

Smoke Detection System RMSII-L



SCHAKO trade mark rights
- Patent DE 199 51 403 A1
- Registered utility model: 2002
3533.8
- Patent EP 122 4641

Approval applied for

Approval to be granted probably from 10/2011

Ferdinand Schad KG
Steigstraße 25-27
D-78600 Kolbingen
Telephone +49 (0) 74 63 - 980 - 0
Fax +49 (0) 74 63 - 980 - 200
info@schako.de
www.schako.de

Smoke detection system RMSII-L

Contents

Description	3
Construction	5
Accessories	5
Fastening	5
Technical data	6
Models and dimensions	7
Dimensions	7
Dimensions of accessories	8
Circuit diagram	10
Maintenance / Inspection	13
Order details	14
Specification texts	14

Smoke Detection System RMSII-L

Description

Application

SCHAKO smoke detectors are used in places where, at the earliest possible stage of a fire, upon occurrence of cold smoke of $< 72^\circ$, triggering and switching operations are to be controlled automatically. **They can be fitted to ventilation ducts.** During an alarm, the smoke detectors limit the source of fire. The alarm message is transmitted via a potential-free contact and interrupts the electric circuit to the electric trigger devices (magnetic clamps, actuators) or to pneumatic valves when triggered via the pneumatic servo cylinder. **The connected fire dampers and smoke dampers are closed. Only trigger devices working by the "zero-current closed/ depressurised closed" working principle must be connected to the RMS system.** The smoke detectors and the connected trigger and switch devices are supplied jointly with power from a relay module 230 AC and a secondary 24 V DC within a protection area.

The smoke detectors remain in alarm condition after being triggered, even after the normal ambient conditions have been restored. The smoke detectors will not return to its monitoring status until they are reset.

As the measurements are taken outside the RMS housing, thus **not requiring a detection chamber**, the function does **not depend on a minimum or maximum air velocity**.

Function (special scattered light method)

Two sensors in the smoke detector send out a light beam and measure if the air on the front of the safety glass is contaminated with smoke or other particles. Before triggering an alarm, various measurement cycles must be carried out, during which the contamination in the air must be measured. If the contamination is not permanently present, then the internal measurement cycle counter is reset. The response sensitivity of the smoke detector is set ex works. The alarm output is a potential-free change-over contact. The smoke detector can be reset to the ready-to-operate mode by remote control. A power failure at the smoke detector must be displayed at the central unit. In this case, the electric circuit for the trigger devices is interrupted on the connected fire dampers, and the dampers are closed. Tampering with the smoke detector, for example by taping the sensors, is detected and, if required, reported to the central unit via a potential-free contact (error output). Deposits on the safety glass of the smoke detector are detected and evaluated. When a certain degree of soiling is exceeded, it is reported as a fault message to the central unit via a potential-free contact. In this way, the smoke detection system monitors itself.

The reset button type RST (at an extra charge) can be used to reset an alarm message.

Advantages

- as no detection chamber is required for measurements, no medium flows through the smoke detector and deposits can only be formed on the safety glass.
- fitted flush with the duct.
- automatic tampering detection.
- easy to clean.
- Self-function test of the transmitter and receiver sensors. A defect is displayed.
- when a power, processor or system failure occurs, a fault message is displayed simultaneously with an alarm message.
- with system monitoring (watchdog).
- Bus connection possible via potential-free contacts
- Connection to the communicative Signalling and Switching Bus System Model KOMES + Easy Bus possible.
- maintenance only once a year required

Industrial property rights owned by SCHAKO

- Patent: DE 199 51 403 A1
- Registered utility model: 20023533.8
- Patent: EP 122 4641

External monitoring is done by the VdS Schadensverhütung GmbH Köln (VdS Damage Prevention Branch, Cologne)



Connection to the Communicative Signalling and Switching Bus System KOMES + Easy Bus

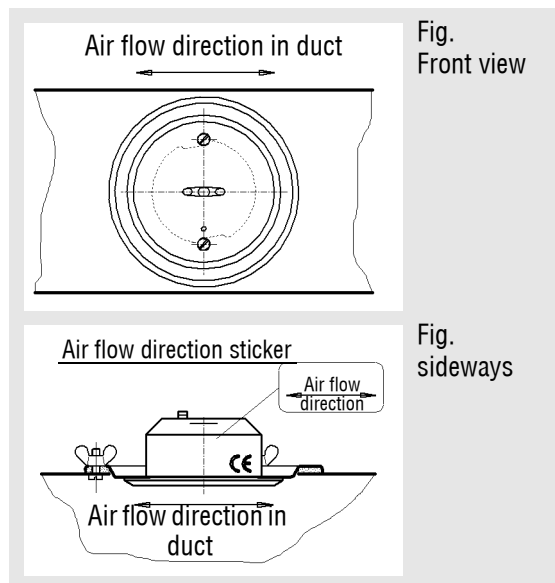
In alarm or fault condition, the relevant potential-free contact of the smoke detector transmits a signal to the bus module, which transmits this message to the bus central unit.

Smoke Detection System RMSII-L

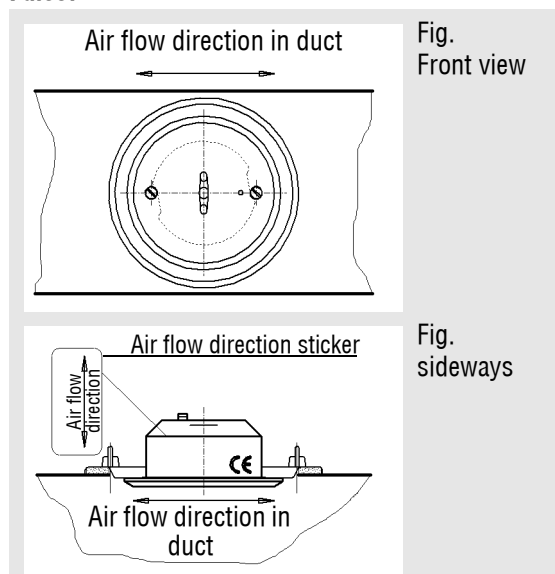
When integrating SCHAKO components in customer facilities, any compatibility problems are not our responsibility and must be eliminated by the customer.

