

## LOW VOLTAGE PANEL SMOKE & HEAT ALARMS



IONISATION	HEAT	OPTICAL
ALKALINE 9 VOLT BATTERY BACK-UP		
<b>Ei181</b>	<b>Ei184</b>	<b>Ei186</b>

## INSTRUCTIONS

Contains vital information on unit operation and installation. Read and retain carefully. If you are just installing this unit, this leaflet **MUST** be given to the householder.

LEAVE WITH USER

**READ THIS FIRST**

- IDEALLY INSTALL IN THE CENTRE OF CEILING AT LEAST 300mm (1ft) FROM LIGHT FITTINGS. KEEP IONISATION ALARMS AWAY FROM KITCHENS TO PREVENT NUISANCE ALARMS. INTERCONNECT ALL ALARMS.
- REMOVE UNIT FROM MOUNTING PLATE BY RELEASING CATCH AS SHOWN IN FIG 1a.
- CHECK BATTERY IS CONNECTED TO SNAP (SEE FIG 1b). BATTERY WILL NOT POWER THE UNIT UNTIL IT IS SNAPPED ONTO THE MOUNTING PLATE.
- ENSURE THE PANEL IS CORRECTLY CONNECTED TO ALL TERMINALS OTHERWISE UNITS WILL NOT OPERATE CORRECTLY. CHECK GREEN PANEL POWER LIGHT IS LIT ON MOUNTING PLATE.
- DO NOT FIT ACTUAL ALARM HEAD UNTIL ALL BUILDING WORK IS COMPLETED TO AVOID CONTAMINATION. AFTER CHECKING OPERATION, COVER SMOKE ALARM WITH DUST COVER UNTIL REQUIRED FOR USE.

Continued Page 2

# READ THIS FIRST

## CHECK OPERATION OF SYSTEM

- ✓ TEST BUTTONS OPERATE ON ALL ALARMS.
- ✓ ALL INTERCONNECTED ALARMS OPERATE WHEN EACH TEST BUTTON IS PRESSED FOR 10 SECONDS.
- ✓ IF THE UNIT BEEPS EVERY 40 SECONDS FOR OVER 20 MINUTES THE BATTERY IS PROBABLY DEPLETED. REMOVE UNIT FROM CEILING (SEE FIG 1) AND REPLACE BATTERY.
- ✗ DO NOT ATTEMPT TO OPEN THE ALARM AS IT IS PERMANENTLY SEALED FOR SAFETY.
- ? IF A NUISANCE ALARM OCCURS PRESS THE TEST/HUSH BUTTON TO SILENCE THE ALARM FOR 10 MINUTES.

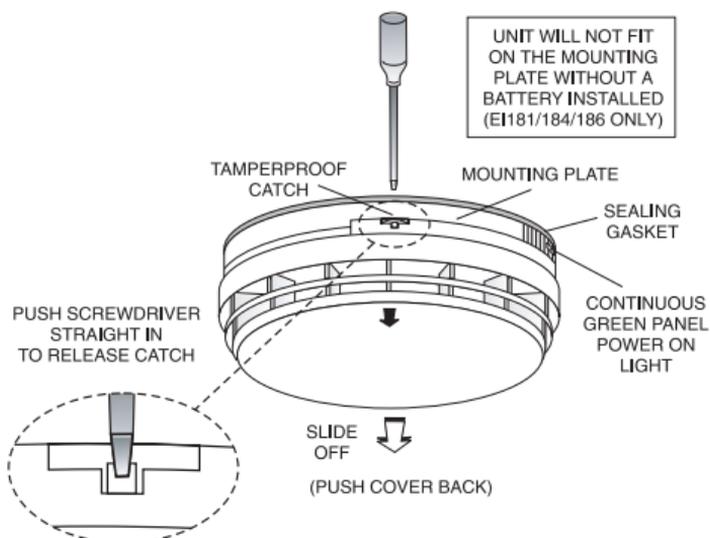


Figure 1a

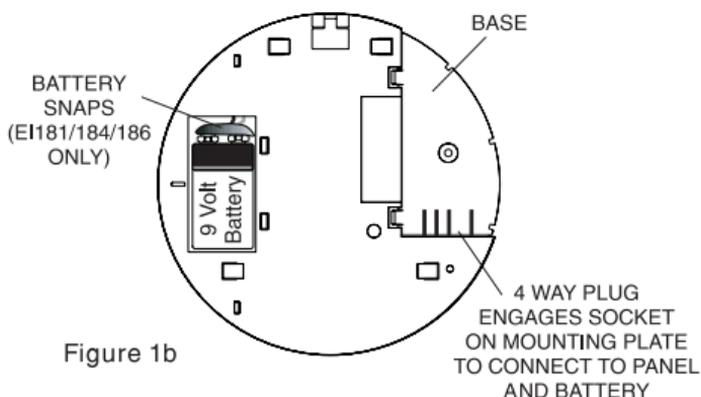


Figure 1b

# LOCATING ALARMS

## SMOKE ALARMS

Sufficient smoke must enter the Smoke Alarm before it will respond. The Smoke Alarm needs to be within 7.5 metres (25 ft) of the fire to respond quickly. It also needs to be in a position where its alarm can be heard throughout your home, so it can wake the occupants in time for all to escape. A single Smoke Alarm will give some protection if it is properly installed, but most homes will require two or more to ensure that a reliable early warning is given. For maximum protection you should put individual Smoke Alarms in all the rooms where fire is most likely to break out, (apart from kitchens, bathrooms etc. see Locations to Avoid).

