



Ultimate precision with
Dual Ray Technology

Automatic Fire Detector 420 Series
Intelligent detection. Superior protection.



BOSCH
Invented for life

Intelligent detection for superior protection

Equipped with Dual Ray Technology and Intelligent Signal Processing (ISP), the Automatic Fire Detector 420 Series detects fires faster than ever and minimizes false alarms, for the highest levels of protection and reliability in every environment.

Complete reliability

In the world of fire detection, precision and reliability are essential. False alarms account for a great number of fire brigade call-outs around the world each year, and waste untold amounts of time and money. And when there really is a fire, time is essential. Early, accurate detection leads to faster responses, and thus minimizes damage and downtime.

The 420 Series includes multisensor detectors that offer and also combine optical, thermal, and chemical detection. The combination of these three specific types of sensors is an approach invented by Bosch. All 420 Series detectors use Bosch's own Intelligent Signal Processing (ISP) Technology, which achieves the highest level of intelligent fire detection. For the next step in precision, the new dual-optical variants (FAP-DO 420, FAP-DOT 420, FAP-DOTC 420) feature Bosch's Dual Ray Technology. Added together, these many features result in the highest reliability, and the assurance that there is only an alarm in a true emergency.

A secure investment

The Automatic Fire Detector 420 Series is a secure investment that delivers maximum value. Built with components that meet the highest Bosch standards for quality, every 420 Series detector is remarkably reliable and has proven longevity.

Precision for every environment

With seven detectors to choose from, the 420 Series is the ideal solution for all kinds of fires, applications, and environments. Every model meets the rigorous requirements of the EN54 standard, and the new models are equipped with Dual Ray Technology, allowing the FAP-DO 420 variant even to detect the smallest smoke particles of a Test fire TF1.



Automatic Fire Detector 420 Series

- 1 FAH-T 420
Heat Detector
- 2 FAP-O 420
Optical Smoke Detector
- 3 FAP-OT 420
Multisensor Detector
Optical, Thermal
- 4 FAP-OTC 420
Multisensor Detector
Optical, Thermal,
Chemical

New

Detectors with Dual Ray
Technology

- 5 FAP-DO 420
Dual-Optical Smoke
Detector
- 6 FAP-DOT 420
Multisensor Detector
Dual-Optical, Thermal
- 7 FAP-DOTC 420
Multisensor Detector
Dual-Optical, Thermal,
Chemical

An expanded range, for detection in every application

To support the broadest range of applications, 420 Series detectors are equipped with different kinds of sensors.

Single-optical sensor: Smoke particles entering the measuring chamber scatter light from a single LED.

Dual-optical sensor: Two LEDs are used to scatter light. With Dual Ray Technology, the different wavelengths of one infrared and one blue LED are used to determine smoke density and particle size.

Thermal sensor: When the maximum temperature is exceeded or if the temperature rises by a defined amount within a specified time, an alarm is triggered.

Chemical (CO gas) sensor: The sensor detects carbon monoxide (CO) gas that results from a fire, and can also detect hydrogen (H) or nitrous monoxide (NO).

Smart, efficient maintenance

Colored rings on each detector identify sensor variants, for accurate and efficient visual checks that make the detectors easy to maintain. A maintenance and test mode is available for efficient maintenance and a smart mechanical, removable lock guards against tampering. Two integrated line isolators watch for short circuits to maintain the LSN loop function. It is also possible to switch off individual sensors.

Connection to a fire panel

Bosch's LSN bus Technology for fire and intrusion systems can be used to connect the 420 Series, along with all the other fire peripherals, to Bosch addressable fire panels - ranging from small to very large and networked applications. The fire panel can be used to program the detectors, indicate status, and performance advanced diagnostics.

New



New

New

New

420 Series Sensor Overview

		Single-optical sensor	Dual Ray Technology with dual-optical sensor	Thermal sensor	Chemical (CO gas) sensor	Intelligent Signal Processing (ISP)
FAH-T 420	Heat detector			•		•
FAP-O 420	Optical Smoke Detector	•				•
FAP-DO 420	Dual-Optical Smoke Detector		•			•
FAP-OT 420	Multisensor Detector Optical, Thermal	•		•		•
FAP-DOT 420	Multisensor Detector Dual-Optical, Thermal		•	•		•
FAP-OTC 420	Multisensor Detector Optical, Thermal, Chemical	•		•	•	•
FAP-DOTC 420	Multisensor Detector Dual-Optical, Thermal, Chemical		•	•	•	•



