

Fire



DATA
SHEET

Conventional Detectors

CPD321 / CPT341 / CFR330 / CMT360

CHT390 / MPD821 / MPT951/

MFR830 / MMT860 / MHT890 / FXN533

FXN632 / FXN525 / FXN524 / FXN526

COOPER

Cooper offers a comprehensive range of conventional detectors that are compatible with Cooper, Menvier and JSB conventional control panels.

Benefits and Features

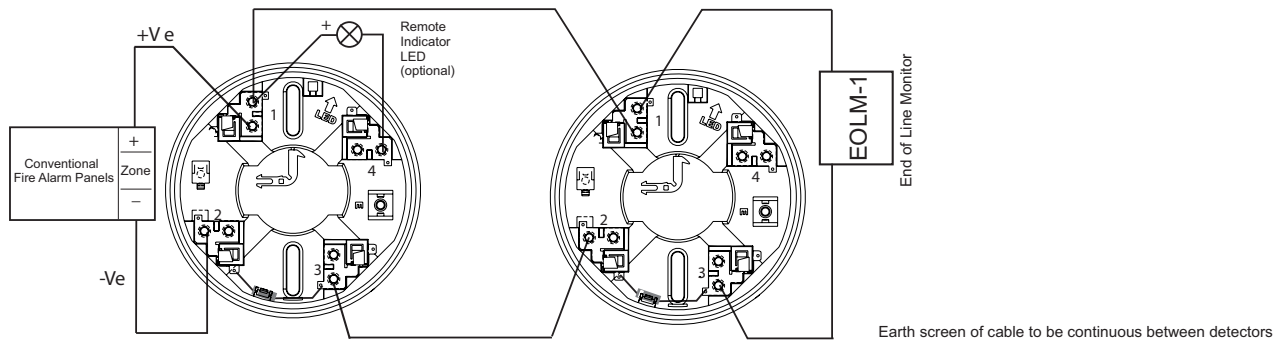
- > LPCB 3rd party approved / CPD approved
- > Low profile design
- > 360° viewable LED design
- > Removable detector chamber for cleaning
- > Common mounting base
- > New enhanced detectors feature dual LEDs,
- > Drift compensation and chamber monitoring (Optical & Photo-Thermal)

MENVIER

JSB

Model	CPD321 / MPD821 FXN533	CPT341 / MPT951 FXN632	CFR330 / MFR830 FXN525	CMT360 / MMT860 FXN524	CHT390 / MHT890 FXN526
Description	Optical detector	Photo-thermal detector	Heat detector (fast)	Heat detector (med)	Heat detector (high)
CPD approved product	0832CPD0633	0832CPD0629	0832CPD0233	0832CPD0236	0832CPD0237
Standards	EN54: Pt 7; 2000 + A1 2002	EN54: Pt 7; 2000 + A1 2002 EN54 Pt 5; 2000 + A1 2002	EN54: Pt 5; 2000 + A1 2002 + A1 2002		
Area coverage	100m ² (subject to local standard)		50m ² (subject to local standard)		
System wiring	2 core				
Indication	360° visibility light pipe				
Mounting	Surface mount CDBB300, FXN520 base				
Detetion Mode	light scatter principle	light scatter principle heat sensitive element	heat sensitive element		
Operating voltage	15 to 30 V dc				
Max stand by current	30µA				
Max Start up current	340µA	340µA	NA		
Max alarm current	25mA				
Heat class	NA	A2S	A2R	BS	CS
Alarm temperature	NA	60°C	60°C	77°C	92°C
Environmental					
IP rating	IP40				
Operating temperature	-20°C to 60°C	-20°C to 45°C	-20°C to 60°C	-20°C to 60°C	-20°C to 75°C
Humidity	0 to 95% non condensing				
EMC	CE marked				
Physical					
Construction	ABS				
Colour	White				
Dimensions					
Excluding base (Dia x H)	100mm x 43mm				
Including base (Dia x H)	100mm x 45mm	101mm x 55mm			
Compatibility	Conventional fire systems				