A Smoke Alarm should be located between the sleeping area and the most likely sources of fire (living room or kitchen for example). It should not be more than 7.5 metres (25 ft) from the door to any room where a fire might start on the escape route from the house.

**Important:** These Smoke/Heat Alarms are designed for a single occupancy in a residential type environment.

A Smoke Alarm should be sited within 3m of bedroom doors for improved audibility.

## HEAT ALARMS

The Heat Alarm gives a fire warning when the temperature at the unit reaches 58°C. It is ideal for kitchens, garages, boiler houses and other areas where there are normally high levels of fumes, smoke or dust i.e. places where Smoke Alarms cannot be installed without the risk of excessive nuisance alarms.

A Heat Alarm should only be used in a room adjoining an escape route, in conjunction with Smoke Alarms on the escape routes.

All the Heat Alarms and Smoke Alarms should be interconnected to ensure the early warning will be heard, particularly by somebody sleeping. A properly designed early warning fire system ensures the alarm is given before the escape routes become blocked with smoke. Therefore, there must be Smoke Alarms along the escape routes as Heat Alarms would not give sufficient warning. However, a fire in a closed room (e.g. kitchen) adjoining the escape route, can eventually cause the corridor to become smoke-logged due to smoke leaking out from around the door before adequate warning can be given by detectors in the corridor. (Smoke leaking out from a room is often cool and slow moving so it can take a long time to rise to the ceiling, and travel to a detector which could be some distance away). A Heat Alarm in the closed room will give early warning of fire in that room and help overcome this problem.

## RECOMMENDED LOCATIONS

Figure 2 illustrates where Smoke Alarms and Heat Alarms should be located in a typical two storey house. Note the spacings in "Recommended Protection" which help ensure the early detection of fire and that the warning will be heard.

Locate Heat Alarms in rooms adjoining or on escape routes - kitchens, garages, boiler houses etc. where Smoke Alarms are unsuitable. Install within 5.3m (17 feet) of potential sources of fire.

### Recommended Protection

See Figures 2 & 3

**Minimum protection**

■ Smoke Alarms located on:-

- each storey
- every 7.5 metres (25ft) of hallways and escape routes
- Within 3m (10ft) of all bedroom doors.

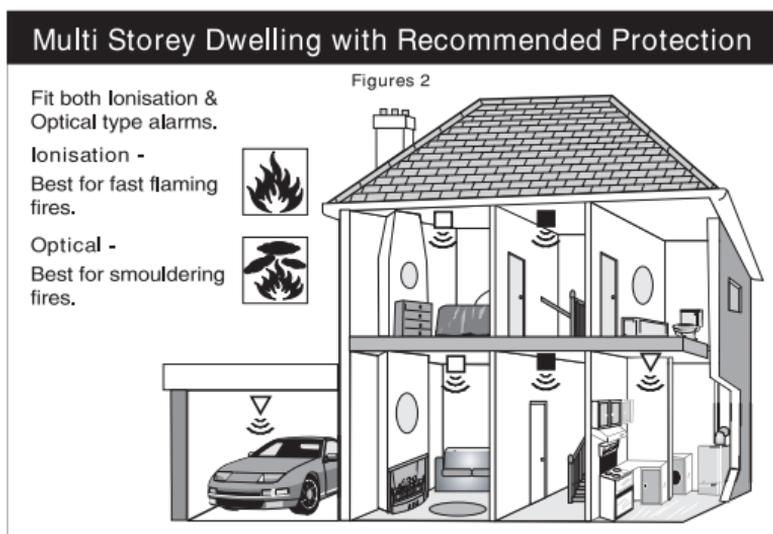
- Interconnect all Alarms

**Maximum protection**

☐ Smoke Alarms located as above plus:-

- All rooms (except bathrooms, shower rooms & kitchens)

▽ Heat Alarms located in Kitchens, garages, boiler rooms etc. Within 5.3m (17ft) of potential fire sources.



### Single Storey Dwelling

If the Home is on one level (a bungalow or mobile home for example) you should put the first Smoke Alarm in a corridor or hallway between the sleeping and living areas. Place it as near to the living area as possible, but make sure you can hear it loudly enough to wake a person in the bedrooms. (for example, see figure 3).

If the bungalow is very large and the corridor or hallway is more than say 15 metres (50 ft) long, one Smoke Alarm will not be sufficient. This is because no matter where it is located it will be more than 7.5 metres from potential fires.

In houses with more than one sleeping area, Smoke Alarms should be placed between each sleeping area and the living area.

### Single Storey Dwelling with Recommended Protection

Figure 3



### Multi Storey Dwellings

If the dwelling has more than one storey it must have an interconnected alarm on each level for minimum protection.

### Maximum Protection

For maximum protection you should put individual Smoke Alarms in all the rooms where fire is most likely to break out (apart from the locations to avoid, mentioned below). Ensure that they are all interconnected. The living room is the most likely place for a fire to start at night, followed by the kitchen and then the dining room. You should also consider putting Smoke Alarms in any bedrooms where fires might occur, for instance, where there is an electrical appliance such as an electric blanket or heater, or where the occupant is a smoker. You could also consider putting Smoke Alarms in any rooms where the occupant is unable to respond very well to a fire starting in the room, such as an elderly or sick person or a very young child.

Fire Authorities (including the Home Office, UK) recommend that both **Optical** and **Ionisation Smoke Alarms** should be fitted for the fastest response to all types of fires. An Optical Alarm should be located downstairs to detect slow smouldering fires (e.g. from a cigarette burning in a couch or bedding, overheated PVC wiring etc). An Ionisation Alarm should be located upstairs to detect fast flaming fires (e.g. paper burning in a container or a grease fire in the kitchen) which could rapidly block the main escape route.