Additional 420 Series features

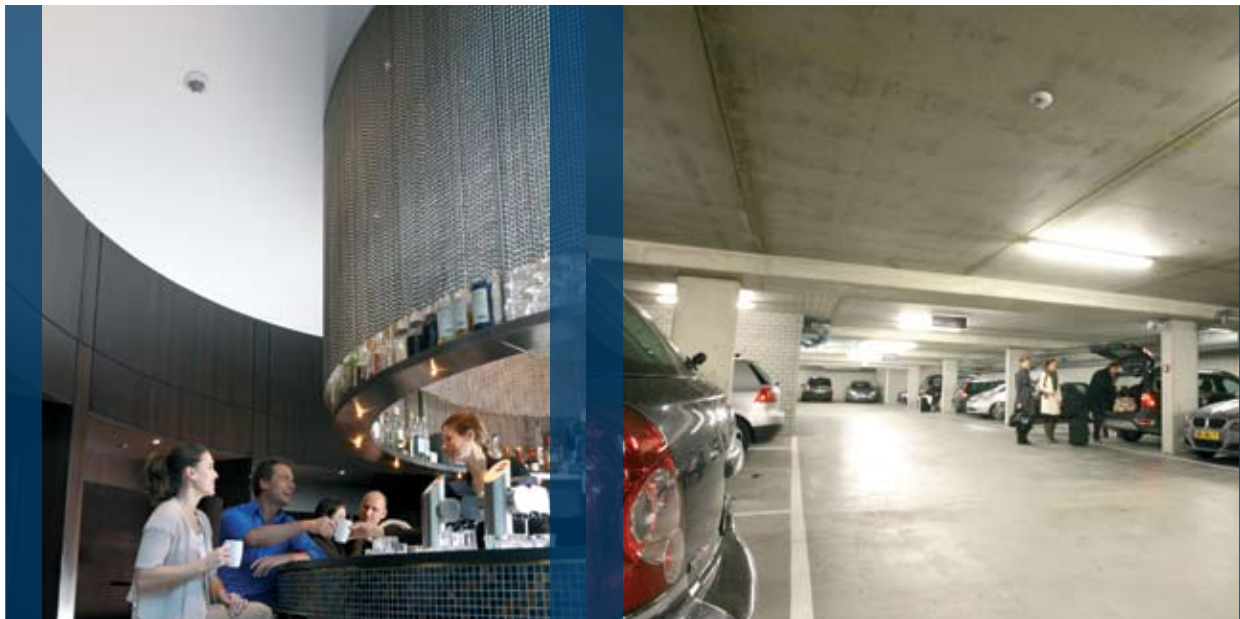
- ▶ EMC stability of 50 V/m from 1 MHz to 3 GHz for use in areas with a WLAN
- ▶ Drift compensation in optical and gas measurements for optimal detection at all times
- ▶ Day/night mode switching for individual sensor configuration
- ▶ Two integrated isolators for maintaining loop functionality and operability in the event of wire interrupts or short circuits

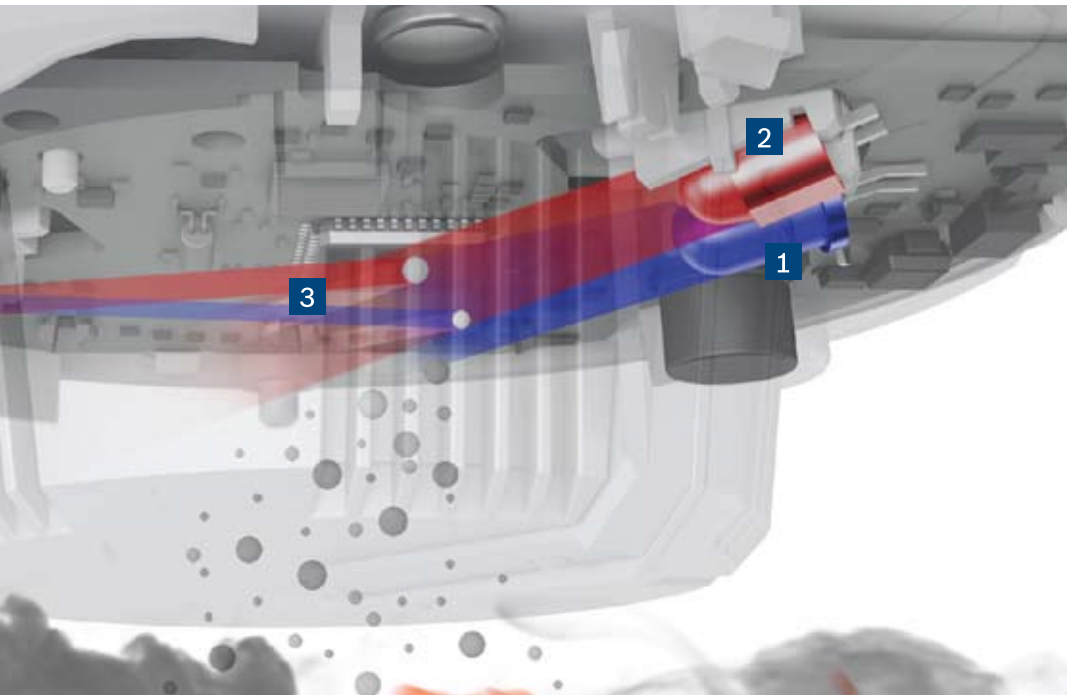
Dual Ray Technology: the next level of precision

