

# FCS-8000-VFD-B Video-based fire detection

## AVIOTEC IP starlight 8000



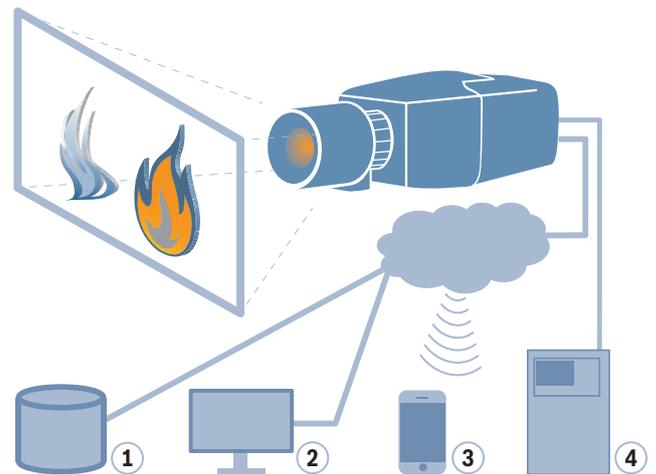
- ▶ Very fast and reliable fire and smoke detection
- ▶ Robust against false alarms
- ▶ Covers large monitoring area
- ▶ Outstanding performance under low-light conditions
- ▶ Resolution 1080p

AVIOTEC IP starlight 8000 sets new standards in visual fire detection by combining reliable smoke and flame detection with outstanding speed.

### System overview

The video-based fire detection is the system of choice when reliable video motion and fire detection is needed, e.g. applications which are not subjected to construction product regulation or a supplementation to existing fire detection systems. AVIOTEC IP starlight 8000 operates as stand-alone unit and doesn't need a separate evaluation unit. Furthermore, it contains all features of the Intelligent Video Analytics which allows analyzing and evaluating moving objects in parallel. Video-based fire detection and Intelligent Video Analytics operate independently from each other and are separately adjustable.

A 10/100 Base-T Fast Ethernet port on the back part of the device is available to connect the camera to Ethernet. This allows easy configuration and monitoring through network devices such as Client PCs or mobile devices. A video recording management system may be integrated optionally. Furthermore, there is a relay output to transmit alarm signals, e.g. to the AVENAR panel. In this case the camera acts as supervisory signal-initiating device. Alarms have to be verified by an operator in a monitoring center owing to non-existing standards. Automatic alarm-forwarding to fire services is not provided.



Pos.	Description
1	Video Recording Manager (VRM)
2	Client PC
3	Mobile Device
4	AVENAR panel

### Functions

#### Fast and reliable flame and smoke detection

A unique Bosch algorithm based on physical characteristics of fires detects flames and smoke within an incredibly short time span by analyzing video sequences. The video-based fire detection

works under remarkable low-light performance (down to 2 lx) and detects test fires TF1 to TF8. In case of flame or smoke detection the video broadcast has the advantage to verify the alarm, speed up the rescue chain and give insights to rescue teams.

**Monitoring large areas**

Insensitive to dust and humidity thanks to the optical principle, it is possible to monitor large indoor and sheltered outdoor areas that push conventional systems to their limits. AVIOTEC IP starlight 8000 is the innovative solution for:

- Industry
- Transportation
- Energy & Utilities
- Warehouses

**Large application range**

The video-based fire detection is suitable for a range of challenging applications in harsh environments with a high fire hazard like paper mills. Highly versatile in application, AVIOTEC IP starlight 8000 offers the possibility to complement existing systems or to tap into new application fields.

**Individually adjustable and adaptable**

Verification time, sensitivity, detection size and selective masking for smoke and flame are individually configurable to adjust them to the customer needs. Flame and smoke detection can be activated or deactivated separately.

**Root cause analysis**

Connecting the camera to a video management system offers the possibility to find out the cause of fires. Based on video recordings, incidents can carefully be established and evaluated. This helps eliminating and preventing hazardous situations in the future.

**Easy installation**

Power for the camera can be supplied via a Power-over-Ethernet compliant network cable connection. With this configuration, only a single cable connection is required to view, power, and control the camera. Using PoE makes installation easier and more cost-effective, as cameras do not require a local power source.

The camera can also be supplied with power from +12 VDC power supplies. To increase system reliability, the camera can be simultaneously connected to both PoE and +12 VDC supplies. Additionally, uninterruptible power supplies (UPS) can be used to ensure continuous operation, even during a power failure.

For trouble-free network cabling, the camera supports Auto-MDIX which allows the use of straight or cross-over cables.

