

Smoke detector

- Type RM-O-VS-D with air flow monitor
- for control of fire and smoke dampers

General building approval Z-78.6-67

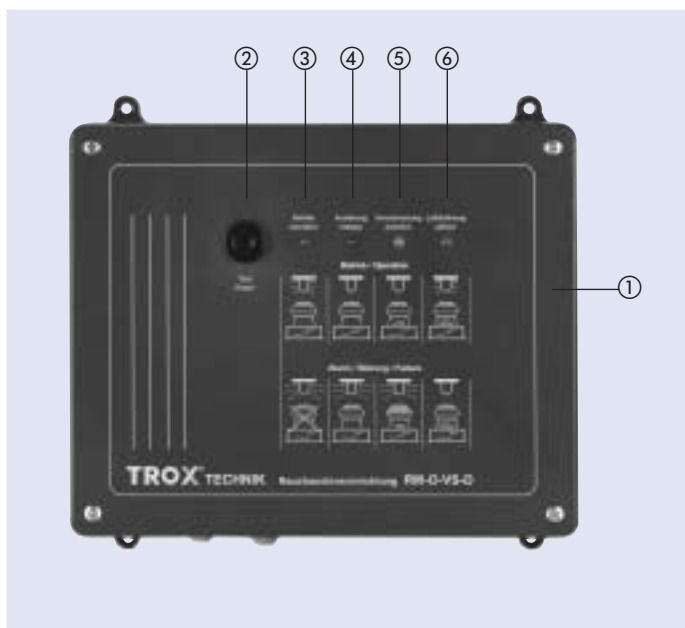


TROX[®] TECHNIK

The art of handling air

Applications · Technical Data	2
Installation instructions	3
Functional description	4
Circuit diagrams	5
Maintenance	6
Order details	7

- ① Smoke detector with mains adapter, sensor electronics, smoke sensor and air flow monitor unit
- ② “Reset / Test” button
- ③ Signal lamp - green - “System monitoring”
- ④ Signal lamp - red - “Alarm condition”
- ⑤ Signal lamp - yellow - “Contamination indicator”
- ⑥ Signal lamp - blue - “Air flow monitoring”



Technical Data

- Supply voltage: 230 V, 50 / 60 Hz
- Power consumption: max. 6 VA
- Protection class: IP 42
- Ambient temperature range: 0 °C to + 60 °C
- Permissible air velocity range: 1 m/s to 20 m/s
- Permissible humidity range: 0 to 90 % relative humidity (Condensation and induction of steam can lead to false alarms)
- Warning limit for air flow: < 2 m/s
- Warning limit for increased contamination: > 70 %
- System monitoring: smoke sensor head missing
Data transmission smoke sensor head defective
- EMC: Interference protection to EN 50081-1 and EN 50130-4
- Weight: approx. 1.5 kg

Application

For control of:

- Fire dampers with electric or electro-pneumatic release mechanisms (power off to operate/close principle)
- Smoke dampers with electric spring return actuators, e. g. TROX type JZ-RS smoke dampers with general building approval Z-78.4-51.

The external inspection as stipulated by law is carried out by VdS Schadenverhütung GmbH, Cologne.

The following should be noted!

- **If a set response threshold for the smoke is exceeded, the smoke detector signals a smoke alarm. The related fire or smoke damper closes. Fresh air or recirculation fans must be shut down if their continued operation will result in the further spread of smoke.**
- **“Regulations on fire protection requirements for ventilation plants” all applicable National Codes must be observed.**
- **The smoke detector may not used to send an alarm to the fire service.**
- **Before commissioning the ventilation plant, the sensor heads must be protected against contamination by building dirt (dirt particles can result in false alarms).**
- **“General and special provisions” of the National Building Codes must be observed.**
- **Installation and maintenance instructions can be found in the leaflet enclosed with every delivery.**