Wiring Diagram - Standard Conventional Base



Product Codes

Conventional optical detector	CPD321 / MPD821 / FXN533
Conventional photo-thermal detector	CPT341 / MPT951 / FXN632
Conventional heat detector (Fast)	CFR330 / MFR830 / FXN525
Conventional heat detector (Med)	CMT360 / MMT860 / FXN524
Conventional heat detector (High)	CHT390 / MHT890 / FXN526
Conventional mounting base	CDBB300 / FXN520

Technical Data



EFXN533	DoP0448	18	EN54-7 Point Type Smoke Detectors
EFXN525	DoP0446	18	EN54-5 Point Type Heat Detectors
EFXN524	DoP0445	18	EN54-5 Point Type Heat Detectors
EFXN526	DoP0447	18	EN54-5 Point Type Heat Detectors
EFXN632	DoP0449	18	EN54-5 Point Type Heat Detectors
FXN922	DoP0405	12	EN54-7 Point Type Smoke Detectors

	Specification
Supply Voltage	15 to 30 Vdc
Cable size / Type	0.5mm ² - 2.5mm ² / FIRETUF, FP200 or MICC
Mounting Hole Centres	50 - 80mm
Allowable Alarm Current	25mA
Allowable Remote Indicator Current	25mA

Wiring hints

Each terminal is suitable for clamping up to 2 wires. Clamping of 2 wires of very different diameters under one screw is not recommended.

DO NOT USE A POWER TERMINAL DRIVER.

Suitable for mounting to mounting boxes with 50-80mm fixing centres.

General

If difficulty is experienced when mounting the detector, this may be due to the following:

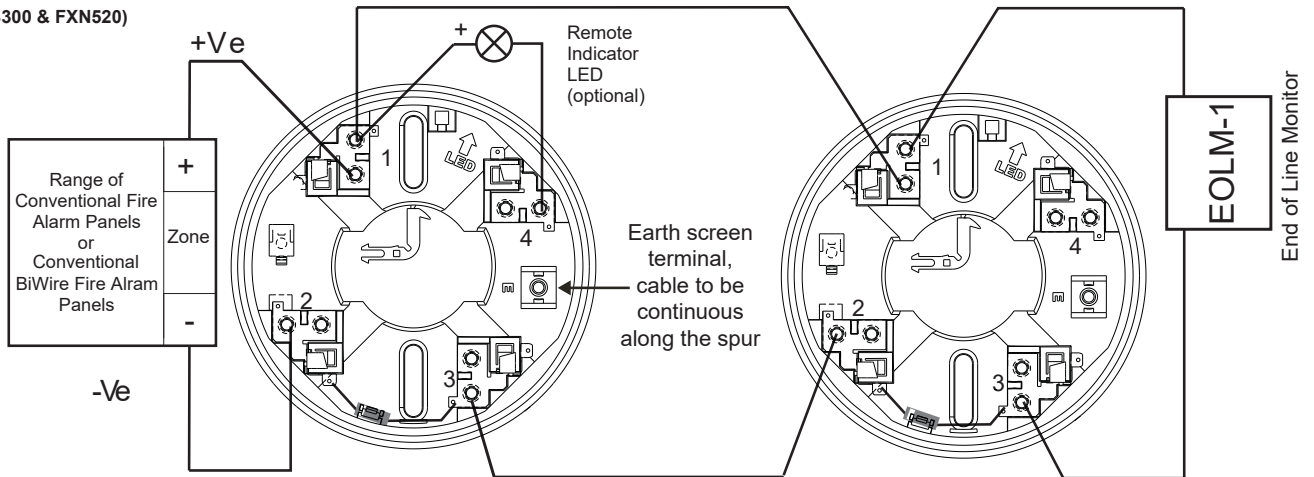
Wiring causing an obstruction - move or shorten wires. Although the base is tolerant to uneven mounting surfaces, a very uneven surface may cause the base to deform when the mounting screws are tightened down - loosen screws to reduce this or slide base to a more flat position.

