



RM-O-M

Duct smoke detector



TROX[®] TECHNIK

The art of handling air

TROX GmbH

Heinrich-Trox-Platz

47504 Neukirchen-Vluyn

Germany

Phone: +49 (0) 2845 202-0

Fax: +49 (0) 2845 202-265

E-mail: trox-de@troxgroup.com

Internet: <http://www.troxtechnik.com>

Translation of the original

A00000046508, 1, GB/en

09/2023

© 2021 TROX GmbH

General information

About this manual

This operating and installation manual enables operating or service personnel to correctly install the TROX product described below and to use it safely and efficiently.

This operating and installation manual is intended for use by fitting and installation companies, in-house technicians, technical staff, instructed persons, and qualified electricians or air conditioning technicians.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

This manual must be given to the system owner when handing over the system. The system owner must include the manual with the system documentation. The manual must be kept in a place that is accessible at all times.

Illustrations in this manual are mainly for information and may differ from the actual design.

Copyright

This document, including all illustrations, is protected by copyright and pertains only to the corresponding product.

Any use without our consent may be an infringement of copyright, and the violator will be held liable for any damage.

This applies in particular to:

- Publishing content
- Copying content
- Translating content
- Microcopying content
- Saving content to electronic systems and editing it

TROX Technical Support

To ensure that your request is processed as quickly as possible, please keep the following information ready:

- Product name
- TROX order number
- Delivery date
- Brief description of defect or issue

Online	www.trox.de
Phone	+49 2845 202-0

Limitation of liability

The information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

The manufacturer does not accept any liability for damages resulting from:

- Non-compliance with this manual
- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications
- Technical changes
- Use of non-approved replacement parts

The actual scope of delivery may differ from the information in this manual for bespoke constructions, additional order options or as a result of recent technical changes.

The obligations agreed in the order, the general terms and conditions, the manufacturer's terms of delivery, and the legal regulations in effect at the time the contract is signed shall apply.

We reserve the right to make technical changes.

Warranty claims

The provisions of the respective general delivery terms apply to warranty claims. For purchase orders placed with TROX GmbH, these are the regulations in section "VI. Warranty claims" of the Delivery Terms of TROX GmbH, see www.trox.de/en/.

Safety notes

Symbols are used in this manual to alert readers to areas of potential hazard. Signal words express the degree of the hazard.

Comply with all safety instructions and proceed carefully to avoid accidents, injuries and damage to property.



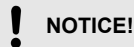
DANGER!
Imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!
Potentially hazardous situation which, if not avoided, may result in death or serious injury.



CAUTION!
Potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



NOTICE!
Potentially hazardous situation which, if not avoided, may result in property damage.



ENVIRONMENT!
Environmental pollution hazard.

Tips and recommendations



Useful tips and recommendations as well as information for efficient and fault-free operation.

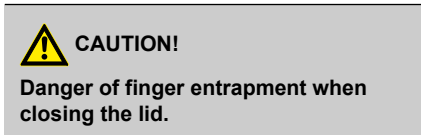
Safety notes as part of instructions

Safety notes may refer to individual instructions. In this case, safety notes will be included in the instructions and hence facilitate following the instructions. The above listed signal words will be used.

Example:

1. ▶ Loosen the screw.

2. ▶




Be careful when closing the lid.

3. ▶ Tighten the screw.

Specific safety notes

The following symbols are used in safety notes to alert you to specific hazards:

Warning signs	Type of danger
	Warning – danger zone.

1	Safety	7	Commissioning.....	30
	General safety notes.....	7	Airflow monitoring.....	30
	Correct use.....	7	Functional test.....	30
	Qualified staff.....	8	Reset.....	31
	Safety signs.....	8	8	Maintenance
2	Technical data	9	General information.....	32
	Dimensions.....	9	Repair work.....	33
	Duct smoke detector.....	10	Open / close inspection cover.....	33
	Sensor head.....	11	Check seal.....	33
	Type plate.....	11	Check/replace sensor head.....	33
3	Transport and storage	12	9	Accessories and spare parts
4	Parts and function	12	10	Index
	General functional description.....	12		
	RM-O-M with air guide profile.....	13		
	RM-O-M with sensor head in air duct.....	13		
	Accessories.....	14		
	Operating status displays	15		
5	Installation	19		
	General notes on installation.....	19		
	Mounting on rectangular air duct.....	21		
	Mounting on round air duct.....	23		
6	Electrical connection	24		
	Supply voltage and wiring to the actuator..	25		
	Supply voltage 230 V AC, Spring return actuator 230 V AC.....	25		
	Supply voltage 230 V AC, Spring return actuator 24 V DC.....	26		
	Supply voltage 24 V DC, Spring return actuator 24 V DC.....	26		
	Connect display module.....	27		
	Integration into the central building man- agement system (BMS).....	27		
	Expansion modules.....	28		
7	Commissioning / Function test / Reset.	30		

1 Safety

General safety notes

Electrical voltage



DANGER!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

Correct use

- The smoke detector is used for smoke detection in ventilation and air-conditioning systems (AHU).
- Fire dampers or smoke protection dampers can be triggered (closed) by the smoke detector.
- The duct smoke detector can also be used to switch off the fan in a ventilation system.
- The duct smoke detector can be used in supply and extract air systems.
- In public swimming pools, the use is only permitted in pure supply air ducts (without circulating air).
- Use in extract air ducts for kitchens or laboratories must be checked on a case-by-case basis.
- Operation is only permitted in accordance with the installation instructions and the technical data in these installation and operating instructions.
- Modifying the duct smoke detector or using replacement parts that have not been approved by TROX is not permitted.
- Only use TROX test gas for the function test.

Incorrect use



WARNING!

Danger due to incorrect use!

Misuse of the duct smoke detector can lead to dangerous situations.

The duct smoke detector must not be used:

- in areas with potentially explosive atmospheres (EX);
- outdoors without adequate protection against the effects of weather;
- in areas with direct sunlight
- in atmospheres where chemical reactions, whether planned or unplanned, may cause damage to the duct smoke detector or lead to corrosion

Qualified staff

WARNING!

Danger of injury due to insufficiently qualified individuals!

Incorrect use may cause considerable injury or damage to property.

- Only specialist personnel must carry out work.

Personnel:

- Skilled qualified electrician
- Trained personnel

Qualified electrician

The qualified electrician is a person who due to his professional training, knowledge, and experience, as well as knowledge of applicable standards and regulations, is capable of executing work on electrical equipment and is capable of autonomously recognizing and avoiding possible hazards.

The qualified electrician is specially trained for the work environment where he is active and is familiar with the relevant standards and regulations.

Skilled qualified electrician

Skilled qualified electricians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on electrical systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

Trained personnel

Trained personnel are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to carry out their assigned duties, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

Safety signs

The following symbols and information signs can be found on the product.

WARNING!

Danger due to illegible signage!

Over time, labels and signs can become dirty or otherwise unrecognisable, so that hazards cannot be recognised and necessary operating instructions cannot be followed. There is then a risk of injury.

- Ensure that all of the safety, warning and operating information is clearly legible.
- Replace illegible signs or labels immediately.

Electrical voltage



Only qualified electricians are allowed to work in areas marked as having electrical voltage.

Unauthorised persons must not open the marked areas.

