

# SYSTEM 32000

## ***A***NALOGUE ***A***DDRESSABLE ***F***IRE ***D***ETECTION ***A***ND ***A***LARM ***S***YSTEM

### Applications Manual

Version 3.4X  
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## Preface

This second issue of the Applications Manual contains information on standalone and network of System32000. The products covered here are compatible with version 3.4X software. New products such as the Loop Powered Zone Module, Single Channel Interface, Repeat Sounder and the new Mains Powered Interface are included. The Low Voltage Directive is also covered. Also included is an appendix covering the Loop Loading Calculation Tool.

The first issue covered products 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

32399	Commissioning Manual for System 32000
32299	User Pack for System 32000
32499	Operating Manual for System 32000

## 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	2	10/97	This second issue covers the design of system 32000 products compatible with version 3.4X software. This issue includes an update to include various new products and inclusion of new fire plans. This update also includes the implications of the Low Voltage Directive.
1 to 42	2	10/97	
Appendices	2	10/97	
Parts	4	10/97	
Phone	2	10/97	

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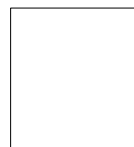
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# Standards - System Design

## BS5839 Conformance

Refer to *British Standard BS5839 Part 1: Fire detection and alarm systems for buildings, Code of practice for system design, installation and servicing.*

## Protection of property

**Siting Detectors** See also, part on *Sensors - Siting*.

- ☐ For a Type P1 system every part of the building should be suitably protected. For this purpose, each effectively enclosed space should be considered separately.
- ☐ Areas covered by a Type P2 system should be separated from unprotected areas by a fire-resisting construction.
- ☐ Voids not more than **800 mm** deep need not be protected unless fire can spread through them from one to the other.
- ☐ Lavatories and water closets need not have independent coverage if cover is provided in a common lobby.
- ☐ Where rooms are divided by partitions or storage racks reaching to within **300 mm** of the ceiling, each section should be protected separately.
- ☐ Shafts for elevators, lifts, hoists, escalators, enclosed chutes through floors and stairways should be protected by detectors at the top of the shaft and within **1.5m** of openings on to each floor.
- ☐ Where an escalator or staircase has a sloping ceiling, a detector may need to be sited on that ceiling.
- ☐ Enclosed staircases should be protected by detectors on each main landing within the staircase.
- ☐ Lantern lights should be protected by a detector unless they are less than **800 mm** in height above the ceiling and are not used as ventilation.
- ☐ Extra detectors may be needed to cope with structural features within a room. Consideration must be given to possible adverse air flows when air conditioning and ventilation systems are in use.
- ☐ If a detector is concealed, it may be desirable to provide a remote visible indication of its operation.
- ☐ Detectors should not be mounted less than **500 mm** from any wall or partition.

- ☐ Detectors should not be mounted less than **500 mm** from any obstruction to the flow of hot gases or smoke towards them. Other isolated obstructions such as light fittings do not normally obstruct the flow of smoke.
- ☐ Care should be taken in siting to ensure that adverse conditions such as high levels of shock or vibration are not encountered.
- ☐ Normally, smoke detectors should not be sited in kitchens, bathrooms, shower rooms or similar situations where conditions are liable to cause unwanted alarms.

## Protection of life

In circumstances where a particular early warning of fire is necessary for the safety of life, automatic fire detectors should be installed in combination with a manually-operated fire alarm system.

Detectors may also be needed:

- ☐ To compensate for a reduction or low level of supervision.
- ☐ Where the occupants are specially vulnerable owing to age, illness or unfamiliarity with the building.
- ☐ Where it is impracticable to provide structural separation to stop the spread of fire products.

The level to which additional protection is provided will depend on the individual building requirements. A Type L3 system provides the first level of protection and should give warning to the occupants in time for them to use the escape routes before they are blocked by smoke. The coverage area should therefore include both escape routes and adjacent rooms.

To protect these circulation areas detectors must be installed:

- ☐ In corridors, passageways and circulation areas.
- ☐ In rooms (other than toilets) opening directly on to any staircase.
- ☐ At the top of any staircase.
- ☐ On landing ceilings, at vertical intervals not exceeding **10.5m** below the top of any staircase.
- ☐ At the top of lift shafts, hoists, ducts etc.
- ☐ At each level external to lift shafts, hoists, ducts etc.

Note that:

- ☐ Only smoke detectors which are as far as possible sensitive to all types of fire should be used.
- ☐ Heat detectors should not be used in circulation areas.





- ☐ Spacing should be as for property protection, but the extension to the spacing for corridors under **5m** wide may be used only if smoke detectors are sited in all adjoining rooms.
- ☐ Additional detectors may be needed to operate fire doors or extinguishing systems.
- ☐ Consideration should be given to the provision of smoke detectors in sleeping accommodation.

A Type L2 system is the second level of protection where all the most vulnerable life and fire risk areas are covered by automatic detectors in addition to those area covered by a Type L3 system. These risks normally fall into two categories:

- ☐ Those in which the normal occupants are especially vulnerable to fire starting in their vicinity.
- ☐ Those having a particularly high probability of ignition and from which fire or fire products could spread to affect the building occupants.

Examples of areas where this extra protection should be considered include sleeping accommodation, day accommodation, store rooms, kitchens and service ducts.

Full protection is obtained by the third level, a Type L1 system in which all areas in the building are covered by automatic detectors.

### Siting Manual Call Points

See also, part on *MCPs - Positioning*.

All MCPs should conform to BS5839 : Part 2 and sited in an:

- ☐ In conspicuous and well-lit positions against a contrasting background so that they can be seen easily.
- ☐ **1.4m** above floor level so that nobody has to travel more than **30 metres** to reach one
- ☐ on floor landings of staircases
- ☐ on all escape routes and exits to the open air.

### Sounders

See also, part on *Sounders - Positioning*.

All fire alarm sounders within a building should have similar sound characteristics - except in areas of high background noise where specialised high-performance sounders may be needed.

Bells or electronic sounders are normally suitable with sirens or high-performance electronic sounders in high noise areas.

When selecting the type of alarm, consideration must be given to any possible confusion with other alarm signals, conflicting background noises, and restrictions on the total current consumption permissible on each alarm circuit.



**NOTE:** *In general the fire alarm sounders **must not** be used for any other purpose, with the established exception of **class changes** in schools where coded signals of not more than five seconds duration can be used.*

**Public address  
equipment**

Public address equipment can be used to give warning of fire, subject to certain conditions. Visual alarm signals should be considered in special circumstances for use in conjunction with alarm sounders.

# EMC Compliance

These guidelines should be followed to meet the requirements of the **EMC directive** in force within the **European Union**, to prevent the **reception** and **emission** of electromagnetic interference into and out of the analogue addressable fire detection and alarm system.

## Code of practice

The installer must follow *BS7671: 1992 Requirements for Electrical installations, IEE wiring regulations 16th edition* if installation is in the United Kingdom, UK.

## Cables

The following cables have been tested against EMC directives for use with fire detection and alarm applications

(see also the Choosing Cable sections for further information):

☐ For **loop circuit, battery connection** and **master alarm circuit** wiring:

- Mineral Insulated Copper Cable (MICC)
- FIRETUF OHLS Cable type: FTZ2E1.5

☐ For **network interface to network interface** or **control panel to network interface** wiring:

- Mineral Insulated Copper Cable<sup>1</sup> (MICC)
- Belden Cable No 9729 (UL Style 2493)
- Armoured Cable<sup>2</sup>.  
By armouring the Belden Cable No 9729 (UL Style 2493)

In the UK, the guidance of BS5839: Part 1 should also be followed.

## Cable Separations

The cables of the fire detection and alarm system and other systems should usually be separated by at least **160 mm**, unless dedicated conduit or ducting is being used.

In the UK there is additional guidance provided in a document reference *Recommended cable separations to achieve electromagnetic compatibility in buildings* obtainable from the **Electrical Contractors Association**.

<sup>1</sup>. The Mineral Insulated Copper Cable should be used for fire resistant applications.

<sup>2</sup>. The cable manufacturer cannot guarantee the cable specification if it is armoured.

**Earth continuity**

All earth connection points should be clean to **provide a good electrical conductivity path**.

To maintain the earth continuity:

- ☐ all **earth leads and fittings** provided should be installed
- ☐ the **loop cable** screen must be continued through each system device on the loop, whether the earth is connected or not.

See also Cable termination

**NOTE:** Do not use any part of building structure for earthing.

A **zinc coating** is provided around the termination point, on the inside of an equipment metal enclosure. This provides a good electrical conductivity path for cable earth termination.

There are **copper fingers** fitted to the control and indicating equipment to fill the gap between enclosure and cover. The fingers provide a shield against electromagnetic and radio frequency interferences.

**Mains Supply**

The mains supply to mains operated equipment should enter the enclosure by a dedicated entry, which is the closest to the mains connection points.

**Cable termination**

Use only cable manufacturers recommendations for cable termination.

The wires between the termination point and terminals should be **short** and as **straight** as possible.

Where Mineral insulated cable (MICC) is being used:

- ☐ use only **galvanised finish junction boxes** for installation of alarm and detection devices
- ☐ use brass locknut with zinc plated lock washer to secure gland to the metal enclosure.

**NOTE:** The EMC tests were performed using the the items detailed above. Whilst other equipment may be used, there is **no guarantee** that the system will remain **EMC compliant**.

There is no need to use **earth tail seals** when terminating mineral insulated cable, providing there is good earth continuity between gland and enclosure.

When using **Firetuf** cable, the earth drain wire should be fitted to the earth point nearest the cable entry, with a length not exceeding **50 mm**.

**Board fixings**

During installation a check should be made to ensure all board fixing screws inside equipment enclosure are fully tightened, the screws maintain earth continuity path between the board and its metal enclosure.



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## LVD Compliance

# Guidelines for compliance with the requirements of the Low Voltage Directive (LVD)

**Introduction** These guidelines should be followed to meet the *requirements for the safety of Information Technology equipment, including electrical business equipment - BS EN 60950: 1992.*

**Products** All 32000 Panels.

- Guidelines**
- ☐ Ensure the EMC Compliance Guidelines are followed.
  - ☐ Each of the Fire Alarm equipments' fused spur units must be fed from a dedicated switch or protective device at the local mains supply distribution board. If a single pole disconnect device is used (on Live Side) then the Neutral (N) should be clearly labelled.
  - ☐ Cable Glands should be used on the equipment for the mains supply cable.
  - ☐ Unused knockouts that have been removed, should not be left open.
  - ☐ Mains supply cable shall:
    - If rubber insulated, be of synthetic rubber and not lighter than ordinary tough rubber sheathed flexible cable according to designation H05 RR-F.
    - If polyvinyl chloride (PVC) insulated and for equipment having a mass exceeding 3kg, be not lighter than ordinary polyvinyl chloride sheathed flexible cable, to designation H05 VV-F or H05 VVH2-F2.
    - Include, in the case of **Class 1 Equipment**, a green/yellow protective earthing conductor electrically connected to the protective earthing terminal within the equipment and connected to the protective earthing contact of the plug, if any.
    - Have conductors with cross sectional areas of not less than 0.75mm<sup>2</sup>.

**NOTE:** For rated currents of up to 3A, a nominal cross sectional area of 0.5mm<sup>2</sup> is permitted provided the length of the cord does not exceed 2m.



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## LPC Certification

**NOTE:** The 32000 system is not currently approved by the **Loss Prevention Council (LPC)**, although the sensors, sounders and call points detailed below are approved.

### Sensors

The 32000 sensors may be configured via the control panel to operate in one of a number of states. The operating state defines the conditions under which the sensor will have identified a fire. Changing the states changes the sensitivity of a sensor. When using combination sensors, the states allow individual sensing elements to be ignored. Sensors may be configured to conform to LPC regulations by using the following states:

Sensor	LPC approved states	Meaning
Optical sensor or Optical sensor Sounder	Detection to meet BS5445: Part 7 (for Smoke) <b>State 0</b>	Medium smoke sensitivity
Heat sensor	Detection to meet BS5445 : Part 5: <b>State 0</b> <b>State 1</b>	Grade 2 Grade 1
Ionisation sensor	Detection to meet BS5445 : Part 7: <b>State 0</b>	Default sensitivity

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

### Manual Call Points

☐ Standard version (*model no 32800*)

### Alarm Sounders

☐ Sounder (*model no 32202 or 32203*)

☐ Combined Optical sounder (*model no 32775*).



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# Sensors - Selection

## Sensor type

<b>Optical</b>	Effective in monitoring visible smoke from slow smouldering fires
<b>Heat</b>	Effective in monitoring high energy fires, even with little or no smoke
<b>Ionisation</b>	Effective in monitoring smoke and the invisible products generated by fast burning, high energy fires
<b>Dust cover</b>	Each 32000 sensor is supplied with a dust cover. The cover is fitted during installation to prevent dust and dirt from building work reaching the fire sensor.

## Optical ( Sounder ) *identified by blue ring around moulding*

- variant**
- ☐ Optical sensor - 32715
  - ☐ Optical Sounder - 32775

(also available in a duct monitoring enclosure - 32760)

This is a general purpose smoke sensor with a combined sounder variant.

**applications** Potential applications include:

- ☐ Most furnished locations like offices, reception area and meeting rooms
- ☐ the *optical sounder* is particularly suitable for applications in **hotel bedrooms**

**siting** Avoid siting optical sensors in:

- ☐ steamy, dusty or smoky environments installation in such conditions will still require frequent sensor cleaning
- ☐ direct line of sight of an infra-red source. e.g. tungsten or high intensity arc lights

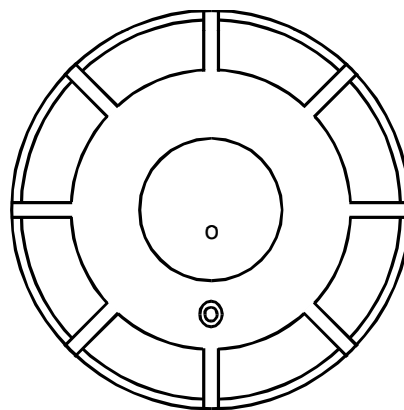


Figure 5-1 Optical sensor (sounder)  
cd12

## Heat Sounder - 32780 *identified by blue ring around moulding*

This combination provides a general purpose applications in areas where smoke sensing is not required. It is a good alternative to smoke sensors where the environment is subject to constant levels of smoke or dirt. The 32780 may be configured to respond at different sensitivity grades and rates. Potential applications include:

- applications**
- ☐ Student accommodation where smoke detection may cause false alarm
  - ☐ Bedrooms where there is no legal requirements protect life

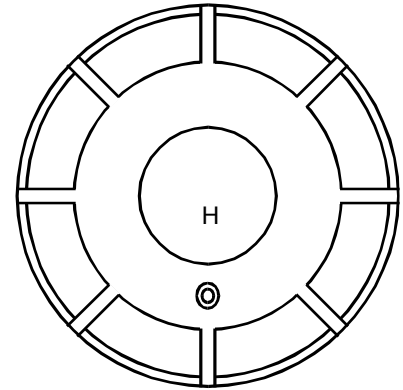


Figure 5-2 Heat sounder  
cd13-1

## Heat - 32720

(also available environmentally protected - 32729)

The heat sensor is a good alternative to smoke sensors where the environment is subject to constant levels of smoke or dirt. The 32720 may be configured to respond at different sensitivity grades and rates. Potential applications include:

- applications**
- ☐ boiler rooms
  - ☐ busy kitchens

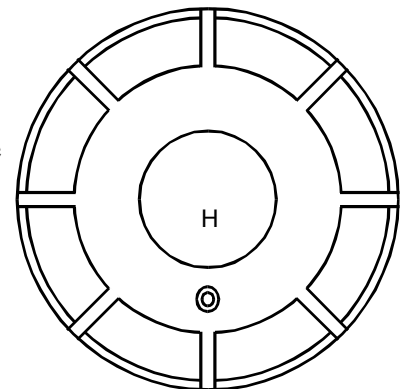


Figure 5-3 Heat sensor  
cd13-2

## Ionisation - 32730

The ionisation sensor is a useful alternative where fast burning fires are likely to produce combustion by-products of a very small size. Potential applications include:

- ☐ solvent stores

A mixture of optical and ionisation sensors can be used to ensure comprehensive coverage in areas of high value. Potential applications include:

- ☐ computer rooms

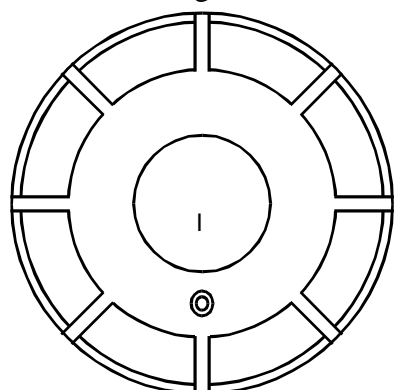


Figure 5-4 Ionisation sensor  
cd13

## Flame detector - 07012-31

**NOTE:** This is a conventional flame detector, to be connected to the fire system via a mains powered fire alarm interface unit or loop powered zone module.

The conventional flame detector is suitable for mounting on high ceilings where a point-type sensor becomes insensitive and impracticable to mount. The flame detector can be mounted on a wall to monitor an area of floor.

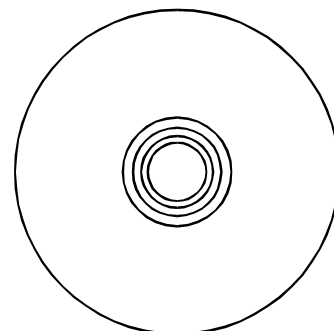


Figure 5-5 Flame detector  
cd131

### applications

Potential applications include:

- ☐ churches
- ☐ shopping malls
- ☐ large department stores

**NOTE:** Flame detectors are unable to detect smouldering fires, they should therefore be used in specialist applications or to supplement smoke sensors.

### siting

Avoid siting flame detectors in the following:

- ☐ where it might receive sunlight reflected from a slowly revolving fan.
- ☐ where it might receive sunlight reflected from water or through branches of a tree.

## Duct sensors - 32760

The duct sensor is designed to sense smoke in air conditioning ducts. The duct sensor is fixed to the outside of a duct and has two probes that protrude in the duct and are positioned across the air flow.

The sensor is fitted with a standard optical smoke sensor.

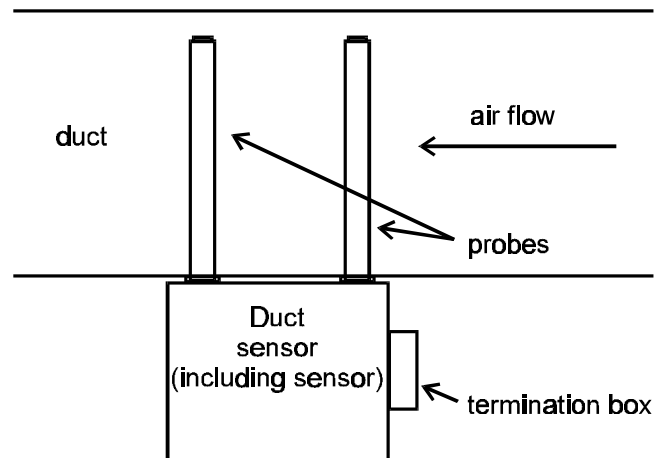


Figure 5-6 Duct sensor  
cd17

**siting** Avoid siting duct sensors in:

- ☐ where air will be diluted from multiple sources
- ☐ near fans or in ducts with fast airflows ( $>10\text{m/s}$ )
- ☐ near bends, inlets and outlets (within 3 x duct width from sensor)
- ☐ near obstructions causing turbulence.

## Semi-Flush fixing - 19279-01

Ceiling-mounted sensors may be semi-flushed to improve their aesthetic appearance.

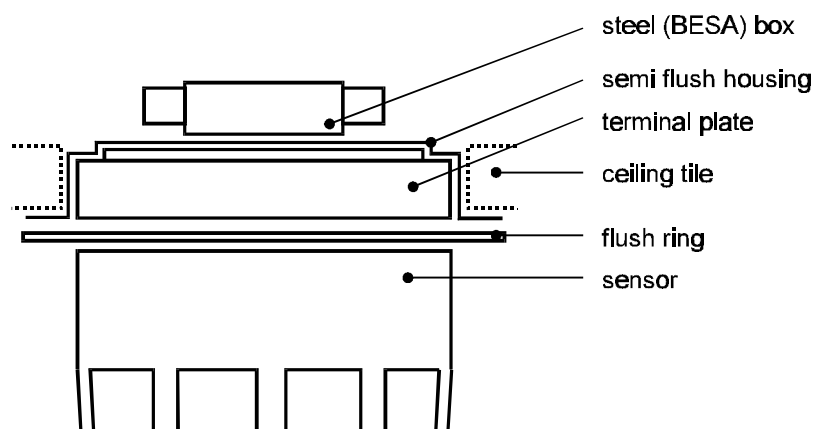


Figure 5-7 Flush fixing sensors  
cd4

## Sensor Trim Ring - 19279-10

Sensors may be mounted using the Sensor Trim Ring which enables the sensors to be mounted onto low grade ceilings quickly and without the need for cutting accurate holes. Also on refurbishments there is no need to repair or replace ceiling material when the sensors are replacing larger diameter sensors.

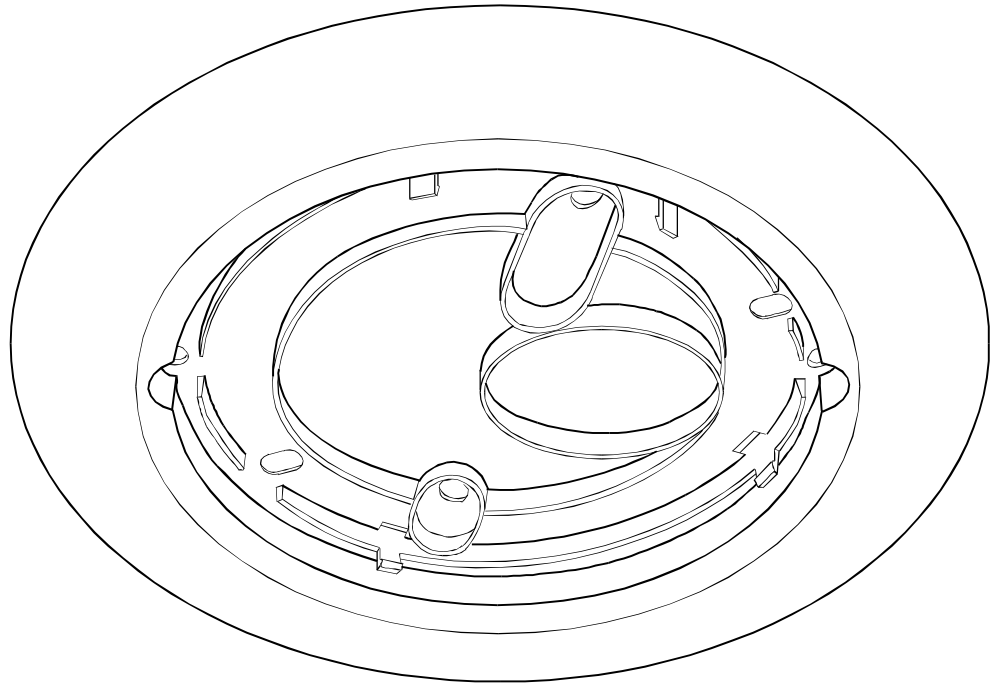


Figure 5-8 Sensor Trim Ring  
cdn94

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# Sensors and MCPs - Siting

See **Appendix A** for information on **Environmental considerations**  
 See also **Appendix B** for information on **equipment** for installation in  
**Hazardous areas**.

## Smoke sensors

The sensor siting design rules aim to satisfy the requirements of BS5839 Part 1:1988, if in doubt refer to the standard. This section refers to point sensors and does not include beam sensing which is covered in a separate section, *Beam sensors*.

### Siting (horizontal)

#### Maximum dimensions

- ☐ Area covered by 1 sensor: **100 m<sup>2</sup>**.
- ☐ Distance between any part of the wall and the nearest sensor: **7.5 m**.
- ☐ Distance between sensors: **15 m**.

#### Minimum dimensions

- ☐ Distance between sensor and wall: **0.5 m**.
- ☐ Distance between sensor and obstruction to the flow of smoke or hot gases: **0.6 m**.

### Layout

#### Flat horizontal ceilings

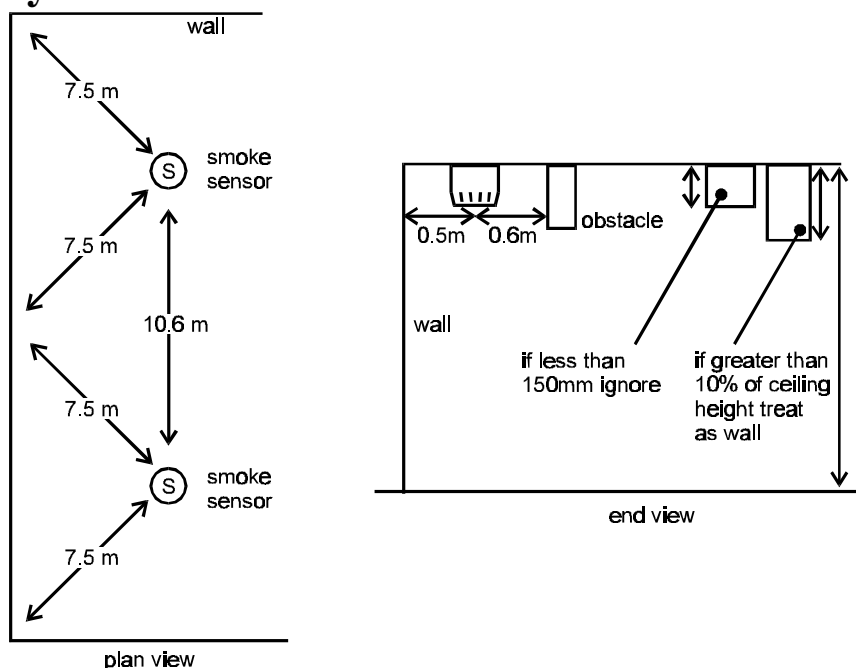


Figure 6-1 Smoke sensors under flat ceiling

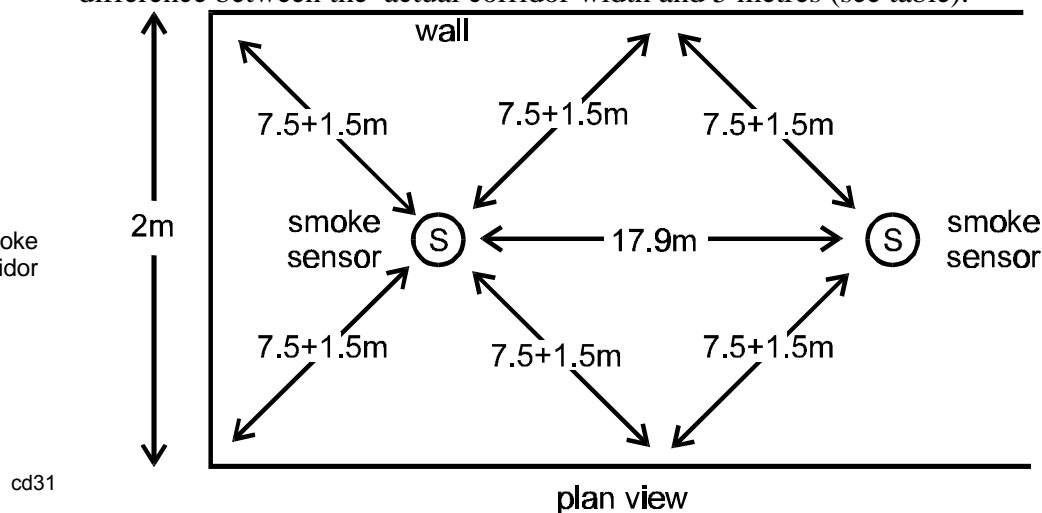
**Corridors**

Sensors in corridors may generally be spaced more widely.

- ☐ this is NOT applicable to life safety applications unless all adjoining rooms have smoke detection
- ☐ this is NOT applicable to corridors greater than 5 metres wide

Sensors may be placed at horizontal distances extended up to 50% of the difference between the actual corridor width and 5 metres (see table).

Figure 6-2 Smoke sensors in 2m corridor

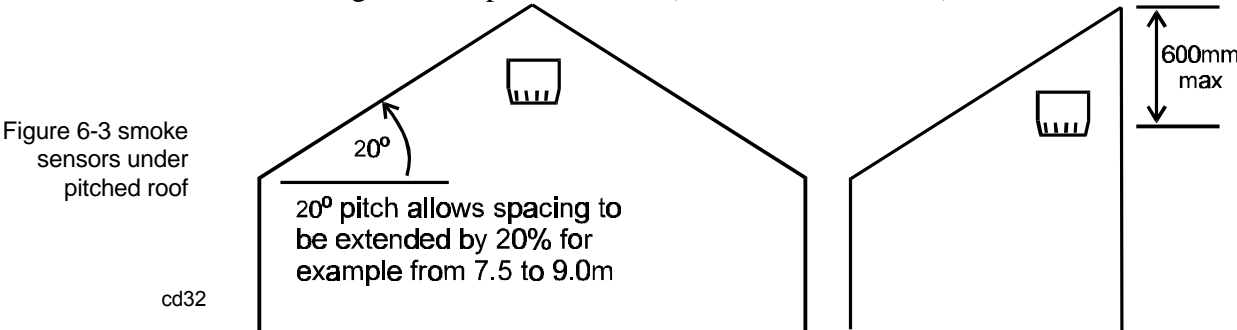


Corridor width (metres)	Maximum spacing between smoke sensors (metres)
1.2m	18.8m
1.6m	18.3m
2.0m	17.9
2.4m	17.4
2.8m	17.0
3.2m	16.5
3.6m	16.0
4.0m	15.5
4.4m	15.0
4.8m	14.4

**Pitched roofs** A row of sensors should be installed along the apex of any pitched roof or north-light roof.

Smoke sensors should be not more than **600 mm** from the apex of the roof.

Horizontal spacing between sensors may be extended when used under pitched roofs. The horizontal distance may be extended by up to 1% for each degree of slope of the roof (relative to horizontal).



**Heights**

Maximum heights of sensors are dependant on the **response** available in the event of fire:

- ☐ A - general applications
- ☐ B - automatic link to a manned centre and the fire brigade response is normally within 5 minutes

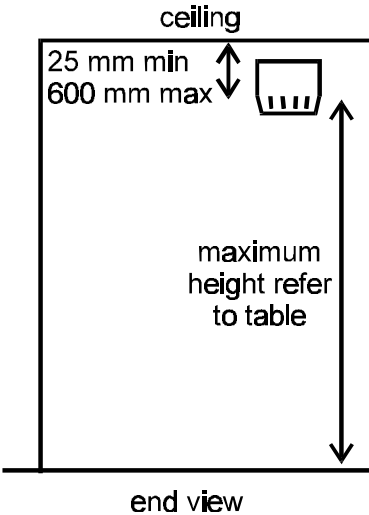


Figure 6-4 Smoke sensor height

cd33

Response A		Response B	
general	extended limits	general	extended limits
10.5m	12.5m	15.0m	18.0m

Table showing maximum heights of sensors above the floor.

Extended limits apply to ceilings that form less than 10% of the ceiling area of a room.

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# Heat sensors

## Siting (horizontal)

The sensor siting design rules aim to satisfy the requirements of BS5839:Part1:1988, if in doubt refer to the standard.

### Maximum dimensions

Area covered by 1 sensor: **50 m<sup>2</sup>**.

Distance between any part of the wall and the nearest sensor: **5.3 m**.

Distance between sensors: **10.6 m**.

### Minimum dimensions

Distance between sensor and wall: **0.5 m**.

Distance between sensor and obstruction to the flow of smoke or hot gases: **0.6 m**.