WARNING: DO NOT USE HIGH VOLTAGE TESTERS WHEN DETECTORS OR CONTROL PANEL ARE CONNECTED TO THE SYSTEM.

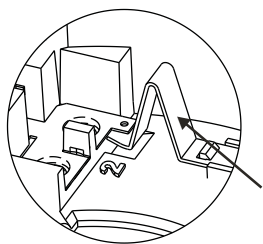
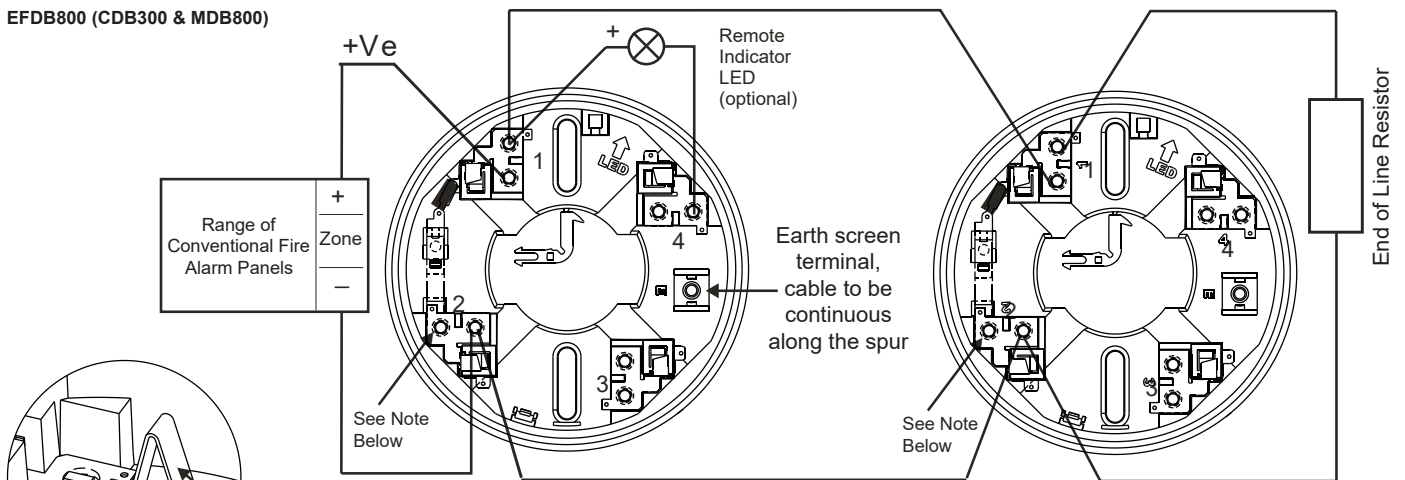
Zener Diode Switch Action EFDB800 (CDB300 & MDB800)



EFXN520 (CDBB300 & FXN520)



EFDB800 (CDB300 & MDB800)



Attention: If using the outer connection on terminal 2, ensure the operation of the switch is not impeded and that there are no shorts between terminal 2 and the switch contact - use sleeves for end of line resistor. Ensure that cable or EOL resistor leg does not short onto the contact.

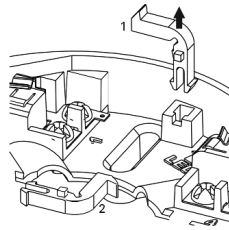
Utilising Locking Tab

The Mounting base includes an optional feature to prevent the removal of the detector without the use of a tool.

1. Remove the standard fit retaining clip.
2. Insert the locking clip which is located at the centre of the base as shown.

