

Frequently Asked Questions (FAQ)

Video-based fire detection AVIOTEC IP starlight 8000

THIS DOCUMENT GIVES ANSWERS TO FREQUENTLY ASKED QUESTIONS REGARDING THE AVIOTEC IP STARLIGHT 8000 VIDEO-BASED FIRE DETECTION

Table of content

Can AVIOTEC replace fire detectors required by standards?	3
Which cameras are available with video-based fire detection?	3
Can additional housings be used for the video-based fire detection AVIOTEC?	3
What is the minimum distance from AVIOTEC to the fire source to detect a fire?	3
What is the maximum distance from the camera to the fire source to detect a fire?	3
Which flame size can be detected with standard settings?	3
Is the detection of smoke independently from the smoke colour?	3
Can AVIOTEC detect fires during fog, snowstorm, sandstorm or clouded lens?	3
Is it possible to detect burning moving objects?	3
What is the minimum illumination level needed for AVIOTEC?	3
How can I measure the illumination of a scene?	4
Does AVIOTEC detect flames and smoke?	4
Where does AVIOTEC detect flames and smoke?	4
Which test fires are tested?	4
Does AVIOTEC detect each kind of smoke?	4
Can customers use alarm-based recording for root-cause analysis?	4
Does AVIOTEC compete against standard fire detectors?	4
Is there a regulation?	4
Why do standard fire detectors don't work well in large halls/ high ceiling areas?	5
Why not use a thermal camera?	5
Regarding the AVIOTEC algorithm: is it camera- or server-based?	5
Which systems can process AVIOTEC alarms?	5
Which effort is needed to configure it in the applications?	5
Is AVIOTEC certified?	5
Where can I find more information about the product?	5
How do I install/ position the camera, which angle?	5
Can I use standard positions of existing video surveillance cameras for video-based fire detection?	5
Does the fire algorithm replace intelligent video analysis (VCA)?	5
Is the picture quality the same known from Bosch surveillance cameras?	5
How can I view the video?	5

How do I see the alarm?	5
Is AVIOTEC integrated in 3 rd party video management systems (VMS)?	6
Can I get alarms via ONVIF?	6
Is it possible to set the sensitivity? In different applications, different false alarm rates might be acceptable.	6
Is it one alarm that is triggered (OR connection)?	6
What do I connect to store and monitor?	6
How do I connect AVIOTEC to my fire alarm panel?	6
What is POE and how does it work?	6
Does the camera use image databases to detect fires?	6
Can we individually change the algorithm?	6
Can the masking be set time dependently?	6
How is the maintenance for AVIOTEC?	6
What to do in case of false alarms? How can they be prevented?	6
Are there special mounting accessories for environments with vibrations from Bosch? How does this affect the camera?	7
How can I provide power supply backup to the camera? With which kind of certification power supply backup has to comply?	7
What type of wire do I need to connect the camera (fire resistant? Regular UTP?)?	7
In case of multiple fires in the area one AVIOTEC is monitoring: Are there any restrictions on the maximum number of fire focus can be detected and generate alarms with only one AVIOTEC?	7
Is it possible to monitor a trouble signal from the camera by the same relay that we monitor the alarm with?	7
As the relay only activates on alarm, how do you monitor troubles in the camera (power off, masking, etc)?	7
If the flame is not fully visible, is AVIOTEC able to detect the flame?	7
Which verticals are interesting because of the newest AVIOTEC FW version 7.72 with 0 lux possibility?	7
For day and night: Is there a separate configuration necessary?	7
Which IR illuminators can be used for the 0 lux applications?	7
Is there a possibility to have automatic incident detection in tunnels at the same time with video fire detection?	8
How to handle actual installations? Changing the mode to auto or leave it at colour?	8
How many masks can be set at the same time in one field of view?	8

Question: Can AVIOTEC replace fire detectors required by standards?

Answer: No, there is no product standard available for video fire detection. Therefore, it is an additional technology, which is for example considered useful to comprehensive risk assessment. AVIOTEC is used in areas/ applications, where standard fire detectors are not required by law/ standard or the necessary parties signed a special fire protection concept.

Question: Which cameras are available with video-based fire detection?

Answer: One box camera version is available: AVIOTEC IP starlight 8000.

Question: Can additional housings be used for the video-based fire detection AVIOTEC?

Answer: Yes, all protective housings that are used for the DINION IP starlight 8000 camera range (UHI-OG-0, UHI-OG S-0, UHO-POE-10, UHO-HBG S-11, UHO-HBG S-51, UHO-HBG S-61) can be used -> Check the AVIOTEC page (accessories) at your regional product catalogue for details).

Question: What is the minimum distance from AVIOTEC to the fire source to detect a fire?

