



Smoke Detection System

Model RMS-L



**Industrial property rights owned
by Schako**
- Patent DE 199 51 403 A1
- Registered utility model 2002
- 3533.8

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 Model RMS-L

Contents

Description	3
Construction	5
Accessories	5
Fastening	5
Models and dimensions	6
Dimensions	6
Dimensions of accessories	7
Technical Data	8
Maintenance / Inspection	9
Circuit diagram	11
Order details	14
Specification texts	14

Smoke Detection System Model RMS-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°, 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 release devices (magnets, 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 release and switch devices are supplied jointly with power from a relay module 230 AC and 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 can be displayed at the central unit. In this case, the electric circuit for the release device 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 reported to the switchboard via a potential-free contact (error output). Deposits on the safety glass are detected and evaluated. When a certain degree of soiling is exceeded, it is reported as a fault message to the switchboard via a potential-free contact. In this way, the smoke detector system monitors itself.

The measurement of the deposits can also be used for obtaining information on the degree of soiling of the ventilation ducts and pipes.

The reset button type RST (at an extra charge) can be used to reset an alarm message. The degree of soiling can be polled and all relevant detector data can be read out by means of a diagnostic and data read-out unit (at an extra charge).

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.
- fitting 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 possible.
- maintenance only required once a year
- DIBt Approval No.: Z-78.6-58
- VdS Approval No. G-200096

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 Pre-



vention Branch, Cologne)

Connection to the Communicative Signalling and Switching Bus System KOMES

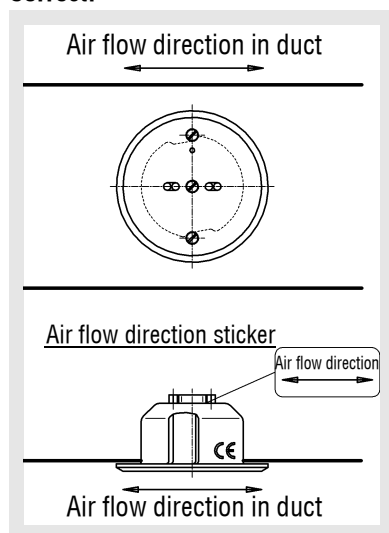
In alarm or fault condition the relevant potential-free contact of the smoke detector transmits a signal to the compatible limit switch module KESS or to the switch motor booster SMB-RSA, which transmits this message to the KOMES bus system.

Smoke Detection System Model RMS-L

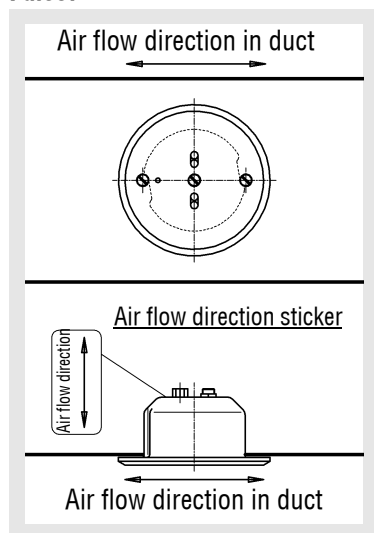
When integrating SCHAKO components in customer facilities, any compatibility problems are not our responsibility and must be eliminated by the customer.

Mounting position to fit into ducts

Correct!



False!



The maximum distance between smoke detector RMS and fire damper must not be greater than 1 m as smoke must be detected as close as possible on the safety component (not in the inspection opening of the fire damper).

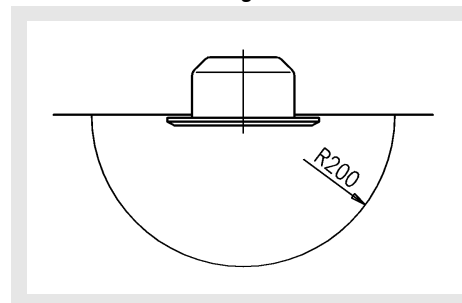
Installation arrangement and mounting

The smoke detector type RMS must be fitted free of vibration if possible. When charged with steam, disinfectant, 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 $\varnothing 120$ mm.
3. Drill mounting holes (only for design with thumb nuts).
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 the diagram.
8. Before putting the RMS 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 antistatic spray.

When fitting the RMS smoke detector, care must be taken that in a 200 mm radius around the detector, nothing can reflect the emitted sensor signals.



Connection

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

Smoke Detection System Model RMS-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 detection system RMS-L on-site ready to operate, an acceptance test immediately prior to putting the fire damper or smoke detector must establish that the installation and the correct functioning, especially the correct interaction of all components, conforms to the regulations. 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 responsible for 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 and smoke damper.

