


BOSCH

Invented for life

FAS-420 series Smoke aspiration systems LSN improved



- ▶ Connectable to the Modular Fire Panel Series 5000 with the improved LSN technology
- ▶ High deceptive alarm immunity with intelligent signal processing *LOGIC · SENS*
- ▶ Innovative airflow monitoring including single-hole monitoring detects obstruction and breakage
- ▶ Initial set-up made easy by automatic initialization
- ▶ Easy diagnostics through flash code on the detector module or by using the DIAG diagnostic software
- ▶ Simple implementation of the pipe system planning through patented aspiration reducing film sheets

The FAS-420 series aspirating smoke detectors are specially designed for connection to the Modular Fire Panel Series 5000 with the extended features of LSN improved version. They are active fire detection systems that are connected directly to the Local SecurityNetwork LSN for early fire detection in area and equipment monitoring, as well as for the monitoring of air conditioning units or ducts.

They have the latest detection technology. Their resistance to contamination, the temperature compensation of the sensor signals and initialization in relation to air pressure ensure reliable operation even under extreme environmental conditions.

Pos.	Description
1	Pipe system/air intake
2	Air sampling openings
3	Housing
4	Detector module incl. airflow sensor
5	Aspiration unit
6	Air outlet

Functions

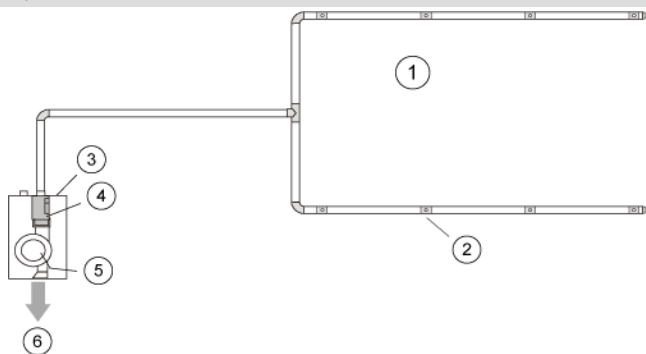
The aspiration unit takes air samples from the monitoring area through a pipe system with defined air sampling openings and passes the samples to the detector module.

Depending on the response sensitivity of the used detector module, the aspirating smoke detector triggers an alarm when the appropriate smoke density is reached. This alarm is displayed via the alarm LED on the unit and is transmitted to the fire panel.

An airflow sensor checks the connected pipe system for breakage and obstruction.

Intelligent signal processing *LOGIC · SENS* compares the measured smoke level with known disturbance variables and decides between alarm and deception. For the display and transmission of alarm and faults various delay times can be selected.

System Overview



Each detector module is monitored for contamination, signal malfunction and device removal. Malfunctions and certain device states are displayed using various LED flash codes on the detector module's electronics PCB.

A fault message is reset via the connected fire panel. Via the Local SecurityNetwork LSN the alarm and fault messages on the unit are reset simultaneously with the detector line.

There are three different detector modules available for the FAS-420 series aspirating smoke detectors. These modules have different response sensitivities:

Detector module	Max. sensitivity (light obscuration)	Levels for selection
DM-TT-80	0.8 %/m	2
DM-TT-25	0.25 %/m	4
DM-TT-05	0.05 %/m	4

The FAS-420-TP2 and the FAS-420-TT2 runs with two detector modules.

Two air sampling pipe systems can be connected to monitor two areas. When monitoring only one area with two pipe systems, dual detector dependency may be implemented. Connection to the Modular Fire Panel Series 5000 and programming via RPS also allows for dual zone dependency.

Address allocation

The integrated DIP switches are used to select between automatic or manual addressing with or without auto detection.