Mount the detector onto the base as described in Detector Installation (see over) and rotate fully clockwise until it finally clicks.

The detector is now locked into position. Remove by utilising a suitable tool (eg a thin screwdriver) into the hole in the detector cover. Gently push the tool into the detector and rotate anti-clockwise.



	Base	Order Codes
Conventional Photoelectric Smoke Detector - Cooper	EFXN520 (CDBB300 / FXN520)	EFXN533
Conventional Heat Detector - Class A2R - Cooper		EFXN525
Conventional Heat Detector - Class BS - Cooper		EFXN524
Conventional Heat Detector - Class CS - Cooper		EFXN526
Conventional Photo/Thermal - Class A2S (Heat Performance) - Cooper		EFXN632
Bi-Wire Programmable Conventional Photoelectric, Photo/Thermal (A2S), Heat Detector (ATR, BS or CS) - JSB	EFXN520 (CDBB300 / FXN520)	FXN922

Detector Features (Photoelectric & Photo/Thermal)

All Photoelectric and Photo/Thermal detectors, automatically compensate for gradual increases in the scatter signal due to contamination e.g. dust build up.

Self-Check Features Of The Bi-wire Detector

The Self-Check feature monitors for the failure of the internal primary alarm circuitry. Under this condition, the detector will still register an alarm condition via the yellow LED. Following such a failure, the yellow LED will remain on following a reset, signaling a fault at the main panel and the detector must be replaced.

BiWire detectors, automatically compensate for gradual increases in the scatter signal due to contamination e.g. dust build up. If excessive dust occurs, the yellow LED will show continuously. If this occurs, the maintenance procedure should be conducted.

The yellow LED will also light continuously if the detectors optical sensor signal begins to reduce below its normal level (chamber monitoring).

In addition, the BiWire range has an isolator that opens if the internal power fails in the detector, giving rise to a zone fault at the main panel.

When used with a BiWire compatible panel with Self Check features, the BiWire Detectors range of detectors can be instructed to blink their yellow LED every 2 seconds by a command from the main panel, to aid the search for a break in the zone cabling or an open detector isolator.

Detector Installation

Fit detector to mounting base and rotate clockwise until the detector drops into place. Continue to rotate clockwise until the detector clicks into place and no further rotation is possible. If the detectors are required to be locked into position, refer to the 'Utilising Locking Tab' section.

Smoke detectors are supplied fitted with dust covers for general protection against airborne contaminants. These must be removed from all detectors before the fire system is commissioned.

NB. These dust covers do not provide adequate protection against quantities of dust generated by building work

Testing

All detectors must be tested following installation or routine service and maintenance. It is recommended that these tests are carried out by a competent person. Authorised personnel must be informed that the fire system will be temporarily out of service before commencing testing. To prevent unwanted alarms, ensure that the the panel is in test mode and it may be appropriate to disable some or all of the sounder circuits.. When all tests are complete, restore panel to normal operation and notify authorised personnel that the system is operational.

Smoke Detectors:

Subject the detector to be tested to a controlled amount of an approved synthetic smoke aerosol via a smoke detector test pole. Suitable products are available for example, from No Climb Products Ltd.

Check that the red LED on the detector latches into alarm within 30 seconds. If an optional remote LED is fitted, check that this also lights.

Ensure that the control panel activates into alarm.

Reset the detector from the control panel unless automatically reset by the panel in test mode.

This procedure will test the smoke sensing circuitry of the Photo/Thermal Detector.

Heat Detectors:

Using a heat gun or hair dryer capable of generating temperatures of up to 95°C, direct the heat source towards the heat sensing elements, visible through the side of the outer cover, from a distance of 15 to 30cm. Care should be taken not to allow the plastic surface temperature to exceed 110°C otherwise damage may occur.

When the temperature reaches the 'Alarm Temperature' (see Specifications above), check that the red LED on the detector latches into alarm. If an optional remote LED is fitted, check that this also lights.

