AVENAR detector 4000

The automatic fire detectors of the AVENAR detector 4000 series feature a superb accuracy and swiftness in detection. The range includes versions with rotaries, manually and automatically addressable, and versions without rotaries for automatic address setting.

Multiple-criteria detectors can support, if single sensors are not sufficient. They have highest stability against deceptive phenomena and response to a broad range of fires.

The versions with two optical sensors (dual-optical) detect the lightest smoke.

The versions with heat sensor detect fires with rapid temperature increase or with a maximum temperature value.

CO fire detectors react promptly to smoldering and suit better for applications with dust, steam, cooking vapors. Included CO-detection helps to support an even more reliable fire detection and leads in parallel to a higher false alarm stability.

**Functions**

**Sensor technology and signal processing**

The individual sensors can be configured in the FSP-5000-RPS programming software. All sensor signals are analyzed continuously by the internal evaluation electronics (ISP, Intelligent Signal Processing) and are linked with each other via an inbuilt microprocessor. The link between the sensors means that the combined detectors can also be used where light smoke, steam or dust must be expected during the course of normal operation.

Only if the signal combination corresponds to the characteristics of the area of operation, selected during the programming, the alarm is triggered automatically. Additionally the time behavior of the sensor signals is evaluated for fire and malfunction detection. Thus, for each individual sensor the reliability of detection is increased. This complex evaluation of fire characteristics (Pattern matching of fire characteristics) reduces the risk of a false alarm. Active adjustment of the optical or the chemical sensor (drift compensation) takes place. Adjustment to extreme disturbance variables is possible through manual or time-controlled switch-off of individual sensors.

In the case of the optical and chemical sensor, the response threshold (drift compensation) is actively adjusted. Manual or time-controlled switch-off of individual sensors is possible for adjustment to extreme interference factors.

All detectors of the AVENAR detector 4000 series are suitable as a technical measure to avoid false alarms.

**Optical sensor (smoke sensor)**

The optical sensor uses the scattered-light method. An LED transmits light to the measuring chamber, where it is absorbed by the labyrinth structure. In the event of a fire, smoke enters the measuring chamber and the smoke particles scatter the light from the LED. The amount of light hitting the photo diode is converted into a proportional electrical signal.

The dual-optical versions use two optical sensors with different wavelengths. The Dual-Ray technology works with an infrared and a blue LED so that lightest smoke is detected fast and reliably (TF1 and TF9 detection).
Fire Alarm Systems - AVENAR detector 4000

Thermal sensor (temperature sensor)
A thermistor in a resistance network is used as a thermal sensor from which an analog-digital converter measures the temperature-dependent voltage at regular intervals. Depending on the specified detector class, the temperature sensor triggers the alarm status when the maximum temperature of 54 °C or 69 °C is exceeded (thermal maximum), or if the temperature rises by a defined amount within a specified time (thermal differential).

Chemical sensor (CO gas sensor)
The main function of the chemical sensor is to detect carbon monoxide (CO) generated as a result of a fire, but it will also detect hydrogen (H) and nitrous monoxide (NO). The sensor signal value is proportional to the concentration of gas. The chemical sensor delivers additional information to effectively suppress deceptive values. Since the service life of the chemical sensor is limited, the C sensor shuts down automatically after a maximum time of operation. The detector will then still operate as a multisensor detector with dual-optical and thermal sensor. It is recommended to exchange the detector immediately in order to keep the higher detection reliability of the version with C sensor. Make sure you have a working detector depending on the chosen sensitivity setting in RPS.

Improved LSN features
AVENAR detector 4000 offers all the features of the improved LSN technology:
• Flexible network structures, including T-tapping without additional elements (no T-tapping feasible for versions without rotaries)
• Up to 254 LSN improved elements per loop or stub line
• Automatic or manual detector addressing, with or without auto-detection
• Power supply for connected elements via LSN bus
• Unshielded fire detection cable can be used
• Cable length up to 3000 m (with LSN 1500 A)
• Backwards compatibility to existing LSN systems and central units
• Monitoring of environmental electromagnetic impact for fast root-cause analysis (EMC values are displayed on the panel)
In addition, the range offers all the established benefits of LSN technology. The panel programming software can be used to change the detection characteristics of the respective room utilization. Each configured detector can provide the following data:
• Serial number
• Contamination level of the optical section
• Operating hours
• Current analog values
– Optical system values: current measured value of the scattered light sensor; the measuring range is linear and shows different degrees of pollution, from slight to heavy.
– Contamination: the contamination value shows how much the current contamination value has increased relative to the original condition.
– CO value: display of the currently measured value.

The sensor is self-monitoring. The following errors are indicated on the fire panel:
• Fault indication in the event of the failure of the detector electronics
• Continuous display of contamination level during service
• Fault indication if heavy contamination is detected (instead of triggering a false alarm)
In the event of wire interruption or short-circuit, integrated isolators maintain the functional security of the LSN loop.

