Invented for life

BOSCH

Fire Alarm Systems

Smarter against fire

Keeping people **safe** is our **first priority**

Bosch Milestones – Innovative Strength in Fire Detection Technology for over 100 years

1920
The first Bosch Fire Panel
Tradition,expertise and trust

1992
Local Security Network LSN
Field bus (loop) used by fire and intrusion peripherals, no element loss due to short circuits or interruptions

1999
MAGIC.SENS Detector Series
Intelligent signal processing

2001
MAGIC SENS OTC Detector
The world's first smoke detector with an integrated CO sensor

2004
Detector 500 Series
The world's first flat-type smoke detector, design award winner

2005
Modular Fire Panel 5000 Series
Modularity with first-class flexibility and scalability

2010
Smoke Detector 420 Series
Groundbreaking Dual Ray technology for first rate reliability in detection

2012
Panel Networking over IP
Future-proof IP technology, tailored and prompt customer service, project-specific solutions

2013
Smart Safety Link
Interfacing the Modular Fire Panel 5000 Series and PRAESIDEO voice evacuation system via IP connection

2014
AVENAR detector 4000
Maximizing detection performance even in the most challenging environments, thanks to eSmog and Dual Ray technology

Bosch cares about safety. We design all our products to assure users that their lives will not only be protected, but quickly and effectively saved in an emergency. A swift response by the fire detection system is absolutely crucial for alerting services and getting help. And because all our products can be combined, a complete solution can be built from just one source.

Did you know that...

Bosch was the first company in the world to build a carbon monoxide sensor in its fire alarm detectors?

100 Years
Bosch Building Technologies
1920 – 2020

2015
Video-based Fire Detection
Using intelligent algorithms, video fire detection systems improve response times and reduce false alarms

2016
Remote services
Connect, maintain and service systems via a secure remote connection and receive immediate notifications

2018
AVIOTEC optimized for tunnels
Videobased-fire detection in challenging environments

2019
Safety Systems Designer
Planning Software for fire alarm projects

2020
AVIOTEC
Outdoor fire detection close to buildings with artifical intelligence-based algorithms

2021
AVENAR Panel
The innovative fire alarm panel platform offering unparalleled connectivity and scalability

2023
AVIOTEC - The next-generation
includes the latest algorithms and deep learning methods

2025
AVENAR detector 4000 -
new, superior fire detection solution with integrated CO gas sensor

2026
AVIOTEC e-server
Fire detection algorithms moved from edge-camera to edge-server, offering greater flexibility to enhance and adapt fire safety portfolios even for challenging applications

AVENAR IO module 4000 series
Interface modules to optimize and customize efficiency and robustness of fire solutions across multiple applications

Put down the fire
Rely on our 100 years of experience in fire alarm systems to offer you solutions to suit all applications. Our automatic detector series also includes multi-criteria and flush-mount variants that offer nearly invisible detection. We supplement these products with highly flexible, user-friendly control panels, such as the AVENAR panel series, for coordinating fire alarms and other event-related messages. Our unique panel design gives you tailor-made protection. Manual call points, sounders, strobes and interface modules, as well as special detectors and our video-based fire detection AVIOTEC complete the solution.

As close as if you were there
Predictive maintenance is the key to preventing costly false alarms. It ensures timely and dependable fire detection. Remote services enable technicians to be more efficient and effective with their service calls using remote diagnostics – saving costs, assets and lives. Our applications for iOS and Android via a secure cloud structure provide true push and instant notifications in case of fire alarms or system warnings.

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01 A system as individual as you are

Reliability, flexibility and value services

Bosch, a technology-driven company in an increasingly connected world, offers end-to-end solutions that are innovative, sustainable, and future-proof. By combining expertise, advanced technology, and close partnerships, Bosch inspires new opportunities while ensuring the protection of your assets. Bosch fire alarm systems integrate seamlessly with previously installed systems, offering reliable fire detection and advanced voice alarm solutions for any location. Each product incorporates the latest innovations, such as multi-sensor capabilities, artificial intelligence, deep learning, and the Internet of Things, embedded within Bosch's cutting-edge portfolio of detectors, alarms, and related systems.

Reliability – Bosch offers solutions that provide significant benefits for businesses. With a focus on protecting people and assets, our systems are designed to ensure business continuity even in the most challenging situations. This is achieved through innovative solutions that leverage artificial intelligence and smart sensor technology, delivering reliable and advanced fire detection and prevention systems tailored to your needs.

Flexibility – We ensure that your investment is protected by providing solutions that are both future-proof and adaptable to technological advancements. Our fire panels are fully modular, offering seamless integration with cutting-edge technologies. With backwards and upwards compatibility, you can easily enhance your existing systems while maintaining their value, ensuring long-term reliability and performance.

Value services – Our services are designed to improve efficiency and reduce costs while providing additional benefits tailored to your needs. We offer comprehensive training and ongoing support to ensure seamless system operation. With our intuitive system planning tools and advanced remote management capabilities, managing your fire safety systems has never been easier or more efficient.

Your benefits	How?
Reliable	
Protect people and assets	Innovative technology including AI and smart sensor technology
Ensure business continuity	
Flexible and durable	
Maintain your investments	Fully modular panel
Integrate cutting-edge technologies	Backwards and upwards compatibility
Valuable services	
Improve efficiency and save costs	Trainings and support
Provide additional services	System planning tool Remote management

Get ready for tomorrow's smart buildings and Internet of Things

Bosch provides you with the unique opportunity to configure your own system according to the modular principle and your specific needs. The reusable "click-and-go" modules, the interchangeable housings, the practical CAN bus mounting and the "hot plug" feature make this possible.

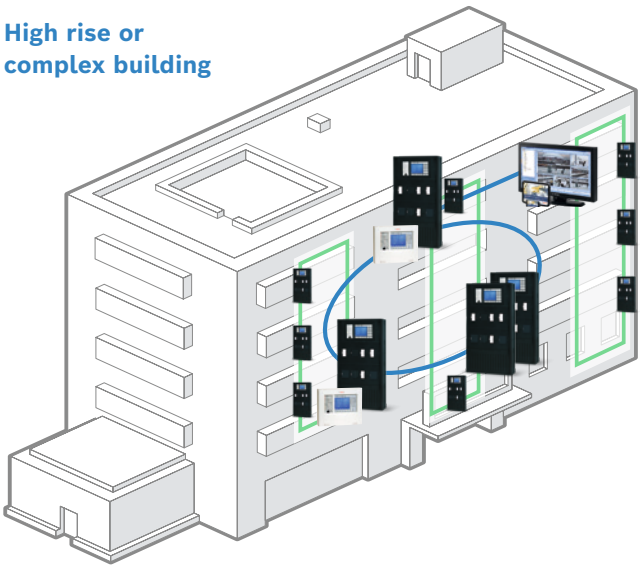
Panel networking
The CAN bus technology operates on a peer-to-peer basis ensuring reliable functionality even if an error occurs. The different loops of the network provide flexibility and allow the system to be adapted to personal requirements. Setting up zones within the network connections, provided by either standard copper or fiber-optic cables, as well as Ethernet, facilitates smooth administration.

Integration in business management systems
Connected to the building management system (BIS) and interfaced with the panel controller through an Ethernet interface and the OPC protocol, no additional interface module is required.

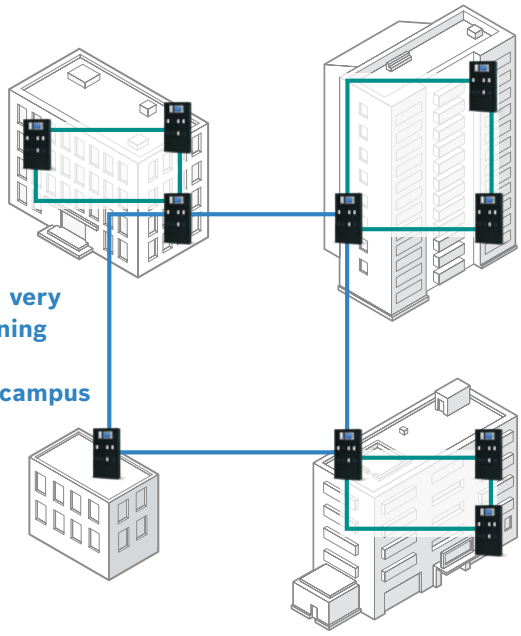
Remote control
AVENAR keypad 8000 remote control unit gives full command of the control panel or the panel network by means of a CAN bus. It offers a high degree of functionality, without the need for additional training, together with an attractive design.

Seamless integration of voice alarm via Smart Safety Link from Bosch
Right out of the box, AVENAR fire alarm panels interface with our voice alarm solutions. This integration supports advanced functionality such as guided evacuation by building zones, allowing operators a high level of situational intelligence and optimized response times. Additionally, the solution significantly reduces installation time and costs by minimizing cabling requirements.