Construction

Safety glass

- Plexiglas

Connecting socket of the diagnostic device

- 4-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.

Housing

- Painted sheet steel (sand silver)

Individual display

- LED on duct exterior

Maintenance cover

- Painted sheet steel (sand silver) with seal

Cover plate

- Plastic film RAL 9010 (white)
- Plastic film in a different RAL colour (at an extra charge)

Base

- Plastic (high-quality)

Accessories

Diagnostic and data read-out unit

- for polling the degree of soiling and reading out all relevant detector data

Relay module (-RM)

- for supplying power to the RMS-L, including terminal strip for alarm transmission. Including test switch and reset button.

Smoke simulation device (-RSG)

- for simple maintenance and inspection of the smoke detectors

Reset button (-RST)

- to reset the alarm

Assembly part (-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 1000 Pa.

Fastening

Screw connection

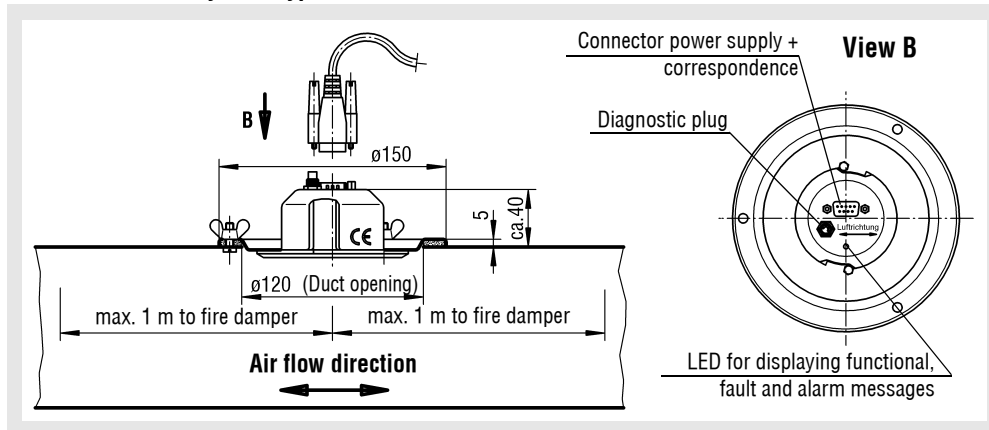
- with thumb nuts or Parker screws

Smoke Detection System Model RMS-L

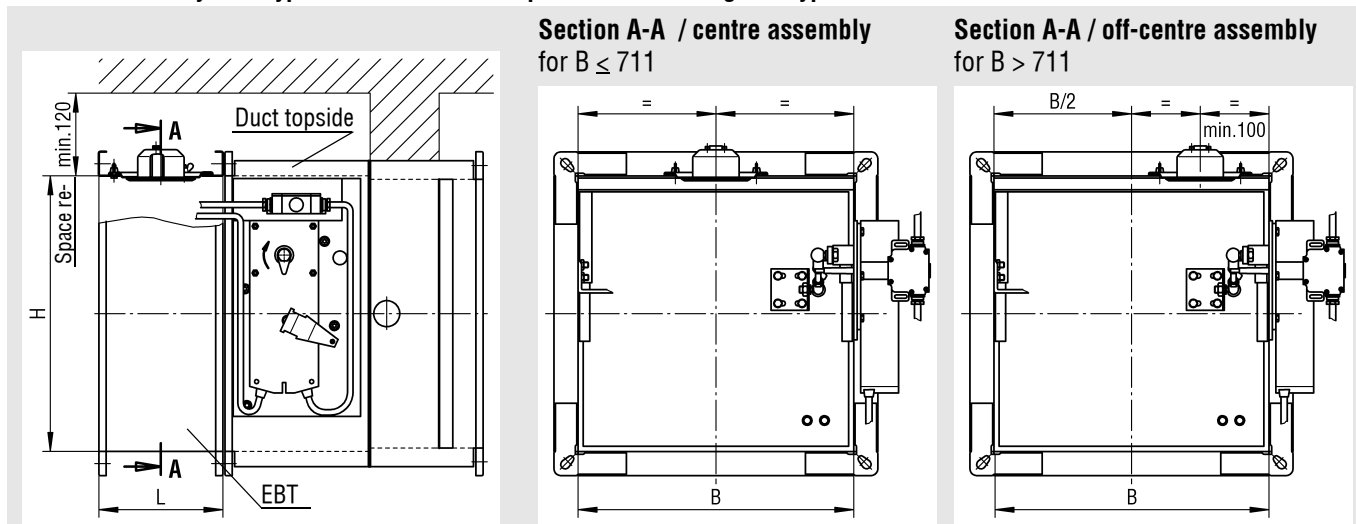
Models and dimensions

Dimensions

Smoke detection system type RMS-L for duct installation

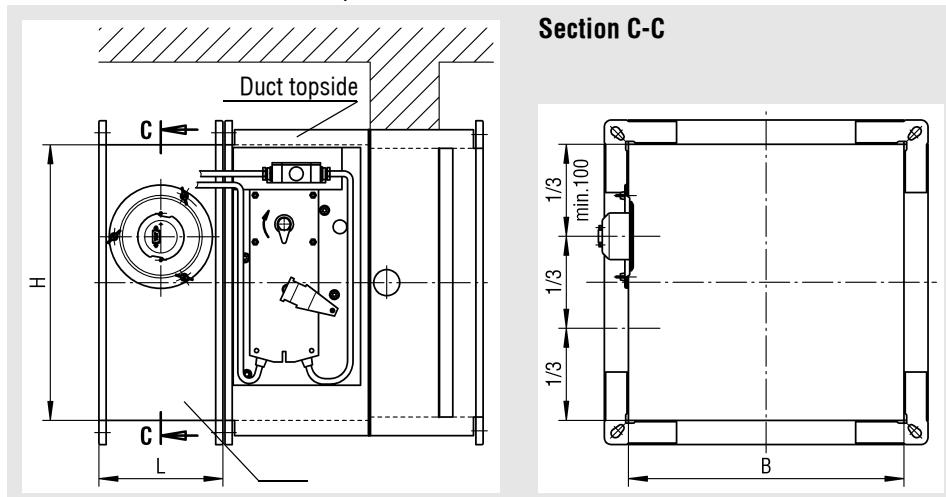


Smoke detector system type RMS-L for fire dampers with mounting unit type EBT



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 $H \geq 318$



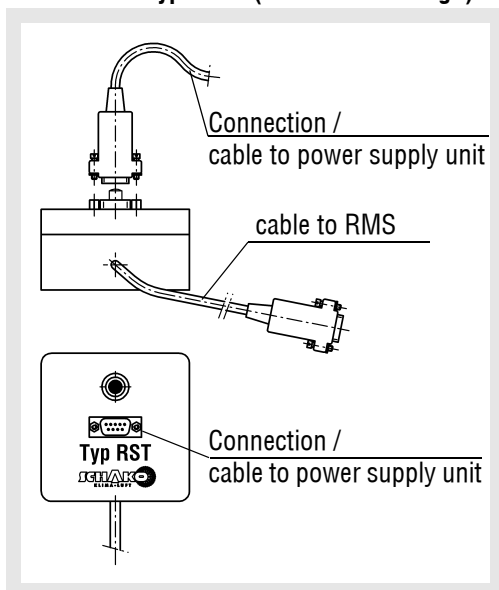
The dimension L depends on the height H (mm).

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	200

Smoke Detection System Model RMS-L

Dimensions of accessories

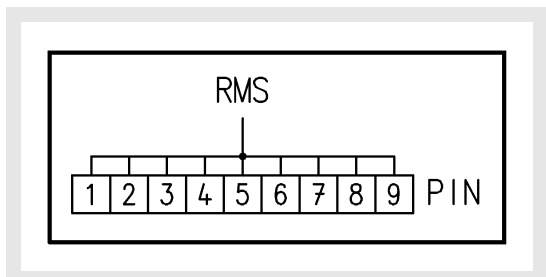
Reset button type RST (at an extra charge)



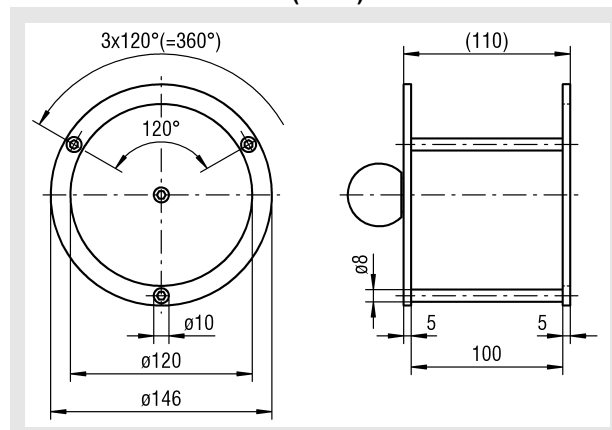
The reset button type RST (at an extra charge) can be used to reset an alarm message.