Detect even the smallest particles

The new dual-optical variants in the 420 Series (FAP-DO 420, FAP-DOT 420, FAP-DOTC 420) use Bosch's Dual Ray Technology for even greater precision. Dual Ray Technology takes advantage of the Mie principle to determine smoke density and particle size, comparing the intensity of scattered light from the differing wavelengths of two LED sources, one infrared and one blue.

Bosch's powerful fire-detection algorithm provides even more reliable differentiation between smoke particles and other particles -- like dust and steam -- that can cause a false alarm in other detectors. As a result, the Dual Ray Technology variants provide earlier, more reliable fire detection and produce fewer false alarms.





Dual Ray Technology

Detectors equipped with Dual Ray Technology are precise enough to detect the smallest smoke particles, resulting in fewer false alarms.

- 1 Blue LED
- 2 Infrared LED
- 3 Scattered light
- 4 Photo Diode



A cost-effective approach

The high level of precision makes the FAP-DO 420 variant with the Dual Ray Technology, a cost-effective solution to detect Test fire TF1, even without the combination of other sensors. The FAP-DO 420 offers a significant advantage over some competitor systems, which require a multisensor detector (optical and thermal or dual-optical and thermal sensors) to provide reliable detection of TF 1 fires. The FAP-DO 420 detector can also be used to replace ionization detectors, which use radioactive material that requires special handling and is extremely difficult to recycle.

Intelligent Signal Processing (ISP) for customized protection

In general, the more sensors a detector has, the earlier it can detect a fire and the fewer false alarms it generates. This is particularly true of the multisensor Technology used by the 420 Series. It features the company's unique and powerful ISP Technology, through which all sensor signals are pre-processed continually by dedicated internal evaluation electronics, analyzed and linked with each other via a built-in microprocessor.

More precise analysis

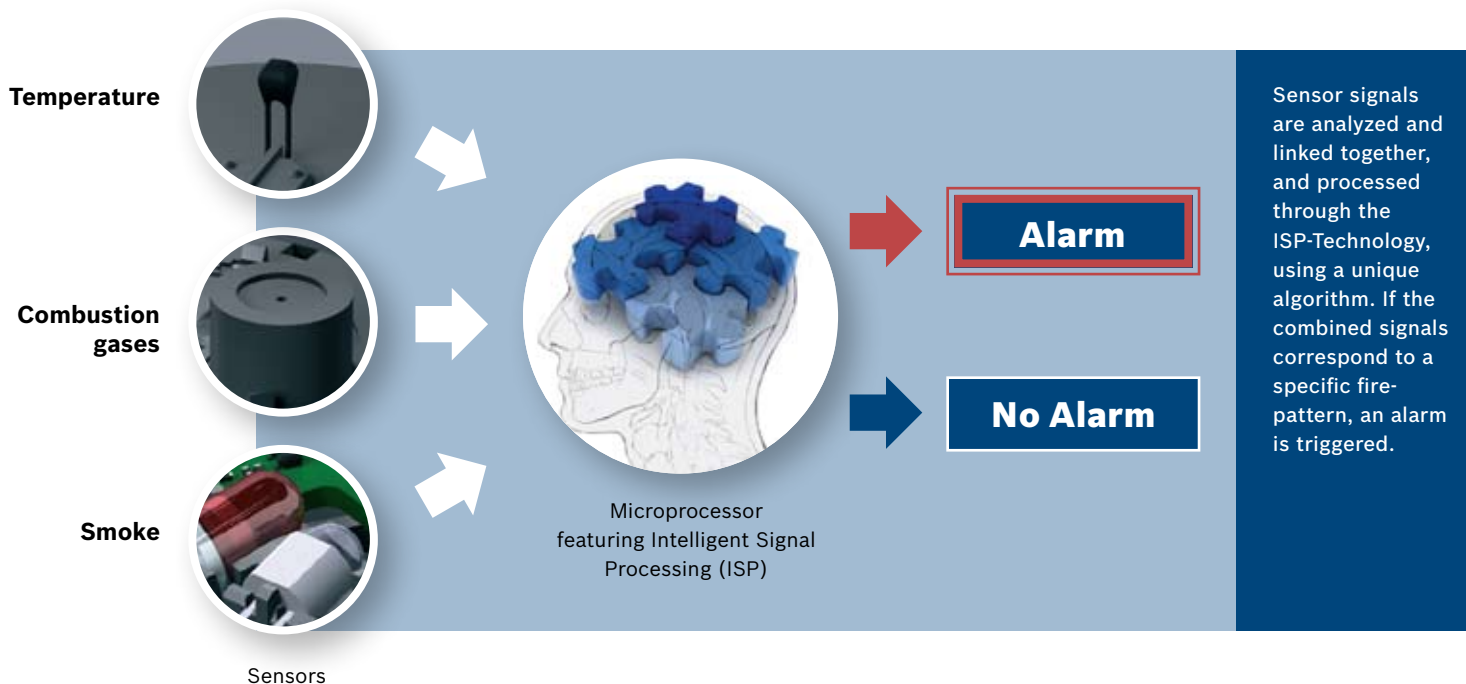
The sensor signals are processed by a powerful algorithm developed using data from fire tests and tests with known disturbance values. The algorithm itself is based on rules derived from the experience of 5,000 fire patterns. An alarm is triggered automatically only if the signal combination of the sensors corresponds to the specific pattern for a real fire.