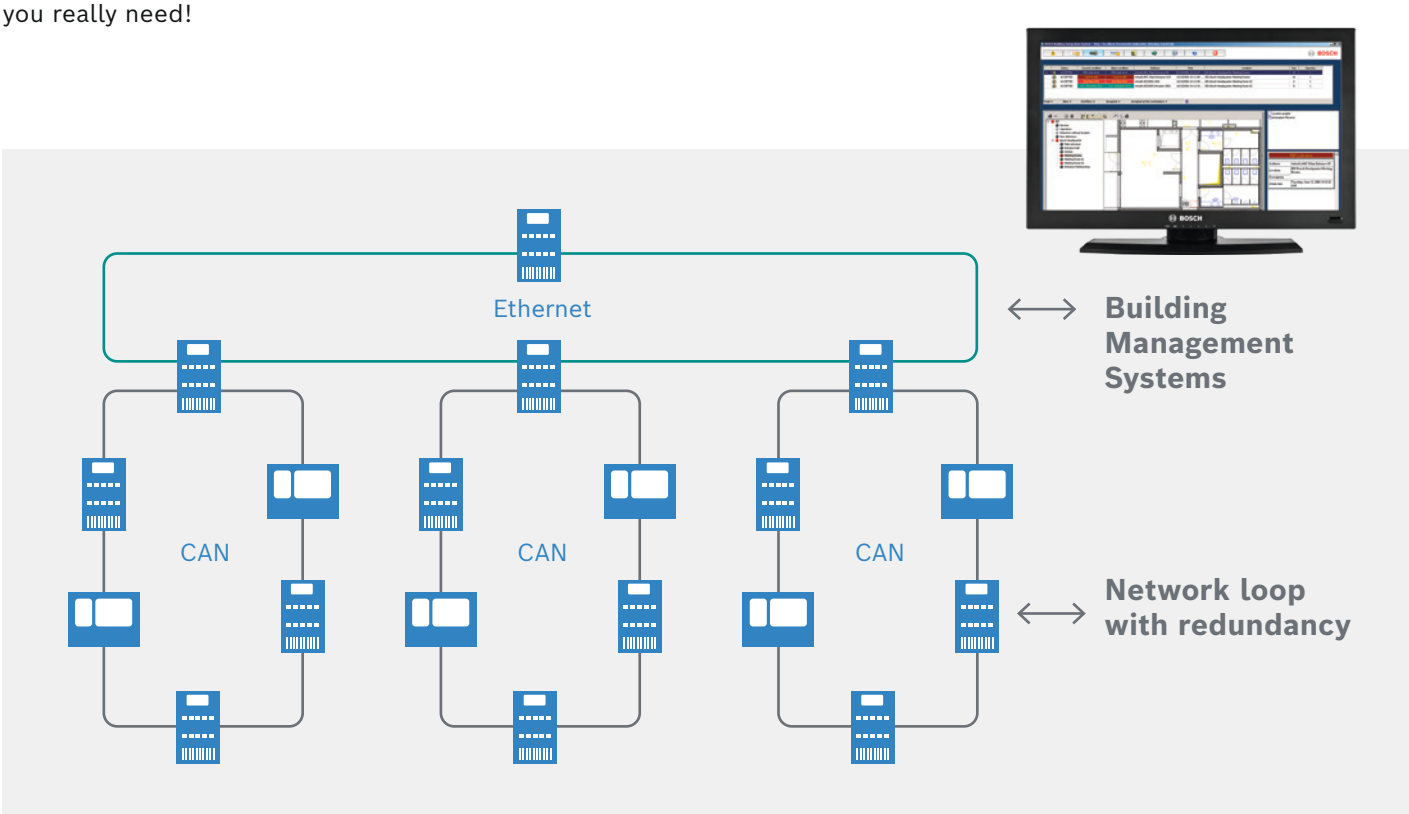
High rise or complex building



Extensive campus – very large network spanning large distances, for example university campus



The various housings, modules and rails result in a tailored system that you can economically extend as your business needs grow. You only buy the components that you really need!



Panel networking via CAN or Ethernet network. Combined CAN networks with high-performance IP Ethernet backbone.

02 AVENAR panel
Are you ready for...

AVENAR panel 2000 and 8000 is the innovative fire alarm panel platform offering unparalleled connectivity and scalability from small to large-sized installations. Users can now fully control safety equipment such as voice alarm, door controls, and more, directly on the panel display via eMatrix feature. The systems are future-proof and fully backwards compatible for sustainable investments, keeping costs for extensions and retrofits at a minimum.

The panel series supports the transformation of building technologies driven by the Internet of Things (IoT). Fully backwards compatible with current fire alarm system components, the AVENAR panel 2000 and 8000 series presents significant improvements in terms of scalability, integration, and processing power. It offers a new level of safety, control and efficiency.

AVENAR panel 2000 for small and medium projects
AVENAR panel 2000 is the key solution for smaller projects. It supports up to four loops thereby extending the applications from small projects to medium projects with up to 512 detectors and call points. AVENAR 2000 panels can connect to a panel network, allowing customers to distribute the intelligence of the fire system in the building while saving cabling costs. Furthermore, AVENAR panel 2000 simplifies the planning and purchasing process for system integrators, as it comes as a complete fire alarm panel kit, expandable in modular fashion.

AVENAR panel 8000 – a solution for all project sizes
For larger-scale installations, AVENAR panel 8000, the successor of the Modular Fire Panel 5000 Series, allows for up to 32 loops and a total of up to 4096 detectors and call points per panel.
Both panels support the current generation of fire detectors based on Local Security Network (LSNi) connections, as well as call stations and other critical system components. The panels can be installed alongside existing network architectures such as our Modular Fire Panel 5000 Series. The possibility to build one common network around AVENAR panel 2000 and 8000 as well as AVENAR keypad 8000 and Modular Fire Panel 5000 Series enhances network efficiency and utilizes the backward compatibility.

Did you know that...

Bosch created its first fire alarm panel in 1920?

Modular system built for scalability and connectivity
Both panels support an Ethernet architecture with fast 100 Mbit connectivity. Four external Ethernet ports are available to link Bosch fire panels and Bosch voice alarm systems on a network, connect to building management systems or other safety systems and also enable remote services for cloud-based control and maintenance.

Fully controllable via graphical user interface (GUI) directly on fire panel
As a technical novelty, the eMatrix graphical user interface (GUI) offers full control via a 7-inch screen. The intuitive interface provides a clear status overview of connected fire protection equipment and evacuation zones. eMatrix also controls voice alarm, door control as well as HVAC (heating, ventilation and air-conditioning). It enables safety managers to optimize protection by monitoring automatically triggered evacuations and offers the possibility to interfere manually when required.

AVENAR panel 2000

Find out more

BMS integration possibilities

In today's complex building environments, the demand for seamlessly integrated fire safety solutions with Building Management Systems (BMS) is growing rapidly. Seamless integration requires effective communication between critical systems, enhancing building safety, efficiency, and user experience.

AVENAR panels by Bosch are designed to meet these evolving needs with robust, flexible integration options. AVENAR panels allow customers to choose from different integration options to meet their requirements such as the level of integration, compatibility with existing installed software, or preference for standardized communication protocols.

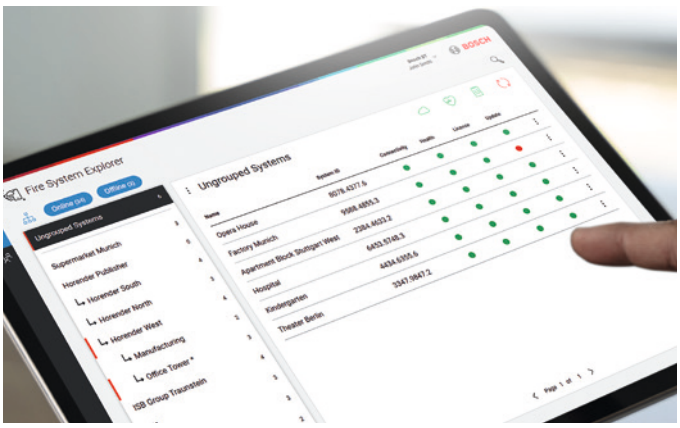
03 NEXOSPACE Fire System Explorer

NEXOSPACE Fire System Explorer is the secure starting point for you and your customers to enter the Internet of Things with your fire alarm systems and benefit from the limitless possibilities of digital services. As a system integrator, you gain new remote insights into the systems you manage and can organize your services more transparently, effectively and efficiently for the benefit of your customers.

The frequent travel and phone calls that were previously necessary for configuration and maintenance of fire alarm systems are now a thing of the past thanks to remote services.