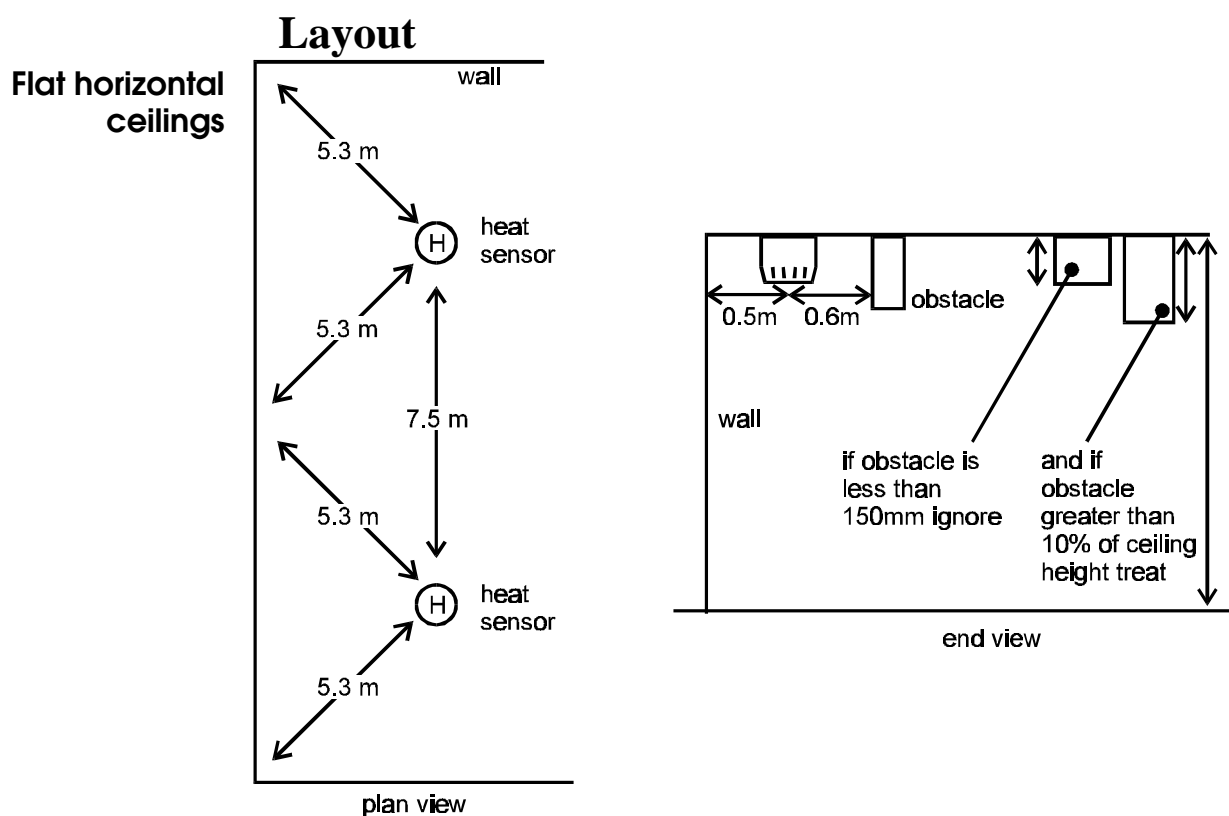


Figure 7-1 Heat sensors under ceiling

cd34

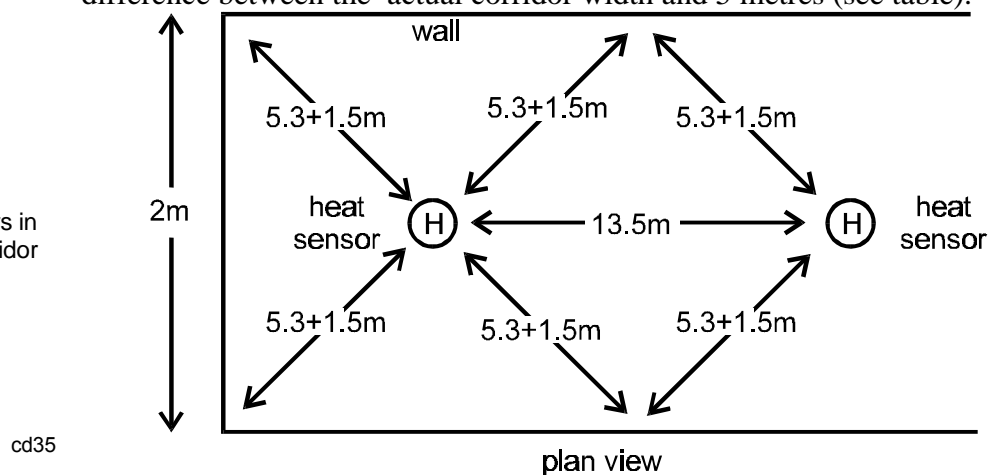
**Corridors**

Sensors in corridors may generally be spaced more widely.

- ☐ this is NOT applicable to life safety applications unless all adjoining rooms have detection.
- ☐ this is NOT applicable to corridors greater than 5 metres wide

Sensors may be placed at horizontal distances extended up to 50% of the difference between the actual corridor width and 5 metres (see table).

Figure 7-2 Heat sensors in 2m corridor



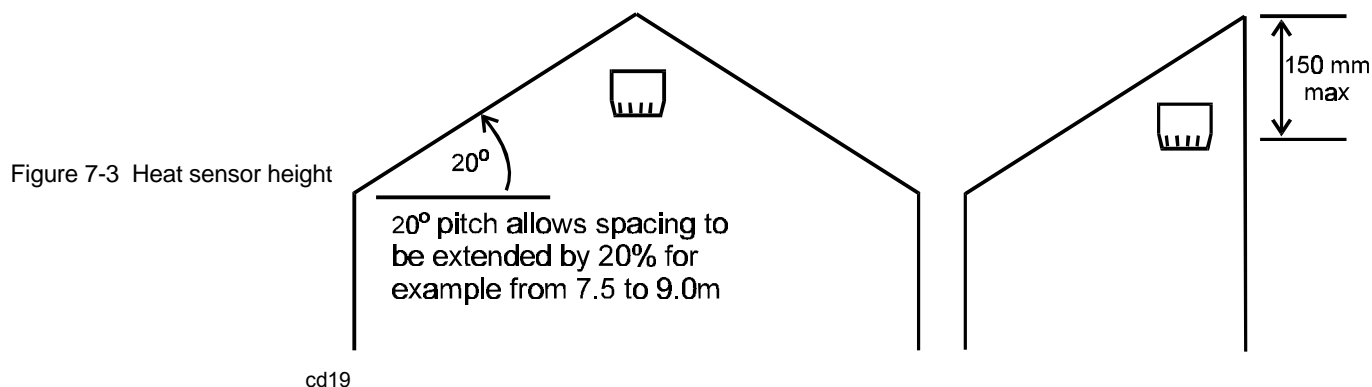
Corridor width	Maximum spacing between heat sensors (metres)
1.2	14.4
1.6	14.0
2.0	13.5
2.4	13.0
2.8	12.5
3.2	12.0
3.6	11.5
4.0	10.9
4.4	10.3
4.8	9.7

**Pitched roofs**

A row of sensors should be installed along the apex of any pitched roof or north-light roof.

Heat sensors should be not more than 150 mm from the apex of the roof.

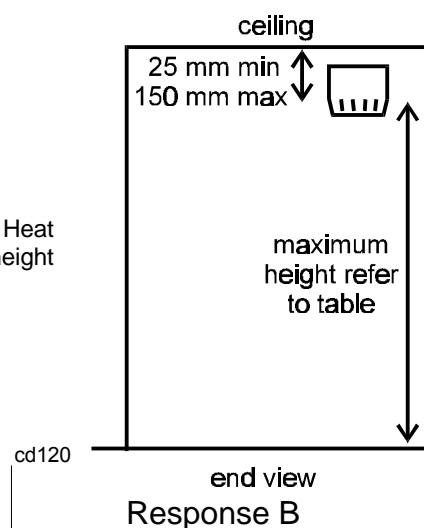
Horizontal spacing between sensors may be extended when used under pitched roofs. The horizontal distance may be extended by up to 1% for each degree of slope of the roof (relative to horizontal).

**Heights**

Maximum heights of sensors are dependant on the response available in the event of fire:

- ☐ A - general applications
- ☐ B - automatic link to a manned centre and the fire brigade response is normally within 5 minutes

Figure 7-4 Heat sensor height



	Response A		Response B	
Sensitivity	general	extended limits	general	extended limits
grade 2	7.5	10.5	12.0	17.0
grade 1	9.0		13.5	
high temp	6.0	10.5	10.5	15.0

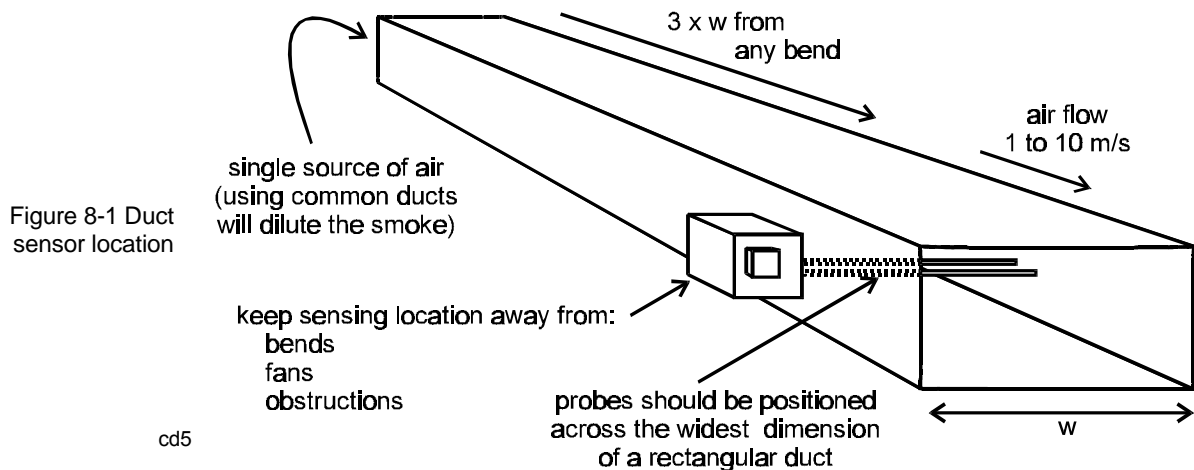
Table showing maximum heights of sensors above the floor.

**NOTE:** Extended limits apply to ceilings that form less than 10% of the ceiling area of a room.

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## Duct sensors



The duct sensor works because the air passing a pair of correctly aligned probes, creates a pressure differential. The pressure differential creates a flow of air through the external duct sensor which incorporates a standard optical /heat sensor.

### Dilution

Dilution will cause the sensor to become less sensitive to smoke. Dilution will occur if the source of air is from more than one place. Avoid siting the duct sensor on a common duct.

### Turbulence

Turbulence will effect the pressure differential between the probes and may prevent the sensor sampling the air. Turbulence is often caused by:

- fans
- inlets and outlets
- corners (keep a distance of 3 times the duct width from any bend)
- obstructions

### Sampling

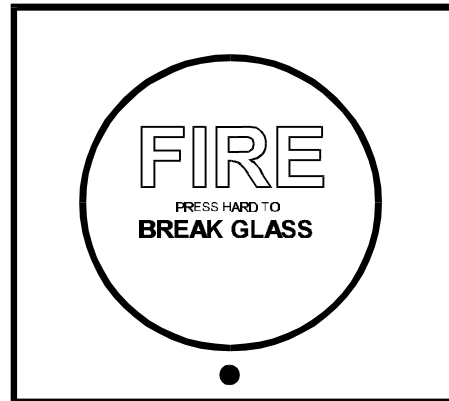
The sampling volume will be proportional to the length of the probes. Keep the probe length as long as possible. Position the probes to cross the greatest dimension of the duct.

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# Manual Call Points (MCPs)

Figure 9-1 MCP

cd76



## Choosing MCPs

There are 2 parameters that will effect the choice of MCP:

- ☐ Operating method (normally break glass)
- ☐ Operating environment

### Positioning

MCPs should be sited in an:

- ☐ In conspicuous and well-lit positions against a contrasting background so that they can be seen easily.
- ☐ **1.4m** above floor level so that nobody has to travel more than **30 metres** to reach one
- ☐ on floor landings of staircases
- ☐ on all escape routes and exits to the open air.

### Operating method

Most MCPs operate on a simple break glass principle, but there are 3 methods available:

- Break glass
- Lift cover, then break glass
- Key operated

### Environment

The standard MCPs are designed for use indoors and are rated to **IP40**.

The water resistant version is rated to **IP44**.

The environmentally protected versions are rated to **IP55**.  
(*IP ratings are estimated*)

**Fixing** All MCPs (not environmentally protected version) are designed for either flush or surface mounting. They include a surface mounting box but not a back box. If the surface mounting box is to be flush mounted then a flush fixing bezel 19289-01 is required.

Refer to *Standards, BS5839* section.

# Sounders -siting

## Choosing sounders

Where applicable the combined 32775 and 32780 sensor/sounder will reduce the complexity and cost of wiring.

The stand-alone 32202 & 32203 sounder and the 32775 & 32780 combined sensor/sounder use only a single address on the loop.

### Sound output

The primary parameter of a sounder is its sound output. The system 32000 sounders include 2 types:

- Combined sensor/sounder rated at 85 dBA at 1 metre for use in bedrooms (32775 & 32780)
- Stand-alone sounder rated at 100 dBA at **1 metre** (32202 / 32203). The sound output may be reduced by adjustment.

**dB ratings:** Sound levels (sound pressure levels) are normally quoted in decibels (dBA). The sound level from a sounder is normally quoted at a distance of **1 metre** from the sounder. The sound level will reduce by 6dB every time the distance from the sounder is doubled.

**angle:** Sound levels (sound pressure levels) are normally quoted on-axis, i.e. directly in-line with the middle of the sounder. This is normally the loudest position. In order to assess the sound level at any particular point it is necessary to allow for the distance from the sounder AND the angle off-axis.

### Environment

The standard sounders are designed for use indoors and are rated to **IP30**. The stand-alone sounder is also available as an environmentally protected version with an **IP55** rating.

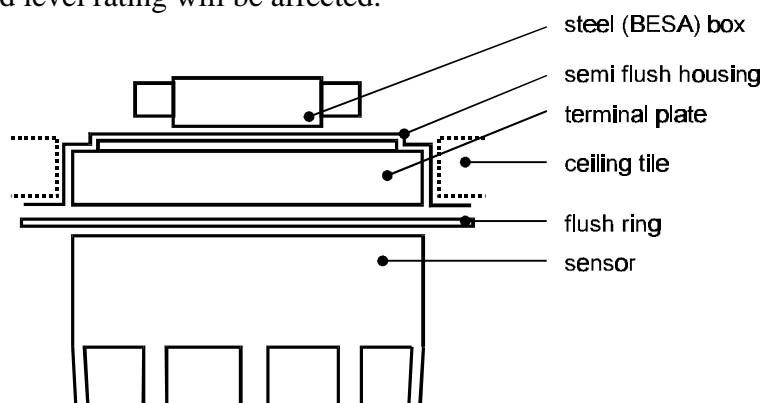
*All IP ratings are estimated*

### Flush fixing sensor sounder

The combined sensor/sounder may be semi-flush fitted. If semi-flush fitted the sound level rating will be affected.

Figure 10-1 Flush fitting a sensor sounder

cd4



## Positioning sounders

BS5839 has no specific recommendations for spacing alarm devices but there is a minimum sound level requirement of

- ☐ 65dB(A) or 5dB(A) above any noise likely to persist for a period longer than 30 seconds, whichever is greater.
- ☐ If the fire alarm system needs to wake sleeping people then the minimum sound level at the bedhead, with all doors shut is 75bB(A).

These requirements will affect the number and siting of alarm sounders within a particular building. Account must be taken of the effect on the sound of doors, walls, ceilings and floors. As a guide to design, most single doors will cause a 20dB(A) drop in sound levels and solid doors such as fire doors can reduce levels by 30dB(A) or greater.

### Sound level for Type L and M systems

In Type L and Type M systems the minimum sound levels must be produced in all 'occupiable parts' of the building. Occupiable parts include restricted areas such as service ducts where people could be working on occasion. As audible alarms are essential for the protection of life, a minimum of two independent sounders must always be provided to guard against the failure of one. A minimum of one sounder should be provided in each fire compartment.

### Sound level for Type P

In Type P systems the minimum sound levels shown above must be produced in the areas required to summon fire fighting assistance. A sounder should also be provided close to the control and indicating equipment and there should be one outside direct services to the correct entrance. In practice, most fire detection and alarm systems involve elements of both property and life protection. Most systems should therefore meet all the above requirements.

## Combined 32775 & 32780 sensor/sounder

The combined sensor/sounder is normally used in rooms where people will be sleeping. In this application it is necessary to have a sound level at the bedhead of **75 dBA**. To achieve this the sounder/sensor is normally positioned on the ceiling as shown in the diagram.

The application assumes the following:

- ceiling height of **2.6 metres**
- bed height of **0.6 metres**

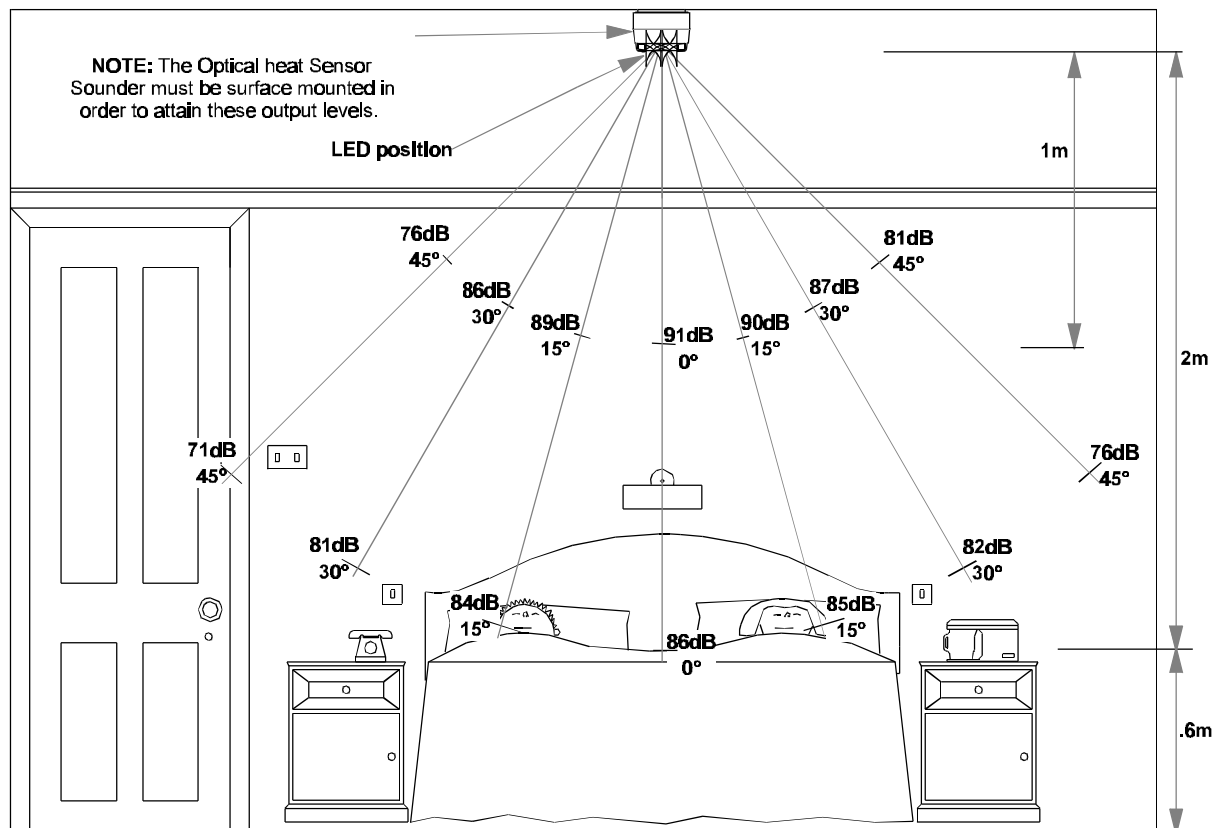


Figure 10-2 Sound output of a sensor sounder

f1157

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# Interfaces to other equipment

## Conventional detector and sounder circuits

### Mains-powered interface

The 32440 interface operates from a mains power supply and incorporates its own battery-backed power supply.

It has 4 channels each may be configured as a conventional detector zone (input) or sounder (output) circuit.

The 32440 interface is typically used to replace a conventional fire alarm control panel.

The interface provides a **24 Vdc**

(nominal) output rated at **250 mA**.

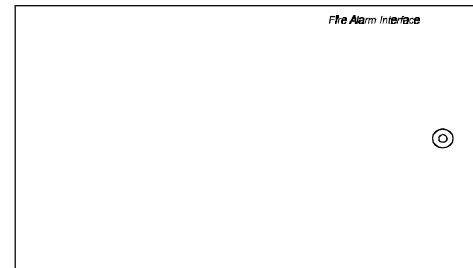


Figure 11-1 Mains powered interface

### Detection zones

A zone (input line) will accept conventional detectors and MCPs. The maximum load per zone 'input' circuit is **2 mA**. Each zone is monitored for:

- ☐ Fire (from manual call point)
- ☐ Fire (from conventional detector)
- ☐ Open circuit fault
- ☐ Short circuit fault

Monitoring conforms to *BS5839* by detecting a manual call point activation

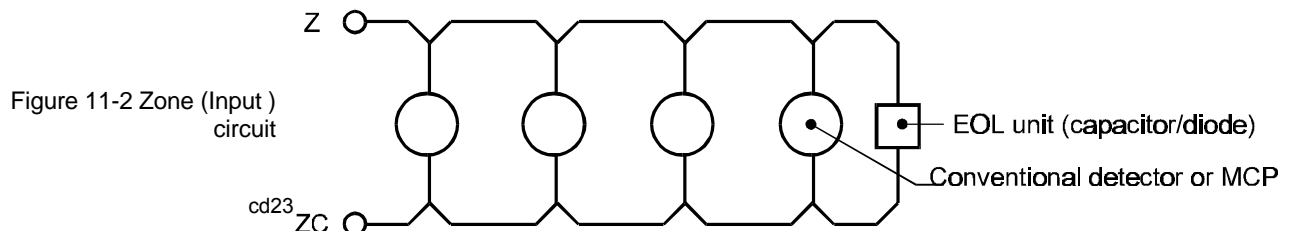


Figure 11-2 Zone (Input) circuit

if a detector is removed.

Each zone requires an end-of-line unit (capacitor/diode), supplied.

There is a single compatibility switch within the interface that sets the detector/MCP characteristics for any channels configured as inputs. The characteristics have been set to provide compatibility with various manufacturers' detectors.

**NOTE:** The detector compatibility has been set for common detectors. The performance of the setting should be verified with the particular detectors being used.

The following settings are available:

- |   |   |
|---|---|
| <input type="checkbox"/> Gent             | 7600 range  |
| <input type="checkbox"/> Apollo / Hochiki | Series 20 tested<br>CD range tested               |
| <input type="checkbox"/> Menvier          | Series 700 tested                                 |
| <input type="checkbox"/> Nittan           | NH-G Series tested                                |
| <input type="checkbox"/> Notifier         | EC range (without resistor fitted to base) tested |
| <input type="checkbox"/> Thorn            | Series 300 tested                                 |

**NOTE:** Where **other manufacturers** manual call points are used on the interface input circuit, then a **3.9V zener diode** must be in **series** with the **call point contacts**.

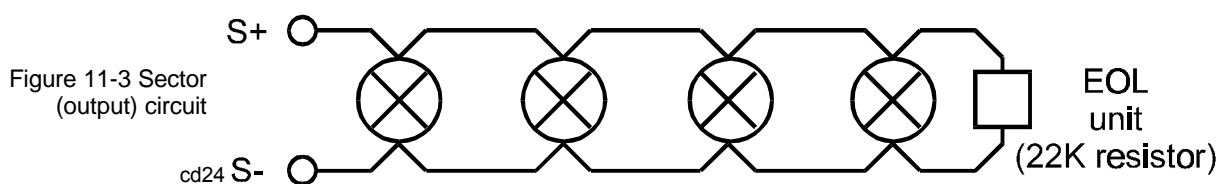
### Sounder sectors

A sector (output line) will accept conventional sounders and door holders etc.

The maximum total load for all sectors on a single 32440 interface is **500 mA** (each sector is individually fused at **800 mA**).

Sectors are monitored for:

- ☐ Open circuit fault
- ☐ Short circuit fault



Each sector requires an end-of-line device (**22K resistor**), supplied.

## Loop Powered Zone Module

The 32410 **Loop Powered Zone Module** is a single channel device which can accept up to **20 conventional detectors**.

There is no limit to the number of **MCPs** which may be connected to the module provided that a 3.9V *zener* or 470R *resistor* is connected in series with the MCP contacts.

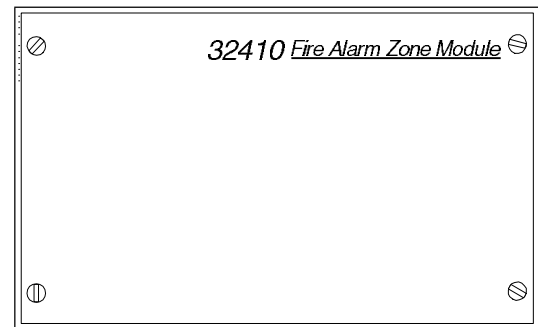


Figure 11-4 Loop Powered Zone Module  
cdn198

### Detection (zone) circuit

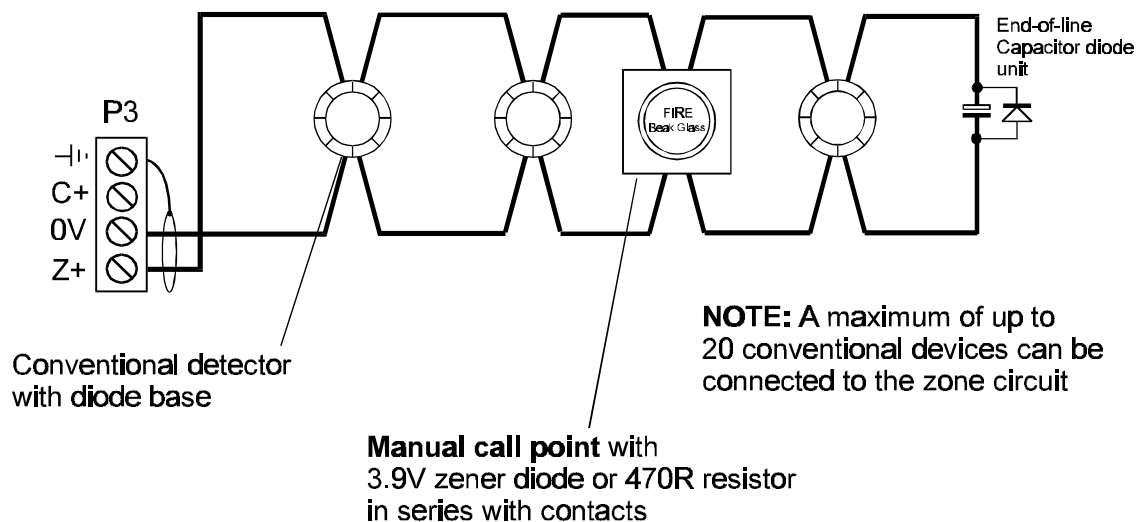


Figure 11-5 Detection zone circuit  
cdm40

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

**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.

**NOTE:** Due to the voltage drop across the diodes, the number of diode bases that can be connected to the zone module is **limited to 5**.

The following detectors are compatible:

- ☐ Gent 7600 range including 07012-31 flame detector, provided
  1. The flame is the only device connected to the zone.
  2. The EOL is fitted directly to the flame detector and is housed in the base
- ☐ Menvier 700 series (Ionisation and Optical)
- ☐ Apollo series 60 (Ionisation)
- ☐ Apollo series 30 (Ionisation and rate of rise)
- ☐ Hochiki SLK-E Optical  
SIH-E Ionisation  
Comb Heat  
DFE-90E Fixed Temp
- ☐ Nittan 2KC Optical smoke
- ☐ System Sensor 1151E  
4451E
- ☐ Notifier SD-651E
- ☐ Thorn MR601/AFA1706 Optical  
MR601T/AFA1705 High Performance Optical  
MD611/AFA1704  
MD601/AFA1702

# Conventional fire alarm systems

Existing conventional **24V dc** fire alarm systems may be interfaced to 32000 systems using a 32440 mains-powered interface.

## Anti-knit circuit

The circuit shown below includes an anti-knit circuit that prevents the 2 fire alarm systems locking each other in the alarm state.

Parts required:

- mains-powered interface (*model no 32440*)
- 24V dc relay (*model no 19104-52*)
- 24V dc timer (*model no 19106-02*)
- zener diode (*model no 4104-042*)
- 2 x diode units
- zone end-of-line and sector end-of-line devices for existing fire alarm system (if monitored).

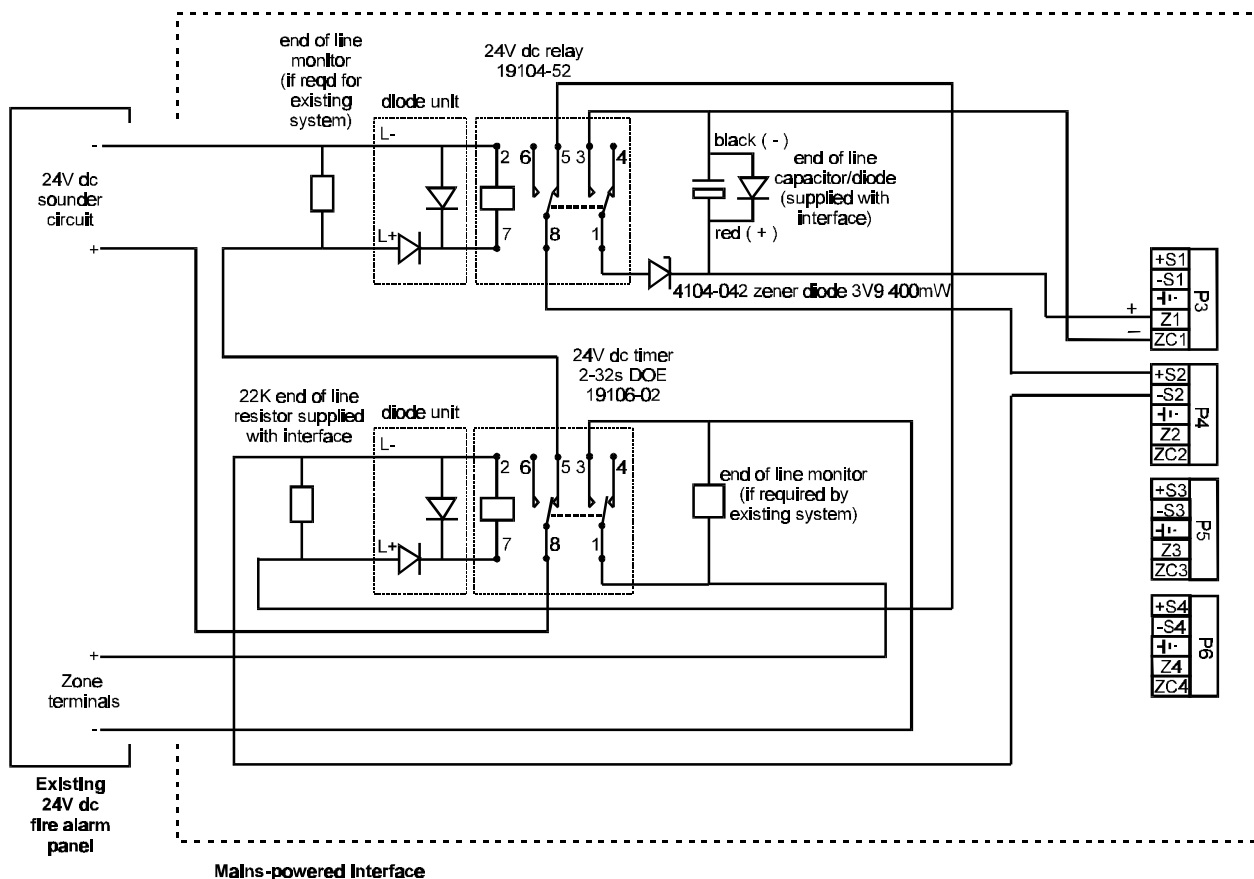


Figure 12-1 Interface to conventional fire alarm system

cdn201

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## Sprinkler systems

Sprinkler flow switches may be interfaced to the fire alarm system so that sprinkler operation will initiate a fire alarm.

Where stabilised water supplies are not available the sprinkler flow switches can momentarily operate due to surges of water pressure. To prevent this causing unwanted alarms a delay circuit must be included:

- ☐ **Sprinkler flow switch with stabilised water supply** - This may be connected directly to either type of 32000 interface.
- ☐ **Sprinkler flow switch without stabilised water supply & 32440 mains-powered interface** - requires a time delay circuit
- ☐ **Sprinkler flow switch without stabilised water supply & 32450 loop-powered interface** - use delay feature incorporated in 32450

### 32440 mains-powered interface

Sprinkler flow switches may be normally open or normally closed.

If the sprinkler flow switch is to be used without a stabilised water supply, use a delay circuit, see following diagram.

The input circuit to the 32440 interface must include an end-of-line unit (shown dotted).

