

## Ventilation Smoke Switch Systems

### LRS 01, LRS 02, LRS 03



LRS 01, LRS 02 and LRS 03 ventilation smoke switch systems are used for the early detection of smoke. Early detection prevents smoke from spreading within and through the ventilation system.

#### Area of application

The three LRS 01, LRS 02 und LRS 03 ventilation smoke switch systems can be used on conduits with either a circular or a rectangular cross-section. The ventilation smoke switch systems are designed for application areas inside buildings.

#### DIBt-compliant

The LRS 03 is approved by the Deutsches Institut für Bautechnik (DIBt) supervisory authority and can be used to activate fire and smoke protection dampers. The following equipment is also required for use in accordance with the approval notification for activating fire and smoke protection dampers: power supply unit NAG 03 alternatively NG 519 or battery-buffered power supply unit SVG 522.

#### Mode of operation

The relay in the optical smoke switches opens in the event of an alarm, heavy contamination, fault or power failure. The smoke switch ORS 210 in the LRS 01 and LRS 02 has an alarm memory and has to be switched back to the operating state using a reset (brief interruption in the supply voltage). The smoke switch ORS 220 in the LRS 03 resets itself automatically to the operating state as soon as the sampling chamber is once again smoke-free. The relay contact is capable of switching voltages of up

to 30 V AC/DC. Other relays are available on the various power supply units for higher voltages or more complex switching tasks.

#### Communication

The optical smoke switches of the ventilation smoke switch systems LRS 01, LRS 02 and LRS 03 are RS-Bus-compatible and also compatible with the smoke switch status display RZA 142. The communication interface (smoke switch PIN 3) is used to transmit the «operation», «dirty», «fault» and «alarm» states of the smoke switch to the RZA 142 and display them visually. In addition to the visual display a potential-free changeover switch is available for each state and can be used to activate or forward the states to higher-level systems such as a building services management system.

#### Convenience

As the smoke switches are easy to mount onto the ventilation duct from the outside they can also be inspected and serviced from the outside without the need of tools or a maintenance hatch. The transparent base cover allows the detector states to be read off quickly and easily. The alarm threshold tracking (contamination compensation) guarantees a long detector service life.

Characteristics	LRS 01	LRS 02	LRS 03
Input voltage	24 V DC	24 V AC/DC	24 V AC/DC
Easy to install	✓	✓	✓
On conduits with circular or rectangular cross-section	✓	✓	✓
Operation/contamination display visible from the outside	✓	✓	✓
Tool-free inspection and maintenance	✓	✓	✓
Optical smoke switch ORS 210 with alarm self-locking	✓	✓	
Optical smoke switch ORS 220 with automatic reset			✓
Integrated reset pushbutton		✓	✓
Pre-wired terminal for external cables	✓	✓	
Integrated voltage transformer		✓	✓
External alarm actuator pushbutton			✓
VdS approval number	G207083	G207084	G207085
DIBt approval			Z-78.6-177

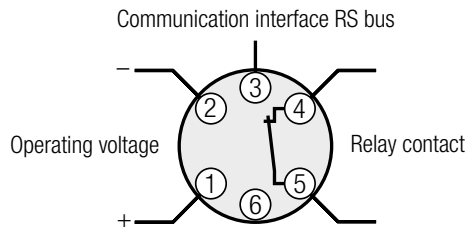
### Technical Data LRS 01

Area of application	ventilation ducts
Min./max. airflow	1 m/s to 20 m/s
Protection type	IP 54 (on duct surface)
Material	PC/aluminium tube
Mounting holes	on the ventilation duct 2 × Ø 28–30 mm
Openings	150 mm spacing for securing to the housing, 2 × max. 6 to 206 mm spacing
Cable entry	4 × Ø 6–10 mm
Dimensions without tube (L × W × H)	25 × 13,5 × 10 cm
Weight without tube	approx. 350 g

### Optical smoke switch ORS 210

Operating principle	scattered light
Response threshold	according to building and inspection principles for smoke-triggering devices (12/76)
Operating voltage	16 to 28 V DC
Residual ripple	≤ 200 m VSS
Power consumption at 28 V DC	idle state 22 mA in the event of an alarm 11 mA in the event of a fault 16 mA
Relay contact with alarm self-locking	Max. switching voltage 30 V AC/30 V DC Max. switching current 1 A
Ambient operating temperature	–20 to +60 °C
Relative humidity without condensation	95%
Weight	120 g

