

Conventional Leaflets

Fire Detectors

**Last updated
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Instructions for Heat and Smoke Detectors

General information

This leaflet covers the following detector heads:

Smoke Detectors

- Ionisation type
- Optical type

Heat Detectors

- Fixed Temperature type
- Rate of Rise type
- High Temperature type

Each Detector head is designed to fit into a base. For information on base wiring and siting of detector-base assemblies, refer to the instructions supplied with the appropriate base.

In a conventional fire detection system a detector is arranged to partially short-circuit the Detector lines to the control panel, when in the alarm state. The power supply from the control panel must therefore incorporate a current limiting circuit to prevent excessive power dissipation in the detector.

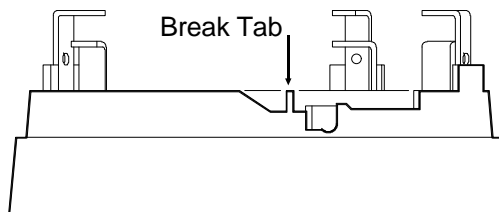
NOTE: This method of operation is not applicable for Detectors in an addressable fire detection system.

CAUTION: Under NO CIRCUMSTANCES MUST any detector and base be PAINTED. Paint may affect the operational characteristics of detectors.

Fitting a detector to a base

To fit the Detector head into a base, align the Detector to the base, push together and twist the Detector in clockwise direction until it is securely fitted to the base.

Figure 1
Base showing tab to break



m0670

Locking a detector to a base

To lock a Detector head into a base, first break the Tab shown in Figure 1 and then fit the Detector into the base.

To unlock the Detector from the base, insert a Key (not supplied code 4191-007) into the keyhole on the side of the base and turn the key clockwise by a quarter of a turn. The detector head can then be removed from the base.

Commissioning

During commissioning of a Fire System EVERY detector must be checked for correct operation using an appropriate Heat or Smoke test.

Maintenance

To ensure continued and trouble free protection it is important that **regular** maintenance is undertaken and that the detectors and all associated equipment are checked at least annually.

The servicing organisation should be contacted to ensure that a contract is drawn up for the maintenance of the system.

CAUTION: The IONISATION SMOKE DETECTOR must be returned to the suppliers for disposal.

Operating parameters

Ambient **temperature range** for correct operation:

- Heat Detectors 0°C to 40°C
 - (High Temperature Heat: 0°C to 70° C)
- Smoke Detectors: 0°C to 50°C.

d.c.. Monitored Circuits		
Allowable operating voltage range	32V dc maximum 16V dc minimum	
Supervisory current (nominal at 28V)	Ionisation Smoke 50uA Optical Smoke 90uA Fixed Temperature 45uA Rate of Rise 45uA High Temperature 90uA	
Maximum current in an alarm mode. (Must be limited by the control panel)	65mA NOTE: This is the total maximum current for both positive and repeat terminals.	
Minimum current in the alarm Mode (To keep the detector conducting)	10mA	
Voltage across detector in alarm mode (The values for the limited current shown are typical only)	Limiting current (mA)	d.c. Voltage (V)
	10	5.5
	20	7.7
	50	13.7

Instructions for Detector BASE Variants

This leaflet provides installation information on BASES that are used for interconnecting the automatic heat and smoke detectors.

Compatibility

The BASE variants detailed in this leaflet are all compatible with the following detectors.

- Ionisation Smoke Detector
- Optical Smoke Detector
- Fixed Temperature Heat Detector
- Rate Of Rise Heat Detector
- High Temperature Heat Detector

Location

It is important that each Detector-Base Assembly is correctly located and for information on correct siting of detectors see the relevant Code of Practice stated in BS 5839 : Part 1 : 1988. In general the following must be taken into consideration:

DO NOT locate smoke detectors where products of combustion may be present such as kitchens, garages, furnace rooms, welding shops etc.

DO NOT locate heat detectors above boilers or heaters or where the temperature is normally very high or liable to sudden fluctuations.

DO NOT locate smoke or heat detectors:-

- In dusty or dirty environments
- Near heating or air conditioning grilles.
- Outdoors in stables, sheds etc.
- In excessively damp areas.
- In dead air spaces at the junctions of ceilings and walls.
- At ceiling locations where a 'thermal barrier' may exist.

Fixing

Each BASE can be fixed to a 2 3/4 inch square box, for example the MK891, or a 2 inch BESA box, or a metric box with 60mm fixing centres, or as an alternative, directly to any flat surface.

Where surface wiring may be required there are side 'cut-out' sections on the BASE assembly and the appropriate 'cut-out' must be removed to allow cable entry directly into the BASE.

Wiring

The BASE wiring details are shown in **Figures 1 to 5** on the following page and include, where appropriate, details of connections to an external LED unit and End-of-Line device, used in a 2-wire open circuit type system.

