AVENAR detector 4000

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- High reliability and precision thanks to Processing Intelligent Signaling Service (ISP)
- Very early detection of the slightest Presence of smoke with dual optic models (dual beam technology)
- Checking for interference electromagnetic in the environment to perform the analysis of the causes
- Automatic and manual steering

AVENAR detector 4000 is a new range of automatic fire detectors that offer extraordinary detection accuracy and speed. Models with two optical sensors (double optical) are capable of detecting the slightest presence of smoke. The range consists of models with rotating sensors, with manual and automatic addressing, and models without rotating sensors with automatic addressing configuration.

Basic Functions

Sensor technology and signal processing Each of the sensors can be configured in
manually or with a timer via the LSN network.

All sensor signals are continuously analysed by the internal evaluation electronics (Intelligent Signal Processing, ISP) and linked to each other via a

integrated microprocessor. The link between the sensores means that the combined detectors
They can also be used where some smoke, steam or dust is expected during the course of normal operation.

The alarm is only triggered automatically if the signal combination corresponds to the characteristics of the location field selected during programming. As a result, the number of false alarms is lower.

In addition, the duration of sensor signals after fire and fault detection is analyzed, resulting in increased detection reliability for each individual sensor.

In the case of the optical and chemical sensor, the response threshold (bias compensation) is actively adjusted. Manual or timed deactivation of individual sensors is necessary for adjustment to extreme interference factors.

Optical sensor (smoke sensor)
The optical sensor uses the light scattering method.
An LED transmits light into 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 reflect the light from the LED. The amount of light reaching the photodiode is converted into a proportional electrical signal.
Models with dual optics have two optical sensors with different wavelengths. Dual beam technology works with a blue LED and

another infrared one, so that the detection of the slightest presence of smoke is carried out quickly and reliably (detection TF1 and TF9).

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

Chemical sensor (CO gas sensor)
The main function of the gas sensor is to detect the carbon monoxide (CO) generated as a result of a fire, but also detects hydrogen (H) and nitrogen monoxide (NO). The value of the sensor signal is proportional to the

gas concentration. The gas sensor outputs additional information to effectively prevent misleading values.

Since the gas sensor has a limited lifespan, the C-sensor is automatically deactivated after a maximum of 6 years of operation. From then on, the detector operates as a multi-sensor detector with two optical sensors and a thermal sensor. It is recommended that the detector be replaced immediately in order to maintain the highest detection reliability of the C-sensor model.

Features of LSN improved
AVENAR detector 4000 offers all the features of the improved LSN technology:

- Flexible network structures, including T-branch without additional elements (T-branch is not feasible on models without swivels)
- Up to 254 improved LSN elements per loop line or branch
- Manual or automatic addressing of the detector, with or without automatic detection
- Power supply for components connected via LSN bus
- Unprotected fire detection cable can be used
- Cable length up to 3,000 m (with LSN 1500 A)
- Backward compatibility with existing LSN systems and central units
- Monitoring of electromagnetic impact on the environment to perform rapid analysis of the causes (EMC values are displayed on the control panel)

In addition, the range offers all the advantages of LSN technology. The control panel programming software can be used to change the detection characteristics according to the use of the room. Each configured detector can provide the following data:

- Serial number
- Level of contamination of the optical section
- Hours of operation
- Current analog values
  - Optical system values: light dispersion value; the measuring range is linear and shows different levels of pollution, from mild to severe.
  - Pollution: The pollution value shows how much the pollution value has increased relative to the original state.
  - CO value: indication of the current measured value (max. 550).

The sensor is self-monitoring. The following errors are indicated on the fire panel:

- Fault indication in case of failure of the detector electronics
- Continuous indication of contamination level during service
- Fault indication if high contamination level is detected (instead of false alarm activation)

In the event of cable interruption or short circuit, integrated isolators maintain the functional safety of the LSN loop.
In the event of an alarm, the individual detector identification is transmitted to the fire control panel.

Additional Features

- A flashing red LED, visible 360° around it around, indicates the alarm.
- Connection to a remote indicator can be made.
- Cable strain relief in false ceilings prevents cables from being accidentally unplugged from the terminals after installation. Access to the terminals for cable cross sections up to 2.5 mm^{2}it's very easy.
- The detectors are fitted with a dust-repellent labyrinth and a cover. The chamber cleaning hole (a plugged opening) on the bottom is used to clean the optical chamber with compressed air (not required for the heat detector).
- The detector bases do not have to be aligned, thanks to the central position of the individual indicator. They also feature a mechanical extraction lock (can be activated and deactivated).

Certificates and approvals

Region	Certification	
Europe	CPR	0786-CPR-21402 FAH-425-TR
	CPR	0786-CPR-21403 FAP-425-DO-R
	CPR	0786-CPR-21405 FAP-425-DOTC-R
	CPR	0786-CPR-21404 FAP-425-DOT-R
	CPR	0786-CPR-21398 FAP-425-O
	CPR	0786-CPR-21399 FAP-425-OR
	CPR	0786-CPR-21400 FAP-425-OT
	CPR	0786-CPR-21401 FAP-425-OT-R
Germany	You	G214100 FAP-425-O
	You	G214099 FAP-425-OR

Region	Certification	
	You	G214098 FAP-425-OT
	You	G214097 FAP-425-OT-R
	You	G214101 FAH-425-TR
	You	G214104 FAP-425-DO-R
	You	G214103 FAP-425-DOT-R
	You	G214102 FAP-425-DOTC-R
Europe	EC	FAP-425

Planning

- Can be connected to FPA-5000 and FPA-1200 fire panels with improved LSN system parameters.
- DO detectors can only be used with MPC panel controller version B and higher. MPC panel controller version A cannot be connected.
- In classic LSN mode, it is possible to connect to LSN fire panels BZ 500 LSN, UEZ 2000 LSN, UGM 2020 and to other panels or to their receiving modules with identical connection conditions, but with the previous LSN system parameters.
- During construction planning, adherence to national standards and directives is essential.
- The top and base of the detector can be painted to match the surroundings. Please note the information provided in Painting Instructions.
- The 420 series detectors can be replaced with all AVENAR detector 4000 models without having to reconfigure the control panel.