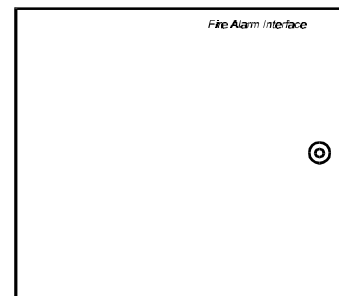


Figure 13-1 Mains powered interface  
cd22

### Delay circuit

#### Equipment required:

Mains -powered interface, one channel (*model no 32440*)

10 second delay module

Zener diode, 3V9, 400 mW (*model no 4101-042*)

End-of-line (capacitor/diode) unit (supplied with interface)

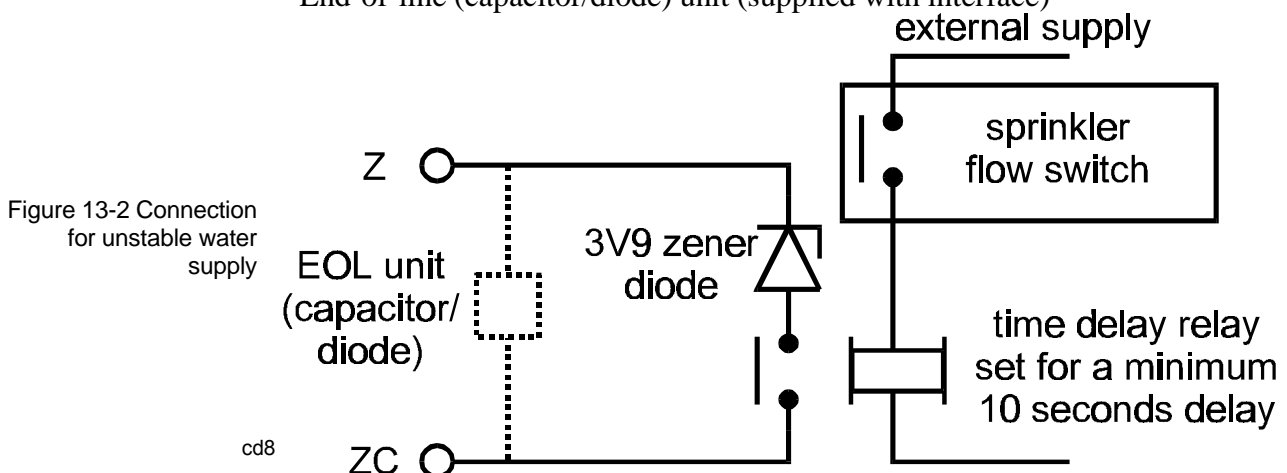
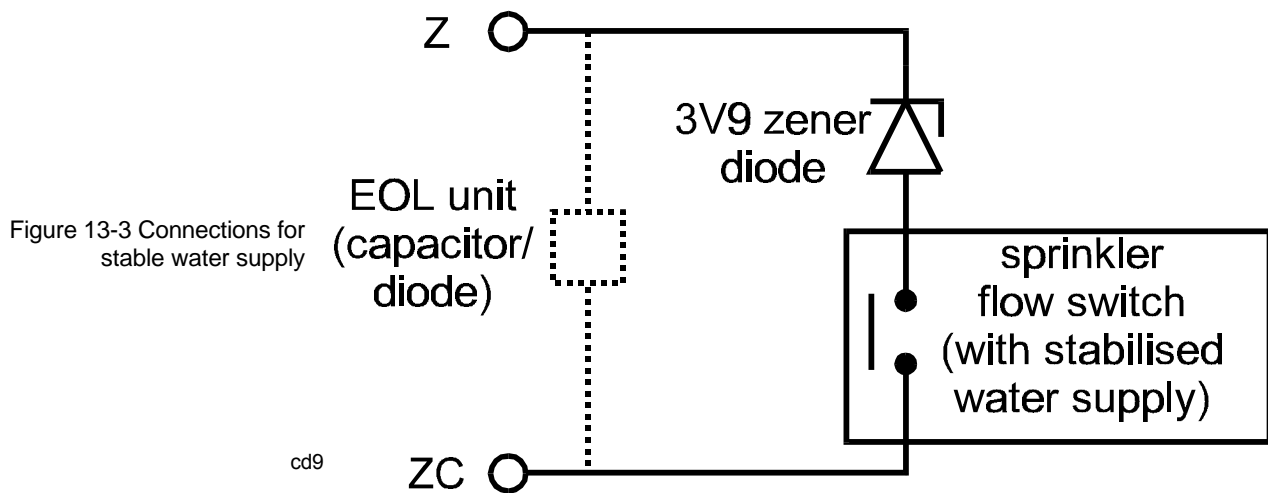


Figure 13-2 Connection  
for unstable water  
supply  
cd8



### 32450 loop-powered interface

The 32450 interface operates directly from the loop power supply and does not use mains power. It has 4 channels. Any of the channels may be configured as an input and used for the sprinkler system.

The sprinkler flow switch should be connected directly to a line module (19245-05) which can be mounted inside the interface enclosure or externally.

The 32450 interface may be configured to include a **10 second delay**, specifically designed for use with sprinkler flow switches. Each input may be configured for normally open or normally closed circuit operation.

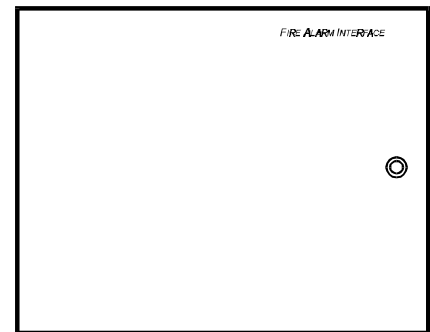


Figure 13-4 Loop powered interface

#### Wiring Equipment required:

Loop-powered interface, one channel (*model no 32450*)  
Line module (*model no 19245-05*)

### 32415 Single Channel Interface

The 32415 interface operates directly from the loop power supply and does not use mains power.

The sprinkler flow switch should be connected directly to a line module (19245-05). The interface should then be configured using the switch inside the interface as a single input device with a **30 second delay**.

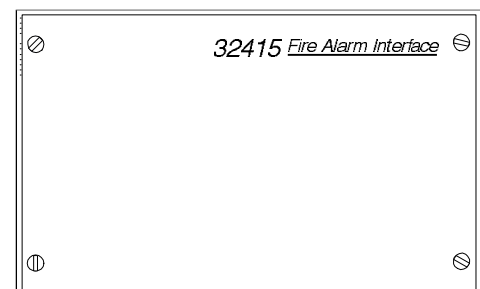


Figure 13-5 Single channel interface  
cdn200



## Door release mechanisms

Door release mechanisms are powered directly from the mains supply or by a dedicated power supply. This supply is wired via an interface relay to release the doors in the event of fire.

### Single channel interface

The output relay of the 32415 single channel interface is used to provide the switching required for the door release mechanism.

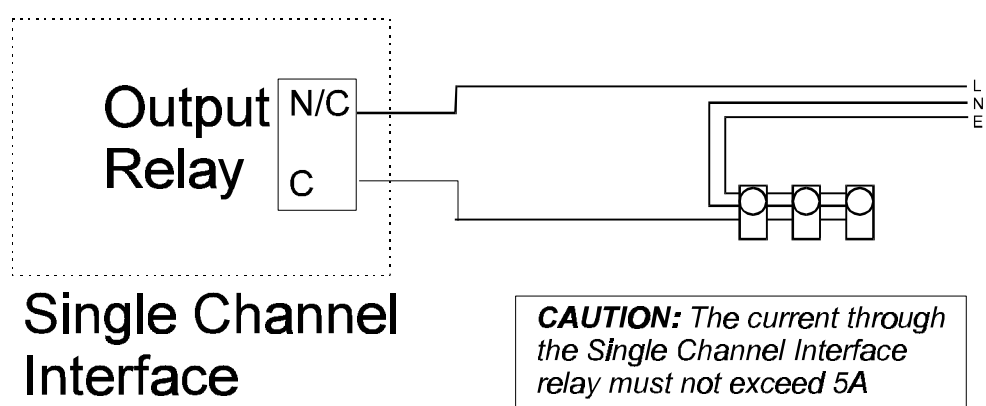


Figure 14-1 Door release interface circuit

cd10

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## Manned centre link

A manned centre link enables the fire alarm control panel to initiate an automatic telephone call to a fire station or other facility. The type of link used will depend on the requirements of the centre and locally available options.

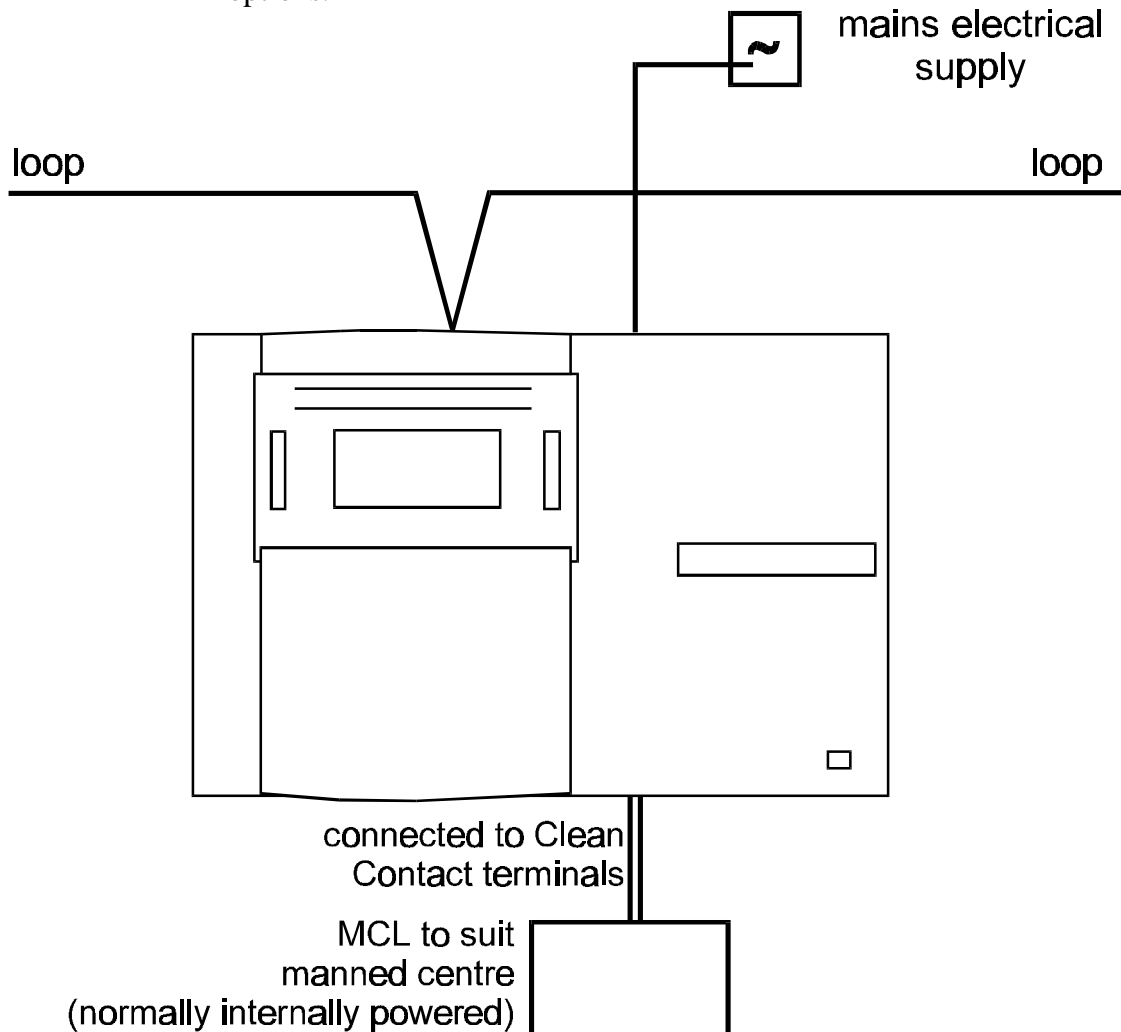


Figure 15-1 Manned centre link connections

cdm1

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## Large alarm loads

Where a 24V- alarm circuit at a control panel or interface unit output circuit is required to drive a large alarm load than it may be necessary to use relay drivers.

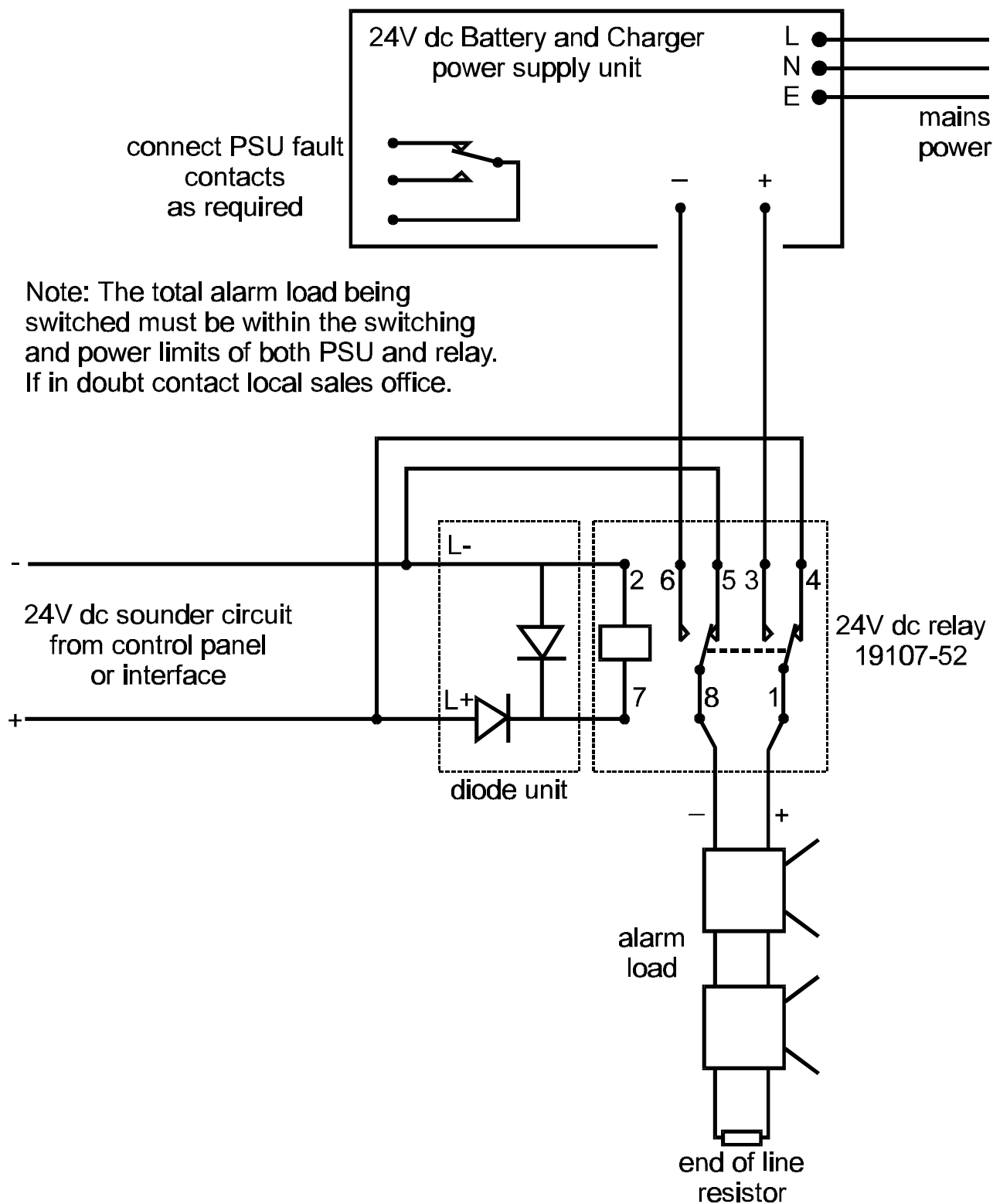


Figure 16-1 Connection of large sector load

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# Loops

## Cable length

The maximum length of cable that may be included in a loop and spurs off the loop is **1km**. The cable should have a total intercore capacitance of less than **0.5 microfarads** and a total series resistance (single core) of less than **13 ohms**.

## Maximum number of outstations

- Addresses** The maximum number of outstation addresses available on each loop is **200**. As every address must be unique this imposes an absolute limit for each loop.
- Loading** Each loop has a limited amount of power to drive devices. The loading effect of devices is shown in the following table. Each loop is capable of supplying **1000 load** units.
- Logical constraints** In addition there are further logical constraints, due to the control logic. These constraints are shown in the following table.

Device	Load per device (max load 1000)	Logical constraint
32202/3 & 32213 sounder	25	40
32440 mains-powered interface	3	8
32450 loop-powered interfaces	2	30
32410 Loop powered zone module	10	100
32415 Single channel interface	10	100
32701 T-breaker	1	200
32702 & 32703 slave units	1	100‡
32715, 32720, 32729, 32730 sensors	1	200
32760 Duct Sensor (also needs a slave LED)	1	50‡
32775 & 32780 sensor/sounder	8	125
32777 Repeat sounder	8	125
328XX range manual call point	1	200
* 32520 repeat panel	3	32

The maximum number of devices on a loop is limited to **200**.

‡ Installations prior to **March 1996** have a maximum of 10 slave units.

## Spurs

Spurs are commonly used to connect a small isolated group of sensors and manual call points to the main loop.

### Limitations

A spur should not cover more than the equivalent of one zone as defined by BS5839:Part 1.

Avoid connecting an interface unit, driving sounders, to a spur circuit. The interface could potentially be driving 4 circuits of sounders and it would not normally be acceptable to lose these due to a single wiring fault.

## Connecting spur loop circuit

A spur circuit is connected to the loop using a 3-way device. This is provided by:

- ☐ 32701 T-breaker
- ☐ 32203 3-way sounder (32213 environmentally protected)
- ☐ 32440 mains-powered fire alarm interface
- ☐ 32520 repeat panel

## Calculating the number of loops

### Coverage

The maximum area that any loop should cover is **10 000 square metres** of floor area of a protected site.

### Future expansion

The number of devices that can be connected to a loop is limited. Where possible allow for system expansion, use extra loops rather than fully load a loop.



# Choosing Loop circuit cable

see also choosing Network circuit cable

**CAUTION:** In countries where the European EMC directive is in force, only those cables detailed in the EMC Compliance part of this manual may be used.

Single pair cable must be used. It is NOT permissible to run mixed loops or outgoing and return pairs in a multi core cable.

System 32000 loop cable carries both data and power supply and therefore its selection is important.

## Specification

- ☐ Mineral insulated cable (MICC) to BS6207:Part 1 (EMC approved)
- ☐ Delta Crompton FDZ2E1.5 FIRETUF OHLS fire resistant data cable (EMC approved)
- ☐ Other cables to the following specification:
  - BS6387
  - no more than **2-cores**
  - a maximum of **0.5  $\mu$ F** total intercore capacitance
  - a maximum of **13 ohms** total per core
  - each core having no less than 1.5 mm<sup>2</sup> cross section area
  - inherent or through metal conduit screen for earth continuity in order to produce electrical protection and screening
  - having protection from heat and mechanical damage
  - the cable screen must be capable of being earthed at each system device (outstation)

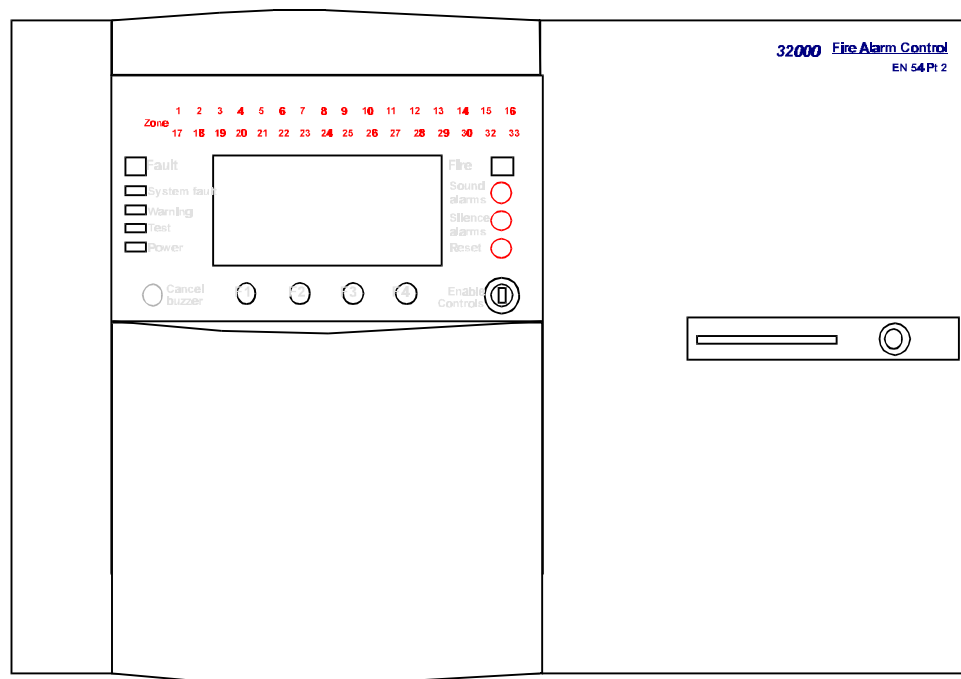
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# Panels

## 1-2 Loop control panel

Figure 19-1 1-2 Loop Control panel



cdn202

- ☐ 1-2 loop fire alarm control panel - 32020 (wall mounted)

Each loop may accommodate up to 200 devices, although there are several restrictions that will in practice reduce the number.

A detailed explanation of how to calculate the maximum number of devices is given in the *Loops, Number of outstations* part of this manual.

## Control panel standby to 72 hours

A standard 32020 control panel will provide a standby time of:

- ☐ 24 hours with an additional full alarm load for 30 minutes (single battery pack)
- ☐ 48 hours with an additional full alarm load for 30 minutes (two battery packs).

### Charger and battery cubicle

This may be extended to 72 hours of standby with an additional full alarm load for 30 minutes by adding extra batteries and a charger.

The charger and batteries should be mounted adjacent to each other. The maximum distance between them and the control panel is 20 metres.

#### Equipment required:

- 8 x 24 Ah batteries (model no 05795-02)
- 1 x battery cubicle (model no 05906-06)
- 1 x charger (model no 05216-24)
- 1 x loop-powered interface (model no 32450)

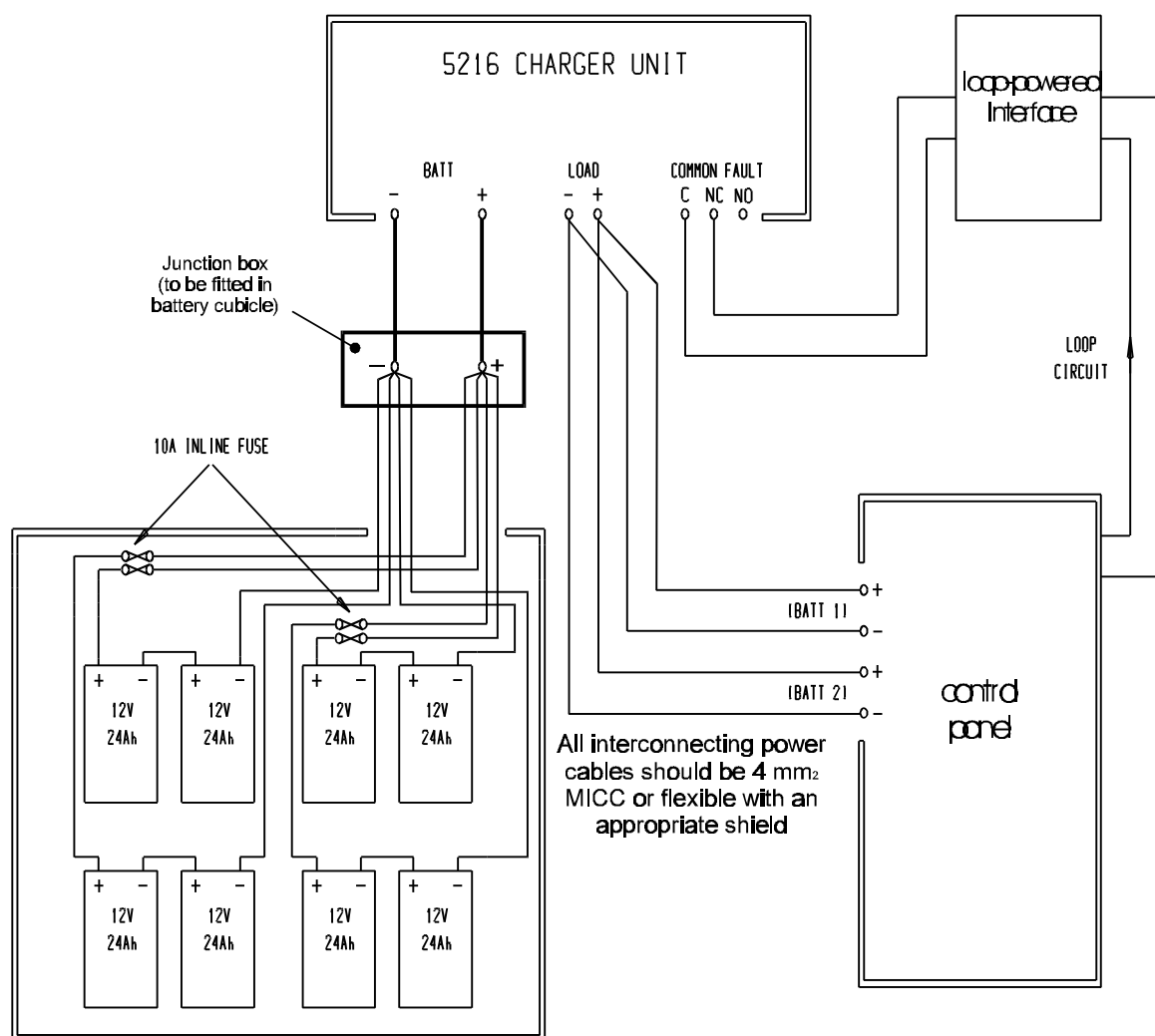


Figure 19-2 1-2 loop panel 72 hour standby

**NOTE:** In order to achieve the **72 hour** standby, the **control panel power supply** needs to be **modified** during the **commissioning stage**.

**NOTE:** The extra batteries are instead of **not** as well as those in the control panel.

## 32520 Repeat panel

A repeat panel is connected directly to any loop of the main control panel. In addition it requires a mains supply to run its battery-backed power supply.

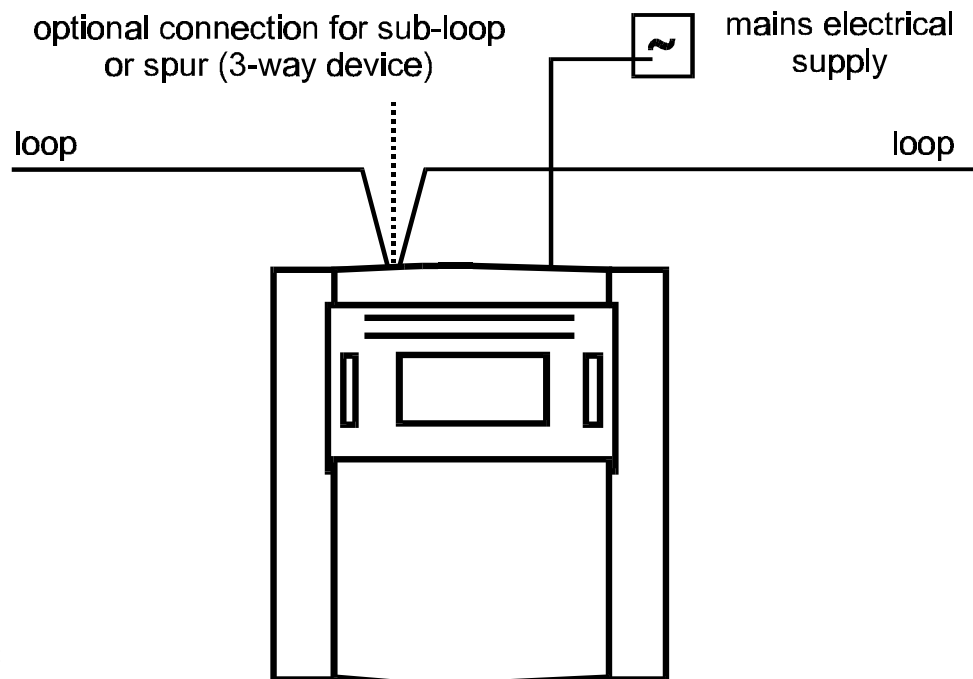


Figure 20-1 Repeat panel connections

cd202

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# Labels and Zones

## Device Labels

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

The following information gives guidelines to be applied when Labelling a particular system device:

- ☐ Each **Fire Sensor** can be given a label of up to **32 characters** (including spaces) in size. The label is for fire and fault annunciation purposes.
- ☐ Each system **Alarm Sounder** can be given a label of up to **32 characters** (including spaces) in size. An abbreviation **SNDR** (to represent the device type) should be included before the specific name, leaving 28 characters for the label. The label is for fault annunciation purpose to define the device type.
- ☐ Each **Manual Call Point** can be given a label of up to **28 characters** (including spaces) in size. An abbreviation **MCP** (to represent the device type) will automatically precede the specific name. The label is for fire or fault annunciation purposes.
- ☐ Each **Interface Unit** can be given a label of up to **32 characters** (including spaces) in size. An abbreviation **INTR** (to represent the device type) should be included before the specific name, leaving 28 characters for the label. The label is for fault annunciation purpose.

In addition, each **32440** and **32450 Interface Unit** has **Four channels**. Each Channel can be configured as an **Input** or an **Output**. Each channel can be given a label.

- An **Input** channel to receive a conventional zone of GENT detectors can be given a label of up to **32 characters** (including spaces). If MCPs are used, a label of up to **28 characters** (including spaces) can be used.
- An **Output** to operate conventional sounders or relays can be given a label of up to **32 characters** (including spaces).
- 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** (including spaces).
- The **32415 Loop powered zone module** is a single channel input to accept conventional detection devices and can be given a label of up to **32 characters** (including spaces).
- The **32410 Single Channel Interface units** is a single channel input to accept switches and can be given a label of up to 32 characters (including spaces).

## Zone Information

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

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

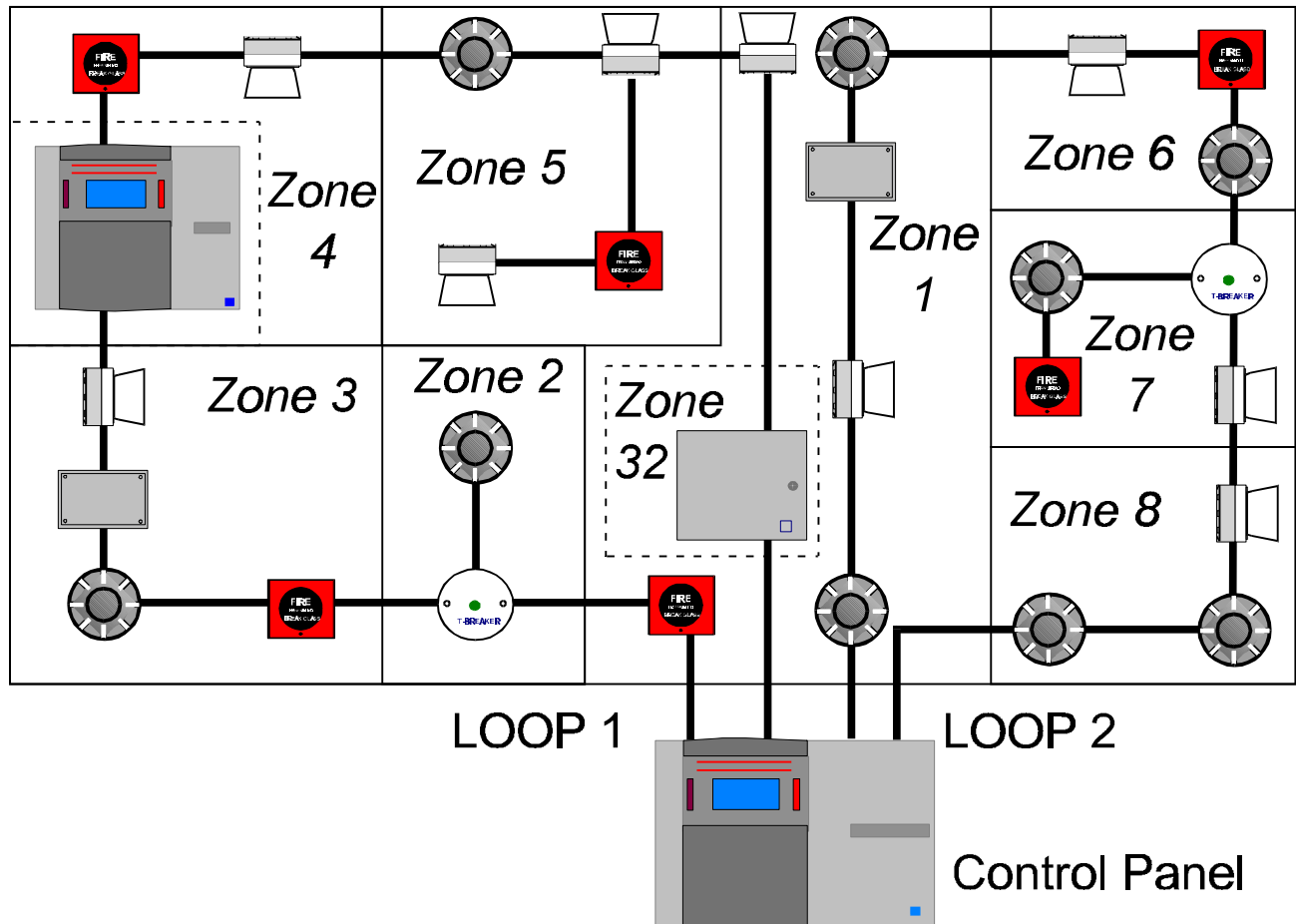


Figure 21-1 System 32000 zone definition  
cdn62

## Uses of Zones

- ☐ **Fire annunciation** - the appropriate **zone LED** illuminates and the **zone label** is displayed.
- ☐ **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.
- ☐ Up to **48 zone** boundaries.
- ☐ 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 provided area covered does not exceed 10,000ft<sup>2</sup>.
- ☐ **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 class change 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**.

## Zone Labels

Each zone may also be given a label to identify the area that it covers.

If both zone and device labels are used, the **zone label** will be displayed when a fire is annunciated.

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

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# Local Fireplans

The selection of a local fire plan dictates the operation of the alarm sounders in the system.