### Checking you can hear the Smoke & Heat Alarms

With the Alarm sounding in its intended location, check you are able to hear it in each bedroom with the door closed, above the sound of the radio. The radio should be set to a reasonably loud conversation level. If you can't hear it over your radio the chances are that it wouldn't wake a person.

If a Smoke Alarm is too far away for it to wake a person, it is best to interconnect to another Smoke Alarm or Heat Alarm near the bedroom, so when one alarm senses fire, all interconnected alarms respond (see below for further details).

## LOCATIONS TO AVOID

Don't place **Smoke Alarms** in any of the following areas:

- **Bathrooms, kitchens, shower rooms, garages** or other rooms where the smoke alarm may be triggered by steam, condensation, normal smoke or fumes. Keep at least 6 metres (20 feet) away from sources of smoke.

Don't place **Heat Alarms** in any of the following areas:

- **Bathrooms, shower rooms** or other room where the unit may be triggered by steam or condensation.

Don't place **Smoke** or **Heat Alarms** in any of the following areas:

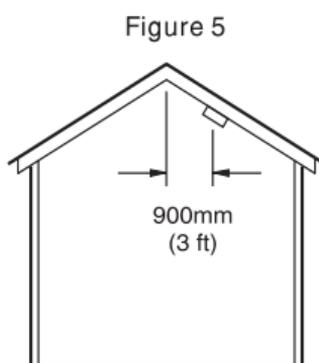
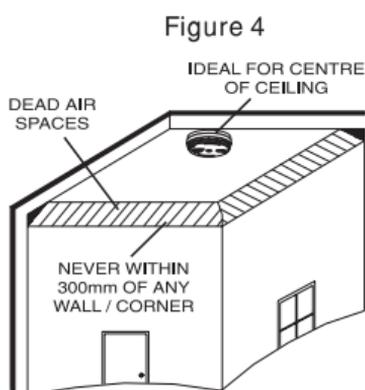
- Places where the normal temperature can exceed 40°C (104°F) or be below 4°C (39°F) e.g. attics, furnace rooms etc. directly above **ovens** or **kettles**, as the heat/steam could cause nuisance alarms.
- Near a **decorative object, door, light fitting, window moulding** etc., that may prevent smoke or heat from entering the Alarm.
- Surfaces that are normally **warmer** or **colder** than the rest of the room (for example attic hatches, uninsulated exterior walls etc). Temperature differences might stop smoke or heat from reaching the unit.
- Next to or directly above **heaters** or **air conditioning vents, windows, wall vents** etc. that can change the direction of airflow.
- In very high or **awkward areas** (eg. over stairwells) where it may be difficult to reach the alarm (for testing, hushing or battery replacement).
- Locate away from very **dusty** or **dirty areas** as dust build-up in the chamber can impair performance. It can also block the insect screen mesh and prevent smoke from entering the smoke detector chamber.
- Locate the unit at least 1 metre (3 feet) from **dimmer controlled lights and wiring** - some dimmers can cause interference.
- Locate unit at least 1.5m (5 feet) and route wiring at least 1m (3 feet) away from **fluorescent light fittings** as electrical "noise" and/or flickering may affect the unit.
- Do not locate in **insect infested areas**. Small insects getting into the smoke detector chamber can cause intermittent alarms. Insects and contamination on the Heat Alarm sensor can increase its response time.

## POSITIONING SMOKE/HEAT ALARMS

The locations must comply with applicable building regulations.

Hot smoke rises and spreads out, so a central ceiling position is the preferred location. The air is “dead” and does not move in corners, therefore Smoke & Heat Alarms must be mounted away from corners. Place the unit at least 300mm (12 inches) from any light fitting or decorative object which might obstruct smoke / heat entering the Alarm. Keep at least 300mm (12”) away from walls. See figure 4. (Smoke Alarms should be located directly on the ceiling or up to 570mm below it. Heat Alarms should be located directly on the ceiling or up to 90mm below it).

Wall mounting is not recommended for these Alarms.



### Sloping Ceiling

In areas with sloping or peaked ceilings install your Smoke/Heat Alarm 90mm (3 feet) from the highest point measured horizontally (see figure 5), because “dead air” at the apex may prevent smoke from reaching the unit.

## INTERCONNECTING SMOKE/HEAT ALARMS

When a fire is sensed the alarm must be given throughout the house. Up to twenty (20) Smoke Alarms (models Ei181, & Ei186 only) and Heat Alarms (model Ei184) can be interconnected so that when one senses fire all alarm.

**Caution: Do not interconnect to any other type of alarm.** The unit initiating the alarm can be identified by the red LED on the cover flashing every second. Figure 6 shows the interconnect wiring.

**Note:** It is only necessary to wire one relay to the control panel. If any alarm senses fire this relay will change state due to the signal on the interconnect line.

These Alarms should be interconnected only within the confines of a single family living unit. If they are interconnected between different units there may be excessive nuisance alarms. Everybody may not be aware that they are being tested or that it is a nuisance alarm caused by cooking etc. When one unit alarms all relays will switch.