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

Terminals RST



Smoke simulation device (-RSG)

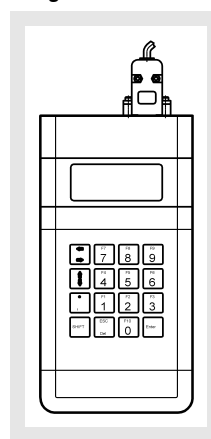


The smoke simulation device (-RSG) is required for simple maintenance and inspection of the smoke detectors. The smoke detectors installed flush with the duct do not have to be dismantled from the duct, and the electric wiring does not have to be deinstalled. Next, simply place the smoke detector with cover plate into the opening of the smoke simulation device. After about 12 seconds, the smoke detector must trigger an alarm message. The diode on the smoke detector or on the reset button/relay module must light up in red. Once this has taken place, the alarm message must be reset by disconnecting the power or by pressing the reset button/or the relay module. As soon as the diode on the smoke detector or on the reset button/relay module flashes in green again, the smoke detector is ready to operate again.

Attention!

Before using the smoke simulation device, the alarm transmission to the fire department must be deactivated.

Diagnostic and data read-out unit

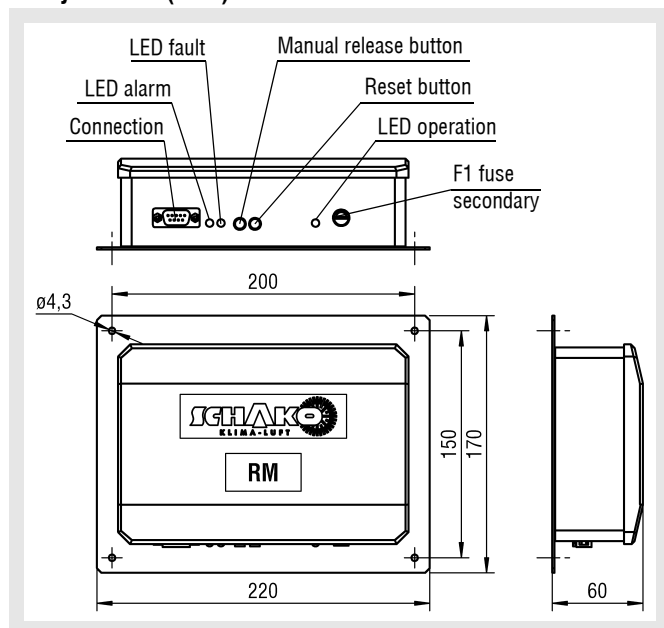


for polling the degree of soiling and reading out all relevant detector data: for example

- Degree of soiling 1 and 2
- Serial number
- Trigger threshold value
- Temperature in the smoke detector
- Functionality control of alarm contact
- Functionality control of fault contact
- including 1 m of connecting cable
- The power is supplied by the RMS

Smoke Detection System Model RMS-L

Relay module (-RM)



The RMS-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 mounted on the relay module. This makes it easier to check the BK 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 relays shorten the installation time and prevent wrong wiring.

The 24 V motor can be connected ready to plug in via the AMP plug. You have the option of ordering the relay module with integrated transformer (version 1) for connection to 230 V AC 50 Hz or without transformer (version 2) for connection to 24 V DC.

Technical Data

RMS-L

Operating voltage	24 V DC (+10%)
Residual ripple	< 20%
Current consumption	40 mA
Switching contacts	- 1x Alarm output (potential-free change-over contact) - 1x 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 42
Weight	0,2 kg
Storage temperature	max. 75°C
relative humidity	10 - 90%
VdS approval no.:	G 200096
DIBt Approval no.:	Z-78.6-58

Individual display - LED display:

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

When soiled, the smoke detector can still detect smoke.