The following settings are possible:

Address	Operating mode
0	Automatic addressing in "improved version" LSN mode for loop/stub (T-taps not possible)
1 – 254	Manual addressing in "improved version" LSN mode for loop/stub/T-taps
255	Automatic addressing in "classic" LSN mode for loop/stub (address range: max. 127)

Features of improved LSN

The aspirating smoke detectors in the 420 series offer all the features of "improved" LSN technology:

- Flexible network structures including "T-tapping" without additional elements
- Up to 254 LSN-improved elements per loop or stub line
- Unshielded cable can be used

In addition, the FAS-420 series offer all the established benefits of LSN technology. Operating data and fault messages can be read out via the operating and display unit of the FPA-5000. In the event of an alarm, individual detector identification is transmitted to the fire panel.

Model variants FAS-420 series

The variants FAS-420-TP1 and FAS-420-TP2 are the cost-effective aspirating smoke detectors for universal use with LED displays for operation, malfunction, and alarm (two alarm indications on the FAS-420-TP2).

The FAS-420-TT1 and FAS-420-TT2 offer differentiated alarm indications (info, pre, and main alarm) as well as a smoke level display in 10 levels (with the FAS-420-TT2 all alarm and smoke level displays are doubled). Depending on the used detector module, a resolution of the sensitivity indication of up to 0,005 %/m, 0,025 %/m or 0,08 %/m can be selected.

Certifications and Approvals

VdS approval numbers: applied for

Installation/Configuration Notes

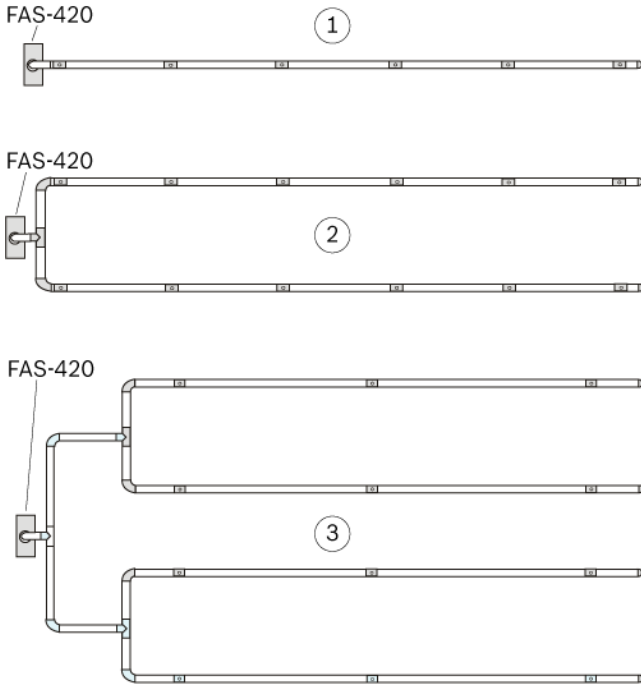
- For connection to the Modular Fire Panel Series 5000 (LSN 0300 and LSN 1500 module) with the extended system parameters of LSN improved version.
- Programming is carried out via RPS.
- The fan requires a separate power supply.
- An external detector alarm display for connection to the FAS-420 series aspirating smoke detectors can be ordered separately.

Planning of the pipe system

- In planning, a distinction is made between area monitoring and equipment monitoring.
- PVC pipes and halogen-free aspiration pipes can be used.
- For equipment monitoring, halogen-free pipes should be used.
- The air sampling pipe system should be arranged such that any fires can be detected at the initial stage.
- The pipe system including air sampling openings must always be symmetrical in design ($\pm 10\%$ deviation).
- If structural issues make it impossible to maintain this symmetry, the following conditions apply:
 - The number of air sampling openings and the length of the shortest and longest pipe branch within the pipe system must not exceed a quantity ratio of 01:02.
 - The distance between neighboring air sampling openings on the aspiration pipe must be even (max. deviation $\pm 20\%$).
 - The diameters of the air sampling openings are determined separately for each pipe branch. The diameters depend on the total number of air sampling openings in the pipe branch in question.
- Greater distances between the aspirating smoke detector and aspiration pipe are specified for pipes with a 40 mm diameter.

- Depending on the geometrics of the area, the I-, U- or double U-pipe system is utilized.