Figure 6

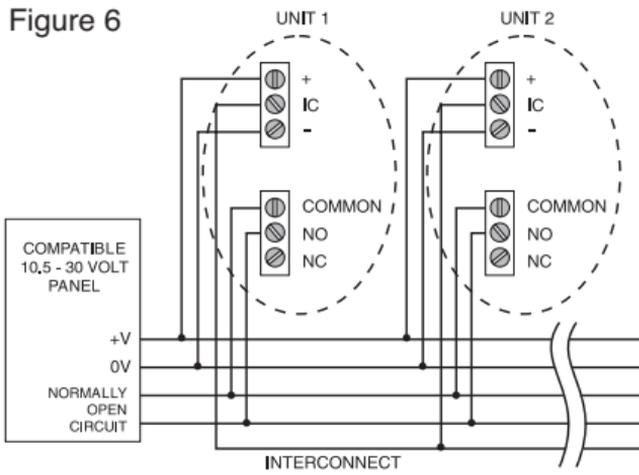
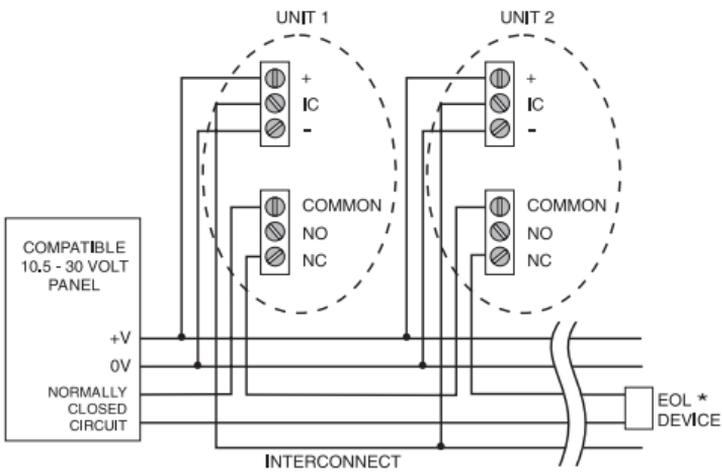


Figure 6a Circuit for Normally Open Relay Contacts



\* EOL - END OF LINE DEVICE, SPECIFIED BY PANEL

Figure 6b Circuit for Normally Closed Relay Contacts

Systems using more than 3 or 4 alarms must be very carefully planned to ensure nuisance alarms are not excessive, e.g. from cooking or weekly testing.

Smoke Alarm Locator Switch (Ei159) should be incorporated into the system and be readily accessible to all occupants so that the source of an alarm can be quickly identified. (see Accessory section).

All Alarms must be cleaned and maintained regularly.

A competent person must be on call to quickly remove any faulty alarms (i.e. units with red light flashing), which are causing all alarms to sound.

## INSTALLING SMOKE/HEAT ALARMS

The Alarm is designed to be permanently mounted, using its own built-in terminal blocks to connect it to the panel. The mounting plate can be screwed directly to the ceiling after connecting the wires.

**IMPORTANT PRECAUTION: Do not install the actual alarm head itself in new or renovated buildings until all work is completed (including floor coverings) and the building has been fully cleaned. The wiring can be installed when appropriate. (Excessive dust and debris from building work can contaminate the smoke chamber or heat sensor and cause problems, it will also invalidate the guarantee). If it must be installed,**

**cover it completely, particularly around the edges, with a dust cover (eg. with the elasticated cover supplied or a plastic bag), until all cleaning is finished.**

**Warning:** Wiring should only be installed by an Electrician in accordance with current IEE wiring regulations for electrical installation. The installation must also be in accordance with the control panel instructions and the instructions in this leaflet.

**Warning:** The mains circuit used to power the control panel must be a 24 hour voltage circuit and be wired on a separate circuit (one with no other lights or appliances) to ensure maximum reliability of the supply.

**Warning:** The Alarms must be connected to a panel that supplies a permanent voltage that cannot be switched off.

Warning: For safety reasons the voltage supply from the control panel must not be greater than 30V (peak or d.c.) and must be either independent of the supply mains or isolated from it by double or reinforced insulations.

**Warning:** If the control panel is not provided with an ALL-POLE MAINS SWITCH (with a contact specification of at least 3mm in each pole), then the electrical installation of the building shall incorporate an ALL-POLE MAINS SWITCH, (with a contact separation of at least 3mm in each pole).

## **Installation**

Select a location complying with the above advice.

1. Remove the mounting plate from the Smoke/Heat Alarm by releasing the tamper-proof catch with a small screwdriver as shown in figure 1a and sliding the alarm from the plate.

2. Lift the foam flap covering the circuit on the mounting plate. If necessary move the jumpers on S1 and/or S2 (see figure 7) by carefully lifting them and placing them over the required pins.

3. If surface wiring the unit remove the required breakaways. Low voltage signal cable is satisfactory (e.g. wire 0.22mm<sup>2</sup>) provided the resistance between the units and the panel is less than 20 ohms.

All wiring must comply with local codes. Connect the wires to the terminals as shown in the wiring diagram (figure 6). The gasket flap can be tucked behind the terminals while this is being done. Place gasket flap back over circuit board and terminals.

4. Carefully align the mounting plate and screw into place. With recessed wiring, ensure the rear gasket seals around the edge of the hole in the ceiling. This is to prevent air draughts affecting the smoke / heat entering the alarm. If the orifice is too large it should be sealed with silicone rubber or equivalent.