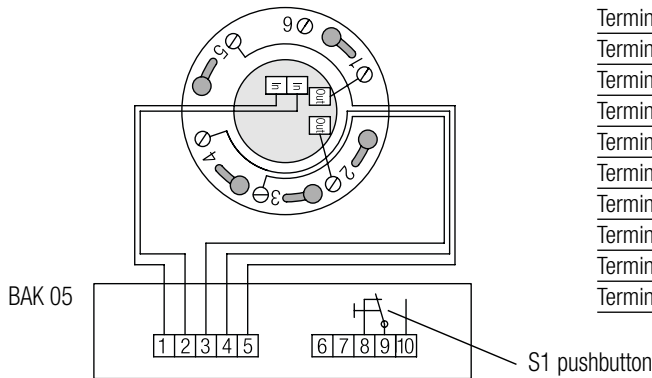
#### Terminal assignment in the LRS 01 base



#### Relay contact position

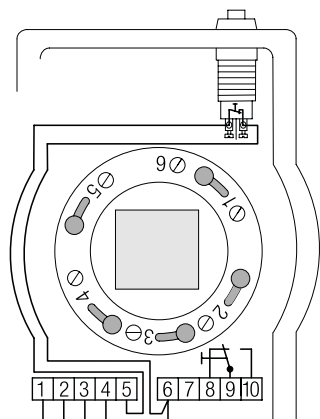
Operating state	
- slight contamination	
- heavy contamination	
- no voltage	
- fault	
- alarm	

#### Terminal assignment in the LRS 02 base



Terminal 1	24 V AC/DC
Terminal 2	0 V AC/DC
Terminal 3	Bus
Terminal 4	Relay
Terminal 5	Relay
Terminal 6	Support point terminal
Terminal 7	Support point terminal
Terminal 8	NC pushbutton S1
Terminal 9	COM pushbutton S1
Terminal 10	NO pushbutton S1

#### Terminal assignment in the LRS 03 base



Terminal 1	24 V AC/DC
Terminal 2	0 V AC/DC
Terminal 3	Bus
Terminal 4	Relay
Terminal 5	Relay
Terminal 6	Support point terminal
Terminal 7	Support point terminal
Terminal 8	NC pushbutton S1
Terminal 9	COM pushbutton S1
Terminal 10	NO pushbutton S1

## Technical Data LRS 02

**Base of the LRS 02** see Technical Data LRS 01

**Optical smoke switch ORS 210** see Technical Data LRS 01

### Rectifier circuit board GR50AC

DC nominal input voltage range	21.6 to 28 V DC
AC nominal input voltage range	21.6 to 26.4 V AC rms
Current consumption	4 mA
Nominal output voltage	24 V DC
Output current	30 mA
Ambient operating temperature	-20 to +60 °C
Dimensions (H × W × D)	37 × 37 × 10 mm
Weight	13 g

### Operation and terminal connection strip BAK 05

Cross-section	max. 1.5 mm <sup>2</sup>
Changeover pushbutton S1	Current max. 1 A Voltage max. 48 V AC/30 V DC
Dimensions (H × W × D)	27 × 20 × 80 mm
Ambient operating temperature	-20 to +60 °C