Answer: The minimum distance depends on the mounting height. The vertical mounting angle must be 37,5° or less. For example: if AVIOTEC is installed at a height of 7m the minimum distance to the fire is 9,3m.

Question: What is the maximum distance from the camera to the fire source to detect a fire?

Answer: The maximum distance depends on the used lens, its opening angle and the mounting height. For example: The maximum distance for a TF5 fire is 23m with a 90° lens opening angle. For an exact planning have a look at the planning tool. Find it at the product catalogue

Question: Which flame size can be detected with standard settings?

Answer: AVIOTEC detects flames with a size larger than 1,1% of the picture width with standard settings. Therefore, the detectable flame size in 23m is 0,5m. To see detectable smoke/ flame sizes in the customers application use the planning tool!

Question: Is the detection of smoke independently from the smoke colour?

Answer: AVIOTEC is able to detect grey and white smoke with an opacity of 40%. Black smoke is hard to detect due to missing structure and opacity (if the black smoke has the necessary opacity, it is a big open fire -> AVIOTEC will trigger the flame way earlier).

Question: Can AVIOTEC detect fires during fog, snowstorm, sandstorm or clouded lens?

Answer: No, the detection is based on an optical principle. If fires are covered by disturbance factors AVIOTEC can't detect it.

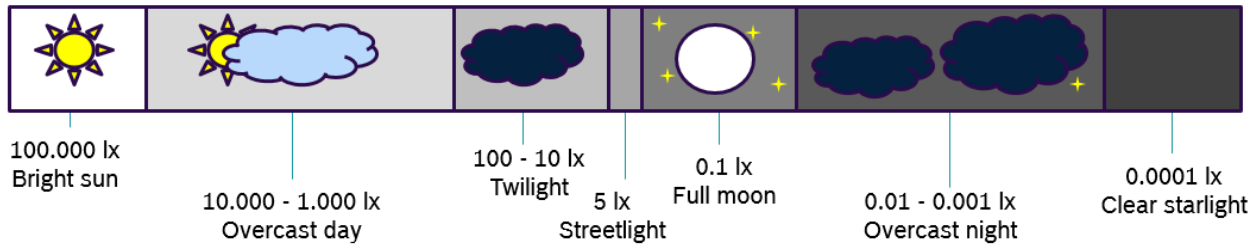
Question: Is it possible to detect burning moving objects?

Answer: No, AVIOTEC detects fires, which are in a stable position in the picture.

Question: What is the minimum illumination level needed for AVIOTEC?

Answer: AVIOTEC needs a minimum illumination level of 2 Lux. If the illumination is less than 2 Lux IR illuminators can assist and let AVIOTEC detect also in 0 lux illuminated areas. For more details have a look at the newest FW version 7.72 manual.

Question: *How can I measure the illumination of a scene?*



Answer: Lux meters can be used to measure the illumination. For a first guess tables exists with typical illumination levels:

Question: *Does AVIOTEC detect flames and smoke?*

Answer: Yes, it detects flames and moving smoke. The user can also decide only to use flame or smoke detection. The detection is an OR connection. That means that either smoke **or** flame must be in AVIOTEC's viewing area.

Question: *Where does AVIOTEC detect flames and smoke?*

Answer: Flames and smoke can be detected within the full field of view of the camera.

Question: *Which test fires are tested?*

Answer: AVIOTEC can detect all test fires according to ISO/ EN standards:

- Open cellulosic (wood) fire (TF1)
- Smoldering (pyrolysis) wood fire (TF2)
- Glowing smoldering cotton fire (TF3)
- Flaming plastics (polyurethane) fire (TF4)
- Flaming liquid (n-heptane) fire (TF5)
- Liquid (methylated spirit) fire (TF6)
- Low temperature black smoke (decalin) liquid fire (TF8)

Question: *Does AVIOTEC detect each kind of smoke?*

Answer: The algorithm can detect up- and side-wards moving smoke up to an 180° opening angle. Ambient smoke with no movement and downwards rising smoke will not be detected.

Question: *Can customers use alarm-based recording for root-cause analysis?*

Answer: Yes, this feature can be used. Please make sure that the customer has agreed with the recording in the contract/ on an extra paper.

Question: *Does AVIOTEC compete against standard fire detectors?*

Answer: No, AVIOTEC is a supplementary system to existing fire detection technologies. On top of that: AVIOTEC can be used in applications where normal fire detectors are not installed due to ambient conditions (high ceilings, dusty /humid applications...)

Question: *Is there a regulation?*

Answer: Not at EN and ISO level. UL has an outline of the smoke detector standard and FM a test standard for video-based fire detection. Also, VdS now has developed an official guideline (VdS 3847).