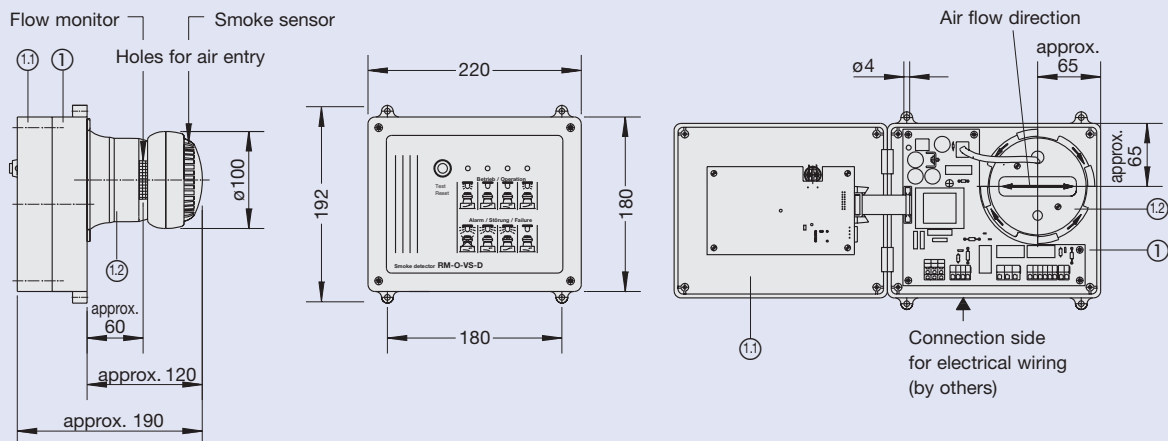
Installation instructions

Installation instructions

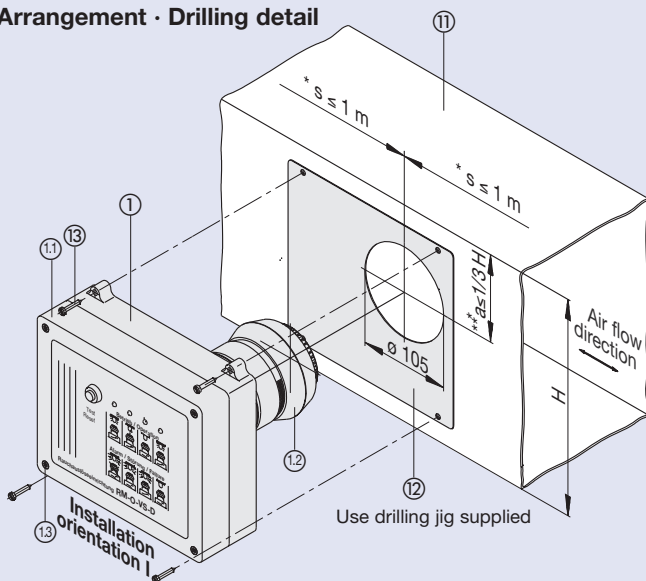
- The smoke detector must be installed on a vibration free surface, in an area of the duct to be monitored, having a uniform air flow over and into the smoke sensor to ensure the proper operation of the smoke alarm.
- Locate the drilling jig (12) on the duct (11) and drill holes (note arrangement and desired installation orientation).
- Using the assembly fixing screws (13), attach the casing to the duct (11).
- Loosen cover fixing screws (13) and open the sealed cover (11) of the casing.
- Connect fire or smoke damper release mechanism (terminal block L3).
- Connect electrical wiring for external functions, e.g. manual remote release (optional).
- Connect to mains supply.
- Close sealed cover (11) and secure with cover fixing screws (13).

- ① Smoke detector with mains adapter, sensor electronics, smoke sensor and air flow monitor unit
- ⑪ Sealed cover connected to casing with hinges
- ⑫ Smoke sensor / air flow monitoring unit
- ⑬ Fixing screws for cover (x4)
- ⑪ Ventilation duct, by others
- ⑫ Drilling jig
- ⑬ Assembly fixing screws (x4)

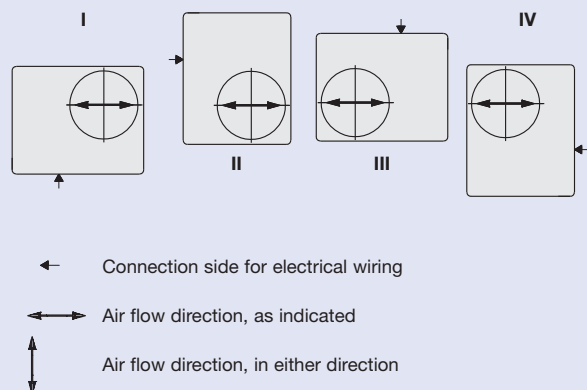
Dimensions



Arrangement · Drilling detail



Installation orientation



← Connection side for electrical wiring

↔ Air flow direction, as indicated

↕ Air flow direction, in either direction

* s = max. distance to fire or smoke damper
Deviations, e.g. due to structural conditions, are only allowed, if reliable smoke detection can be guaranteed.