Note Take notice when planning that the fans of the aspirating smoke detectors produce a noise level of 45 dB(A).



Pos.	Designation
1	I-pipe system
2	U-pipe system
3	Double U-pipe system

- For a faster detection, it is best to select several short branches rather than a few long branches (U and double-U pipe systems preferable).
- Bends are preferable to angles in the event of directional changes.
- In order to increase transport speed in critical application areas, the fan voltage can be increased from 6.9 V to 9 V.

Specifying the sensitivity

- The response sensitivity at the individual detection points (air sampling openings) S_{DP} depends on:
 - the used detector module
 - the selected sensitivity level S_{ASD} on the detector module
 - the number of all planned detection points in the system per detector module $N_{proj. DP}$
- The sensitivity of the individual detection point S_{DP} is calculated from:

$$S_{DP} = S_{ASD} \times N_{proj. DP}$$
- The detector modules have the following selectable sensitivity levels S_{ASD} (specification in %/m light obscuration):

Detector module Type DM-TT-05	Detector module Type DM-TT-25	Detector module Type DM-TT-80
0.05 %/m	0.25 %/m	0.8 %/m
0.1 %/m	0.5 %/m	1.6 %/m
0.2 %/m	1 %/m	
0.4 %/m	2 %/m	

- The planning occurs according to the instructions for point-type smoke detectors.
- Here it must be ensured that the sensitivity of the individual detection point S_{DP} achieves at least a value of 3.5 %/m light obscuration.
- When monitoring several areas with a smoke aspiration system, the total sensitivity of the air sampling openings within a closed area must amount to ≤ 3.5 %/m light obscuration. If this value is not reached, it is recommended that a higher sensitivity be set.
- Depending on the course of the fire and environmental conditions, the actual response sensitivity is generally higher than the calculated sensitivity S_{DP} of a detection point since it can be assumed that several air sampling openings will always be filled with smoke (collective effect).

Planning Limitations

- Pipe length between two air sampling openings:
 - Minimum 0.1 m
 - Maximum 12 m.
- Maximum monitoring area per air sampling opening:
 - 120 m² for the DM-TT-05 and DM-TT-25 detector modules
 - 60 m² for the DM-TT-80 detector module.
- Maximum of 24 air sampling openings per pipe system
- Max. pipe length / max. total monitoring area per pipe system (doubled when two detector modules are used):
 - 180 m / 2880 m² (VdS-compliant)
 - With single-hole monitoring: 140 m / 1680 m²

Standard planning in line with VdS

	I-pipe system	U-pipe system	Double U- pipe system
Min. distance RAS - 1st SO ¹⁾	4 m	4 m	4 m
Max. distance RAS - 1st SO	20 m	20 m	20 m
Max. branch length			
- fan voltage 6.9 V	60 m	60 m	30 m
- fan voltage 9 V	80 m	70 m	40 m
Max. total pipe length ²⁾			
- fan voltage 6.9	80 m	140 m	140 m
- fan voltage 9 V	100 m	160 m	180 m
Min. distance between 2 SO	4 m	4 m	4 m
Max. distance between 2 SO	12 m	12 m	12 m
Max. no. of SO ²⁾	16	18	24

1) SO = air sampling opening

2) Per pipe system, that is with the FAS-420-TP2 and FAS-420-TT2 doubling of the values

- The air sampling opening diameters (Ø in mm) listed in the tables are achieved using aspiration reducing film sheets with the appropriate punch diameters.
- The air sampling openings are named in alphabetical order. The one closest to the aspirating smoke detector is termed "A". The cross section of the air sampling openings is increasing with increasing distance to the detector.