Mounting position to fit into ducts

Correct!



False!



The maximum distance between the smoke detector RMSII-L and the fire damper must not be greater than 1 m as smoke must be detected as closely as possible to the safety component (not in the inspection opening of the fire damper).

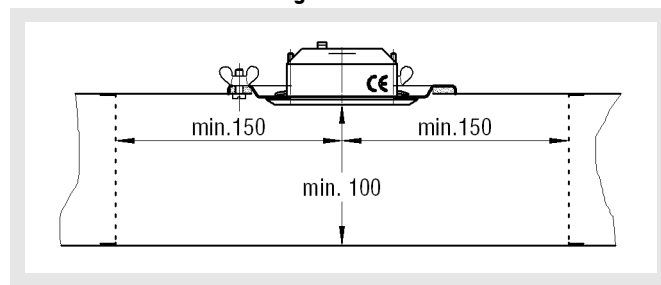
Installation arrangement and mounting

The smoke detector type RMSII-L must be fitted free of vibration if possible. When charged with steam, dust, soot (exhaust gases) or dew, an alarm or fault message is triggered.

Assembly in ducts

1. Establish smoke detector position (max. 1 m before or after the safety component, since smoke must be detected in its immediate proximity, not in the inspection opening of the fire damper), and mark the middle.
2. Cut out a hole of 120 mm in diameter.
3. Drill mounting holes (only when installed on site in the ventilation duct).
4. Insert the delivered insulating sleeves into the mounting holes.
5. Fit smoke detector with maintenance cover and seal, connect with thumb nuts or Parker screws.
6. During assembly, observe air flow direction.
7. Carry out electrical wiring according to diagram.
8. Before putting the RMSII-L into operation, the duct system must be cleaned completely. Please note that, after wiping the front glass, the front glass must be sprayed with an anti-static spray.

When fitting the RMSII-L smoke detector, care must be taken that in a 100 mm radius around the detector, nothing can reflect the emitted sensor signal.



Connection

1. Connect the mains power supply. When the output voltage is active, the green operating indicator lamp will flash.

Smoke Detection System RMSII-L

Note

Before the first startup of the smoke detector, the ceiling must be cleaned to remove any assembly dirt so as to avoid any accidental alarm message.

The relay modules / power supply units are equipped with a controller with power limiter and thermal protection. When a short-circuit occurs, the controller switches off the output voltage. An interruption in the mains supply voltage or of the "+" output line will reset the detector.

After fitting the smoke detector RMSII-L on site ready to operate, an acceptance test immediately prior to putting the fire damper or smoke detector into operation must establish that the installation conforms to the regulations and that the smoke detector functions properly, especially that all components interact correctly. The acceptance test must be documented by the building owner of the ventilation system. The documents must be filed by the building owner/operator of the ventilation system.

After a successful acceptance test, the person in charge of the acceptance shall install a sign supplied by the manufacturer (upon request), which is included in each delivery, **in the immediate proximity of each** fire damper or smoke damper.

For maintenance, service, retrofitting, etc., inspection openings in sufficient number and size must be provided on-site.

Construction

Smoke detector base

- Polycarbonate

Connecting socket of the diagnostic device

- 6-pin connection

Connecting cable

- 1.0 m with 9-pin Sub D plug. The 9-pin Sub D terminal for the electric supply and trigger lines is located inside the base.
- extended connecting cable 2.0 or 3.0 m in length with 9-pin Sub D plug.

Measuring window

- Polyamide

Individual display

- LED on duct exterior

Mounting frame

- Painted sheet steel (sand silver) with seal

Accessories

Relay module (-RMS V4.00)

- for supplying power to the RMSII-L, including terminal strips for alarm transmission. Including test switch and reset button.
- Version 1 with transformer for connection to 230 V AC 50 Hz (standard)
- Version 2 without transformer for connection of 24 V DC, without general supervisory building approval, approval required in individual cases.

Reset button (-RST)

- to reset the alarm message

Assembly part type EBT

- for installation flush with the duct, made of galvanised sheet steel
- Housing leakage according to DIN EN 1751, class B, at a duct pressure of up to 1,000 Pa.

Assembly part (-REBT)

- for installation in round ducts, made of galvanised sheet steel for \varnothing 100-710

Fastening

Screw connection

- with thumb nuts or Parker screws

Smoke Detection System RMSII-L

Technical data





RMSII-L

Operating voltage	24 V DC (+15%-20%)
Residual ripple	< 20%
Max. current consumption	25 mA
Switching contacts	- 1 Alarm output (potential-free change-over contact) - 1 Fault output (potential-free change-over contact)
max. switching voltage	100 V DC / 125 V AC
max. switching current	2.0 A
max. switching power	30 W / 62.5 V A
Operating temperature and ambient temperature	0 °C to +60 °C
Protection type according to DIN 40050	IP 40
Weight	0.2 kg
Storage temperature	max. 75°C
relative humidity	10 - 90%

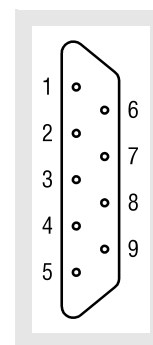
Individual display - LED display:

flashing green	=	Function
permanently red	=	Alarm
permanently orange	=	Fault / Soiling

Connection assignment of the 9-pin SUB-D plug:

Assignment	Relay dead	Relay in operation	Meaning
1	-	-	GND
2			Relay contact work contact fault
3			Relay contact centre contact fault
4			Relay contact rest contact fault
5	-	-	Test switch to GND
6			Relay contact rest contact alarm
7			Relay contact centre contact fault
8			Relay contact work contact alarm
9	-	-	+24 V

The relays drop off when an alarm / a fault or a power cut occurs.