2 Technical data

Dimensions

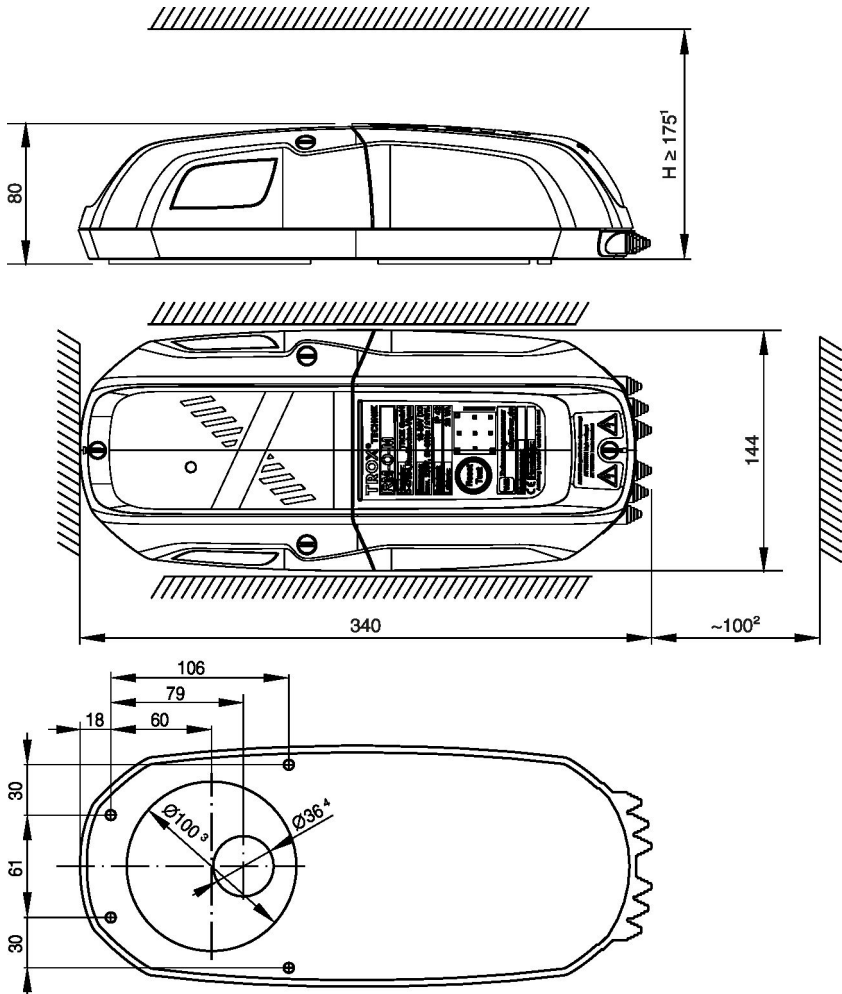


Fig. 1: Dimensions and space required

- | | |
|--|---|
| <p>1 for variant with air guide profile: $H \geq$ Air guide profile</p> <p>2 Space requirement for connection lines</p> | <p>3 for variant with sensor head in duct, opening in air duct $\varnothing 100 \dots 105$ mm</p> <p>4 for variant with air guide profile, opening in air duct $\varnothing 40 \dots 45$ mm</p> |
|--|---|

Duct smoke detector

Nominal operating voltage DC	24 V ±10%
Nominal operating voltage AC	230 V AC ±15% 50-60 Hz
Operating voltage range DC	21.6 V DC ... 28.8 V DC ± 3%
Cut-off range DC	< 22.3 V DC and > 28.0 V DC
Power consumption without accessories (nominal operation)	5 VA (at 230 V AC); 3.6 W (at 24 V DC)
Power consumption with display or expansion module (nominal operation)	6 VA (at 230 V AC); 4.8 W (at 24 V DC)
Current consumption without accessories (nominal operation)	40 mA (at 230 V AC); 150 mA (at 24 V DC)
Current consumption with display or expansion module (nominal operation)	50 mA (at 230 V AC); 200 mA (at 24 V DC)
Maximum connected load spring return actuator	10 VA (230 V AC/ 24 V DC)
Internal fuse	500 mA, slow-blow
Maximum connection diameter	2.5 mm ²
Relay contact FD Alarm (motherboard)	230 V AC or 24 V DC; 8A
Relay contact Sys Fail (motherboard)	24 V DC; 1A
Relay contact Alarm BMS (EM-RELAY)	24 V DC; 1A
Relay contact Airflow (EM-RELAY)	24 V DC; 1A
Relay contact Pollution (EM-RELAY)	24 V DC; 1A
IP protection level	IP42
Protection class 230V AC / 24 V DC	II (protective insulation) / III (protective extra-low voltage)
Minimum length air guide profile	90 mm (600 mm in scope of delivery)
permissible airflow velocity	1.0...20 m/s
Alarm threshold for volume flow rate	0.8 m/s
Alarm threshold for increased contamination	> 70%
Operating temperature	-10...65 °C
Relative humidity	5 %...90 %, no condensation
Storage temperature	-20...70 °C
Weight	max. 1.1 kg (without air guide profile)

Dimensions	340×144×80 mm (L×W×H)
EC conformity / approval	<ul style="list-style-type: none"> ■ Construction Products Regulation (EU) no. 305/2011 ■ EN 54-27:2015 - Fire detection and fire alarm systems - Smoke detectors for monitoring ventilation ducts ■ General building inspectorate licence Z-78.X-XX ■ VdS approval number: G 22 30 17

Sensor head

Nominal operating voltage DC	DC 3.3 V ± 5%
Current consumption at rest	5 µA
Current consumption with display	24 mA max.

Type plate



Fig. 2: Type plate (example)

- | | |
|--|--|
| <p>1 Type</p> <p>2 Manufacturer's address</p> <p>3 Specification of the supply voltage</p> <p>4 Protection level</p> <p>5 Power consumption</p> <p>6 CE mark</p> | <p>7 Test/reset button ↪ 'Function test with test/reset button' on page 30</p> <p>8 Order data</p> <p>9 National conformity mark (Ü-Zeichen)</p> <p>10 VdS approval number</p> <p>11 QR code for downloading technical information</p> |
|--|--|

3 Transport and storage

Delivery check

Check delivered items immediately after arrival for transport damage and completeness. In case of any damage or an incomplete shipment, contact the shipping company and your supplier immediately.

Delivery depends on the options ordered according to the order key. The order key is listed in the shipping documents.

Transport on site

If possible, transport the smoke detector in its packaging until it reaches the place of installation. Do not remove the packaging until immediately before installation.

General functional description

In order to prevent the spread of smoke in buildings through ventilation and air-conditioning systems, it is important to detect smoke at an early stage. The duct smoke detector RM-O-M is used to control and trigger fire dampers or smoke protection dampers. The duct smoke detector operates on the principle of light scattering and detects the smoke regardless of its temperature, so that fire dampers close before their release temperature is reached. The fire dampers or smoke control dampers are closed in the event of interrupting the supply voltage to the spring return actuator (alarm relay R1).

The duct smoke detector can also be used to switch off the fan in a ventilation system.

LED indicators can be used to display information such as smoke detection or the degree of soiling of the sensor head.

With the optional expansion module EM-RELAY, ↪ *Chapter 6.2.1.2 'EM-RELAY' on page 29*, the evaluated information can be forwarded to the central building management system.

EM-RELAY - Relay board for evaluation of alarm, contamination and airflow monitoring

Storage

For temporary storage please note:

- Remove any plastic wrapping.
- Protect the product from dust and contamination.
- Store the product in a dry place and away from direct sunlight.
- Do not expose the unit to the effects of weather (not even in its packaging).
- Do not store the product below -20 °C or above 70 °C.

Packaging

Properly dispose of packaging material.

4 Parts and function

The descriptions for commissioning and configuration can be found in the corresponding commissioning and configuration descriptions.

The duct smoke detector is supplied in two different versions:

- RM-O-M with air guide profile Fig. 3
- RM-O-M with sensor head in duct Fig. 4

RM-O-M with air guide profile

Functional description

With this variant, the air guide profile permanently directs air from the air duct into the sensor head, and back into the air duct. The sensor head is installed in the casing of the RM-O-M and is easily accessible via the inspection cover. For round air ducts, we recommend using the variant with air guide profile.

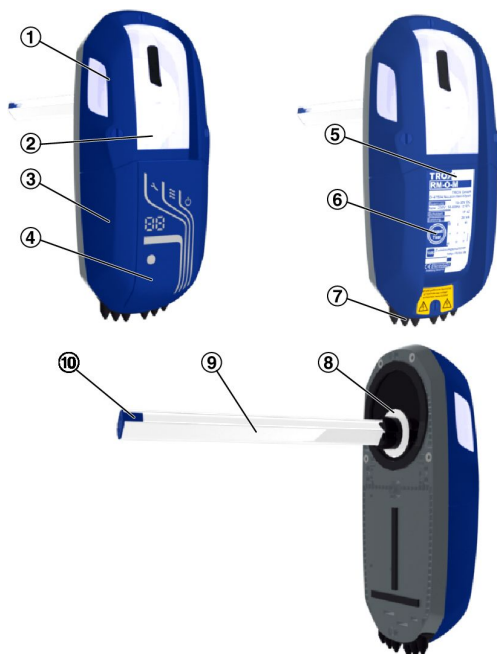


Fig. 3: RM-O-M with air guide profile

- ① Inspection cover RM-O-M
- ② Inspection window with LED display
↪ on page 15
- ③ Casing
- ④ Display module (optional)
- ⑤ Type plate
- ⑥ Test/reset button
- ⑦ Cable gland
- ⑧ Seal
- ⑨ Air guide profile
- ⑩ End cap

RM-O-M with sensor head in air duct

Functional description

With this variant, the sensor head sits directly in the air duct. After removing the inspection cover, the sensor head can be easily removed from the air duct.