Smoke Detection System Model RMS-L

Maintenance / Inspection

Maintenance of the smoke detection device RMS-L must be carried out once a year or after 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 RMS 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 contaminated. 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. Check if the diode on the fitted smoke detector or the reset button type RST flashes green, thus signaling ready operating state. If the smoke detector type RMS is inserted into the duct and no reset button has been installed, then the LED with a lead through the back of the duct can also check the function.
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 the reset button, the smoke detector must return to the ready operating state, and the diode on the smoke detector or on the reset button must flash green.
5. Fault control
On the smoke detector RMS, the transmitter and receiver sensors must be covered. The diode on the smoke detector lights up permanently 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 is reset at the central unit.
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 values is exceeded, an alarm message will be triggered, and the connected locking devices must close automatically. The diode on the smoke detector or reset button must light up in red. After the air in the surroundings of the smoke detector has broken down the aerosol 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 reset button. 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 or on the reset button flashes in green again, the smoke detector is ready to operate again.
or
Functional control using the smoke simulation device (-RSG)
The smoke detectors must be dismantled from the duct, and the electric wiring does not have to be deinstalled. Next, simply place the smoke detector with cover plate into the opening of the smoke simulation device. After about 12 seconds, the smoke detector must trigger an alarm message. The diode on the smoke detector or on the reset button/relay module must light up in red. Once this has taken place, the alarm message must be reset by disconnecting the power or by pressing the reset button/or the relay module. As soon as the diode on the smoke detector or on the reset button/relay module flashes in green again, the smoke detector is ready to operate again.
7. Soiled front glass
If the front glass is soiled to such an extent that the smoke detector sends a fault message to the central unit, and the diode on the smoke detector and reset button lights up in orange, the front glass must be cleaned with a moist cloth. As soon as the soiling has been removed, the smoke detector returns automatically to the ready-to-operate state, and the diode on the smoke detector or on the reset button flashes in green again. It is recommended wiping the front glass with a moist cloth when carrying out the regular maintenance work. Do not use any aggressive materials for cleaning the front glass as the glass might turn dull, causing a constant fault message to be sent (contaminated front glass)
Make sure that, after wiping the front glass, it is sprayed with an antistatic spray.

Smoke Detection System Model RMS-L

8. 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 locking devices themselves must be checked.

Inspection instructions





The SCHAKO smoke detector type RMS 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 soiled.

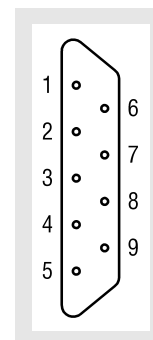
When a power failure of the smoke detector occurs, a fault message is also sent to the central unit.

Inspection includes the following actions:

- Check if the diode on the fitted smoke detector or the reset button type RST flashes green, thus signalling ready operating state.

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

Assignment	Colour	Relay dead	Relay in operation	Meaning
1	black	-	-	GND
2	brown			Relay contact work contact fault
3	red			Relay contact centre contact fault
4	orange			Relay contact rest contact fault
5	yellow	-	-	Test switch to GND
6	green			Relay contact rest contact alarm
7	blue			Relay contact centre contact fault
8	purple			Relay contact work contact alarm
9	grey	-	-	+24 V



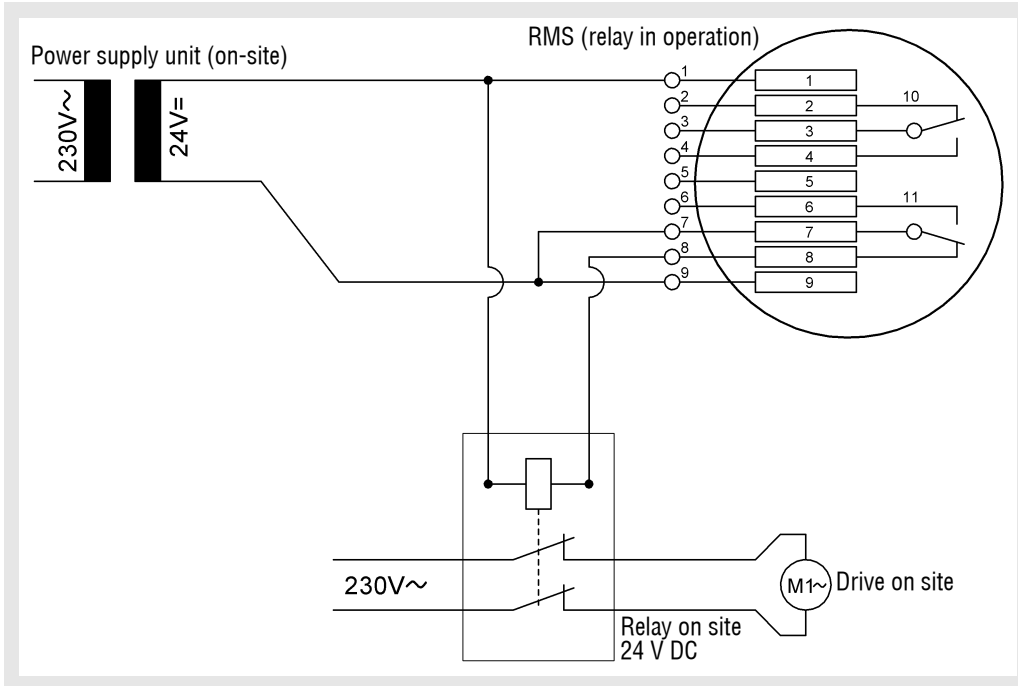
The relays drop off when an alarm / a fault or a power cut occurs.