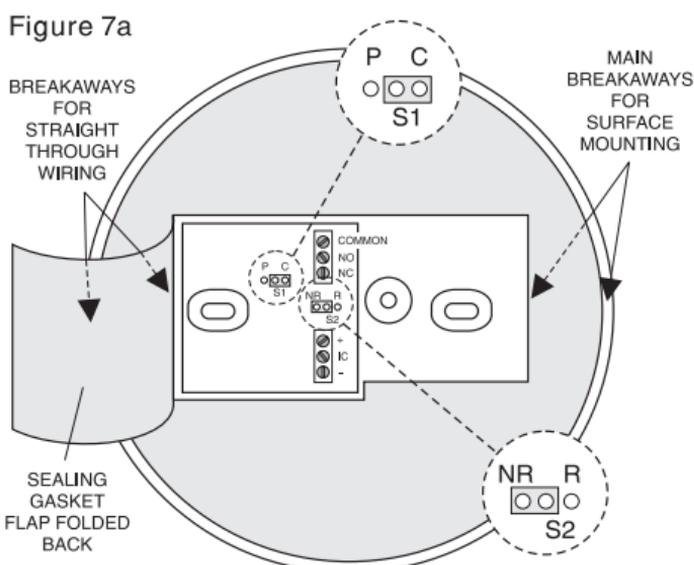
Check the battery is connected in the back of the alarm.

Carefully line up the unit on the base and slide on.

Press the test/hush button for 10 seconds. The horn should sound.

7. Connect the panel power to the alarm circuit. The green light on the mounting plate should turn on.

Check the operation of the Alarm as outlined in the next section.



- |    |             |   |
|----|-------------|---|
| S1 | POSITION C  | RELAY ON CONTINUOUSLY WHEN IN ALARM (AS SUPPLIED)         |
|    | POSITION P  | RELAY PULSED FOR 5 SECONDS WHEN UNIT ALARMS               |
| S2 | POSITION NR | NO RESISTANCE IN SERIES WITH RELAY CONTACTS (AS SUPPLIED) |
|    | POSITION R  | RESISTORS CONNECTED TO CONTACTS AS SHOWN BELOW            |

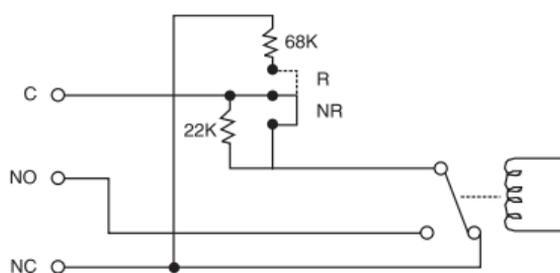


Figure 7b

## CHECKING AND MOUNTING YOUR ALARMS

### INSPECTION & TESTING PROCEDURE

After installation, after re-occupation following a holiday, and weekly, check **all** your Alarms as follows:

Check the green light is illuminated on the mounting plate. This shows the panel is supplying power.

Press the **test button** for up to 10 seconds to ensure the sensor chamber, electronics and sounder are working. A red light on the cover will flash while horn is sounding. The relay contacts change over when the horn sounds with the Ei186 units. They change over 6 seconds after the horn sounds with the Ei181 & Ei184 units. The alarm will stop when the button is released. Pressing the test button simulates the effect of smoke or heat during a real fire and is the best way to ensure the Alarm is operating correctly.

**WARNING: DO NOT TEST WITH FLAME.**

This can set fire to the Alarm and damage the house.

We do not recommend testing with smoke or heat as the results can be misleading unless special apparatus is used.

Check for any sign of contamination such as cobwebs or dust and clean the alarm as described below if necessary.

### **Interconnected alarms**

Test the first unit by pressing the button. All the detectors should alarm within about 5 seconds of the first horn sounding and the red light on the first unit only will flash once a second. The relay contacts should change over within 6 seconds after the horns sound. Check all the other units similarly. (**Note:** Ionisation and Heat alarms signal to other interconnected alarms, about 4 seconds after their own horn sounds. Optical alarms signal within about a second).

### **Checking Battery Back-up**

The Alarm automatically monitors the battery every 40 seconds to ensure that it is satisfactory. If it is depleted it will give a short beep every 40 seconds.

Before replacing the battery, check that the beeps are not due to one of the following:

(i) Battery snaps not connected properly.

(ii) On the **Optical Smoke Alarms** only (Ei186) if the unit beeps and the red light does not flash at the same time it indicates a problem with the smoke chamber – see Cleaning the Smoke Alarm section below:

If the beeps have continued for over 20 minutes (and the other causes of beeps have been ruled out – see below) the battery must be replaced.

(iii) Switch off the panel voltage supply and remove the unit as shown in fig 1a. **CAUTION:** Do not attempt to remove the Alarm without first releasing the tamper clip. Remove depleted battery and replace with one of the specified 9V alkaline batteries. The alarm cannot be replaced on the mounting plate unless a battery is installed. After replacing the battery, slide on to the mounting plate and then press the test button and ensure horn sounds loudly before you turn on the panel supply. **Note:** Only use the specified Alkaline batteries shown on the base label (Duracell MN1604, Eveready 522 or Energizer 6LR61). We recommend that the “use by date” on the battery should still have at least 2 years to go. Older batteries will give beeps prematurely.

We recommend that the battery is replaced each year for optimum performance.

**Please note:** The ionisation and heat alarms (Ei181 & Ei184) give two short beeps about a second apart at the end of the hush period (i.e. about 10 minutes after test/hush button has been pressed). These two beeps should not be confused with low battery beeps.

## Manual Testing

We recommend that the functioning of the battery back-up is checked after installation and then at least yearly as follows:-

Turn off (or disconnect) the power at the panel (green light on mounting plate should be off) press the test button and ensure the horn sounds loudly for 10 seconds. (This checks the battery back-up models Ei181, Ei184 and Ei186 only).

