aico®

Product Guide for
Smoke & Heat Alarms

aico®

Product Guide for
Smoke & Heat Alarms

Ahead on Quality
Ahead on Performance
Ahead on Features

When Lives are at Risk
it Pays to Fit the Best

Stockist

ISO9001
Certificate No. 8206

Ei Professional®

Aico Ltd is a wholly owned
subsidiary of Ei Electronics

Ei Professional®

PGSHA 0905 Issue 1

The Solution Provider for Residential Fire Detection

The Ei Range of Smoke Alarms from Aico offers the complete solution to meeting the new requirements of BS 5839: Pt.6: 2004 for Residential Fire Detection. Proven and reliable technology is combined with innovative product development to provide the best possible performance available in real fire situations. Various options are offered in order that specifiers and end users can select the ideal product for every individual installation with regard to the building and its occupants. All options offer value for money, unprecedented ease for the installer and aesthetically pleasing designs.

Our new RadioLINK product is the ultimate solution as it provides for wireless interconnection of the alarms and achieves 'best practice installations' in the easiest and most economical way.

The UK Market Leader

As Europe's leading manufacturer of smoke alarms with over 30 years experience, we currently outsell every comparable product on the market. Quality in our life saving products is never compromised. We have a record of industry firsts including the first BSI Kitemarked range, the first rechargeable back-up power supply in a smoke alarm, the first mains powered heat alarm, the first with hush technology across the range and the *only* Easi-fit design.

Ei now offer another first with the RadioLINK wireless interconnect system.

Service & Availability

At Aico we believe the very best alarm technology should be accompanied by the very best support possible. We offer unrivalled product information for end users of the product, specifiers and installers.

On the ground we have an experienced regionally based technical sales team, a highly trained customer service department and a responsive sales office. Our products are distributed to the trade locally via most electrical wholesalers throughout the UK. Expert training and on site installation advice is readily available.

Smoke & Heat Alarm Installation Standards & Regulations ... how does it affect me?

What does the British Standard BS 5839: Part 6: 2004 Recommend?

This is the definitive code of practice to which Architects, Building Professionals, Enforcing Authorities, Landlords and Installers should refer for recommendations on the design, installation and use of smoke and heat alarms in the majority of domestic dwellings. Landlords in both the public and private sector are considered to have a duty of care to fit compliant smoke and heat alarms.

New Build Properties & Materially Altered Dwellings
One to three storeys - Grade D, LD2
- Mains alarms with battery back-up
- Optical smoke alarms in circulation spaces - hallways & landings e.g. Ei146 or Ei166 with or without RadioLINK
- Heat alarm in the kitchen e.g. Ei144 or Ei164 with or without RadioLINK
- Smoke alarm or heat alarm as best suited for the particular circumstance (see page 4 for definitions and usage), in the main living room
- All alarms should be interconnected
- The sound pressure level of the alarm signal measured at the doorway of each bedroom with the door open should be at least 85dB(A)

Existing Tenanted Properties
Two and three storey - Grade D, LD3
- Mains alarms with battery back-up
- Optical alarms in circulation spaces - hallways & landings e.g. Ei146 or Ei166 with or without RadioLINK
- If a fire risk assessment shows the property or occupier to be a high fire risk, increase the number of alarms installed to meet the risk - e.g. follow new build recommendations for an LD2 installation
- All alarms should be interconnected
- The sound pressure level of the alarm signal measured at the doorway of each bedroom with the door open should be at least 85dB(A)

Single storey - Grade F, LD3
- Battery powered with a minimum battery life of 5 years e.g. Ei 10 year alarm
- Optical smoke alarm in circulation spaces - hallway e.g. Ei3105TYCH
- If a fire risk assessment identifies a concern that the occupier cannot or may not replace a battery, use mains alarms or mains with battery back-up
- If a fire risk assessment shows the property or occupier to be a high fire risk, increase the number of alarms installed to meet the risk - e.g. follow new build recommendations for an LD2 installation

System Grades and Categories
Six different grades of fire detection systems are defined and - generally speaking - the greater the fire risk the more comprehensive the system should be. Briefly, the Grades are as follows:

GRADE A - A full system with control and indicating equipment installed to BS 5839: Part 1

GRADE B - Detectors and sounders using simpler specified equipment

GRADE C - Detectors and sounders or alarms with central control

GRADE D - Mains powered alarms with an integral stand-by power supply

GRADE E - Mains powered alarms with no stand-by power supply

GRADE F - Battery powered alarms

Three different categories of life protection systems are defined. Briefly these are (starting at the highest):

LD1 - Alarms in all circulation spaces that form part of escape routes and all areas where a fire might start, but not bathrooms, shower rooms or toilets

LD2 - Alarms in all circulation spaces that form part of escape routes and rooms or areas that present a high fire risk

LD3 - Alarms in circulation spaces that form part of escape routes

The Code emphasises that no one type of alarm is most suitable for all applications. Consideration must be given to the most suitable type of detection - optical, ionisation and heat (see page 4 for definitions and usage).

What do Building Regulations Demand in New Build and Materially Altered Dwellings?

Architects, builders and installers must comply with Building Regulations and install mains powered smoke alarms in new and materially altered dwellings.

England & Wales
Building Regulations Approved Document B (Fire Safety) requirements are currently Grade E, LD3.

A consultation document dated July 2005 proposes the following new requirements which, if implemented, are expected to come into force in early 2006.

Grade D, LD2
- Mains alarms with battery back-up wired to a lighting circuit or a dedicated circuit
- Smoke alarms are required in the circulation spaces such as hallways and landings. In general optical alarms are recommended e.g. Ei146, Ei166
- Heat alarm to be installed in the kitchen where there is no door separating the kitchen from the circulation space, e.g. Ei144, Ei164
- A smoke alarm should also be fitted in the main (largest) bedroom to meet audibility requirements
- Building extensions and room conversions, above ground floor level, require a Grade D, LD2 system to be installed in the property
- Smoke and heat alarms should be interconnected
- Mains powered smoke and heat alarms may be interconnected using radio-links

Scotland
Building Standards Technical Handbook No 2 (Fire) requirements are currently:

Grade D, LD3
- Mains smoke alarms with battery back-up
- Smoke alarms are required in the circulation spaces, hallways & landings
- Smoke alarms should be interconnected
- Alarms may be interconnected using radio-links

Northern Ireland
Building Regulations (Northern Ireland) Technical Booklet E (Fire Safety) requirements were amended in June 2005 to:

Grade D, LD2
- Mains Smoke alarms with a battery back-up
- Smoke alarms are required in the circulation spaces, hallways & landings
- A smoke alarm is required in the 'principal habitable room' e.g. living room
- A heat alarm is required in every kitchen
- Loft conversions require all the above to be installed
- Smoke and heat alarms should be interconnected
- Alarms may be interconnected using radio-links

More comprehensive information is provided in our free 'Guide To Residential Fire Detection'. (See page 19).

ALARM SENSOR TYPES

Optical Alarms
where should they be used?

Optical sensors are more responsive to smouldering fires producing large particle smoke typical of fires involving furniture and bedding. They are more immune to invisible smoke produced by 'burning the toast' and similar cooking fumes. This makes them ideal for siting in hallways close to kitchens where false alarms from ionisation alarms may be a particular problem. The BS 5839: Pt.6: 2004 Standard recommends the use of optical alarms in circulation spaces of a dwelling, such as hallways and landings. Optical alarms are prone to false alarm if exposed to steam and should not be located too close to poorly ventilated bathrooms or shower rooms.