In the event of an alarm, individual detector identification is transmitted to the fire panel.

Further characteristics
• A red flashing LED visible 360° indicates the alarm.
• Connection to a remote indicator is possible.
• The strain relief for cables in false ceilings prevents the cables from being unplugged accidentally from the terminals after installation. The terminals for cable cross-sections up to 2.5 mm² are very easily accessible.
• The detectors have a dust-repellent labyrinth and cap construction. The chamber maid plug (an opening with closing plug) on the bottom is used to clean the optical chamber with compressed air (not required for the heat detector).
• The detector bases no longer have to be directed due to the centralized position of the individual display. They also have a locking clip. To prevent that unauthorized persons have access to the detector, the locking clip can be activated.

Regulatory information

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<th>Region</th>
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Fire Alarm Systems - AVENAR detector 4000

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Installation/configuration notes

- The detector can be painted (cap and base) and thereby adapted to the surrounding colour scheme. Note the information in the Painting Instructions.
- Detectors of the 420 series can be replaced by all versions of the AVENAR detector 4000 without re-configuring the panel.

Installation/configuration notes in accordance with VdS/VDE

- The FAP-425-DOTC-R, FAP-425-DOT-R, FAP-425-OT-R, and FAP-425-OT versions are planned in accordance with the guidelines for optical detectors if operated as optical detectors or as combined optical/thermal detectors (see DIN VDE 0833 Part 2 and VDS 2095)
- If occasional deactivation of the optical unit (scattered light sensor) is required, planning must be based on the guidelines for heat detectors (see DIN VDE 0833 Part 2 and VDS 2095)
- When planning fire barriers according to DIBt, note that the heat detector (FAH-425-T-R) must be configured in accordance with class A1R.

Technical specifications

Electrical

- Operating voltage: 15 DC to 33 DC
- Current consumption: 0.55 mA
- Alarm output: Per data word by two-wire signal line.
- Indicator output: Open collector connects 0 V over 1.5 kΩ through, max. 15 mA.

Mechanical

- Dimensions (Ø x H) (mm):
  - Without base: Ø 99.5 x 52 mm
  - With base: Ø 120 x 63.5 mm

Housing

- Material: Plastic
- Color: White, similar to RAL 9010, matt finish
- LED color: Red, Green

Weight (g)/Shipping weight (g)
### Fire Alarm Systems - AVENAR detector 4000

<table>
<thead>
<tr>
<th>Detector Type</th>
<th>Weight (g)</th>
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<td>FAP-425-O</td>
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<tr>
<td>FAP-425-DOTCO-R</td>
<td>82/122</td>
</tr>
<tr>
<td>FAH-425-T-R</td>
<td>75/109</td>
</tr>
</tbody>
</table>

### Operating relative humidity, non-condensing (%)

- All versions except FAP-425-DOTC-R and FAP-425-DOTCO-R: 15% - 95%
- FAP-425-DOTC-R: 15% - 90%
- FAP-425-DOTCO-R: 15% - 90%

### Permissible air speed (m/s)

20 m/s

### Installation height (m)

- All versions except FAH-425-T-R: Max. 16 m
- FAH-425-T-R: 0 m – 7.50 m

### IP rating (IEC 60529)

- FAP-425-DO-R: IP41, IP43 with detector base and FAA-420-SEAL or MSC 420

### Operation

- Monitoring area (m²) of all variants except FAH-425-T-R: 120
- Monitoring area (m²) FAH-425-T-R: 40 m²
- Operating time (years) FAP-425-DOTCO-R: 10*

### Response sensitivity

- Optical part: In accordance with EN 54-7 (programmable)
- Thermal maximum part: > 54°C/ > 69°C
- Chemical sensor: In accordance with VdS 6017, VdS 6018, VdS 6019, depending on sensitivity configuration

*FAP-425-DOTCO-R detectors need to be exchanged after 10 years at the latest.

### Ordering information

**FAP-425-O Smoke detector, optical auto-addressable**

Analog addressable detector with one optical sensor, automatic address setting.

Order number FAP-425-O | F.01U.307.725 F.01U.279.893

**FAP-425-O-R Smoke detector, optical**

Analog addressable detector with one optical sensor, manually and automatically addressable.

Order number FAP-425-O-R | F.01U.307.726
FAP-425-OT Detector optic/thermal auto-addressable
Analog addressable detector with one optical and one thermal sensor, automatically addressable.
Order number FAP-425-OT | F.01U.307.727
F.01U.279.787

FAP-425-OT-R Multisensor detector, optical/thermal
Analog addressable detector with one optical and one thermal sensor, manually and automatically addressed.
Order number FAP-425-OT-R | F.01U.307.728
F.01U.280.245

FAP-425-DO-R Smoke detector, dual-optical
Analog addressable detector with two optical sensors, manually and automatically addressable.
Order number FAP-425-DO-R | F.01U.307.729
F.01U.279.988