** for horizontally installed ventilation ducts

Functional description

Fire and smoke damper		Operational status / Event	Signal	Alarm relay	LED lamp	LED lamp	Signal relay	LED lamp
OPEN	CLOSED			LED lamp - red -	- yellow - Contamination	- green - System	- blue - Air flow > 2 m/s 2)	
				Terminal block - X3 -			Terminal block - X4 -	
		Mains turned on - Functional status -	LED					
			Contact					
		Mains not turned on	LED					
Contact								
		Smoke - Alarm situation, immediate release signal -	LED					
Contact								
S3 closed								
		Mains turned on • Electronics defective, • No smoke sensor - Alarm situation, immediate release signal -	LED					
Contact								
		Dust / Contamination > 70 % < 90 %	LED					
Contact								
		Contamination > 90 % - Alarm situation, immediate release signal -	LED					
Contact								
		Manual release can only be cancelled using "Reset"	LED					
Contact								
		Test / Reset - Inspection -	LED					
Contact								
S3 open								
		Mains turned on • Electronics defective, • No smoke sensor - Alarm situation, immediate release signal -	LED					
Contact								
		Dust / Contamination > 70 % < 90 %	LED					
Contact								
		Contamination > 90 % - Alarm situation, immediate release signal -	LED					
Contact								
		Manual release can only be cancelled using "Reset"	LED					
Contact								
		Test / Reset - Inspection -	LED					
Contact								

- 1) Contamination indicator
 up to 70 % - Normal range
 > 70 % - 90 % - Warning range
 > 90 % - Alarm range

- 2) The blue LED goes out at air velocity < 2 m/s
 or after the fire or smoke damper closes.

- 3) The alarm situation, triggered by smoke
 (event or maintenance), can only be cancelled
 by pressing the button after the smoke sensor
 head is again free of smoke.

LED lit LED flashing LED off!

The entire electrical system must be installed in accordance with VDE (or National equivalent) and the local Energy Supply Company regulations.

Also current National Legal Standards related to the “Regulations on fire protection requirements for ventilation plants” must be complied with.

Figure 1 Circuit diagram RM-O-VS-D
(Fire or smoke damper in **CLOSED** position)

Figure 2 Installation with separate power supply for the control device A on the system fire or smoke damper

Figure 1

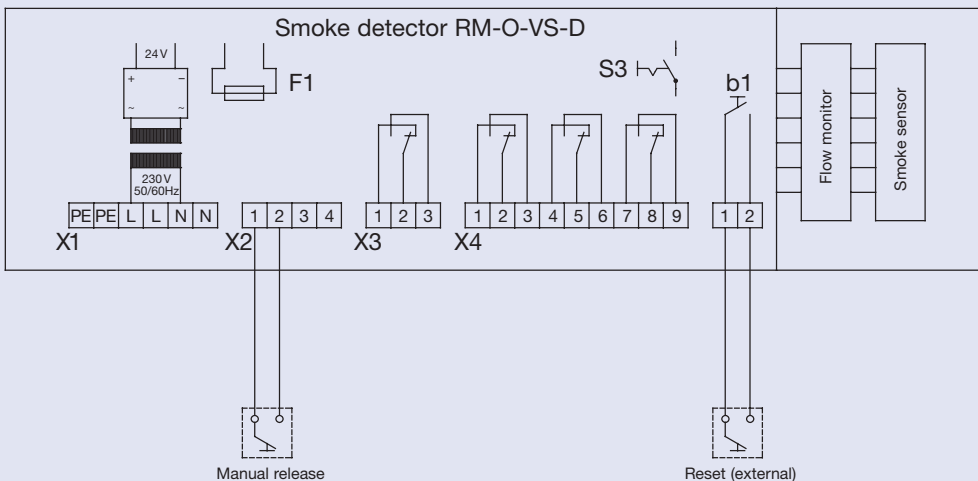
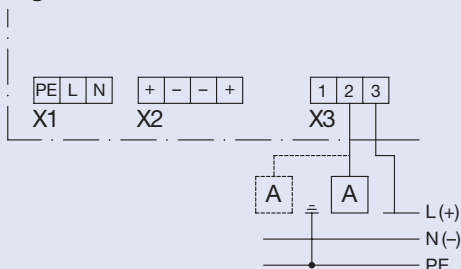