Ionisation Alarms
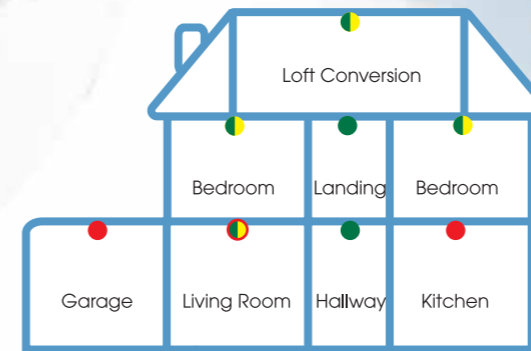### where should they be used?

Ionisation type sensors are particularly sensitive to the almost invisible smoke produced by fast flaming fires. This makes them more liable to false alarm due to cooking fumes if sited in a hallway close to a kitchen. Ionisation alarms are less vulnerable to false alarms caused by dense tobacco smoke, excessive dust and insect ingress. The BS 5839: Pt.6: 2004 Standard recommends that ionisation alarms should not be used in hallways and landings, where there is a risk of false alarms caused by cooking fumes.
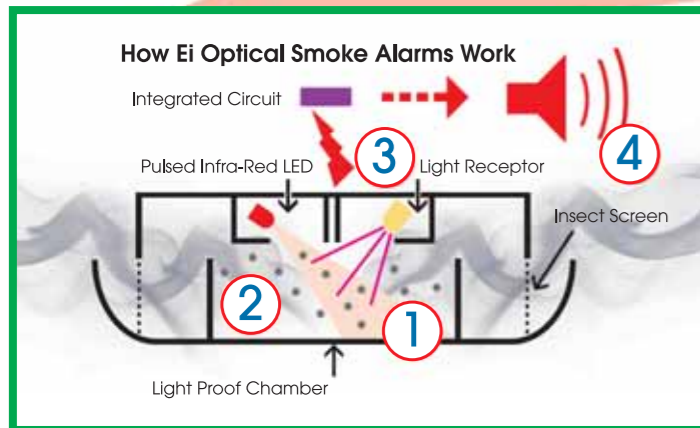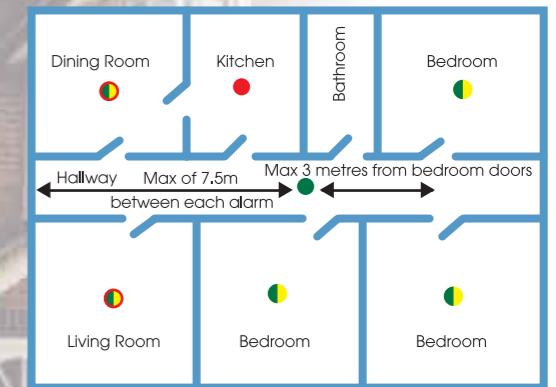
Note: Either type of sensor is generally suitable. The choice of sensor type should, if possible, take into account the type of fire that might be expected and the need to avoid false alarms.

How Ei Optical Smoke Alarms Work

Integrated Circuit
Pulsed Infra-Red LED — ③ Light Receptor — ④
Insect Screen
② ①
Light Proof Chamber

1. A light beam is pulsed in the sensor chamber every 10 seconds to 'look' for smoke. Any smoke present has to be visible to the naked eye so that the receptor can 'see' it. If no smoke is detected, the alarm will remain in a standby state.
2. When large particle smoke is detected, the light beam will be scattered onto the light receptor.
3. This will then send an electrical signal to the IC (Integrated Circuit).
4. If two consecutive signals are received by the IC, the alarm will sound.

How Ei Ionisation Smoke Alarms Work

Integrated Circuit — ③ — ④
Electrodes → Radioactive Source
② ① ②
↑ Chamber Cover
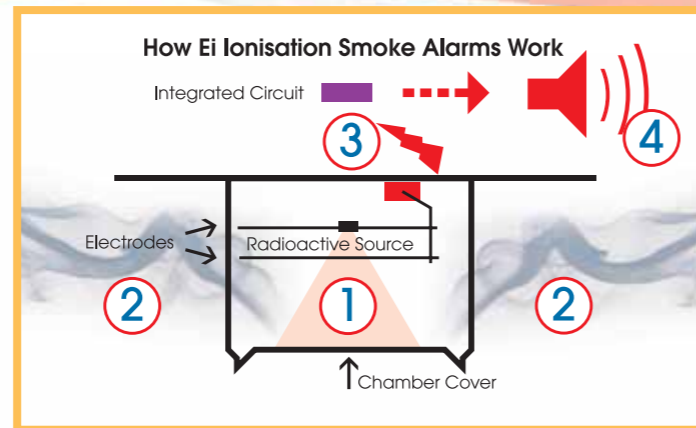
1. Inside the sensor chamber is a minute (safe) radioactive element that ionises the air within. This causes a small current to flow in the chamber and this will remain constant for the life of the alarm unless smoke particles enter.
2. When smoke enters the sensor chamber, the balance of the current is disturbed.
3. This is detected by the electronics in the alarm circuitry and a signal is sent to the Integrated Circuit (IC).
4. This causes the alarm sounder to operate.

Heat Alarms
where should they be used?

Heat alarms are less likely to cause false alarm problems as they are not responsive to any type of smoke or fumes, only heat. Because of the potential for a slower response than smoke alarms, they should only be used in a fire alarm system that also includes smoke alarms, and all of the alarms must be interconnected. The BS 5839: Pt.6: 2004 recommends that heat alarms should be used in kitchens. It goes on to suggest that they may also have a role to play in the main living room but they should not be installed in circulation spaces or areas where fast response to fire is required.

How Ei Heat Alarms Work

Integrated Circuit — ③ Thermistor ④
② ②
Sensor Chamber Cover ①
Heat Source
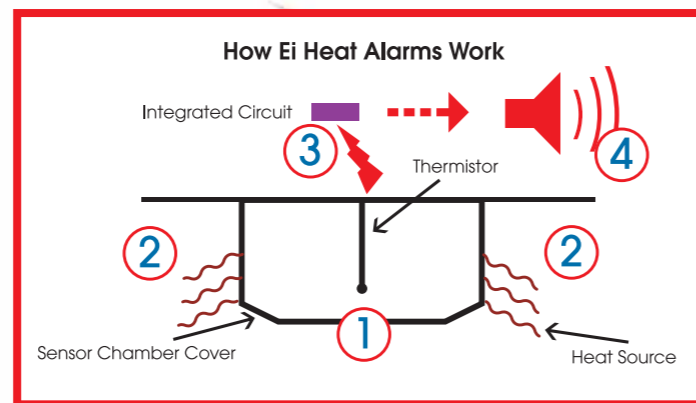
1. A thermistor (a heat sensitive resistor) is sited in the sensor chamber of the alarm.
2. When the temperature rises the resistance of the thermistor reduces.
3. The IC continuously monitors the resistance of the thermistor. When this indicates the temperature is over 54 °C the IC sends a signal to the sounder circuit.
4. The alarm sounder then operates.