Key functionalities

- **System status information**: Overview of all companies and systems including health status, connectivity, license validity and updates
- **Instant alerts**: Transmission of alerts via email and apps to increase reaction time to critical situations
- **Remote maintenance**: Early detection of potential issues through predictive maintenance, also preventing potential escalation to greater damage or system failure
- **Automatic documentation**: Detailed insight into service visits, spot checks and system status
- **Detector self-test**: Automatic detector tests, compliant with VDS-3860 and mandatory maintenance visits online



Increased safety

NEXOSPACE Fire System Explorer provides close monitoring of fire alarm systems, enabling early detection of problems and minimizing downtime. This increases safety, prevents major damage and extends system lifespan.

More efficiency

You reduce the need for on-site presence and save time by minimizing travel. Automated processes improve planning and resource allocation, increasing efficiency and reducing costs. You are better prepared for targeted service visits and conduct faster on-site testing.

24/7 transparency

The cockpit of the NEXOSPACE Fire System Explorer offers you and your customers 24/7 comprehensive insights into all connected fire systems, enhancing transparency and trust. With flexible grouping options, you can easily manage systems by region, customer, or team.

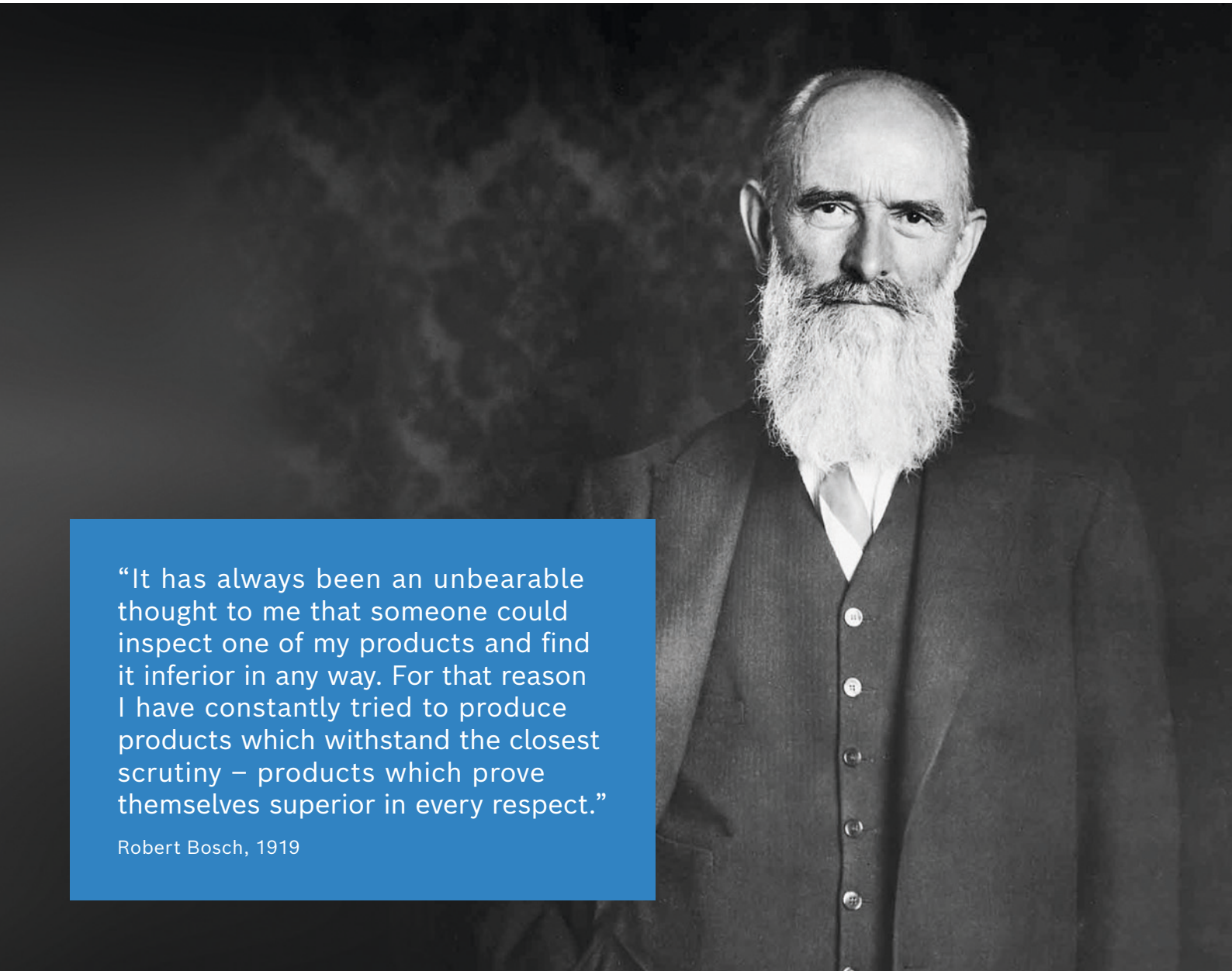
Stronger market position

Connecting your fire alarm systems to IoT positions your company as a technology leader, attracting customers looking for advanced solutions. The possibilities of digital services improve the customer experience, build loyalty and allow you to reallocate resources to drive growth and profitability.

04 Bosch Quality

Fire detectors from Bosch are tested beyond specifications

As it is our commitment to guarantee 100% product and service quality, all fire detectors must first prove their worth inhouse passing tests even beyond specifications. For this, we even have our own fire laboratory near Munich where fire-fascinated employees set fires professionally in order to make fire detection systems safer.



"It has always been an unbearable thought to me that someone could inspect one of my products and find it inferior in any way. For that reason I have constantly tried to produce products which withstand the closest scrutiny – products which prove themselves superior in every respect."

Robert Bosch, 1919

> “With our own test laboratory, we can check our products prior to the official certification in order to make sure that we pass the test successfully and do not lose time-to-market.“
>
> Robert Rett, test engineer for sensors and peripherals,
> Bosch Sicherheitssysteme GmbH

Playing with fire is welcome

Our team at the Fire Lab ensures top quality and performs test fires according to EN54 and UL268 standards. This is a necessary step to be approved by the testing institution VdS Schadenverhütung GmbH. Before receiving the approval, every fire detection product on the market has previously passed various standard tests. These include a series of different fires that show how the detectors perform under different conditions. In order to prevent any delays in the certification process, we carry out the tests under the same conditions as in the VdS laboratory where each new product is inspected prior to the actual certification.

TF4, or test fire 4 is an example for one of these standard tests and involves burning a polyurethane plate. After setting the material on fire, the plastic develops flames within seconds and soon fills the fire lab’s test chamber also with thick smoke. The entire process is observed in the control room where we monitor on screens which fire detector has triggered an alarm after how many seconds.

Testing resistance to disturbance values

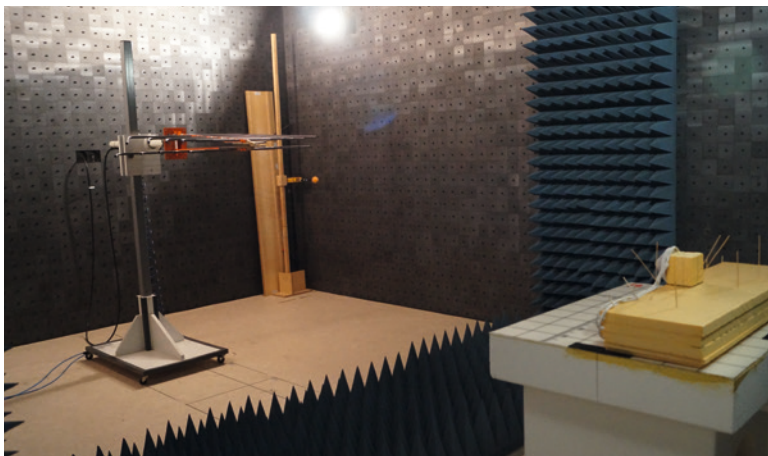
Furthermore, at our own fire laboratory we go even beyond the specifications and carry out self-conceived tests, which are not required, but necessary to ensure the highest reliability of the detectors. These disturbance tests make sure that our fire detection systems are resistant against any external interference variables. We control if the fire detectors trigger an alarm when they recognize cigarette smoke or steam (e.g. in the bathroom or kitchen) or if they can distinguish it from a real fire.

Smoke Tunnel

The disturbance tests are slightly different. We want to ensure that the video-based fire detector AVIOTEC detects fire and smoke correctly. Direct spotlights shine into the camera and ventilators blow smoke in all directions. Photo canvases have been used to see if AVIOTEC can detect fires correctly even against different backdrops. This shows how thoroughly AVIOTEC is put to the test to prove its reliability even under difficult conditions.