I-pipe system

Ø in mm	Number of air sampling openings							
	2	3	4	5	6	7	8	9
A	6.0	5.0	4.2	3.8	3.2	3.0	2.5	2.5
B	6.8	5.2	4.4	3.8	3.2	3.0	2.5	2.5
C	-	5.2	4.6	4.0	3.6	3.0	3.0	2.5
D	-	-	4.6	4.0	3.6	3.4	3.0	3.0
E	-	-	-	4.4	4.0	3.4	3.4	3.0
F	-	-	-	-	4.0	3.8	3.4	3.4
G	-	-	-	-	-	3.8	3.8	3.4
H	-	-	-	-	-	-	3.8	3.8
I	-	-	-	-	-	-	-	3.8
J	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-
N	-	-	-	-	-	-	-	-
O	-	-	-	-	-	-	-	-
P	-	-	-	-	-	-	-	-

I-pipe system (continued)

Ø in mm	Number of air sampling openings						
	10	11	12	13	14	15	16
A	2.0	2.0	2.0	2.0	2.0	2.0	2.0
B	2.0	2.0	2.0	2.0	2.0	2.0	2.0
C	2.5	2.0	2.0	2.0	2.0	2.0	2.0
D	2.5	2.5	2.5	2.0	2.0	2.0	2.0
E	3.0	2.5	2.5	2.5	2.5	2.5	2.5
F	3.0	3.0	2.5	2.5	2.5	2.5	2.5
G	3.4	3.0	3.0	2.5	2.5	2.5	2.5
H	3.4	3.4	3.0	3.0	2.5	2.5	2.5
I	3.6	3.4	3.0	3.0	3.0	3.0	3.0
J	3.6	3.6	3.4	3.0	3.0	3.0	3.0
K	-	3.6	3.4	3.4	3.0	3.0	3.0
L	-	-	3.4	3.4	3.4	3.0	3.0
M	-	-	-	3.4	3.4	3.4	3.4
N	-	-	-	-	3.4	3.4	3.4
O	-	-	-	-	-	3.4	3.4
P	-	-	-	-	-	-	3.4

A-P = designation of the air sampling openings

U-pipe system

Ø in mm	Number of air sampling openings per pipe system								
	2	4	6	8	10	12	14	16	18
A	5.2	3.6	3.4	3.2	2.5	2.5	2.0	2.0	2.0
B	-	4.0	3.4	3.2	3.0	2.5	2.0	2.0	2.0
C	-	-	3.6	3.4	3.0	2.5	2.5	2.0	2.0
D	-	-	-	3.4	3.2	3.0	2.5	2.5	2.0
E	-	-	-	-	3.2	3.0	3.0	2.5	2.5
F	-	-	-	-	-	3.2	3.0	3.0	2.5
G	-	-	-	-	-	-	3.2	3.0	2.5
H	-	-	-	-	-	-	-	3.0	3.0
I	-	-	-	-	-	-	-	-	3.0

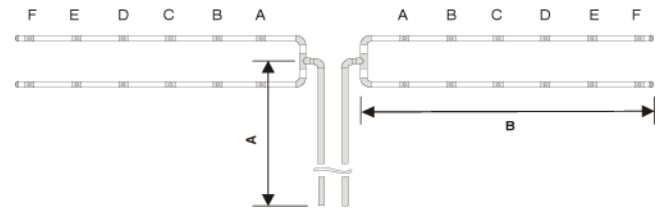
A-I = designation of the air sampling openings

Double U-pipe system

Ø in mm	Number of air sampling openings per pipe system					
	4	8	12	16	20	24
A	4.0	3.0	2.5	2.0	2.0	2.0
B	-	3.4	3.0	2.5	2.0	2.0
C	-	-	3.0	3.0	2.5	2.0
D	-	-	-	3.0	2.5	2.5
E	-	-	-	-	3.0	2.5
F	-	-	-	-	-	3.0

A-F = designation of the air sampling openings

Planning with long pipe feed lines



Pos. Designation

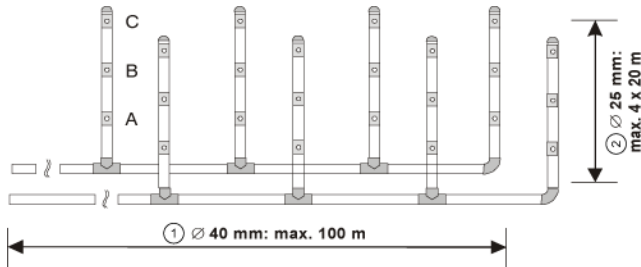
- A Length of pipe feed line with a diameter of 40 mm (see following table)
- B Length of aspiration pipe with a diameter of 40 mm (see following table)