**Dimensional drawing** see Technical Data LRS 01

**Relay contact position** see Technical Data LRS 01

## Technical Data LRS 03

**Base of the LRS 03** see Technical Data LRS 01

### Optical smoke switch ORS 220

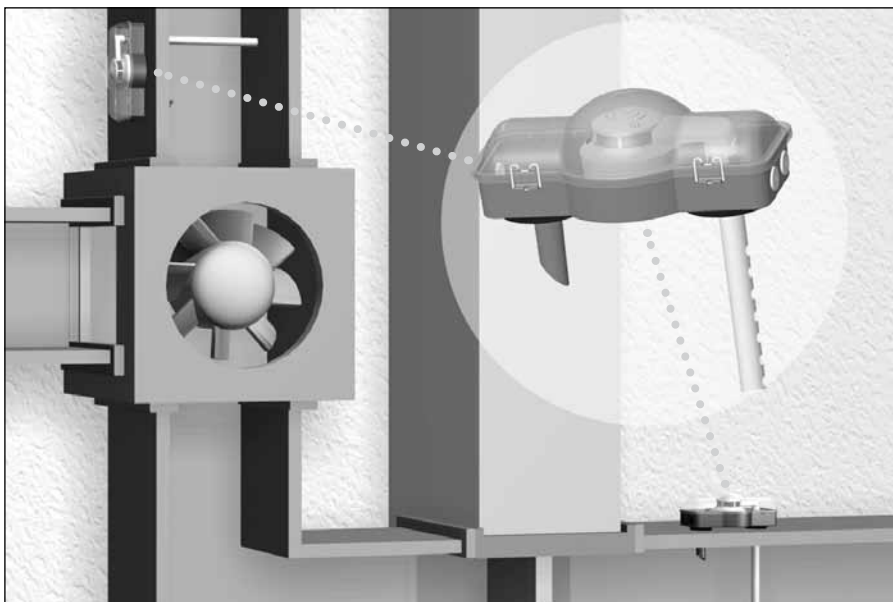
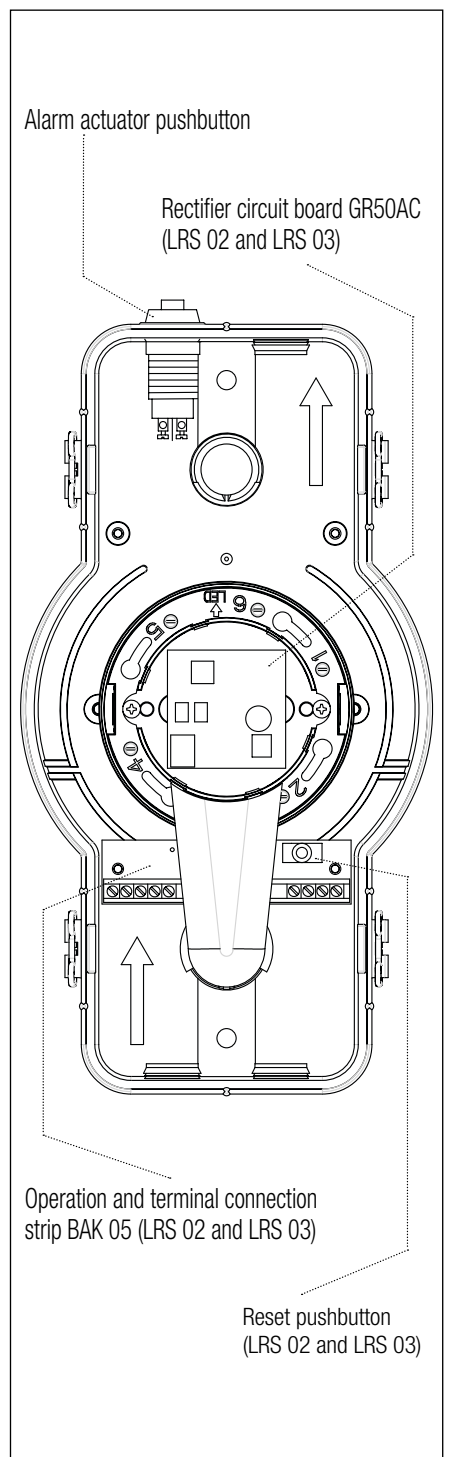
Operating principle	scattered light
Response threshold	according to building and inspection principles for smoke-triggering devices (12/76)
Operating voltage	16 to 28 V DC
Residual ripple	≤ 200 mVSS
Power consumption at 28 V DC	idle state 22 mA in the event of an alarm 11 mA in the event of a fault 16 mA
Relay contact	Max. switching voltage 30 V AC/30 V DC Max. switching current 1 A
Ambient operating temperature	-20 to +60 °C
Relative humidity without condensation	95%
Weight	120 g