The panel has **5 local fireplans** from which to choose. These operate as follows:

## FIRE PLAN - 1

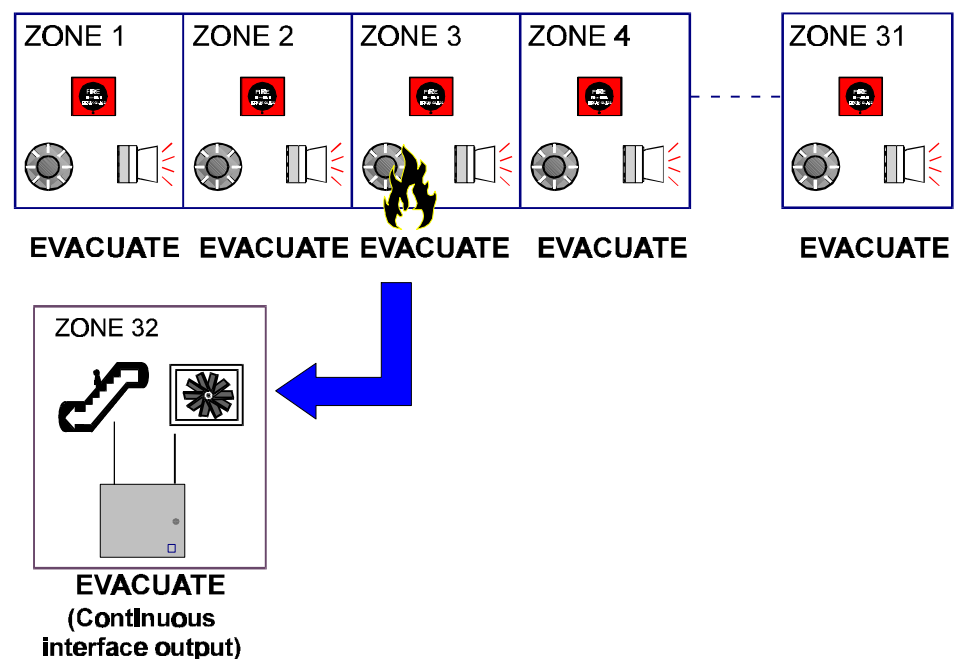


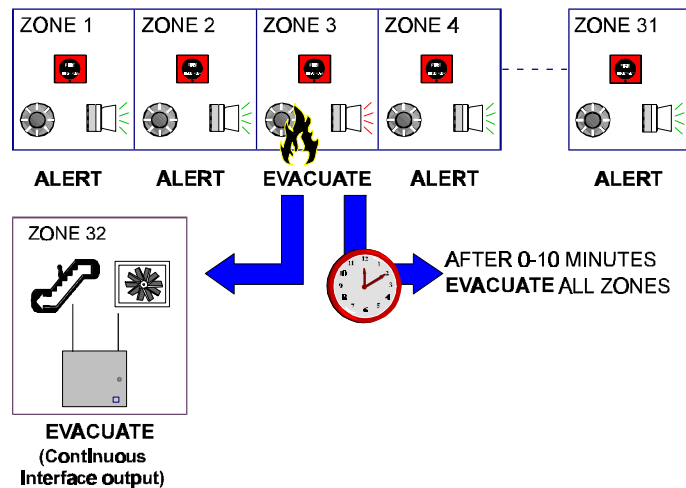
Figure 22-1 Fire plan 1

- ☐ Evacuate all zones when fire detected in any zone
- ☐ Immediately action all interface units in Zone 32 to provide a continuous output

## FIRE PLAN - 2

Figure 22-2 Fire plan 2

cdn191

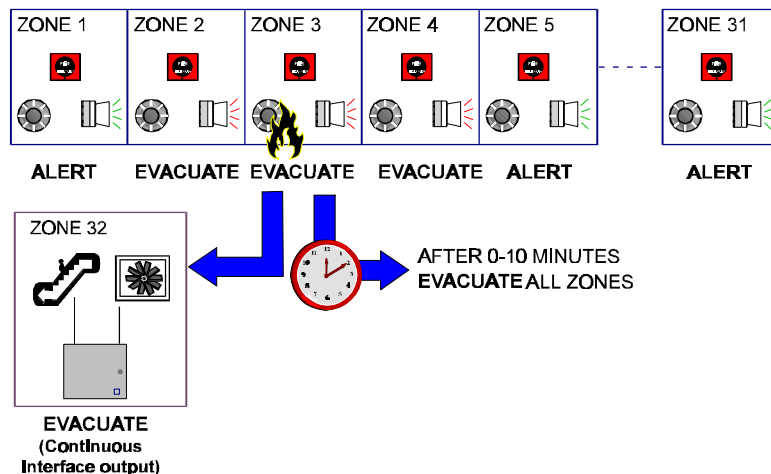


- ☐ Evacuate the zone in fire
- ☐ Immediately action all interface units in Zone 32 to provide a continuous output
- ☐ Alert all other zones
- ☐ Either after a pre-defined delay (0-10 minutes) or any second fire condition, evacuate all alerting zones

## FIRE PLAN - 3

Figure 22-3 Fire plan 3

cdn192

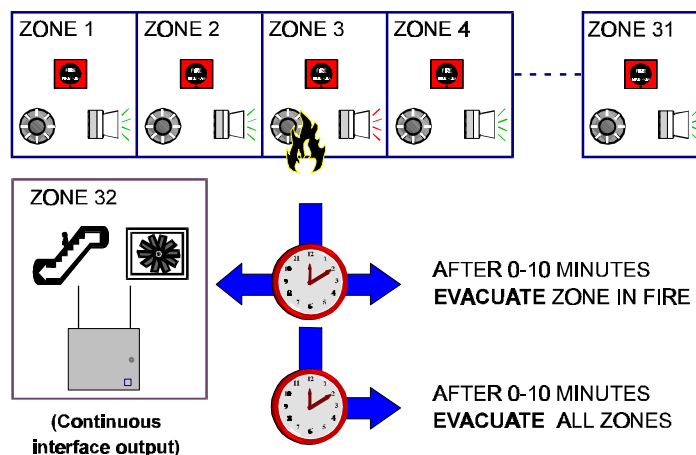


- ☐ Evacuate the zone in fire and zones numerically adjacent to that zone (Zone 1 will evacuate zones 31 and 2. Zone 31 will evacuate zones 30 and 1)
- ☐ Immediately action all interface units in Zone 32 to provide a continuous output
- ☐ Alert all other zones
- ☐ Either after a pre-defined delay (0-10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

## FIRE PLAN - 4

Figure 22-4 Fire plan 4

cdn189



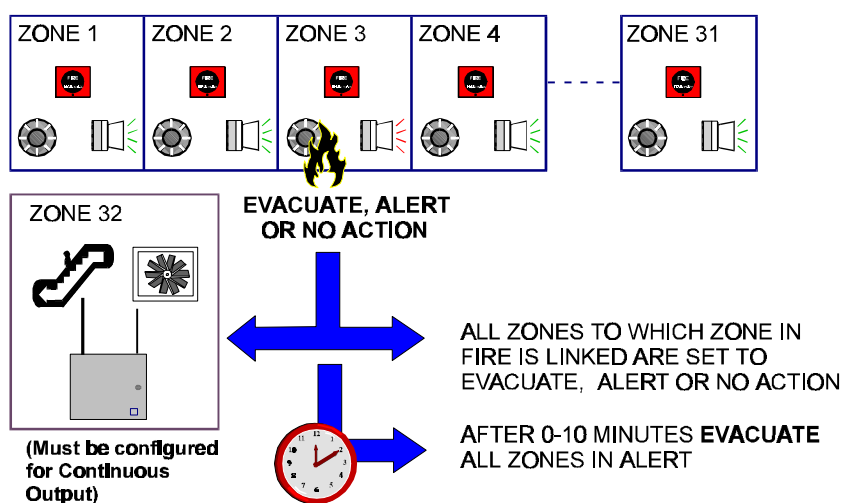
- ☐ With a zone in fire, after a pre-defined delay (0-10 minutes) or a second fire condition, evacuate the zone
- ☐ Either after another identical pre-defined delay or any second fire condition, evacuate all other zones

**NOTE:** The predefined delays are always identical.

## FIRE PLAN - 5

Figure 22-5 Fire plan 5

cdn167



**CAUTION:** Although zone 32 can be set to Evacuate/Alert/No Action in Fire plan 5, it should **always** be set to **Evacuate** to avoid damaging the plant it controls.

- ☐ Evacuate/Alert/No Action operation (as predefined) the zone in fire.
- ☐ Immediately Evacuate/Alert/No Action (as predefined) all other zones to which the zone in fire is linked.
- ☐ Either after a predefined delay (0-10 minutes) or any second fire condition, evacuate all other zones in alert.

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# Networks of control panels

See also *Network Fireplans*.

A 32000 'secure network' is constructed using up to 16 network terminals, connected together to form a loop.

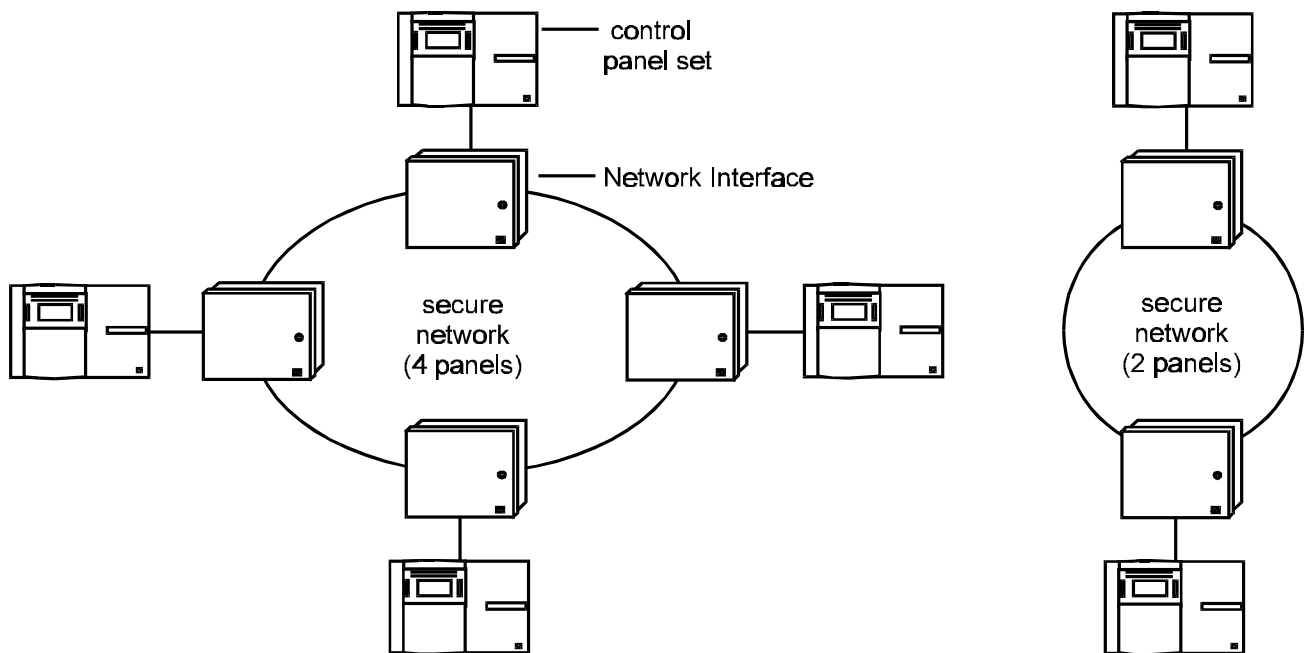


Figure 23-1 A 32000 network  
cd203

A network allows fire and other information to be passed from one control panel to another. A 32000 secure network comprises a cable loop, made-up of individual segments. The end of each segment is separately terminated within a network interface which includes isolator circuits. These allow a single cable fault to be isolated without affecting network performance.

In the event of multiple cable faults the network will automatically reconfigure itself so that groups of control panels that are still connected operate as individual networks.

Generally the cable length between:

- ☐ Panel to interface is **10m** maximum
- ☐ Interface to interface **1200m** maximum

**NOTE:** *The maximum cable lengths depend on the cable being used.*

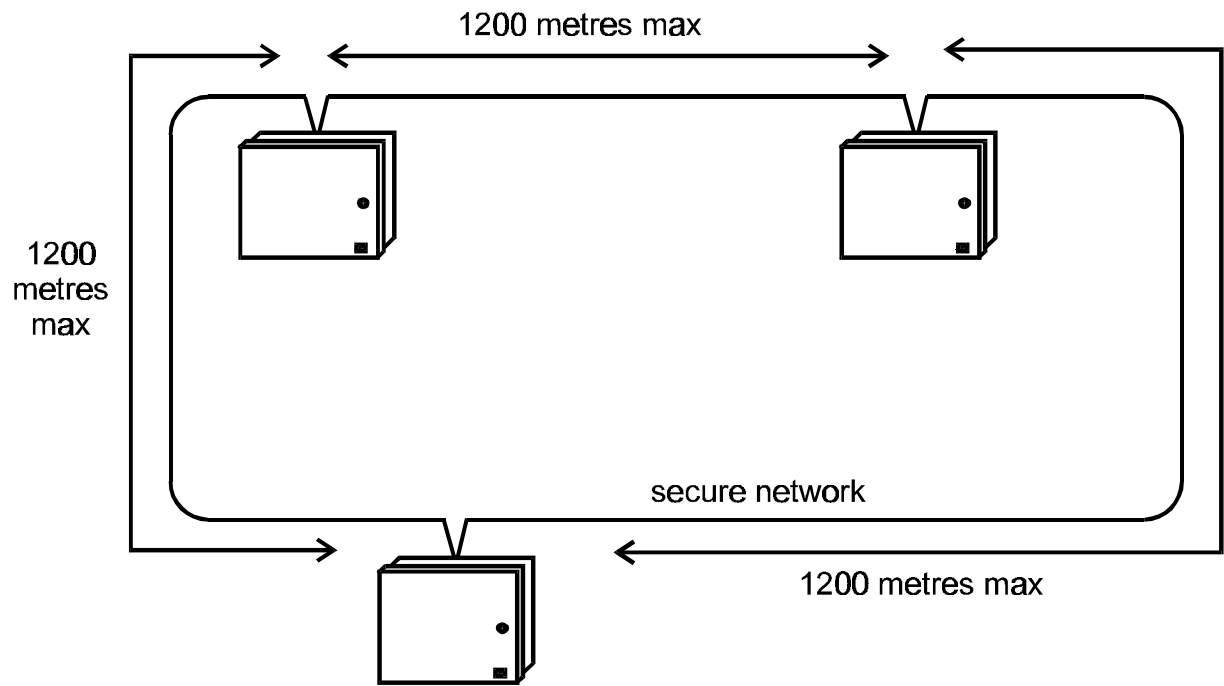


Figure 23-2 Network Cable lengths



# Choosing network cable

**CAUTION:** In countries where the European EMC directive is in force, only those cables detailed in the EMC Compliance part of this manual may be used.

The cable used to interconnect networks **MUST** be one of the following:

## Data Cables

- ☐ Belden No 9729 (UL: Style 2493) EMC approved
- ☐ Teflon jacketed Belden TR No 89729

**1200m** maximum Network Interface to Network Interface  
**10m** maximum Control Panel to Network Interface

Both cables must have following characteristics:

- two twisted pairs
- each pair individually screened
- 24 AWG (7 strands x 32 AWG)
- low capacitance between conductors - 39.4 pF/m at 1 KHz
- low capacitance conductor to screen - 72.2 pF/m at 1 KHz
- temperature range -30°C to +60°C.
- (teflon jacketed cable 89729 up to 200°C)

- ☐ Armoured cable

- Can be achieved by armouring the above cable.

**600m** maximum Network Interface to Network Interface  
**10m** maximum Control Panel to Network Interface

## Fire Resistant Cables

- ☐ Mineral insulated copper cable (MICC)  
**800m** maximum Network Interface to Network Interface  
**10m** maximum Control Panel to Network Interface
  - BS6207: Part 1
  - 3 parallel cores
  - having continuous metal sheath encapsulating
  - each core have 1.5 mm<sup>2</sup> cross section area
  - a red cover sheath (preferred for alarm applications)

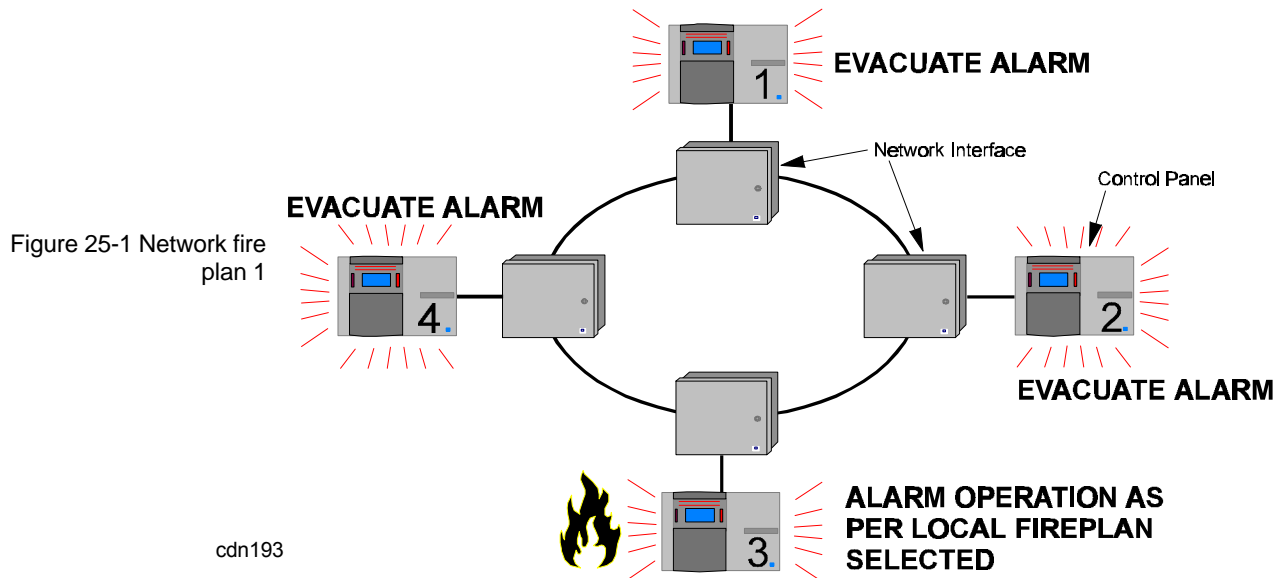
**Beldfoil is a registered trademark**

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# Network fireplan

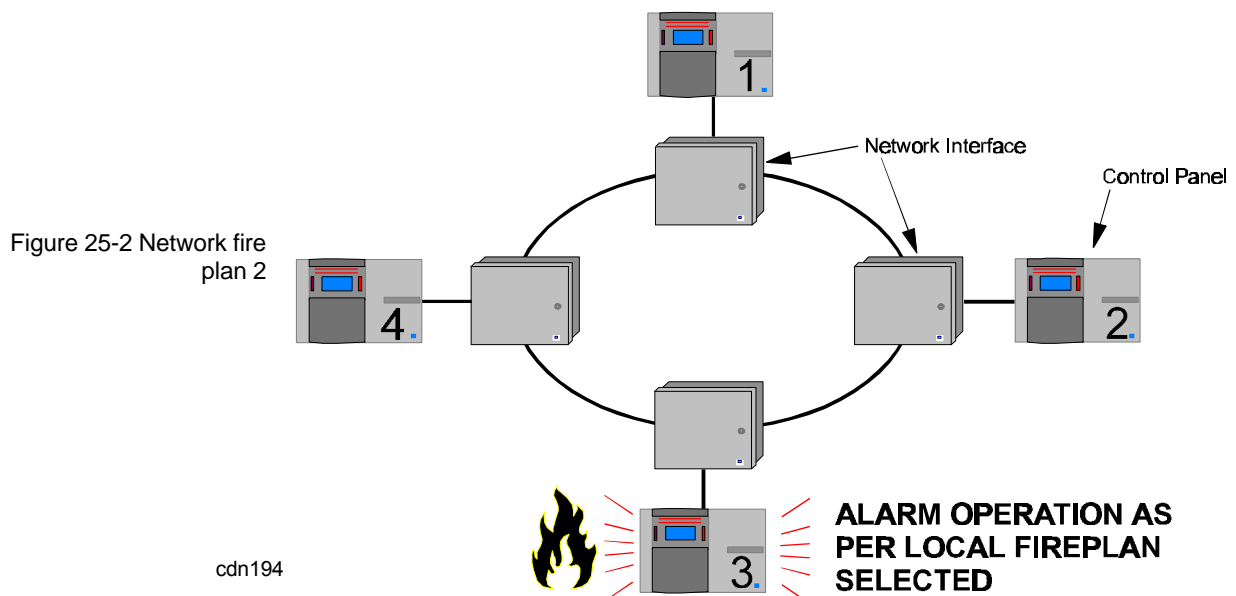
The panel has 6 network fireplans from which to choose. These operate as follows:

## NETWORK FIRE PLAN 1



- ☐ Evacuate all zones from any external fire

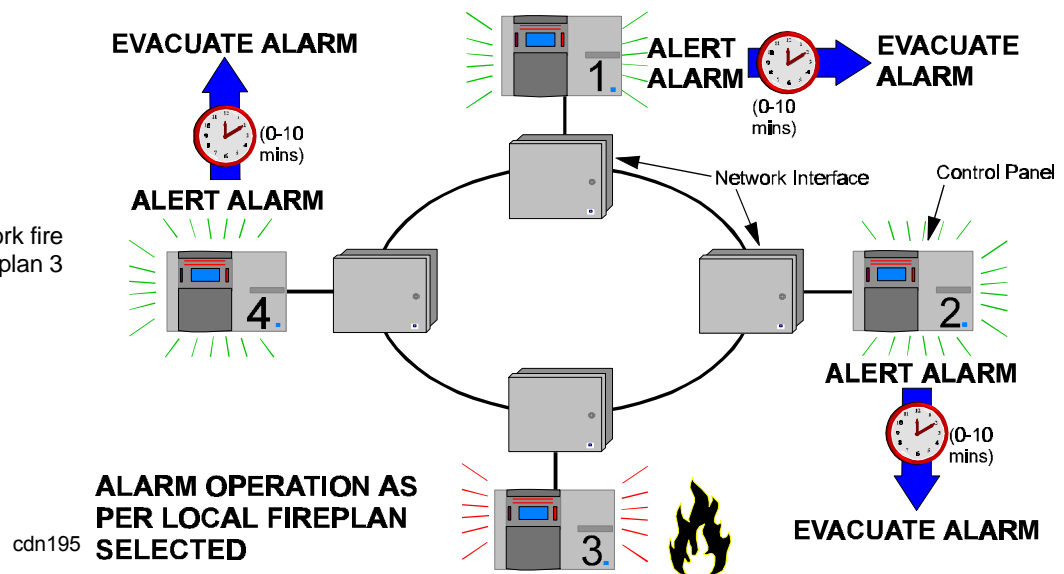
## NETWORK FIRE PLAN 2



- ☐ Ignore external fire events

## NETWORK FIRE PLAN 3

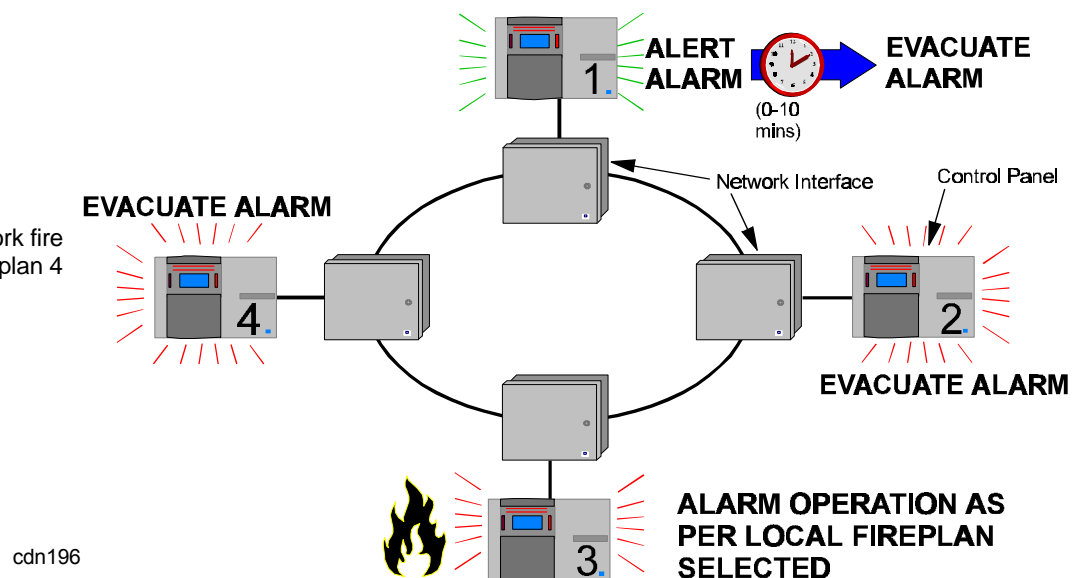
Figure 25-3 Network fire plan 3



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

## NETWORK FIRE PLAN 4

Figure 25-4 Network fire plan 4

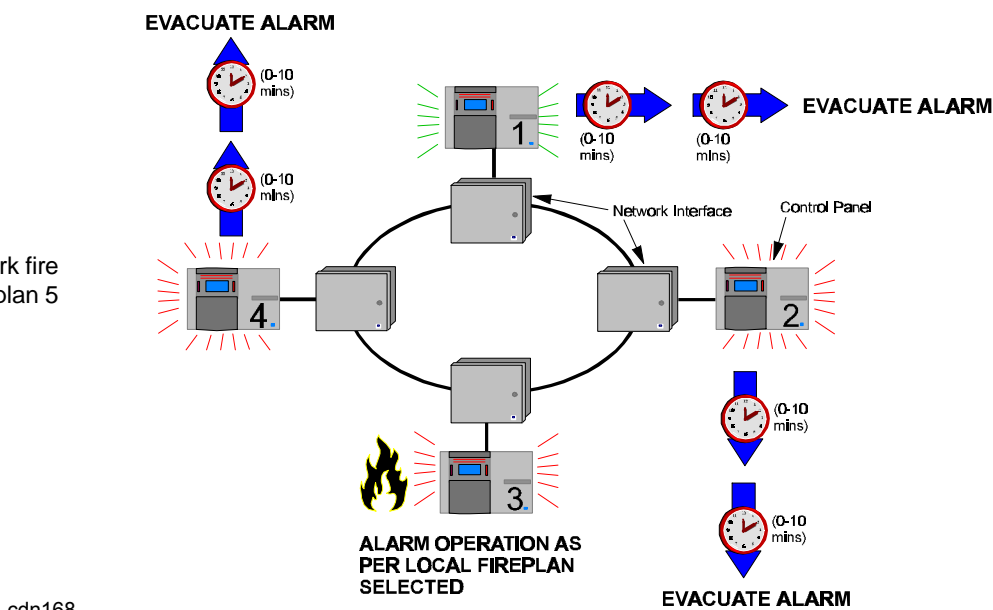


- ☐ Evacuate all zones if panel is numerically adjacent to the panel in fire
- ☐ Alert all other zones on other panels. After a pre-defined delay (0-10 minutes) or any second fire condition, evacuate all zones.

**NOTE:** Fire plan 4 cannot be used with local fire plans 2 and 3

## NETWORK FIRE PLAN 5

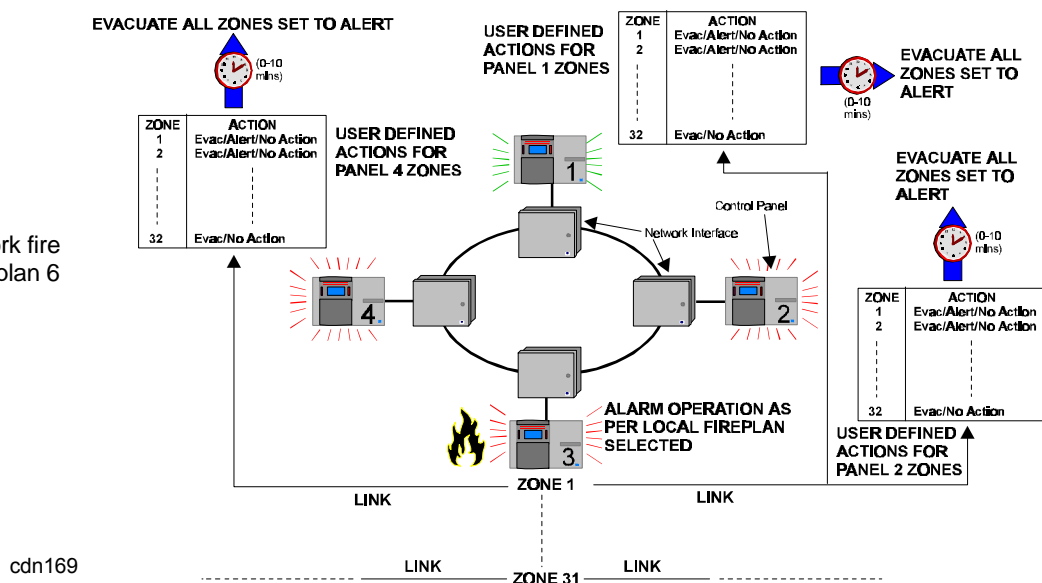
Figure 25-5 Network fire plan 5



- ☐ Evacuate all zones on other panels after twice the pre-defined delay (0-10 minutes) or upon any second fire condition.

## NETWORK FIRE PLAN 6

Figure 25-6 Network fire plan 6



- ☐ Any zone on the network can action any other zone on the network to Evacuate/Alert or No Action.
- ☐ After pre-defined delay (0-10 minutes) all zones in alert are set to evacuate.

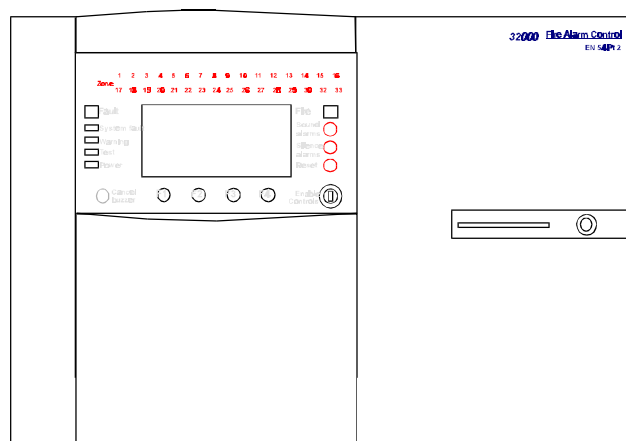
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## 32020 - Control Panel

Figure 26-1 1-2 Loop control panel

cdn202



The 32020 is a fire alarm panel conforming to the requirements of *BS 5839:Part 4* and Loss Prevention Council. It houses its own power supply and batteries. It may be surface mounted or semi-recessed.

The control panel is designed to be used with the 32000 range of addressable analogue sensor and sounders.

A keyswitch on the front cover prevents unauthorised access to fire alarm controls. All fire, fault and warning events are indicated by coloured lights with message display. Each sensor and zone can be given a name thus making the message easy to understand.

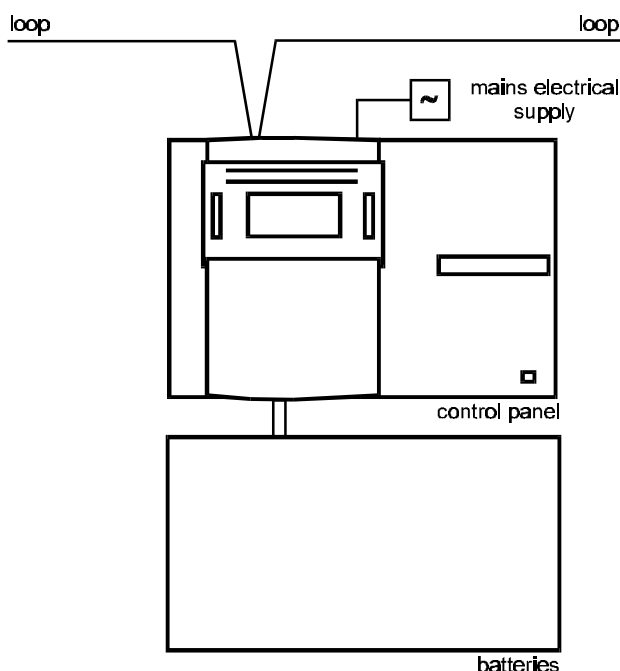
### Options

The control panel is supplied in basic form. An additional loop card may be added:

- Loop Card (*model no 32023-11*)

Figure 26-2 Panel external wiring

cd218



## Specification

Standard	BS5839:Part 4
Dimensions Control panel	Width 508mm height 377mm depth 160mm
Battery Unit	Width 508mm height 389mm depth 160mm
Full Assembly weight Control panel	16Kg
Battery unit	40Kg with all eight batteries
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Mains Operating voltage	230V 50Hz +10% -6% fused at 3.15A
Batteries in battery box Normally Can hold up to	4 - 12V 12Ah for 24hr standby with 0.5hr alarm load 8 - 12V 12Ah for 48hr standby with 0.5hr alarm load
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Light Grey -(door) Dark Grey-(Controls and indications & backbox)
Loops	Up to 2 Loops (loops 2 require an optional card) automatic allocation of addresses (up to 200 per loop)  Labels - for: outstations, interfaces. Each label may have up to 32 characters, (28 for manual call points)
Master alarm circuits	2 - (24 volt dc) 800 mA max per circuit
Common Fire and Common Fault relays	each with 2 sets of - double pole change-over, voltage-free contacts rated at 1A 24Vdc
Manned centre link connector via Clean contacts	1 - single pole change-over relay, voltage-free contacts rated at 1A 24Vdc
Serial I/O connector	1 - RS232/485 for connecting to a Network system or commissioning computer



Indicators	Fire (red) Fault (amber) System Fault (amber) Warning (amber) Test (amber) Power On (green)  32 zone, hidden until lit  Alpha-numeric display - 16 line 40 character, with back-light
Internal sounders	Fire buzzer Fault buzzer Keypad 'beep'
Controls (Keyswitch enable)	Sound Alarms Silence Alarms Reset Fire Cancel Buzzer Enable controls Menu keys and Qwerty keyboard
Menu options	Current fault and warning logs Analysis of analogue sensor information Interrogation of sensor cleanliness Loop map connections Enable/disable sensors, zones, sounders Enable/disable interface unit channels Fire plan menus Outstation label Address allocation
Logs	255 Fault, Warning & Status events 100 Fire (only) event Current fault events Current warning events
Printer	The printer operates when the access door is open. The printer can be used to provide a printed copy of most of the messages presented on the display. Printer controls include: ON, OFF, line feed and test.