Question: *Why do standard fire detectors don't work well in large halls/ high ceiling areas?*

Answer: Standard fire detectors are mounted at the ceiling. Smoke from a fire source must reach the detector. The higher the ceiling, the longer this process will take. Due to a longer detection time, fires can develop faster than being detected early by the AVIOTEC. In special cases inversion layers can exist in big halls (the reason behind are heat pockets beneath the ceiling). The smoke will not reach the ceiling -> standard fire detectors cannot trigger an alarm.

Question: *Why not use a thermal camera?*

Answer: Thermal cameras can detect heat. Smoke plumes from hidden smouldering fires cannot be detected.

Question: *Regarding the AVIOTEC algorithm: is it camera- or server-based?*

Answer: The AVIOTEC algorithm is an integrated solution inside AVIOTEC itself. The fire detection is independently from the connected server.

Question: *Which systems can process AVIOTEC alarms?*

Answer: Alarms can be transmitted via relay, metadata or ONVIF. Each system which can work with these data can be used.

Question: *Which effort is needed to configure it in the applications?*

Answer: In the camera itself, the fire and smoke detection is active with its standard settings as soon as the camera is installed, powered up and the focus set. If needed/wanted the standard settings can be changed to special needs in the application (only two sliders and masking possibilities).

Question: *Is AVIOTEC certified?*

Answer: AVIOTEC has a VdS certification with a G number (G217090). It also has a certification from the CSIRO

Question: *Where can I find more information about the product?*

Answer: You can download operating and installation manuals, brochures, films and power point presentations from the Bosch product catalogue.

Question: *How do I install/ position the camera, which angle?*

Answer: Please check the operation guide of AVIOTEC for installation requirements. Also, plan the application of the customer within the planning tool for AVIOTEC.

Question: *Can I use standard positions of existing video surveillance cameras for video-based fire detection?*

Answer: Use the operation guide of AVIOTEC to check, if the position meets the requirements of AVIOTEC.

Question: *Does the fire algorithm replace intelligent video analysis (VCA)?*

Answer: No. Intelligent video analytics and video-based fire detection can be used in parallel but AVIOTEC must be planned and installed according to the operation guide. This is necessary to ensure the detection reliability for fire.

Question: *Is the picture quality the same known from Bosch surveillance cameras?*

Answer: No. Several adaptations at the picture were made to improve the fire detection functionality.

Question: *How can I view the video?*

Answer: Using standard browser (internet explorer) or video management systems.

Question: *How do I see the alarm?*

Answer: This depends on the used management system. You can also use the web interface of AVIOTEC. Use the operation guide of AVIOTEC for detailed information.

Question: *Is AVIOTEC integrated in 3rd party video management systems (VMS)?*

Answer: Via ONVIF and standard protocols (ETH connection) AVIOTEC is connectable to 3rd party VMS. AVIOTEC is fully integrated e.g. into the BVMS (Bosch VMS), Genetec, Seetec and Milestone systems (state 10/2018).

Question: *Can I get alarms via ONVIF?*

Answer: Yes, also ONVIF alarms will be transmitted.

Question: *Is it possible to set the sensitivity? In different applications, different false alarm rates might be acceptable.*

Answer: Yes. You can choose different sensitivity settings according to the application needs (please check the operation guide regarding the exact settings).

Question: *Is it one alarm that is triggered (OR connection)?*

Answer: The alarms are triggered independently: one for smoke and one for flame. Either one of those has to be in the field of view of the camera to trigger a fire alarm.

Question: *What do I connect to store and monitor?*

Answer: Storage devices can be connected via network. AVIOTEC can be connected into the IP network.

Question: *How do I connect AVIOTEC to my fire alarm panel?*

Answer: We do not recommend connecting AVIOTEC directly (as a detector triggering external alarms) to a fire panel. Due to missing standards for VFD the direct connection to a fire alarm panel is only allowed as a local alarm; authorities will not be notified. You can use the relay output of the camera for direct connection to the fire alarm panel. In special applications a dedicated fire alarm concept defined by every necessary party can change this. -> needs to be defined individually.

Question: *What is POE and how does it work?*

Answer: POE is an abbreviation for Power Over Ethernet. The Ethernet cable will be used for data transmission and empowering the devices. POW is standardized according to IEEE 802.3af-2003 or IEEE 802.3at-200 works with 48V.

Question: *Does the camera use image databases to detect fires?*

Answer: No. There are no pre-learned fire sequences used to detect fires. AVIOTEC uses physical behaviour algorithms to detect fires in the scene.

Question: *Can we individually change the algorithm?*

Answer: The algorithm can be adopted by sensitivity settings and verification time by using the web-interface. Also masking for flames/smoke can be inserted to adopt AVIOTEC to the applications needs. Please use the operation guide of AVIOTEC for get to know the details.