SITING DIAGRAMS
For Houses in Multiple Occupation (HMOs) see page 15

Which Alarms to Fit Where

Average two storey house
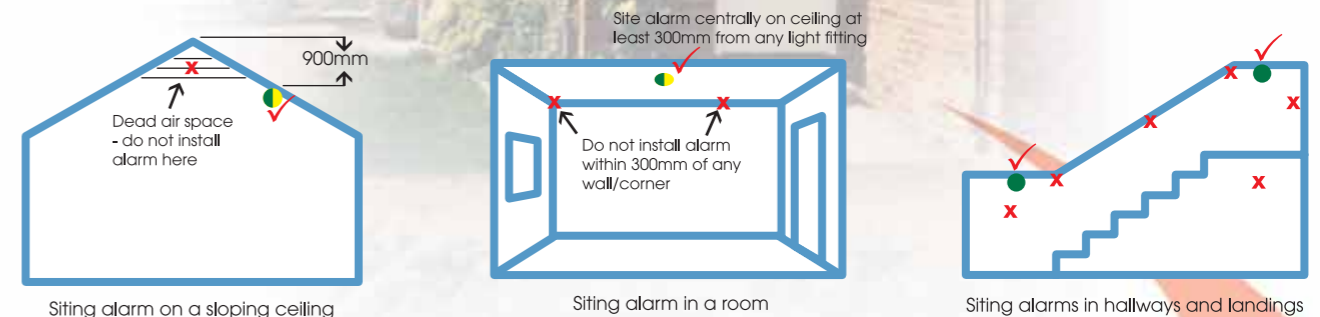
Loft Conversion
Bedroom | Landing | Bedroom
Garage | Living Room | Hallway | Kitchen

Single storey dwelling

Dining Room | Kitchen | Bathroom | Bedroom
Hallway   Max of 7.5m   Max 3 metres from bedroom doors
between each alarm
Living Room | Bedroom | Bedroom

- Optical or Ionisation smoke alarm as best suited for the particular circumstances
- Optical smoke alarm
- Smoke or heat alarm as best suited for the particular circumstances
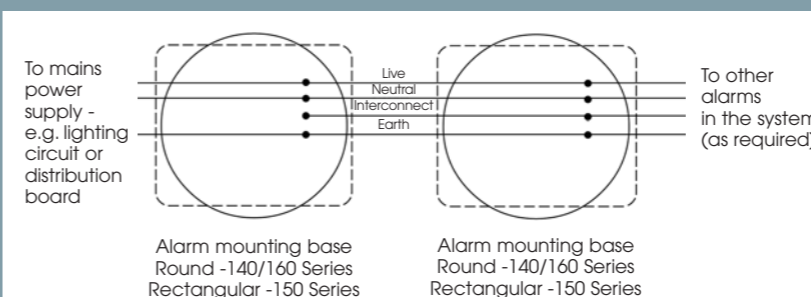- Heat alarm

Do not install smoke or heat alarms in bathrooms, shower rooms or toilets

900mm
Dead air space - do not install alarm here
Siting alarm on a sloping ceiling

Site alarm centrally on ceiling at least 300mm from any light fitting
Do not install alarm within 300mm of any wall/corner
Siting alarm in a room

Siting alarms in hallways and landings

✓ Correct ceiling siting position for alarms   x Do not install alarms here

For additional guidance please use the Customer Service Helpline 0870 758 4000

Wiring diagram for Mains Powered Smoke & Heat Alarms

To mains power supply - e.g. lighting circuit or distribution board
Live
Neutral
Interconnect
Earth
To other alarms in the system (as required)

Alarm mounting base Round -140/160 Series Rectangular -150 Series
Alarm mounting base Round -140/160 Series Rectangular -150 Series

Use standard BS 6004 PVC cable typically 1.5mm² 6243Y three core and earth.

For 'R' models a fourth interconnect wire is required. Please ask for wiring diagrams.

Important

Interconnection is vital to ensure the alarm is heard throughout the property by all occupants.

WARNING
MIXING LIVE & NEUTRAL WILL BLOW / DAMAGE INTERCONNECTED ALARMS
N IC L

- Incorrectly wiring the Live and Neutral wires will result in irreparable circuit damage and the unit will have to be replaced

- The alarms must not be connected when the house wiring insulation is being tested with high voltages i.e. do not use an insulation tester on the alarms, as this will cause irreparable damage
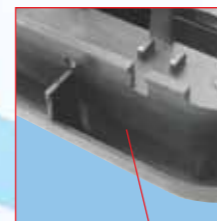
Innovative Design & Quality Features

Ei's unique large volume optical smoke chamber & sophisticated electronics have a proven track record of reliability and high efficiency detection. Longevity and resistance to false alarms as well as reliable protection from electromagnetic interference has also been proven over the last 15 years.

At 85dB(A) at 3 metres our alarms are loud. Unique encased horn assembly has the piezo disc securely held with silicone mastic to prevent creepage and premature horn failure. Additionally soldered contacts prevent failures due to corrosion and arcing associated with more commonly used pressure contacts.

Self monitoring and indicating LEDs & audible warning signals. Each alarm self tests every 40 seconds. Two separate LED indicators are used to indicate healthy mains supply, fault, battery fault, alarm status and low cell/battery warning.

Ultra high performance vanadium pentoxide lithium rechargeable cells are used on the 160 Series, 150 Series and RadioLINK bases. These cells offer the best back-up possible and are designed to outlast the alarms.
● A precision charging circuit ensures peak cell efficiency at all times
● Cells provide up to six months back-up even without mains power

● Alkaline battery in the 140 Series designed to last up to 4 years in standby

Smoke Alarms are sophisticated electronic devices. Protection from external contamination is vital to maintain the fire detecting sensitivity of the product and to minimise false alarms. A fine mesh insect screen reduces false alarms caused by insect contamination and fibres, whilst allowing free access of smoke to the sensor chamber. A dust cover is also provided for protection on site and prior to occupancy.
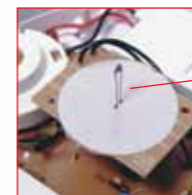
The hush button provides for false alarm control on all Easi-fit models. Also provides manual test function.

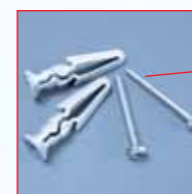Multiple cable entries and surface wiring knockouts.

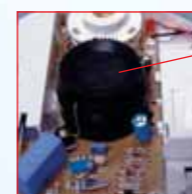Large, clearly marked wiring connections.

Heat alarms feature fixed temperature fast response thermistor sensor, ideal for protecting kitchens & garages.
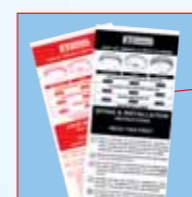
Precision fin design allows fast access of smoke to the sensor.

Multi purpose fixings supplied for use in either plasterboard, concrete or wood.

High performance, corrosion resistant ionisation chamber responds quickly to flaming fires and is proven in millions of applications. Exceptional reliability in a real fire situation.

Installer and user instructions.

THE FASTEST SIMPLEST INSTALLATION POSSIBLE…

easi-fit

Fitting an Easi-fit mains powered alarm really is this simple:

1 Screw the mounting plate supplied with the alarm to the ceiling during first fix. No separate enclosure is required.

2 Wire up terminals on the mounting plate and clip on the protective cover.

3 Slide the alarm into place. There's no need to wire up a separate lead and connector.

REMOVAL
The alarm is removed by releasing the tamper-resistant clip with a screwdriver and sliding it off. The protective cover ensures that the mains cables are never exposed.