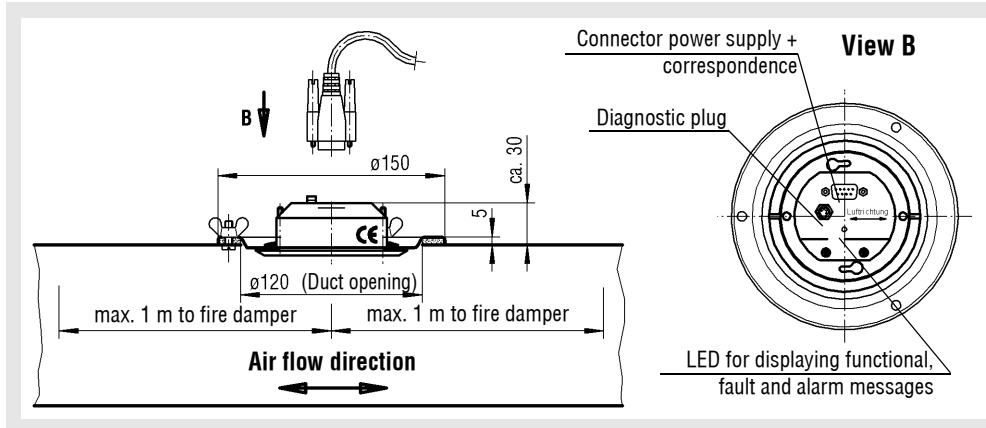


Smoke Detection System RMSII-L

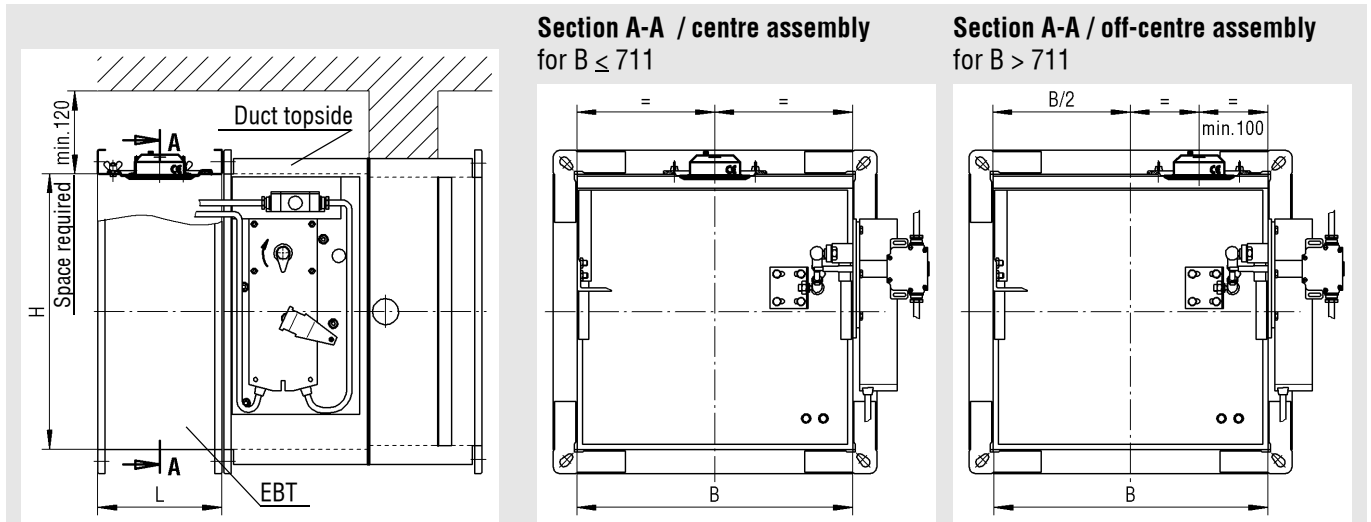
Models and dimensions

Dimensions

Smoke detection system type RMSII-L for duct installation

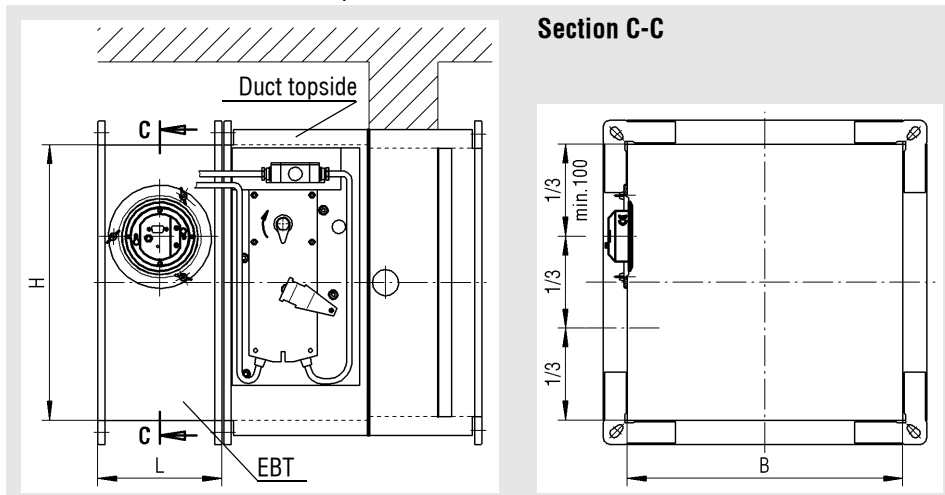


Smoke detection system type RMSII-L for fire damper installation with assembly part type EBT



The smoke detector must always be assembled in the assembly part type EBT on the same damper half as the release device (not in the inspection opening of the fire damper).