DO NOT Spur wire from the initiating (zone) circuits.

IMPORTANT: Ensure all unused terminal screws are tightened after each BASE installation is complete.

All wiring and terminal connections should be checked and tested before the detectors are plugged into the bases.

Testing

It is important that you DO NOT Undertake high voltage insulation tests of wiring with the wires connected into their intended terminals. Such a test may damage the electronic components in the CONTROL UNIT, BASE, (not applicable for the 72300-00 BASE), EXTENSION L.E.D UNIT and END-OF-LINE Unit.

Detector-Base Assembly

To plug a detector into a BASE, align, push together and twist in a clockwise direction until the detector fits into the base.

Note: The INPUT and OUTPUT connections MUST be terminated strictly as shown.

A maximum of 20 diode-BASES are allowed per zone circuit.

IMPORTANT: For the Fire System to comply with BS5839 : Part 1 : 1988, all the diode-BASES must be wired correctly and tested for correct operation within each zone circuit.

Note: The start-of-line ,SOL, BASE should be fitted with a 680K Ohms resistor, as shown below. Also the BASE rim should be fitted with an SOL self adhesive label, for identification.

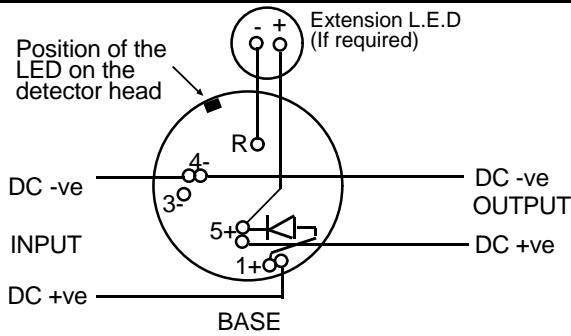


Figure 1 Wiring Details for BASE
Code Number
72301-00

This BASE is factory fitted with a diode to permit initiating circuit continuity when a detector is removed from its BASE.

See footnote

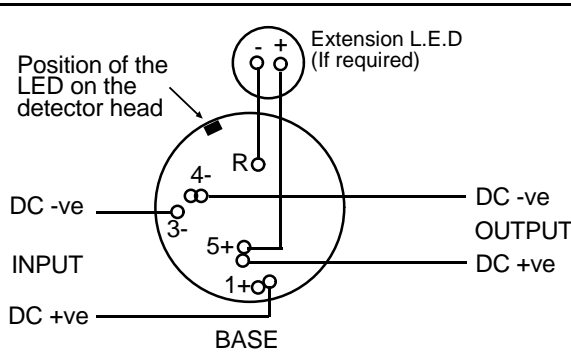


Figure 2 Wiring Details for BASE
Code Number
72300-00

See footnote

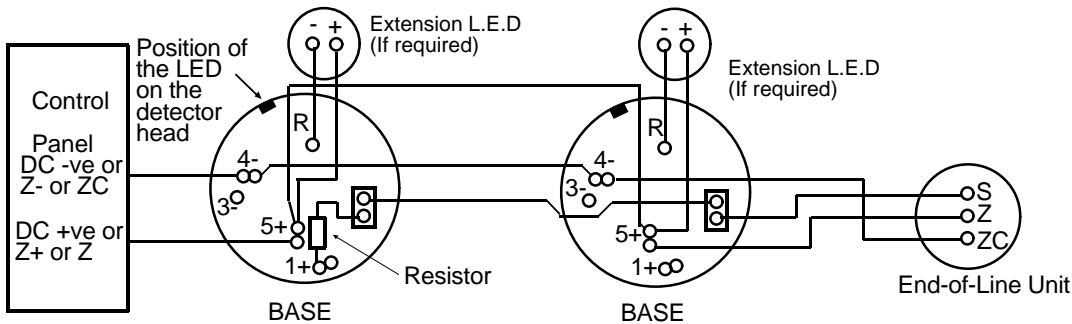


Figure 3 Wiring Details for BASE
Code Number
72300-01

This type of BASE is suitable for HTM82 Systems

(*) A separate +24Vdc supply, from the control panel operates the relay in the BASE. The supply is controlled by a normally closed RESET SWITCH. The SWITCH is operated to reset an activated detector. If the supply is not broken to the relay, the detector will not reset.

Relay type 24Vdc 1280Ohms
Contacts rated 1A at 28Vdc.

