BOSCH

Invented for life

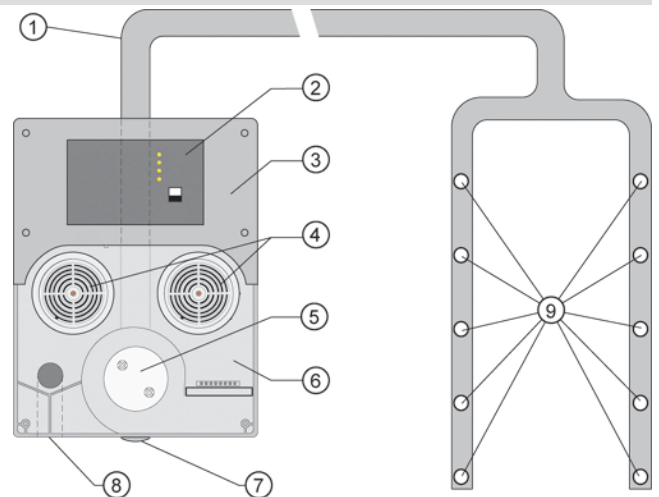# RAS 100 LSN Smoke Aspiration Systems with Optical O 400 LSN-RAS Smoke Detectors

▸ **High flexibility and security**

▸ **Self-monitoring of fan function and power supply of the smoke detector(s)**

▸ **All the performance features of LSN technology**

▸ **Easy-to-service**

The modified smoke extraction systems RAS 100 LSN-1 and RAS 100 LSN-2 are equipped with the proven optical smoke detectors O 400 LSN of the MAGIC.SENS product series. On the one hand, the smoke extraction systems enable the monitoring of difficult-to-access objects; on the other hand, they enable monitoring with practically invisible detection points.

System Overview

Pos.	Designation
1	Suction pipe
2	Operating/display panel (can be rotated by 180°)
3	Electronics chamber
4	1 or 2 O 400 LSN-RAS smoke detectors for RAS 100
5	Fan
6	Detector chamber

Pos.	Designation
7	Pipe stops
8	Air outlet opening
9	Suction openings

Functions

Via suction lines, the fan extracts air into the detector chamber in which one or two optical smoke detectors are installed that work according to the scattered light principle.

The detectors check the extracted air for smoke particles and trigger a pre alarm with 2/3 of the alarm threshold of a smoke detector.

When the alarm threshold is reached for one or both smoke detectors, the main alarm is triggered.

An alarm is signaled visually on the operating and display panel and can be relayed via a potential-free double-throw contact to a superior LSN fire panel.

Airflow Monitoring

Because the reliability of detection depends on the constant airflow to the detector chamber, the RAS 100 LSN has airflow monitoring. By monitoring the fan performance, the system detects obstructions and interruptions in the suction pipe.

With a deviation from the set values, the RAS 100 LSN independently triggers a fault indication.

A selectable delay time for this fault indication ensures that disturbances such as turbulence in the suction pipe are ignored.

After fault elimination, the display on the device is reset automatically.

To be able to take fluctuating ambient temperatures into account, the RAS 100 LSN is equipped with a compensation switch.

Malfunctions on the device or on the suction system are reported automatically by the integrated NTK 100 LSN panel interface to the fire panel via the LSN, recorded there, and displayed.

LSN features

With the integrated O 400 LSN optical fire detector, the RAS also has all features of LSN technology:

- Patented contamination detection
- Pre alarm on reaching 2/3 of the alarm threshold
- Three selectable sensitivity levels
- Drift compensation
- Malfunction isolation on the LSN
- Transmission of system malfunctions to the fire panel
- Remote reset of the system via LSN
- Depending on the fire panel, with the WinPara program, the serial number, contamination level, operating hours, and current analog values can be read out.

With the RAS 100 LSN-2 it is possible to implement a dual-detector or dual-group dependency circuit.

Certifications and Approvals

Region	Certification	
Germany	VdS	G 299093 RAS 100 LSN
Europe	CE	RAS 100 LSN-1/-2
Czech Republic	TZÚS	080-001268 RAS 100 LSN
Hungary	TMT	TMT-27/2006 RAS 100 LSN

Installation/Configuration Notes

Note The "General installation/configuration notes" in the RAS-XL section apply taking into account the specially-listed limiting values for the RAS 100 LSN.