**Rectifier circuit board GR50AC** see Technical Data LRS 02

**Operation and terminal connection strip BAK 05** see Technical Data LRS 02

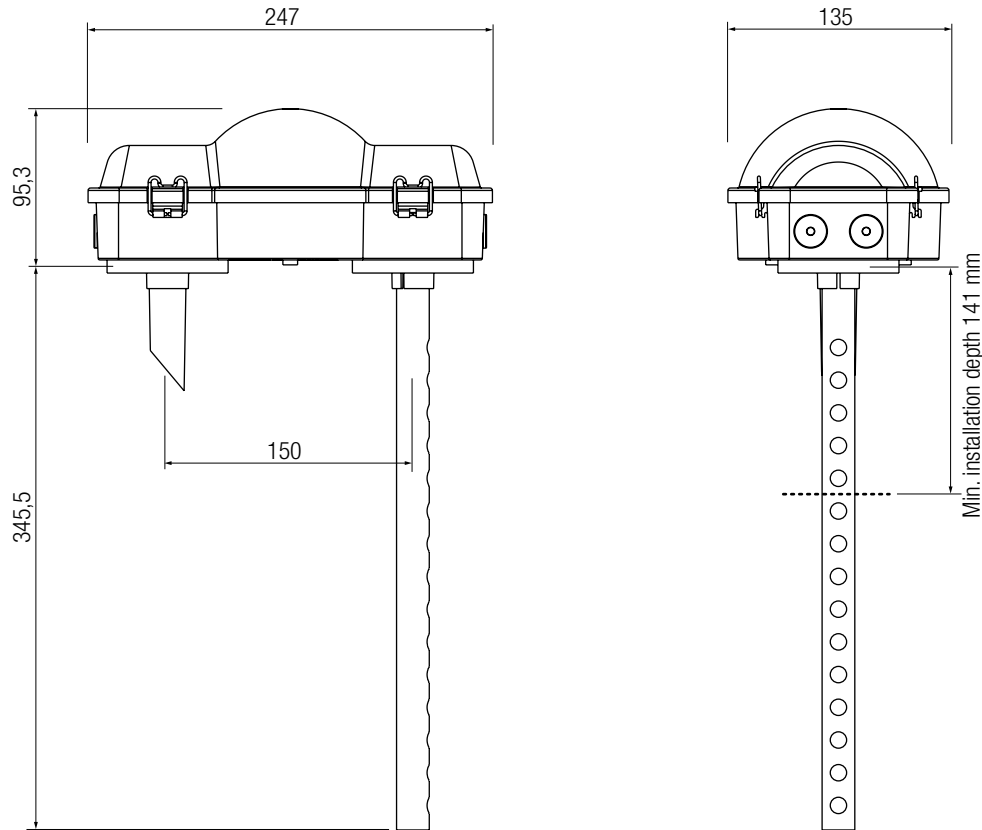
**Dimensional drawing** see Technical Data LRS 01

**Relay contact position** see Technical Data LRS 01



The ventilation smoke switch system LRS 03 is powered by the power supply unit and trigger NAG 03 + SAB 04 (alternatively other power supply units from the DIBt-approved range can also be used). In the event of a smoke alarm the LRS 03 forwards the signal to the power supply unit. The power supply unit triggers the fire or smoke protection damper. Dampers can be activated with both 230 V AC and 24 V DC (take note of the switch-on current!). The damper can be reset both via the power supply unit and the LRS 03.

## Dimensional drawing



### Ordering information

Ventilation smoke switch system LRS 01 24 V DC VdS incl. ORS 210	LRS 01	234966
Ventilation smoke switch system LRS 02 24 V AC/DC VdS incl. ORS 210	LRS 02	233170
Ventilation smoke switch system LRS 03 24 V AC/DC DIBt incl. ORS 220	LRS 03	5 000 618.0201

### Replacement smoke switch/rectifier circuit board

Optical smoke switch	ORS 210	234982
Optical smoke switch	ORS 220	235571
Rectifier circuit board	GR50AC	5 000 662.0201

### Optional accessories

Power supply unit and trigger	NAG 03	223875
Power supply unit	NG 519	227854
Battery-buffered power supply unit	SVG 522	5 400 085
Locking systems connection board	FAK 01	6 300 116
Smoke switch status display	RZA 142	227714

We reserve the rights to implement technical changes and modify delivery options.