

FAS-420 Aspiration smoke detector series LSN improved



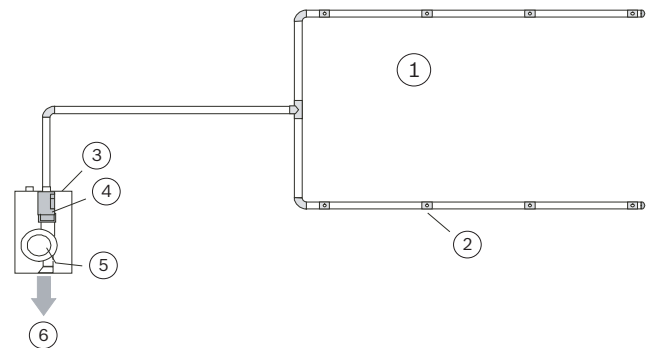
- ▶ High deceptive alarm immunity with intelligent signal processing *LOGIC-SENS*
- ▶ Innovative airflow monitoring including single-hole monitoring detects obstruction and breakage
- ▶ Initial set-up made easy by automatic initialization
- ▶ Maintains LSN loop functions in the event of wire interruption or short-circuit thanks to two integrated isolators
- ▶ SL-versions: Noise reduction to 38 dB(A) by extremely quiet fan and up to 34 dB(A) with additional sound absorber

The FAS-420 Series Aspiration Smoke Detectors are specially designed for direct connection to the Local SecurityNetwork LSN improved version with the extended features. They are active fire detection systems 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.

The SL-versions with extremely quiet fan are applicable for noise sensitive areas, for example hotel rooms, hospitals and bureaus. The noise was reduced to 38 dB(A) and up to 34 dB(A) with additional sound absorber.

System overview



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 Aspiration 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.

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 Aspiration Smoke Detectors. These modules have different response sensitivities:

Detector Module	Max. sensitivity (light obscuration)	Levels for selection
DM-TT-50(80)	0.5 %/m (0.8 %/m)	2
DM-TT-10(25)	0.1 %/m (0.25 %/m)	4
DM-TT-01(05)	0.015 %/m (0.05 %/m)	4

i Notice

The sensitivity is based on the measurements during Standard Test Fires (previous measurement in brackets).

The FAS-420-TP2, FAS-420-TT2, FAS-420-TP2-SL and the FAS-420-TT2-SL 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 AVENAR panel series, FPA-5000 or FPA-1200 and programming via FSP-5000-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 Aspiration Smoke Detectors in the 420 Series offer all the features of the LSN technology improved version:

- 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 found on the panel controller. 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 Aspiration Smoke Detectors for universal use with LED displays for operation, malfunction, and alarm (two alarm indications on the FAS-420-TP2). They are also available as silent versions FAS-420-TP1-SL and FAS-420-TP2-SL. The FAS-420-TT1 and FAS-420-TT2 (FAS-420-TT1-SL and FAS-420-TT2-SL) 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 0,0015 %/m, 0,01 %/m or 0,05 %/m can be selected.

Regulatory information

Region	Regulatory compliance/quality marks	
Europe	CPR	0786-CPR-20790 FCS-320-TPx_FCS-320-TTx_FAS-420-TPx_FAS-420-TTx
Germany	VdS	G 208046 FCS-320 TT_TPSeries / FAS-420 TT_TPSeries
Switzerland	VKF	AEAI 19207 FAS-420 LSNi
Europe	CE	FAS-420-TP1/-TP2
	CE	FAS-420-TT1/-TT2

Installation/configuration notes

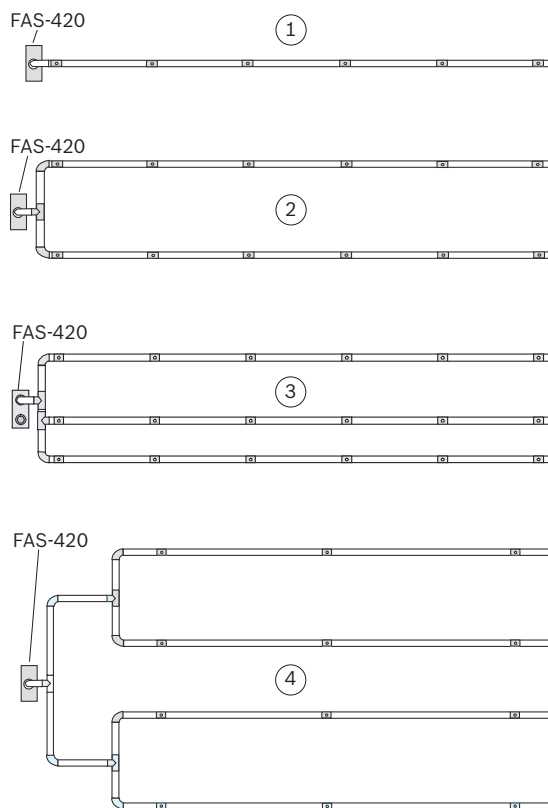
- For connection to the addressable fire panels with the extended system parameters of LSN improved version.
- Programming is carried out via RPS.
- The fan requires a separate power supply.
- An external detector alarm display for connection to the FAS-420 Series Aspiration Smoke Detectors can be ordered 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 Aspiration Smoke Detector and aspiration pipe are specified for pipes with a 40 mm diameter.
- Depending on the geometrics of the area, the I-, U-, M- or double U-pipe system is utilized.

