

# DUCT SMOKE DETECTORS

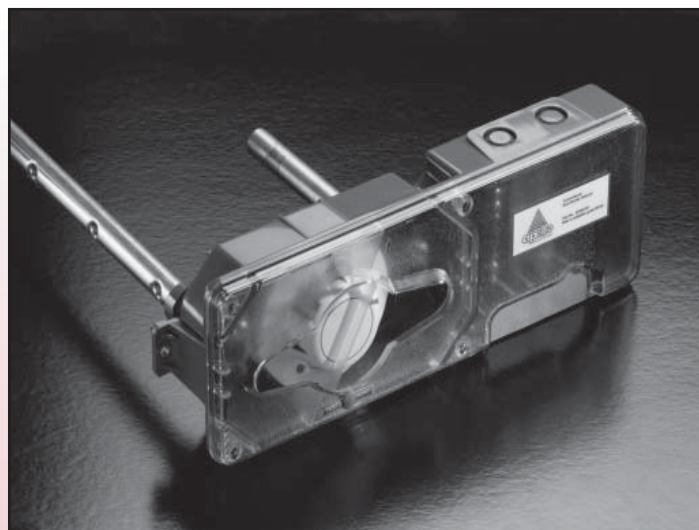
## FUNCTION

The Apollo Duct Smoke Detector provides early detection of smoke in the air moving through heating and ventilation (HVAC) ducts in commercial and industrial premises. Its purpose is to prevent the recirculation of smoke from an area on fire to areas unaffected by the fire. Duct smoke detector part no 53546-021 is designed to accept a conventional detector head. See Table 1 overleaf for details of suitable heads. Duct smoke detector part no 53546-022 is designed to accept an analogue addressable detector head. Details of suitable heads are given in Table 2 overleaf.

Under no circumstances should a duct smoke detection system be used as the sole method of detecting fire. They should be used as supplementary detection in a fire detection system.

## FEATURES

- operates in air speeds of 0.5m/s to 20m/s
- standard sampling tube supplied for ducts up to 540mm
- three optional sampling tube lengths for ducts up to 3000mm
- transparent cover to view detector head LED
- fitted with base for conventional or analogue addressable detectors
- Integrated smoke test port



*Duct Smoke Detector with Conventional Head*

## OPERATION

The duct smoke detector is fitted to the side, the top or the bottom of the ventilation duct and has two tubes which extend into the air duct through holes in the duct wall. The perforated sampling tube which spans the duct is placed in the airflow upstream of the exhaust tube which causes a pressure differential in the duct detector. Air is sucked up the sampling tube, across the detector and exhausted back into the air duct.



36 Brookside Road, Havant, Hampshire PO9 1JR, England.

Tel: +44 (0)23 9249 2412 Fax: +44 (0)23 9249 2754 Website: [www.apollo-fire.co.uk](http://www.apollo-fire.co.uk) Email: [sales@apollo-fire.co.uk](mailto:sales@apollo-fire.co.uk)



INVESTOR IN PEOPLE



Assessed to ISO 9001: 2000  
Quality Systems Certificate number 010



The duct smoke detector is designed to operate in ducts with a width of between 300mm and 3000mm. A sampling tube of 360mm, suitable for duct widths up to 540mm, is supplied as standard. Longer sampling tubes for wider ducts may be ordered separately:

150—750mm	Part no 53541-170
750—1500mm	Part no 53541-171
1500—3000mm	Part no 53541-172

The tubes should be long enough to reach from one side of the duct to the other and it may be necessary to use a tube that is too long and cut it to slightly more than the duct width. Since the tube needs to be supported on both sides a hole should be cut in the opposite wall of the air duct to allow the tube to protrude slightly. The tube must be closed with the small red bung provided.

The exhaust tube does not need to extend across the duct and is therefore supplied at a fixed length.

### ELECTRICAL CONSIDERATIONS

The duct smoke detector is supplied as a housing with a base fitted for either a conventional detector or an analogue addressable detector. The housing has provision for electrical connections depending on the type of detector fitted. For technical data on the detector head, please refer to the relevant product guide or PIN sheet.

### SITING THE DUCT SMOKE DETECTOR

To minimise the impact of air turbulence and stratification on performance a duct smoke detector should be located as far as possible downstream from any obstruction (ie, deflector plates, elbows, dampers, etc). In all situations confirmation of velocity and pressure differential within specifications is required.

A uniform non-turbulent (laminar) airflow between 0.5 and 20m/s must be present in the air duct. The pressure differential between sampling (high pressure) and exhaust (low pressure) tubes should be between 0.025 and 3mbar.

If installing the detector in the return air side of the air duct, locate it at a point where it will not be diluted with outside air.

If possible, install duct smoke detectors upstream of air humidifiers and downstream of dehumidifiers.

To minimise false alarms avoid mounting the detector in areas of extreme high or low temperatures, in areas of high humidity or in areas containing gases or high amounts of dust.

### FITTING THE DETECTOR HEAD

Duct smoke detector part no 53546-021 is designed to accept a conventional detector head. The following heads may be used:

	Ionisation smoke	Optical smoke
Series 60 wide voltage	55000-205	55000-305
Series 65	55000-217	55000-317
Series 65 with flashing LED	55000-216	55000-316

**Table 1** Compatible conventional detectors

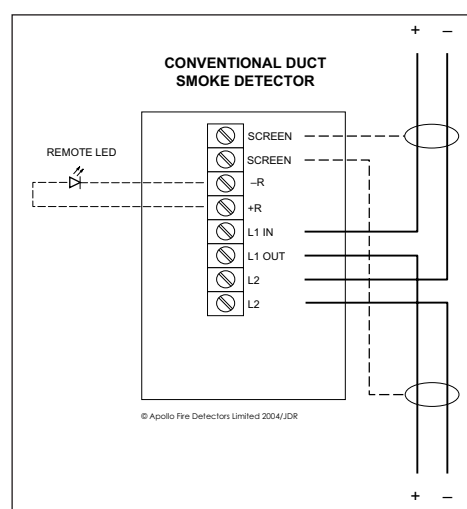
Duct smoke detector part no 53546-022 is designed to accept an analogue addressable detector head. The following heads may be used:

	Ionisation smoke	Optical smoke
XP95	55000-500, -520	55000-600, -620
Discovery	58000-500	58000-600

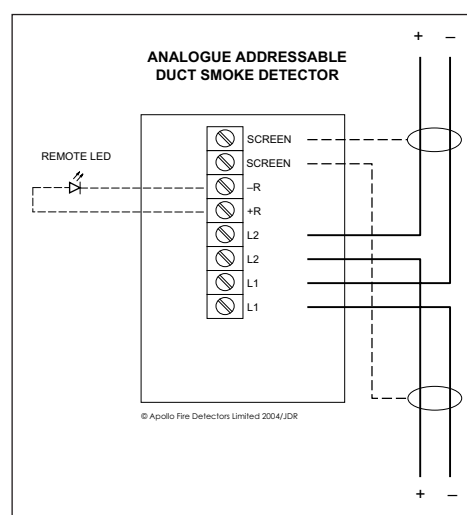
**Table 2** Compatible analogue addressable detectors

### WIRING CONNECTIONS

The duct smoke detector accepts solid or stranded wiring up to 2.5mm<sup>2</sup>.



**Fig 1** Wiring diagram for conventional detectors



**Fig 2** Wiring diagram for analogue addressable detectors