Ensure that the control panel activates into alarm.

Reset the detector from the control panel unless automatically reset by the panel in test mode.

This procedure will test the heat sensing circuitry of the Photo/Thermal Detector.

Maintenance

Only minimal maintenance can be performed on this range of detectors as they do not contain any site serviceable parts. The frequency of maintenance and will depend on the environment to

which the detector is exposed but should be at least annually. Dusty or damp environments will demand more frequent maintenance.

Remove the detector from its mounting base.

Use a vacuum cleaner to remove dust build up from around the smoke entry apertures of a smoke detector, or from around the heat sensing element of a heat detector.

For smoke detectors, visually inspect the insect mesh for blockages. If these can not be cleared by vacuuming, the detector must be replaced.

Re-fit detector to its mounting base and test as described above.

Detectors that fail the testing procedure must be replaced.

	EFXN533	EFXN525	EFXN524	EFXN526	EFXN632	FXN922
Operating voltage	15 to 30 Vdc	15 to 30 Vdc	15 to 30 Vdc	15 to 30 Vdc	15 to 30 Vdc	15 to 30 Vdc
Standby current (max)	30µA	30µA	30µA	30µA	30µA	80µA
Start up current (max 20 sec)	340µA	N/A	N/A	N/A	340µA	340µA
Alarm current (max)	25mA	25mA	25mA	25mA	25mA	25mA
Ambient temperature (max)	60°C	45°C	60°C	75°C	45°C	Opto Mode 60°C Opto-Heat Mode 45°C ATR Rate of Rise Mode 45°C BS Fixed Temp Mode 60°C CS Fixed Temp Mode 80°C
Ambient temperature (min)	-20°C	-20°C	-20°C	-20°C	-20°C	-10°C
Alarm temperature (static)	N/A	60°C	77°C	90°C	60°C	Opto-Heat Mode 60°C ATR Rate of Rise Mode 60°C BS Fixed Temp Mode 77°C CS Fixed Temp Mode 92°C
Heat detector class –as defined by EN54-5:2000	N/A	A2R	BS	CS	A2S	See above
Relative humidity (non-condensing)	0 to 95%	0 to 95%	0 to 95%	0 to 95%	0 to 95%	0 to 95%
Height (without base)	34mm	43mm	43mm	43mm	43mm	43mm
Height (with base)	47mm	56mm	56mm	56mm	56mm	56mm
Diameter	100.5mm	100.5mm	100.5mm	100.5mm	100.5mm	100.5mm
Weight	78g	76g	76g	76g	78g	78g
Material	PC/ABS	PC/ABS	PC/ABS	PC/ABS	PC/ABS	PC/ABS
Colour	White	White	White	White	White	White
Bi-Wire compatible	No	No	No	No	No	Yes
Self check features	No	No	No	No	No	Yes

CONVENTIONAL DETECTORS

- **Wide range of detector types**
- **360° visibility LED**
- **EN54 approved**
- **Low profile design**

Ionisation detectors

Ionisation smoke detectors are mildly radioactive, and as such have to be disposed of under carefully controlled conditions. Advances in technology have resulted in the development of the photo thermal detector which offers superior performance to the ionisation type, but with a considerably lower environmental impact. Cooper Lighting and Security policy is therefore to phase out the use of ionisation detectors during 2007.

The Menvier and JSB ranges of conventional detectors have been specifically designed to operate with their respective control panels. Section 11.1 of BS5839 part 1:2002 confirms the need for system designers to make certain that all system components are fully compatible with each other. Menvier 800/900 series and JSB FXN500/600 series conventional detectors are third party approved to the relevant section of EN54 (part 7 for smoke detectors & part 5 for heat detectors).

Cooper Lighting and Security has an enviable reputation for innovation, and this latest catalogue sees the introduction of a number of new enhanced detectors which will supersede existing versions during 2007.