Installation into duct side wall possible from H ≥ 318



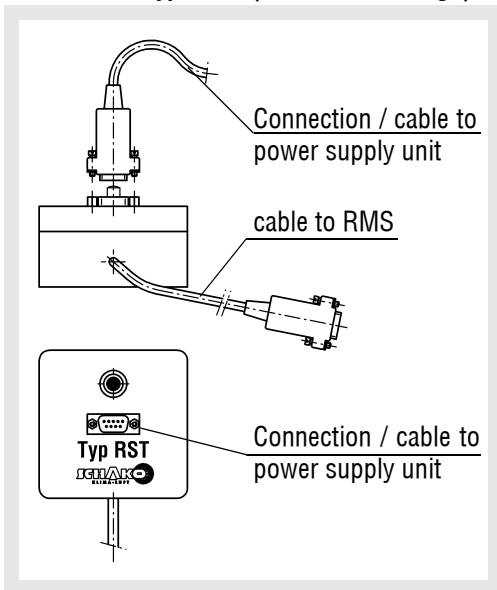
The dimension L depends on the height H (mm).

H (mm)	L (mm)
201	180
252	180
318	180
357	180
400	180
449	180
503	180
565	180
634	180
711	180
797	210

Smoke Detection System RMSII-L

Dimensions of accessories

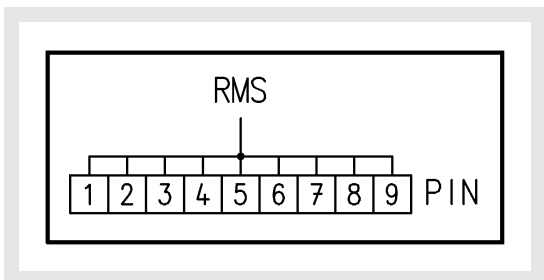
Reset button type RST (at an extra charge)



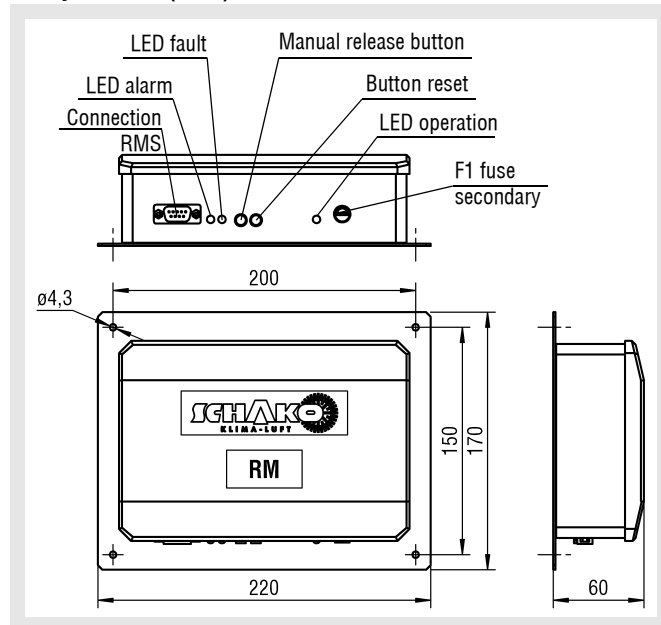
The reset button type RST (at an extra charge) can be used to reset an alarm message.

The reset button is fitted in a T-piece socket.

Terminals RST



Relay module (-RM)

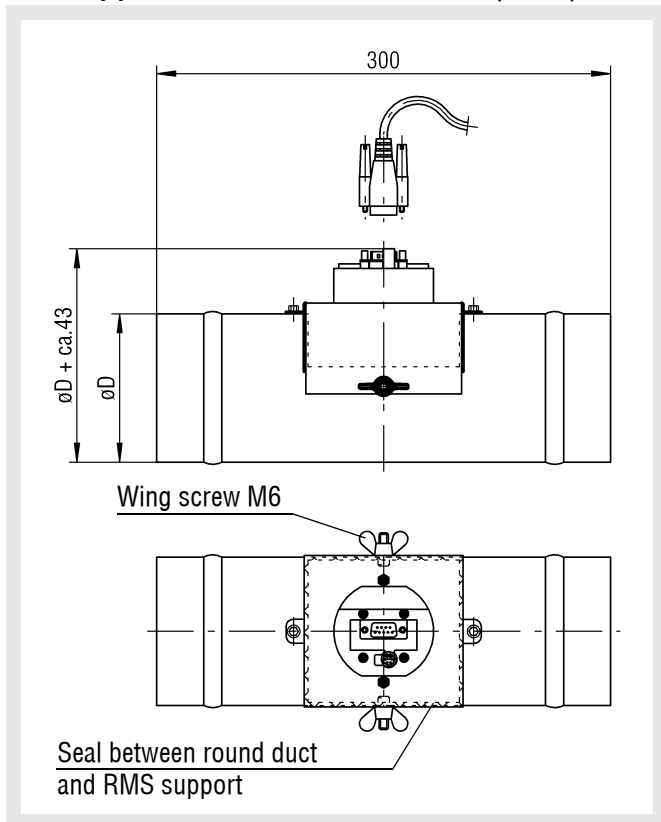


The RMSII-L can be easily connected to the power supply by means of a relay module (9-pin SUB-D plug). Moreover, the reset button RST and test switch TS have already been mounted on the relay module. This makes it easier to check the fire damper closing function via the test switch TS and/or to reset the alarm message via the reset button RST. Additional terminal strips for spring return actuator and / or fan disconnection or other switching operations will shorten the installation time and prevent wrong wiring.