Electromagnetic compatibility

Besides ensuring that our fire detection systems perform in the event of a real fire, we also test emission and immunity in our internal EMC (electromagnetic compatibility) Lab. The detectors are checked for different types of emissions, e.g. radiated or conducted emission, and it must be proven that no voltage fluctuations and flickering occur. In addition, in the lab we control whether the products are immune to surge voltages, electrostatic discharge and radiated electromagnetic fields.
At the third laboratory, the Sensor Lab, we perform tests in a so-called smoke tunnel, that is identical to the official one at the test institute.
Here we check our detectors’ sensitivities and monitor corrosion properties – all this to be able to offer intelligent detection and superior protection.



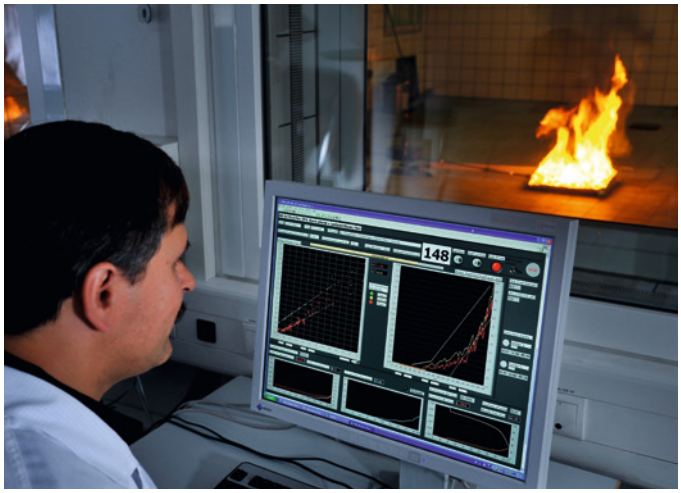
Mr. Rett – the arsonist by profession

Flames and smoke are his profession: In a laboratory near Munich, Robert Rett plays with fire to make fire detection systems safer.

Robert Rett is completely alone in the control room of Bosch's fire laboratory in Ottobrunn near Munich. Through a glass pane, he gazes into a white-tiled room that has polyurethane plates on the floor, and presses a button. He only triggers a small flame, but within seconds, the plastic starts to smoke, and only two minutes later the view into the room is completely blocked with thick, white smoke.

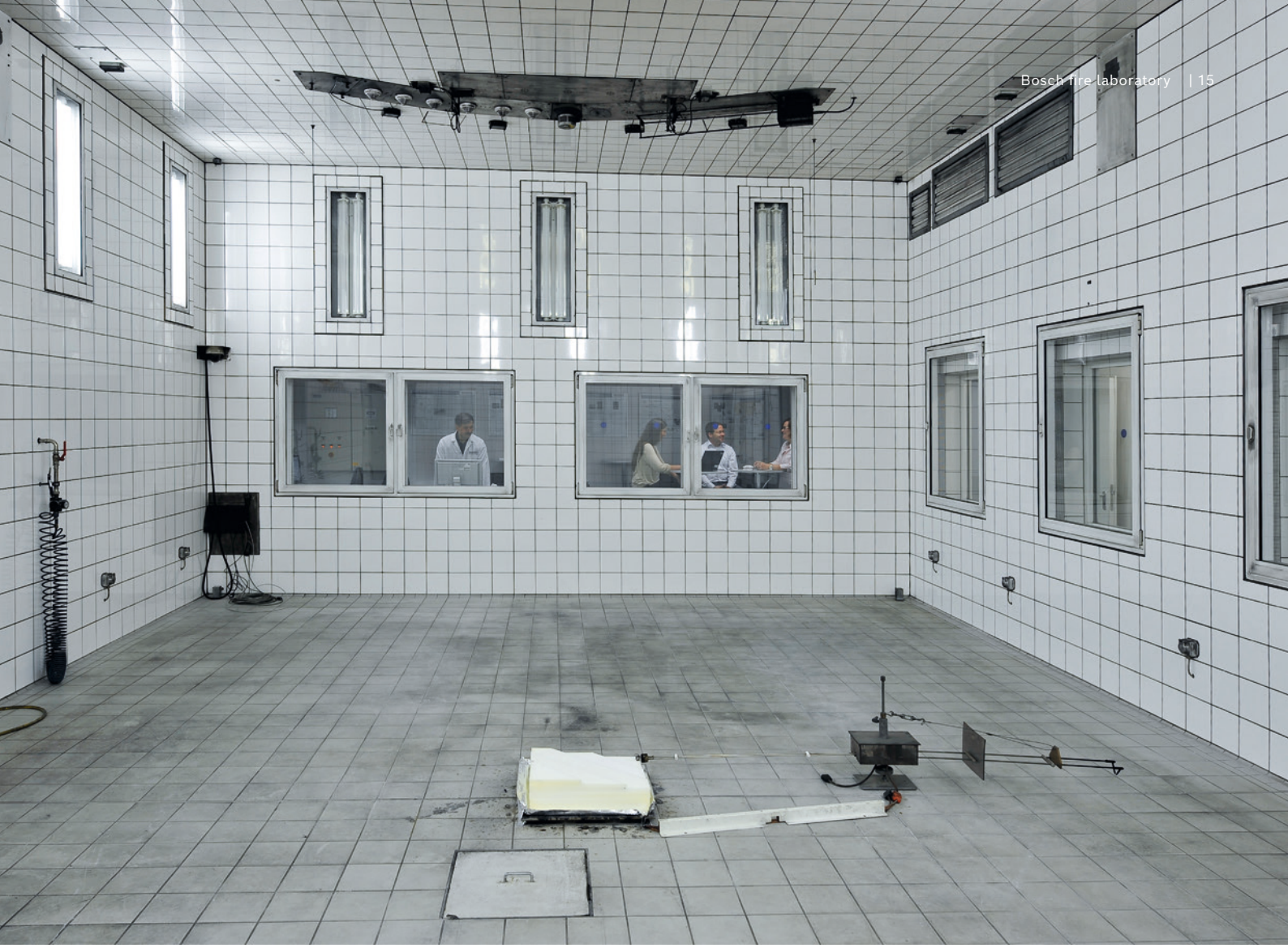
On the screen in front of him, Rett observes when and how the fire detectors mounted on the ceiling of the fire laboratory are triggered. This test, known as Fire Test 4, is one of the standard tests that all fire detection products made by Bosch must undergo. It is standard because it is one of many fire tests necessary to gain approval by the testing institution VdS (Verband der Sachversicherer) Schadenverhütung GmbH.

"We carry out all norm tests under the same conditions as in the test laboratory. Faults that only became apparent during the certification process would result in huge delays," explains Rett. Faults — that might mean that fire detectors are triggered too late or not at all. It could also mean that they are triggered although there is no fire. That is a problem because repeated false alarms mean that people no longer believe they are in any danger.



"Fire detectors protect life and property and must therefore be reliable," says Rett. For the last years, the qualified electrician has been responsible for precisely that in the fire laboratory. "Knowledge about fires and the way we use them here in standard conditions is not something you can train somebody for; it just takes experience," explains Rett. This is exactly what fascinates this level-headed man, who is now piling up small logs for the next test.

Every time he works in the fire laboratory, there are different products or different conditions being tested. Today, in addition to a range of fire detectors, three AVIOTEC cameras, which are used to facilitate video-based early fire detection, are suspended from the ceiling. They are among the latest Bosch developments for public and industrial use in enclosed spaces: The networked cameras can reliably detect smoke and flames — as already shown in the first test, it is these cameras that report the fire in the laboratory first.



“AVIOTEC cameras are IP-based and can be used via a shared user interface within the network, which we have set up especially for this purpose. The system is then put through its paces,” explains Rett. Spotlights that shine directly into the camera have been set up. Various ventilation conditions have been simulated using fans that blow the smoke in all directions. Photo canvases have been used to see if AVIOTEC can detect fires correctly even against different backdrops.

Rett also carries out these specially conceived tests for conventional fire detectors. He refers to them as “disturbance tests,” and they often consist of him using cigarettes, sparklers, or steam to test the alarms’ reliability. Tests of this nature are not legally required, but as Robert Rett knows from experience: “Better safe than sorry.”