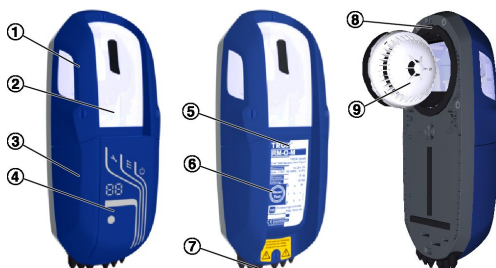


Fig. 4: RM-O-M with sensor head in air duct

- ① Inspection cover RM-O-M
- ② Inspection window with LED display
↪ on page 15
- ③ Casing
- ④ Display module (optional)
- ⑤ Type plate
- ⑥ Test/reset button
- ⑦ Cable gland
- ⑧ Seal
- ⑨ Sensor head

Accessories

Display module

On the optional display module, the operating and status messages are shown in detail by four coloured LEDs and an alphanumeric 2-character display. If the installation situation is difficult to reach, the display module can be fixed in an accessible place. For this purpose, the display module can be attached to magnetic surfaces or to the supplied mounting bracket. The scope of delivery includes, depending on the attachment variant, a 0.2 m or an 8 m cable, max. cable length 8 m; cable type: standard network cable e. g. SF-UTP.

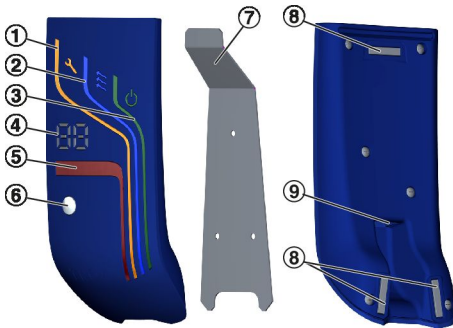







































Fig. 5: Display module

- ① LED yellow - contamination >70%
- ② LED blue - airflow monitoring
- ③ LED green - operation
- ④ Status indicator ↗ on page 18
- ⑤ LED red - alarm
- ⑥ Test/reset button
- ⑦ Mounting bracket
- ⑧ Magnets
- ⑨ Connection socket for connection with smoke detector RM-O-M

Function of the LED indicators, ↗ on page 17

Operating status displays

Mainboard / sensor head

Operating status	LED Mainbord			LED Sensor head		Damper blade position	
	red	green	yellow	Status	Colour	OPEN	CLOSED
Normal operation					green		
Normal operation Contamination >70% ...<90%					yellow		
Normal operation Airflow < 0.8 m/s ¹					yellow		
Alarm position (immediate release) Contamination >90%					red		
Alarm position (immediate release) ² Smoke					red		
Alarm position (immediate release) Test or manual release	 Flashing consecutively for one second each						
Alarm position (immediate release) System error					red		
OFF No supply voltage					-		

¹⁾ only with activated airflow monitoring

²⁾ triggered by smoke (event or maintenance)

LED Status	 off	 on	 blinking
------------	---	--	--

Relay circuits

Operating status	Mainboard		Extension board (EM-RELAY)			Damper blade position	
	Alarm FD	Sys.Fail	Airflow	Pollution	Alarm BMS	OPEN	CLOS ED
Normal operation							
Normal operation Contamination >70% ... <90%							
Normal operation Airflow < 0.8 m/s ¹							
Alarm position (immediate release) Contamination >90%							
Alarm position (immediate release) ² Smoke							
Alarm position (immediate release) Test or manual release							
Alarm position (immediate release) System error							
OFF No supply voltage							

¹) only with activated airflow monitoring

²) triggered by smoke (event or maintenance)

Display module (optional)

Operating status	LED				Status indicator	Damper blade position	
	red	yellow	blue ³	green		OPEN	CLOSE D
Normal operation					XX ⁴		
Normal operation Contamination >70% ...<90%					XX ⁴		
Normal operation Airflow < 0.8 m/s ¹					LO		
Alarm position (immediate release) Contamination >90%					PO		
Alarm position (immediate release)² Smoke					F1		
Alarm position (immediate release) Test or manual release	 Flashing consecutively for one second each				CH / 88 (alternating)		
Alarm position (immediate release) System error					see status indicator ↻ 18		
OFF No supply voltage					off		

¹⁾ only with activated airflow monitoring

²⁾ triggered by smoke (event or maintenance)

³⁾ Blue LED lights up at air speed < 0.8 m/s

⁴⁾ Measuring chamber - contamination in %

LED Status	off	on	blinking
------------	-----	----	----------

Status LEDs

Display	Operating status	Description
XX	Normal operation	Measuring chamber - contamination in %
LO		LO only applies if airflow <0.8m/s
CH/88	Alarm position	Test function active (test mode)
PO		Measuring chamber - contamination with functional impairment
H0		Mainboard defective
H1		Motherboard and extension module not compatible
H2		No communication between mainboard and sensor head
H3		No communication between mainboard and extension module
H5		Supply voltage - overvoltage/undervoltage total system
H6		Sensor head - wrong sensor head (no TROX sensor head)
H7		Sensor head - wrong sensor head
H8		Sesnor head - hardware fault
F1		Smoke detection

5 Installation

General notes on installation

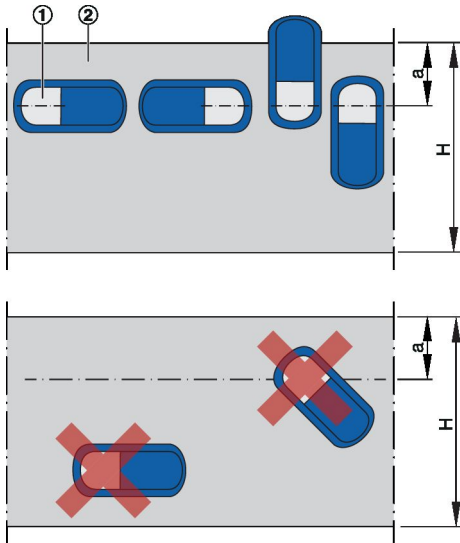


Fig. 6: RM-O-M Installation positions in horizontal air ducts

- ① RM-O-M
- ② Horizontal air duct
- a Distance a = 1/3 H
- H Duct height

Note

Recommendations for installation:

- 1.5 × H minimum distance between duct smoke detector and any bends, control units etc.
- Fit the duct smoke detector in the upper third of horizontal air ducts (not near a corner).

If structural reasons do not permit this, the duct smoke detector must be installed in such a way that safe smoke detection is nevertheless guaranteed.

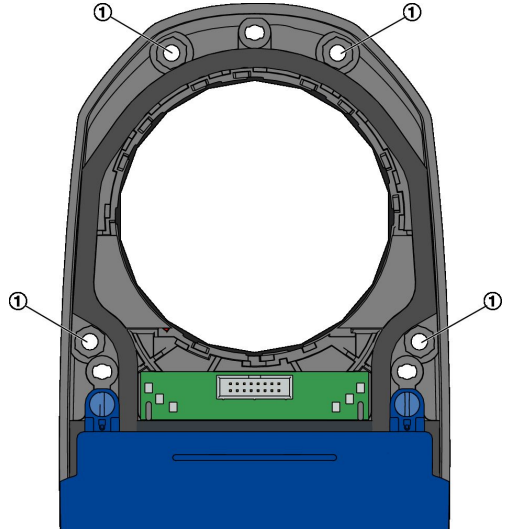


Fig. 7: Fixing holes

- ① Fixing holes

For mounting, there are 4 mounting holes on the smoke detector, dimensions: ↪ Chapter 2.1 'Dimensions' on page 9. The RM-O-M may only be attached to the air duct at the specified mounting holes, using screws.