Even fewer false alarms

Specific parameters, separate from the fire patterns, increase the detector's precision. There are pre-programmed settings, for example, for use in dusty environments, or when smokers are present. These parameters make the detector even better at distinguishing fires from other disturbances over a broader range of operating conditions.

Earlier detection

In addition, the multisensor algorithm parameters are adapted to different application types, to further optimize early fire detection and false-alarm immunity. They also enhance immunity from ambient influences such as dust, humidity, and temperature variation. This ensures best-in-class differentiation between real fires and disturbances.



Detect every kind of fire.

The Automatic Fire Detector 420 Series includes detectors for every EN54 fire type, and supports programmable parameters so it's easy to create a system fully tailored to individual needs.

Model	Sensor	Application	Test fire TF1 – Open cellulosic (wood) fire	Test fire TF2 – Rapid smouldering pyrolysis (wood) fire	Test fire TF3 – Glowing (fast smouldering) cotton fire	Test fire TF4 – Open plastics (polyurethane) fire	Test fire TF5 – Liquid (heptane) fire	Test fire TF6 – Liquid (methylated spirit) fire	Test fire TF8 – Low temperature black smoke (decalin) liquid fire
FAH-T 420	Heat Detector	Used where an open, fast-developing fire might occur	(•)			•	•	•	
FAP-O 420	Optical Smoke Detector	Used where a smoldering fire might occur		•	•	•	•		•
FAP-DO 420	Dual-Optical Smoke Detector	Used where equal response to different types of fire is essential	•	•	•	•	•		•
FAP-OT 420	Multisensor Detector Optical, Thermal	Used where open, fast-developing fires, as well as smoldering fires, might occur	•	•	•	•	•	•	•
FAP-DOT 420	Multisensor Detector Dual-Optical, Thermal	Used in environments with varying conditions	•	•	•	•	•	•	•
FAP-OTC 420	Multisensor Detector Optical, Thermal, Chemical	Used where CO gas might harm people	•	•	•	•	•	•	•
FAP-DOTC 420	Multisensor Detector Dual-Optical, Thermal, Chemical	Used in environments with special conditions to maintain, and where CO gas might harm people	•	•	•	•	•	•	•