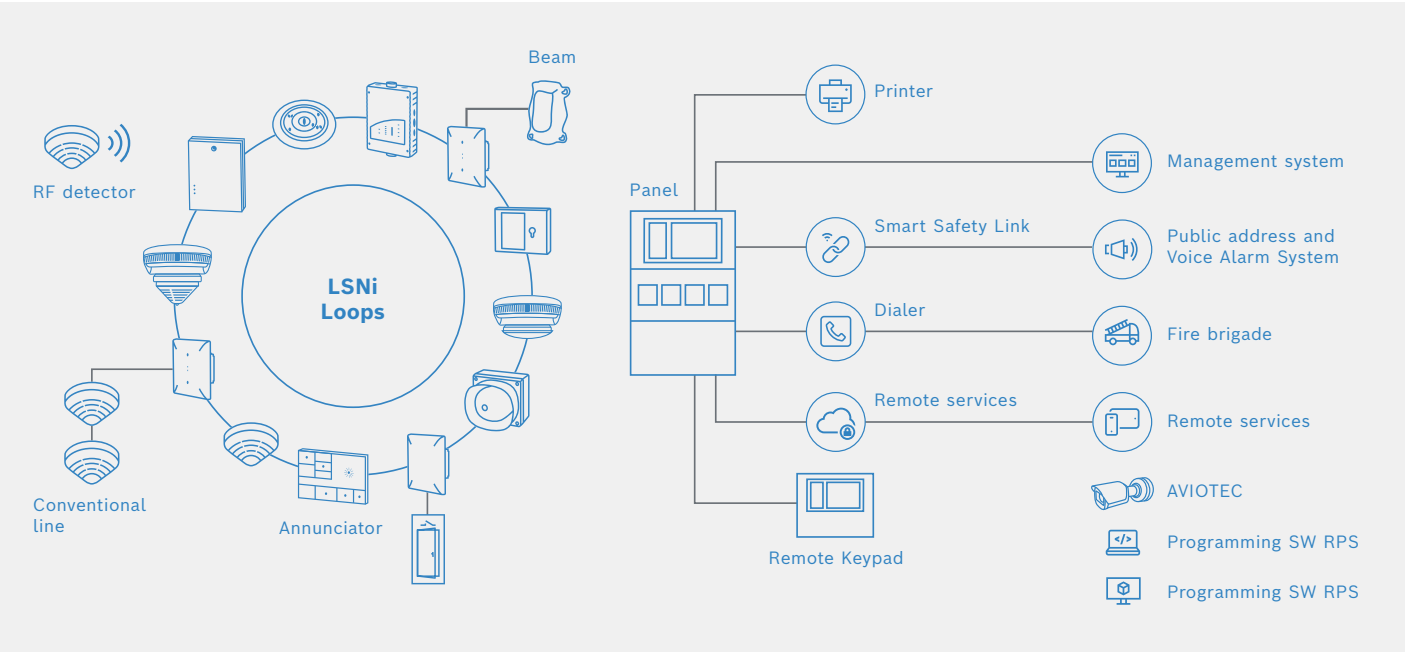
Find out more

Did you know that...

Robert perfoms more than 400 test fires per year?

All you need to detect, report and visualize a fire

Bosch has an extensive range of addressable and conventional products in the fields of fire detection, voice alarm and risk management. These products allow you to realize a tailor-made and comprehensive concept for almost any project, without neglecting aesthetics, standards or market requirements.



System overview

Uninterruptible Sounders

The FNM-42OU Series, available in indoor and outdoor variants, never fail to perform with their low power consumption and high volume, significantly reducing operating costs. With their own high performance energy source, they ensure non-stop notification, and enable fast responsiveness and steadfast operation.

Interface modules

Fire detection systems are usually connected to other building systems, like fire dampers, signaling devices, or fire doors. When a fire breaks out, input/output (IO) modules facilitate a prompt and coordinated response to a fire. AVENAR IO module 4000 series are multi-application, smart and compact and ensure a seamless fire alarm response.

Automatic fire detectors
We offer a broad range of intelligent automatic detectors with high reliability, used for premises and items with a medium or high concentration of valuable assets. Various detection technologies ensure early, state-of-the-art fire detection with practically no false alarms.

Special detectors
In buildings that do not allow the installation of point-type detectors, e.g. linear heat detectors, aspirating smoke systems, flame detectors and beam detectors provide customized protection.

Manual call points
Our range includes single-action and double-action manual call points which can be employed in our addressable LocalSecurityNetwork (LSN) as well as in conventional technology. Both large and small design types are available for different applications.

Sounders and strobes
When every second counts, sounders and strobes for local alarm actuation will signal the occurrence of a fire. Indoor and outdoor variants as well as uninterruptible versions and signaling devices that combine visual and acoustic alarms in just one device complete the range. Alarm indicators for fire detectors in false floors and ceilings are also part of the portfolio. They have a low power consumption and will give you distinct advantages.

Wireless
With our generation of wireless detectors, we offer a flexible fire protection solution that works almost entirely without cabling. It is therefore ideally suited for historical buildings, for retrofitting and expansion of existing buildings, and for temporary installations. Thanks to the combination of two frequency bands and highly reliable mesh technology, the new wireless fire alarm system offers high system availability and maximum protection. The solution consists of a gateway, which is connected to the fire alarm system by cable, as well as up to 30 detectors and 10 manual call points, which communicate with the gateway by radio and can therefore be installed anywhere without cabling.

Get best-in-class fire systems providing precision and accurate performance to discover, inform and visualize incidents to achieve faster responses and thus minimize damage and downtime.

Find out more

05 Highlight: AVENAR IO module 4000 series

The AVENAR IO module 4000 series comprises new Bosch interface modules to optimize and customize the efficiency and robustness of fire detection solutions across multiple applications from overseeing special fire detectors to ensure they will alert the fire alarm panel if signs of fire are detected, to controlling the locks and release mechanism of electronic doors. Bosch addresses this need with the latest addition to the cutting-edge AVENAR portfolio: The AVENAR IO module 4000 series.

Fire detection systems are usually connected to other building systems, like fire dampers, signaling devices, and fire doors. Each building is unique, so the specific needs for how these systems connect can differ. Interface modules help fire safety managers ensure that all connected systems work together effectively when a fire alarm goes off.

Input/output (IO) modules facilitate a prompt and coordinated response to a fire by providing the interactive link between all devices and systems from one central point. They also assist safety managers with continual monitoring of operations across an entire premises and diagnostics for identifying the source of a fire or system interference – all while fire detectors and alarms are kept up and running.

Multi-Application, Smart & Compact

The AVENAR IO 4000 module can be integrated to increase efficiency in multiple fire safety applications. This offers flexibility for planning a fast fire alarm response, including the control, operation and monitoring of facilities such as fire exits, sprinkler systems and dampers.

Thanks to its configurable software, the AVENAR IO module 4000 enhances security and provides tailored solutions. In the event of a fieldbus failure or power loss, the module features a fail-safe option that allows users to control how devices respond, ensuring that safety standards are maintained. Additionally, its configurable software enables improved digital connectivity between a building's devices.

The interface modules feature a modern, compact design which saves space in tight installation points like cabinets and boiler rooms. The IO modules are optimized with easy cabling and for simple installation on DIN rails. Plus, their low energy consumption means more devices can be included within one loop.

FLM-430-I4R2: A Universal Interface

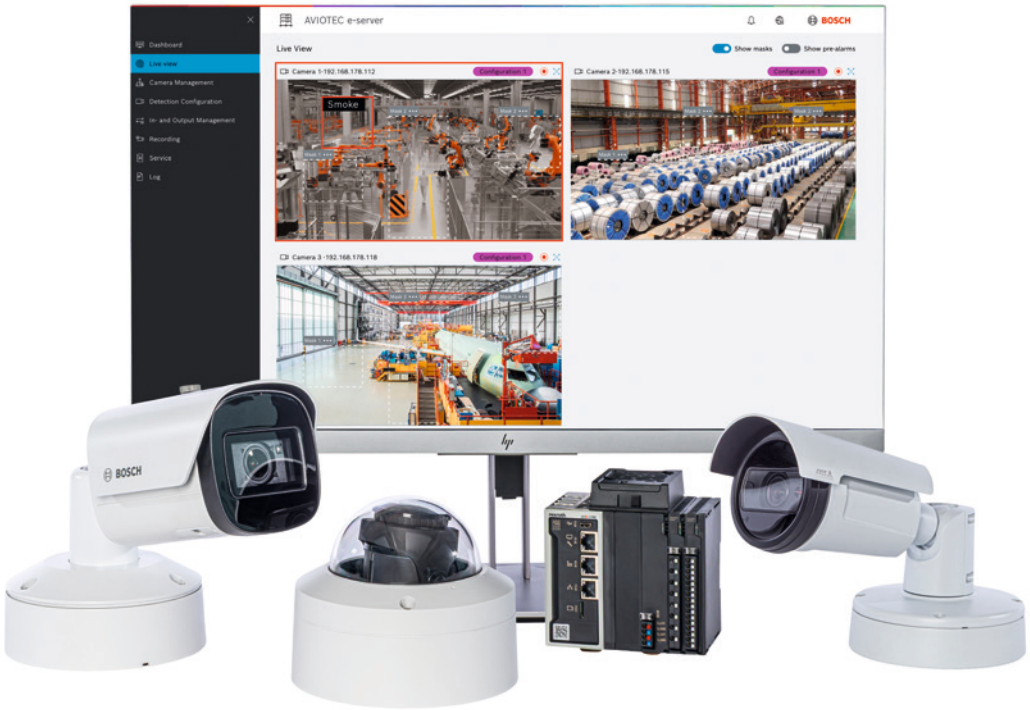
Bosch has expanded its AVENAR IO (input/output) module 4000 series with the introduction of the FLM-430-I4R2. This innovative module is engineered to connect a wider range of third-party equipment to the AVENAR fire alarm system, including high-voltage devices. The FLM-430-I4R2 offers four software-configurable inputs and two relay outputs, making it ideal for diverse fire safety applications. It enables control of both 24V DC and 230V AC equipment, such as smoke control dampers, fire dampers, and door holders, ensuring comprehensive management of a facility. The module can actuate and monitor the status of fire and smoke control dampers. Its capabilities extend to supporting up to four 4-wire conventional detectors, complete with a configurable pre-alarm feature for early warning, and is backward compatible with various resistor values for retrofitting existing installations. With configurable fail-safe behavior, system integrators can define whether a connected device maintains its last state or is interrupted in the event of a fieldbus failure, ensuring predictable system behavior.