CAUTION!

Malfunction of the duct smoke detector

If the casing is damaged, the function of the duct smoke detector may be impaired.

When carrying out assembly work, proceed carefully and do not drill any additional holes in the casing.

Do not use damaged units.

Prepare air guide profile for mounting

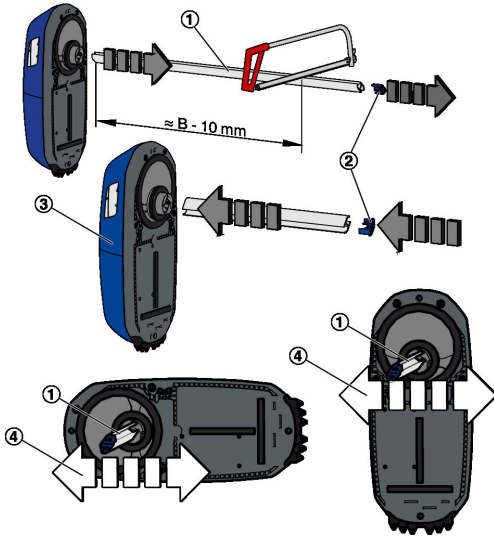


Fig. 8: Installation RM-O-M in horizontal air duct

1. ▶ Measure the width (B) or diameter (ØD) of the air duct.

! NOTICE!

Do not shorten the air guide profile on the side (red insertion marking) that is inserted into the recess on RM-O-M.

When shortening the air guide profile, a minimum length of 90 mm must be observed.

2. ▶ For B or ØD < 600 mm: shorten air guide profile (Fig. 8) to $\approx B$ or $\text{ØD} - 10$ mm.

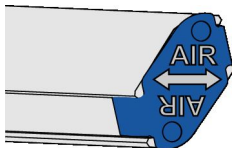


Fig. 9: Air direction arrow end cap

3. ▶ Fit the end cap (Fig. 8/2) on the shortened end of the air guide profile.

! NOTICE!

Proper function is not guaranteed without the end cap in place.

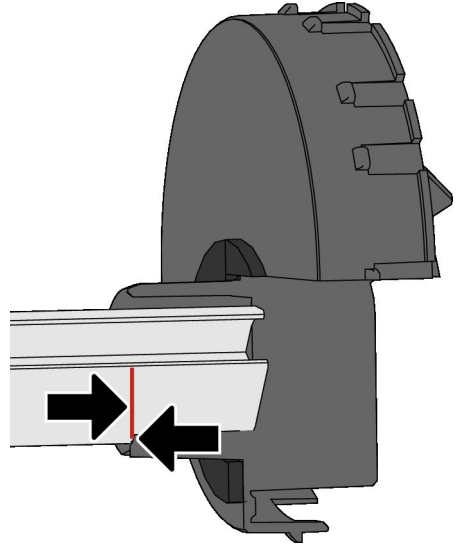


Fig. 10: Insert air guide profile

4. ▶ Insert the air guide profile into the duct smoke detector up to the red insertion mark. Observe the direction of airflow on the end cap of the air guide profile Fig. 9.

! NOTICE!

Malfunction due to improper installation

For proper functioning, it is important that the air guide profile is inserted into the recess up to the red insertion mark (no gap between mark and recess).

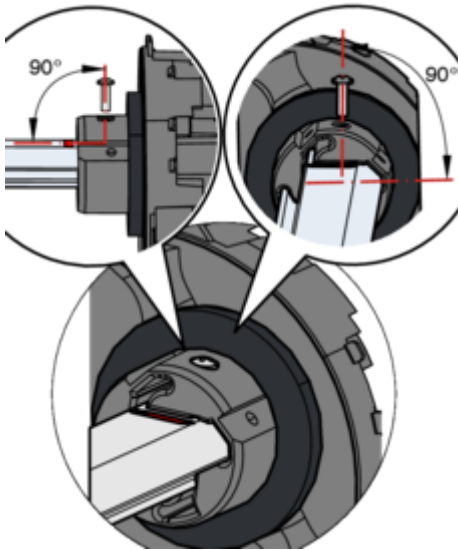


Fig. 11: Fixing the air guide profile

5. ▶ Fix the air guide profile to the smoke detector using the Phillips screw (3x10) supplied.
 - Screw in the Phillips screw vertically to the profile!
 - Screw in the screw hand-tight to the end position (bearing surface).

**Mounting on rectangular air duct
RM-O-M with air guide profile**

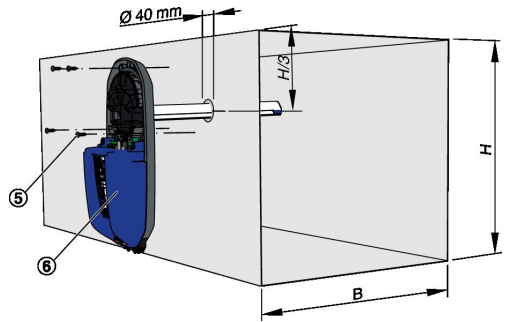


Fig. 12: Installation RM-O-M in horizontal air duct

Upon installation, make sure that the air guide profile is mounted in the upper third of the air duct, minimum length of the air guide profile is 90 mm.

1. ▶ Prepare air guide profile for assembly, & ‘Prepare air guide profile for mounting’ on page 20.
2. ▶ Mark the intended position of the RM-O-M with the drilling template (packaging).
3. ▶ Drill a hole \varnothing 40 mm at the intended position, e.g. using a step drill.



DANGER!

Malfunction due to improper installation

The casing seals must seal tightly to the air duct. No ambient air may enter the casing.

The smoke detector RM-O-M with air guide profile must therefore not be installed in holes larger \varnothing 45 mm.

4. ▶ Pre-drill the holes for the four screws.
5. ▶ Insert the air guide profile into the 40 mm hole.

6. ▶ Attach the smoke release device (Fig. 12/6) to the air duct with screws (Fig. 12/5).
7. ▶ After fastening the casing, check whether the adapter with air guide profile is movable (can be removed and reinserted ↪ 8.2.3.1 'RM-O-M with air guide profile' on page 33).
8. ▶ Fit and fasten the inspection cover, ↪ Chapter 8.2.1 'Open / close inspection cover' on page 33.

RM-O-M with sensor head in air duct

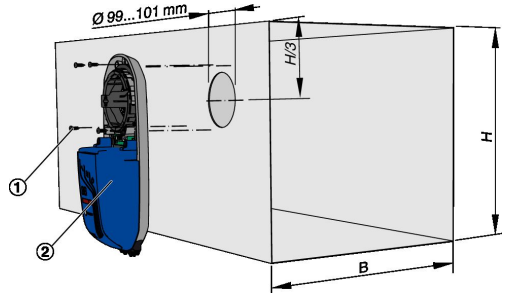


Fig. 13: Installation RM-O-M in horizontal air duct

For installation, it must be ensured that the sensor head is mounted in the upper third of the air duct.

1. ▶ Open inspections cover, Fig. 22
2. ▶ Mark the intended position of the RM-O-M with the drilling template (packaging) ↪ Chapter 5.1 'General notes on installation' on page 19.

! NOTICE!

The smoke detector may only be attached to the specified mounting holes.

3. ▶ Make a round hole \varnothing 100....105 mm at the intended position.
4. ▶ Attach the smoke detector (Fig. 12/2) to the air duct with screws (Fig. 12/1).
5. ▶ Insert the sensor head into the smoke detector, ↪ 8.2.3.2 'RM-O-M with sensor head in air duct' on page 35. When inserting, the air direction must be observed.
6. ▶ Fit and fasten the inspection cover, ↪ Chapter 8.2.1 'Open / close inspection cover' on page 33.

Mounting on round air duct

RM-O-M with air guide profile

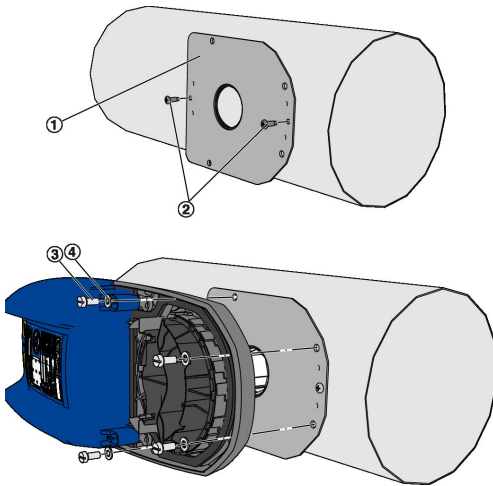


Fig. 14: RM-O-M Installation in round air duct

Upon installation, make sure that the air guide profile is mounted through the centre of the air duct, minimum length of air guide profile is 90 mm.