For the current wire colours, please refer to the leaflet enclosed with each smoke detector type RMS-L.

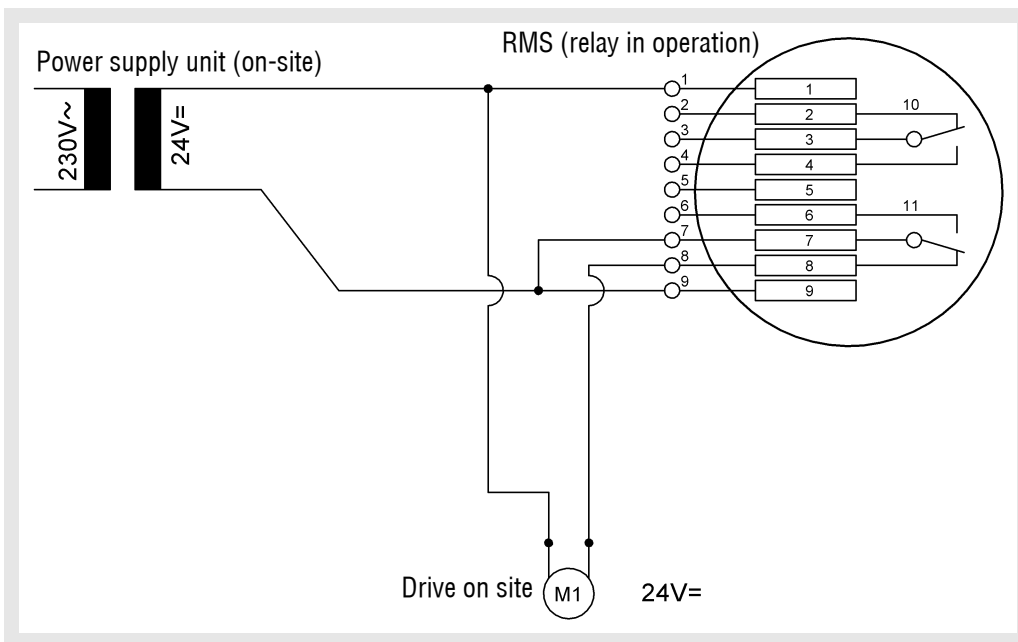
Smoke Detection System Model RMS-L

Circuit diagram

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



Circuit diagram of power supply unit (on-site)