i Notice

Take notice when planning that the fans of the Aspiration Smoke Detectors produce a noise level of 45 dB(A).



Pos.	Designation
1	I-pipe system
2	U-pipe system
3	M-pipe system
4	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.

Planning limitations

- Pipe length between two air sampling openings:
 - Minimum 4 m (0.1 m with Simplified Pipe Planning)
 - Maximum 12 m.

- The maximum monitoring area per air sampling opening corresponds to the maximum monitoring area of point-type detectors according to valid planning guidelines.
- Maximum of 32 air sampling openings per pipe system
- Max. pipe length / max. total monitoring area per pipe system:
 - **300 m / 2880 m²** (VdS-compliant)
 - With two Detector Modules: **2*280 m / 5760 m²**

Aspiration pipe planning

Aspiration pipe systems are constructed according to planning specifications with the common pipe components as well as components for special applications, e. g. Water Separator or Detonation Safety Barrier.

All borings for the smoke aspiration systems are made to a diameter of 10 mm and the exact aspiration openings are implemented by means of the patented Aspiration Reducing Film Sheets. For each aspiration hole a Aspiration reducing Film Sheet with corresponding punch diameter and Marking Tape must be provided.

i Notice

For applications in areas where a blowing-out system is necessary (e. g. low-temperature areas or where high levels of dust accumulate), special suction reducers with plastic clips are available as separate items.

For further information on the following aspects of FAS-420 planning, refer to the operation guide (F.01U.029.275):

- Specifying the sensitivity
- Standard planning in line with VdS
- Planning with long pipe feed lines
- Planning for high-rise warehouses
- Simplified Planning
- Planning with single-hole monitoring
- Planning for forced airflow

Technical specifications

	Auxiliary current (mA)
FAS-420-TP1 Aspiration smoke detector, 1 pipe system	285 mA
FAS-420-TP2 Aspiration smoke detector 2 pipe systems	325 mA
FAS-420-TT1 Aspiration smoke detector, 1 pipe system	290 mA – 305 mA
FAS-420-TT2 Aspiration smoke detector 2 pipe systems	330 mA – 360 mA
FAS-420-TP1-SL Aspiration smoke detector silent 1 pipe	170 mA – 190 mA

	Auxiliary current (mA)
FAS-420-TP2-SL Aspiration smoke detector silent 2 pipes	210 mA – 230 mA
FAS-420-TT1-SL Aspiration smoke detector silent 1 pipe	170 mA – 190 mA
FAS-420-TT2-SL Aspiration smoke detector silent 2 pipes	210 mA – 230 mA

Each current consumption was measured at fan voltage 9V.

Ordering information

FAS-420-TP1 Aspiration smoke detector, 1 pipe system
 Basic unit without Detector Module, for connecting one pipe system
 Order number **FAS-420-TP1 | F.01U.029.255**

FAS-420-TP2 Aspiration smoke detector 2 pipe systems
 Basic unit without Detector Modules, for connecting two pipe systems
 Order number **FAS-420-TP2 | F.01U.029.256**

FAS-420-TT1 Aspiration smoke detector, 1 pipe system
 Basic unit without Detector Module, for connecting one pipe system
 Order number **FAS-420-TT1 | F.01U.029.252**

FAS-420-TT2 Aspiration smoke detector 2 pipe systems
 Basic unit without Detector Modules, for connecting two pipe systems
 Order number **FAS-420-TT2 | F.01U.029.253**

FAS-420-TP1-SL Aspiration smoke detector silent 1 pipe
 Basic unit without Detector Module, for connecting one pipe system
 Order number **FAS-420-TP1-SL | F.01U.083.877**

FAS-420-TP2-SL Aspiration smoke detector silent 2 pipes
 Basic unit without Detector Module, for connecting two pipe systems
 Order number **FAS-420-TP2-SL | F.01U.083.876**

FAS-420-TT1-SL Aspiration smoke detector silent 1 pipe
 Basic unit without Detector Module, for connecting one pipe system
 Order number **FAS-420-TT1-SL | F.01U.083.875**