For round air ducts, the smoke detector is fixed with a bracket (order code: RM-KIT/Console).

1. ▶ Prepare air guide profile for assembly,
 - ↳ 'Prepare air guide profile for mounting' on page 20.
2. ▶ Drill a hole \varnothing 40 mm at the intended position, e.g. using a step drill.

⚠ DANGER!

Malfunction of the smoke detector due to improper installation.

The casing seal must be tight to the air duct. No ambient air may enter the casing.

The smoke detector RM-O-M with air guide profile must not be installed in holes larger than \varnothing 45 mm.

3. ▶ Fasten the mounting bracket (Fig. 14/1) to the air duct with 2 screws or rivets (Fig. 14/2).
4. ▶ Insert the smoke detector with air guide profile into the drilled hole.
5. ▶ Secure the smoke detector to the bracket (Fig. 14/1) with screws M5 x 12 (Fig. 14/3) and washers (Fig. 14/4).

! NOTICE!

The smoke detector may only be attached to the specified mounting holes.

6. ▶ Fit and fasten the inspection cover
 - ↳ Chapter 8.2.1 'Open / close inspection cover' on page 33.

6 Electrical connection

Opening the electrical operating area

⚠ DANGER!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

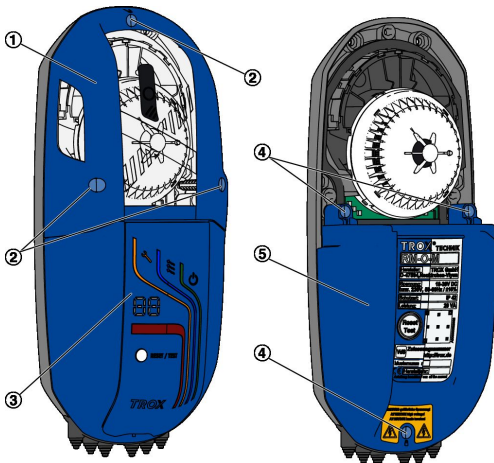


Fig. 15: Opening the electrical operating area

Personnel:

- Skilled qualified electrician

1. ▶ Remove the display module, if provided (Fig. 15/3).
2. ▶ Loosen the bayonet screws (Fig. 15/2) and remove the inspection cover (Fig. 15/1).
3. ▶ Loosen the bayonet screws (Fig. 15/4) and remove the unit cover (Fig. 15/5).

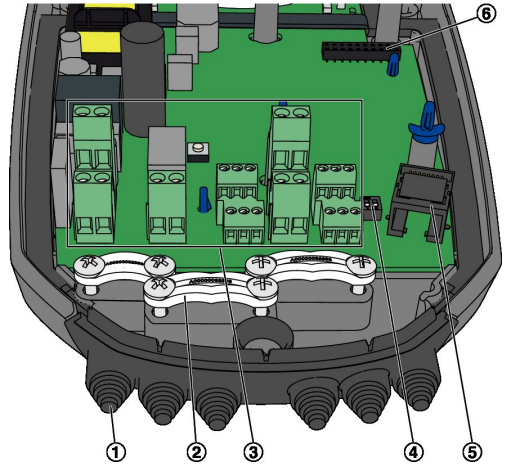


Fig. 16: RM-O-M Connections Mainboard

- ① Cable gland
- ② Strain relief
- ③ Connection terminals
- ④ Dip switch airflow monitoring
- ⑤ Connection socket display module
- ⑥ Expansion module slot

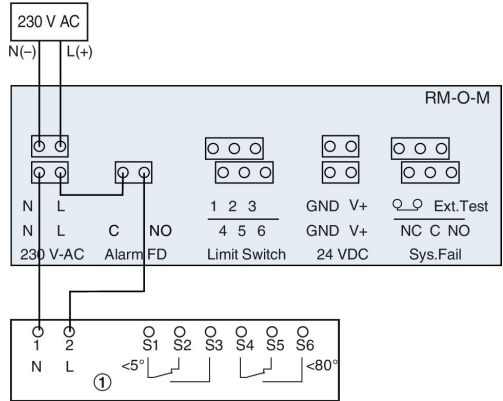
Airflow monitoring ④

- S1 Off - Airflow monitoring switched on (default)
- S1 On - Airflow monitoring switched off
- S2 - not used

Supply voltage and wiring to the actuator

- Depending on the supply voltage and the design of the actuator, the wiring must be carried out according to the following connection diagrams. Taking into account the performance data ↗ *Chapter 2.2 'Duct smoke detector' on page 10*, parallel connection of several actuator is possible.
- Connect the unit to the supply voltage in such a way that an all-pole disconnection from the mains is possible at any time.
- Install the fuse protection of the supply line (building protection) according to the technical rules, based on the performance data and the selected cable cross-section, observe the maximum cable cross-section, ↗ *on page 10*.
- The fire dampers or smoke protection damper can be equipped with an actuator for a supply voltage of 230 V AC or 24 V AC/DC. See the performance data on the rating plate.
- The connecting cables of the 24 V spring return actuators of fire dampers are fitted with plugs. For connection to the terminals, shorten the connecting cable.
- Insert connecting cables only at the cable bushings, maximum cable diameter 10 mm.
- Secure connection cables with strain relief.

**Supply voltage 230 V AC,
Spring return actuator 230 V AC**



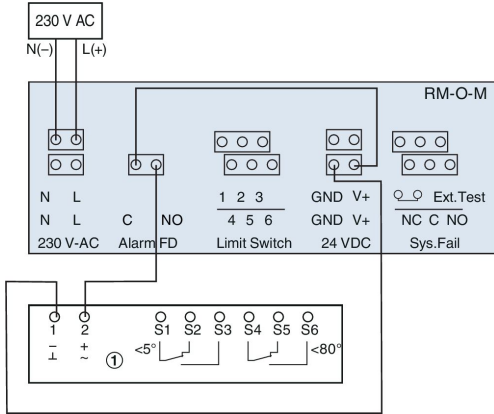
With 230 V AC supply voltage of the RM-O-M, spring return actuators ① can also be connected using double connection terminals of the RM-O-M. The maximum power of the feeding power supply and the maximum switching capacity of 10 VA of the RM-O-M must be taken into account.

Note: Wiring of end position detection to RM-O-M, only if RM-O-M has a communication board.

! NOTICE!

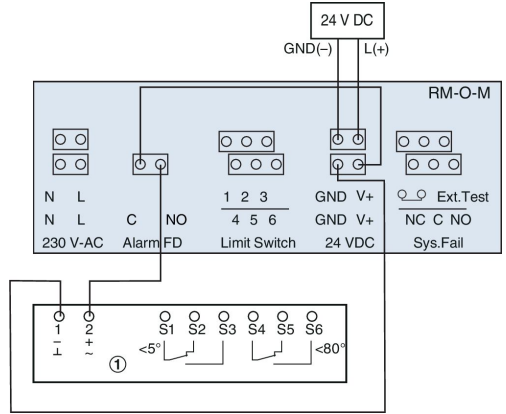
To avoid malfunctions due to short-circuits or wire breakage, separate cable routing or routing the cables in a protective tube or cable duct is required when using the output voltage GND / V+ (24 V) and using the display module.

**Supply voltage 230 V AC,
Spring return actuator 24 V DC**



With 230 V AC supply voltage of the RM-O-M, spring return actuators ① can be supplied with 24V DC by the power supply unit of the RM-O-M. The maximum permissible connection power load is 10 VA.