- Pipe feed lines with a diameter of 40 mm are used for the planning. These also apply for the previous mentioned pipe configurations.
- The following limitations apply to a pipe system for area monitoring:
 - Maximum pipe length A (diameter 40 mm): 60 m
 - Maximum pipe length B (diameter 25 mm), depending on the pipe configuration, see following table:

Pipe configuration	Fan voltage 6.9 V	Fan voltage 9 V
I-pipe system	60 m	80 m

Pipe configuration	Fan voltage 6.9 V	Fan voltage 9 V
U-pipe system	60 m	70 m
Double-U-pipe system	30 m	40 m

Planning for high-rise warehouses



Pos.	Designation
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1	Basic pipe
2	Branches

- A basic pipe can be installed for high-rise warehouse planning, from which the stub-like aspiration pipes are routed.
- The following limits apply:
 - Max. pipe length 180 m (4 x 20 m branches + 100 m basic pipe)
 - Max. basic pipe length 100 m, basic pipe diameter 40 mm.

Simplified Planning

- Simplified planning is used for equipment protection and in smaller premises. The benefit of this type of planning are the standard diameters of the air sampling openings.

	I-pipe system	U-pipe system	Double U-pipe system
Min. distance RAS - 1st SO ¹⁾	2 m	2 m	2 m
Max. distance RAS - 1st SO	20 m	20 m	20 m
Max. branch length	20 m	20 m	20 m
Max. total pipe length ²⁾ 25 mm Ø	40 m	60 m	100 m
Min. distance between 2 SO (d)	0.1m	0.1m	0.1m
Max. distance between 2 SO (d)	4 m	4 m	4 m
Max. no. of SO ²⁾	18	18	20

1) SO = air sampling opening

2) Per pipe system, that is with the FAS-420-TP2 and FAS-420-TT2 doubling of the values

I-pipe system

Ø in mm	Number of air sampling openings (SO)									
	2	3	4	5	6	7	8	9	10	
All SO	6.0	5.0	4.4	4.0	3.6	3.4	3.2	3.0	3.0	

I-pipe system

I-pipe system (continued)

Ø in mm	Number of air sampling openings (SO) per pipe system							
	11	12	13	14	15	16	17	18
All SO	3.0	3.0	2.5	2.5	2.5	2.5	2.5	2.5

U-pipe system

Ø in mm	Number of air sampling openings (SO) per pipe system									
	2	4	6	8	10	12	14	16	18	
All SO	6.0	4.4	3.6	3.2	3.0	3.0	2.5	2.5	2.5	

Double U-pipe system

Ø in mm	Number of air sampling openings (SO) per pipe system				
	2	8	12	16	20
All SO	4.0	3.4	3.0	2.5	2.0

Planning with single-hole monitoring

	I-pipe system	U-pipe system	Double U-pipe system
Min. distance RAS - 1st SO ¹⁾	4 m	4 m	4 m
Max. distance RAS - 1st SO	20 m	20 m	20 m
Max. branch length			
- fan voltage 6.9 V	40 m	40 m	20 m
- fan voltage 9 V	60 m	50 m	30 m
Max. total pipe length ²⁾			
- fan voltage 6.9 V	60 m	100 m	100 m
- fan voltage 9 V	80 m	120 m	140 m
Min. distance between 2 SO	4 m	4 m	4 m
Max. distance between 2 SO	12 m	12 m	12 m
Max. no. of SO ²⁾	10	14	12

1) SO = air sampling opening

2) Per pipe system, that is with the FAS-420-TP2 and FAS-420-TT2 doubling of the values

- The activation threshold for the airflow monitoring system is set via the fire panel using the programming software RPS.