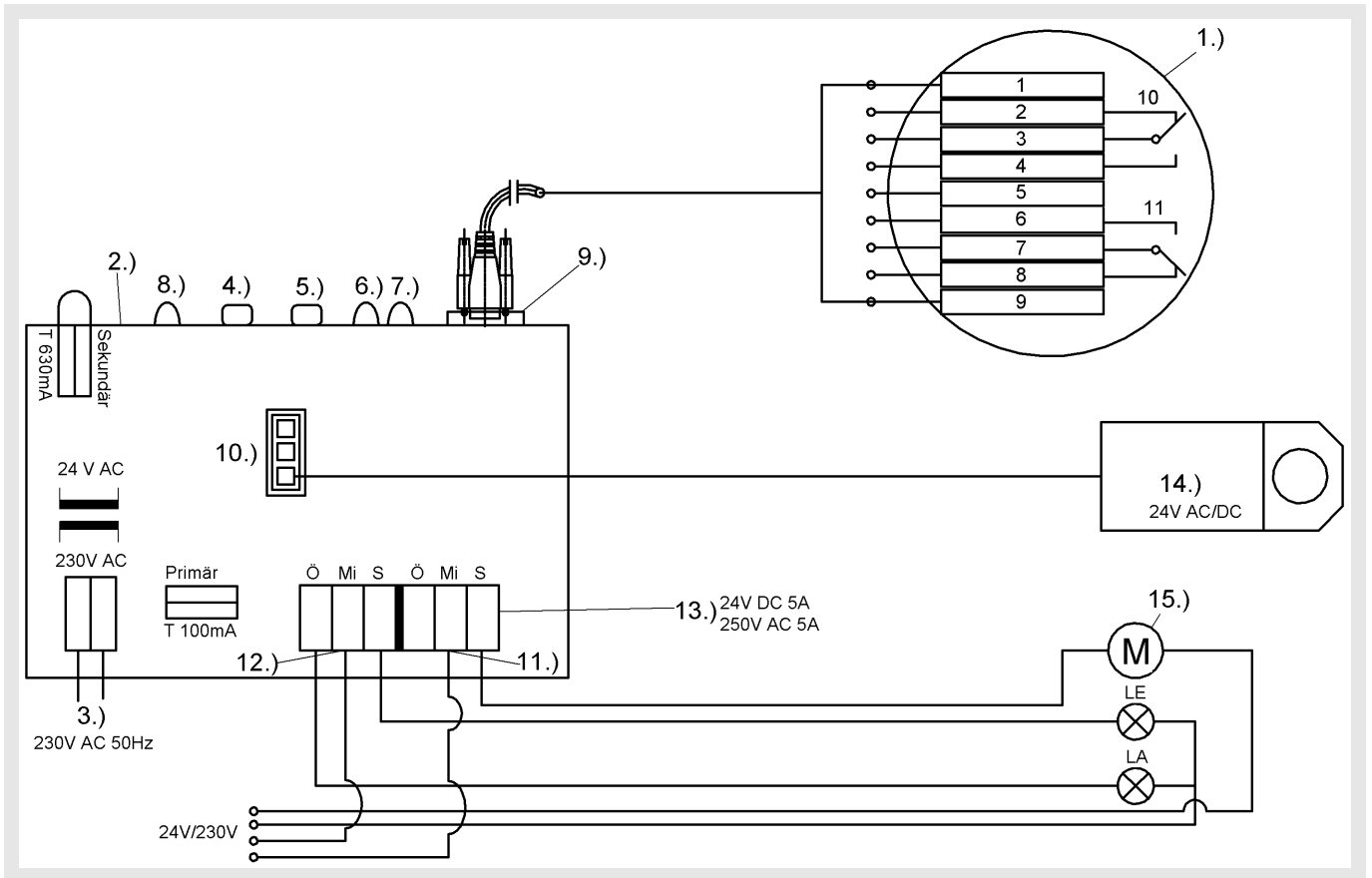


Contact assignment RMS-L:

- 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 Model RMS-L

Circuit diagram relay module Version 1



Contact assignment RMS-L:

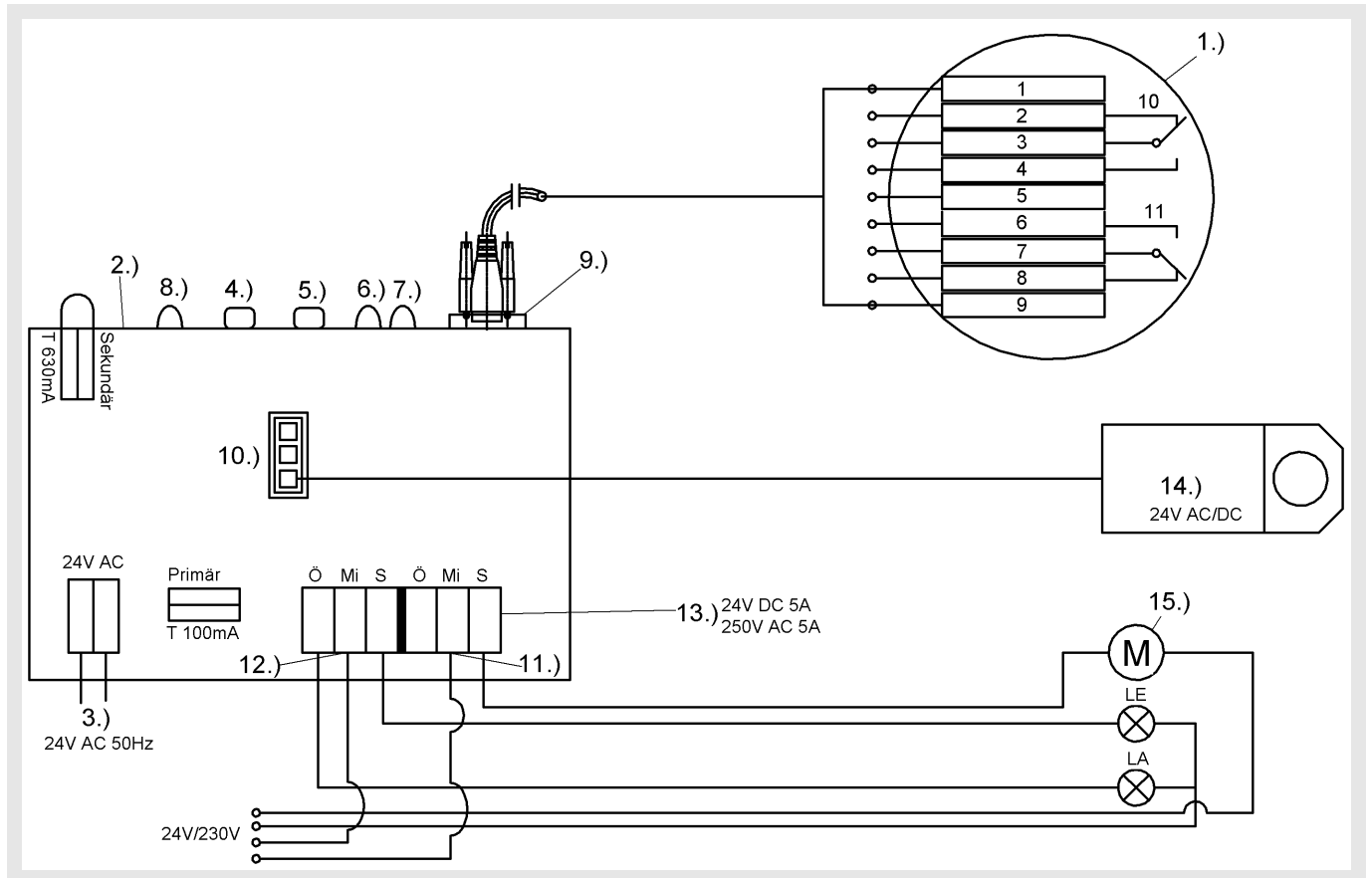
- 1.) Smoke detector
- 2.) Relay module
- 3.) Mains connection
- 4.) Reset button
- 5.) Manual release
- 6.) LED fault
- 7.) LED Alarm
- 8.) LED operation
- 9.) Connection RMS
- 10.) AMP plug for 24V AC/DC actuators
- 11.) Selector switch 1 actuator
- 12.) Selector switch 2 light
- 13.) Contact load of the selector switch
- 14.) Spring return actuator 24 V AC/DC for fire damper. SCHAKO product
- 15.) Spring return actuator 24 V AC/DC / 230 V AC Schako product or third-party 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 Model RMS-L