FAP-425-DOT-R Multisensor detector, dual-optical/thermal
Analog addressable detector with two optical sensors and one thermal sensor, manually and automatically addressable.
Order number FAP-425-DOT-R | F.01U.307.730
F.01U.279.989

FAP-425-DOTC-R Detector dual-optical/thermal/chemical
Analog addressable detector with two optical sensors, one thermal and one chemical sensor, manually and automatically addressable.
Order number FAP-425-DOTC-R | F.01U.307.731
F.01U.280.451

FAP-425-DOTCO-R Detector dual-optical/thermal/CO
Analog addressable detector with two optical sensors, one thermal and one chemical sensor (CO gas sensor), manually and automatically addressable.
Order number FAP-425-DOTCO-R | F.01U.395.473

FAH-425-T-R Heat detector
Analog addressable heat detector with one thermal sensor, manually and automatically addressable.
Order number FAH-425-T-R | F.01U.307.732
F.01U.280.243

FAA-420-SEAL Damp room seal, 10 pcs
Damp room seal
Delivery unit is 10.
Order number FAA-420-SEAL | F.01U.215.142

Accessories
MS 400 B Detector base with Bosch logo
Bosch-branded detector base for surface mounted and flush-mounted cable feed
Order number MS 400 B | F.01U.215.139

MS 400 Detector base
Detector base for surface mounted and flush-mounted cable feed, not branded.
Order number MS 400 | 4.998.021.535

MSC 420 Base extension with damp room sealing
Extension for detector bases with surface-mounted cable feed
Order number MSC 420 | 4.998.113.025

FAA-MSR420 Detector base with relay
with a change-over relay (Form C)
Order number FAA-MSR420 | F.01U.508.658

FAP-425-OT Detector optic/thermal auto-addressable
Analog addressable detector with one optical and one thermal sensor, automatically addressable.
Order number FAP-425-OT | F.01U.307.727
F.01U.279.787

FAP-425-OT-R Multisensor detector, optical/thermal
Analog addressable detector with one optical and one thermal sensor, manually and automatically addressable.
Order number FAP-425-OT-R | F.01U.307.728
F.01U.280.245

FAP-425-DO-R Smoke detector, dual-optical
Analog addressable detector with two optical sensors, manually and automatically addressable.
Order number FAP-425-DO-R | F.01U.307.729
F.01U.279.988

FAP-425-DOT-R Multisensor detector, dual-optical/thermal
Analog addressable detector with two optical sensors and one thermal sensor, manually and automatically addressable.
Order number FAP-425-DOT-R | F.01U.307.730
F.01U.279.989

FAP-425-DOTC-R Detector dual-optical/thermal/chemical
Analog addressable detector with two optical sensors, one thermal and one chemical sensor, manually and automatically addressable.
Order number FAP-425-DOTC-R | F.01U.307.731
F.01U.280.451

FAP-425-DOTCO-R Detector dual-optical/thermal/CO
Analog addressable detector with two optical sensors, one thermal and one chemical sensor (CO gas sensor), manually and automatically addressable.
Order number FAP-425-DOTCO-R | F.01U.395.473

FAH-425-T-R Heat detector
Analog addressable heat detector with one thermal sensor, manually and automatically addressable.
Order number FAH-425-T-R | F.01U.307.732
F.01U.280.243

FAA-420-SEAL Damp room seal, 10 pcs
Damp room seal
Delivery unit is 10.
Order number FAA-420-SEAL | F.01U.215.142

Accessories
MS 400 B Detector base with Bosch logo
Bosch-branded detector base for surface mounted and flush-mounted cable feed
Order number MS 400 B | F.01U.215.139

MS 400 Detector base
Detector base for surface mounted and flush-mounted cable feed, not branded.
Order number MS 400 | 4.998.021.535

MSC 420 Base extension with damp room sealing
Extension for detector bases with surface-mounted cable feed
Order number MSC 420 | 4.998.113.025

FAA-MSR420 Detector base with relay
with a change-over relay (Form C)
Order number FAA-MSR420 | F.01U.508.658
MH 400 Heating element
usable at locations where the functional safety of the
detector might be impaired by condensation
Order number MH 400 | 4.998.025.373

FMX-DET-MB Mounting bracket
Mounting bracket for installation in false floors
Order number FMX-DET-MB | 2.799.271.257

SK 400 Protective cage
prevents damage
Order number SK 400 | 4.998.025.369

SSK400 Dust protection, 10pcs
Protective dust cover for automatic point type detectors.
Delivery unit is 10.
Order number SSK400 | 4.998.035.312

TP4 400 Label plate small
Support plate for detector identification.
Delivery unit is 50.
Order number TP4 400 | 4.998.084.709

TP8 400 Label plate large
Support plate for detector identification, large.
Delivery unit is 50.
Order number TP8 400 | 4.998.084.710

Services
EWE-FPTDT-IW 12 mths wrty ext Fire Point Detector
12 months warranty extension
Order number EWE-FPTDT-IW | F.01U.360.736