Activation threshold	Designation	Airflow deviation
I	small	+/- 10% airflow deviation
II	medium	+/- 20% airflow deviation
III	large	+/- 30% airflow deviation
IV	very large	+/- 50% airflow deviation

I-pipe system

Ø in mm	Number of air sampling openings									
	2	3	4	5	6	7	8	9	10	
A	6.0	5.0	4.2	3.8	3.2	3.0	2.5	2.5	2.0	
B	6.8	5.2	4.4	3.8	3.2	3.0	2.5	2.5	2.0	
C	-	5.2	4.6	4.0	3.6	3.0	3.0	2.5	2.5	

I-pipe system

D	4.6	4.0	3.6	3.4	3.0	3.0	2.5
E		4.4	4.0	3.4	3.4	3.0	3.0
F			4.0	3.8	3.4	3.4	3.0
G				3.8	3.8	3.4	3.4
H					3.8	3.8	3.4
I						3.8	3.6
J							3.6

A-J = designation of the air sampling opening

Activation thresholds of the I-pipe system

Setting level	Number of air sampling openings								
	2	3	4	5	6	7	8	9	10
1*	III	III	II	I	I	-	-	-	-
2*	O	O	III	III	II	I	I	-	-
3*	O	O	O	O	III	III	II	I	I
4*	O	O	O	O	O	O	III	II	I
5*	O	O	O	O	O	O	O	O	II

* Number of obstructed openings that are detected at level X
- not possible / O not practical

- Example for setting the activation thresholds:
If it is detected that 3 air sampling openings of a total of 8 are obstructed, set the airflow monitoring switch to level II.

U-pipe system

ℓ in mm	Number of air sampling openings per pipe system						
	2	4	6	8	10	12	14
A	5.2	3.6	3.4	3.2	2.5	2.5	2.0
B	-	4.0	3.4	3.2	3.0	2.5	2.5
C	-	-	3.6	3.4	3.0	2.5	2.5
D	-	-	-	3.4	3.2	3.0	2.5
E	-	-	-	-	3.2	3.0	3.0
F	-	-	-	-	-	3.2	3.0
G	-	-	-	-	-	-	3.2

A-G = designation of air sampling openings

Activation thresholds of the U-pipe system

Setting level	Number of air sampling openings per pipe system						
	2	4	6	8	10	12	14
1*	III	II	I	-	-	-	-
2*	O	III	II	I	-	-	-
3*	O	O	III	II	I	-	-
4*	O	O	O	III	II	I	-
5*	O	O	O	O	III	II	I

Activation thresholds of the U-pipe system

6*	O	O	O	O	O	III	II
7*	O	O	O	O	O	O	III

* Number of obstructed openings that are detected at level X
- not possible / O not practical

Double U-pipe system

ℓ in mm	Number of air sampling openings per pipe system		
	4	8	12
A	4.0	3.0	2.5
B	-	3.4	3.0
C	-	-	3.0

A-C = designation of the air sampling openings

Activation thresholds of double U-pipe system

Setting level	Number of air sampling openings per pipe system		
	4	8	12
1*	I	-	-
2*	II	I	-
3*	O	II	I
4*	O	III	II
5*	O	O	III
6*	O	O	III

* Number of obstructed openings that are detected at level X
- not possible / O not practical

Planning for forced airflow

- The FAS-420 series smoke aspiration systems can be used in low-speed units (flow speed max. 10 m/s).
- The pipe system is installed in the exhaust duct as far away as possible from sound dampers, air baffles and bends. The distance from such "obstacles" should be at least three times the smallest duct diameter.
- If it cannot be avoided to mount the pipe system directly behind air baffles, sound dampers or bends, the high-speed areas must be monitored
- The pipe entries into the duct as well as the part of the pipe system outside the duct must be airtight.
- An air return must be provided to allow for the different pressure areas in the aspirating smoke detector and air sampling pipe system.
- The distance between the air return and the intake must be at least 2 m. The open end of the return should be sloped at a 45° angle.
- If the distance of 2 m cannot be maintained, the pipes must be offset so that a pressure drop is achieved between intake and exhaust through the different speed areas.
- The air sampling openings must be arranged counter to the airflow.
- The pipe end is constructed with an end cap without boring.
- The diameters of the air sampling openings are chosen depending on the number of detection points, as in the case of the "simplified planning".