A 24 V spring return actuator can be activated via the 3-pin AMP plug. (Standard Belimo BLF or BFG) You have the option of ordering the relay module with integrated transformer (version 1 standard) for connection to 230 V AC 50 Hz or without transformer (version 2 without general supervisory building approval, approval required in individual cases) for connection to 24 V DC.

Smoke Detection System RMSII-L

Assembly part for installation in round ducts (-REBT)

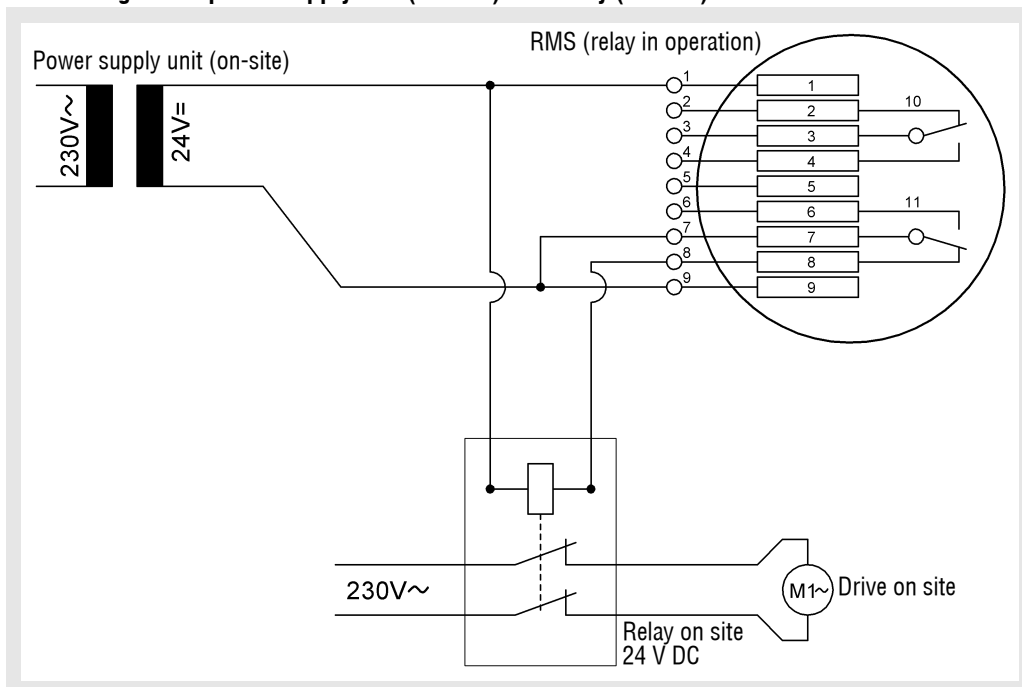


Size	$\varnothing D$
100	98
125	123
140	138
160	158
180	178
200	198
224	222
250	248
280	278
315	313
355	353
400	398
450	448
500	498
560	558
630	628
710	708

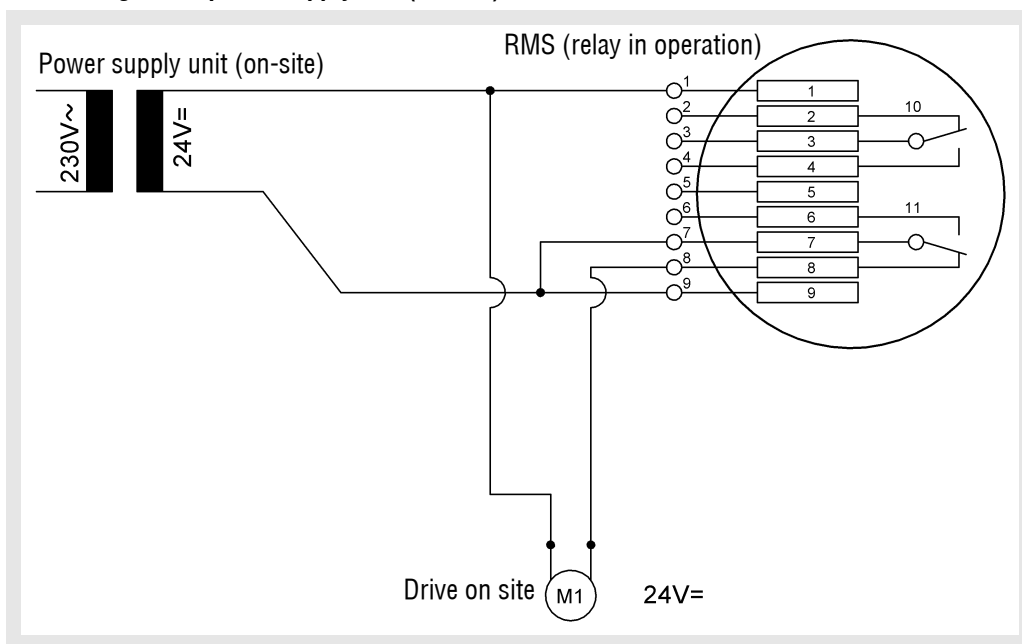
Smoke Detection System RMSII-L

Circuit diagram

Circuit diagram of power supply unit (on-site) and relay (on-site)



Circuit diagram of power supply unit (on-site)



