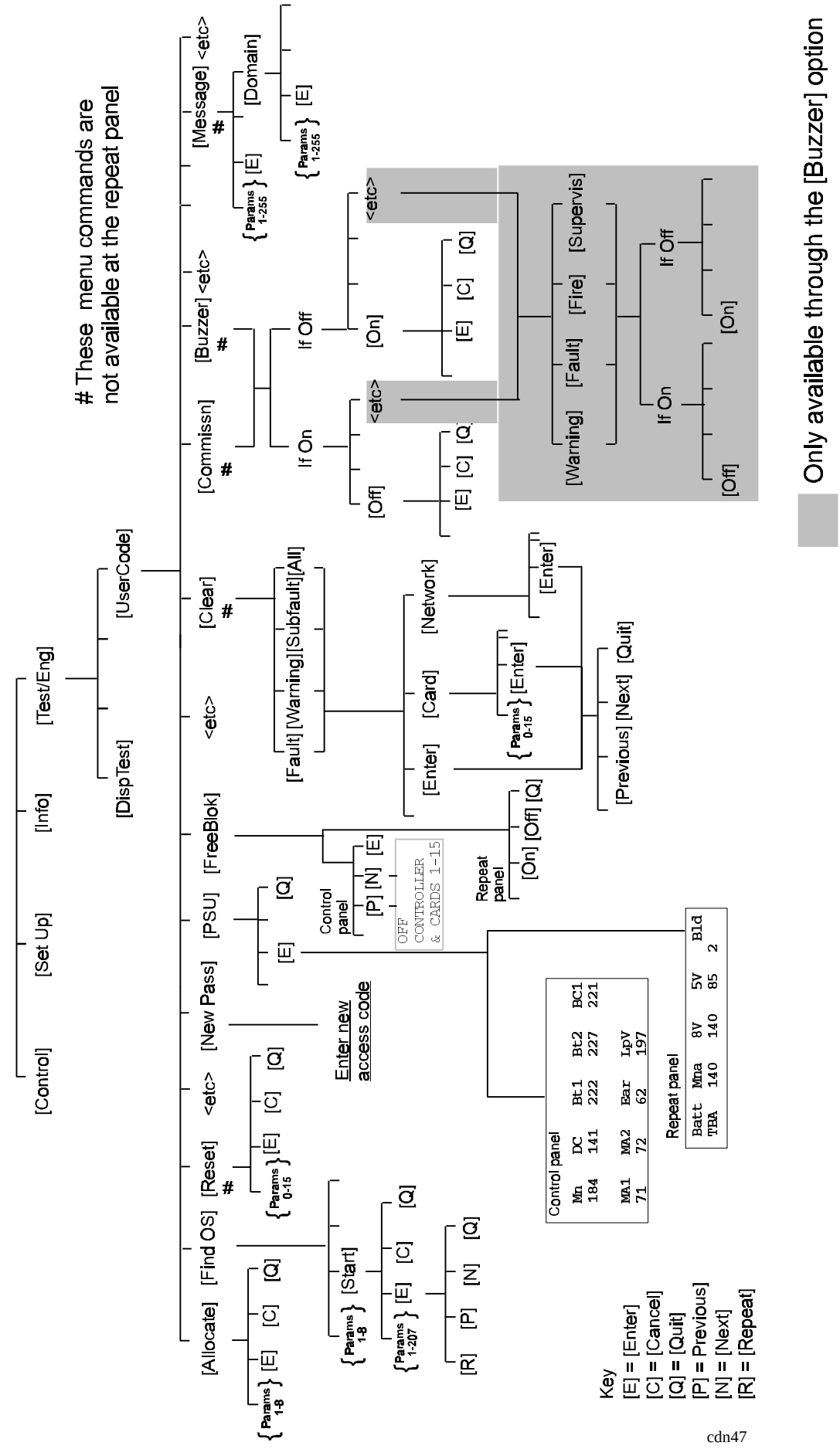
These menu commands are not available at the repeat panel

Key
[E] = [Enter]
[C] = [Cancel]
[Q] = [Quit]
[P] = Previous]
[N] = [Next]
[R] = [Repeat]



cdm171

[Test/Eng] Menu map



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Appendix B

Message-action list

This appendix lists all the messages that are likely to be displayed at the *control panel* or *repeat panel* of the fire system.