All smoke alarms comply with:
BS 5446: Pt.1: 2000

All heat alarms comply with:
BS 5446: Pt.2: 2003

	RadioLINK Base	160 Series	150 Series	140 Series	Modifire RF System Control Devices	Modifire Hard wired System Control Devices
Ionisation Sensor		✔	✔	✔		
Optical Sensor		✔	✔	✔		
Heat Sensor		✔	✔	✔		
Mains Supply	✔	✔	✔	✔		
Lithium Rechargeable Cell Back-up	✔	✔	✔			
Alkaline Battery Back-up				✔		
Lithium Battery					✔	
Interconnectable	✔	✔	✔	✔		
85dB(A) @ 3m Sound Output		✔	✔	✔		
Easi-fit System		✔	✔	✔		
Test/Hush Feature		✔	✔	✔	✔	✔
Radio-Frequency Interconnect	✔				✔	
High Performance Ionisation Chamber		✔	✔	✔		
Large Volume Optical Chamber		✔	✔	✔		
Insect Screen on Optical Chamber		✔	✔	✔		
54-62 °C Thermistor Temperature Range		✔				
Fast Access Smoke Finning		✔				
LED Power Indicator		✔	✔	✔		
LED Auto Circuit Test Indicator		✔	✔			
LED Hush Mode Indicator		✔	✔	✔		
LED Alarm State Indicator	✔	✔	✔	✔		
LED Transmission/Reception Indicator	✔				✔	
LED House Coding Indicator	✔				✔	
Audible Fault Warning		✔	✔	✔		
Audible Low Battery Warning		✔	✔	✔		
Automatic Hush Mode Reset		✔	✔	✔	✔	✔
Connection with Battery Missing Prevented						✔
Non-Reversible Mains Connector Lead			✔			
Unit Activation Upon Connection	✔	✔	✔	✔		
Tamper-proof Rechargeable Cells	✔	✔	✔		✔	
Soldered Horn Contacts		✔	✔	✔		
Easi-see Easi-connect Wiring Terminals	✔	✔	✔		✔	
Mains Wiring Cable Cover	✔	✔			✔	
Multiple Cable Entries	✔	✔			✔	✔
Removable Mini Trunking Entry		✔				
Foam Sealing Gasket	✔	✔	✔	✔		
Anti-tamper Locking Catch	✔	✔	✔	✔		
Multiple Fixing Holes	✔	✔	✔	✔	✔	✔
Date Code Identification	✔	✔	✔	✔	✔	✔
BS Kitemarked		✔	✔	✔		
CE Marked	✔	✔	✔	✔	✔	✔
EMC Conformance	✔	✔	✔	✔		
BS & Building Reg. Grade D Compliance	✔	✔	✔	✔		
BS & Building Reg. Grade E Compliance	✔	✔	✔	✔		
Class II Double Insulated	✔	✔	✔	✔	✔	✔
UV Stabilised Moulding	✔	✔	✔	✔	✔	✔
Installer Instructions		✔	✔	✔		
User Instructions		✔	✔	✔		
Combined Installer/User Instructions	✔				✔	✔
Dust Cover Supplied		✔	✔	✔		
Distribution Board Label Supplied		✔	✔	✔		
Multi Purpose Fixings Included		✔	✔			
Typical Footprint Dimensions (mm)	150	150	125x100	140	90x90	90x90

THE COMPLETE SOLUTION TO THE NEW BS 5839: Pt.6: 2004 REQUIREMENTS

Interconnecting mains powered smoke alarms is essential to provide the earliest possible warning of a fire. Fire statistics show that the quicker occupants are alerted to a fire, the less risk of death or injury there is. Furthermore, property damage is also reduced.

But hard wired interconnection is expensive, time consuming and disruptive. A hard wired system is also difficult and expensive to reconfigure when circumstances (or standards) change.

RadioLINK is the solution.

With RadioLINK, mains powered smoke alarms are interconnected by wireless signals rather than cabling. It's so much simpler, more convenient - and easier to change or extend as and when required.

The use of radio interconnection in Grade D alarm systems means that it is now much easier to comply with the extended alarm coverage recommended in BS 5839: Pt.6: 2004. With no interconnect wiring required, the contractor and specifier can agree fixed costs - allowing a quicker, simpler and more cost effective solution to smoke and heat alarm installation.

Fire Risk Assessments - A Major Issue for Landlords in the Private & Public Sector

The new BS 5839 Pt.6: 2004 recommends that a fire risk assessment is conducted in all properties. The reality is that most landlords do not have the resources to undertake this hugely time-consuming and expensive operation. In view of this, when retrofitting smoke alarms into existing properties, serious consideration should be given to the suggestion that - in the absence of a fire risk assessment - it may be 'Best Practice' to specify a Grade D, Category LD2 system as recommended for new build properties:

- Hallways and landings - Optical smoke alarms
- Kitchen - Heat alarms
- Living Room - Smoke or Heat alarms depending on the circumstances

The Easiest Installation in Conversion Properties, Extensions & Loft Accommodation

If wiring to areas outside of the conversion or 'works' area is required in order to install the additional alarms cited by Building Regulations, RadioLINK can provide an easier way of achieving an interconnected alarm system.

RadioLINK in Apartments & HMOs

In circumstances where an expensive control panel system is not required, RadioLINK provides the cornerstone of a truly innovative, powerful and cost-effective communal system when used in conjunction with RadioLINK System Control Devices. (See pages 14 and 15 for more details)

The Benefits of RadioLINK

- Best Practice for single family dwellings, apartments and HMOs
- Easi-fit technology saves time and money on every installation
- Fixed cost installations
- Wire-free interconnection and zoning capability
- Fully upgradeable system - future proof
- Reliable interconnection
- Minimises risk of accidental mis-wiring
- No false alarms from normal electrical transients
- Range of optional system control devices
- RadioLINK uses tried, tested and proven radio transceiver technology
- Use with Ei160 and Ei140 Series alarms - already proven in millions of installations nationwide

Code	Description
Ei168	RadioLINK Interconnect Base
Ei428	RadioLINK Remote Relay
Ei411	Wireless Remote Control Switch
Ei407	Wireless Remote Manual Call Point
Ei410	Wireless Remote Control

The Ei168 RadioLINK Base Unit

At the heart of the RadioLINK system are the Ei168 base units, which are fully compatible with any Ei160 or Ei140 Series alarm. It is from here that radio signals are transmitted and received. An Ei168 base is required for all alarms in the system.

- Mains powered with rechargeable 10 year+ lithium cell back-up
- Radio transceiver 868.499 MHz
- Unique Easi-fit design with integral terminal block
- Simple and secure house coding system
- Interference free

RadioLINK SYSTEM CONTROL DEVICES
(As used in a Modifire RadioLINK system. See pages 14 and 15)

Ei428 Remote Relay Module

- Mains powered with rechargeable 10 year+ lithium cell back-up to ensure the relay operates even during a mains failure
- Interfaces with other systems, e.g. warden call and other signal devices
- 5 amp relay with volt free contacts for up to 240 V output
- Constant or Pulse operation selectable by installer

Ei411 Wireless Remote Control Switch

- Allows testing of the system by the user at ground level
- Allows easy identification of the location of the site of a fire or of a false alarm
- Allows silencing of nuisance alarms when used with 'R' model alarms (See page 14)
- No wiring required
- Neat appearance - same size as a two gang light switch
- Fitted with 10 year+ lithium battery

Ei407 Wireless Manual Call Point

- Allows manual testing of the system
- Allows manual alarm to warn other residents
- Same size as a standard manual call point
- No wiring required
- Fitted with 10 year+ lithium battery

Ei410 Wireless Remote Control - Hand Held

- All the same features and functions as the Ei411 (above) - but built into a small key fob for personal use
- Fitted with lithium button cell

Easy to fit

1 Wire in each Ei168 RadioLINK base to the mains electricity supply.

2 Slide either a 140 or 160 series alarm on to the Ei168 base which will automatically activate the rechargeable back-up cells, and then repeat this procedure for all the alarms in the system.

3 House code the system.

The 160 Series, Easi-fit mains powered smoke and heat alarms are our highest specification range, especially so when coupled to the RadioLINK system. Designed for the specifier, installer and end user demanding the very highest standards of safety, performance and reliability you'd expect from Europe's leading manufacturer of mains powered fire detection products. Almost all practical duty of care provisions are catered for. With no risk of casual back-up cell removal, the power supply is virtually guaranteed against any external threat to the energy supply. Risks of false alarms are minimised and installation costs are lower due to ease of installation and the all round quality of the outstanding 160 Series.

WHY RECHARGEABLE VANDIUM PENTOXIDE LITHIUM CELLS?

The 10 year+ technology used in the 160 Series provides the most effective and reliable back-up power available. Maintenance requirements are negligible. The cells used are the only rechargeable cells with a realistic ten year life expectancy confirmed by manufacturer Panasonic. Constantly 'topped up' by the mains, they out-perform lithium primary batteries, capacitors or rechargeable cells currently in use in other smoke alarms.