Existing detectors and their new enhanced equivalents, are mechanically and electrically compatible with each other and can be mixed on an existing system.



CONVENTIONAL DETECTORS

SYSTEM OVERVIEW

- The smoke detector range consists of:
 - Optical smoke detector
 - Ionisation smoke detector (being phased out)
 - Combined photo thermal
- With photo thermal detector, sensitivity of smoke detection element varies according to changes in temperature. If temperature is stable then smoke detection sensitivity is reduced to provide maximum false alarm rejection, if there is a significant rate of rise in temperature, smoke detection sensitivity is increased to maximum, to provide earliest possible detection of all fires, especially those which are fast clean burning types
- Photo thermal offers excellent detection of both cool smouldering fires and hotter burning cleaner fires. It is therefore becoming a natural replacement for less environmentally friendly ionisation type detectors.
- Heat detector range consists of:
 - Rate of rise heat detector
 - Medium temperature fixed heat detector
 - High temperature fixed heat detector
- Detectors have an attractive appearance, enhanced by low profile design, optical detector has a profile including base of only 45mm, thermal and photo thermal detectors have a profile including base of 55mm
- Detectors use light pipe technology to provide 360° LED viewing angle. This simplifies installation and reduces search time in the event of alarm activation
- The LED status indicator can be seen from any angle avoiding the need for careful alignment of LED with optimum viewing point such as the entrance to a room
- The logo on each detector is colour coded to indicate the exact device type without the need to remove the detector for inspection
- Enhanced smoke and photo thermal detectors have chamber monitoring with drift compensation, this feature automatically monitors for chamber contamination and adjusts detector sensitivity in response to gradual build up of dust. When end of drift compensation limit is reached, an amber status LED illuminates to alert user. Note this feature is only incorporated in the new enhanced detectors (see page 85)
- Bi wire versions include additional components to make them fully compatible with JSB FX2200BW series panels (see page 50 for further details)

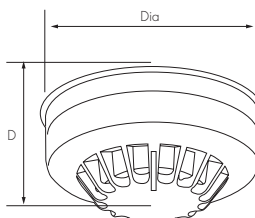
USER INTERFACE

- Red LED to indicate alarm condition
- Amber LED to indicate chamber fault/drift compensation limit (enhanced versions only)
- All wiring connections are via a common mounting base (supplied separately)

INSTALLATION NOTES

- Detectors are fixed and wired via common mounting base
- Cable entry into base can be rear or side
- A locking facility is provided which can be activated if required to prevent unauthorised detector removal without the use of a special tool
- Positive click mechanism incorporated to provide clear indication when detector is correctly located in base

DIMENSIONS



	Dia (mm)	D (excl base)	D (incl base)
Optical & Ionisation smoke detectors	101	33	45
Photo-thermal detector	101	43	55
Heat detectors	101	43	55



Innovative light pipe technology allows LED to be seen from any angle



CATALOGUE NUMBERS

Description	Part number to suit Menvier systems	Part number to suit JSB systems	Part number to suit JSB Bi wire systems
Optical smoke detector ^a	MPD820	FXN523	-
Enhanced optical smoke detector	MPD821 ^b	FXN533 ^b	FXN623
Ionisation smoke detector ^c	MID810	FXN521	FXN621
Combined photo/thermal detector	MPT950 ^a	FXN622 ^a	-
Enhanced photo thermal detector ^b	MPT951 ^b	FXN632 ^b	FXN622
Fixed heat detector (77°C)	MWT860	FXN524	FXN624
Fixed heat detector (92°C)	MHT890	FXN526	FXN626
Rate of rise heat detector	MFR830	FXN525	FXN625
Common base	MDB800	FXN520	FXN520

- a) This device will be phased out during 2007 and replaced with the new enhanced designs
- b) This device will be introduced during 2007
- c) This device will be phased out during 2007

SELF CHECK CONVENTIONAL DETECTORS

- **New patented technology**
- **Enhanced system integrity for conventional systems**
- **Constantly checks and confirms detector operation**
- **Triggers a fault locally and at panel in event of a fault**
- **Drift compensation**

The JSB range of self check detectors work like ordinary conventional detectors, but in addition incorporate additional circuitry to constantly monitor their own status and raise an alarm both locally and at the panel in the event of a fault.