The messages are *alphanumerically arranged* to provide guidance:

- ☐ on hardware most likely to generate the message
- ☐ the probable meaning of the message
- ☐ along with suggestions on what initial actions may be taken to rectify the problem.

Message..	mainly associated with..	meaning..	and possible rectification action.
A spurious FIRQ	IO Card / DKC / Backplane	A glitch or noise has occurred on backplane / IO card	Clear and ignore single occurrence of this event For multiple occurrences replace the IO card
A spurious IRQ	IO Card Backplane	A glitch or noise has occurred on backplane / IO card	
A spurious SWI3	IO Card Backplane	A glitch or noise has occurred on backplane / IO card	
A spurious NMI	IO Card Backplane	A glitch or noise has occurred on backplane / IO card	
A spurious SWI2	IO Card Backplane	A glitch or noise has occurred on backplane / IO card	
Access fault	Any Card	This Card cannot talk to the Local controller card	Replace the card if fault keeps reoccurring
ACIA failed	Network Card or IO Card	The communication chip has failed on the network / IO card	Reset the card and replace if it fault keeps reoccurring
Alarm Zone Disabled/Enabled at Card n	Loop Processor Card	The alarm zone has been disabled or enabled	If necessary, manually enable / disable the Alarm zone.
Alarms silenced	Local Controller Card	The silence alarms button has been pressed	-
Alarms sounded	Local Controller Card	The sound alarms button has been pressed	-
Allocation started from end 2	Loop Processor Card	No devices were found on End-1 or End 1 of loop is open circuit	Check the wiring to the first outstation or last outstation on the loop

Message..	mainly associated with..	meaning..	and possible rectification action.
Allocation : Too many	Loop Processor Card	There has been more than 200 devices allocated on the loop or the device(s) is (are) restricted to a particular software version	Replace the incompatible devices with a compatible ones
Allocation : Tx fault	Loop Processor Card	Invalid reply from outstation	Check the outstation. Also check the cable routing and length (measure resistance and capacitance of cable)
Allocation : HW fault	Loop Processor Card	The loop breaker relay has not closed or serial line End-2 is faulty. The outstation may not be correctly fitted.	Check outstation connections
Allocation : Double Allocated	Loop Processor Card	Two devices have been given the same address. Loop breaker (relay contacts) are fused `micro welded' together (closed) or there is a bad connection	The device may be faulty. If the contacts are stuck then a gentle tap on the assembly containing the relay may free the contacts
Allocation : Map error	Loop Processor Card	The loop wiring is incorrect. A sub loop may have been wired on a spur	Check and rewire if necessary
Allocation : not ready	Loop Processor Card	As per message	Wait and if it takes longer than 10 minutes then reset the loop card
Allocation : OK at Card n : Allocated x	Loop Processor Card	The loop circuit has been successfully allocated	-
ASCII OS is faulty	Loop Processor Card	Failure of communication to Repeat panel software or the power supplies to the panel are not connected	If applicable, connect the power supply to the repeat panel and RESET the Master Repeat Card. If necessary replace the card/software
Back up	Memory (RAM) Card	Data is being copied from cards and stored on the RAM	-
Battery disconnected/ restored	Power supply	A disconnection is indicated when the ADC value from the battery is equal to or less than 130	Normally it should be= 234 (27.4V) - to give restored indication. Value = V_{batt} 1/6x256/5
Battery discharged	Power supply	This indicates failure of battery load test. The value should be equal to or less than (Normal -9).	Check load test and the battery condition

Message..	mainly associated with..	meaning..	and possible rectification action.
Baud rate n at Card x	IO Card	The baud rate set on the DIL switch on the card has been read	If required, change the baud rate
Baud rate n	Network Card	The baud rate set on the DIL switch on the card has been read	If required, change the baud rate
Buffer full	Any Card	Software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Buffers out of step	Any Card	Software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Call point on interface unit operated/restored	Outstation	Mains powered interface input has been triggered by conventional MCP. Value of input is equal to or less than 6V	-
Call point operated/ restored	Outstation	The call point glass has been broken or the test key has been operated	Replace the break glass to restore the call point or remove the test key
Call point is open cct	Outstation	Monitored base does not see end-of-line. Bad connection to MCP.	Check the internal wiring as there may be a loose connection
Call point short cct	Outstation	Call point contacts are short circuit	Check the call point contact and circuit internally.
Call point glass is broken	Outstation	Call point has been operated when disabled	Replace the glass
Card found/lost	Any Card	The card has been found/lost (is locked out)	There may be a hardware fault on card or backplane. Investigate and rectify
Card n recovered /Card n backed up	Memory (RAM) Card	Data has been **recovered** to a card from the RAM card. A card data has been **backed** up to the RAM card.	-
Card lost	Memory (RAM) Card	The card is missing or Battery link is not fitted or on board battery is flat, less than 3V	Replace the battery (Normal voltage is 3.9V)