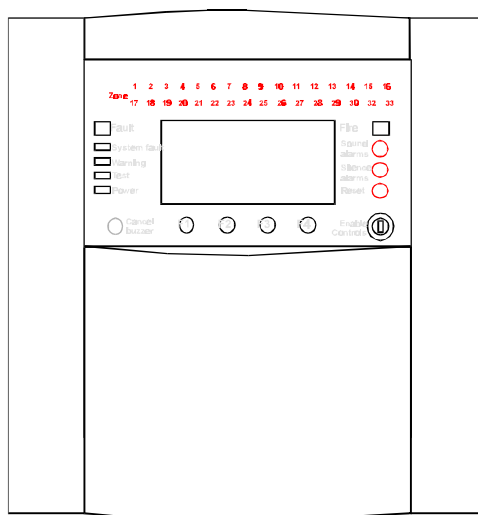


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## 32520 - Repeat Panel

Figure 27-1 Repeat panel

cdn203



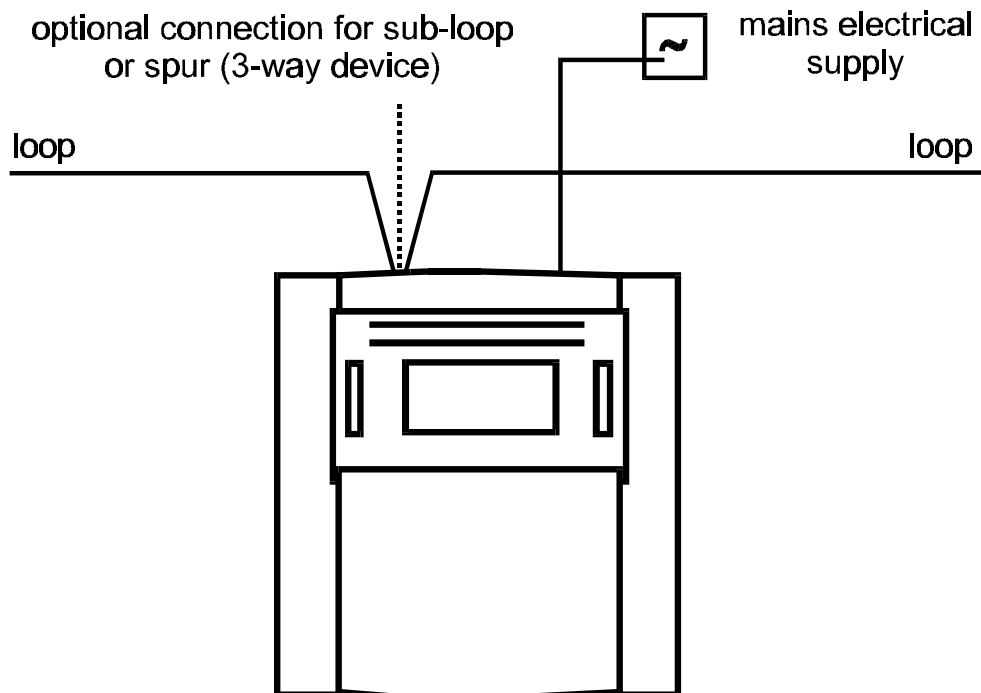
The 32520 Repeat Panel repeats all of the front panel indications that are provided on the main panel. In addition, all of the essential controls are also available.

The repeat panel can therefore take the place of a main panel for all standby and emergency needs. This allows the main panel to be sited elsewhere, close to security staff or to fit-in with cable routes.

The repeat panel is connected directly to a loop and has a built-in 'T' connection. The panel has an integral battery-backed mains power supply.

Figure 27-2 Wiring a repeat panel

cd202



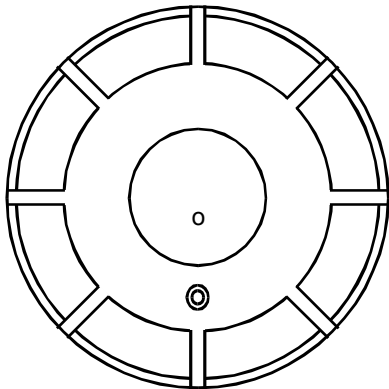
## Specification

Standard	BS5839:Part 4
Panel Dimensions	width 385 mm height 377 mm depth 145 mm
Full assembly weight	14Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Mains Operating voltage	230V 50Hz +10% -6% internally fused at 3.15A
Battery Supply	Integral 2-off 12V - 6Ah sealed lead acid
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Light Grey - (door) Dark Grey (control and indications,backbox)
Indicators	Fire (red) Fault (amber) System Fault (amber) Warning (amber) Test (amber) Power On (green)  32 zone, hidden until lit  Alpha-numeric display - 16 line 40 character, with back-light
Internal sounders	Fire buzzer Fault buzzer Keypad 'beep'
Controls (keyswitch enable)	Sound Alarms Silence Alarms Reset Fire Cancel Buzzer Enable controls Menu keys and Qwerty keyboard
Menu options	Current fault and warning logs Analysis of analogue sensor information Interrogation of sensor cleanliness Loop map connections Enable/disable sensors, zones, sounders Enable/disable interface unit channels Address allocation
maximum number per loop	maximum number of repeat and mimic panels per loop = 32 load factor (1000 max) = 3

# 32715 Optical sensor

Figure 28-1 Optical Sensor

cd49

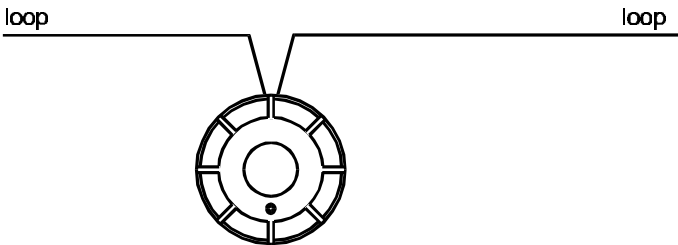


The optical sensor is suitable for most smoke detection applications.

**Variant** Combined optical sounder (*model no 32775*) see product data sheet.

Figure 28-2 Wiring the Optical sensor

cd80



## Specification

Standard Smoke	BS5445:Part 7 (EN54 : Part 7)
Dimensions	diameter 86 mm height 60 mm (with terminal plate)
Full Assembly weight	540g with terminal plate (approximately)
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated (mounted on a flat ceiling) IP20 estimated (mounted on a BESA box)
Air flow in installed environment	10m/s gusting for up to 30 minutes 5m/s continuous
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	Red LED visible at 500LUX ambient light levels 3m

Mounting	Surface or Semi-flush, using mounting kit ( <i>model no 19279-01</i> )
Chamber format	Sensing chamber is removable
Loop	Maximum number per loop = 200 Load (1000 max) = 1

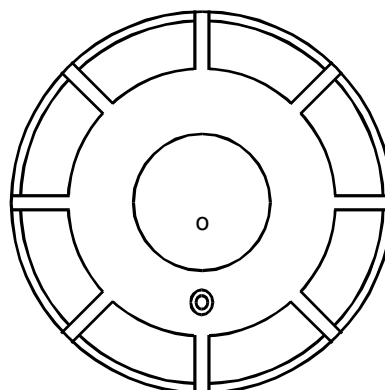
### Sensitivity

<b>State 0 LPC approved</b>	Medium sensitivity (Default) Suitable for most applications. Smoke detection to meet the requirements of BS5445:Part 7
<b>State 1</b>	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
<b>State 5</b>	As state 0
<b>State 8</b>	Medium sensitivity optical with time delay (20s time constant). This state is useful in hotel bedrooms where low levels of signal could occur for short durations.
<b>State 10</b>	As state 8
<b>State 11</b>	Low sensitivity optical If smoke detection is desirable in areas where airborne particles or smoke are normally present.
<b>State 15</b>	No detection, total disablement of sensor

# 32775 Optical Sounder

Figure 29-1 Optical sounder

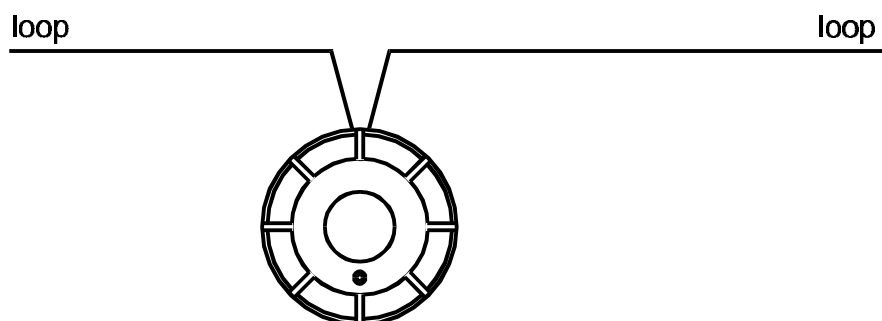
cd83



In addition to optical smoke detection, the 32775 incorporates a high output sounder that achieves 75 dBA when correctly installed above a bedhead.

Figure 29-2 Wiring an Optical sounder

cd80



## Specification

Standard Smoke detection Sounder	BS5445 : Part 7 (EN54 : Part 7) BS5839 : Part 1 Sound output 85dBA at 1m
Dimensions	diameter 86 mm height 60 mm (with terminal plate)
Full Assembly weight	600g with terminal plate
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated (mounted on a flat ceiling) IP20 estimated (mounted on a BESA box)
Air flow in installed environment	10m/s gusting for up to 30 minutes 5m/s continuous
Vibration	5 to 60Hz
Colour	White

Operating voltage	20-50V
Indicators	Red LED visible at 500LUX ambient light levels 3m
Mounting	Surface or Semi-flush using mounting kit ( <i>model no 19279-01</i> )
Chamber format	Sensing chamber is removable
Loop	Maximum number per loop = 125 Load (1000 max) = 8

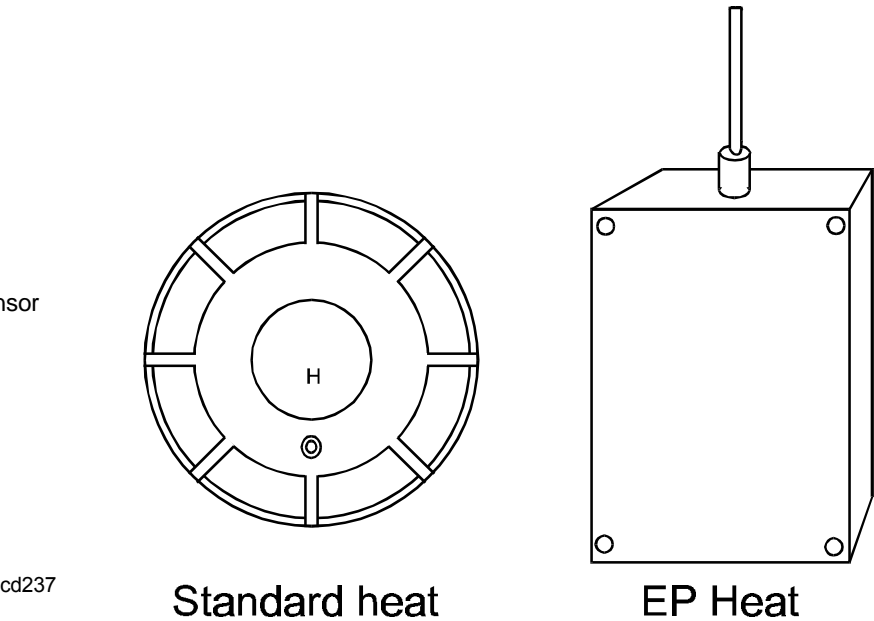
## Sensitivity

<b>State 0 LPC approved</b>	Medium sensitivity (Default) Suitable for most applications. Smoke detection to meet the requirements of BS5445:Part 7
<b>State 1</b>	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
<b>State 5</b>	As state 0
<b>State 8</b>	Medium sensitivity optical with time delay (20s time constant). This state is useful in hotel bedrooms where low levels of signal could occur for short durations.
<b>State 10</b>	As state 8
<b>State 11</b>	Low sensitivity optical If smoke detection is desirable in areas where airborne particles or smoke are normally present.
<b>State 15</b>	No detection, total disablement of sensor



# 32720 and 32729(EP) Heat Sensors

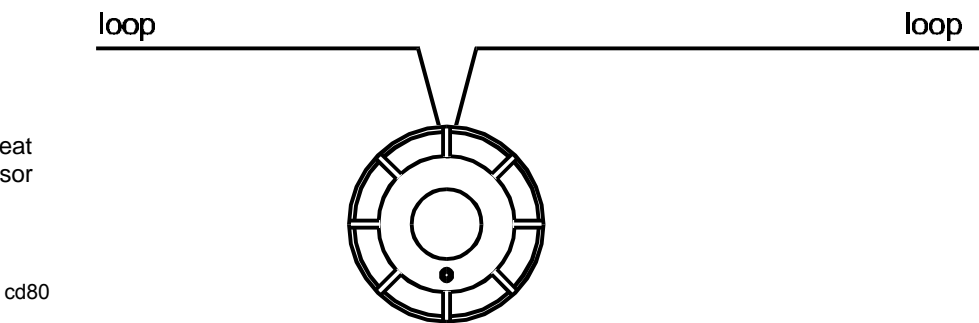
Figure 30-1 Heat sensor



The heat sensor is a good alternative to smoke sensors where the environment is subject to constant levels of smoke or dirt.

**Variant**      Environmentally protected, IP55 estimated (*model no 32729*)

Figure 30-2 Wiring a heat sensor



## Specification

Standard Heat	BS5445:Part 5 (EN54 : Part 5) BS5445:Part 8 (EN54 : Part 8)
Dimensions standard	diameter 86 mm height 60 mm (with terminal plate)
environmentally protected	180 mm height (the probe protrudes 100mm) 180 mm width 90 mm depth
Full Assembly weight	505g with terminal plate for standard 2.1Kg for the environmentally protected
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C

Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	Standard heat: IP20 estimated EP Heat: IP55 estimated
Air flow in installed environment	10m/s gusting for up to 30 minutes 5m/s continuous
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	Red LED visible at 500LUX ambient light levels 3m
Mounting	Surface or Semi-flush using mounting kit ( <i>model no 19279-01</i> )
Chamber format	Sensing chamber is removable
Loop	Maximum number per loop = 200 Load (1000 max) = 1

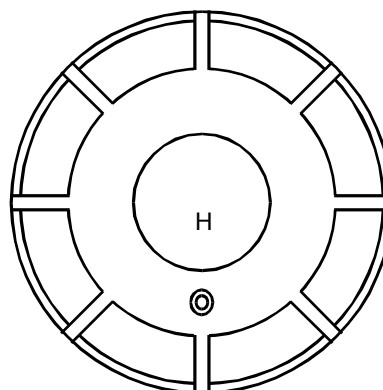
## Sensitivity

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

# 32780 Heat Sounder

Figure 31-1 Heat sounder

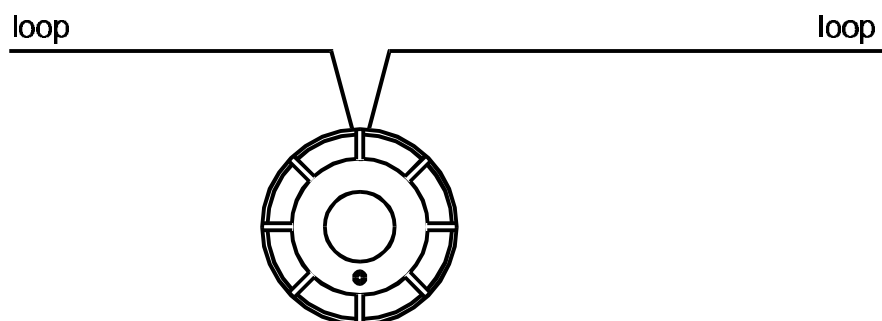
cd13



In addition to heat detection, the 32780 incorporates a high output sounder that achieves 75 dBA when correctly installed above a bedhead.

Figure 31-2 Wiring an Heat sounder

cd80



## Specification

Standard Heat detection Sounder	BS5445: Parts 5 (EN54 : Part 5) BS5839 : Part 1 Sound output 85dBA at 1m
Dimensions	diameter 86 mm height 60 mm (with terminal plate)
Full Assembly weight	600g with terminal plate
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated (mounted on a flat ceiling) IP20 estimated (mounted on a BESA box)
Air flow in installed environment	10m/s gusting for up to 30 minutes 5m/s continuous
Vibration	5 to 60Hz
Colour	White

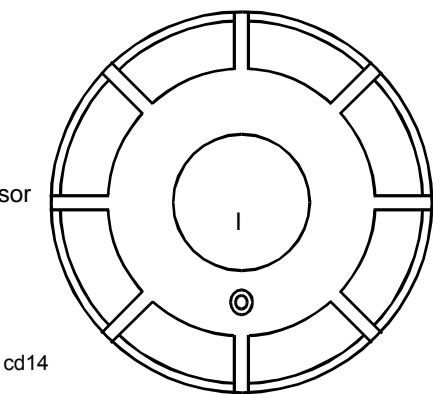
Operating voltage	20-50V
Indicators	Red LED visible at 500LUX ambient light levels 3m
Mounting	Surface or Semi-flush using mounting kit ( <i>model no 19279-01</i> )
Chamber format	Sensing chamber is removable
Loop	Maximum number per loop = 125 Load (1000 max) = 8

## Sensitivity

<b>State 0</b> <b>LPC</b> <b>approved</b>	Medium Sensitivity (Default) Heat - grade 2 heat
<b>State 12</b> <b>LPC</b> <b>approved</b>	Grade 1 heat only
<b>State 13</b>	Grade 2 heat only -
<b>State 14</b>	Grade 3 heat only
<b>State 15</b>	No detection, total disablement of sensor

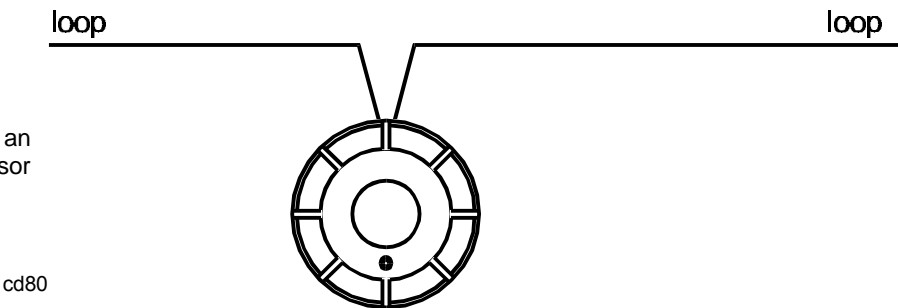
32730 Ionisation Sensor

Figure 32-1 Ionisation smoke sensor



The ionisation sensor is a useful alternative to optical sensors where fires are likely to include invisible products of combustion.

Figure 32-2 Wiring an ionisation sensor



Specification

Standard Smoke detection	BS5445 : Part 7 (EN54 : Part 7)
Dimensions	diameter 86 mm height 60 mm (with terminal plate)
Full Assembly weight	610g with terminal plate
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated (mounted on a flat ceiling) IP20 estimated (mounted on a BESA box)
Air flow in installed environment	5m/s gusting for up to 30 minutes 2m/s continuous
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V

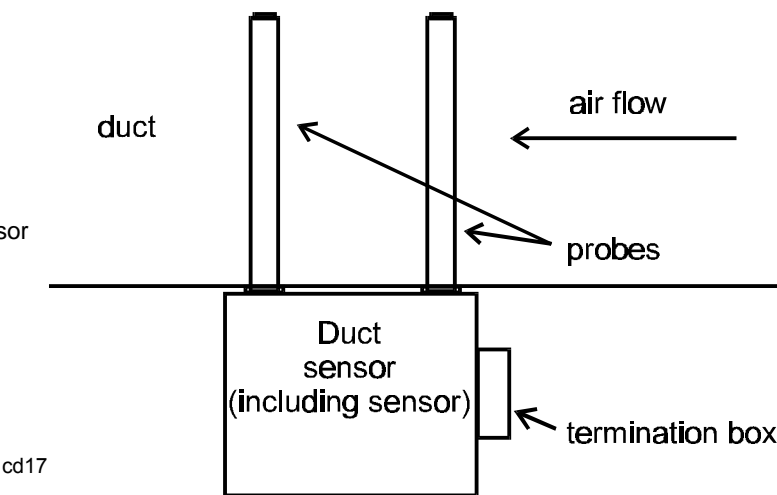
Indicators	Red LED visible at 500LUX ambient light levels 3m
Mounting	Surface or Semi-flush using mounting kit ( <i>model no 19279-01</i> )
Chamber format	Sensing chamber is removable
Loop	Maximum number per loop = 200 Load (1000 max) = 1

## Sensitivity

<b>State 0 LPC Approved</b>	(Default) Medium sensitivity. Same sensitivity as a standard conventional detector. Detection to meet BS5445:Part 7
<b>State 3</b>	Medium sensitivity with 20 second time constant Medium sensitivity, but ignores faster transients. Fire signal must be present for a minimum of 20 seconds to create an alarm.
<b>State 5</b>	Medium sensitivity with no background Same as state 0 but ignores smouldering fires taking greater than 20 minutes to reach alarm levels. Used when mixed with 3471 Optical Smoke/Heat Sensors or in normally smoky environments.
<b>State 10</b>	Low sensitivity with 5 second time constant Lower sensitivity detection than state 0. Can be used where low levels of airborne smoke or dust are likely to occur.
<b>State 12</b>	Slow or Low sensitivity Lower sensitivity detection as for state 10, but ignores faster transients. Fire signal must be present for a minimum of 20 second to create an alarm.
<b>State 15</b>	No detection, total sensor disablement This is a total disablement of the sensor.

# 32760 Duct Mounting Sensor

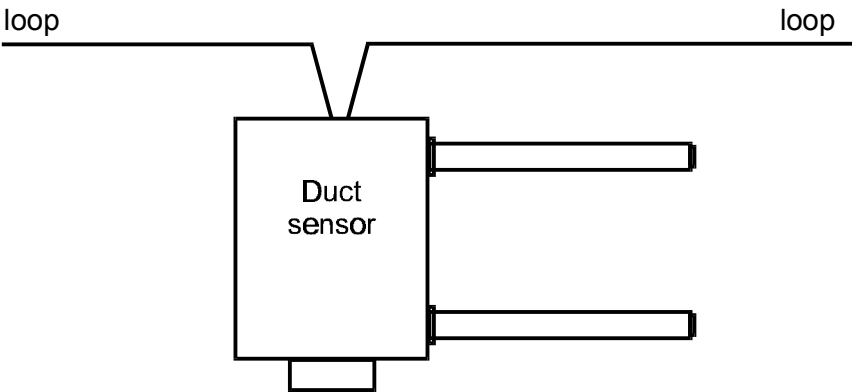
Figure 33-1 Duct sensor



The duct sensor acts as an additional detection device by using probes to sample the air in ducts. It can be used to trigger the shut-down of air-conditioning or ventilation plant to prevent the spread of smoke.

Figure 33-2 Wiring a duct sensor

Block diagram



## Specification

Standard	Not applicable
Dimensions Housing	height 60 mm width 180mm depth 170mm
Probes	length 0.92m supplied
Probes	The probes are 0.92 metres long, but may be cut down to suit. An extension kit allowing probes to be extended by a further 0.92 metres is available ( <i>model no 17908-06</i> )
Full Assembly weight	3.3Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>

Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP55 estimated
Air flow in installed environment	1-10m/s
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	none, use the separate slave LED (supplied with the duct sensor)
Loop	Maximum number per loop = 200 Load (1000 max) = 1

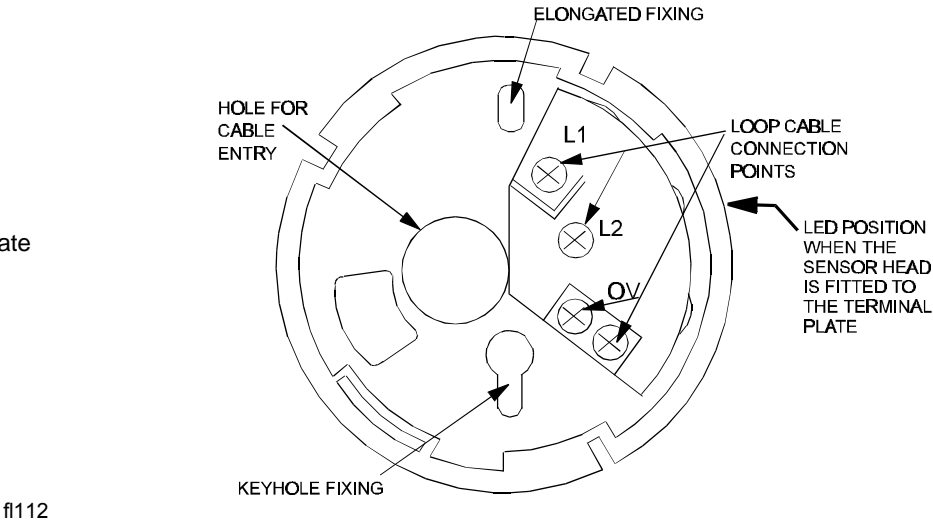
## Sensitivity

<b>State 0</b>	Medium Sensitivity (Default) Suitable for most applications.
<b>State 1</b>	High Sensitivity Used in areas or situations where airborne smoke or dust is unlikely to occur and therefore a more sensitive detection is available
<b>State 8</b>	Medium Sensitivity optical with time delay (20s time constant).
<b>State 11</b>	Low Sensitivity If smoke detection is desirable in areas where airborne particles or smoke are normally present.
<b>State 15</b>	No detection, total disablement of sensor



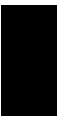
# 32700 Terminal Plate

Figure 34-1 Terminal Plate



## Specification

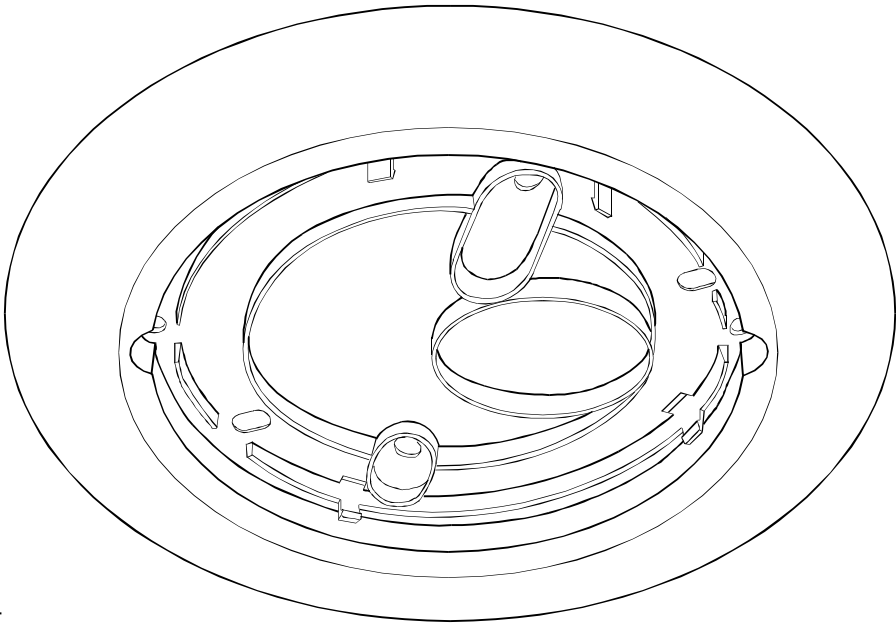
Diameter	75mm
Weight	TBA
Colour	White



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# 19279-10 Sensor Trim Ring

Figure 35-1 Sensor trim ring



cdn94

The sensor trim ring provides the following benefits:

- ☐ Installation time required on ceilings of low quality material is reduced as there is no need to cut such accurate holes.
- ☐ Installation in refurbished installations where the sensors are of an larger diameter is easier as there is no need to repair or replace the ceiling

## Specification

Diameter	120mm
Weight	TBA
Bacbox Compatibility	1. BESA type 2. 'MK switch' type 3. 'American style' type
Colour	White



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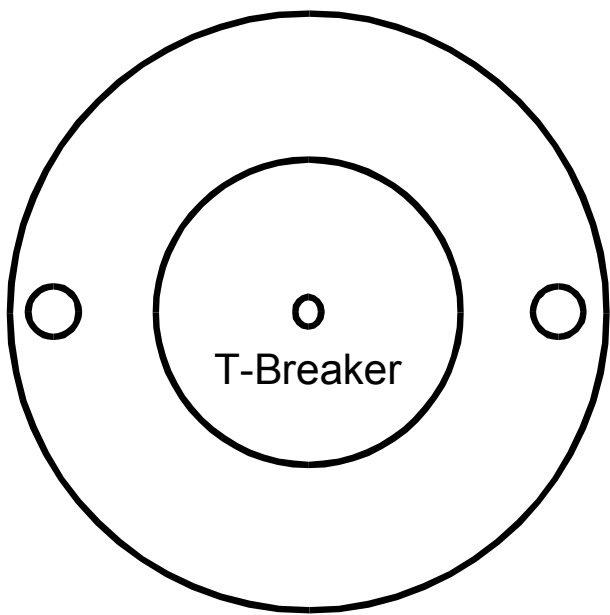
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# 32701 T-Breaker Unit

Figure 36-1 T-breaker

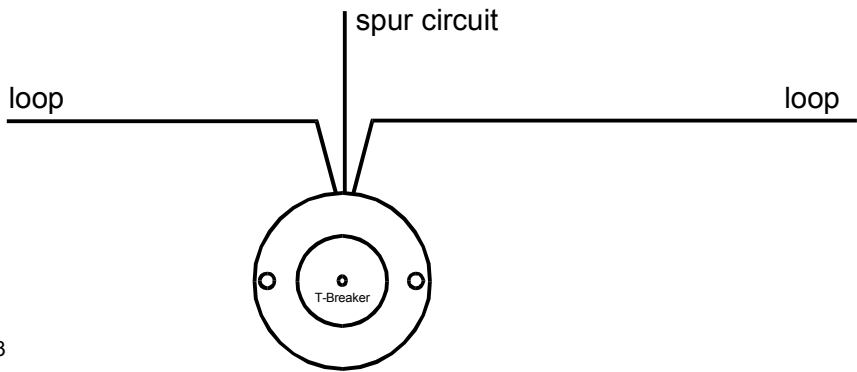
cd122



The T-breaker may be placed anywhere in a loop to provide connection for a spur or sub-loop. The T-breaker uses a single address of its own.

Figure 36-2 Wiring a T-breaker

cdm3



## Specification

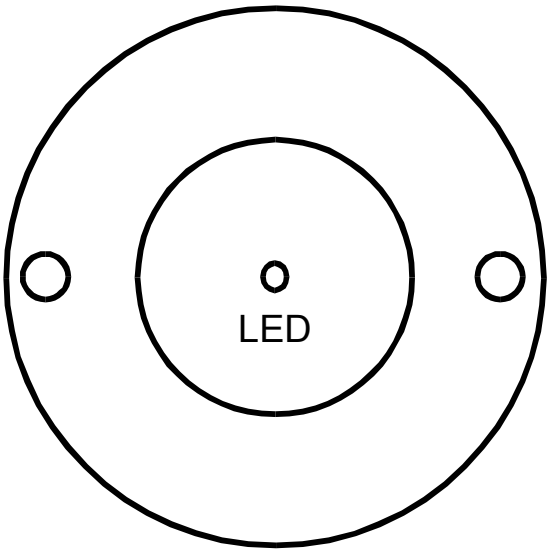
Dimensions	diameter 86 mm height 48 mm
Full Assembly weight	350g with fixing base
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated

Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicator	Green LED, may be switched ON for identification purposes, also illuminates to indicate hardware fault
Loop	Maximum number per loop = 200 Load (1000 max) = 1

32702 Slave LED

Figure 37-1 Slave LED

cd124

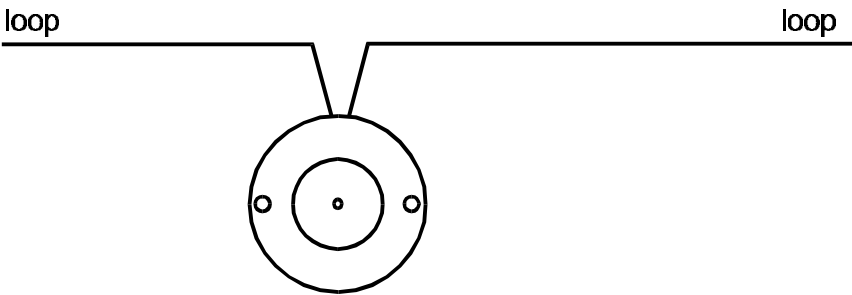


The slave LED provides a remote repeat indicator for a sensor. This is particularly useful where the sensor is mounted in a ceiling void or some other hidden location.