- With integrated interfaces, can be integrated directly into the Local Security Network LSN
- Both flush-mounted and surface-mounted cable feed are possible

Limiting values for area monitoring with the RAS 100 LSN

Arrangement	I	U / T	H	Cross	Star
Ascent/feeder:					
Ø 25 mm(*)	4 m	6 m	10 m	20 m	20 m
Ø 40 mm(**)	20 m	30 m	45 m	40 m	45 m
Suction branch		2x	4x	3x	4x
	80 m	70 m	50 m	40 m	40 m
Furthest removed suction opening					
Ø 25 mm(*)	60 m	60 m	60 m	60 m	60 m
Ø 40 mm(**)	100 m	100 m	80 m	80 m	80 m
Maximum suction openings	12	20	20	18	20
Maximum suction openings	See corresponding guideline, (e.g. VdS 2095 in Germany, VKF in Switzerland)				
Monitoring area per suction opening	Max. 60 m², square area (depending on the country-specific regulations, e.g. VdS 2095 in Germany, VKF in Switzerland)				

For applications where the maximum pipe lengths (*) are not exceeded, the entire suction pipe may be installed with Ø 25 mm.
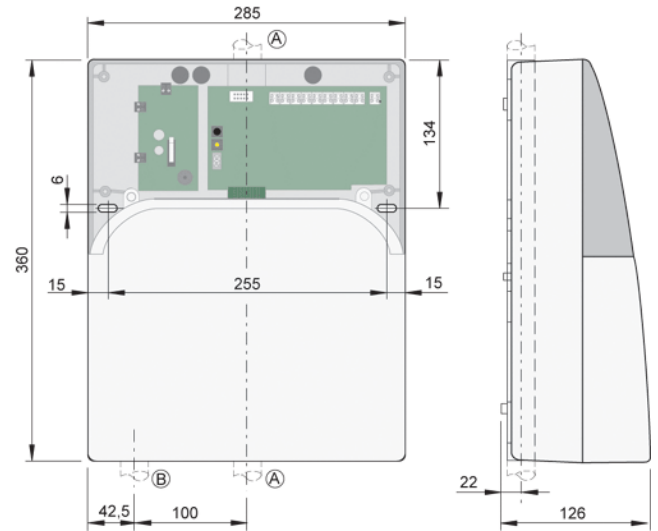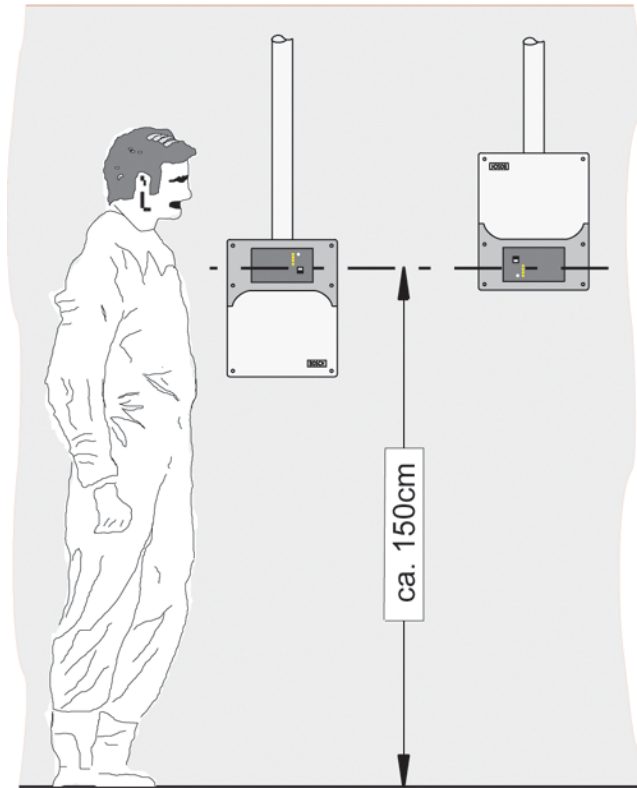
If the maximum pipe lengths (**) are used, the first third of the suction pipe must be installed with Ø 40 mm (at least up to the first suction opening or pipe branch).