Message..	mainly associated with..	meaning..	and possible rectification action.
Chamber removed or Replaced	Outstation	The device chamber has been removed	Replacing the chamber will remove the indication
Clock changed / clock not set up	Local Controller Card	The time and date has been altered or no time entered	If necessary, set the clock using the set up menu
Comms Enabled/Disabled at card x	IO Card	The card communications has been enabled or disabled	If necessary, manually enable/disable the Comms using the control menu
Comms Enabled/Disabled	Network Card	The control panel has been isolated from network in echo node	-
Comms supply Restored	Network interface PSU	The 5V supply has been restored	-
Comms Supply Fault 1	TBA	TBA	TBA
Communications started/stopped at card x	IO Card	The communication to a particular panel has IO card started/stopped	Check the wiring and the communicator of the communication.
Control passed 1 at Card n	Network Card	TBA	Normally this message never appears
Corrupted RAM Memory at Card X	Any Card	There was a checksum failure on configuration at midnight	Recover data to the card and record in log book. If it reoccurs then replace the card
DC Power fail restored	Power supply	Check the ADC of output 27V regulator Normal=146(28.5V) Value=Vreg x 1/10x256/5	-
DC too high / DC too low	Power supply	The DC supply is either too high if greater than 164 (32V) or too low if less than 102 (20V)	Check mains supply
Detection Zone Disabled/Enabled at Card n	Loop Processor Card	The detection zone has been enabled or disabled automatically or manually	If necessary, manually enable/disable the detection zone using the [control] menu
Detector on interface unit	Outstation	The mains powered interface input has been triggered by conventional detector. The value of the input should be equal to or less than 10V	-

Message..	mainly associated with..	meaning..	and possible rectification action.
Earth fault/ cleared	Power supply	The *Ear* ADC value reads: **greater than 75** for an earth fault on the +ve line **less than 40** for an earth fault on the -ve (0V) line	An all clear indication is given when the *Ear* ADC reading is around **60**
Enabled Aux relay **Disabled Aux relay**	Local Controller Card	The auxiliary relay has been manually enabled or disabled	If necessary, manually enable/disable the auxiliary relays using the [control] menu
Excessive transmission error rate **Too many errors: lost outstation or loop split**	Loop Processor Card	There were more than 10 reply errors in one day (More than 16 reply errors will cause the outstation isolation.)	Check the screening and electrical noise in area of operation plus check loose connections to loop
Fast scan started	Datalogging	A fire sensor has detected a change on its input	The message normally occurs when the data logger is connected
Fault cleared warning cleared	Local Controller Card	The fault or warning has now gone	-
Fire reset	Local Controller Card	The Fire reset button has been pressed	-
Fire	Loop Processor Card	The pattern match is equal to a Fire or MCP operated or conventional detection on IO line of mains interface operated	-
Full keyboard removed/fitted	IO Card / DKC/ MRC	The QWERTY keyboard has been `removed'(is not fitted)	Check the cable connections to the keyboard to bring about the `fitted' message.
High Error rate at Card n	Network	High number of communication errors	TBA
Incompatible Card Version	Any Card	There is a card software conflict, that is V2 & V3 loop cards are in the same panel	Fit compatible software
Interface input fault / restored	Outstation	IO line triggered fault	Check the interface wiring and restore input for normal operation
Interface Input Fire	Outstation	The Interface input line triggered a fire	Check the interface system and restore input for normal operation