**NOTE:** The slave LED is positioned directly before the associated sensor. It does not use an address of its own.

Figure 37-2 Wiring a Slave LED

cd125



Specification

Dimensions	diameter 86 mm height 48 mm
Full Assembly weight	340 with fixing base
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>

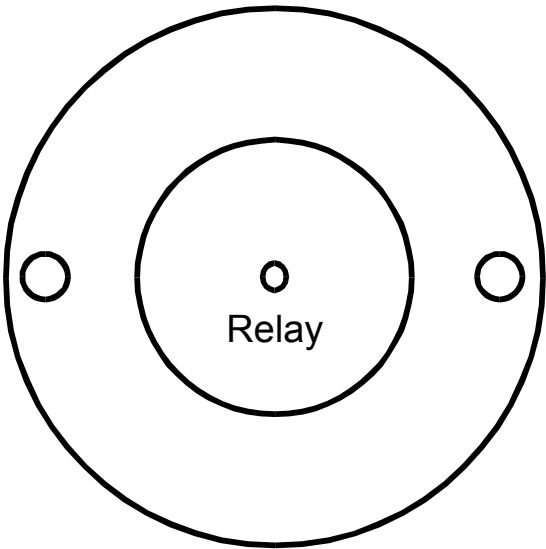
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	Red LED
Loop	Maximum number per loop = 50 Load (1000 max) = 1



# 32703 Slave Relay

Figure 38-1 Slave relay

cd123

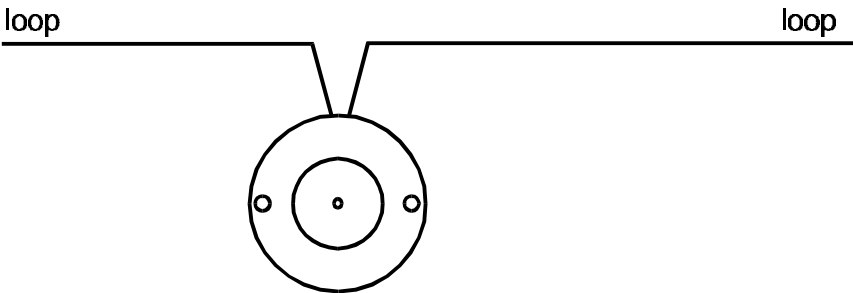


The slave relay provides a relay contact that operates when a particular sensor senses fire.

**NOTE:** The slave relay is positioned directly before the associated sensor. It does not use an address of its own.

Figure 38-2 Wiring a slave relay

cd125



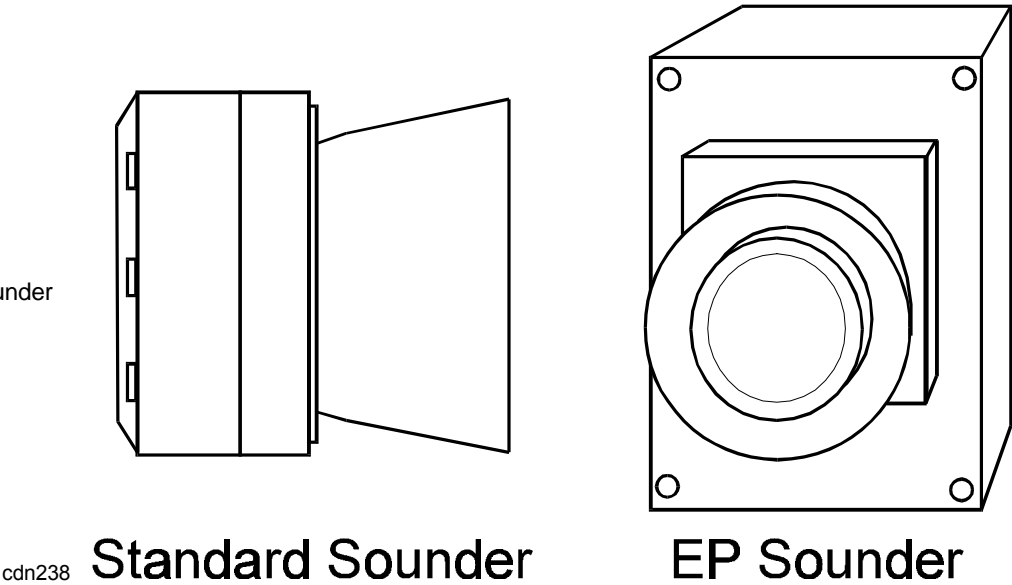
## Specification

Dimensions	diameter 86 mm height 48 mm
Full Assembly weight	360g with fixing base
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>

Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	Red LED
Loop	Maximum number per loop = 50 Load (1000 max) = 1
Contacts	Single pole change over - 2 amp, 24 Vdc

# 32202/3 and 32213(EP) Sounder

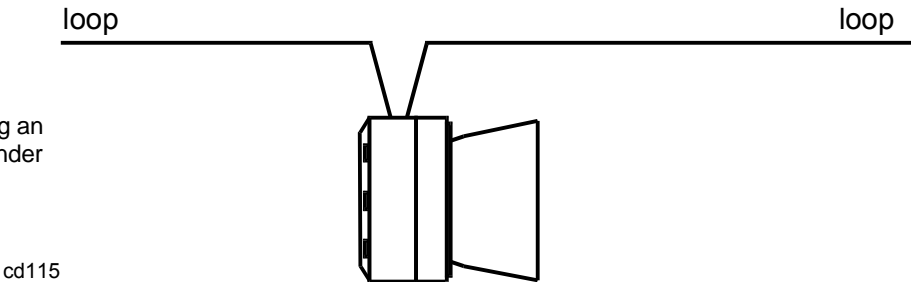
Figure 39-1 Alarm sounder



## Variant

- ☐ Standard 2-way sounder (*model no 32202*)
- ☐ 3-way version (*model no 32203*)
- ☐ Environmentally protected version of 3-way (*model no 32213*)

Figure 39-2 Wiring an alarm sounder



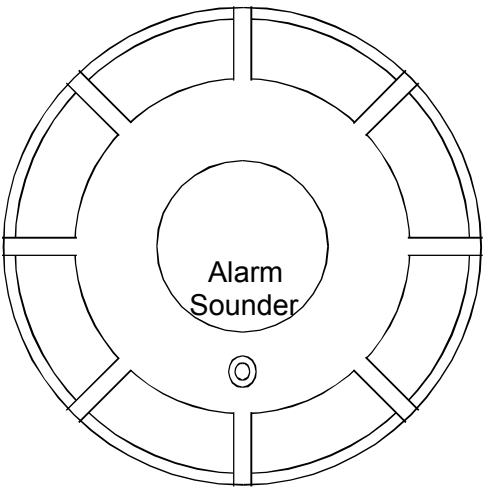
## Specification

Sound output	BS5839: Part 1 Sound output 98 dBA at 1 metre
Dimensions Standard variant	width 108 mm depth 112 mm height 108 mm
environmentally protected	width 180 mm depth 155 mm height 180 mm
Full Assembly weight	1.1Kg -approximate for standard variant 4Kg - environmentally protected

Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated standard type IP55 - Environmentally protected type
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V

# 32777 Repeat Sounder

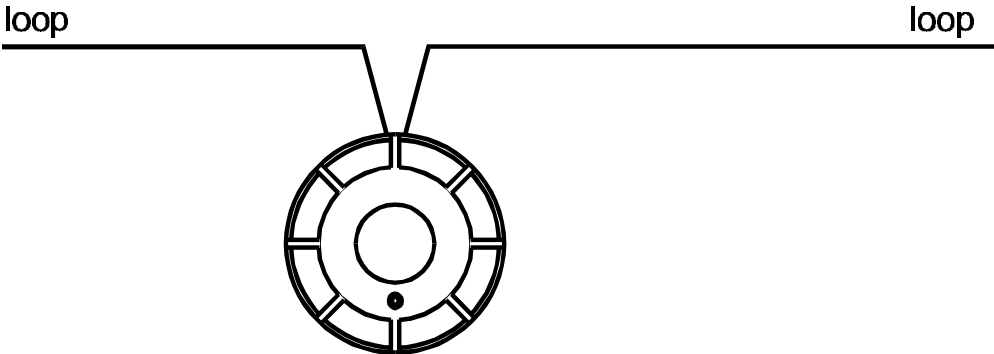
Figure 40-3 Repeat Sounder



cdn204

The Repeat Sounder is aimed at providing alarm sounder coverage in areas that do not require smoke/heat coverage or already have sufficient smoke/heat coverage but inadequate sounder output levels. Typical applications are en-suite bathroom/shower in a hotel, toilets/washrooms and in complicated building layouts where a more even sounder coverage is required than could be obtained by system sounders.

Figure 40-4 Wiring a repeat sounder



cd80

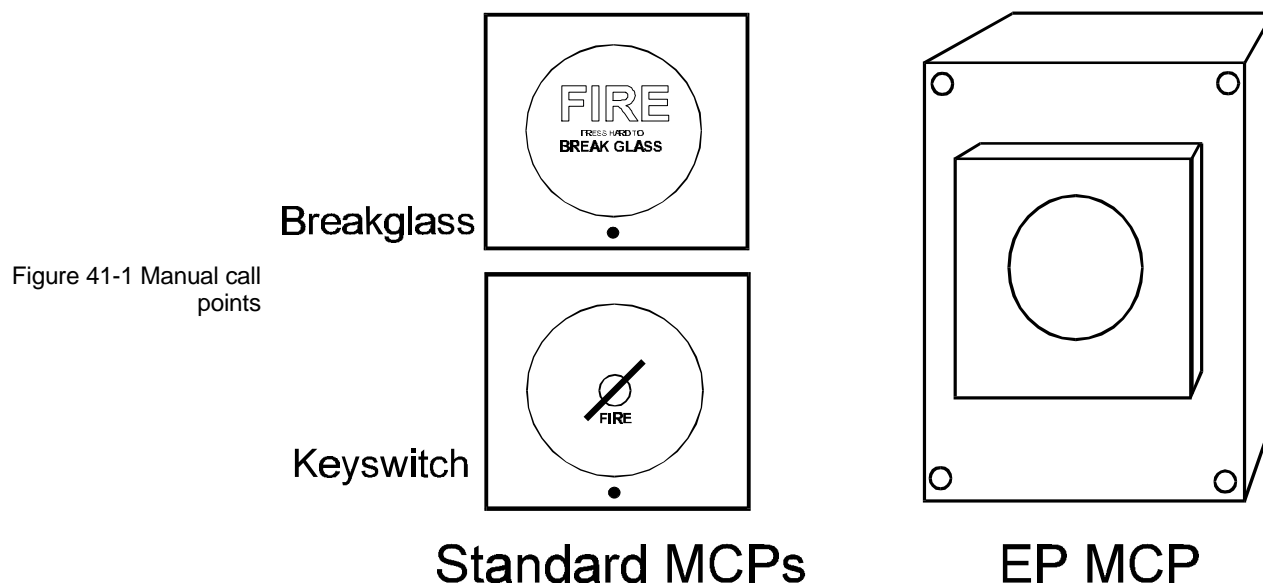
## Specification

Sounder	BS5839 : Part 1 Sound output 85dBA at 1m
Dimensions	diameter 86 mm height 60 mm (with terminal plate)
Full Assembly weight	600g with terminal plate
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>



Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP30 estimated (mounted on a flat ceiling) IP20 estimated (mounted on a BESA box)
Vibration	5 to 60Hz
Colour	White
Operating voltage	20-50V
Indicators	Red LED visible at 500LUX ambient light levels 3m
Mounting	Surface or Semi-flush using mounting kit ( <i>model no 19279-01</i> )
Loop	Maximum number per loop = 125 Load (1000 max) = 8

## 32800 range MCPs



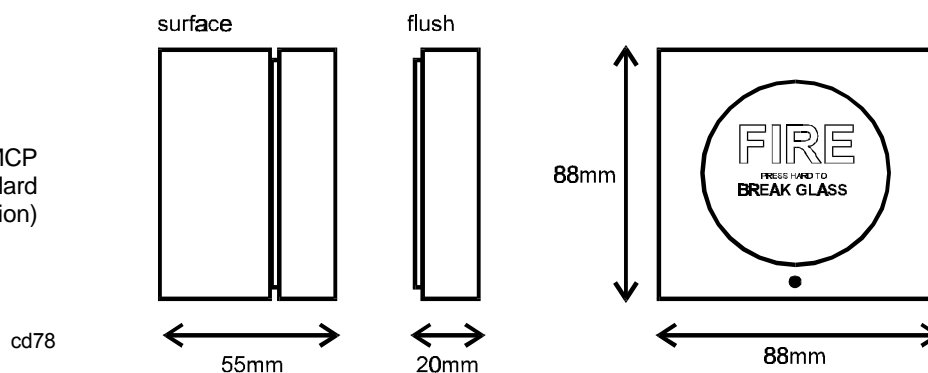
cdn239

### Variant

The 32800 range includes:

- ☐ Surface mounted MCP - LPC certified (*model no 32800*)
- ☐ Surface mounted MCP, water resistant IP44 (*model no 32812*)
- ☐ Surface mounted MCP, environmentally protected IP55\* (*model no 32829*)
- ☐ Surface mounted MCP with lift-up cover (*model no 32852*)
- ☐ Surface mounted MCP with lift-up cover, water resistant IP54\* (*model no 32852*)
- ☐ Surface mounted MCP with key switch (*model no 32807*)

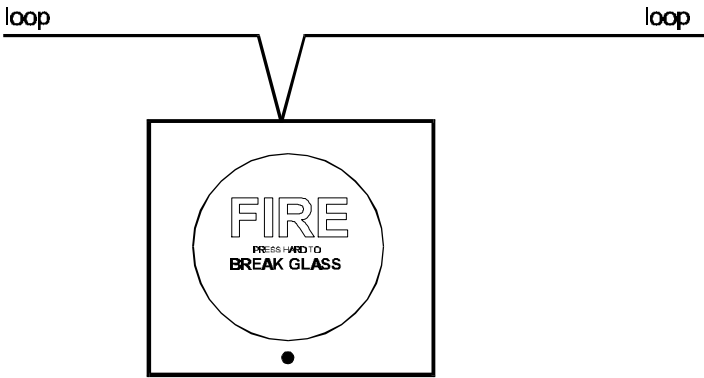
Figure 41-2 MCP dimensions (standard version)



cd78

Figure 41-3 Wiring an MCP

cd79



Specification

Standard	BS5839: Part 2 (break glass type only)
Dimensions Standard variant	width 88 mm depth 75 mm height 88 mm
environmentally protected	width 180 mm depth 130 mm height 180 mm
Full Assembly weight	770g - approximate for standard variant 3.5Kg - environmentally protected
Storage temperature	-30 to 70°C
Operating temperature	0 to 50°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated standard type IP55 - Environmentally protected type
Vibration	5 to 60Hz
Colour	Red
Case	ABS engineering plastic
Indication	Red LED that illuminates when the MCP is operated
Testing	The mechanism and operation of the MCP is tested by using a test key
Operating voltage	20-50V

Accessories

Spare glasses, pack of 10 (*model no 14112-09GR*)

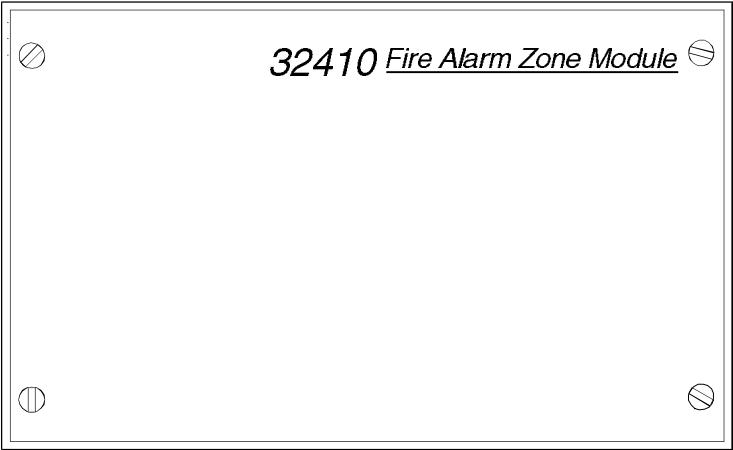
Spare glasses (for LPC version), pack of 10 (*model no 32809*)



# 32410 Loop Powered Zone Module

Figure 42-1 Loop powered zone module

cdn198

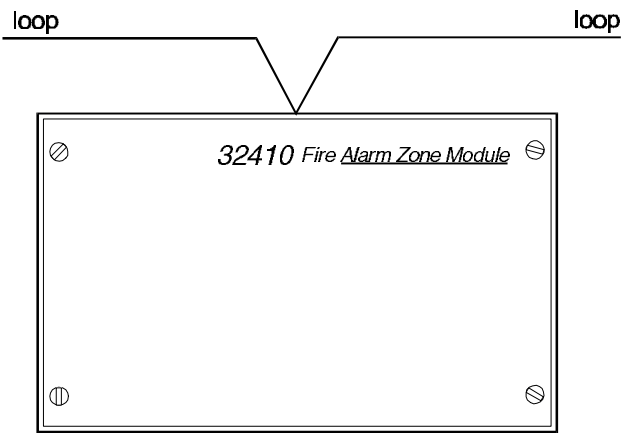


The 32410 loop powered zone module is a single channel device, which can accomodate up to 20 conventional detectors. The loop powered zone module can also accomodate conventional manual call points fitted with either a 3.9V Zener or 470 ohm resistor in series with its contacts.

**NOTE:** *The loop powered zone module must be used with loop processor software V3.42 or above.*

Figure 42-2 Wiring a loop powered zone module

cdn205



## Specification

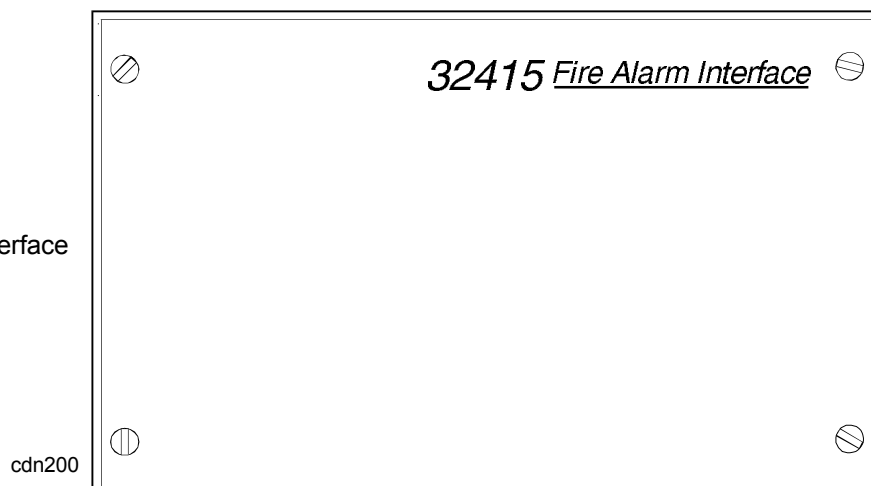
Module Dimensions	Width 204mm height 125mm depth 50mm
Full Assembly weight	0.676Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%

Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Grey/Brown and Black
Number of channels	1 channel
Input channels	<p>2-wire input for conventional zone circuits. Circuits are monitored for:</p> <ul style="list-style-type: none"> <li>Fire/MCP fire (unable to distinguish between the two)</li> <li>Wiring open circuit fault</li> <li>Wiring short circuit fault</li> </ul> <p>Monitoring conforms to BS5839 by detecting a MCP activation if a detector is removed, provided that the detector bases are designed to give this type of indication.</p> <p>Maximum detector load: <i>TBA</i></p> <p>End-of-line capacitor/diode (supplied) must be used.</p> <p>The input circuits may be configured to operate with various other manufacturers conventional detectors:</p> <ul style="list-style-type: none"> <li>Menvier 700 series: Ionisation</li> <li>Menvier 700 series: Optical</li> <li>Apollo series 60: Ionisation</li> <li>Apollo series 30: Ionisation</li> <li>Apollo series 30: Rate of rise</li> <li>Hochiki SLK-E Optical</li> <li>Hochiki SIH-E Ionisation</li> <li>Hochiki Comb Heat</li> <li>Hochiki DFE-90E Fixed Temp</li> <li>Nittan 2KC Optical Smoke</li> <li>System Sensor 1151E</li> <li>System Sensor 4451E</li> <li>Notifier SD-651E</li> <li>Thorn MR601/AFA1706 Optical</li> <li>Thorn MR601T/AFA1705 High Performance Optical</li> <li>Thorn MD611/AFA 1704</li> <li>Thorn MF601/AFA 1702</li> <li>Thorn MS302 Ex Flame, provided; <ul style="list-style-type: none"> <li>1. The flame detector is the only device connected to the zone.</li> <li>2. The EOL is fitted directly to the flame detector and is housed in the base.</li> </ul> </li> </ul>
Loop	<p>Maximum number per loop = 100</p> <p>Load factor (1000 max) = 10</p> <p>2-way device</p>

**NOTE:** Due to the voltage drop across the diodes, the number of diode bases that can be connected to the zone module is limited to 5.

## 32415 Single Channel Interface

Figure 1 Single Channel Interface



The 32415 single channel interface operates directly from the loop power supply. It has 1 channel, which may be configured to work as a single input or a multiple input (both with output via the relay change over contacts if required) or an output (via relay change over contacts) device.

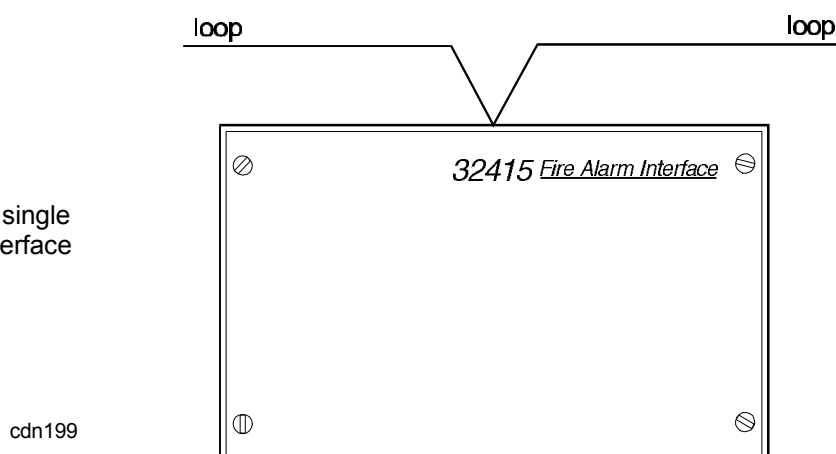
When configured as a single input device, a line module must be used. The line module may be installed up to 100m cable distance away. Its two position switch must be set to input.

When configured as a multiple input device, an end of line capacitor unit must be used. If the multiple inputs are from manual call points, there must be a 470 ohm resistor in series with the contacts.

When configured as an output device, the output relay contacts are voltage free and rated at 5A at 30Vdc/5A at 250Vac. The relay output of the interface operates with a 32000 zone. Therefore the single channel outstation will need to be configured to a zone.

**NOTE:** *The single channel interface must be used with loop processor software version 3.42 or above.*

Figure 2 Wiring a single channel interface

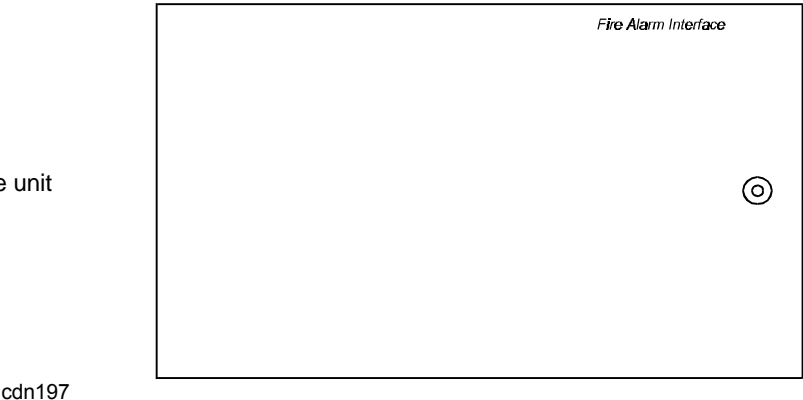


## Specification

Panel Dimensions	Width 204mm height 125mm depth 50mm
Full Assembly weight	0.702Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Electrostatic discharge immunity	IEC 801-2 Level ± 8KV - air discharge ± 6KV - contact discharge
Radio Frequency Interference (assuming EMC complaint cable used)	
Radiated immunity	80MHz - 1GHz (DD ENV50140:1994) 10V/m
Conductive immunity	150KHz to 100MHz (DD ENV50141:1994) 140dBuV
Transients immunity	IEC 801-4 Level ± 2kV
Surge immunity	Common Mode Surge immunity - <b>1KV input output lines</b>  Differential Mode and Common Mode surge immunity - <b>2KV mains line</b>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Grey/Brown and Black
Number of channels	1 channel, (configurable as input or output)
Input channels	Single input (using line module): monitors voltage free contacts, normally open or normally closed, inputs may be configured as: fire, fault, class change (with 0s or 30s delay before signal accepted)  Multiple input (with capacitor end of line unit): monitors voltage free contacts (in series with 470 ohm resistor for mcps) normally open or normally closed, inputs may be configured as: fire only (with 0s or 30s delay before signal accepted)
Output channels	Voltage free SPCO contacts rated at: 5 amps at 30 Vdc 5 amps at 250 Vac
Loop	Maximum number per loop = 100 Load factor (1000 max) = 10 3-way device (terminals provided for spur or sub-loop)

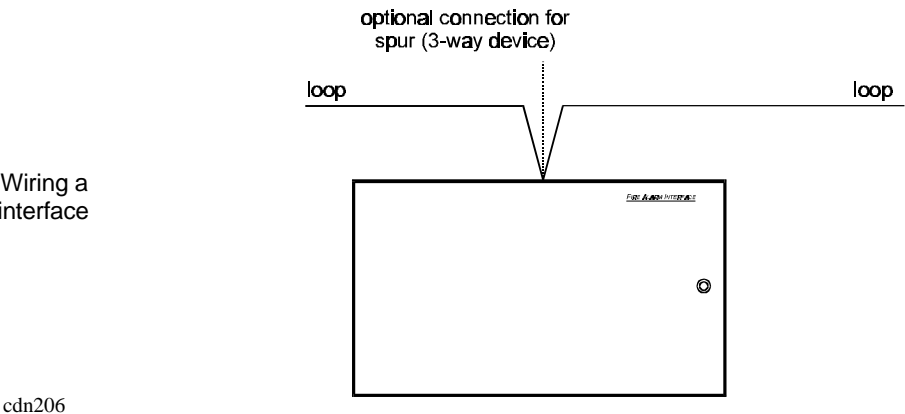
# 32440 Mains-powered Interface

Figure 44-1 Mains powered interface unit



The 32440 interface operates from mains power and incorporates its own battery-backed power supply. It has 4 channels, each may be configured as as input or output and are configured as a conventional zone circuit.

Figure 44-2 Wiring a mains powered interface



## Specification

Panel Dimensions	Width 504mm height 305mm depth 98mm
Full Assembly weight	8.6Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Mains Operating voltage	230V 50Hz +10% -6%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>

Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>						
Auxiliary power terminals	24V dc fused at 250mA.						
Ingress Protection	IP40 estimated						
Vibration	5 to 60Hz						
Colour	Grey/Brown - cover and Black - backbox						
Number of channels	4 channels, (each configurable as input or output)						
Input channels	<p>2-wire inputs for conventional zone circuits. Circuits are monitored for:</p> <ul style="list-style-type: none"> <li>Fire</li> <li>MCP fire</li> <li>Wiring open circuit fault</li> <li>Wiring short circuit fault</li> </ul> <p>Monitoring conforms to BS5839 by detecting a MCP activation if a detector is removed, if the detector bases allow this function.</p> <p>Maximum detector load: 2 mA.</p> <p>End-of-line capacitor/diode (supplied) must be used.</p> <p>The input circuits may be configured to operate with various manufacturers detectors and MCPs:</p> <table> <tr> <td>Gent</td><td>Apollo / Hockiki</td></tr> <tr> <td>Menvier</td><td>Nittan</td></tr> <tr> <td>Notifier</td><td>Thorn</td></tr> </table>	Gent	Apollo / Hockiki	Menvier	Nittan	Notifier	Thorn
Gent	Apollo / Hockiki						
Menvier	Nittan						
Notifier	Thorn						
Output channels	<p>Output channels will operate conventional equipment such as sounders, xenon beacons and relays.</p> <p>Maximum current of 500mA shared between all four channels with the maximum allowed current per channel being 500 mA (fused at 800 mA).</p> <p>Sectors are monitored for:</p> <ul style="list-style-type: none"> <li>wiring open circuit fault</li> <li>wiring closed circuit fault</li> </ul> <p>End-of-line 22k resistor (supplied) must be used.</p> <p>When connecting bells and sounders to an output channel they must be of the polarised and suppressed type.</p> <p>Up to 4 Octal relays with diode packs may be fitted within the enclosure. These provide Double Pole Change Over DPCO voltage-free contacts rated at 10 amps, 240 Vac, resistive load.</p>						
Loop	<p>Maximum number per loop = 8</p> <p>Load factor (1000 max) = 3</p> <p>3-way device (terminals provided for spur )</p>						

# 19104-52 Power relay

For use in 32440 mains powered interface unit. A maximum of 4 relays with diode units can be fitted on the DIN rail inside the interface unit.

Figure 44-3Power relay base

cdn36

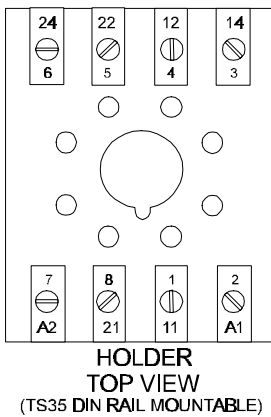


Figure 44-4 Diode unit

cdn28

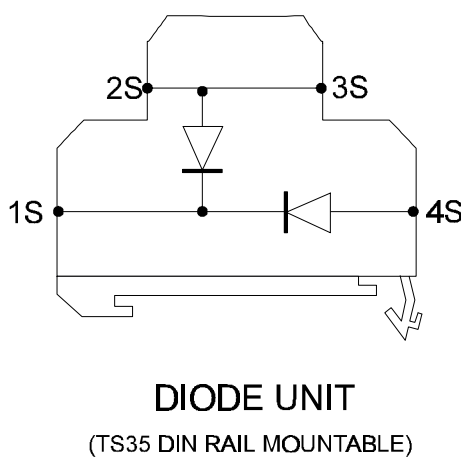
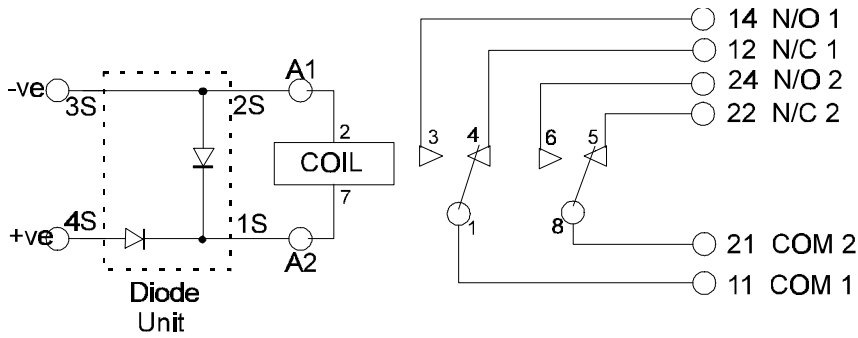


Figure 44-5 Relay connections

cdn60



## Specification

Octal base	DIN Rail Mountable
Relay Voltage	24V
Realy coil resistance	470R
Relay contact rating	10A
Relay current consumption	50mA

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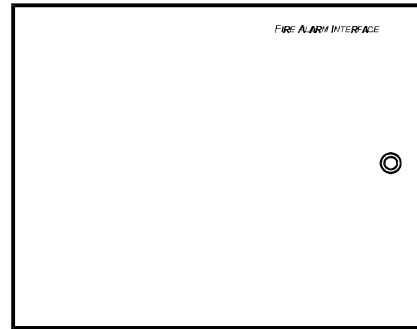




## 32450 Loop-powered Interface

Figure 45-1 Loop powered interface unit

cd27



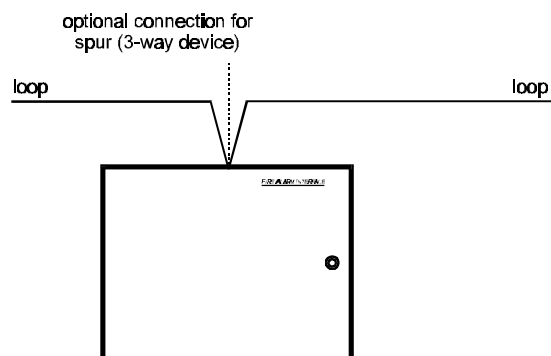
The 32450 interface operates directly from the loop power supply and does not use mains power. It has 4 channels. The interface must be used in conjunction with one or more of the following interface options:

- ☐ Line modules (*model no 19245-05*).  
Provides a single channel input or output. Up to 4 may be used in conjunction with the interface. Line modules connect to the interface with 2 wires. All four line modules may be housed within the interface enclosure. Alternatively, any line module may be housed in the host equipment; the limit of the 2-wire interconnection is 100 metres, this cable distance should be deducted from the loop circuit allowance.
- ☐ Power supply unit (*model no 19245-06*).  
The supply unit provides up to four 240 Vac, 5 amp rated single pole changeover relay contacts in a separate enclosure and requires a separate 240Vac supply. Each relay is controlled by one channel of the interface. They are interconnected by a 2-wire cable. The maximum length of this cable is 100 metres. One relay is supplied with the supply unit, additional relays, up to 3 maximum, are ordered separately (*model no 19245-07*).
- ☐ Key switches 4-position door (*model no 32454*)  
  - 2-way key switch (*model no 19245-02*)- max 4 per interface
  - 3-way key switch (*model no 19245-03*)- max 2 per interface

The 4-position door replaces the standard door of the interface. The door may be assembled with up to 4 key switches. Key switches are available in 2-way and 3-way configurations and include LEDs to indicate status. Key switches connect to the interface via push-on connectors. Label plates are built-in to each key switch position. Unused positions may be covered using a blanking plate (supplied). Line modules are not required if keyswitches are used.