**Note:** A good battery can supply the unit for over a year in standby (or 5 hours in alarm) without panel power.

In standby, with panel power, the battery can operate for up to 4 years before the low battery beeps start – these will normally last for over 30 days before the battery is fully depleted.

## CLEANING YOUR ALARM

Clean your Alarm regularly, particularly in dusty areas. Use the narrow nozzle attachment of your vacuum cleaner to remove dust, insects and cobwebs from the sides and cover slots where the smoke or heat enters. To clean the cover, wipe with a damp cloth. Dry cover thoroughly with a lint free cloth.

### **WARNING: Do not paint your Alarm.**

Other than the cleaning described above, no other customer servicing of this product is required. Repairs, when needed, must be performed by the manufacturer.

All Alarms are prone to dust and insect ingress which can cause false alarms or failure to alarm.

The latest design, materials and manufacturing techniques have been used in the construction of our Alarms to minimize the effects of contamination. However it is impossible to completely eliminate the effect of dust and insect contamination, and therefore, to prolong the life of the Alarm you must ensure that it is kept clean so that excess dust does not build up. Any insects or cobwebs in the vicinity of the Alarm should be promptly removed.

In certain circumstances even with regular cleaning, contamination can build up in the smoke sensing chamber causing the alarm to sound or fail. If this happens the alarm must be returned to us for servicing or replacement. Contamination is beyond our control, it is totally unpredictable and is considered normal wear and tear. For this reason, contamination is not covered by the guarantee and a charge is made for servicing such units.

If you experience persistent false alarms, in particular locations, due to contamination of the smoke chamber you could consider replacing Optical Smoke Alarms (Ei186) with Ionisation Smoke Alarms (Ei181). Ionisation type alarms are less susceptible to dust than Optical type alarms.

## NUISANCE ALARMS

If there is a nuisance alarm simply press the test/hush button on the Alarm to silence the unit for 10 minutes.

If, when the alarm goes off, there is no sign of smoke, heat or noise to indicate that there is a fire, you should get your family into a safe place, before you start investigating.

Check the house carefully in case there is a small fire smouldering somewhere.

Check whether there is some source of smoke or fumes, for example cooking fumes being drawn past the Smoke Alarm by an extractor.

If there are frequent nuisance/false alarms it may be necessary to re-locate the device away from the source of the fumes. If for some reason the alarm continues to sound without smoke or heat being present (due to insect infestation or contamination build-up for example) the units can be silenced by disconnecting the panel power and removing the unit (see figure 1). If cleaning the Alarm does not correct the problem it can be returned to the manufacturer for repair or replacement (see Getting Your Alarm Serviced below).

### Hush Feature

All the Smoke / Heat Alarms have a combined Test/Hush Button to help you control nuisance false alarms.

1. To cancel a false alarm, press the Test/Hush Button located on the cover. The Alarm will automatically switch to a reduced sensitivity condition (very large levels of smoke from a nearby fire will override the Hush on the smoke alarms). This condition allows unwanted alarms to be silenced for a period of approximately 10 minutes.

**The unit will flash the red light every 10 seconds (instead of the normal 40 seconds) to indicate the sensitivity is reduced. At the end of the hush period the Ionisation Smoke Alarm (Ei181) and the Heat Alarms (Ei184) will give two short beeps. The Optical Smoke Alarm (Ei186) does not give these two beeps.**

On interconnected Alarms, pressing the Test/Hush Button on the one sensing smoke (i.e. the one with the red light flashing every second) will silence all alarms. Pressing the Hush Button on any other Alarm will not cancel the alarm.

2. The unit will reset to normal sensitivity at the end of the silenced period. If additional silenced time is required, simply push the Test/Hush Button again.

## IMPORTANT SAFE GUARDS

- When using household protective devices, basic safety precautions should always be followed, including those listed below:
- Please read all instructions.
- Rehearse emergency escape plans so everyone at home knows what to do in case the alarm sounds. Further information can be obtained from the Home Office Publication entitled "Smoke Detectors in the Home" (FB2) or from your local fire prevention officer.

- **NOTE:** Constant exposure to high or freezing temperatures or high humidity may reduce the life of the battery.
- To maintain sensitivity to smoke, do not paint or cover smoke /heat alarms in any manner; do not permit any accumulation of cobwebs, dust or grease.
- If a unit has been damaged in any way or does not function properly,do not attempt a repair. Return Alarm (see - Getting your Alarm Serviced).
- This appliance is only intended for premises having a residential type environment.
- Smoke / Heat Alarms are not a substitute for insurance. The supplier or manufacturer is not your insurer.
- The chamber inside the Ionisation Smoke Alarms (Ei181) contains a small amount of radioactive material. Do not tamper with the chamber. You may safely install and clean the Smoke Alarm following this leaflet's instructions.

### Do not dispose of your Alarm in a fire.

Use the Smoke / Heat Alarm Test Buttons to familiarize your family with the Alarm sound and to practice fire drills regularly with all family members. Draw up a floor plan that will show each member at least 2 escape routes from each room in the house. Children tend to hide when they don't know what to do. Teach children how to escape, open windows, and use roll up fire ladders and stools without adult help. Make sure they know what to do if the alarm goes off.

## PLANNING YOUR ESCAPE FOR WHEN THE ALARM GOES OFF

1. Check room doors for heat or smoke. Do not open a hot door. Use an alternate escape route. Close doors behind you as you leave.



2. If smoke is heavy, crawl out, staying close to floor. Take short breaths, if possible, through a wet cloth or hold your breath. More people die from smoke inhalation than from flames.