Find out more

06 See it before it spreads

AVIOTEC e-server: The Future of Video-based Fire Detection

For years, Bosch has pioneered video-based fire detection with AVIOTEC, integrating powerful AI directly into the camera. The award-winning AVIOTEC 8000i IR set the standard for all-in-one detection speed and reliability.
Now, with AVIOTEC e-server, Bosch has moved the intelligence from edge-camera to edge-server. By adding the intelligence to the on-premise edge server, AVIOTEC e-server brings more flexibility supporting multiple cameras and extended features with unmatched detection performance. This enables AVIOTEC to optimally meet fire protection objectives for any specific application.



AVIOTEC algorithm technology – how does it work?
Faster and more accurate: Bosch's video-based fire detection system is based on the capability of various analysis techniques that examine live images for fires. Utilizing a unique, scientifically tested physical detection model, Bosch technology spots fires and disturbances, predicts behaviour to reduce false alarms and speeds up reaction times – helping you stop threats before they spread.

AVIOTEC is the perfect answer for facilities used for industry, transportation, public buildings, warehousing and adjoining outdoor areas to minimize detection time with low false alarm rates.

Compared to infrared and thermal imaging cameras, AVIOTEC uses optical analyses to detect flames and smoke. The fire detection technology has grown in its variety of application and stability over the last few years thanks to the use of artificial intelligence.

Did you know that...

our AVIOTEC software analyzes video images in real-time at the source to identify flames and smoke?

Find out more

At a glance

- **Detection of flames and smoke**
  Identify even hidden fires, smoldering fires and burning liquids
- **Fast detection at the source**
  Detect fires where they start, speeding up reaction times, improving rescue response and minimizing damage on site
- **Detection in complete darkness**
  Optimize surveillance together with IR illumination
- **Outdoor applications close to buildings**
  Ensure dependable operation via innovative AI-algorithms
- **Real time monitoring**
  View the situation and speed up response time
- **Video storage**
  Perform root-cause analysis with recorded videos

Reference Santa Priscila – warehouses in Ecuador

Industria Pesquera Santa Priscila faced a critical fire safety challenge in its seafood raw material warehouses in Guayaquil, Ecuador, due to inadequate detection and vulnerability to fire and arson. A robust, early detection system that reliably avoided false alarms was urgently needed.

Collaborating with Bosch and partner Adeatel, Santa Priscila's managers quickly recognized AVIOTEC technology's power. The joint team engineered a comprehensive solution: AVIOTEC cameras for large areas, AVENAR 4000 smoke detectors for smaller spaces, all networked to an AVENAR 8000 fire alarm panel. Bosch Remote Services were also implemented for continuous support.

This multi-functional system was deployed within three months, providing Santa Priscila with an effective and cost-efficient fire safety and security solution.

Find out more

07 Smarter against fire

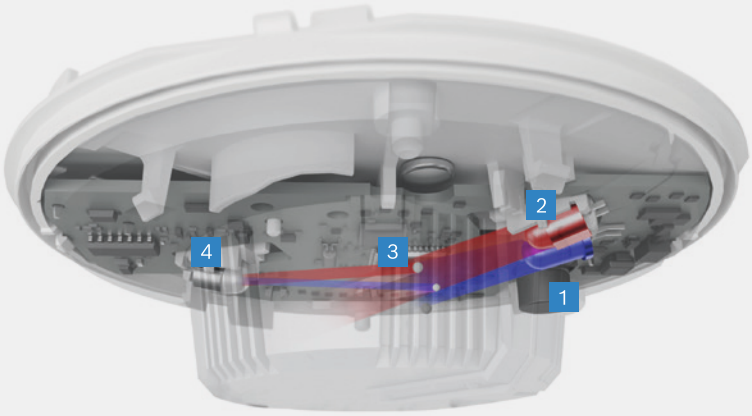
Bosch offers a series of fire detectors which combine unsurpassed reliability with outstanding detection performance.

Early detection even in most challenging conditions
In the world of fire detection, precision and reliability are essential. AVENAR detectors 4000 series offer eight different types of automatic fire detectors all with built-in short-circuit isolators and with different kind of sensors. They include optical and dual-optical detectors, some of which also provide multi-criteria detection including thermal and/or chemical detection.The combination of these three specific types of sensors is an approach invented by Bosch.

AVENAR detector 4000 uses Bosch's own Intelligent Signal Processing (ISP) technology, which achieves the highest level of intelligent fire detection. A heat detector is also part of the range. Some models include rotary switches for manual addressing in stub topologies, while models without such switches allow cost savings in ring topologies, where addressing is automated.

Protect people, property and premises
For the next step in precision, the detector series also includes four variants with the innovative Dual Ray Technology for even more accurate and early fire detection everywhere. It distinguishes visible disturbance values, such as dust, steam and cigarette smoke, by determining smoke density and particle sizes. It does this by comparing the intensity of scattered light from the differing wavelengths of two LED sources, one infrared and one blue. These technologies offer customers early detection in even the most challenging environments, including night clubs, parking garages and computer rooms.

Added together, these many features result in the highest reliability, and the assurance that an alarm is only signaled in a real emergency.



Dual Ray Technology
Detectors featuring Dual Ray Technology offer exceptional precision, effectively identifying visible disturbances like steam or smoke. This advanced capability leads to fewer false alarms, ensuring peace of mind.

1 | Blue LED
2 | Infrared LED
3 | Scattered light
4 | Photodiode

Did you know that...

the Dual Ray technology in our detectors precisely distinguishes between smoke and water steam?

A clean solution – Linen supplier Synergy Health standardizes on Bosch Dual Ray Technology

Synergy Health is a global company specializing in the sterilization of medical equipment and the supply of linen, particularly for the healthcare sector. The company offers a comprehensive range of services across the Netherlands – including the rental and washing of bed linen, professional clothing and linen for operating rooms.

During a complete replacement of its fire protection systems, Dutch linen supplier Synergy Health installed Bosch fire panels and detectors in eight subsidiaries.

In Synergy Health's laundries, high fire risk meets very demanding environmental conditions due to humidity, steam and dust. The company therefore needed a solution that could detect smoke and fire as reliably as it could differentiate between real alarm conditions and disturbance values to minimize costly false alarms. AVENAR detector 4000 series with Dual Ray Technology proved to be the answer.