Figure 2



- Ⓧ1 Mains connection 230 V, 50/60 Hz
- Ⓧ2 Manual release
Terminal 1-2
- Ⓧ3 Connection for smoke detector (zero potential)
Switch rating 250 V, 5 A, 24 V DC, 100 W
- Ⓧ4 Air flow monitoring
Terminals 1-2-3 (zero potential)
Contamination and system error signalling
 - S3 closed
Device error and/or smoke sensor head
>70 % contaminated
Terminals 4-5-6 (zero potential)
 - S3 open
Device error and/or smoke sensor head
>90 % contaminated
Terminals 4-5-6 (zero potential)
Smoke sensor head
>70 % contaminated
Terminals 7-8-9 (zero potential)
- Ⓧ1 Fine wire fuse 200 mA mT
- Ⓧ1 “Reset / Test” button
- Ⓧ1 Mode selector switch
- A The number of smoke control systems that can be connected depends on the total power consumption of the systems.

Maintenance

General

- The operator must comply with the basic maintenance requirements in accordance with DIN 31051 (Principles of maintenance) in conjunction with DIN EN 13306 (Maintenance concepts).
- Maintenance activities may only be carried out by qualified companies / specialist staff.
- The results of all maintenance activities must be documented. These documents should be held by the operator. Documentation should also include general building approval.
- Inspection and maintenance must be carried out annually.

Inspection

(at commissioning phase and after any modifications)

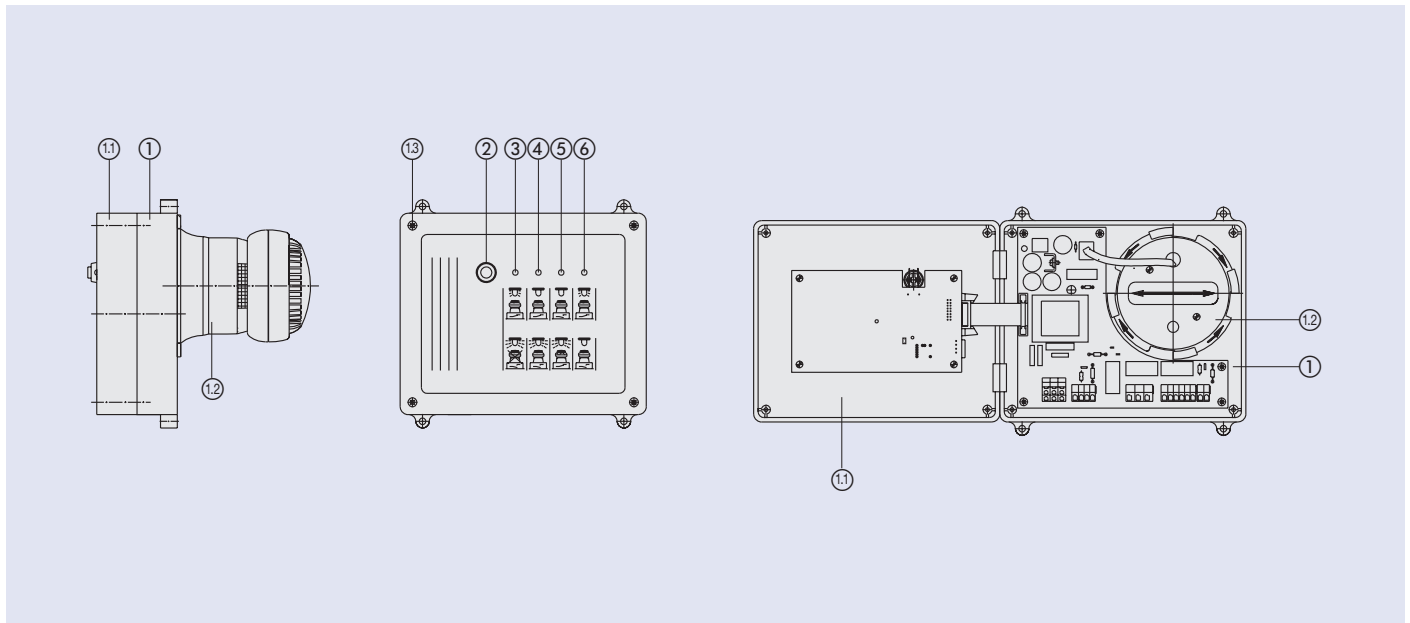
To be checked:

- Application and installation situation
- Electrical connections and no loose wires
- Electrical interaction of signal transmitter, indicators and control devices on the fire or smoke damper
- Flow rates (guarantee of smoke detection)

Maintenance (annually during the inspection)

- With contamination above 70 % (yellow signal lamp flashing) Clean smoke sensor head by blowing out with clean compressed air (oil and moisture free). If unsuccessful, the smoke sensor head must be replaced.
- Remove impurities from the dirt protection screens on the air entry holes (smoke sensor head and flow monitor unit).

- ① Smoke detector with mains adapter, sensor electronics and smoke sensor and air flow monitor unit
- ①① Sealed cover attached to casing with hinges
- ①② Smoke sensor / air flow monitor unit
- ①③ Cover fixing screws (x4)
- ② "Reset / Test" button
- ③ Signal lamp - green - "System monitoring"
- ④ Signal lamp - red - "Alarm condition"
- ⑤ Signal lamp - yellow - "Contamination indicator"
- ⑥ Signal lamp - blue - "Air flow monitoring"



Functional checks

(at commissioning and repeated every year)

Without smoke

- Press the "Reset / Test" button on the smoke detector or in the control centre (optional). The circuit to the controller located on the fire or smoke damper is broken; the fire or smoke damper closes. After the button is released, fire or smoke dampers with spring return motors automatically return to the OPEN position.

Warning!

Fire dampers with solenoid release mechanisms can only be opened again on site by hand.

With smoke

- Check response of the smoke sensor by blowing a test aerosol in an opening in the ventilation duct, which is in direct proximity to the smoke detector (on site check).
- When the permitted concentration limit is exceeded, the fire or smoke dampers in the system will close. To re-open - once the smoke sensor head is free of smoke - the "Reset / Test" button must be pressed.

Procedure:

Open smoke detector (see installation instructions) and remove the smoke sensor / air flow monitor unit (bayonet joint). Loosening of the electrical connections is not necessary.

After the check, reinstall the smoke sensor / air flow monitor unit (note air flow direction) and close smoke detector.

Warning!

All operating, warning and alarm functions are described on Page 4.

Repair

- All defects found during inspection or maintenance must be remedied immediately.
- Defective or contaminated smoke sensor heads must only be replaced with original TROX components.
- The smoke detector can only be repaired by the manufacturer.

Order code

RM-O-VS-D

Specification text

Smoke detector (smoke sensing using optical light scatter principle) to prevent transfer of smoke via the ventilation ducting in air conditioning systems.

Suitable for control and release of fire and smoke dampers with General Building Approval equipped with electric or electro-pneumatic release mechanisms and working on the principle of power off to close.

Essential features

- Can be used for air velocities of 1 m/s to 20 m/s
- With integral mains adapter (supply voltage 230 V, 50 / 60 Hz)
- Zero potential signal relay
- Integral signal lamps
- Sealed cover connected to casing with hinges
- Choice of four flow directions by rotation through 90°
- Easy to remove smoke sensor head (simple functional check)
- With contamination level indicator and "tracking" of sensitivity threshold (long service life)
- Air flow monitor (warning limit set at air velocity < 2 m/s)
- Annual maintenance
- Granted General Building Approval Z-78.6-67 by the German Institute for Structural Engineering, Berlin
- Compatible with any product and manufacturer

Order example

Manufacturer: TROX

Type: RM-O-VS-D

Quantity: 5