Self check detectors represent a major innovation, greatly enhancing the integrity conventional fire alarm systems. With traditional conventional fire systems, the monitoring systems within the control panel, check that all detectors are in place and that wiring is intact, they do not however verify that the detectors are actually working. The new self check range of detectors changes this, detectors automatically constantly monitor themselves and raise an alarm in the event of a failure.



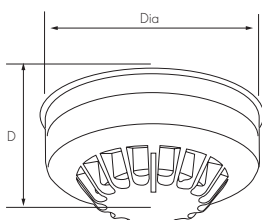
SYSTEM OVERVIEW

- Range consists of
 - Optical detector
 - Photo thermal detector
 - Rate of rise heat detector
 - 77°C fixed temperature heat detector
 - 92°C fixed temperature heat detector.
- Optical and photo thermal detectors incorporate drift compensation to automatically compensate for small slow changes in background readings, helping to compensate for the build up of dust etc within the chamber.
- Self check detectors are compatible with JSB FX2200 series panels only
- All self check detectors have a status LED (with 360° viewing angle) to provide clear status information and minimise search times in event of alarm activation.
- Detectors have a discreet low profile design

USER INTERFACE

- Amber status LED to indicate internal fault or drift compensation limit reached
- Red status LED to indicate a fire condition
- If a detector develops a fault, a fault signal is also sent to the control panel

DIMENSIONS



	Dia (mm)	D (excl base)	D (incl base)
Optical & Ionisation smoke detectors	101	33	45
Photo-thermal detector	101	43	55
Heat detectors	101	43	55

CATALOGUE NUMBERS

Cat. No.	Description
FXN523ISC	JSB Self Check optical conventional detector
FXN524ISC	JSB Self Check conventional heat detector (77°C)
FXN525ISC	JSB Self Check conventional heat detector (Rate of rise)
FXN526ISC	JSB Self Check conventional heat detector (92°C)
FXN622ISC	JSB Self Check combined photo/thermal conventional detector
FXN520	JSB common mounting base

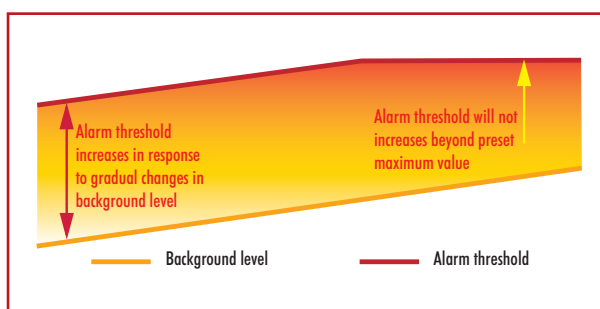
INSTALLATION NOTES

- Detectors are fixed and wired via common mounting base
- Cable entry to base can be rear or side
- A locking facility is provided, which can be activated if required to prevent unauthorised detector removal

DRIFT COMPENSATION EXPLAINED

Smoke detectors sense the presence of tiny smoke particles in the air. With traditional detectors, the gradual build up of dust and similar particles can be seen as smoke and can result in false alarms. Drift compensation increases the alarm threshold of the detector in response to a very slow gradual build up of dust or similar contaminant, thus maintaining a safe margin between normal and alarm levels.