Find out more

eSmog: The next level of precision

Decrease invisible false alarm causes

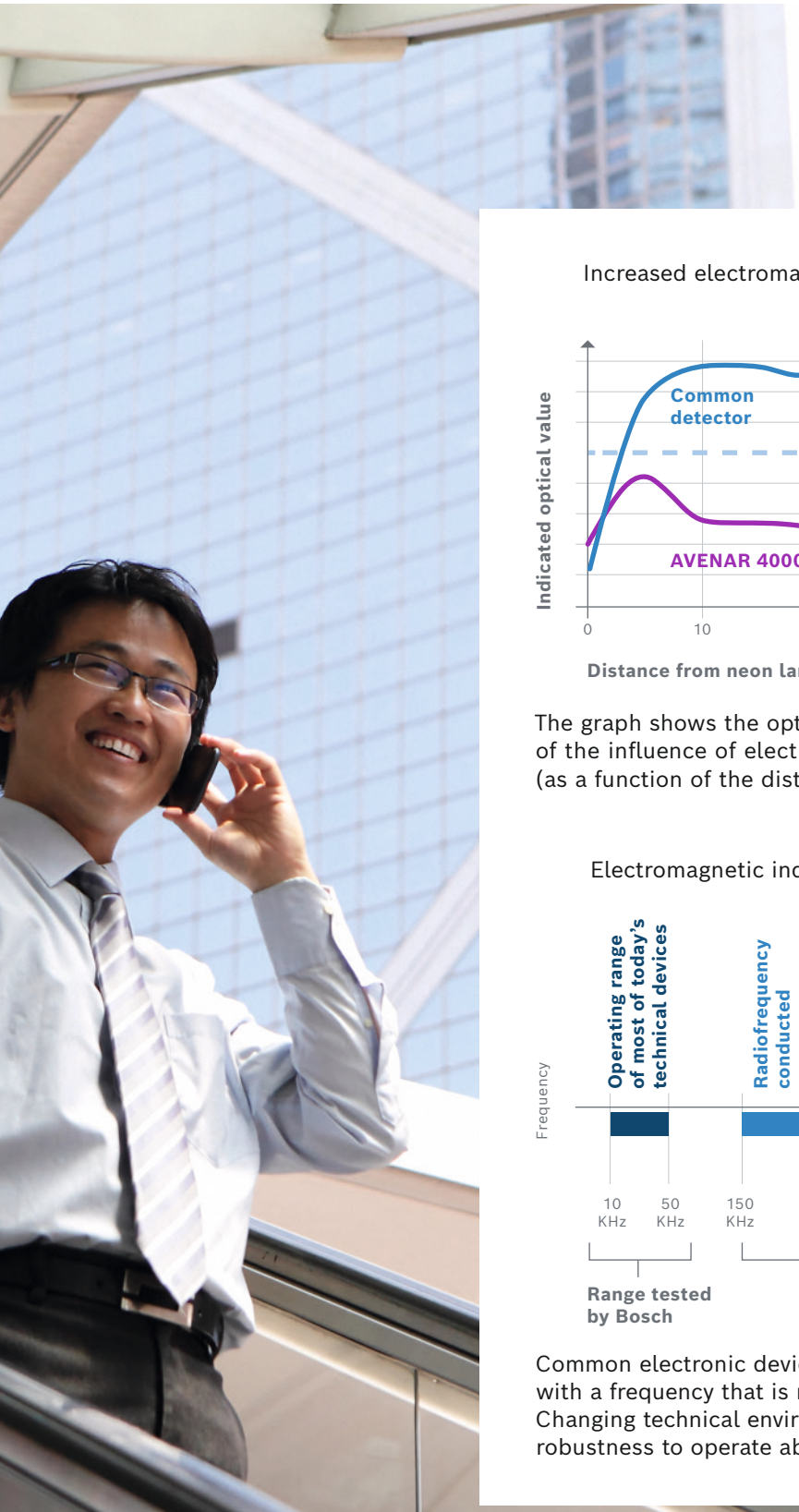
Bosch fire detectors maximize detection performance
Modern buildings are increasingly equipped with complex technical infrastructure. This trend leads to a tendency of increased electromagnetic pollution, which creates challenges for any installed electrical equipment. It is estimated that between 20%-30% of today's false alarms have undetermined causes. It is hard for technicians to prevent the situations if the root cause is not clarified.

Mobile phones and escalators can create disturbance
With its eSmog feature, AVENAR detector 4000 takes these new circumstances into account. Its robustness against electromagnetic pollution and its information about invisible disturbance values, such as escalators, mobile phones and routers, allow the system integrator to identify and resolve critical conditions even quicker, saving time and money.

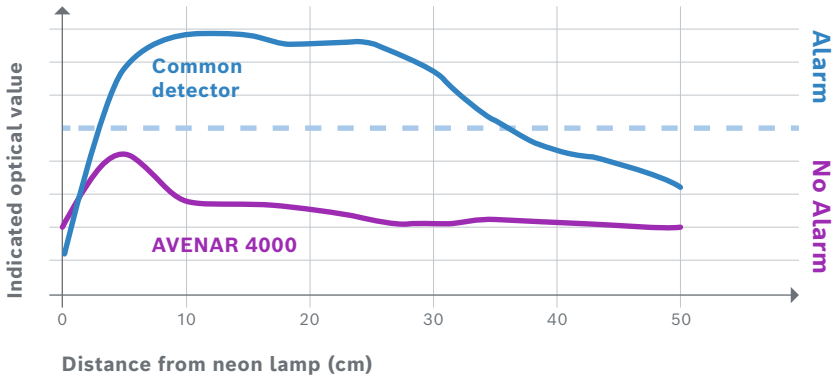
In addition, stability and detection performance are further enhanced during operation and maintenance by constantly measuring the electromagnetic exposure of each detector and calculating mid- and long-term averages. These are used to predict the exceeding of threshold values even before possible false alarms can occur.

Did you know that...

20 % – 30 % of today's false alarms have undetermined causes?

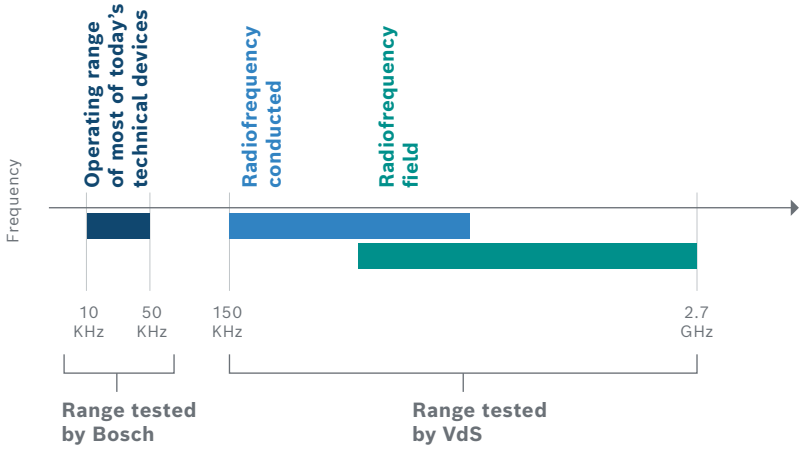


Increased electromagnetic robustness



The graph shows the optical value of the detector which varies because of the influence of electromagnetic fields when no smoke is detected (as a function of the distance).

Electromagnetic indication and monitoring



Common electronic devices are emitting electromagnetic fields with a frequency that is not tested by standards and norms. Changing technical environments require high electromagnetic robustness to operate absolutely impeccably.

08 Highlight: AVENAR all-in-one 4000

With AVENAR all-in-one 4000, we offer a range of signaling devices that combine visual and acoustic alarms in just one device. Optionally, any fire detectors of the AVENAR family can be combined with the signaling device in one device, so that a cost-saving and space-saving complete solution is created that can significantly reduce installation and maintenance costs. The signaling devices are certified according to EN54-3 and EN54-23 Category C, for ceiling mount, and W, for wall mount, and with protection class IP 42 are suitable for almost all applications in buildings.

Alarming part
(including battery)

EN54-23: optical signalling, flasher ring with 12 LEDs
EN54-3: acoustical part, 32 preprogrammed tones with up to 97 db(A)

Cover part

With detection, combination with AVENAR detector 4000 series
Without detection, cover in red or white color

(Unit-) base

For easy (pre-) mounting and cabling

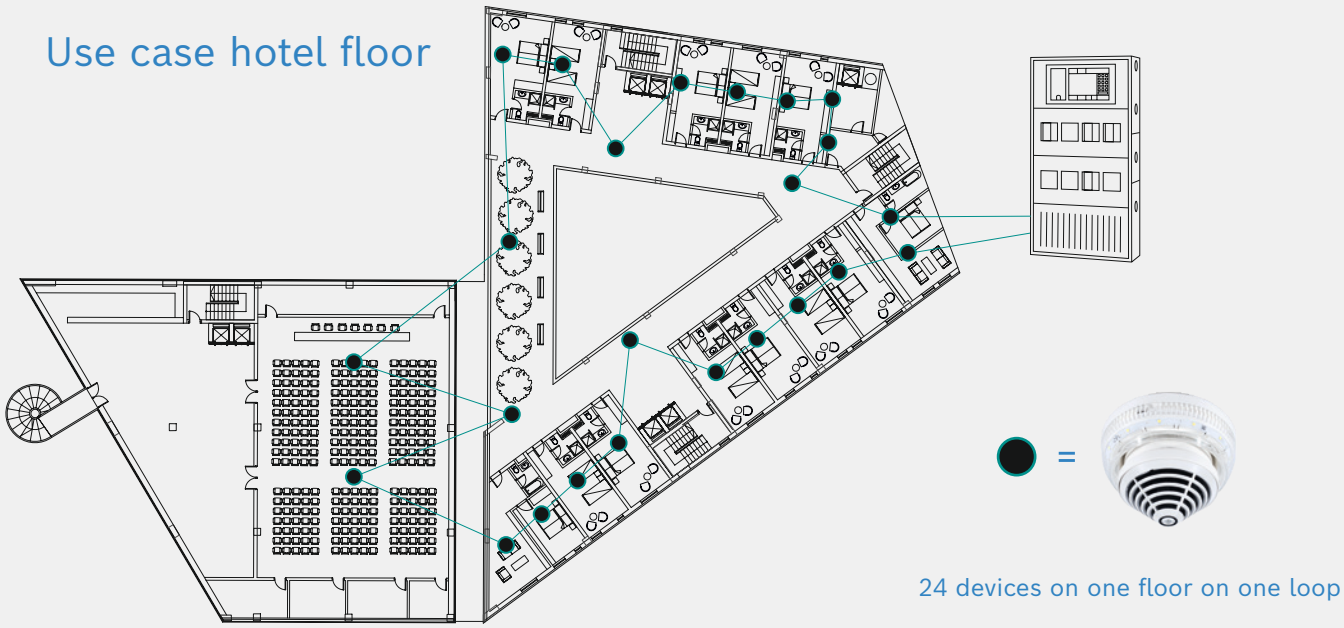
Detector base

Fits with detector or cover
Option for detector removal protection

Up to 125 devices on a ring bus
AVENAR all-in-one 4000 is characterized by its extremely low power consumption, so that up to 125 devices can be installed on just one ring bus. The integrated battery with a service life of up to 10 years also ensures uninterrupted alarming even if the bus fails. This means that complex and expensive E-30 cabling to ensure functional integrity will not be necessary for the installation.

