True Duct Smoke Detector

TDD

Jan.08

TDD 300

Technical Data

Sensor type	Infra-beam (Obscuration principle)
Calibration	Factory calibrated
Sensitivity	3 to 25% obscuration (adjustable)
Signal damping	On/Off selectable
Maintenance	Optics require regular cleaning
Power supply	24Vac @ 50/60Hz (-10%...+15%) 24Vdc (-10%...+15%)
Power consumption	62 mA max.
Probe length	100-600 mm
Duct size	
Min	100 x 320 mm (300) 500x500mm(600)
Max	450 x 450 mm (300) 900x900mm(600)
Outputs	
Analogue	2-10Vdc, 3V = normal
Relay 1	Auto/manual reset NO alarm contact SPDT 1A @ 120Vac, 24Vdc, Volt free normally open contact Only SDD 300/600D
Relay 2	SPDT 1A @ 120Vac, 24Vdc, Volt free normally open contact
Analogue status level	
< 2Vdc	Sensor fault
3-7Vdc	Normal operation
7-9Vdc	Optics require cleaning
> 9,5Vdc	Smoke alarm
Electrical connections	Screw terminals for 0,5-2,5 mm² cable
Enclosure	ABS flame retardant
Protection	IP65 (Head with cable gland only)
Ambient range	
Temperature	+10...+40 °C
RH	0-95% non-condensing
Weight	350 g
EMC Emissions	EN 50081-1
EMC Immunity	EN 50082-1

Features

- **Damped or undamped output**
- **Manual or auto reset**
- **Analogue output for service diagnostics**
- **LED bargraph display (TDD 300/600D)**

Design Features

The detector has an alarm relay with potential free normally open contacts which will make contact when smoke is detected.

An analogue output is provided which may be connected to a building management system where the signal level may be used to indicate the presence of smoke and the current service state of the optics.

TDD 300/600D incorporate a moving dot LED display to indicate the current state of the optical devices, a fault relay is also provided to signal unit failure and or the need for cleaning.

Application

The TDD should be installed in ventilation or air- conditioning systems to prevent the smoke generated by a fire circulating within the building and spreading through areas which are not immediately affected. In particular these detectors should be fitted wherever the ventilation ductwork passes through fire barriers and where smoke control dampers are fitted.

This allows the dampers to be closed immediately, thereby limiting the spread of smoke which would otherwise occur if heat activated systems alone were used.

These detectors should also be fitted in the return air ducts of single zone or package air handling units in order that the supply fans may be automatically shut down thus limiting the provision of oxygen to the fire.

The exhaust fans and air control dampers, where fitted, may also be moved to the full exhaust condition to expel any smoke during evacuation of the building.

Ordering Codes

TDD 100	Duct smoke detector, length 100 mm
TDD 150	Duct smoke detector, length 150 mm
TDD 200	Duct smoke detector, length 200 mm
TDD 250	Duct smoke detektor, length 250 mm
TDD 300	Duct smoke detector, length 300 mm
TDD 600	Duct smoke detetctor,length 600 mm
TDD 300D	Duct smoke detector, length 300 mm with bargraph display
TDD 600D	Duct smoke detector, length 600 mm with bargraph display

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Description

The TDD series duct smoke detector has been developed from a proven design using modern devices to provide effective and reliable detection of smoke in ventilation systems.

Detection of smoke is achieved by monitoring a carefully controlled infra red beam within a perforated tube which is inserted into the ductwork.

This method senses smoke directly within the duct, eliminating the problems associated with conventional detectors mounted in sampling boxes.

Circuitry incorporated in the design of the detector controls the infra red beam continuously.

This ensures that the detectors response will remain constant throughout operation of the system.

External influences including background pollution, airborne dust and low level electrical interference frequently found in commercial and industrial applications, a common source of problems with some other types of detector, are selectively filtered by the electronics thereby providing the highest sensitivity to smoke combined with effective rejection of short term disturbances that would otherwise give a false alarm.

The detector features variable sensitivity and an advanced signal damping circuit which can be bypassed for testing purposes.

An LED bargraph visually indicates the smoke density and service state of the optical devices (TDD 300/600D only) and this signal is available as an analogue output to communicate with a building automation system.

Location

The TDD is an optical beam detector and therefore, air velocity has little effect on performance, however, careful positioning of the detector is required if optimum detection is to be achieved.

The detector should always be fitted with the holes in the sensing tube parallel to the airflow.

Where air changes direction its density will vary, therefore, bends and changes in section should be avoided wherever possible when positioning the detector.

The chosen location should also allow access for routine cleaning, however, where site conditions restrict the choice consideration should be given to the air flow pattern to ensure that the detector is in the main airstream.

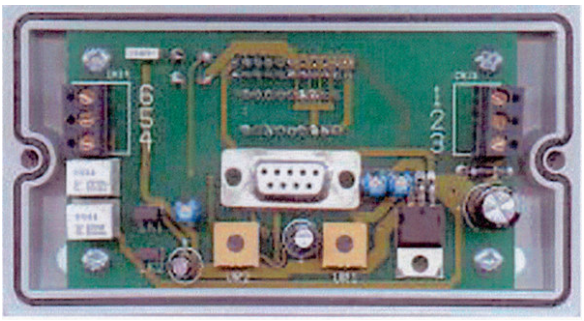
In order to provide the earliest possible detection of smoke the chosen location should limit the number of grilles or branch ducts entering the system prior to the detector position to the minimum possible.

This will reduce the possibility of small quantities of smoke in the duct from the early stages of a fire being diluted by air from unaffected areas prior to passing over the detector.

For this reason each room should, ideally, be protected individually and large open plan areas should be zoned.

The detector should always be fitted as far downstream from the last grille or branch as possible to ensure that the air is well mixed.

Connections



Links & Adjustment		Terminals	
VR1:	Do not adjust	1	0v
VR2:	Sensitivity	2	24Vac
LK1:		3	2-10Vdc output
On =	Output damped	4	Relay common
Off =	Output undamped	5	Fault contact
LK2:			(TDD300/600D
On =	Alarm manual reset		only)
Off =	Alarm auto reset	6	Relay NO

To reset an alarm, or after a power failure, press the RESET button on the sensor lid.

Dimensions