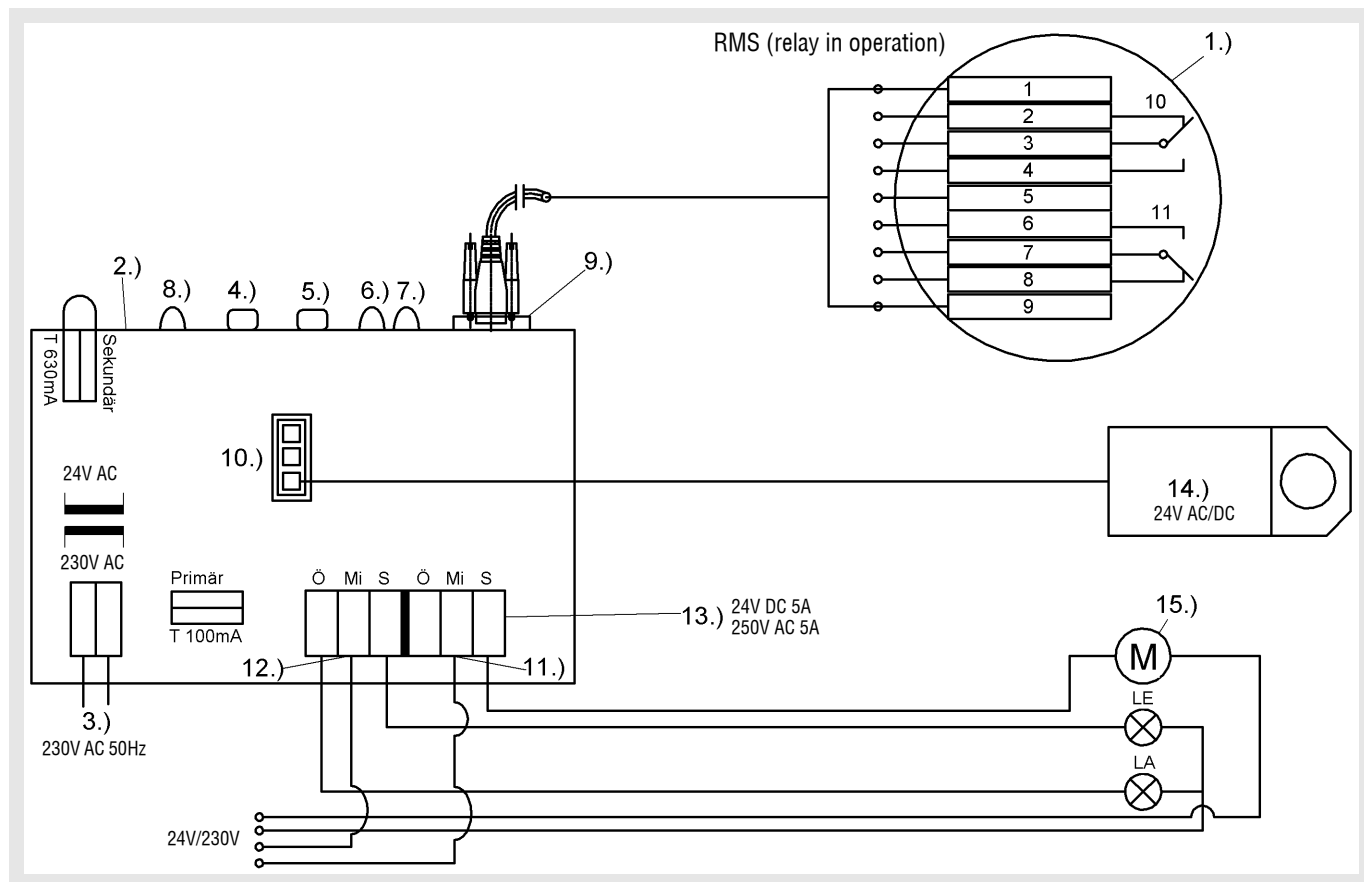
Contact assignment RMSII-L:

- 1 GND
- 2 Work contact
- 3 Centre contact
- 4 Rest contact
- 5 Test switch / RST
- 6 Rest contact
- 7 Centre contact
- 8 Work contact
- 9 +24 V
- 10 Fault
- 11 Alarm