Figure 45-2 Wiring a loop power interface

cdm2



## Specification

Panel Dimensions	Width 261mm height 270mm depth 60mm
Full Assembly weight	2.4Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Immunity	BS EN50130-4: 1995: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems</i>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Grey / Brown - cover and Black backbox
Number of channels	4 channels, (each configurable as input, output or off)
Input channels	(using line modules) monitors voltage-free contacts, normally open or normally closed. inputs may be configured as: fire fault non-fire event (with 10 second sprinkler switch delay option)
Output channels	(using line modules) voltage-free SPCO contacts rated at: 2 amps at 24 Vdc  (using supply unit and relays) voltage-free Single Pole Change Over SPCO contacts rated at: 5 amps at 240 Vac All ratings - resistive load
Loop	Maximum number per loop = 30 Load factor (1000 max) = 2 3-way device (terminals provided for spur)

Notes on using 19245-05 line module

Figure 45-3 Connecting a line module to an interface

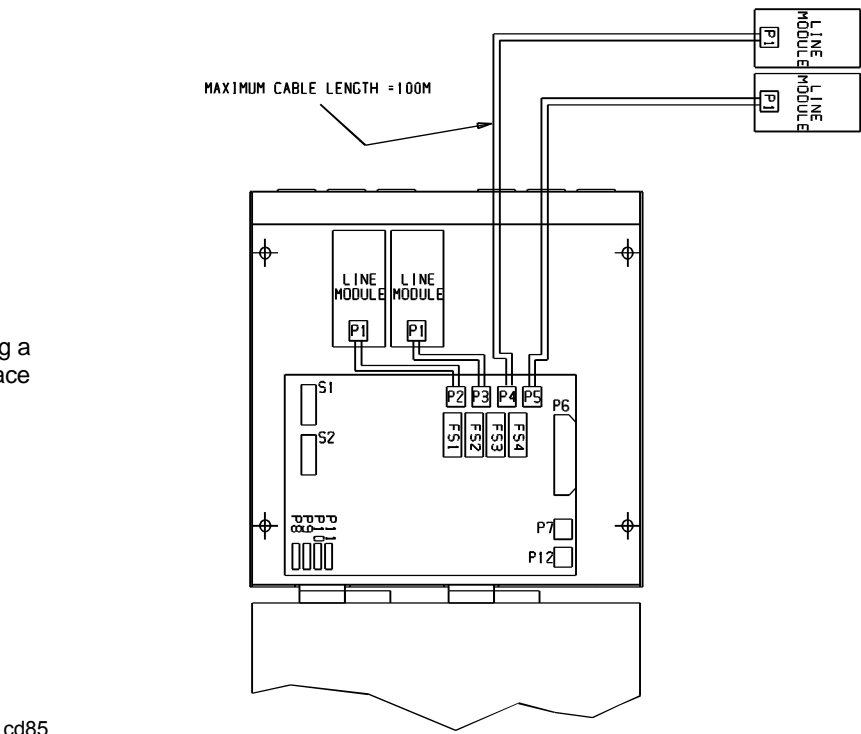


Figure 45-4 Line module input configuration

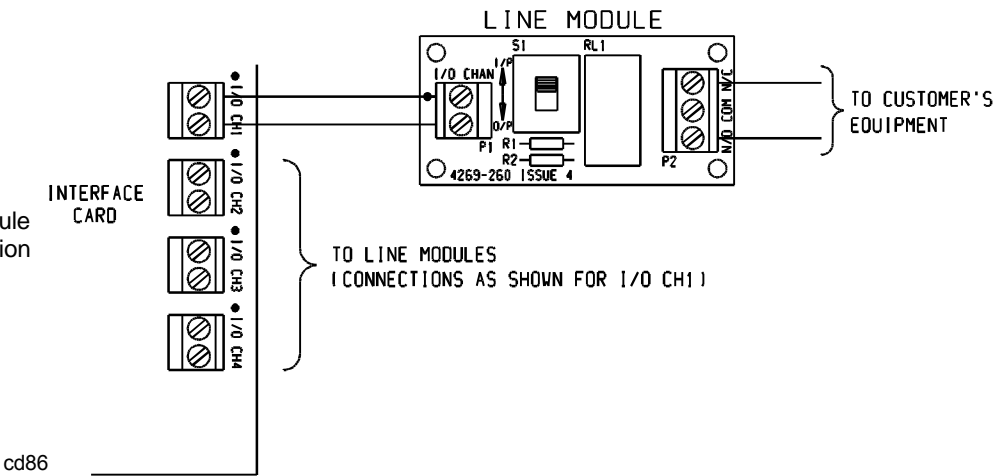
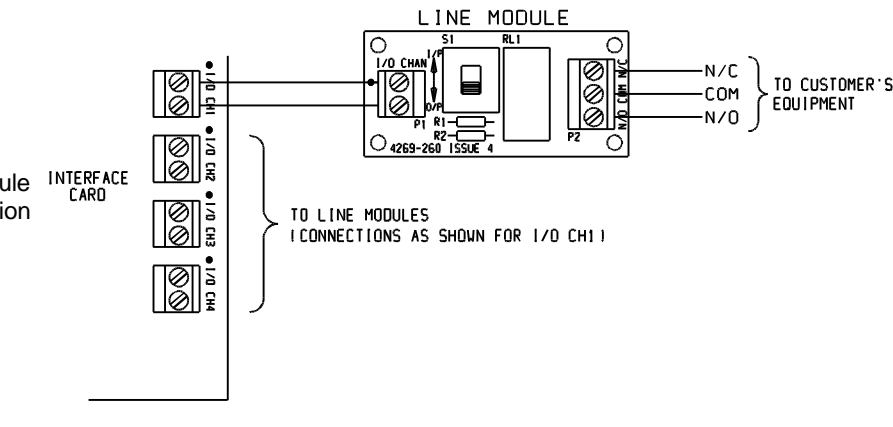
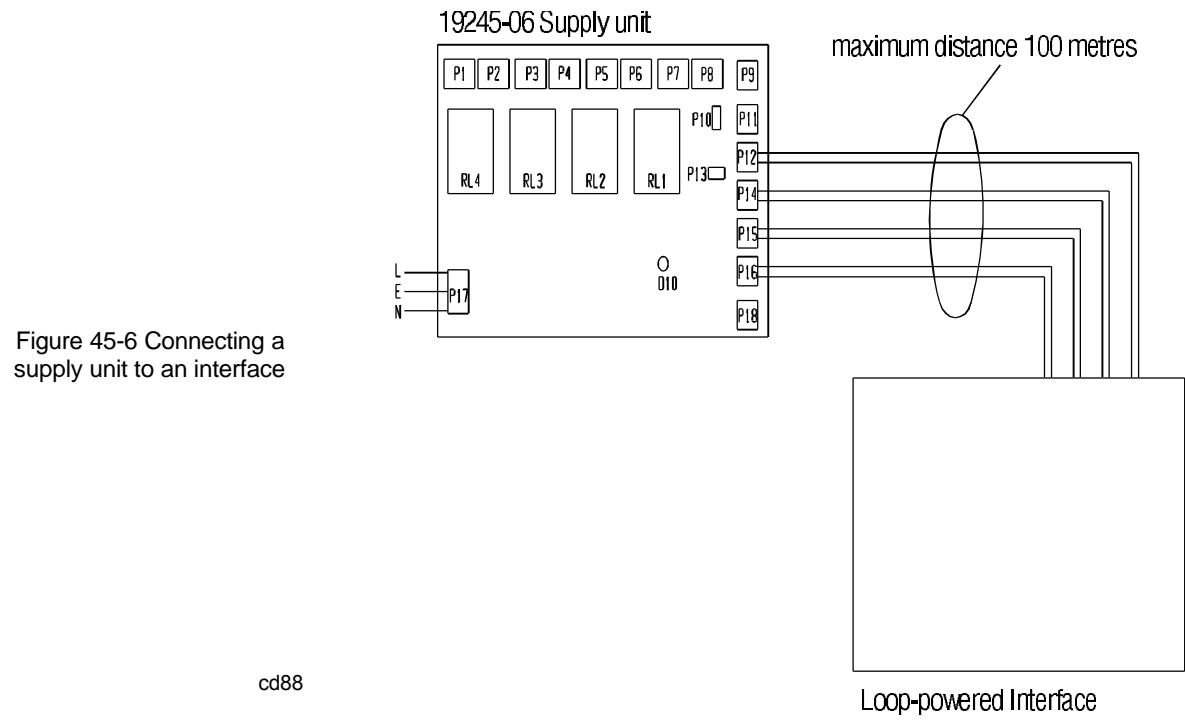


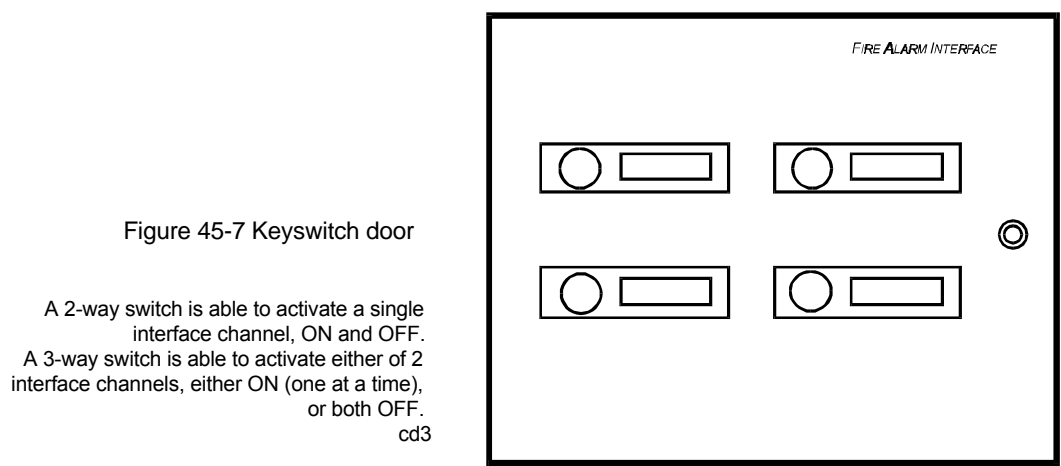
Figure 45-5 Line module output configuration



Notes on using 19245-06 supply unit

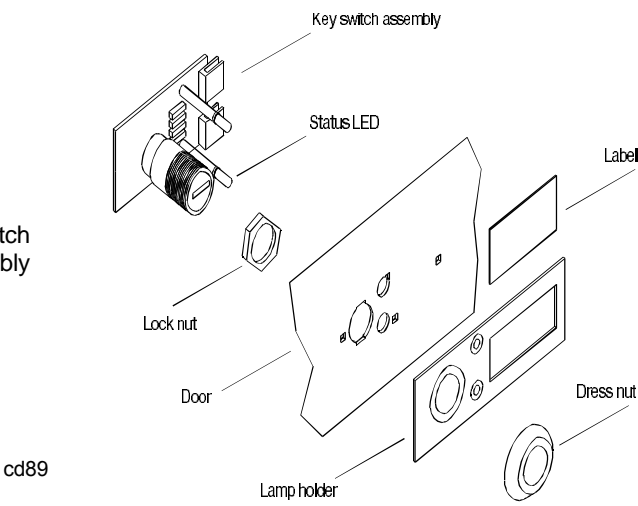


Notes on using keyswitches

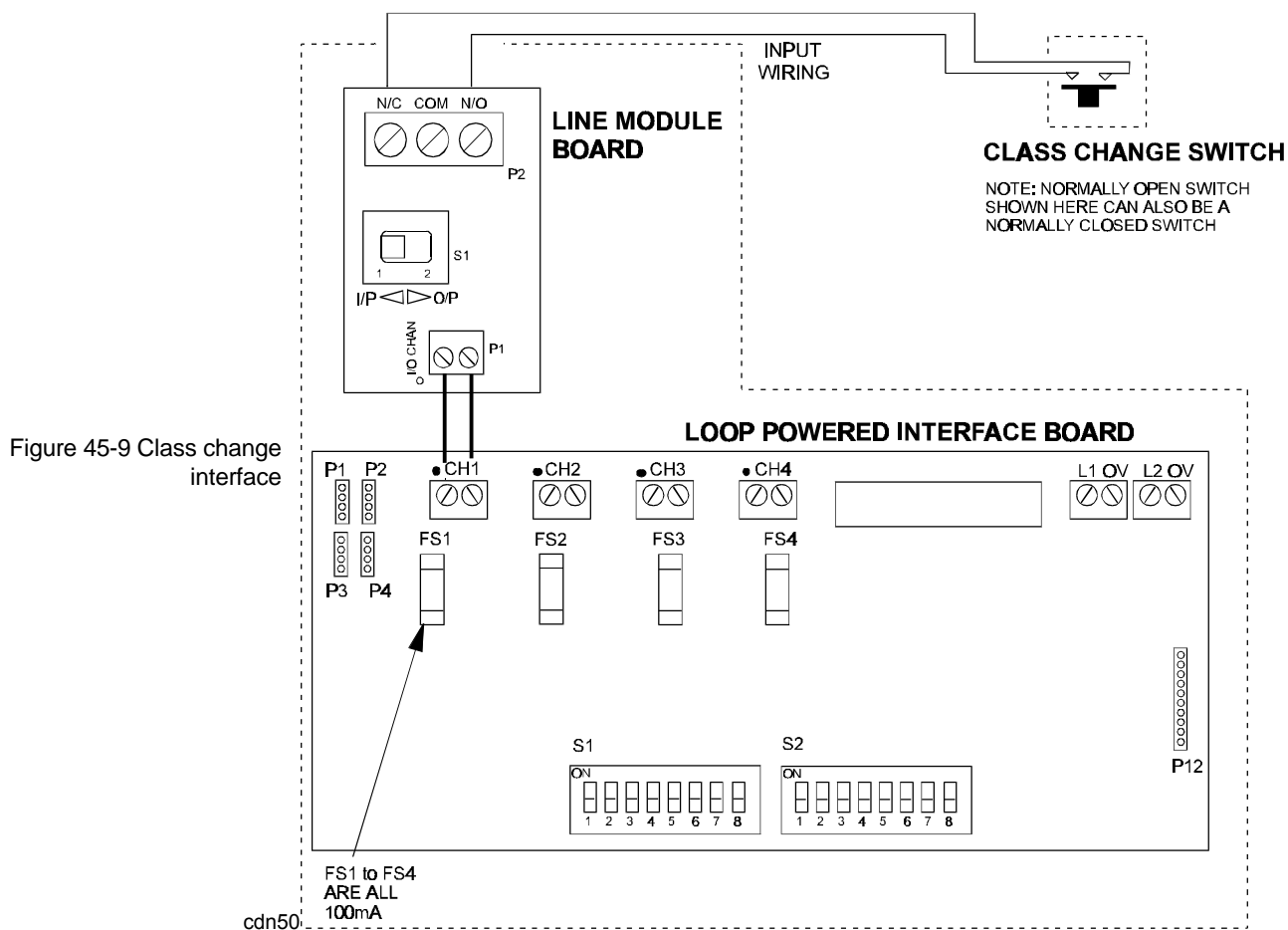


A 2-way switch is able to activate a single interface channel, ON and OFF.  
A 3-way switch is able to activate either of 2 interface channels, either ON (one at a time), or both OFF.

Figure 45-8 Keyswitch assembly



## Notes on using 32457 Class Change Interface



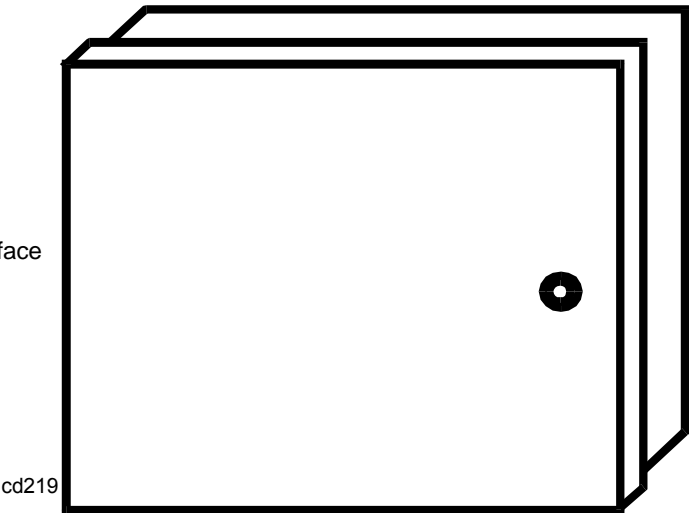
- ☐ Dual in line switches S1 and S2 on the interface board require setting for Supervisory input. There are two options available, *Normally Open* N/O and *Normally closed* N/C input.
- ☐ The line module must be set for input and may be positioned up to 100m cable distance away.

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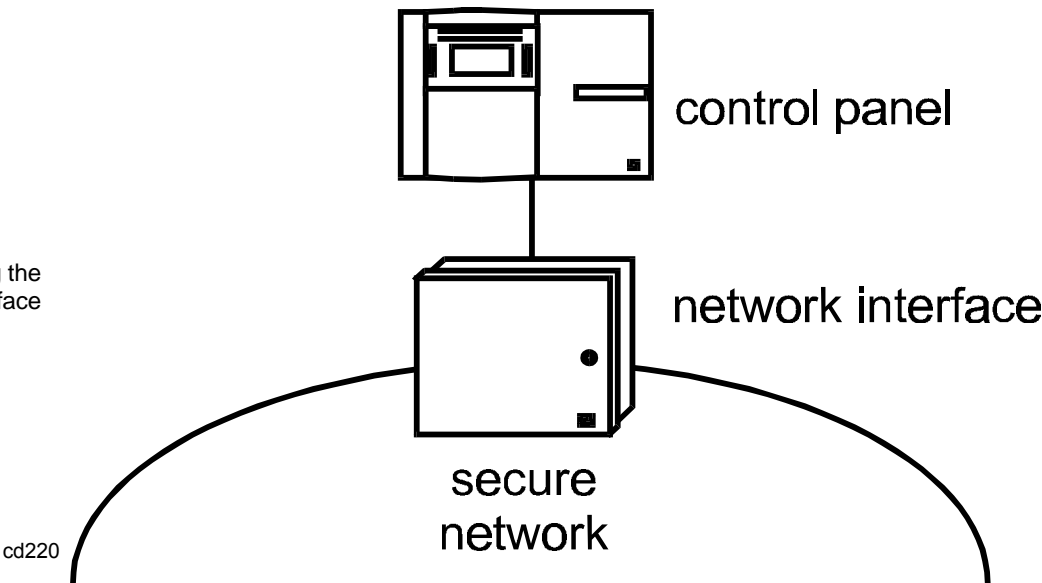
# 32620 Network interface

Figure 46-1 Network interface



The network interface provides for connection of a 32020 control panel to a 32000 network. It includes an integral battery-backed power supply.

Figure 46-2 Wiring the network interface



## Specification

Panel Dimensions	Width 487mm height 377mm depth 119mm
Full Assembly weight	11Kg
Storage temperature	-30 to 70°C
Operating temperature	0 to 45°C
Relative Humidity (Non condensing) Temperature 5 - 45°C	up to 90%

Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry <b>Class B limits</b>
Electrostatic discharge immunity	IEC 801-2 Level ± 8KV - air discharge ± 6KV - contact discharge
Radio Frequency Interference (assuming EMC complaint cable used)	
Radiated immunity	80MHz - 1GHz (DD ENV50140:1994) 10V/m
Conductive immunity	150KHz to 100MHz (DD ENV50141:1994) 140dBuV
Transients immunity	IEC 801-4 Level ± 2KV
Surge immunity	Common Mode Surge immunity - <b>1KV input output lines</b>  Differential Mode and Common Mode surge immunity - <b>2KV mains line</b>
Ingress Protection	IP40 estimated
Vibration	5 to 60Hz
Colour	Grey / Brown - cover and Black backbox
Maximum number per network	16
Maximum cable distances	Between <b>Network Interface</b> and <b>Network Interface</b> = <b>1200m</b> . Between <b>Control Panel</b> and <b>Network Interface</b> = <b>10 m</b>



# Appendix A- Environmental considerations

## Radio frequency interference

32000 range sensors have been built to withstand normal levels of radio frequency interference.

Sensors have been tested to with stand up to 10 volts per metre field strengths in the frequency range:

☐ 10 MHz to 1 GHz

### Flame sensors

Flame sensors are the most sensitive type of sensor because of the technique used to sense fire.

### Cellular telephones

Most cell phones operate at about 900 MHz and should not normally cause a problem with fire alarm sensors. Do not use a cell phone within 2 metres of a sensor, especially a flame detector.

### Interference

The 32000 system utilises a digital data bus and therefore inherently creates a small amount of radio frequency interference. Sensitive electronic equipment, such as measuring equipment and radio receivers, should not be placed close to any part of the 32000 system or its wiring.

### EMC

Systems should be designed within the guidance provided for EMC compliant systems. Refer to *EMC Compliance* section.

## Infra-red radiation

Infra-red radiation can be generated by strong sunlight and high intensity lamps, such as tungsten or arc lights.

Infra-red radiation may adversely effect :

☐ flame detectors

☐ optical sensors

☐ beam sensors

Avoid positioning these sensors in strong infra-red light.

## X-rays and Gamma rays

Generally, an environment accessible to humans under normal operating conditions will be suitable for 32000 fire alarm equipment.

Areas that have higher levels of X-ray or gamma radiation may increase the failure rate of the subjected equipment. Very high levels of this radiation may cause a total malfunction.

## Electro-magnetic interference

Refer to *EMC Compliance* section.

Electro-magnetic interference is generated by large current pulses and electrical sparks. Current pulses are often caused by plant control equipment such as thyristor controllers. Sparks are often generated by motors, generators and switch gear.

Normally 32000 fire alarm equipment should be placed at least 2 metres from such sources of interference. High power circuits may present a greater problem.

## Static discharge

Static discharges are commonly caused by lightning and man-made fibres.

System devices are designed to withstand static discharges up to 8 kilovolts, see data sheets.

The best defence is a system with good earth bonding as described in the *EMC Compliance* section.

## Temperature

Consider using environmentally protected products in this environment.

Do NOT use optical smoke or beam sensors in cold stores. Condensing air, created when external doors are opened, may cause false alarms.

System 32000 sensors are designed to operate in the temperature range 0°C to 50°C (if heat sensing is used on a sensor, it can only operate up to 45°C). Standard products are not designed to operate in a condensing atmosphere.

### Cold stores

A cold store may be specified to operate at temperatures just above 0°C but this will normally utilise a chiller discharging air at colder temperatures. Any sensor installed in such an environment may experience temperatures well below 0°C.

Beware of ceiling and other areas around cold stores, temperatures may fall below 0°C.

## Humidity

System 32000 sensors have been designed to operate in the following humidity ranges:

- ☐ 0 - 90% relative humidity, non-condensing, 0 to 45°C

Exception:

- Environmentally protected (EP) devices  
0 - 95% relative humidity, non-condensing, 0 to 50°C

**source** The most common source of high humidity in uncontrolled environments are:

- ☐ bathrooms, showers and saunas
- ☐ sports changing rooms

## Ingress of water (and dust)

### Environmentally protected

Environmentally protected versions of 32000 sensors provide the following degree of protection:

Sensor	IP rating (estimated)
Environmentally protected (EP) sensors, sounder and mcp	IP55

### Non-protected

Non-environmentally protected system 32000 sensors provide the following degree of protection:

Sensors	IP rating (estimated)
Optical-Heat (sounder) and ionisation sensors mounted on a flat ceiling	IP30
mounted off the ceiling, ie on a BESA box	IP20
Heat sensor and Heat Sounder	IP20
Duct sensor	IP55
Manual call point with water resistant gasket	IP40 IP44

**NOTE:** Some applications have processes that can create problems with respect to water ingress. Examples include laboratories and abattoirs which are hosed-down with water. In these instances water resistant gaskets are unlikely to provide adequate protection.

## Fast moving air

System 32000 sensors are designed to operate in air speeds up to:

☐ 5 metres/second continuous

☐ 10 metres/second gusting

**exception**

☐ Ionisation sensor

- 2 metres/second continuous
- 5 metres/second gusting for periods up to 30 minutes)

Where wind is present, the positioning of sensors should be such that smoke is not blown away from the sensor or sensing beam. The diluting effects of high airflows should also be considered.

## Vibration

The 32000 sensors are designed to tolerate vibration at frequencies of between 5 and 60 Hz.

Very strong vibration may cause sensors to become detached from the terminal plate or otherwise come apart. Avoid subjecting sensors to vibration caused by process equipment.

## Corrosion

Strong acid or alkaline environments will cause sensors to corrode. This will reduce the time between failures.

# Appendix B - Hazardous areas

## Classification & Equipment

Hazardous areas arise from a combination of gas, vapour or dust and the presence of a potential source of ignition, typically electrical equipment.

Many industrial sites are now designated as hazardous areas. Areas are classified by 'zones 0, 1, 2 or safe'. The classification is determined by the user (normally in conjunction with specialists and the factory inspectorate), and refers to the length of time for which the risk is present.

There are two types of fire alarm equipment that can be used in hazardous areas:

Area 'zone' classification	type of equipment
<b>zone 0</b> (risk permanently present)	Certified intrinsically safe
<b>zone 1</b> (risk present between 10 and 1000 hours per year)	Certified intrinsically safe or Certified Flameproof (dependant on enclosure classification)
<b>zone 2</b> (risk present less than 10 hours per year)	Certified intrinsically safe or Certified Flameproof (dependant on enclosure classification)

Zone classifications Y and Z refer to risks from dust.

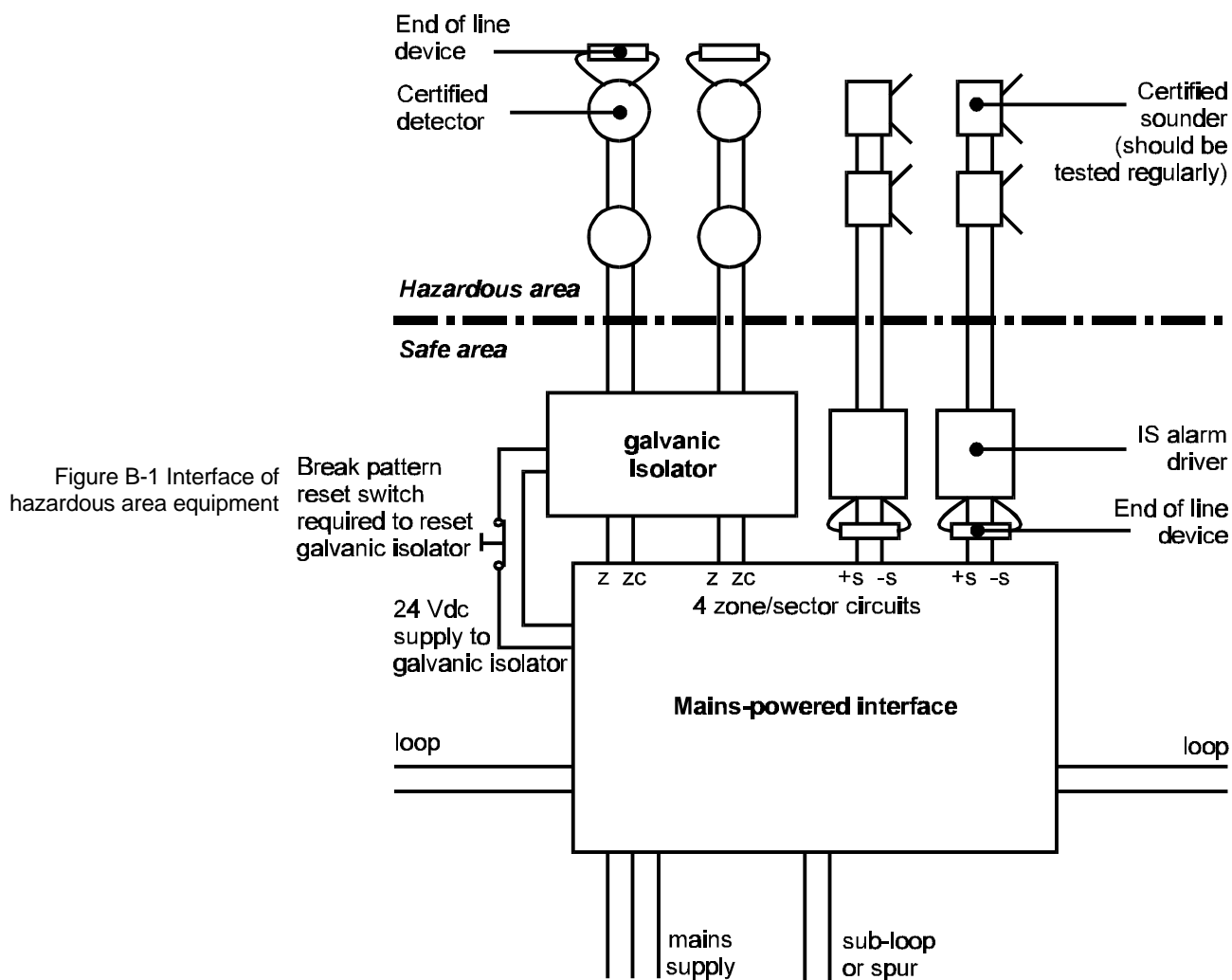
## 32000 systems

**WARNING:** 32000 devices **must not** be installed in hazardous areas

Hazardous areas are protected using **conventional certified detectors and sounders**. These should be interfaced to the 32000 system using a 32440 mains-powered interface and suitable **certified** isolating equipment such as galvanic isolators and alarm drivers.

**NOTE:** Design information for intrinsically safe and flameproof systems is provided separately.

The mains-powered interface will connect to detector and sounder circuits via galvanic isolators and IS alarm drivers as required (flameproof sounders can be connected directly to the interface without an alarm driver: check approvals for positioning of end-of-line device).



cdn240

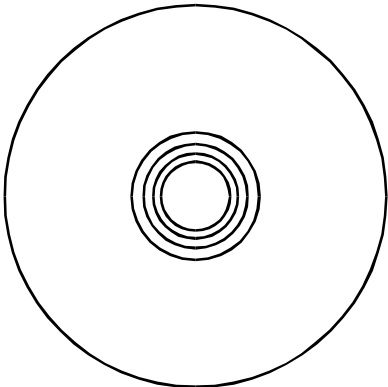
**NOTE:** Sounder circuits cannot be monitored through the alarm driver and should therefore be tested regularly

# Appendix C -07012-31 Flame Detector

**CAUTION:** This is not a loop wired device.

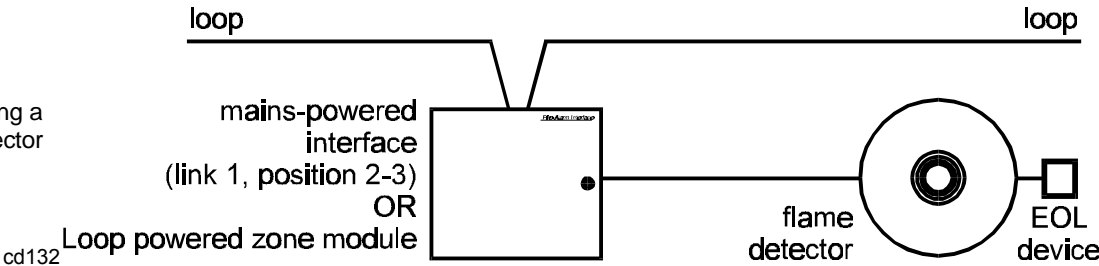
Figure C-1 Flame detector

cd131



The flame detector senses infra-red radiation emitted from flames and ensures rapid response to carbon-based, free burning fires. It is ideally suited to buildings with high ceilings such as churches, shopping malls and sports halls.

Figure C-2 Wiring a flame detector



The detector is mounted on a base (*model no 07700-21*), not included with detector.