3. Get out as fast as you can. Do not stop for packing. Have a prearranged meeting place outside for all family members. Check everybody is there.



4. Call the Fire Brigade from a neighbor's house. Remember to give your name and address.



5. **NEVER** re-enter a burning house.



## LIMITATIONS OF SMOKE HEAT

Smoke/Heat Alarms have significantly helped to reduce the number of fire fatalities in countries where they are widely installed.

However independent authorities have stated that they may be ineffective in some circumstances. There are a number of reasons for this:

- The Alarms will not work if the mains power is off and the back-up battery is depleted. On the Ei181/184/186 alarms the batteries should be replaced annually and when the unit gives low battery beeps.
- Smoke/Heat Alarms will not detect fire if sufficient smoke/heat does not reach the alarm. Smoke/Heat may be prevented from reaching the Alarm if the fire is too far away, for example, if the fire is on another floor, behind a closed door, in a chimney, in a wall cavity, or if the prevailing air draughts carry the smoke/heat away. Installing Smoke/Heat Alarms on both sides of closed doors and installing more than one Smoke/Heat Alarm as recommended in this leaflet very significantly improves the probability of early detection.
- The Alarm may not be heard.
- A Smoke / Heat Alarm may not wake a person who has taken drugs or alcohol.
- Smoke / Heat Alarms may not detect every type of fire to give sufficient early warning. They are particularly ineffective with: fires caused by smoking in bed, escaping gas, violent explosions, poor storage of flammable rags and/or liquids, (for example petrol, paint, spirits etc), overloaded electrical circuits, arson and children playing with matches.
- Fire Authorities (including the Home Office, UK) recommend that both Optical and Ionisation Smoke Alarms should be fitted for the fastest response to all types of fires.
- Smoke / Heat Alarms don't last indefinitely. For example if there is a build up of contamination, performance will be impaired.

The manufacturer recommends replacement of the Smoke/Heat Alarms after 10 years as a precaution.

## ACCESSORY

### **Smoke Alarm Locator Ei159:**

The Smoke Alarm locator is recommended for systems with three or more Smoke / Heat Alarms as it helps quickly identify the unit in alarm and reduces the impact of nuisance alarms.

Pressing the Smoke Alarm Locator button will silence all interconnected alarms for 10 minutes, except those sensing fire. It is easily installed between the interconnect and 0 volt terminals.

## GETTING YOUR ALARM SERVICED

If your Alarm fails to work after you have carefully read all the instructions, checked the unit has been installed correctly, and is receiving panel power contact Customer Assistance at the address given at the end of this leaflet. If it needs to be returned for repair or replacement put it in a padded box and send it to "Customer Assistance and Information" at the nearest address given on the Alarm or in this leaflet. Do not snap on the mounting plate as this connects the battery and the unit may beep or alarm in the post. State the nature of the fault, where the Alarm was purchased and the date of purchase.

## FIVE YEAR PRODUCT GUARANTEE

Ei Electronics guarantees this Alarm (excluding the battery) for five years from date of purchase against any defects that are due to faulty materials or workmanship. This guarantee only applies to normal conditions of use and service, and does not include damage resulting from accident, neglect, misuse, unauthorised dismantling, or contamination howsoever caused. This guarantee excludes incidental and consequential damage. This guarantee does not cover costs associated with the removal and/or installation of alarms. If this Alarm should become defective within the guarantee period, it must be returned to Ei Electronics, with proof of purchase, carefully packaged, with the problem clearly stated. (see "Getting Your Alarm Serviced") We shall at our discretion repair or replace the faulty unit.

Do not interfere with the Alarm or attempt to tamper with it. This will invalidate the guarantee, but more importantly may expose the user to shock or fire hazards. This guarantee is in addition to your statutory rights as a consumer.

## SPECIFICATIONS

**Supply Voltage:** 10.5 to 30.0 Volts<sub>DC</sub> (DC Only).

**Standby Current:** 7.5mA (max) @ 12V; 10.0mA (max) @ 24V.

**Alarm Current:** 58.0mA (max) @ 12V; 60.0mA (max) @ 24V.

**Relay Contacts:** 30 volts/1 amp resistive (normally open and normally closed supplied). The unit is supplied with the relay operating in continuous mode (i.e. relay is on while unit is sensing smoke). To select pulse mode (relay turns on for 5 seconds only at start of smoke sensing), set jumper S1 to "P" position.

The unit is also supplied with the relay in conventional, i.e. no contact resistance, mode. If required, 22K ohm can be connected in series with the C terminal and relay contact and 68K ohm between C and NC screw terminals by setting jumper S2 to "R" position.

**Wiring:** Wiring may be surface or recessed.

**Cable:** 4 core max resistance 20 ohms, provided specified supply voltage is maintained at unit.

**Test Button:** Simulates the effect of fire and checks electronics and horn.

**Power-on Indicators:**

- Continuous green light on mounting plate for panel power.
- Red LED flashes every 40 seconds.

**Alarm output:** Piezo horn 85dB (A) @ 3m.

**Standby Temp:** 0°C - 40°C.

**Humidity:** 10 - 90 % Relative Humidity  
**Interconnect:** Up to 20 units in total (Ei181, Ei184, Ei186 units only) can be interconnected so that when one senses fire all alarm. Relays switch on all units.

**Alarm Indicator:** Red LED flashes rapidly only on units sensing fire.

**Battery Back-Up:** 9 Volt Alkaline Primary Battery will power the unit in standby for over 1 year without external power. Will power the unit for over 2 hours in alarm. Battery is monitored for open circuit, short circuit and high impedance. The unit will beep once a minute when it is starting to be depleted.