Smoke Detection System RMSII-L

Circuit diagram of relay module

Version 1



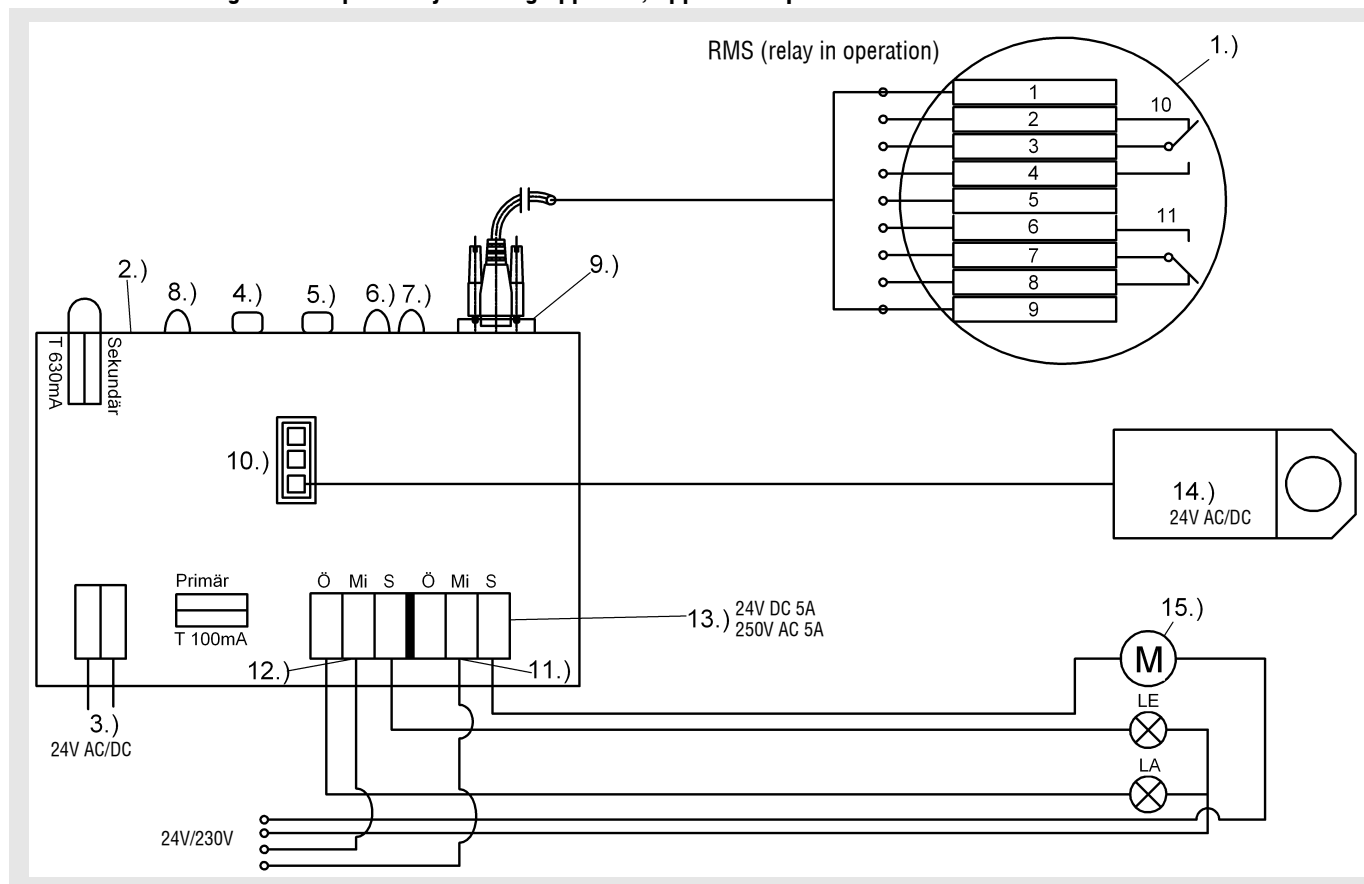
Contact assignment RMSII-L:

1.)	Smoke detector	1	GND
2.)	Relay module	2	Work contact
3.)	Mains connection	3	Centre contact
4.)	Reset button	4	Rest contact
5.)	Manual trigger	5	Test switch / RST
6.)	LED fault	6	Rest contact
7.)	LED alarm	7	Centre contact
8.)	LED operation	8	Work contact
9.)	Connection RMS	9	+24 V
10.)	AMP socket for 24 V AC/DC actuators, max. 10 VA	10	Fault
11.)	Selector switch 1	11	Alarm
12.)	Selector switch 2	Ö	= NC contact
13.)	Contact load of the selector switch	Mi	= Centre contact
14.)	Spring return actuator 24 V AC/DC for fire damper. Product SCHAKO	S	= NO contact
15.)	Spring return actuator 24 V AC/DC / 230 V AC Schako product or external product	LA	= Ventilation OFF
		LE	= Ventilation ON

Smoke Detection System RMSII-L

Circuit diagram of relay module

Version 2 - without general supervisory building approval, approval required in individual cases.



Contact assignment RMSII-L:

- 1.) Smoke detector
- 2.) Relay module
- 3.) Mains connection
- 4.) Reset button
- 5.) Manual trigger
- 6.) LED fault
- 7.) LED alarm
- 8.) LED operation
- 9.) Connection RMS
- 10.) AMP socket for 24 V AC/DC actuators, max. 10 VA
- 11.) Selector switch 1
- 12.) Selector switch 2
- 13.) Contact load of the selector switch
- 14.) Spring return actuator 24 V AC/DC for fire damper. Product SCHAKO or external product
- 15.) Spring return actuator 24 V AC/DC / 230 V AC Schako product or external product

- 1 GND
- 2 Work contact
- 3 Centre contact
- 4 Rest contact
- 5 Test switch / RST
- 6 Rest contact
- 7 Centre contact
- 8 Work contact
- 9 +24 V
- 10 Fault
- 11 Alarm
- Ö = NC contact
- Mi = Centre contact
- S = NO contact
- LA = Ventilation OFF
- LE = Ventilation ON

Smoke Detection System RMSII-L

Maintenance / Inspection

Maintenance of the smoke detection device RMSII-L must be carried out once a year or following a fault message, soiling or directly after commissioning.

Note

Installation and wiring must be carried out by skilled electricians. The recognised regulations of technology, safety and accident prevention regulations as well as the VDE guidelines, regulations of the local electric power companies and the wiring instructions and connection diagrams of the component manufacturer must be adhered to when installing, wiring and commissioning. When wiring the junction boxes, care must be taken to connect the shielding to earth. The smoke detector must be used according to the brochure description.

Maintenance instructions

The SCHAKO smoke detector type RMSII-L permanently monitors itself and gives an error warning to the central unit if there is a mechanical or electrical defect or if it is too heavily soiled. When a power failure of the smoke detector occurs, a fault message is also sent to the central unit. This permanent self-monitoring allows a yearly maintenance interval.