FAS-420-TT2-SL Aspiration smoke detector silent 2 pipes
 Basic unit without Detector Module, for connecting two pipe systems
 Order number **FAS-420-TT2-SL | F.01U.083.874**

Accessories

DM-TT-50(80) Detector module max. sensitivity 0.5%/m
 Detector module for Aspiration Smoke Detectors Series FAS-420, with max. sensitivity of 0,5 %/m (0.8 %/m) light obscuration
 Order number **DM-TT-50(80) | 4.998.143.400**

DM-TT-10(25) Detector module max. sensitivity 0.1%/m

Detector module for Aspiration Smoke Detectors Series FAS-420, with max. sensitivity of 0,1 %/m (0.25 %/m) light obscuration
Order number **DM-TT-10(25) | 4.998.143.401**

DM-TT-01(05) Detect. module max. sensitivity 0.015%/m

Detector module for Aspiration Smoke Detector Series FAS-420, with max. sensitivity of 0,015 %/m (0.05 %/m) light obscuration
Order number **DM-TT-01(05) | 4.998.143.402**

FAS-ASD-SL Sound absorber smoke aspiration detector

Noise reduction up to 10 dB(A).
Order number **FAS-ASD-SL | F.01U.090.252**

FAS-ASD-DIAG Diagnostic software

The FAS-ASD-DIAG Diagnostic Software enables reading out all stored device data and gives advices to remove failures.

Including connection cable for USB interface and diagnosis tool with an infrared interface.
Order number **FAS-ASD-DIAG | F.01U.033.505**

MT-1 Device Mounting

Bracket (two parts) for mounting TITANUS devices on racks or similar equipment
Order number **TITANUS MT-1 mount | 4.998.143.410**

RAS TEST-PIPE Test pipe for smoke aspiration system

Pipe with three different suction openings to make the functional test easier to carry out.
Order number **RAS TEST-PIPE | 4.998.148.848**

Test Adapter

The Test Adapter is recommended for applications where the suction pipe system has to be fixed.
Order number **RAS test adapter | 4.998.148.849**

TITANUS AF-2.0 Suction-reducing film sheets, 2.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-2.0 | 4.998.143.416**

TITANUS AF-2.5 Suction-reducing film sheets, 2.5mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-2.5 | 4.998.143.417**

TITANUS AF-3.0 Suction-reducing film sheets, 3.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-3.0 | 4.998.143.418**

TITANUS AF-3.2 Suction-reducing film sheets, 3.2mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-3.2 | 4.998.143.419**

TITANUS AF-3.4 Suction-reducing film sheets, 3.4mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-3.4 | 4.998.143.420**

TITANUS AF-3.6 Suction-reducing film sheets, 3.6mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-3.6 | 4.998.143.422**

TITANUS AF-3.8 Suction-reducing film sheets, 3.8mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-3.8 | 4.998.143.423**

TITANUS AF-4.0 Suction-reducing film sheets, 4.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-4.0 | 4.998.143.424**

TITANUS AF-4.2 Suction-reducing film sheets, 4.2mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-4.2 | 4.998.143.425**

TITANUS AF-4.4 Suction-reducing film sheets, 4.4mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-4.4 | 4.998.143.426**

TITANUS AF-4.6 Suction-reducing film sheets, 4.6mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-4.6 | 4.998.143.427**

TITANUS AF-5.0 Suction-reducing film sheets, 5.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-5.0 | 4.998.143.428**

TITANUS AF-5.2 Suction-reducing film sheets, 5.2mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-5.2 | 4.998.143.429**

TITANUS AF-5.6 Suction-reducing film sheets, 5.6mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-5.6 | 4.998.143.430**

TITANUS AF-6.0 Suction-reducing film sheets, 6.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-6.0 | 4.998.143.431**

TITANUS AF-6.8 Suction-reducing film sheets, 6.8mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-6.8 | 4.998.143.432**

TITANUS AF-7.0 Suction-reducing film sheets, 7.0mm

Price per piece, DU 10 pieces
Order number **TITANUS AF-7.0 | 4.998.143.433**

TITANUS AF-BR Marking tape suction-reducing film sheet

Price per piece, DU 10 pieces
Order number **TITANUS AF-BR | 4.998.143.413**

Represented by:

Europe, Middle East, Africa:
Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
emea.securitysystems@bosch.com
emea.boschsecurity.com

Germany:
Bosch Sicherheitssysteme GmbH
Robert-Bosch-Ring 5
85630 Grasbrunn
Germany
www.boschsecurity.com

North America:
Bosch Security Systems, LLC
130 Perinton Parkway
Fairport, New York, 14450, USA
Phone: +1 800 289 0096
Fax: +1 585 223 9180
onlinehelp@us.bosch.com
www.boschsecurity.us

Asia-Pacific:
Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2808
Fax: +65 6571 2699
apr.securitysystems@bosch.com
www.boschsecurity.asia