Focus on usability
When developing the AVENAR all-in-one 4000, we have given particular importance to simple installation and handling as well as flexible application options. The signal heads can be pre-assembled and are equipped with plug-in terminals, which significantly simplifies and speeds up installation. For different areas of application, you can choose between three intensity levels for both optical and acoustic alarms. On top, you can combine any fire detector from the AVENAR family with the signaling device. This means that you can also exchange fire detectors separately as part of your maintenance work, even without replacing the signal transmitter, which keeps maintenance costs low.

Use case hotel floor



Overview: Variance of type C, W and O

	Ceiling	Wall	Open
Mounting	Only ceiling mounting	Only wall mounting	Ceiling and wall mounting
Illumination area / square	Best choice for small room heights because of well defined standard	Best choice for small room heights because of well defined standard and also used in addition where ceiling mounted devices do not fully illuminate the room area	Best choice for rooms with heights above average because there is no standard and dimensions are defined by the manufacturer
Flexibility	No flexibility, (limited up to 3m mounting height, no wall mounting possible)	No flexibility, (limited up to 2.4m mounting height, no ceiling mounting possible)	Flexibility (mounting height open, for ceiling and wall possible)
Values	Defined by standard	Defined by standard	Defined by manufacturer
Power consumption	Comparatively lower as with O variant	Comparatively lower as with O variant	Higher (mostly)
Verticals			

"With up to 125 devices in a loop, we are defining an entirely new category in fire detection. This opens up completely new possibilities and considerable savings potential for planners, installers and operators."

Sebastian Wehr, Product Manager at Bosch Building Technologies.

09 Invisible protection on any ceiling, ultra slim and easy to clean

The 500 Series is totally different, because it uses a virtual optical chamber. It is ultra-slim and lies flush with the ceiling – a distinct advantage which does not detract from the appearance of attractive rooms. Color rings that can be mounted in the detector also allow the units to be perfectly coordinated with the color of the surrounding ceiling.

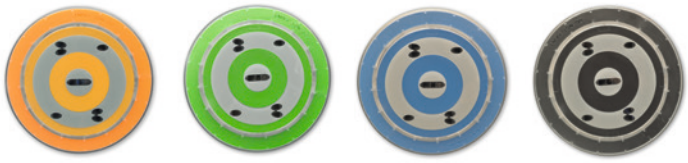
Discreet styling outside, Bosch know-how inside
The 500 Series combines built-in style with Bosch's proven know-how, ensuring a reliable investment for the future.

Award collection – not dust collection
The Smoke Detector 500 Series features a virtual optical chamber, allowing it to blend seamlessly into ceilings without accumulating visible dirt. This design enhances reliability and simplifies cleaning, reducing service time and costs. Continuous dirt measurement triggers a signal when cleaning is needed.

Powerful technology
The 500 Series employs a scattered-light fire detection system with dual detection areas, ensuring high reliability. It also offers a multi-sensor option with a carbon monoxide (CO) sensor, utilizing intelligent signal processing to minimize false alarms and expand its application range, even in challenging environments.

Giving architects more freedom
With its low-profile design, the 500 Series remains unobtrusive on ceilings, allowing architects to prioritize aesthetics and overall design.

The modern way – to secure aesthetics
Reliable fire detection with a touch of style: Bosch presents the invisible fire detector. A completely different concept combining a pleasing design with up-to-date technology.



Find out more

10 Monitored planning: Transparent and close to reality

Safety Systems Designer – your fire planning tool covering the full chain

Find out more

The Safety Systems Designer – an easy-to-use tool

Thanks to generic terminology and intuitive navigation, there is no training needed – saving you costs and time.

Planning fire alarm projects – a challenging task

This demanding business requires the inclusion of different parties at various planning stages along the complete value chain. We offer a solution that includes a plugin and a blocks library for AutoCAD® making it perfectly adaptable to your daily business. In addition it provides quick answers when it comes to initial budgeting and calculation. All features combined, Bosch provides an unmatched platform for your business. In the future, the Safety Systems Designer will be the only software you need to plan and calculate fire alarm systems.

Project planning for fire protection on the next level

Bosch's planning and support tool enables users a precise design according to EN-54 regulations, including the allocation of peripherals on different loops. Taking into consideration the actual topology, the Safety Systems Designer ensures that every project detail is taken into account. This is made possible through a complete plausibility check and the automatized as well as customized provision of a comprehensive documentation, perfectly tailored to your needs.

Autodesk and AutoCAD are registered trademarks or trademarks of Autodesk, Inc., in the USA and other countries.

11 Solutions that go beyond expectation

All around the world, Bosch solutions exceed customer expectations. The expertise and know-how of our partners and the quality of our technology make even the most demanding and complex environments safer.

Smart fire alarm system monitoring for reliable fire safety across offices in Croatia

GRAWE, an insurance group with 62 offices in Croatia, faced frequent false fire alarms in its Zagreb office buildings, causing tenant complaints and business disruptions. Management recognized the need for a reliable fire safety solution to mitigate risks and protect the company's reputation.

They partnered with Fidens Alarm, a Bosch integrator, to implement Bosch's AVENAR 4000 detector series. This system, combining AVENAR heat and smoke detectors, offered backward compatibility, saving upgrade costs. The entire fire safety solution is now remotely monitored 24/7 by Bosch's NEXOSPACE Fire System Explorer, enabling predictive maintenance, troubleshooting, and updates.

This advanced connectivity has eliminated false alarms, providing real-time status updates to Majeric via the Bosch app, reducing maintenance costs, and ensuring a safe environment.

> "All components of the fire alarm system are functioning excellently, and we've had no problems whatsoever."
>
> Mr. Robert Majeric, Facilities Maintenance Manager, commercial real estate, Zagreb

Find out more

A scalable fire safety solution for a modern auto parts warehouse in Denmark

FTZ Auto Parts' new, large-scale warehouse in Odense, Denmark, required a robust fire safety system to protect high-value auto parts and materials. The Facilities Manager needed reliable detection for high-storage bays, extensive halls, automated areas, and offices.

Bosch provided a tailored solution, including linear beam detectors and aspirating smoke detectors for high ceilings, and AVENAR 4000 series optical smoke detectors for general areas. All detectors connect to an AVENAR 8000 fire alarm panel and evacuation system. This customized Bosch setup ensures reliable fire detection across the complex site, leading to successful installation and high customer satisfaction.

Find out more

"The Bosch system was all commissioned and installed on time, and in the months since its installation, has been running well. Our customer is happy."

Peter Mølgaard, System Integrator, El-team Vest

"Bosch fire detection system's redundancy feature made me curious about evaluating their offerings. I believe that consideration of this will certainly be a game changer in our DC operations to ensure minimal downtime."

Mr. Jimesh Chauhan, SME Electrical Nxtra

Digital business continuity with redundancy-enabled fire detection for a renowned data center in India

Nxtra by Airtel, a subsidiary of Bharti Airtel Limited in India, operates over 100 data centers. The centers provide secure, scalable spaces to support digital operations, including a 4-Megawatt facility in Pune serving a global software company.

Data is a crucial asset for companies, requiring secure and accessible storage. Downtime can cause massive losses, and fires at data centers risk destroying valuable assets. False alarms, however, lead to unnecessary evacuations, power shutdowns, and costly disruptions.

Reliable fire detection is essential.
In 2022, Nxtra's MEP team sought a fire detection system for their Pune data center. A US consulting firm recommended solutions meeting stringent standards like VdS, UL, and FM. Bosch impressed Nxtra with their reliable, compliant systems, approved by VdS and NFPA72, ensuring high technical standards.

Find out more

Why a Fire Alarm System from Bosch?

You can rely on an early and accurate detection

It adapts to your current and future needs

You can profit from additional services to improve your operations and reduce costs

Bosch Building Technologies

Visit **www.boschbuildingtechnologies.com/lifesafetysystems**
to learn more about our product offering

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