- The following limit values apply regarding the distance of the air sampling openings to each other and to the duct wall:

	Duct cross-section $\leq 0.5 \text{ m}^2$	Duct cross-section $> 0.5 \text{ m}^2$
Distance SO - wall	100 to 200 mm	200 to 300 mm
Distances between SOs	100 mm	150 mm

SO = air sampling opening

Parts Included

Type of device	Qty	Components
FAS-420-TP1	1	Aspirating smoke detector basic unit, with LED displays for operation, malfunction, and alarm, for one detector module, for connecting one pipe system
FAS-420-TP2	1	Aspirating smoke detector basic unit, with LED displays for operation, malfunction, and alarm, for two detector modules, for connecting two pipe systems
FAS-420-TT1	1	Aspirating smoke detector basic unit, with differentiated alarm and smoke level display, for one detector module, for connecting one pipe system
FAS-420-TT2	1	Aspirating smoke detector basic unit, with differentiated alarm and smoke level display, for two detector modules, for connecting two pipe systems

Note One or two detector modules must be ordered separately for the basic units (see table). Only use detector modules of the type DM-TT-XX for all variants of the FAS-420 series.

For type of device	Qty	Required detector modules
FAS-420-TP1	1	Either DM-TT-80, DM-TT-25 or DM-TT-05
FAS-420-TP2	2	DM-TT-80, DM-TT-25 and/or DM-TT-05
FAS-420-TT1	1	Either DM-TT-80, DM-TT-25 or DM-TT-05
FAS-420-TT2	2	DM-TT-80, DM-TT-25 and/or DM-TT-05

Technical Specifications

Electrical

Operating voltage	24 V DC (14 - 30 V DC)
Current consumption from LSN	2,9 mA

Current consumption from auxiliary power supply (at 24 V)	FAS-420-TP1/ FAS-420-TT1	FAS-420-TP2/ FAS-420-TT2
• Starting current, fan voltage 6.9 V	300 mA	330 mA
• Starting current, fan voltage 9 V	300 mA	330 mA
• In standby, fan voltage 6.9 V	200 mA	230 mA
• In standby, fan voltage 9 V	260 mA	310 mA
• On alarm, fan voltage 6.9 V	230 mA	290 mA
• On alarm, fan voltage 9 V	290 mA	370 mA

Mechanics

Displays on the device

FAS-420-TP1 / FAS-420-TP2

• In operation	Green LED
• Malfunction	Yellow LED
• Alarm	1 red LED / 2 red LEDs

FAS-420-TT1 / FAS-420-TT2

• In operation	Green LED
• Malfunction	Yellow LED
• Level display	1 x / 2 x smoke level display, each with 10 segments (1 - 10)
• Alarm	1 x 3 / 2 x 3 red LEDs for info alarm, pre-alarm and main alarm

Conical duct connections for Ø 25 mm

• Aspiration pipe	1 pipe / 2 pipes
• Air return	1 pipe
Cable bushings	5 x M 20 and 2 x M 25
Dimensions (W x H x D)	200 x 292 x 113 mm
Weight	Approx. 1.5 kg
Housing material	Plastic (ABS)
Housing color	Papyrus white, RAL 9018

Environmental conditions

Protection category as per EN 60529 IP 20

Permissible temperature range

• Series FAS-420 aspirating smoke detectors	-20 °C ... +60 °C
• Pipe system PVC	-10 °C ... +60 °C
• Pipe system ABS	-40 °C ... +80 °C