- Environmentally friendly - no special disposal requirements
- A precision charging circuit ensures peak efficiency at all times
- 6 month back-up even without mains power
- Cells supplied fully charged providing 6 months initial standby capacity before mains powering
- Proven 10 year+ life expectancy
- Cells are soldered for reliable long term connection
- Terminals are laser welded for reliability
- Wide temperature range -20°C to +60 °C
- No battery replacement requirement

FEATURES EASI-FIT DESIGN TECHNOLOGY

COMPREHENSIVE 5 YEAR GUARANTEE

RADIOLINK COMPATIBLE

Ei164 Heat — BS 5446: Pt.2: 2003

Ei166 Optical — BS 5446: Pt.1: 2000

Ei161 Ionisation — BS 5446: Pt.1: 2000

easi-fit

Ei166 Optical With Hush
- More responsive to slow smouldering fires
- Large volume high performance optical chamber with proven extended life capability
- Fine mesh insect resistant screen

Ei161 Ionisation With Hush
- Responds quickly to fast flaming fires
- Unique and proven long life ionisation smoke chamber

Ei164 Heat With Hush
- Ideal for protecting kitchens and garages and other areas prone to false alarms
- Fixed temperature fast response thermistor sensor, range 54° - 62°C
- BS 5446: Pt.2: 2003 Class A1

Surface Mount Kits & Relays

COLOUR CODED PACKAGING FOR EASY RECOGNITION

160 SERIES COMMON FEATURES & BENEFITS

Advanced suppression and calibration technology	: For reduced nuisance alarms and correct smoke sensitivity
10 year+ lithium cell back-up	: Reliable energy back-up, for the life of the alarm
Hush button on all products	: Control of false alarms
Separate mains and warning LEDs	: Easy identification of alarm status
Precision charging circuit	: Ensures peak cell performance
Low cell power warning	: Identifies loss of mains charging or cell failure
Interconnects with other Ei mains smoke and heat alarms	: Offers a complete residential alarm system
RadioLINK & Modifire system compatible	: The perfect solution to meeting BS 5839: Pt.6: 2004
Easi-fit mounting plate system	: Reduces installation time and effort
Large easily identifiable wiring connections	: Reduces risk of wiring errors
Multiple cable entries	: Provides wiring route options for the installer
Mini trunking removable access door	: Neat surface wiring option
Surface mount kit available	: For uneven ceilings and additional wiring options
5 amp relay mounting kit available	: 5 amp relay in a base for interfacing with remote devices
Automatic circuitry test every 40 seconds	: Confirms the alarm is always functional
Multi-purpose fixings	: For use on plasterboard, concrete or wood surfaces
Comprehensive 5 year guarantee	: Includes rechargeable cells

Code	Description
Ei166	Optical with Hush & Mounting Plate
Ei166R	Optical with Hush, Mounting Plate & Surface Mount Kit for use with Modifire System, Ei152 & MCP400, RadioLINK Ei411
Ei161	Ionisation with Hush & Mounting Plate
Ei161R	Ionisation with Hush, Mounting Plate & Surface Mount Kit for use with Modifire System, Ei152 & MCP400, RadioLINK Ei411
Ei164	Heat Alarm with Hush & Mounting Plate
Ei164R	Heat Alarm with Hush, Mounting Plate & Surface Mount Kit for use with Modifire System, Ei152 & MCP400, RadioLINK Ei411
Ei127	Surface Mount Kit
Ei128R	Surface Mount Kit with 5 amp Relay
Ei128RBU	Surface Mount Kit with 5 amp Relay & 10Yr+ Rechargeable Lithium Cells

140 Series - The Contractor's First Choice
For New Build & Owner Occupied Properties

150 Series - Local Authority & Housing
Association Replacement Range

MAINS POWERED ALARMS WITH ALKALINE BATTERY BACK-UP

Designed for applications where the budget is a key consideration and where maintenance is in the hands of the owner occupier or there is no requirement for lithium power cell back-up. The 140 Series provides an alkaline battery back-up instead of rechargeable cells. Further cost savings are possible through the innovative and totally unique Easi-fit technology, as there is no need to purchase additional wiring enclosures, mounting kits, leads or connectors. In a field where time is money, the fact that Easi-fit alarms are simpler and quicker to install ensures even greater savings. Now with Easi-fit fixing pack, suitable for use on plasterboard, concrete or wood surfaces.

Ei141
Ionisation — BS 5446: Pt.1: 2000

Ei146
Optical — BS 5446: Pt.1: 2000

Ei144
Heat — BS 5446: Pt.2: 2003

Ei146 Optical With Hush
- More responsive to slow smouldering fires
- Advanced optical chamber with proven extended life capability
- Fine mesh insect resistant screen
- Alkaline battery supplied already connected to reduce installation errors (does not draw power until alarm is fitted to the mounting plate)
- Hush button for false alarm control
- Interconnects with other Ei mains powered smoke and heat alarms
- Separate mains and warning LEDs
- Time and money saving Easi-fit design
- Protective dust cover supplied
- 5 year guarantee

Ei141 Ionisation With Hush
- Responds quickly to fast flaming fires
- Unique and proven long life ionisation smoke chamber
- Alkaline battery supplied already connected to reduce installation errors (does not draw power until alarm is fitted to the mounting plate)
- Hush button for false alarm control
- Interconnects with other Ei mains powered smoke and heat alarms
- Separate mains and warning LEDs
- Time and money saving Easi-fit design
- Protective dust cover supplied
- 5 year guarantee

RADIOLINK COMPATIBLE

Ei144 Heat With Hush
- Ideal for protecting kitchens and garages and other areas subject to false alarms
- Fixed temperature fast response thermistor sensor, range 54° - 62°C
- Alkaline battery supplied already connected to reduce installation errors (does not draw power until alarm is fitted to the mounting plate)
- Hush button for false alarm control
- Interconnects with other Ei mains powered smoke and heat alarms
- Separate mains and warning LEDs
- Time and money saving Easi-fit design
- Protective dust cover supplied
- 5 year guarantee
- BS 5446: Pt.2: 2003 Class A1