**Supply voltage 24 V DC,
Spring return actuator 24 V DC**



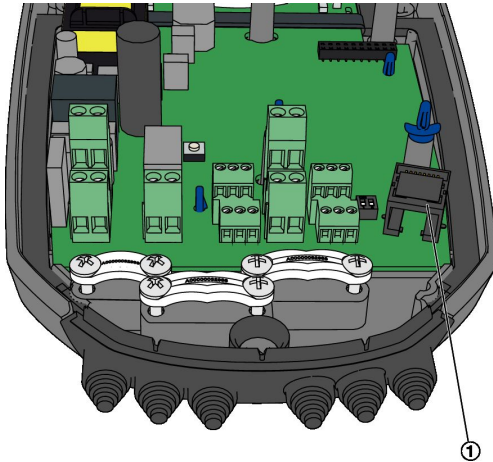
With 24 V DC supply voltage of the RM-O-M, spring return actuators ① can also be connected using the double connection terminals of the RM-O-M. The maximum power of the feeding power supply and the maximum switching capacity of 10 VA of the RM-O-M must be taken into account.

Connect display module

Personnel:

- Skilled qualified electrician

The display module can be connected with the network cable (approx. 0.2 m), included in the supply package. It is possible to extend the network cable up to a maximum of 8 metres.



1. ▶ Insert the connection cable through the cable gland into the casing and plug it into the socket (1).



2. ▶ Plug the connection cable into the socket on the display module (2).

Integration into the central building management system (BMS)

The following connections can be used for integration into the central building management system:

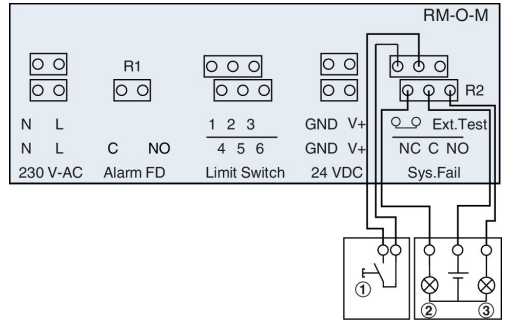


Fig. 17: Connection diagram

R1 Alarm relay

R2 Sys.Fail Relay (System Failure)

① External test button

② Control light switched off in case of system error

③ Control light switched on in case of system error

Function Test/Reset button ①

1. Keystroke - Test

2. Keystroke - End of Test

After a release, e.g. when using test gas, only one keystroke is required to reset.

Expansion modules

The smoke detector can be equipped with expansion modules (EM) at the factory, or retrofitted. Depending on the required connection to higher-level systems, alternative expansion modules for different interface standards can be used on the slot:

- EM-RELAY - Relay board for evaluation of alarm, contamination and air-flow monitoring

The descriptions for commissioning and configuring the communication modules can be found in the corresponding commissioning and configuration instructions for the above-mentioned modules. Relay board EM-Relay ↗ Chapter 6.2.1.2 'EM-RELAY' on page 29

Retrofitting expansion module

Electrostatic sensitive component



The packaging contains electrostatically sensitive components.

Only allow packages to be opened by trained personnel. Establish potential equalisation before opening.

Insert expansion module

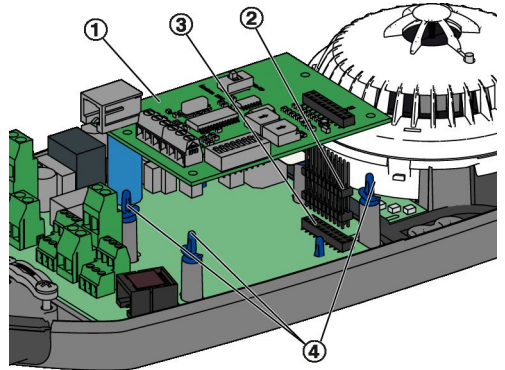


Fig. 18: Insert expansion module

Personnel:

- Qualified electrician

⚠ DANGER!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

! NOTICE!

Destruction of the expansion module

Do not touch the circuit board at the conductive tracks and, if possible, only touch the edge of the circuit board.

1. ▶ Plug the short side of the pin header (Fig. 18/2) into the socket (Fig. 18/3) on the mainboard.
2. ▶ Plug the expansion module (Fig. 18/1) onto the pin strip and press it firmly onto the four fastening points (Fig. 18/4).

⇒ Circuit board is mounted

EM-RELAY

Connection relay

The expansion module has three potential-free changeover relays for evaluation or display in the central BMS

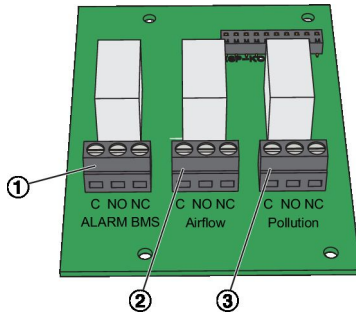


Fig. 19: EM-RELAY

- ① Terminals Relay Alarm BMS
- ② Connection terminals relay airflow monitoring; relay function only when airflow monitoring is switched on,
- ③ Connection terminals Relay Contamination Sensor head

Performance data

maximum switching voltage	24 V DC
maximum switch rating	1A

7 Commissioning / Function test / Reset

Commissioning

A function test must be carried out for commissioning, then at least annually and after any modification, e.g. repair.



Recommended

For commissioning, the function test must be carried out with test gas.

For this purpose, we recommend spraying test gas directly into the ventilation duct to detect installation faults.

Airflow monitoring

The smoke detector RM-O-M has airflow monitoring. Airflow monitoring is activated at the factory. It can be switched off via dip switches on the mainboard ↗ *Chapter 6 'Electrical connection' on page 24.*

Functional test

Function test with test/reset button

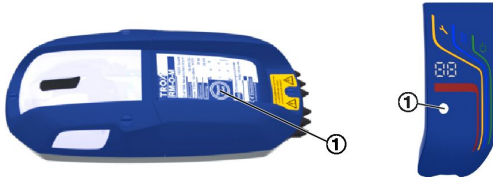


Fig. 20: Test/reset button

Starting a test run

- ▶ Press briefly on the smoke detector or on the display module [Test/Reset] (Fig. 20/1).
 - ⇒ The circuit to the release device of the fire damper or smoke detection damper is interrupted; the damper blade closes and remains in the CLOSED position. Test operation is signalled by LEDs on the motherboard and the display module.

Exit test function and perform reset

- ▶ Press again on the smoke detector or on the display module [Test/Reset].
 - ⇒ The circuit to the release device of the fire damper or smoke detection damper is closed; the damper blade opens and remains in the OPEN position. The reset is signalled by LEDs on the motherboard and the display module.



Test/reset without function

After changing the sensor head, the supply voltage must be disconnected for approx. 1 minute. Then carry out a function test with test gas!

Function test with test gas

! NOTICE!**Malfunction due to the use of non-approved test gases**

To ensure the long-term function of the RM-O-M, only the TROX test gas RM-KIT / Tester may be used.

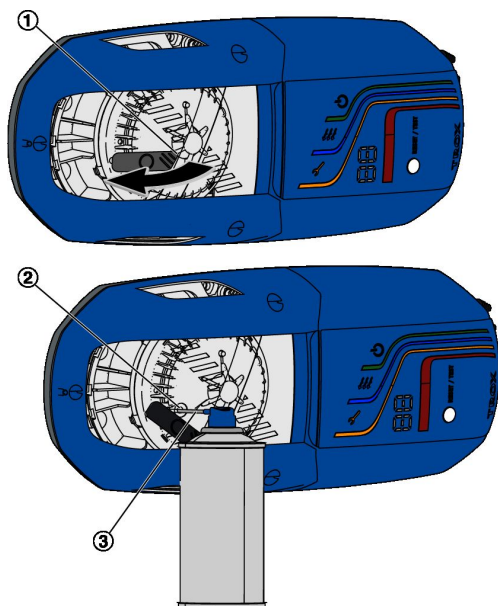


Fig. 21: Function test with test gas

For the function test, test gas is sprayed into the opening on the inspection cover. The function test can also be used in direct airflow.

1. ▶ Open the opening (Fig. 21/2) the inspection cover by pulling the rubber tab (Fig. 21/1) in the direction of the arrow.
2. ▶ Insert the spray tube (Fig. 21/3) into the opening in the inspection cover and bring it up to the sensor head.
3. ▶ Spray test gas into the sensor head.



Alternatively, the test gas can also be sprayed with the inspection cover removed, or in another opening of the air duct (in the direction of airflow in front of the RM-O-M).