Permissible relative humidity (non-condensing) 10 ... 95 %

Special features

Acoustic power level	45 dB(A)
Response sensitivity (max. light obscuration)	
• Detector module DM-TT-80	0.8 %/m
• Detector module DM-TT-25	0.25 %/m
• Detector module DM-TT-05	0.05 %/m
Service life of the fan (12 V)	43,000 hrs at 24 °C

Ordering Information

FAS-420-TP1 Aspirating smoke detector LSN improved	FAS-420-TP1
FAS-420-TP2 Aspirating smoke detector LSN improved	FAS-420-TP2
FAS-420-TT1 Aspirating smoke detector LSN improved	FAS-420-TT1
FAS-420-TT2 Aspirating smoke detector LSN improved	FAS-420-TT2
Accessories	
DM-TT-80 Detector module for aspirating smoke detectors series FAS-420 and TITANUS basic units TOP·SENS® TT-1/ TT-2 with max. sensitivity of 0.8 %/m light ob- scuration	TITANUS DM-TT-80
DM-TT-25 Detector module for aspirating smoke detectors series FAS-420 and TITANUS basic units TOP·SENS® TT-1/ TT-2 with max. sensitivity of 0.25 %/m light obscuration	TITANUS DM-TT-25
DM-TT-05 Detector module for aspirating smoke detectors series FAS-420 and TITANUS basic units TOP·SENS® TT-1/ TT-2 with max. sensitivity of 0.05 %/m light obscuration	TITANUS DM-TT-05
MT-1 Device mounting	TITANUS MT-1 mount
DIAG Diagnostic software incl. connection cable	TITANUS DIAG-2
Test pipe	RAS test pipe
Test adapter	RAS test adapter
AF-BR Marking tapes for aspiration reducing film sheets Price per piece, DU 10 pieces	TITANUS AF-BR
AF-2.0 Aspiration reducing film sheets 2.0 mm Price per piece, DU 10 pieces	TITANUS AF-2.0

Ordering Information

AF-2.5 Aspiration reducing film sheets 2.5 mm Price per piece, DU 10 pieces	TITANUS AF-2.5
AF-3.0 Aspiration reducing film sheets, 3.0 mm Price per piece, DU 10 pieces	TITANUS AF-3.0
AF-3.2 Aspiration reducing film sheets, 3.2 mm Price per piece, DU 10 pieces	TITANUS AF-3.2
AF-3.4 Aspiration reducing film sheets, 3.4 mm Price per piece, DU 10 pieces	TITANUS AF-3.4
AF-3.6 Aspiration reducing film sheets, 3.6 mm Price per piece, DU 10 pieces	TITANUS AF-3.6
AF-3.8 Aspiration reducing film sheets, 3.8 mm Price per piece, DU 10 pieces	TITANUS AF-3.8
AF-4.0 Aspiration reducing film sheets, 4.0 mm Price per piece, DU 10 pieces	TITANUS AF-4.0
AF-4.2 Aspiration reducing film sheets, 4.2 mm Price per piece, DU 10 pieces	TITANUS AF-4.2
AF-4.4 Aspiration reducing film sheets, 4.4 mm Price per piece, DU 10 pieces	TITANUS AF-4.4
AF-4.6 Aspiration reducing film sheets, 4.6 mm Price per piece, DU 10 pieces	TITANUS AF-4.6
AF-5.0 Aspiration reducing film sheets, 5.0 mm Price per piece, DU 10 pieces	TITANUS AF-5.0
AF-5.2 Aspiration reducing film sheets, 5.2 mm Price per piece, DU 10 pieces	TITANUS AF-5.2
AF-5.6 Aspiration reducing film sheets, 5.6 mm Price per piece, DU 10 pieces	TITANUS AF-5.6
AF-6.0 Aspiration reducing film sheets, 6.0 mm Price per piece, DU 10 pieces	TITANUS AF-6.0
AF-6.8 Aspiration reducing film sheets, 6.8 mm Price per piece, DU 10 pieces	TITANUS AF-6.8
AF-7.0 Aspiration reducing film sheets, 7.0 mm Price per piece, DU 10 pieces	TITANUS AF-7.0

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