Circuit diagram relay module

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



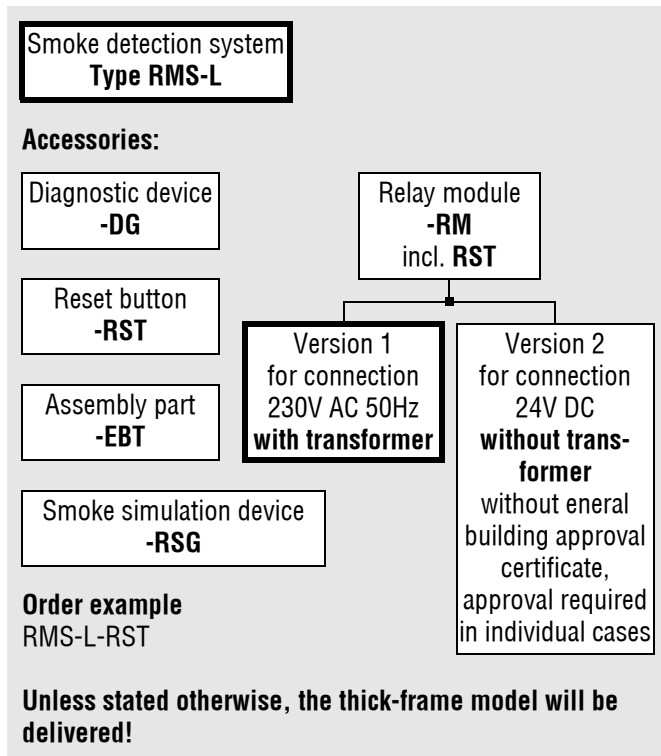
Contact assignment RMS-L:

- 1.) Smoke detector
- 2.) Relay module
- 3.) Mains connection
- 4.) Reset button
- 5.) Manual release
- 6.) LED fault
- 7.) LED alarm
- 8.) LED operation
- 9.) Connection RMS
- 10.) AMP plug for 24V AC/DC actuators
- 11.) Selector switch 1 actuator
- 12.) Selector switch 2 light
- 13.) Contact load of the selector switch
- 14.) Spring return actuator 24 V AC/DC for fire damper. SCHAKO product 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 Model RMS-L

Order details



Specification texts

Smoke detection system **type RMS-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 another RAL color 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 release 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 occur each over 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.

DIBt Approval No.: Z-78.6-58

Certified by VdS Cologne EN 54-7

Approval no.: G 200096

Product: SCHAKO **type RMS-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 building approval certificate, approval required in individual cases
- Reset button (-RST) for resetting the alarm message.
- Smoke simulation device (-RSG) for simple maintenance and inspection of the smoke detectors
- Diagnostic device (-DG) for polling the degree of soiling and reading out all relevant detector data.
- 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.