- ⇒ If the response threshold value (fire characteristic smoke) is exceeded, the circuit to the release device of the fire or smoke damper is interrupted; the damper blade closes and remains in the CLOSED position. Smoke detection is signalled by LEDs on the motherboard and the display module.

4. ▶ Press [Test/Reset] (Fig. 20/1) on the smoke detector or the display module.

- ⇒ The circuit to the release device of the fire damper or smoke detection damper is closed; the damper blade opens and remains in the OPEN position. Normal operation is signalled by LEDs on the motherboard and the display module.

Reset

After a triggering, the smoke detector must be reset to restore the function.

- ▶ Press [Test/Reset] (Fig. 20/1) on the smoke detector or on the display module.
- ⇒ The circuit to the release device of the fire damper or smoke detection damper is closed; the damper blade opens and remains in the OPEN position. Normal operation is signalled by LEDs on the motherboard and the display module.

8 Maintenance

General information

Regular care and maintenance ensure operational readiness, functional reliability and long service life of the duct smoke detector.

Maintenance of the smoke detector is the responsibility of the owner or operator of the ventilation system. The system owner is responsible for creating a maintenance plan, for defining maintenance goals, and for the functional reliability of the equipment.

Functional test

The owner or operator of the ventilation system must initiate the functional check of the smoke detector at least once a year.

Before starting any work on the ventilation system, get the approval of the operator of the ventilation system.

If, for operational reasons, even short-term shut-downs of the ventilation system are not permitted, these must be prevented by suitable measures, such as e.g. temporarily bridging the alarm contact.

It must be ensured that all temporary contact bridges are removed and a functional test of the entire ventilation system is carried out at the end of the work.

Maintenance

The sensor head must be replaced after 8 years at the latest (⇒DIN14675).

All the other parts of the RM-O-M duct smoke detector are not subject to wear and tear, and hence maintenance-free. The smoke detector must be included in the regular cleaning of the ventilation system.

Cleaning



DANGER!

Danger of electric shock! Do not touch any live components!

Electrical equipment carries a dangerous electrical voltage.

- Only the inspection cover may be opened for cleaning, the casing cover must not be opened.
- Do not use any liquids near the duct smoke detector.

The outer casing of the smoke detector can be cleaned with a dry or damp cloth. Sticky dirt or contamination may be removed with a commercial, non-aggressive cleaning agent. Do not use abrasive cleaners or mechanical cleaning tools (e.g. brushes).

If the contamination is > 70% (yellow LED is illuminated) the sensor head should be cleaned.

Clean sensor head and inspection cover

- Remove sensor head, ↪ *Chapter 8.2 'Repair work' on page 33*
- Cleaning the sensor head by blowing it out with oil- and water-free compressed air. If this measure is unsuccessful, the sensor head must be replaced.
- Removing contamination on the insect screen of the air inlet openings
- Install sensor head, ↪ *Chapter 8.2 'Repair work' on page 33*
- Clean the inside of the inspection cover and fit the cover.
- Carry out a functional test, ↪ *Chapter 7.2 'Functional test' on page 30*

Repair

For safety reasons, repair work affecting fire protection must only be carried out by qualified personnel or the manufacturer. Only original spare parts may be used for repairs. A functional test is required after any repair, see *Chapter 7.2 'Functional test' on page 30*.

Repair work

Open / close inspection cover

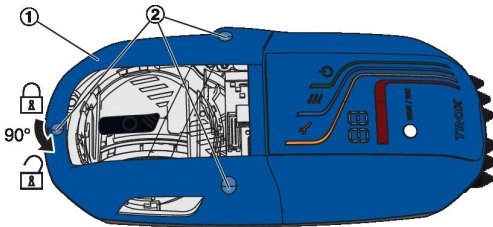


Fig. 22: RM-O-M inspection cover

To open the inspection cover (Fig. 22/1), turn the bayonet screws (Fig. 22/2) 90° anti-clockwise. Pull off the inspection cover towards the front.

To close, put on the inspection cover and turn the bayonet screws 90° clockwise.

Check seal

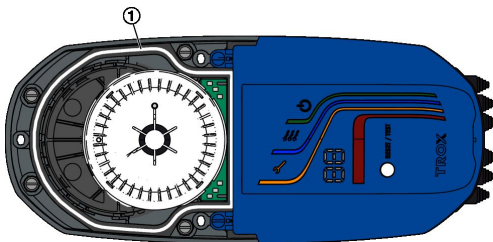


Fig. 23: Check seal

① Seal inspection cover

For the function of the smoke detector, it is important that the inspection cover closes tightly.

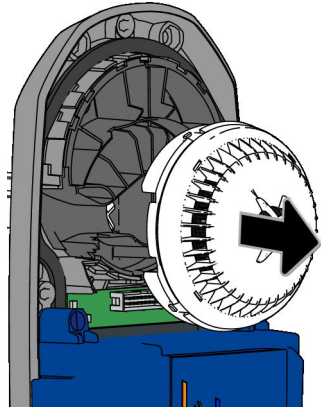
To check the function, check the sealing surfaces (Fig. 23) on the casing and on the cover for any damage.

Check/replace sensor head

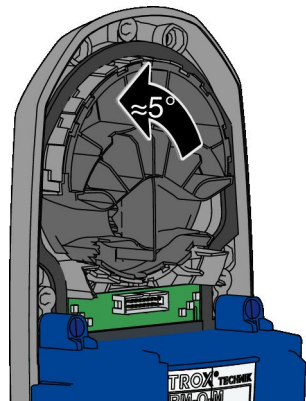
RM-O-M with air guide profile

Remove the sensor head and air guide profile

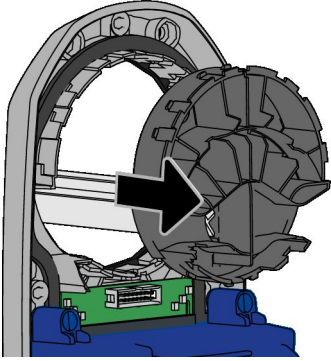
- ▶ Open inspection cover, see *on page 33*.



- ▶ Remove the sensor head by pulling it out of the holder by hand.

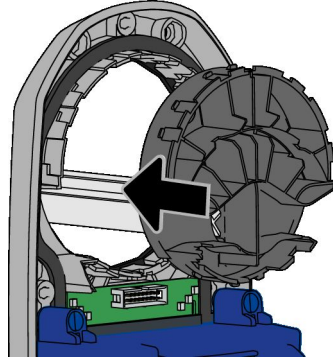


- ▶ Carefully turn the holder anti-clockwise.

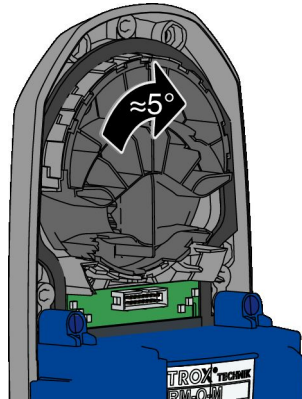


4. ▶ Pull out the holder.
5. ▶ Blow out the air guide profile with compressed air, clean the sensor head,.

Insert sensor head and air guide profile

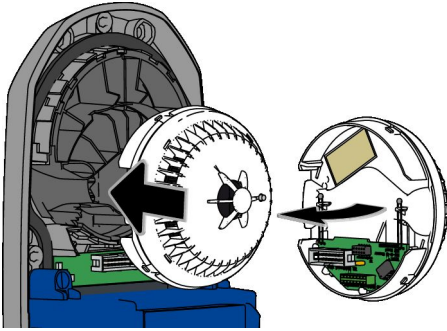


1. ▶ Insert the adapter with air guide profile into the casing.



2. ▶ Fix the adapter by pressing it evenly and turning it clockwise.

If the adapter cannot be fastened, loosen the 4 fastening screws of the casing slightly, insert the adapter and tighten the screws again.



3. ▶ Plug the sensor head onto the adapter.
4. ▶ Close inspection cover, ⚡ on page 33.
5. ▶ Carry our functional test!