Limiting values for equipment monitoring with the RAS 100 LSN

Suction pipe for equipment monitoring

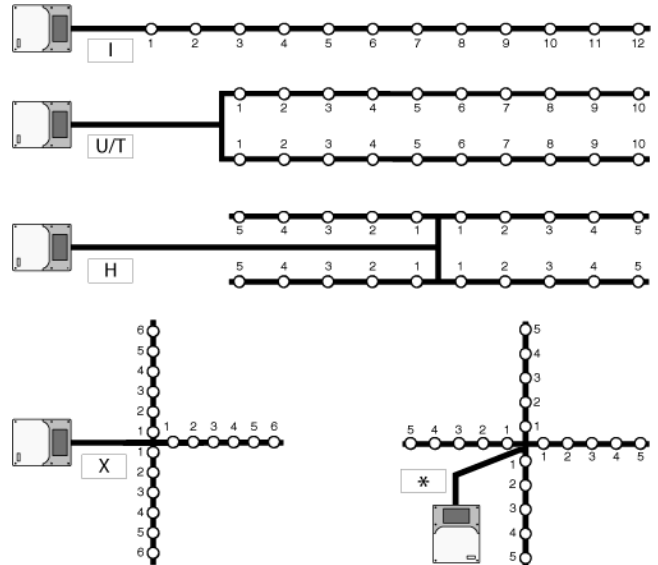|	
Maximum suction points	6
Number of devices/cabinets that can be monitored	6 (5 as per VdS)
Furthest removed suction point	20 m
Maximum length of the suction pipe (total)	50 m
Pipe diameter of the main line	20 / 25 mm
Pipe diameter with flexible suction branch	16 / 21 mm

Assembly drawing

ca. 150cm

Pos. **Description**

A   Suction opening

B   Exhaust vent

Dimensioning of the suction borings:

Size of the borings [mm] applies to all layout types!

Suction openings per suction branch	No. of the suction opening					
	1	2	3	4	5	6
2	3.5	4.0	-	-	-	-
3	3.5	4.0	4.5	-	-	-
4	3.5	3.5	4.0	4.5	-	-
5	3.5	3.5	4.0	4.0	4.5	-
6	3.5	3.5	4.0	4.0	4.5	4.5
7	3.5	3.5	3.5	4.0	4.0	4.5
8	3.5	3.5	3.5	4.0	4.0	4.0
9	3.5	3.5	3.5	4.0	4.0	4.0

	No. of the suction opening					
10	3.5	3.5	3.5	4.0	4.0	4.0
11	3.5	3.5	3.5	3.5	4.0	4.0
12	3.5	3.5	3.5	3.5	4.0	4.0

	No. of the suction opening					
Suction openings per suction branch	**7**	**8**	**9**	**10**	**11**	**12**
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-
7	4.5	-	-	-	-	-
8	4.5	4.5	-	-	-	-
	4.5	4.5	4.5	-	-	-
10	4.5	4.5	4.5	4.5	-	-
11	4.0	4.0	4.5	4.5	4.5	-
12	4.0	4.0	4.5	4.5	4.5	4.5

Parts Included

RAS 100 LSN-1

Qty.	Components
1	Housing with connection and monitoring component, fan and NTK 100 LSN interface.
1	Detector base MS 400
1	Special optical smoke detector O 400 LSN-RAS

No additional LSN interface required!

RAS 100 LSN-2

Qty.	Components
1	Housing with connection and monitoring component, fan and NTK 100 LSN interface.
2	Detector base MS 400
2	Special optical smoke detector O 400 LSN-RAS

No additional LSN interface required!

Technical Specifications

Electrical

Nominal operating voltage	24 V DC (18 V DC . . . 30 V DC)
Current consumption (at 24 V)	
• In operation	280 mA
• Alarm 1 + 2	280 mA
• Switch-on current peak	Approx. 5 A, max. 1 ms

Mechanics

Displays

• IN OPERATION	LED green
• FAULT (malfunction)	LED yellow
• ALARM 1	LED red
• ALARM 2	LED red

Detector box

• Material	Plastic, ABS blend
• Color	Gray, RAL 2807 purple anthracite, RAL 3002
• Dimensions (W x H x D)	285 x 360 x 126 mm
• Weight	2700 g
Computer connection	RJ12 - RS 232
Connecting the suction pipe	¾" or 25 mm adapter
Connecting the exhaust line	1" or 25 mm adapter

Environmental conditions

Protection category as per EN 60529	IP 53
Permissible operating temperature	
• Detector module	0 ℃ . . . +50 ℃
• Suction pipe	0 ℃ . . . +60 ℃
Permissible rel. humidity	
• Constant	70 % rel. / F1
• Short-term (without condensation)	95 % rel. / F1

Special features

Response sensitivity of the O 400 LSN-RAS	0.02 . . . 0.03 dB/m

Ordering Information

RAS 100 LSN-1 Smoke Aspiration System with a special optical MAGIC.SENS O 400 LSN-RAS smoke detector, greater sensitivity as compared to the normal optical detector	**RAS100LSN-1**
RAS 100 LSN-2 Smoke Aspiration System with two special optical MAGIC.SENS O 400 LSN-RAS smoke detectors, greater sensitivity as compared to the normal optical detector	**RAS100LSN-2**

Accessories

REK 100 LSN Smoke Aspiration System Individual Detection only for RAS 100 LSN-1 and -2	**REK100/RAS**