**Ionisation Ei181**

**Sensor:** Dual Ionisation Chamber.

**Sensitivity:** Complies with BS5446-1: 2000.

**Source:** 0.9 microcurie of Am 241.

**Combined Test/Hush Button:** Tests and then hushes unit for 10 minutes. Automatically resets. Red LED flashes every 10 seconds while in hush. At the end of the hush period unit gives a double beep.

**Airspeed:** No false alarms up to 10 m/s (22mph).

**Insect Screen:** Prevents insects or debris entering the chamber.

**Dimensions:** 145mm (d) X 55mm (h). **Weight:** 380 grams.

### **Optical Ei186**

**Sensor:** Detects light scattered by smoke.

**Sensitivity:** Complies with BS5446: Part 1: 2000.

**Ambient Light:** Chamber design and electronic compensation overcomes problems with stray light.

**Combined Test/Hush Button:** Tests and then hushes unit for 10 minutes. Automatically resets. Red LED flashes every 10 seconds while in hush.

**Airspeed:** No effect.

**Insect Screen:** Prevents insects and debris entering the chamber.

**Automatic Self Test:** Chamber is tested every 40 seconds and unit beeps if it is degraded (without red light flashing at same time).

**Dimensions:** 145mm (d) x 60mm (h). **Weight:** 380 grams.

### **Heat Ei184**

**Sensor:** Fast response Thermistor.

**Sensitivity:** 58 +/- 4°C (Response grade 1 as defined in EN54: Part5).

**Combined Test/Hush Button:** Tests and then hushes unit for 10 minutes. Automatically resets. Red LED flashes every 10 seconds while in hush. At the end of the hush period unit gives a double beep.

**Airspeed:** No effect.

**Contamination:** Much less affected by insects and contamination than Smoke Alarms.

**Dimensions:** 145mm (d) x 65mm (h). **Weight:** 380 grams.

## **TROUBLESHOOTING**

### **1. FREQUENT NUISANCE ALARMS OCCUR:**

- (1) Close kitchen / bathroom door when in use.
- (2) Ensure that the alarm is sited at least 6m away from sources of fumes.
- (3) Contamination from insects, paint or paint fumes may have occurred. Clean the alarm as described in this booklet.
- (4) If the problem persists, resiting of the unit should be considered. Alternatively, replace the unit with an Optical unit (Ei186/185), assuming that the problem is with an Ionisation type alarm (Ei181/180).

### **2. ALARM SOUNDS FOR NO APPARENT REASON:**

- (1) Identify the alarm source. On interconnected units, the red light on the cover will flash rapidly only on the unit which is the source of the alarm.
- (2) Check for fumes, steam etc. from the kitchen or bathroom. Paint and other fumes can cause nuisance alarms.

(3) Press the test/hush button to silence the Smoke/Heat Alarm for 10 minutes.

(4) If alarm does not stop, remove the unit (see figure 1). (Only remove alarm with red light flashing, the others are probably satisfactory).

### **3. LOW BATTERY BEEPS:**

If the battery is correctly connected and the unit has beeped for over 20 minutes the battery is probably depleted. Obtain a new battery, remove the alarm and replace the depleted battery. (see figure 1).

### **OTHER BEEPS:**

(1) If the panel is providing power and replacing battery or cleaning unit has not stopped beeps, a fault may exist. Replace the unit (see figure 1).

(2) The Ionisation/Heat units (Ei181/180/184/183) give two beeps 10 minutes after the test/hush button is pressed.

(3) If the Optical units (Ei186/185) beep without the red light flashing at the same time, the chamber is defective. Clean the chamber.

### **4. INTERCONNECTED ALARMS DO NOT ALL SOUND AND THE RELAY DOES NOT SWITCH:**

(1) Hold test button for 10 seconds after first alarm has sounded to ensure signal is transmitted to all units. Relay should switch.

(2) Check that the green power light on the mounting plate is on.

(3) Check panel and wiring.

The crossed out wheelie bin symbol that is on your product indicates that this product should not be disposed of via the normal household waste stream. Proper disposal will prevent possible harm to the environment or to human health. When disposing of this product please separate it from other waste streams to ensure that it can be recycled in an environmentally sound manner. For more details on collection and proper disposal, please contact your local government office or the retailer where you purchased this product.



**CE**  
0086

Ei Electronics, Shannon, Co. Clare, Ireland  
08  
DoP No.13-0001

EN14604:2005 + AC:2008

Smoke Alarm Devices:  
Ei181, Ei186

Fire Safety

Nominal activation conditions/ sensitivity, response delay (response time) and performance under fire condition	<b>Pass</b>
Operational reliability	<b>Pass</b>
Tolerance to voltage supply	<b>Pass</b>
Response delay and temperature resistance	<b>Pass</b>
Vibration resistance	<b>Pass</b>
Humidity resistance	<b>Pass</b>
Corrosion resistance	<b>Pass</b>
Electrical stability	<b>Pass</b>

**CE**

Heat Alarm Devices:  
Ei184

The Declaration of Performance No. 13-0001 may be consulted at [www.eielectronics.com/compliance](http://www.eielectronics.com/compliance)

**Aico Ltd.** Mile End Business Park, Maesbury Rd,  
Oswestry, Shropshire SY10 8NN, U.K.  
Tel: 01691 664100  
[www.aico.co.uk](http://www.aico.co.uk)

**Ei Electronics.** Shannon, Co Clare, Ireland.  
Tel: 061 471277  
[www.eielectronics.com](http://www.eielectronics.com)