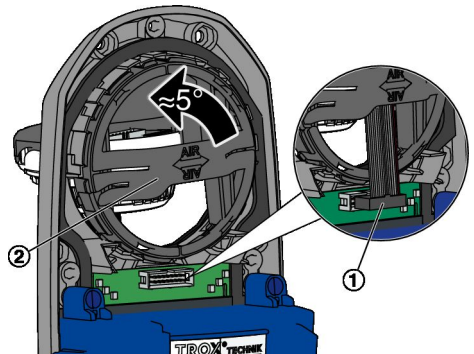
RM-O-M with sensor head in air duct

Removing sensor head



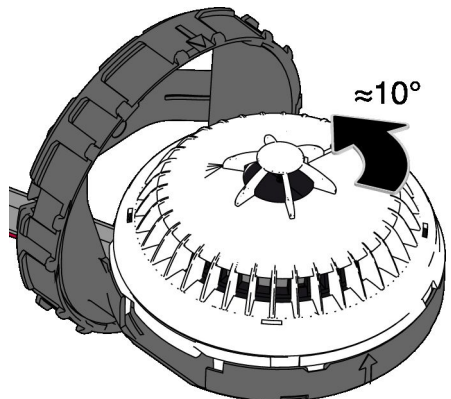
As an alternative to the variant described here, the sensor head can be removed or replaced through an opening in the air duct.

1. ▶ Open inspection cover, ⚡ on page 33.

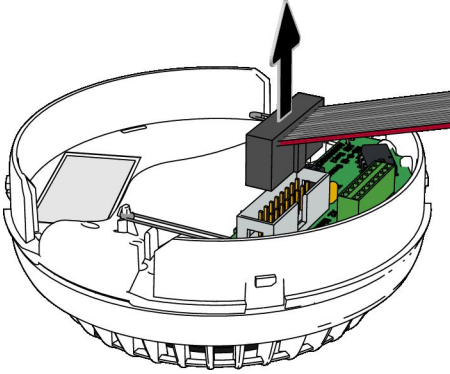


2. ▶ Pull the flat cable out of the socket.

Turn the adapter slightly anti-clockwise by hand. Pull out adapter.

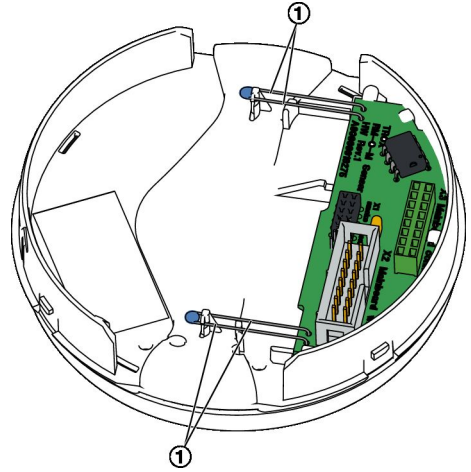


3. ▶ Loosen the sensor head counterclockwise and remove it.

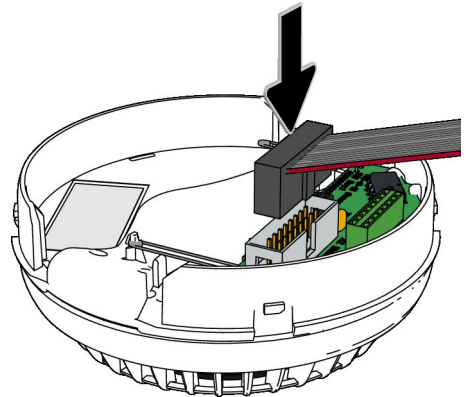


4. ▶ Pull the flat cable out of the socket on the sensor head.
5. ▶ Clean sensor head, .
6. ▶ Insert sensor head, ↪ 'Insert sensor head into RM-O-M' on page 36.

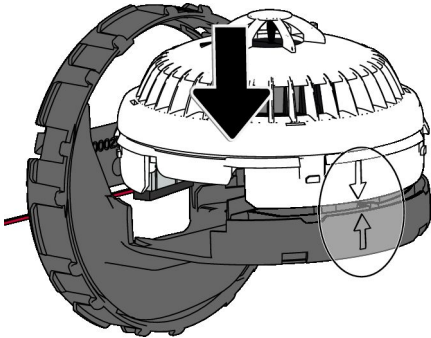
Insert sensor head into RM-O-M



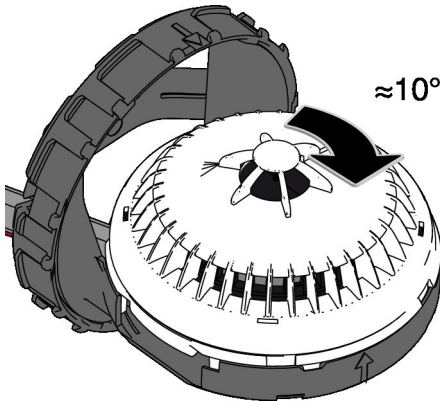
1. ▶ Check the NTC thermistors (1) for airflow monitoring, these must be in place as shown and must not be damaged.



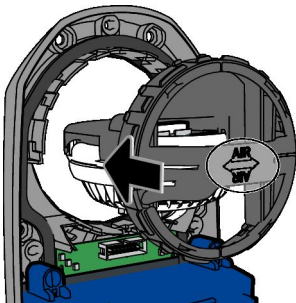
2. ▶ Plug the flat cable into the sensor head.



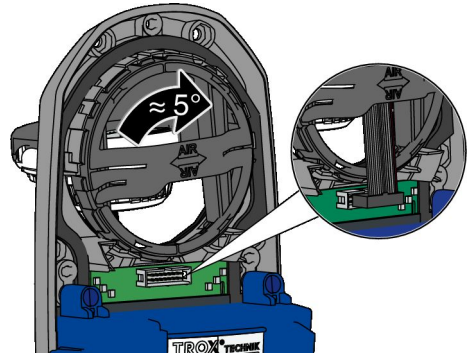
3. ▶ Insert the sensor head into the adapter, observing the arrows.



4. ▶ Fix the sensor head by turning it clockwise.



5. ▶ Insert the adapter with the sensor head into the casing of the RM-O-M, observing the air direction arrow. Only insert the adapter in airflow direction, otherwise the airflow monitoring will not function properly. If the air direction is different, the adapter can be inserted into the casing rotated by 90°.



6. ▶ Fix the adapter by turning it clockwise, and plug in the flat cable on the motherboard.
7. ▶ Close inspection cover, ↪ on page 33.
8. ▶ **Carry out functional test!**

9 Accessories and spare parts

Accessories

Order code	Description
RM-KIT / TUBE	Conversion kit to installation variant air guide profile
RM-KIT / DUCT	Conversion kit to installation variant sensor head in duct
RM-KIT / DISP-L	Retrofit set DISP display module for RM-O-M + 8 m patch cable with RJ45 connector
RM-KIT / DISP-S	Retrofit set DISP display module for RM-O-M + 0.2 m patch cable with RJ45 connector
RM-KIT / CONSOLE	Mounting bracket for round air duct
RM-KIT / FK-K90	Accessories powder-coated mounting plate for mounting RM-O-M on FK-K90 and FK-EU
RM-KIT / TESTER	Test gas, non-flammable, can with spray tube
RM-KIT / EM-RELAY	Expansion module EM-RELAY

Replacement parts

Order code	Description
RM-KIT / RM-SRD3000	TROX sensor head for RM-O-M
RM-KIT / COVER	Replacement casing for RM-O-M
RM-KIT / GROMMET	Sealing grommet cable gland
RM-KIT / TUBE SCREW	Replacement screw for mounting air guide profile in mounting plate lance
RM-KIT / DISP BRACKET	Replacement bracket for DISP-L display module

10 Index

A		R	
Airflow monitoring.....	30	Repair.....	33
C		S	
Cleaning.....	32	Sensor head	
Commissioning.....	30	changing.....	33, 34, 35, 36
Copyright.....	3	insert.....	34, 36
Correct use.....	7	removing.....	33, 35
D		replacing.....	33, 34, 35, 36
Defects liability.....	4	Service.....	3
E		Spare & Claim Department.....	3
EM-RELAY		Storage	12
Connecting the relays.....	29	Symbols.....	4
Expansion module		T	
Insert module.....	28	Technical data.....	10
L		Transport.....	12
Limitation of liability.....	4	Transport damage.....	12
M		Type plate.....	11
Maintenance.....	32	W	
P		Warranty claims.....	4
Packaging.....	12		
Personnel.....	8		