Message..	mainly associated with..	meaning..	and possible rectification action.
Interface input S/C / restored	Outstation	The interface input wiring has a short circuit. The value of input is equal to or less than 2V	Check the wiring and rectify to restore the input
Interface failed	IO Card	The interface timer chip has failed	Clear the fault and ignore single occurrence of the event. Replace the card on multiple occurrences.
Interface output S/C / restored	Outstation	The value of output is equal to or less than 50%	Check the wiring and restore the output circuit
Interface input operated / released	Outstation	N/A	N/A
Interface input O/C / restored	Outstation	The end-of-line is not seen.	Check the interface wiring. A device on the input circuit may have been removed, if so refit the device to restore
Interface output o/c or restored	Outstation	The end-of-line is not seen The value of output is equal to or greater than 125%	Check the wiring A device may have been removed from the input circuit, if so, refit to restore
Interface input not reset	Outstation	The input line continues to trigger	Check the devices connected on the IO line
Intermittent Fault	Any Card	A fault has been picked up by the local controller	Replace the appropriate card if the fault keeps reoccurring
Invalid task delay	Any Card	Software error	NOTE: Fatal errors will automatically activate a system reset. Ignore single occurrence of the event. Record the event in the log book.
Invalid configuration	Loop Processor Card	Loop recovered with freeblocks ON This is normally not allowed.	Switch OFF the freeblocks and reallocate
Invalid message / reply received	Loop Processor Card	The message/reply received cannot be understood. The communication can be from a Repeat panel	Ignore the message for single occurrence and record in log book
Invalid message/reply	Network Card	The message/reply has not been understood from other panels	Ignore the for single occurrence and record the event in the log book

Message..	mainly associated with..	meaning..	and possible rectification action.
Invalid task stage	Any Card	Software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in log book
IO line enabled / disabled	Loop Processor Card	The IO line has been either enabled or disabled automatically or manually	If necessary, manually enable/disable the IO line using the control menu
Isolated Zone n at Card n	Loop Processor Card	TBA	TBA
Keypad not fitted	Local Controller Card	The control keyboard can not be found	Check the connection to the keyboard
Last Univ Tx Failed at Card n	Network	TBA	This message is never displayed
Loop Started not ready	Loop Processor Card	As per message	Wait and if it takes longer than 10 minutes then reset the loop card
Loop map has changed	Loop Processor Card	The map is different to that previously allocated	Check and confirm the difference with backup map
Loop power restored	Power supply	Normal loop supply has been restored: Normal = 202 (44V) Where: Value = Vsupp x 1/11X256/5	-
Loop stopped	Loop Processor Card	The loop has been aborted or is still being allocated	Re-allocate the loop
Loop voltage too high/low	Power supply	The value is equal to or greater than 215 (high) or The value is equal to or less than 190 (low)	Check the PSU and replace it if necessary
Lost slave Outstation	Loop Processor card	There is no reply on ends 1&2 of the outstation	Check the slave device connections and replace the device if necessary
Lost Command	Loop Processor Card	Lost FAB/SAB	Ignore single occurrence of the event and record it in the log book
Lost outstation	Loop Processor Card	There is no reply on ends 1&2 of the outstation	Check the sensor connections

Message..	mainly associated with..	meaning..	and possible rectification action.
Main program not running	Any Card	There is a problem with the software	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of the event. Record the event in the log book
Mains failed / restored	Power supply	This failure is detected when the ADC output from the rectifier is equal to or less than 105	Check the mains and fuse. Replace the PSU if necessary. This should Normally equal to 190 (60V) to get a restored message Value = Vsecond x 1/16x256/5
Mains too high	Power supply	The ADC value is equal to or greater than 220	Check mains supply to the equipment and the PSU
Master alarm **o/c** **or** **s/c**	Power supply	No end-of-line seen. With an O/C the value is greater than 92 or With a S/ C the value is less than 37	Check the wiring to the master alarm circuit. If the master alarm circuits are not used then ensure the EOL is connected inside the control panel
Master alarm restored	Power supply	Master alarm fault has cleared The value should read 74	
Master alarm enabled/disabled	Local Controller Card	The master alarm circuits have been enabled or disabled automatically or manually	If necessary, manually enable or disable the master alarm circuit
Master polling/not polling at card x	IO Card	N/A	N/A
Memory corrupt	Outstation	There is an EEPROM checksum failure	Replace the failed outstation
Neighbour ACK Failed at card n	Network	TBA	-
Neighbour ACK Invalid at Card n	-	Duplicated address setting	Check domain addresses are unique to each system
Network initialised	Network Card	Successful network map with polled panels	-
Network starting	Network Card	Communication starting with other connected panels	-
Network wiring fault n	Network Card	Wiring is presumed to be o/c between panels	Check the wiring between the panels