COMPREHENSIVE 5 YEAR GUARANTEE
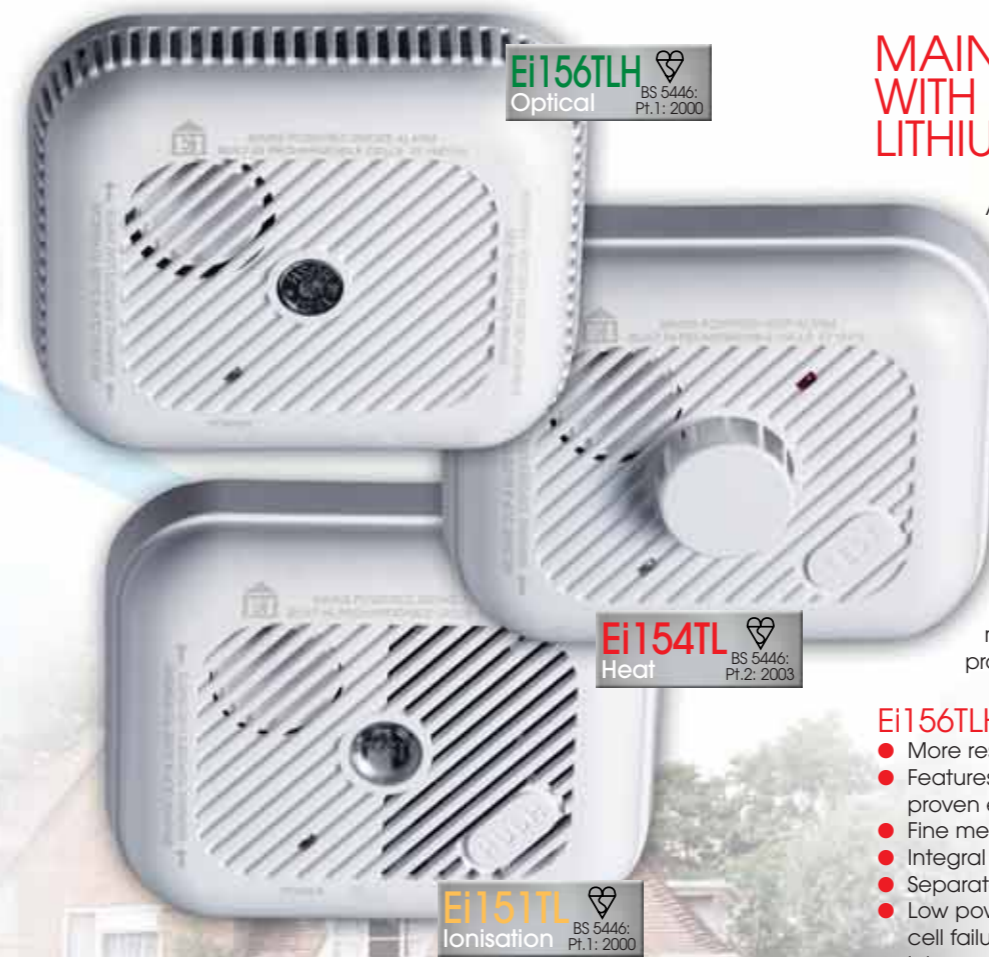
COLOUR CODED PACKAGING FOR EASY RECOGNITION

Surface Mount Kits & Relays
For 140 Series alarms see page 17

Code	Description
Ei146	Optical with Hush & Mounting Plate
Ei141	Ionisation with Hush & Mounting Plate
Ei144	Heat Alarm with Hush & Mounting Plate
Ei127	Surface Mount Kit
Ei128R	Surface Mount Kit with 5 amp Relay
Ei128RBU	Surface Mount Kit with 5 amp Relay and 10Yr+ Rechargeable Lithium Cells

easi-fit

Ei156TLH
Optical — BS 5446: Pt.1: 2000

Ei154TL
Heat — BS 5446: Pt.2: 2003

Ei151TL
Ionisation — BS 5446: Pt.1: 2000

MAINS POWERED ALARMS WITH 10 YEAR+ RECHARGEABLE LITHIUM CELL BACK-UP

Advanced detection technology coupled with superior 10 year+ rechargeable lithium cell back-up has made the 150 Series a market leader and the first choice for specifiers nationwide. The 150 Series' popularity and reliability over the last 15 years is proven by the fact that several million units have now been specified and installed by Councils and Housing Associations and are currently protecting households throughout the UK and other countries. Many of these alarms may now be entering the end of their useful life cycle and should be considered for replacement. New 150 Series product will fit the majority of existing installed bases and can therefore offer the most economical replacement programmes.

Ei156TLH Optical With Hush
- More responsive to slow smouldering fires
- Features the large, advanced Ei optical chamber with proven extended life capability
- Fine mesh insect resistant screen
- Integral Test & Hush button
- Separate mains and warning LEDs
- Low power cell warning in the event of mains or cell failure
- Interconnects with other Ei mains powered smoke and heat alarms
- Precision charging circuit ensures peak cell performance
- Proven 10 year+ rechargeable lithium cell back-up
- 5 year guarantee includes rechargeable cells

Ei151TL Ionisation With Hush
- Responds quickly to fast flaming fires
- Unique and proven long life Ei ionisation smoke chamber
- Easy to use Test and Hush buttons
- Separate mains and warning LEDs
- Low power cell warning in the event of mains or cell failure
- Interconnects with other Ei mains powered smoke and heat alarms
- Precision charging circuit ensures peak cell performance
- Proven 10 year+ rechargeable lithium cell back-up
- 5 year guarantee includes rechargeable cells

Ei154TL Heat Alarm
- Ideal for protecting kitchens and garages and other areas subject to false alarms
- Fixed temperature fast response thermistor sensor, range 54° - 62°C
- Easy to use Test button
- Separate mains and warning LEDs
- Low power cell warning in the event of mains or cell failure
- Interconnects with other Ei mains powered smoke and heat alarms
- Precision charging circuit ensures peak cell performance
- Proven 10 year+ rechargeable lithium cell back-up
- 5 year guarantee includes rechargeable cells
- BS 5446: Pt.2: 2003 Class A2

COLOUR CODED PACKAGING FOR EASY RECOGNITION

COMPREHENSIVE 5 YEAR GUARANTEE

Surface Mount Kits & Relays
For 150 Series alarms see page 17

Code	Description
Ei156TLH	Optical with Hush
Ei156TLR	Optical with Hush for use with Modifire System, Ei152 & MCP400
Ei151TL	Ionisation with Hush
Ei151TLR	Ionisation with Hush for use with Modifire System, Ei152 & MCP400
Ei154TL	Heat Alarm
Ei157	Surface Mount Kit
Ei157R	Surface Mount Kit with 6 Way Terminal Block
Ei158R	Surface Mount Kit with Relay

Modifire is a cost effective means of providing a fire alarm system for dwellings where additional control and warning devices are required. Modifire is ideal for HMOs, apartments and many small commercial and retail properties. Modifire is very flexible in fully hard wired versions or with RadioLINK, which is virtually wire free.

There are many options available to the specifier and installer when using Modifire. In properties where a simple system is required, the illustration below shows how this can be achieved using a Modifire RadioLINK system, either hard wired or RF.

Where there is a need for a more comprehensive system, just choose the particular control and/or signalling devices that you need, consult the adjacent Modifire Selection Guide and install the system that meets your requirements. If you need advice on a specific application, please contact our Customer Services Department on 0870 758 4000.

MODIFIRE - RadioLINK SYSTEM

The major benefit of this system is that there is no requirement to run cables between the alarms and control devices. This can save a significant amount of time, cost and disruption. The system requires the use of a mains powered Ei168 RadioLINK base for each of the 160 series alarms installed. The required control and/or signalling devices can then be added to suit the application. See the adjacent Modifire Selection Guide and refer to page 9.

MODIFIRE - HARD WIRED SYSTEM

At the heart of this system is the 160 series 'R' models (Ei161R, Ei164R, Ei166R). It is then a simple case of installing the control and/or signalling devices required for the specific property. The adjacent Modifire Selection Guide details the products required to achieve the level of control desired.

MODIFIRE SELECTION GUIDE

System Options	Modifire RadioLINK	Modifire Hard wired	Notes
Wire free interconnection	Ei168	N/A	Use an Ei168 base with every alarm in the system
Manual Call Point	Ei407	MCP400*	*Use Ei161R, Ei166R or Ei164R alarm to operate the MCP400
Alarm Locate Switch	Ei411*	Ei159	*Completely wire free
Wire free Remote Test, Locate & Hush Switch	Ei411	N/A	Use only Ei161R, Ei166R or Ei164R alarms for hush feature
Hard Wired Remote Test & Hush Switch	N/A	Ei152	For use with Ei161R, Ei166R,Ei164R alarms only
Relay	Ei428*	Ei128R/ Ei128RBU*	*Operates even in mains failure
Xenon Beacon	SAB300 SABV4	SAB300 SABV4	Requires relay
Magnetic Door Holder	MDH230	MDH230	Requires relay
Remote Sounder - External	YO3	YO3	Requires relay
Remote Sounder – Internal	Ei167	Ei167	Wire as smoke/heat alarms in the system

Modifire RadioLINK with a Wireless Manual Call Point & Remote Control Switch

Ei168 RadioLINK base with mains smoke alarm

Ei168 RadioLINK base with mains smoke alarm

RadioLINK

System can be hard wired if required

Wireless Manual Call Point

Wireless Remote Control Switch

## MODIFIRE IN APARTMENTS AND OTHER MULTI-STOREY PROPERTIES

The main problem with a fire alarm system that covers the whole property is false alarms causing inconvenience to the occupants and unnecessary call outs by the Fire Brigade. The common response by occupants is to disable the system.