Detectors will only increase the alarm threshold very gradually and have a programmed maximum drift value, which they will not go beyond. This ensures that a detector will respond to a genuine very small fire situation. (see below)



Drift compensation helps avoid false alarms

CONVENTIONAL BASES

- Separate loop in and loop out terminals
- Stand off fixing feature
- Accepts side entry surface cables
- Selectable detector locking feature

Detector mounting bases are available which have been specifically designed to be compatible with Menvier or JSB detectors and control panels. One base is available for Menvier systems and one suitable for JSB systems. The bases have been designed for flexibility, simplicity and speed of installation.



SYSTEM OVERVIEW

- Bases incorporate purpose designed devices to provide fault warning if detector is removed whilst maintaining full zone wiring integrity
- Menvier base has spring contact switch and parallel zener diode arrangement
- JSB base has series Schottky diode

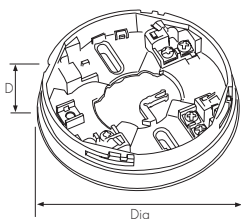
USER INTERFACE

- Heavy duty terminals are provided for each connection, each terminal can accept 2 x 2.5mm cables. Separate loop in and loop out terminals are provided for each connection.

INTERFACE OPTIONS

- Menvier and JSB conventional detectors and bases support the use of a remote LED refer to page 132 for details

DIMENSIONS



Dia (mm)	D (mm)
104	22

INSTALLATION NOTES

- Base incorporates a retaining clip to provide positive feedback when detector is correctly fitted
- Separate terminals are provided for loop in and loop out connections
- Each terminal can accept up to 2 x 2.5mm cables
- Base incorporates a substantial cable entry aperture in the rear of the base
- Breakouts are provided to enable the detector base to sit neatly over surface cables and then enter via the rear entry aperture
- Base mounting incorporates a stand off feature to help prevent distortion when mounted on an uneven surface
- Fixings are suitable for standard BESA box or direct fixing to suitable surface
- Optional locking devices (supplied with base) to prevent unauthorised detector removal

CATALOGUE NUMBERS

Cat. No.	Description
FXN520	Common mounting base for JSB FXN500 & FXN600 series detectors
MDB800* 10	Base for Menvier 800/900 series detectors (Pack of 10)
MDB800	Base for Menvier 800/900 series detectors (single base)



RELAY BASES

- Simple to install
- Designed specifically for Menvier and JSB detectors
- Provides remote signal for external interfacing
- Versions to suit analogue and conventional systems

Relay bases are available from Cooper Lighting and Security to provide a local relay signal in the event of a particular detector being triggered. These are ideal for instigating a local response in the event of a specific detector being triggered. Two formats are available, one designed specifically to operate with the latest generation of Menvier detectors and one designed to operate with the latest generation of JSB detectors.



DEVICE OVERVIEW

- Relay base combines a detector mounting base with a relay
- Simple to install, first fix mounting plate

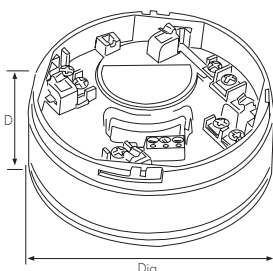
SYSTEM FUNCTIONALITY

- Relay is controlled by status of host detector
- If host detector is triggered relay activates

INTERFACE OPTIONS

- Bases are compatible with latest generation Menvier (800 & 900 series) and JSB (500 & 600) detectors only

DIMENSIONS



Dia (mm)	D (mm)
102	40

INSTALLATION NOTES

- Relay base is supplied with a first fix fixing plate
- Fixing plate has a central cable aperture
- Cable entry is from rear
- Main body is then clipped into place on base, body locks into place when pressed into position

TECHNICAL SPECIFICATION

Relay contact rating	1A @ 24 V DC
Relay trigger source	Detector remote LED output
Detector locking facility	Supplied as standard

CATALOGUE NUMBERS

Cat. No.	Description
FXN520R	Relay base to suit JSB conventional detectors
MDB800R	Relay base to suit Menvier conventional detectors
MAB800R	Relay base to suit Menvier analogue detectors