Message..	mainly associated with..	meaning..	and possible rectification action.
Network insecure / secure	Network Card	There are 3 missing replies in a row on End-2 of the controller	Check the wiring and check the error rate
New address n at card x	IO Card	The address set on the DIL switch has been read at the particular card	-
New domain address n at Card n	IO Card	The address set on the DIL switch has been read at the particular card	-
New address n	Network Card	The address set on the DIL switch has been read	-
NMI's missed	Loop Processor Card	There is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
No periodic interrupts	Any Card	There is a problem with software, the watchdog will operate the local controller	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
No response	Loop Processor Card	There is no communication with repeat panel software	Power-up the repeat panel
Node lost/restored	Network Card	There has been 15 missing replies from another panel	Check the node wiring. Also check setting and if necessary reset the Network card to restore the card
Node found	Network Card	Another panel on the network has been acknowledged	-
Node double allocated n	Network Card	Two network cards have the same address	Ensure unique address is given to the card
Not enough RAM	Any Card	Not enough memory space	Reset the card and ignore single occurrence of the event. If necessary replace the card or add more RAM
Nothing found	Loop Processor Card	No devices found on End 1 or End 2 of a loop circuit	Check wiring to loop circuit at end-1 and end-2
OS replaced is faulty	Loop Processor Card	There is a Tx fault when finding the outstation	Check connections to the outstation and also check the device type

Message..	mainly associated with..	meaning..	and possible rectification action.
Outstation mains failed/restored	Outstation	Failure of mains supply to repeat panel or mains powered interface unit.The value of rectified DC is equal to or less than 8V (failed) and is greater than 24V (restored)	Check mains supply connections and fuses
Outstation power too high/restored too low/restored	Outstation	The internal power rail of mains powered interface unit has value of rectified DC equal to greater than 32V (high) / less than 30V (restored) DC equal to or less than 24V (low) / greater than 26V (restored)	Replace the outstation if the power fault cannot be restored
Outstation replaced	Loop Processor Card	The outstation is communicating with the panel	-
Outstation battery O/C or restored	Outstation	The failure of fuse or wiring to the battery or there is a battery open circuit. Normally applicable to mains powered outstations Normal value = 27.4V Value is equal to or less than 16V (O/C) / greater than 17V (Restored)	Check the battery and replace the battery if necessary to restore the equipment
Outstation enabled/disabled	Loop Processor Card	The outstation has been enabled or disabled manually or automatically	If necessary manually enable or disable the outstation
Outstation power Fault / Restored	Outstation	The failure of internal power supply rail	Replace the outstation
Outstation Fault / Restored	Outstation	There is a fault on the outstation.	Check the outstation and replace it if necessary.
Outstation battery fault/restored	Outstation	The battery has failed the load test For a mains powered interface the drop value is equal to or less than (Normal - 2V)	Check and replace the battery if necessary
Panel in/out of commissioning mode	Local Controller Card	The commissioning mode has been switched ON/OFF	To change the mode use the Test/Eng menu

Message..	mainly associated with..	meaning..	and possible rectification action.
Panel power-up	Local Controller Card	There is a software reset being performed on the system or there has been a manual reset of card 0	Check for system error messages
Panel Label Set up	Local Controller Card	The panel label has been set from the menu	-
Pointer corrupted	Loop Processor Card	There is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Pointer missing	Any Card	There is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Prefire	Loop Processor Card	The pattern match is less than that is a Fire pattern	-
Printer lost/fitted	IO Card / DKC / MRC	The integral printer has not been seen and is `lost'.	Check the connections to the printer, replace ribbon cable if necessary and reset card 15 for a `fitted' message.
Program memory corrupted	Any Card	There has been a checksum failure on EPROM at midnight	Clear the message and ignore single occurrence. Record the event in log the book
Program runaway	Any Card	The CPU has crashed	
Program not running	Any Card	There is a problem with the software. This will result in the watchdog circuit operation	NOTE: Fatal errors will automatically activate an automatic system reset Ignore single occurrence of this event. Record the event in the log book