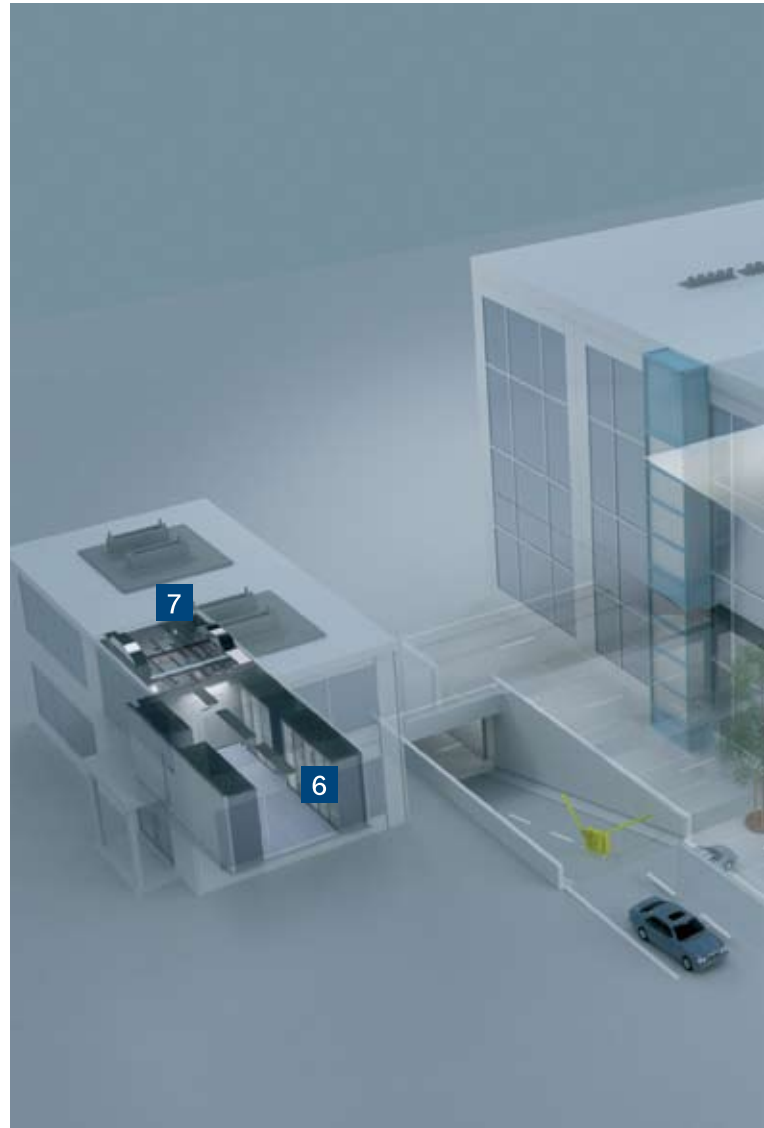
Accurate detection, everywhere you need it

Different substances burn differently, and no two fires are exactly alike. Smoldering paper in a waste basket, for example, generates smoke but very little heat, while an industrial fire involving ethanol gives off no smoke yet has a strong heat flow. The 420 Series takes all these possibilities into account, meeting EN54 fire-type requirements and offering options that cover every fire criteria, from type of material and heat flow to airstream, smoke emission, and aerosol characteristics.

In high humidity areas, for example, such as kitchens and bathrooms, a 420 Series detector might be used to detect the difference between common steam and dangerous smoke. In other places, where people gather, work, or sleep, such as public spaces, office buildings, hotels, and hospitals, a 420 Series detector might be used to detect invisible carbon monoxide particles to detect very early stages of a smoldering fire.

The new dual optical models, with their high-precision Dual Ray Technology, deliver an added level of reliability and provide early detection in even the most challenging environments, including nightclubs, parking garages, and computer rooms.

Protect people, property,



7] Server room
FAP-DOTC 420

Monitor a variety of precise conditions, to protect sensitive equipment and prevent data loss



6] Technical room
FAP-OTC 420

Quick detection to reduce equipment downtime



and premises

The illustrations on this page offer a few sample applications of the 420 Series. They are examples only, but represent some of the many possibilities available with the 420 Series.



1] Offices
FAP-O 420

A cost-effective, reliable way to detect smoldering fires early



2] Conference room
FAP-OT 420

For identifying fast-developing fires or smoldering fires



3] Kitchen
FAH-T 420

Detect temperature fluctuations in a place with an open fire

5] Underground parking
FAP-DOT 420

Dual Ray Technology monitors a variety of environmental conditions



4] Bar/Lobby
FAP-DO 420

Dual-optical sensor for reliable detection in environments with disturbance values

A Tradition of Quality and Innovation

For over 100 years, the Bosch name has stood for quality and reliability. Bosch is the global supplier of choice for innovative technology, backed by the highest standards for service and support.

Bosch Security Systems proudly offers a wide range of security, safety, communications and sound solutions that are relied upon every day in applications around the world, from government facilities and public venues to businesses, schools and homes.

Bosch Security Systems

To learn more about our product offering, please visit www.boschsecurity.com or send an e-mail to emea.securitysystems@bosch.com

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