A Modifire system is flexible enough to suit the individual requirements of a property and can minimise the false alarm problems.

The diagram below shows a block of apartments with each apartment having its own dedicated system and a separate system covering the escape routes. Should a false alarm occur in any of the apartments, it will not affect any of the other apartments. If a fire occurs in any of the apartments, the heat alarm inside the apartment (connected to the escape route system, but not the system in the apartments) will operate the system in the escape routes plus the heat alarm in each of the other apartments to give the vital early warning.

Local Authority and/or Local Fire Authority approval must be sought for Modifire HMO Systems.

Example of fire alarm system for multi-storey apartments & HMOs

Apartment 5	Apartment 6
Apartment 3	Apartment 4
Apartment 1	Apartment 2
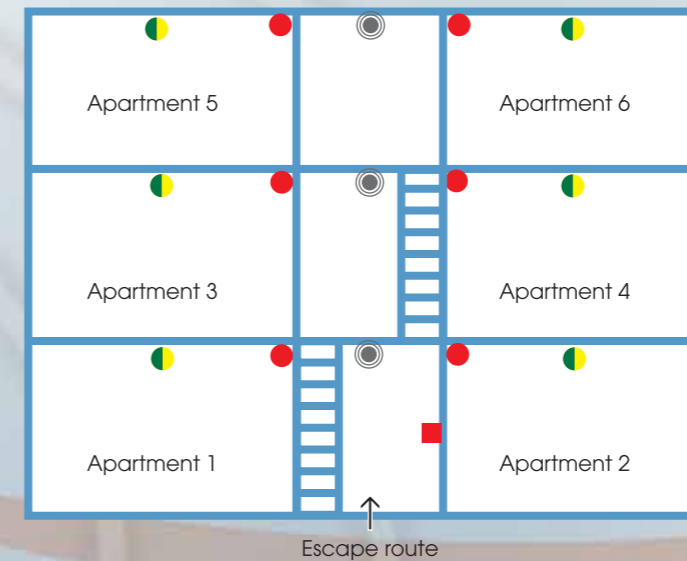
Escape route

Alarms in apartments
Stand alone mains powered smoke alarm system not connected to other apartments, or escape route

Escape route
Smoke alarms all interconnected

Heat alarm in hallway of each apartment – interconnected with smoke alarms in escape route only

Manual Call Point connected to system in escape route

(See page 9 for RadioLINK Modifire System Control Devices)

MCP400 Manual Call Point
● Supplied complete with surface mount box
● Testing key supplied
● Supplied with non-breakable operating element
● LPC approved, conforms to BS EN 54-11

Ei159 Smoke Alarm Locator Switch
● Allows the user to locate the precise source of an alarm in installations comprising three or more units
● Pressing the locator button stops all the alarms sounding except for the one that was the source of the alarm
● Ideal for larger premises and HMOs
● Auto reset within ten minutes
● Minimises disturbance to other residents
● Suitable for use with any of the 140, 150 and 160 Series alarms

Ei128R Relay Base - mains powered only
● For use with 140 and 160 Series alarms
● Surface Mount Kit or pattress
● 5 amp relay with volt free contacts
● Switchable for constant or pulse operation
● Allows signalling to door closers, sounders, strobes etc

Ei128RBU Relay Base - mains with rechargeable back-up
● For use with 140 and 160 Series alarms
● 5 Amp relay with volt free contacts
● Switchable for constant or pulse operation
● Features rechargeable lithium back-up cells with 10 yr+ life
● Ideal for signalling to devices not affected by a mains failure, such as Warden Call Systems

SAB300 Remote Strobe Xenon Beacon
● Mains powered
● For internal or external use
● Flash energy of 3 watts and flash frequency of .9Hz
● Clear or red lens options
● For operation via an Ei158R or Ei128R relay

SABV4 High Intensity Strobe Xenon Beacon
● Mains powered
● Ideal for use where standard strobes may not be sufficiently visible
● 5 joule high intensity flash
● Low current consumption
● Red or opal lens option
● For operation via an Ei158R or Ei128R relay

YO3 Remote Sounder
● Mains powered
● Use in areas where a warning is required - but a detector isn't
● For internal or external use
● Offers a range of switchable sound frequencies from 500Hz to 2900Hz
● Switchable sound outputs from 97-100dB(A)
● For operation via an Ei158R or Ei128R relay

MDH230 Magnetic Door Holder
● Mains powered
● Will automatically release a fire door in the event of a fire
● Test/Override button feature
● Holding capacity of 11.3kg
● Low current consumption
● For operation via an Ei158R or Ei128R relay

Ei152 Remote Test & Hush Switch
● Specifically designed for use with the Ei161R, Ei164R or Ei166R alarms
● Tests alarms or silences false alarms (only on 'R' models in the system) from an easily accessible low level switch position
● Ideal for the infirm or elderly
● Wall mounted

Ei167 Remote Sounder
● Interconnects with all mains operated smoke and heat alarms
● Ideal for use where an alarm but no detection is required
● Wall or ceiling mounted
● Features rechargeable lithium back-up cells with 10yr+ life
● Manual test button
● AC mains indicator light
● 85dB(A) alarm at 3m

Alarm Systems for the Deaf & Hearing Impaired

People with hearing difficulties require a different approach to fire protection, as a conventional alarm sounder will not be sufficient for their needs. Aico's range of alarms for the deaf and hearing impaired are the only units currently available from an experienced smoke alarm manufacturer. They are also available with RadioLINK for ease of installation.

System Features and Benefits of all models

- Mains powered control panel with rechargeable battery back-up
- High intensity integral strobe light
- Auxiliary socket for connection of additional optional strobe lights.
- Vibrating pad for placing under a pillow or mattress
- Supplied with plug-in or hard wired option
- Capability for interconnection of up to 12 alarms
- Test button on control panel for testing the system
- Connections are monitored to check integrity of system
- Alarm clock input facility
- Remote trigger option
- Pager output facility
- Compatible with RadioLINK system (Ei169RF, Ei176RF)
- Systems available for mains or LV operated smoke alarms

Systems Available

Ei169 - Supplied with a mounting pattress for Ei150 Series smoke or heat alarms. Smoke/Heat alarm not supplied.

Ei169/160 - Supplied with a mounting pattress for Ei160 Series smoke or heat alarms. Smoke/Heat alarm not supplied.

Ei169RF - Comprises control box with a RadioLINK transceiver, integral strobe, vibrating pad and cable for connections. Ideal for use with smoke and heat alarms using an Ei168 RadioLINK base. Other RadioLINK control devices can be used with this model (see page 9 for more information). RadioLINK base and smoke/heat alarm not supplied.

Ei175 - Supplied with low voltage ionisation smoke alarm.

Ei176 - Supplied with low voltage optical smoke alarm.

Ei176RF - Comprises control box with a RadioLINK transceiver, integral strobe, vibrating pad and cable for connections. Supplied with Ei3105RF RadioLINK optical smoke alarm.

Code	Description
Ei169	Mains Deaf Alarm Kit for 150 Series
Ei169/160	Mains Deaf Alarm Kit for 160 Series
Ei169RF	RadioLINK Mains Deaf Alarm Kit for 160 Series
Ei175	Complete with LV Ionisation Smoke Alarm
Ei176	Complete with LV Optical Smoke Alarm
Ei176RF	RadioLINK LV Optical Smoke Alarm Kit
Ei178	Additional Strobe
Ei174	Additional Vibration Pad
Ei3105RF	Additional RadioLINK LV Optical Smoke alarm

Low Voltage Smoke & Heat Alarms

In properties where there is a requirement to connect smoke and heat alarms to a low voltage security system, or Warden Call System, the Ei180 Series alarms can provide the ideal solution.