Message..	mainly associated with..	meaning..	and possible rectification action.
Q buffer full	Any Card	This is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of the event. Record the event in the log book
Q buffer number	Any Card	Software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
RAM initialised	Memory (RAM) Card	The available memory has been verified	
RAM is write protected	Memory (RAM) Card	The memory card is read only	Disable the protect to write to the memory card, using the set up menu
RAM is not write protected	Memory (RAM) Card	Read and write is possible to the memory card	Enable the protect if required using the set up menu
Recover failed	Loop Processor Card	The loop does not match what is on RAM (memory) card	Check and confirm/correct the difference and then backup the loop data
Recover succeeded at card n	Loop Processor Card	This is a successful recovery after a previous failure	-
Replaced outstation Wrong type	Loop Processor Card	Outstation is of a different type	Check and confirm installation of correct type of O/S and reallocate. Back up the card data to the memory card.
Scan error	Loop Processor Card	There has been an invalid universal scan reply	Check the loop length and screening on the loop cable
Sensor out of specification	Loop Processor Card	Fault pattern has been matched	Check and replace the sensor if necessary
Shared memory hardware is faulty	Any Card	There are backplane problems	Remove all other cards then the LCC. See if problems persists Replace the backplane if necessary
Short at card n	Loop Processor Card	A short circuit has occurred between loop cores at end 1 or the positive core may be down to earth.	There may be a wiring fault or the loop card may be faulty

Message..	mainly associated with..	meaning..	and possible rectification action.
Short at card n outstation n	Loop Processor Card	Incorrectly polarity (or short circuit) between two devices. A number of devices have their loop breakers closed.	Investigate and remove the wiring fault.
Slave micro failed	Loop Processor Card	The loop driver has been watchdogged by the loop processor	Reset and ignore single occurrence of this event. Record the event in the log book
Slave Outstation Replaced	Loop Processor Card	Slave type outstation has been replaced	-
Spurious acknowledgement.	Any Card	This is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Spurious FAB	Loop Processor Card	The outstation has an unwanted FAB	Ignore single occurrence of the event. Panel will automatically remove the indication
Stack too deep	Any Card	This is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event Record the event in the log book
Stack overflow	Any Card	This is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of this event. Record the event in the log book
Sub fault	Loop Processor Card	The sub-fault pattern has been matched	Check condition codes of the outstation
Superfire	Loop Processor Card	Pattern match is equal to greater than a Fire pattern	-
System stopped / started	Local Controller Card	Backplane link has been moved causing the system to stop	The link is not normally accessed

Message..	mainly associated with..	meaning..	and possible rectification action.
Task stuck	Any Card	This is a software error	NOTE: Fatal errors will automatically activate a system reset Ignore single occurrence of the event. Record the event in the log book
Too many errors n	Network Card	There has been up to 6 communication errors in a row	Check the wiring and cable screen connection. There may be faults with the installation.
Two master has the same address	IO Card / DKC	N/A	N/A
Two controller at Card n	TBA	TBA	TBA
Unable to claim buffers	Any Card	The system is too busy	Wait or reset the card if stuck. Record the event in the log book
Unrecoverable Tx fault	Loop Processor Card	There has been more than 3 reply errors in a row	Check the outstation connections and replace the outstation if necessary.
Warm restart	Local Controller Card	The 5V rail has seen a dip activating the watchdog or the red button on the LCC has been pressed or the panel power reconnected	-
Wiring changed - short	Loop Processor Card	The loop is short circuit after the particular device	Check wiring and device after the indicated outstation
Wiring changed - ground break	Loop Processor Card	An automatic test has shown a break on the 0V line (conducted every minute)	Check wiring of 0V around the loop
Wiring changed - split/closed	Loop Processor Card	No reply has been received from an outstation at End-2 of the loop	Check the wiring. There can also be other obscure reasons
Wiring changed part short	Loop Processor Card	There is less than 80 ohms between the +ve and 0V of loop wiring	Check loop wiring
Wrong card type	Any Card	The card is in the wrong slot i.e. loop card in slot 15	Move the cards to the right slot location
Zone enabled / disabled	Local Controller Card	The zone has been enabled or disabled automatically or manually	If necessary, manually enable or disable the zone

System 32000

Introduction

This section lists the commercially available parts for use in the System 32000.