Question: *Can the masking be set time dependently?*

Answer: Since the FW release 7.61 it is possible to set three different profiles. Per profile, sensitivity settings, verification time and masking can be set separately. They can be set in a scheduler and adjusted to the applications needs (e.g. higher sensitivity during nighttime because no employees are around and fires need to be detected even earlier).

Also RCP commands can be used to switch between the profiles.

Question: *How is the maintenance for AVIOTEC?*

Answer: Please have a look at the new operation guide (since FW 6.50). The operation guide explains the proposed maintenance plans (according to the standards VDE gave for standard fire detectors).

Question: *What to do in case of false alarms? How can they be prevented?*

Answer: We have different setting possibilities to reject false alarms. Sensitivity slider and verification time can be adjusted. Also masking features and different installation positions from AVIOTEC can minimize false alarms. Please have a look at the operation guide where the influences and countermeasures are explained.

Question: Are there special mounting accessories for environments with vibrations from Bosch? How does this affect the camera?

Answer: Vibrations will affect the camera regarding false alarms. A vibrating camera can cause flame false alarms. To prevent those false alarms, choose another position to install AVIOTEC if it is possible in the area. If there is no possibility to install AVIOTEC without having vibrations there is the need to look for hardware, mounting the camera “vibration free”. From Bosch we do not have such a HW right now.

Question: How can I provide power supply backup to the camera? With which kind of certification power supply backup must comply?

Answer: Providing power to AVIOTEC is possible via POE or/and 12V DC. If you provide both ways, there is going to be a redundant power supplied. Now AVIOTEC has a VdS certification and no EN/FM/UL. This means that there is no standard requiring power supply back up for AVIOTEC. If you connect AVIOTEC via the relay to the fire panel and include it into the fire concept, make sure to define the power supply backup there.

Question: What type of wire do I need to connect the camera (fire resistant? Regular UTP?)?

Answer: In Regarding cables we do not have any special request. Use the common fire cable for your region.

Question: In case of multiple fires in the area one AVIOTEC is monitoring: Are there any restrictions on the maximum number of fire focus can be detected and generate alarms with only one AVIOTEC?

Answer: AVIOTEC can trigger up to 256 different fire (smoke or flame) events in one field of view.

Question: Is it possible to monitor a trouble signal from the camera by the same relay that we monitor the alarm with?

Answer: Right now, this is not possible.

Question: As the relay only activates on alarm, how do you monitor troubles in the camera (power off, masking, etc)?

Answer: This can only be monitored by watching the video image of the camera-> or the camera is connected via Ethernet to a VMS, a shutdown/reboot (watchdog) from the camera would be detected by the VMS.

Question: If the flame is not fully visible, is AVIOTEC able to detect the flame?

Answer: AVIOTEC can detect a flame which has a size of 1,1% of the pixels from the field of view. The flame also needs to have a stable flame core and flickering to be detected by AVIOTEC. If the flame is half covered, it will need longer to be detected by AVIOTEC because it needs to develop longer. Nevertheless, as soon as the size is reached and the criteria are fitting, AVIOTEC will detect the flames.

Invisible flames cannot be detected -> no colour, no flame core, only flickering which is hard to see also for the camera. AVIOTEC is an optical detection and not based on IR/UV.

Question: Which verticals are interesting because of the newest AVIOTEC FW version 7.72 with 0 lux possibility?

Answer: With the newest FW version applications get interesting where an invisible detection is necessary (without visible light). Also, applications where no redundant light can/ shall be installed – the IR illumination is less power consumption and ensures fire detection until the light is repaired.

Question: For day and night: Is there a separate configuration necessary?

Answer: No, the settings set for a profile are active day and night. If you want to have different settings for different modes: you can configure different time depending profiles

Question: Which IR illuminators can be used for the 0 lux applications?

Answer: IR illuminators having different wavelengths. For AVIOTEC 850nm as well as 940nm are working. Depending on the application itself, the respective range must be chosen. Make sure to test the illumination so that the whole field of view of AVIOTEC is illuminated.

Question: *Is there a possibility to have automatic incident detection in tunnels at the same time with video fire detection?*

Answer: Yes. With AVIOTEC 8 rules for AID can run in parallel to the fire detection.

Question: *How to handle actual installations? Changing the mode to auto or leave it at colour?*

Answer: If IR illumination is already installed in this area the settings can be changed to automatic switch of colour/ monochrome mode. If no IR illumination is installed yet, leave the settings as they are: colour

Question: *How many masks can be set at the same time in one field of view?*

Answer: In total 16 masks can be set for each profile and each field of view of one AVIOTEC