- Ionisation, optical and heat sensor types available
- Integral Test and Hush button
- Unique Easi-fit installation to save time and money
- Operates on a wide range of voltages 10VDC - 30VDC
- Supplied with Alkaline battery back-up
- Integral relay offering selectable continuous or pulse operation
- Smoke alarms Kitemarked to BS 5446: Pt.1: 2000
- Heat alarms Kitemarked to BS 5446: Pt.2: 2003 Class A2
- Suitable for use in BS 5839: Pt.6: 2004 Grade C applications with appropriate control equipment

In applications where budget is the key, the range of 12VDC smoke and heat alarms available from Aico are ideal for connection to domestic security systems.

- Ionisation, optical and heat sensor types available
- Integral relay
- Interconnect feature
- Smoke alarms Kitemarked to BS 5446: Pt.1: 2000
- Heat alarms Kitemarked to BS 5446: Pt.2: 2003 Class A2

Code	Description
Ei181	10-30VDC Ionisation Smoke Alarm
Ei184	10-30VDC Heat Alarm
Ei186	10-30VDC Optical Smoke Alarm
Ei100R	12VDC Ionisation Smoke Alarm
Ei103R	12VDC Heat Alarm
Ei105R	12VDC Optical Smoke Alarm

Surface Mount Kits & Relays for 140, 150 & 160 Series

Surface Mount Kits enable easier installation of the alarms. Relays provide the option of signalling to almost any other device. Relays can be used to signal to:

Warden Call Systems   Strobes
Sounders   Door Closers
Smoke Vents   Other Fire Alarm Systems

Relay Features

- 5 Amp coil with volt-free output contacts
- Contacts rated up to 240VAC
- Selectable for pulse or continuous operation
- Mains operated - all models
- Rechargeable cell back-up supply (Ei128RBU & Ei428), interfaces with other mains back-up protected systems, such as Warden Call
- Designed to be sited under a smoke/heat alarm (Ei158R, Ei128R, Ei128RBU)
- Optional cover available for Ei128R & Ei128RBU models to enable relay to be sited remotely, rather than under a smoke alarm

140 and 160 Series options

Ei127 -   Surface Mounting Kit for use on uneven ceilings or where complicated wiring is used.
Ei128R -   As Ei127 with integral relay.
Ei128RBU - As Ei128R with 10yr+ rechargeable cell back-up supply.
Ei128COV - Cover to enable Ei128R/Ei128RBU to be remotely sited.

RadioLINK

Ei428 -   Remote relay module for use with RadioLINK system only, see page 9.

150 Series options

Ei157 -   Surface Mount Kit for easier connection of complicated wiring and removes the need for a dry lining box.
Ei157R -   As above with 6 way terminal block (for use with Ei151TLR and Ei156TLR alarms.
Ei158R -   As Ei157 with integral relay.

Carbon Monoxide (CO) Alarms

NO ALARM - NO CHANCE!

Carbon Monoxide or (CO), is a particularly insidious gas. It is a killer. The naked eye can't see it, it does not smell, it has no taste. The need for a reliable mains powered alarm that will operate even in the event of a mains failure is obvious.

The Ei professional range includes fully featured product usually specified by Local Authorities & Landlords and less sophisticated product where duty of care is not so much of an issue and where the mains supply is more likely to be continuous and /or regular battery maintenance is known to be reliably carried out.

The Ei261EN is the top of the range product. Current sensor technology used by all manufacturers of CO alarms has a limited life cycle; the sensors cannot be relied upon after a period of 5/6 years. The Ei261EN offers a **replacement sensor feature**, thereby increasing the life cycle of the product to ten years.

Ei261EN Mains Powered CO Alarm with Rechargeable Lithium Cells and Replaceable CO Sensor

- 10 year+ rechargeable lithium cell back-up designed to outlast the alarm
- Replacement sensor module, minimum five year life
- Easy to use test/hush button
- Automatic self diagnostics
- Distinctive alarm sound, easily distinguishable from a smoke alarm
- Wall or ceiling mounting
- Pre alarm warning
- Interconnect feature - only for use with other Ei261EN / DEN CO Alarms
- Comprehensive Indicator lights: Mains on / Fault / Alarm on
- Optional digital display - Ei261DEN
- Quick CO gas test feature

We have a range of publications, each one dedicated and focussed for use by specifiers, installation contractors, end users and our distributors. These include advanced technical documents for those who wish to study the full implications of the British Standard and Building Regulations as applied to smoke alarms. We publish Frequently Asked Questions to provide on site solutions. Individual product specifications and individual range brochures are available, also specification documents that may be used by Local Authorities, Housing Associations, Architects and House Builders to ease the preparation work of tender documents for upcoming contracts.

- A Guide to Residential Fire Detection
- Smoke, Heat & RF Frequently Asked Questions
- RadioLINK Brochure
- RadioLINK CD
- CO Brochure
- Technical Specifications
- Installation and Maintenance Manual for Smoke, Heat & CO Alarms
- Tenant User Cards

CARBON MONOXIDE (CO) PRODUCT SPECIFICATIONS

Product Code	Ei261DEN	Ei261EN	Ei225EN	Ei205EN
Mains Supply	✔	✔	✔	
Lithium Rechargeable Cells	✔	✔		
Powered by 3 x AA Alkaline Batteries				✔
Electrochemical Cell CO Sensor Element	✔	✔	✔	✔
85dB(A) @ 3m Sound Output	✔	✔	✔	✔
Easi-fit System	✔	✔		
LED Power Indicator	✔	✔	✔	✔
LED Alarm & CO Level Indicator	✔	✔	✔	✔
Digital LCD CO (ppm) Display	✔			
CO Level Memory Feature	✔	✔		✔
LED Fault Indicator	✔	✔	✔	✔
Audible Fault Warning	✔	✔	✔	✔
Audible Low Battery Warning	✔	✔		
Test/Hush Button	✔	✔	✔	✔
Automatic Reset After Alarm/Test	✔	✔	✔	✔
Interconnection Capability	✔	✔		
Replaceable Sensor Module	✔	✔		
Quick CO Gas Test Feature	✔	✔	✔	✔
Pre-Alarm For Low CO Levels	✔	✔	✔	✔
High Level of Gas Type Selectivity	✔	✔	✔	✔
Unit Activation Upon Connection	✔	✔	✔	✔
Soldered Horn Contacts	✔	✔	✔	✔
Tamper Resistant Cover	✔	✔	✔	✔
Tamper-proof Cells	✔	✔		
Locking Screw Hole	✔	✔		
Easi-see Easi-connect Wiring Terminals	✔	✔		
Mains Wiring Cable Cover	✔	✔	✔	
Multiple Cable Entries	✔	✔	✔	
Foam Sealing Gasket	✔	✔		
Anti-tamper Locking Catch	✔	✔		
Multiple Fixing Holes	✔	✔		
Date Code Identification	✔	✔	✔	✔
BS Kitemarked BS EN 50291	✔	✔	✔	✔
CE Marked	✔	✔	✔	✔
EMC Conformance	✔	✔	✔	✔
Class II Double Insulated	✔	✔	✔	
UV Stabilised Moulding	✔	✔	✔	✔
Combined Installer/User Instructions	✔	✔	✔	✔
Fixings Included	✔	✔	✔	✔
Typical Footprint Dimensions (mm)	155 x 125	155 x 125	135 x 105	135 x 105

EASY TO REPLACE SENSOR MODULE

RECHARGEABLE LITHIUM CELLS

BS EN 50291: 2001

Contact 0870 758 4000
For your literature requirements or visit our website: www.aico.co.uk