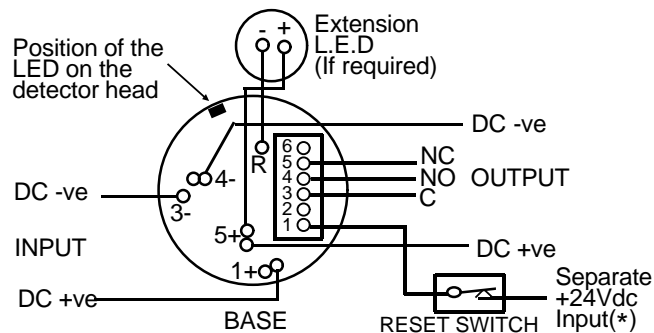


Figure 4 Wiring Details for BASE
Code Number
72300-03

This BASE is factory fitted with a relay to provide an output via its single pole change-over contacts.

See footnote

● Position of the LED on the detector head.

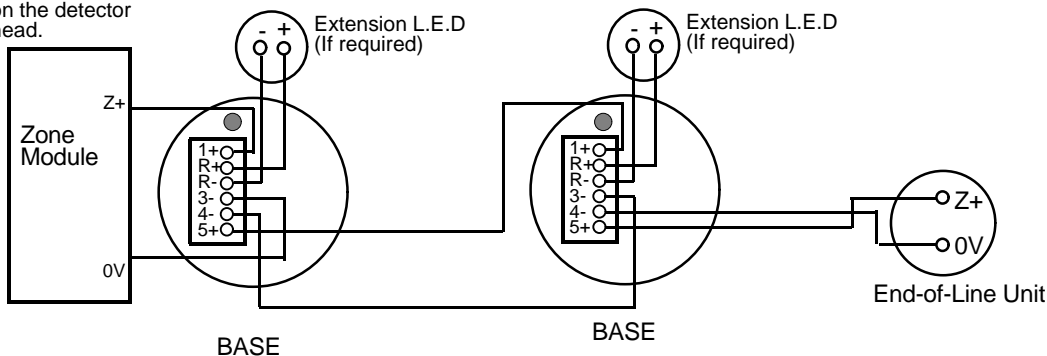


Figure 5 Wiring Details for BASE
Code Number
70200-01

This BASE is only suitable for use in an addressable fire alarm system.

Notice: The BASE wiring details given in figures 1,2 and 4 do not show connections to the end-of-line unit and Control panel. The terminal markings at the control panel and end-of-line unit may vary depending on the type of fire alarm system.

Instructions for 724XX-XXNM Detector Variants



Heat
Detectors



Optical
or Ionisation
Smoke Detectors

Variants

The variants detailed in this leaflet are:

- 72431-25NM - Ionisation Smoke Detector
- 72441-25NM - Optical Smoke Detector
- 72451-25NM - Fixed Temperature Heat Detector (58°C)
- 72461-25NM - Rate Of Rise Heat Detector
- 72400-01NM - Base (without diode)
- 72401-01NM - Base (including diode)
- 72400-02NM - Low profile base (without diode)
- 72401-02NM - Low profile base (with diode)
- 72490-02NM - Detector Dust Cover
- 17899-44 - Relay module
- 72490-01NM - Removal tool
- 72499-24NM - Remote LED and Module

General

This leaflet provides installation information for the automatic heat and smoke conventional detectors.

Installation

Location

It is important that each Detector assembly is correctly located and for information on correct siting of detectors see the relevant Code of Practice stated in BS 5839 : Part 1 : 1988. In general the following must be taken into consideration:

DO NOT locate smoke detectors where products of combustion may be present such as kitchens, garages, furnace rooms, welding shops etc.

DO NOT locate heat detectors above boilers or heaters or where the temperature is normally very high or liable to sudden fluctuations.

DO NOT locate smoke or heat detectors:-

- In dusty or dirty environments
- Near heating or air conditioning grilles.
- Outdoors in stables, sheds etc.
- In excessively damp areas.
- In dead air spaces at the junctions of ceilings and walls.
- At ceiling locations where a 'thermal barrier' may exist.


Specification


Operating voltage	8.0V to 28.0V	
Radioactive source (Ionisation detector only)	Americium Am ²⁴¹ Activity: <15kBq	
Quiescent current (Maximum)	Ionisation	15µA @ 28V
	Optical Smoke	60µA @ 28V
	Fixed Temperature (58°C)	30µA @ 28V
	Rate of rise	30µA @ 28V
Alarm current	26 - 34mA	
Weight	Ionisation	0.11kg
	Optical smoke	0.11kg
	Fixed temperature	0.07kg
	Rate of rise	0.07kg
Diameter	104mm	
Height	50mm (not including base) 73mm (with base) 65mm (with low profile base)	
Colour	White (comparable to RAL 9010)	
Working temperature	0°C to +50°C (Heat 0°C to +45°C)	
Storage temperature	-25°C to +75°C	
Relative humidity	93% +/- 2% non condensing	
Wire size	1.5mm ² maximum	