Control and indicating equipment

Control Panel	* - first fix products	
	32020	Fire alarm Control Panel SET including control panel, 1 loop card, power supply, battery box and battery pack.
	*32022	Fire alarm Control Panel
	32334	Control panel Power supply unit
	*32330	Control Panel Battery Box
	13395-12	Battery pack 4 off 12V @ 12.0Ah (for Control Panel)
	13390-01	Printer paper
Network	32620	Network Interface SET (including battery pack)
	32622	Network Interface unit
	32635	Battery pack 1 off 12V @ 7Ah (for Network Interface)
Repeat Panel	32520	Fire alarm Repeat Panel SET including repeat panel and battery pack.
	32522	Fire alarm Repeat Panel
	13395-01	Battery pack 1-12V @ 6.0Ah (order 2 off for Repeat Panel)
Flush Shrouds	32029	Flush shroud for 32022 Control Panel
	32529	Flush shroud for 32522 Repeat Panel
	32329	Combined Flush shroud for 32022 Control Panel and 32330 Battery box

Cards

	32023-01	Local controller card V3, (LCC for 32022)
	32023-11	Loop processor card V3, (LPC for 32022)
	32023-31	1-2 Loop panel RAM Card (for 32022)
	32023-21	I/O card V3 (for 32022)

32000 Sensors, terminal plate and Accessories

32000 Sensors	32715	Optical sensor
	19271-01	Replacement chamber for Optical sensor
	32775	Optical sensor sounder
	19271-01	Replacement chamber for Optical sensor sounder (as for Optical Sensor)
	32720	Heat sensor
	19272-01	Replacement chamber for Heat sensor
	32730	Ionisation smoke sensor
	19273-01	Replacement chamber for Ionisation smoke sensor
	32780	Heat sounder
	19274-01	Chamber for Heat sounder
32000 Terminal Plate	32700	Terminal plate
Trim Ring	19279-01	Sensor trim ring
Slaves/ T-Breaker	32701	T-breaker Unit
	32702	Slave LED unit (Remote Fire lndicator Unit)
	32703	Slave Relay Unit
Tools	17918-26	Sensor Tool Kit
	17918-22	Chamber Extractor cup
	17918-23	Electronics module removal tool - Optical (+ combined sounder)
	17918-24	Electronics module removal tool - Ionisation
	17918-25	Electronics module removal tool - Heat

Environmentally Protected	32729	EP Heat Sensor
Special sensors	32760	Duct Sensor

Alarm sounders

Sounders	32202	Alarm sounder 2-way
	32203	Alarm sounder 3-way
	32777	Repeat sounder
Environmentally Protected	32213	EP Sounder 3-way

Manual call points (MCP)

MCPs	32800	Surface mounted MCP
	32807	Surface mounted MCP keyswitch
	32842	Surface mounted MCP with cover
	32812	Surface mounted water resistant MCP
	32852	Surface mounted water resistant MCP with cover
	19289-01	MCP Semi-flush mounting kit
Environmentally Protected	32829	EP MCP surface
Spares	14112-09GR	Spare glasses (Pack of 10)

Interfaces

Mains Powered Interface	32440	Fire Alarm Interface unit - Mains powered
	19104-52	Power relay for Fire Alarm Interface - Mains powered complete with base and diode pack.
Class change Interface	32457	Class Change Interface unit Supplied with 1-Line Module
1-channel loop powered interface	32410	Loop powered zone module
	32415	Single channel interface (loop powered)

4-channel Loop Powered Interface

32450	Fire Alarm Interface unit - Loop powered
19245-05	Line module (up to 4 can be installed in a 32450)
19245-06	Power supply unit for Fire Alarm Interface - Loop powered (including 1 mains relay)
19245-07	Mains relay (up to 4 used with PSU)
32454	Keyswitch door 4-way for Fire Alarm Interface - Loop Powered
19245-02	Keyswitch assembly 2-position (used on keyswitch door)
19245-03	Keyswitch assembly 3-position (used on keyswitch door)

Manuals & Accessories

32299	System 32000 User pack (containing Pre-Commissioning information and Installation Manual)
32499	System 32000 Operating manual

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