Installation/configuration notes comply with VdS/VDE standard

- Models FAP-425-DOTC-R, FAP-425-DOT-R, FAP-425-OT-R and FAP-425-OT have been designed in accordance with the guidelines for optical detectors, whether they are to be 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 designing fire barriers according to DIBt, please note that the heat detector (FAH-425-TR) must be configured according to class A1R.

Parts included

Model of detector	Cont.	Components
FAP-425- - OR	1	Optical smoke detector with rotating
FAP-425- - OT-R	1	Multi-sensor optical/thermal detector with rotating
FAH-425- - TR	1	Heat detector (thermal differential/thermal maximum) with rotating
FAP-425- - DO-R	1	Dual optical smoke detector with rotating
FAP-425- - DOT-R	1	Dual optical/thermal multi-sensor detector with rotating
FAP-425- - DOTC-R	1	Dual optical/thermal/chemical multi-sensor detector with rotating
FAP-425- - EITHER	1	Optical smoke detector without rotating parts
FAP-425- - OT	1	Rotating-free optical/thermal multi-sensor detector

Technical specifications

Electrical data

Operating voltage	From 15V DC to 33V DC
Current consumption	< 0.55 mA
Alarm output	For data via two-wire line
Indicator output	Open collector switching 0V over 1.5kOhm, max 15mA

Mechanical data

Dimensions	
• Without base	Ø 99.5 x 52 mm
• With base	Ø 120 x 63.5 mm
Housing	
• Material	Plastic, ABS (Novodur)
• Color	White, similar to RAL 9010, matt finish
Weight	Without/with packaging
• FAP-425-DOTC-R	85 g / 130 g approx.
• FAP-425-DO-R, FAP-425- - DOT-R	80 g / 120 g approx.
• FAP-O-425-R / FAP-425- - OT-R / FAH-425-TR	80 g / 120 g approx.
• FAP-425-O / FAP-425-OT	75 g / 115 g approx.

Environmental conditions

Temperature of operation allowed	
• FAP-425-DOTC-R	From - 10 °C to + 50 °C
• FAP-425-DOT-R / FAP-425-OT-R / FAH-425-TR / FAP-425-OT	From -20 °C to +50 °C

• FAP-425-DO-R / FAP-425-OR / FAP-425-O	From -20 °C to +65 °C
Temperature of storage allowed	
• FAP-425-DOTC-R	From -20 °C to +50 °C
• All models (except FAP-425- - DOTC-R)	From -25 °C to +80 °C
Allowable relative humidity	95% (non-condensing)
Allowed air speed	20 m/s.
Protection class according to EN 60529	IP 40 detector base, IP 43 with anti-humidity sealing

Additional Features

Response sensitivity	
• Optical part	According to EN EN54-7 (programmable)
• Maximum thermal part	> 54 °C / >69 °C
• Thermal part differential: • FAH-425-TR	A2S / A2R / A1 / A1R / BS / BR, according to EN 54-5 (programmable)
• Thermal part differential: • FAP-425-DOTC-R / FAP-425-DOT-R / FAP-425-OT-R / FAP-425-OT	A2S / A2R / BS / BR, according to EN 54-5 (programmable)
• Gas sensor	In ppm range
Individual indicator	Red LED
Color code	
• FAP-425-OR / FAP-425- - EITHER	Unbranded
• FAP-425-OT-R / FAP-425-OT	Black bow
• FAH-425-TR	Red bow
• FAP-425-DO-R	2 concentric grey bows
• FAP-425-DOT-R	2 concentric black bows
• FAP-425-DOTC-R	2 concentric yellow bows

Design

Please respect local guidelines. Limits are waived following.

Control surface (see local regulations)	
• All models (except FAH-425-R)	Max. 120 m_2
• FAH-425-TR	Max. 40 m_2
Maximum installation height (see local regulations)	
• All models (except FAH-425-R)	Max. 16 m
• FAH-425-TR	Max. 7.5 m

Order Information

AVENAR optical detector detector 4000
Addressable analog detector with an optical sensor, manually and automatically addressable
Order number**FAP-425-OR**

Optical/thermal detector AVENAR detector 4000
Addressable analog detector with one optical sensor and one thermal sensor, manually and automatically addressable
Order number**FAP-425-OT-R**

AVENAR detector 4000 heat detector
Addressable analog heat detector with one thermal sensor, manually and automatically addressable

Order number**FAH-425-TR**

AVENAR dual optical detector detector 4000
Addressable analog detector with two optical sensors, addressable manually and automatically
Order number**FAP-425-DO-R**

AVENAR detector 4000 dual optical/thermal detector
Addressable analog detector with two optical sensors and one thermal sensor, addressable manually and automatically
Order number**FAP-425-DOT-R**

Dual optical/thermal/chemical detector AVENAR detector 4000
Addressable analog detector with two optical sensors, one thermal sensor and one chemical sensor, addressable manually and automatically
Order number**FAP-425-DOTC-R**

AVENAR optical detector 4000, without rotating parts
Addressable analog detector with one optical sensor, automatic address setting
Order number**FAP-425-O**

Optical/thermal detector AVENAR detector 4000, without rotating parts
Addressable analog detector with one optical sensor and one thermal sensor, automatic address setting

Order number**FAP-425-OT**

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