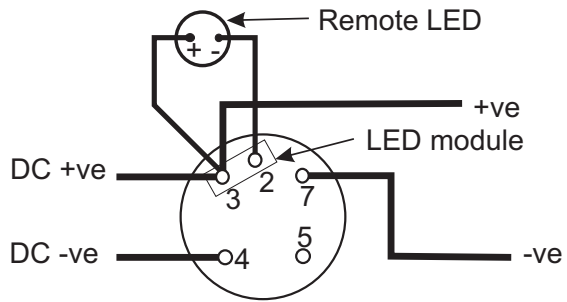
Fixing

Each Detector is fitted to a base. The base can be fixed to a 2 3/4 inch square box, for example the MK891, or a 2 inch BESA box, or a metric box with 60mm fixing centres, or as an alternative, directly to any flat surface.

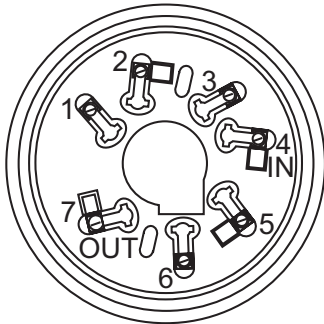
Where surface wiring may be required there are side 'cut-out' sections on the standard base assembly (not low profile) and the appropriate 'cut-out' must be removed to allow cable entry directly into the base.

 The connections shown here are applicable for **Conventional systems only.**

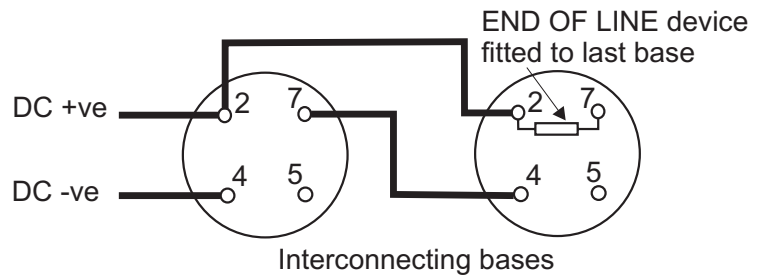
 It is important that the LED module is fitted when a remote LED is used to maintain system integrity under fault conditions.



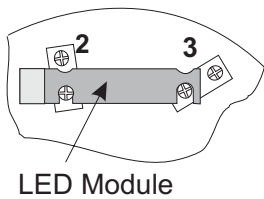
Connecting LED to base with LED Module fitted



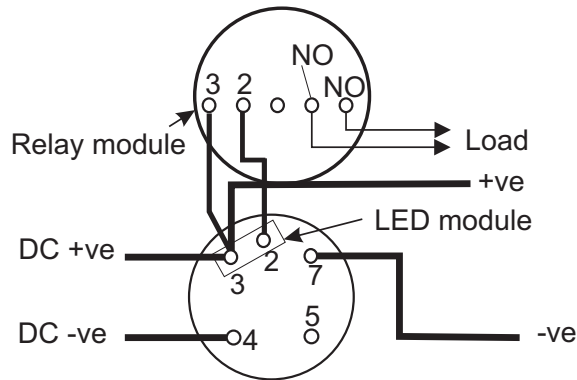
Terminal positions on base



NOTE: Method of interconnection is identical for both with and without diode fitted to the bases.



LED Module
Base showing how LED module is connected



Connecting Relay Module to base with LED module fitted

Wiring

The base wiring details are shown in above and include, where appropriate, details of connections to an external LED, Relay module and End-of-Line device used in a 2-wire open circuit type system.

DO NOT Spur wire from the initiating (zone) circuits.

IMPORTANT: Ensure all unused terminal screws are tightened after each BASE installation is complete.

All wiring and terminal connections should be checked and tested before the detectors are plugged into the bases.

Detector-Base Assembly

To fit the Detector head into a base, align the Detector to the base, push together and twist the Detector in clockwise direction until it is securely fitted to the base.

CAUTION: Under **NO CIRCUMSTANCES MUST any detector and base be PAINTED.** Paint may affect the operational characteristics of detectors.

Testing

It is important that you **DO NOT** undertake a high voltage insulation tests of wiring with the wires connected into their intended terminals. Such a test may damage the electronic components in the CONTROL UNIT, detector-BASE, and the END-OF-LINE Unit.

Commissioning

During commissioning of a Fire System EVERY detector must be checked for correct operation using an appropriate Heat or Smoke test.

Maintenance

To ensure continued and trouble free protection it is important that regular maintenance is undertaken and that the detectors and all associated equipment are checked at least annually.

The servicing organisation should be contacted to ensure that a contract is drawn up for the maintenance of the system.

CAUTION: The **IONISATION SMOKE DETECTOR** must be returned to the suppliers for disposal.