Maintenance includes the following actions:

1. The type of use and the installation situation must be checked for the first time during commissioning and then after changes have been made.
2. The electrical connections must be checked for correct connection and perfect condition.
3. Checking whether the diode on the fitted smoke detector flashes green, thus signalling ready operating state.
4. Electrical functionality control
The power supply of the smoke detector must be disconnected by removing the 9-pin Sub-D plug. This causes the smoke detector to send an alarm to the connected locking device, which will close automatically. The diode on the smoke detector or on the reset button is no longer lit. As soon as the power supply has been restored and the alarm has been acknowledged by pressing the reset button, the smoke detector must return to the ready operating state, and the diode on the smoke detector must flash green.
5. Fault control
On the smoke detector RMSII-L, the transmitter and receiver sensors must be covered. The diode on the smoke detector is permanently lit in orange. The fault contact reports a fault. After that, the cover must be removed again. The smoke detector must again return to the ready operating state, and the fault message goes out.

6. Functionality control using test aerosols
When the smoke detector is fitted to ducts, a test aerosol must be applied to the smoke detector through an inspection opening. This must be done by applying the test aerosol to the smoke detector increasingly in pulsed form for about 10 sec. When the alarm threshold value is exceeded, an alarm message will be triggered, and the connected shut-off devices must close automatically. The diode on the smoke detector or on the reset button must light up in red. After the aerosol components in the surrounding air of the smoke detector have decomposed to such an extent that the value drops again below the alarm threshold value, the alarm message is still displayed on the smoke detector or the relay module. This is why the smoke detector must be activated again by disconnecting the power supply or by pressing the reset button. As soon as the diode on the smoke detector type RMSII-L flashes in green again, the smoke detector is ready to operate again.
7. Elimination of defects
If defects have been detected during maintenance, they must be eliminated immediately. Defective components may only be replaced with original parts delivered by Schako. Repair of the smoke detector must be carried out only by the appliance manufacturer.
If any of the connected locking devices are not closing, even when the smoke detector operates faultlessly, then the shut-off devices themselves must be checked.

Inspection instructions

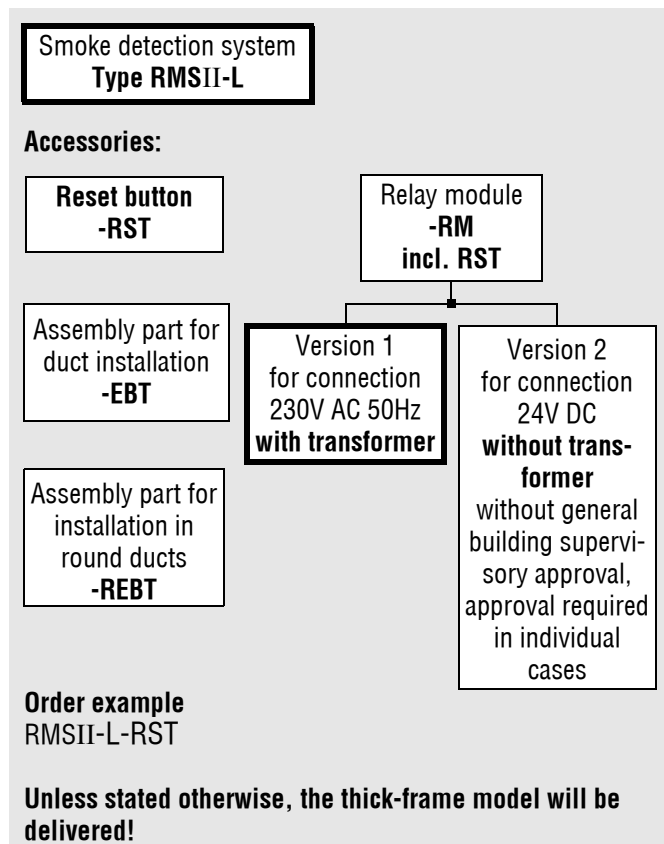
The SCHAKO smoke detector type RMSII-L permanently monitors itself and gives an error warning to the central unit if there is a mechanical or electrical defect or if it is too heavily soiled. When a power failure of the smoke detector occurs, a fault message is also sent to the central unit.

Inspection includes the following actions:

- Checking whether the diode on the fitted smoke detector flashes green, thus signalling ready operating state.

Smoke Detection System RMSII-L

Order details



Specification texts

Smoke detection system type RMSII-L, with annual maintenance, for flush duct installation or fire damper installation with assembly part type EBT, with maintenance cover. Consisting of a housing made of sheet steel painted sand silver, base made of high-quality plastic, safety glass made of Plexiglas, cover plate made of plastic film painted to RAL 9010 (white) or a different RAL colour at an extra charge, including a maintenance cover made of sheet steel with seal and connecting cable 1.0 m long with Sub-D connection. For use on fire and smoke dampers, with electric or pneumatic trigger devices working by the zero-current closed / depressurised closed functional principle, and with magnetic clamp and lifting magnet.

Two sensors self-monitoring permanently for correct functioning measure the air contamination due to smoke with a special scattered light procedure outside the housing, without using a detection chamber. They measure the degree of contamination on two points on the surface of the safety glass. Alarm and fault messages each take place via a potential free change-over contact. Manual triggering of the smoke detector possible via a reset button (at an extra charge) or via remote control or a diagnostic unit possible.

Fastening with screw mounting (SM) (with thumb nuts or Parker screws).

Connection 24 V DC.

Product: SCHAKO **type RMSII-L**

Accessories:

- Relay module (-RM) for supplying power and for alarm transmission incl. test switch and reset button.
 - Version 1: with transformer for connection to 230V AC 50Hz.
 - Version 2: without transformer for connection to 24V DC.
without general supervisory building approval, approval required in individual cases.
- Reset button (-RST) for resetting the alarm message.
- Assembly part (-EBT) for simple duct installation in front of the fire damper. Consisting of galvanised sheet steel with connection flanges. Housing leakage according to DIN EN 1751, class B, at a duct pressure of up to 1,000 Pa
- Assembly part (-REBT) for simple installation in round duct (ø100-710) in front of the fire damper. Consisting of galvanised sheet steel.