## Specification

Standard	EN54: Part 10 (draft)
Dimensions	diameter 108mm height 75mm
Weight	275g with base
Operating temperature	0 to 60°C
Relative humidity (non condensing)	95% RH (non-condensing)
Colour	White
Indicators	Red LED



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# Appendix D

## Loop Loading And Battery Standby Calculation Tool V1.0 User Guide

### Introduction

- ☐ **Hardware Requirements:** IBM PC or compatible, minimum processor should be a 486DX 33 with 8MB of RAM.
- ☐ **Software Requirements:** Microsoft Windows 3.1, EXCEL 5.0

This software is designed to calculate the battery standby time of the following Gent products:

- ☐ 3404 Alarm Panel
- ☐ 3408 Alarm Panel
- ☐ 32000 Alarm Panel
- ☐ 34440 Mains Powered Interface
- ☐ 32440 Mains Powered Interface

The interface between the user and the computer is the familiar windows format of pop up dialog boxes giving various choices of how to configure the particular product chosen. As the macros are designed to run within MS EXCEL the results of all calculations are written to a worksheet which can either be saved or printed.

### Installation

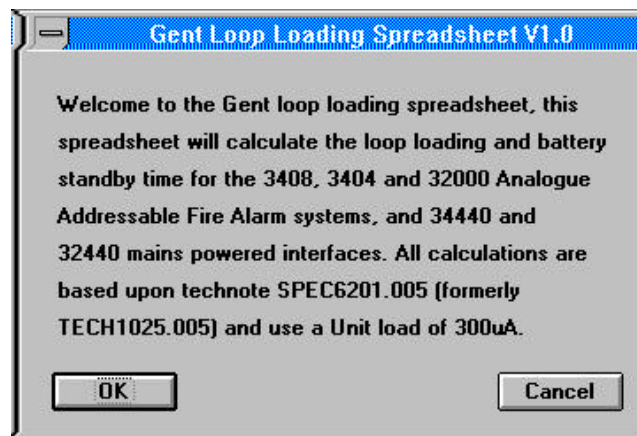
- ☐ In order to install this software onto your P.C. create a directory on your hard drive called loopload.
- ☐ Copy the contents of the supplied disk from A:\ to C:\loopload.
- ☐ Run Windows and then Excel 5.0.
- ☐ From the pull down menu File choose Open, click on the loopload directory and then the file Genttemp.xls. Now press O.K, the file should open.
- ☐ From the View menu in Excel choose Toolbars, a dialog will now appear which allows the user to choose additional toolbars, click on the Customize button.

- ☐ Another dialog called Customize will appear, notice the scrollbar and menu, move down the scrollbar to the bottom and click on custom.
- ☐ The custom set of icons is now displayed to the right of the scrolling menu, pick an icon you wish to use for the loop loading calculator and drag it to the toolbar at the top of your screen.
- ☐ A dialog called Assign Macro will now be present on your screen, scroll down the macro names until you come across the word START, click on START, click on O.K.
- ☐ The loop calculator will now be assigned to this icon. The customize dialog will still be open, click on close and the installation is complete.

## Starting a Calculation

After pressing the button which you specified to invoke the loop loading macro's the following introduction screen will appear.

Figure D1 Introduction screen

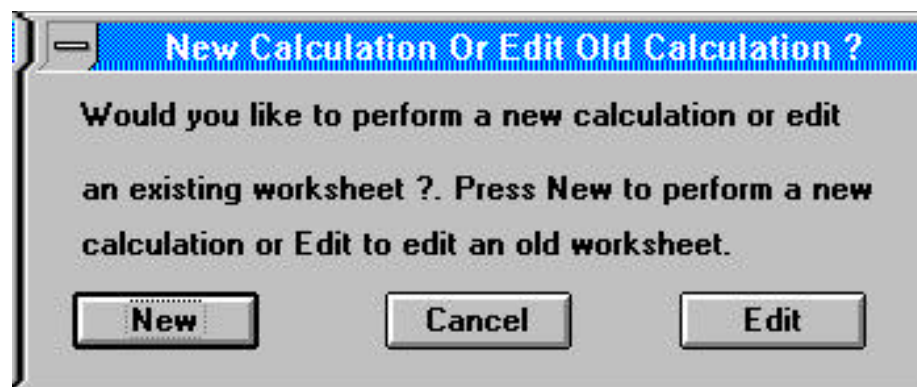


cdn208

This window explains the capabilities of the software and the technical document which it was based upon. Press OK to proceed.

The software will now prompt you as to weather you wish to perform a new calculation or edit an old one.

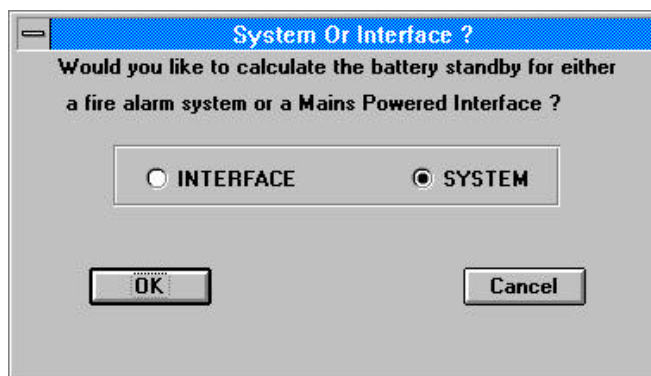
Figure D2 Calculation options screen



cdn209

## Configuring a System.

Figure D3 System or Interface window



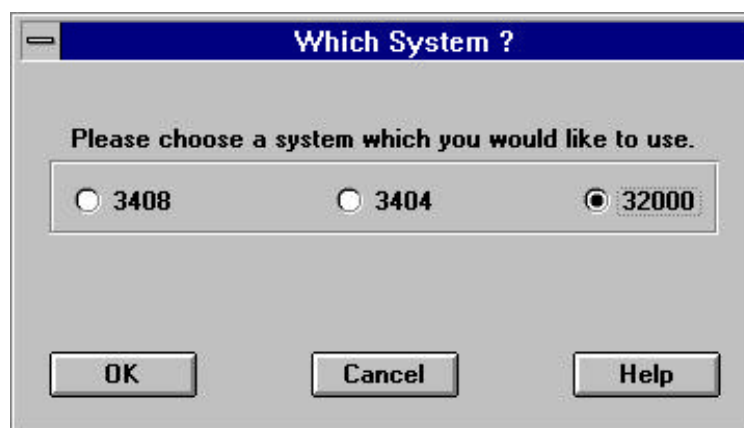
cdn210

The two radio buttons on the window offer the user a choice of either performing a calculation for a fire alarm system or for a mains powered interface. If whilst configuring the alarm panel, a mains powered interface is used on any of the loops a choice will be given at the end to calculate the battery standby of the interface.

### Which System ?

This software will currently calculate the battery standby for all three Gent analogue addressable alarm systems in order to choose which system the calculation is to be performed upon, the appropriate radio button on the *Which System ?* window must be highlighted.

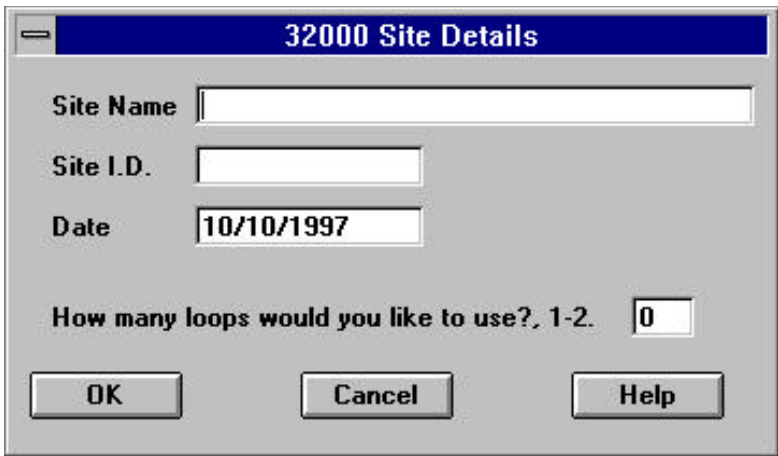
Figure D4 Which system window



cdn211

The next window to appear will be the *Site Details* window. This requires all of the edit boxes to be filled out as this information is written to the worksheet which can be printed.

Figure D5 Site details window



The '32000 Site Details' window is a dialog box with a blue title bar. It contains the following fields and controls:

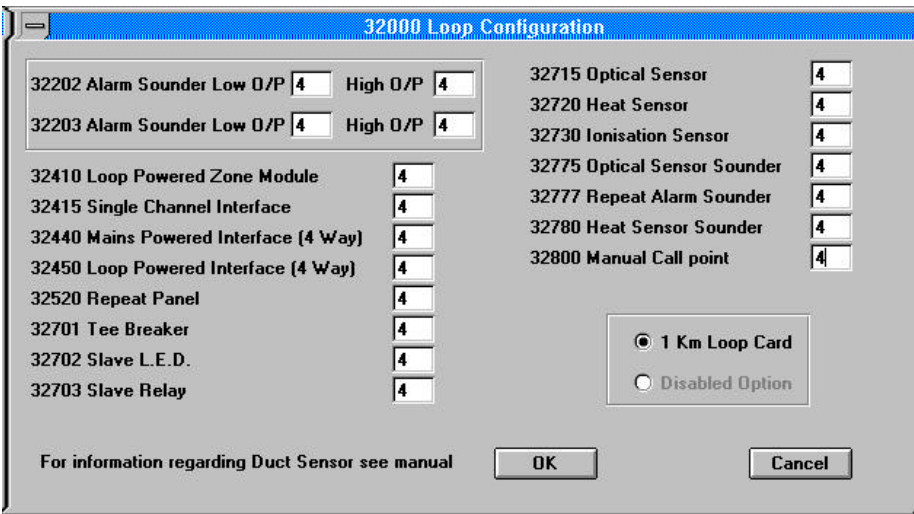
- Site Name:** A text input field.
- Site I.D.:** A text input field.
- Date:** A date input field showing '10/10/1997'.
- How many loops would you like to use?, 1-2:** A numeric input field showing '0'.
- Buttons:** 'OK', 'Cancel', and 'Help' buttons at the bottom.

cdn31

### Configuring a loop

The *32000 Loop Configuration* window presents the user with the loop connected devices and the quantity of each device is entered into the appropriate edit box when the loop is configured the user should press OK.

Figure D6 Loop Configuration window



The '32000 Loop Configuration' window is a dialog box with a blue title bar. It contains the following fields and controls:

- 32202 Alarm Sounder Low O/P:** Input field with '4'.
- High O/P:** Input field with '4'.
- 32203 Alarm Sounder Low O/P:** Input field with '4'.
- High O/P:** Input field with '4'.
- 32410 Loop Powered Zone Module:** Input field with '4'.
- 32415 Single Channel Interface:** Input field with '4'.
- 32440 Mains Powered Interface (4 Way):** Input field with '4'.
- 32450 Loop Powered Interface (4 Way):** Input field with '4'.
- 32520 Repeat Panel:** Input field with '4'.
- 32701 Tee Breaker:** Input field with '4'.
- 32702 Slave L.E.D.:** Input field with '4'.
- 32703 Slave Relay:** Input field with '4'.
- 32715 Optical Sensor:** Input field with '4'.
- 32720 Heat Sensor:** Input field with '4'.
- 32730 Ionisation Sensor:** Input field with '4'.
- 32775 Optical Sensor Sounder:** Input field with '4'.
- 32777 Repeat Alarm Sounder:** Input field with '4'.
- 32780 Heat Sensor Sounder:** Input field with '4'.
- 32800 Manual Call point:** Input field with '4'.
- Radio buttons:** '1 Km Loop Card' (selected) and 'Disabled Option'.
- Text:** 'For information regarding Duct Sensor see manual'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

cdn220

If the data entered exceeds the allowable quantity the software will warn the user that the figure entered is too great and that the calculation cannot proceed until the figure is reduced. If the loop is overloaded in terms of current required the software will again flag a warning and the number of devices on that particular loop should be reduced in order for the calculation to proceed. Note that the absolute value will be taken in the event of any negative values entered. If the loop configuration is acceptable the window and there is another loop to configure, the window will re-appear.

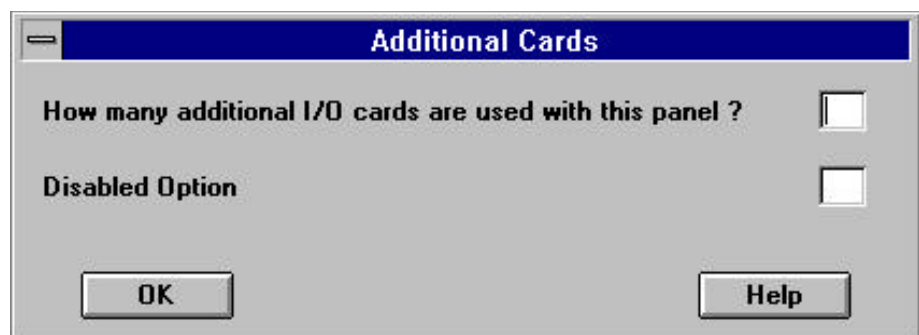
## Adding Additional Cards.

It is possible to include additional cards within the control panel for networks or I/O devices, after the loops are configured the *Additional cards* window will appear, unless both loops are configured, allowing the user to specify the number of either I/O or Network cards are to be placed inside the panel.

The 32000 panel is supplied with three cards, 1xIO,1xLCC and 1xRAM. This leaves 2 free slots in the backplane for the Loop Cards or additional IO cards, if only one loop is used.

If these limits are exceeded the software will ask the user to re-edit and reduce the number of cards entered.

Figure D7  
Additional cards  
window



cdn232

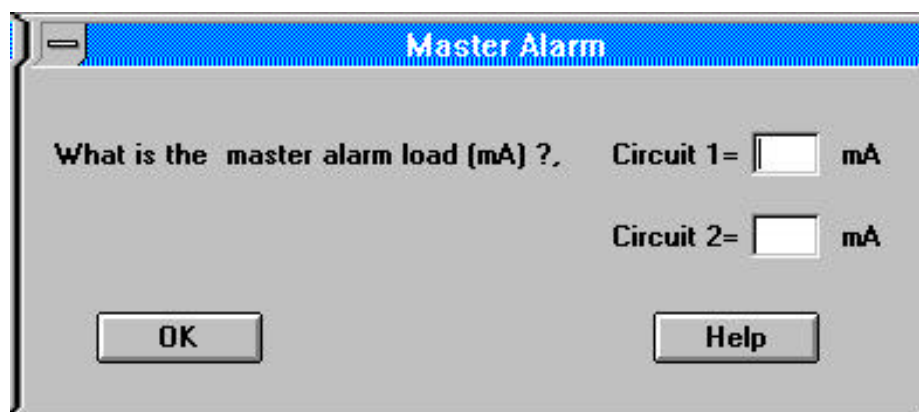
## Loading the Master Alarm Circuits.

Each panel has two master alarm circuits available for supplying bells, beacons etc. The loading which can be placed upon these circuits is 0.4A/Circuit

This limit may be exceeded to 0.8A/Circuit providing that the total system alarm current does not exceed 5.5A.

The *Master Alarm* window is used to enter the value of the load upon the master alarm circuits in mA. If this value exceeds the allowable current the software will warn the user to re-edit and reduce this value of current.

Figure D8 Master  
Alarm window



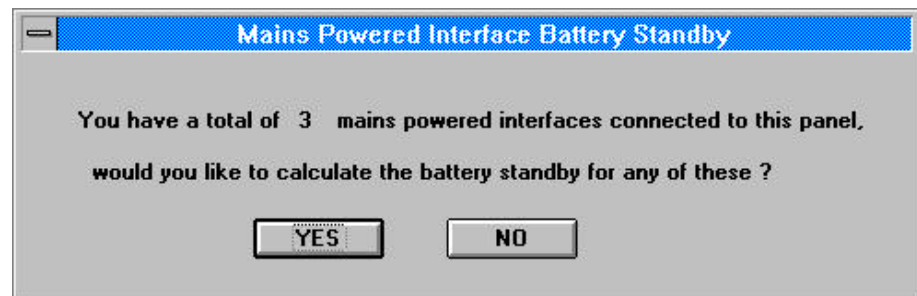
cdn217

**NOTE:** *In the event of the panel being overloaded due to the loops connected to the panel being loaded to near maximum, the Master Alarm window may not appear. Instead a warning will appear that the panel is overloaded and the calculation should be repeated and the number of devices connected to the panel reduced.*

## Interface Calculation and Saving a Worksheet.

If during configuration of one of the loops on the panel a 32440 mains powered interface was chosen the software will prompt the user to indicate if they would like to calculate the battery standby time of an interface.

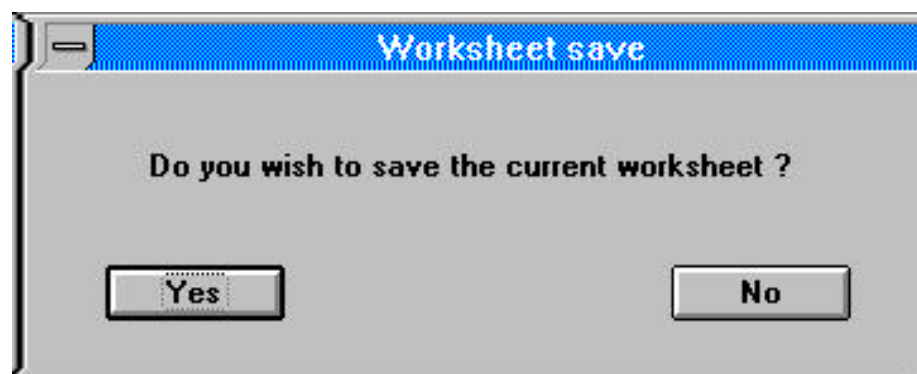
Figure D9 Mains Powered Interface Battery Standby window



cdn229

If no is pressed on the *Mains Powered Interface Battery Standby* window the software prompts the user as to whether they wish to save the worksheet.

Figure D10 Worksheet save window

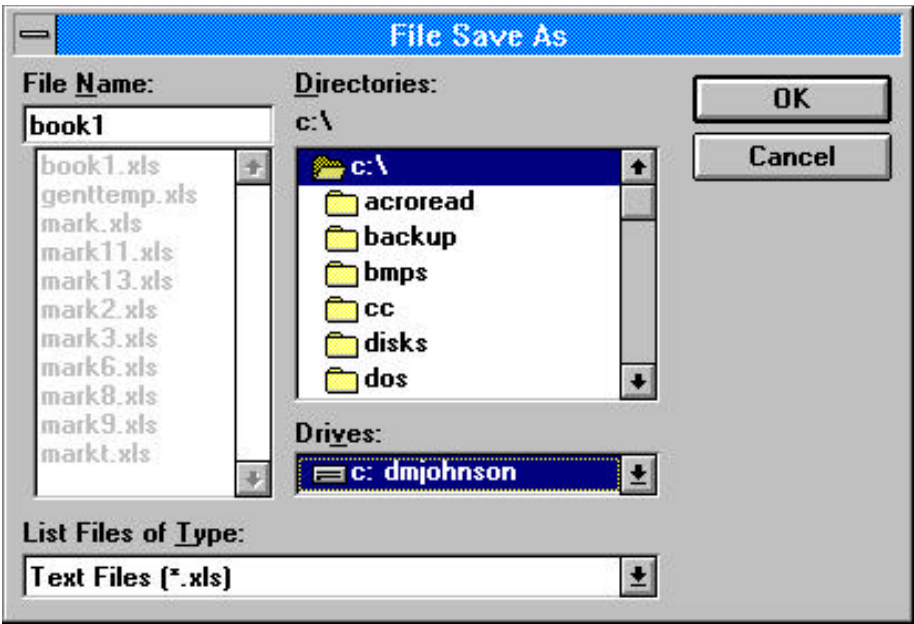


cdn218

In order to save the worksheet press yes. The dialog shown in the *Save As* window will be displayed in order to save the file specify a filename and the drive and directory where you wish the file to be stored.

Figure D11 Save As window

cdn219



**Interface  
Battery  
Standby  
Calculations**

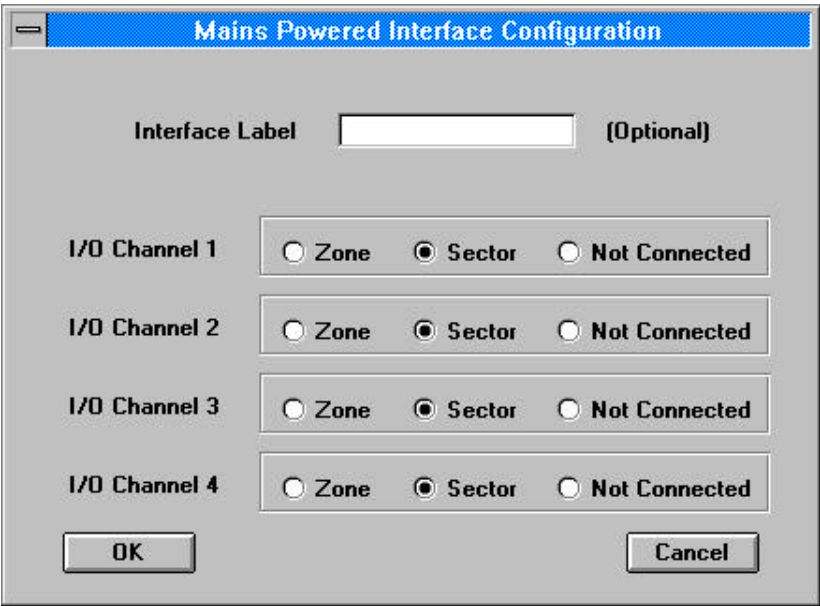
There are four I/O's which can be configured to be either Zones (Inputs) or Sectors (Outputs). The maximum current which the interface is capable of sourcing is 500mA, this may be via a single sector or a combination of up to four sectors.

The interface also provides an auxiliary supply capable of sourcing up to 250mA.

The *Mains Powered Interface Configuration* window is used to configure the four I/O channels, by highlighting the appropriate radio button each I/O channel can be configured to be either a Sector, Zone or Not Connected.

Figure D12 Mains Powered interface Configuration window

cdn222





The interface label is used as an identifier/name for the particular interface, this will be printed out along with the results of the standby calculation. It is not required that a label is provided but it is advisable for your records. The choices highlighted on this window will influence the options available on the Mains Powered Interface Sector Loading window.

Figure D13 Mains  
Powered Interface  
Sector Loading window

cdn223

The window is used to enter the loading of the channels chosen to be sectors and also the optional auxiliary power supply. As mentioned previously each sector is capable of sourcing up to 500mA however the maximum current which can be sourced by all four sectors is also 500mA. The maximum current which the Aux supply is capable of sourcing is 250mA, however it must be stressed that if the Aux supply is connected the battery standby time of this interface is severely reduced. The software will detect any invalid entries in the edit boxes and not allow the calculation to continue until the entry is re-edited to within the directed limits.

Once valid data has been entered and OK is pressed the *Another Mains Powered Interface* window will appear. If the yes button is pressed the program will return to the *Mains Powered Interface Configuration* window and another interface can be configured. if no is pressed the program will produce the *Worksheet savewindow* and the worksheet may be saved.

## Printing a Worksheet

It is possible to either print the Worksheet by pressing yes when prompted by the software or alternatively following the instructions listed below.

In order to print the worksheets contents you should have the worksheet which you wish to print open, click on the **F**ile pull down menu and then click on **P**rint **P**review. The page should now be visible, choose set-up to set-up the page orientation which is suggested to be Landscape to display the information clearly. Often the contents of the worksheet will stretch over a number of pages so it is a good idea to adjust the scaling of the pages but do not make the information too small as it becomes hard to read. When the page is set-up to your liking press **O**K and then **P**rint. The worksheet should now be printed, assuming you have the printer set-up correctly.



## Opening Saved Worksheets

To open saved worksheets you must first of all have Excel open. Click on the File pull down menu and then click on Open, a window will appear. Highlight the particular drive and directory in which the file resides and then click on the file and press OK, the file should then be opened by Excel.

## Editing Loop Configurations On Previous Calculations

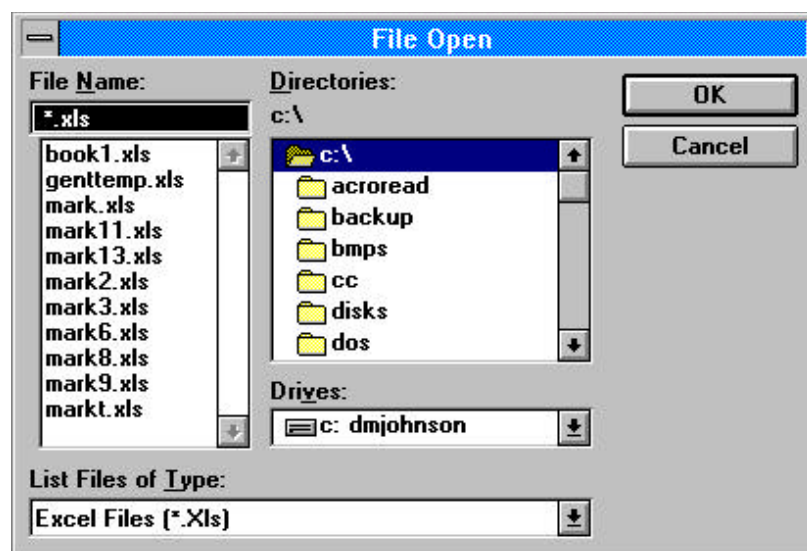
It is possible to edit the configuration of a loop which is part of a previous calculation, however it is not possible to add or remove another loop on an old calculation.

In order to edit a calculation, execute the software and when the dialog shown in screenshot two appears press the Edit button.

### Opening an Old Calculation

Once you have chosen to edit an old calculation it is necessary to open the file which this is stored in. In order to open the file the *File Open* dialog will appear as usual in windows applications specify the drive and directory where the file is stored and then click upon the file and press O.K. The file will now be opened and providing it is a Gent loop loading calculation will be copied to worksheet one.

Figure D14 File open window



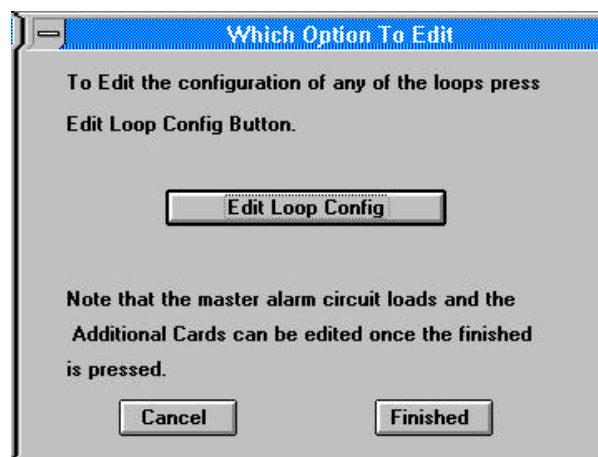
cdn225

### Editing the Loop Configuration

Once a file has been opened the *Which option to edit* window will appear, if the Edit Loop Config button is pressed you will be able to edit any of the loops which are present upon the panel. In order to edit the number of additional cards present upon the panel or the Master Alarm Circuit load and indeed complete the re-calculation of the battery standby etc. Press the Finished button.

Figure D15 Which  
Option to Edit  
window

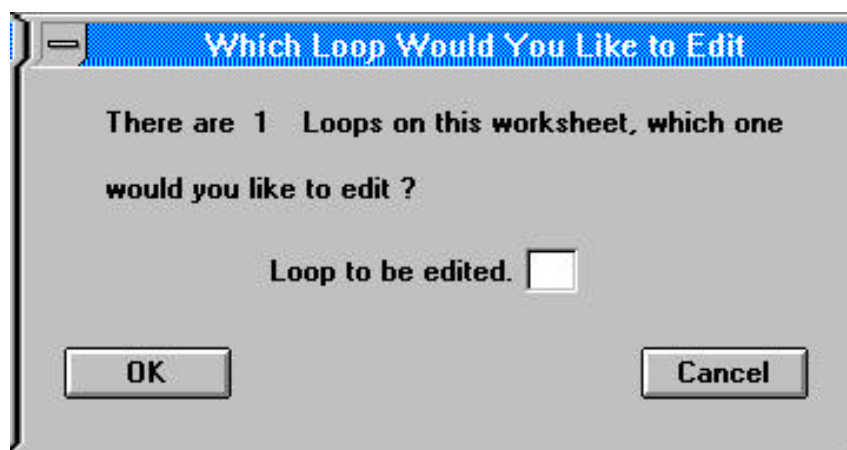
cdn226



## Editing the Loop Configuration 2

Assuming that the Edit Loop Config button was pressed on the *Which option to edit* window then the *Which loop would you like to edit* dialog will appear. This dialog states the number of loops which are present on the worksheet and asks which loop you wish to edit.

Figure D16 Which  
loop would you  
like to edit window



Once a loop has been chosen press O.K. the appropriate loop configuration dialog will appear with the number of devices present upon that loop. Once you have finished editing that particular loop the software will ask you if you wish to edit another loop. If you choose yes the *Which loop would you like to edit* dialog will re-appear else the *Which option to edit* window will re-appear.

## Editing the number of Additional Cards and the Master Alarm Circuit Load.

If you have highlighted the Edit Loop Config radio button and pressed O.K. on the *Which option to edit* window or you have pressed the Finished button on the same window, then you will be given the same options. These are to edit the Number of Cards and the Master Alarm Circuit load, the current information stored on the worksheet will be displayed in the dialogs. Once editing is complete the software will prompt you to save the worksheet.

## What Does The Information Displayed Upon the Worksheet Mean ?

The worksheet displays the information entered by the user and also the information which is calculated by the software itself. The left hand side of the worksheet displays the device type and product numbers, the corresponding number of those devices used on each loop is displayed to the right of these product descriptions and to the far right the total number of each device used on that particular panel.

The Quiescent loop current line shows the current consumption of each loop under normal operating conditions and the Alarm loop current shows the current consumption for each loop when it is in alarm. The loop load is also calculated as a percentage which is displayed on the line below the Alarm loop current.

The Total System Alarm Load (Amps) and the Total System Quiescent Load (Amps) are the total load placed upon the panel under each condition.

The last few lines at the bottom of the worksheet display the panel battery standby duration and the required battery capacity in order to satisfy both 24 and 72 hours battery standby.

## Notes On Products

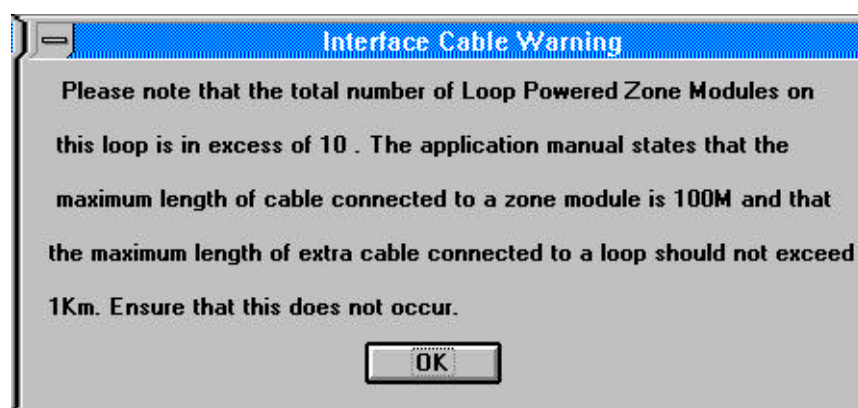
This section contains additional notes on various different products.

### Single Channel Interface

Each loop must have no more than 1 Km of additional cable connected to it for applications such as single channel interfaces, in addition to this each single channel interface or loop powered zone module must have no more than 100M of cable connected to it. This is why the loop loading software will warn the user with the *Interface cable warning* window when the number of single channel interface, or zone modules, or combination of the two exceeds ten.

Figure D17  
Interface Cable  
Warning window

cdn228



## **Duct Sensors**

A duct sensor is basically a sensor housed in a metal box, in order to enter these into the calculation add the number of duct detectors to the appropriate detector which is placed in the Duct housing.

# 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

<b>32000 Sensors</b>	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
<b>32000 Terminal Plate</b>	32730	Ionisation smoke sensor
	19273-01	Replacement chamber for Ionisation smoke sensor
	32780	Heat sounder
	19274-01	Chamber for Heat sounder
	32700	Terminal plate
	19279-01	Sensor semi-flush mounting kit
<b>Trim Ring</b>	19279-10	Sensor trim ring
<b>Slaves/ T-Breaker</b>	32701	T-breaker Unit
	32702	Slave LED unit (Remote Fire Indicator Unit)
	32703	Slave Relay Unit
<b>Tools</b>	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

<b>Environmentally Protected</b>	32729	EP Heat Sensor
<b>Special sensors</b>	32760	Duct Sensor

## Alarm sounders

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

## Manual call points (MCP)

<b>MCPs</b>	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
<b>Environmentally Protected</b>	32829	EP MCP surface
<b>Spares</b>	14112-09GR	Spare glasses (Pack of 10)

## Interfaces

<b>Mains Powered Interface</b>	32440	Fire Alarm Interface unit - Mains powered
	19104-52	Power relay for Fire Alarm Interface - Mains powered complete with base and diode pack.
<b>Class change Interface</b>	32457	Class Change Interface unit - Loop powered
<b>4-channel Loop Powered Interface</b>	32450	Fire Alarm Interface unit - Loop powered

and 1 can be installed into a 32415)

<b>1-channel loop powered interface</b>	32410	Loop powered zone module
	32415	Single channel interface (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