**Regulatory information**

Standards	Type
Emission	EN 55022 Class B (2010), +AC (2011) FCC: 47 CFR 15, class B (2012-10-1)
Immunity	EN 50130-4 (PoE, +12 VDC)* (2011) EN 50121-4 (2006), +AC: (2008)
Alarm	EN 50130-5 Class II (2011)
Safety	EN 60950-1 UL 60950-1 (2nd edition) CAN/CSA-C 22.2 No. 60950-1
Vibration	Camera with 500 g (1.1 lb) lens as per IEC 60068-2-6 (5 m/s <sup>2</sup> , operational)
HD	SMPTE 296M-2001 (Resolution: 1280x720) SMPTE 274M-2008 (Resolution: 1920x1080)
Color representation	ITU-R BT.709
ONVIF conformance	EN 50132-5-2; IEC 62676-2-3

\* Chapters 7 and 8 (mains voltage supply requirement) are not applicable to the camera. However, if the system in which this camera is used needs to comply with this standard, then any power supplies used must comply with this standard.

VdS certification only valid with the supplied lens.

Region	Regulatory compliance/quality marks	
Europe	CE	FCS-8000-VFD-B
USA	FCC	FCS-8000-VFD-B
Germany	VdS	G 217090 AVIOTEC IP starlight 8000
Australia	CSIRO	afp-3323 AVIOTEC IP starlight 8000
Morocco	CMIM	FCS-8000-VFD-B
Macao Special Administrative Region Government	CB	0851/GEL/DPI/2020

**Installation/configuration notes**

**Disclaimer**

**IMPORTANT:** Video fire indication systems are video content analysis systems. They give indications for possible fires and are designed to supplement fire detection systems and human guards in monitoring centers in order to recognize possible dangerous situations.

Video fire indication systems are confronted with a higher amount of challenges considering scenery and background compared to conventional fire detection

systems. They cannot ensure that fire will be detected reliably in all scenery settings. Thus, the video fire detection system shall be seen as a support system that enhances the probability of early fire detection, with the restriction that it shall not be seen as a system that ensures fire detection in all possible image scenarios and it might detect false alarms. Conventional fire alarm systems must in no way be replaced by video-based fire alarm systems.

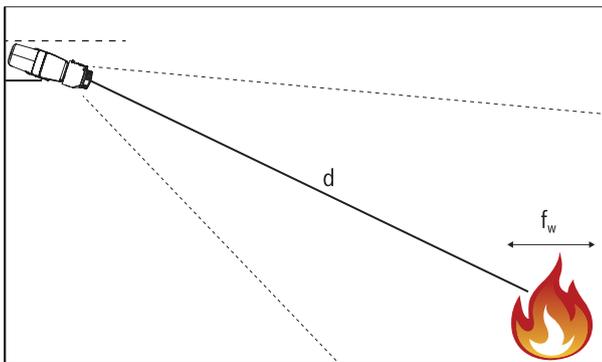
In addition, and for the U.S. market only, Bosch Security Systems makes no representation that the video fire indication system will prevent any personal injury or property loss by fire or otherwise; or that such product will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained fire indication system may only reduce the risk of a fire or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result.

**Consequently, Bosch Security Systems shall have no liability for any personal injury, property damage or other loss based on a claim the product failed to give warning.**

**i Notice**

The system is developed for areas with white illumination (warm white 3000 K - daylight white 5600 K). In case of different illumination it might be necessary to use the Expert mode to ensure the flame detection. Fire detection must be tested to evaluate proper functionality of the system with the used illumination.

The camera must be mounted according to the following graphic:



d	Distance to fire
f <sub>w</sub>	Flame width

The maximum distance to fire depends on f<sub>w</sub> and the lens settings.

The tables below demonstrate exemplarily the maximum distances to a fire depending on fire size and opening angle of the camera lens:

**Maximum distance to fire in m (Flame detection)**

LVF-5005C-S4109 (standard lens)			
	Opening angle [°]		
	100	60	45
Fire width [m]			
0.3	18.2	27.6	36
0.5	30.4	46.1	60
1	60.9	92.2	120
2	121.9	184.4	240.1

LVF-8008C-P0413			
	Opening angle [°]		
	100	60	33
Fire width [m]			
0.3	18.4	27.6	48.4
0.5	30.7	46	80.7
1	61.5	92.1	161.4
2	123.1	184.3	322.8

**Maximum distance to fire in m (Smoke detection)**

LVF-5005C-S4109 (standard lens)			
	Opening angle [°]		
	100	60	45
Smoke width [m]			
0.3	12.5	19.3	25.2
0.5	21.3	32.2	42
1	42.6	64.5	84
2	85.3	129	168.1

LVF-8008C-P0413			
Opening angle [°]			
	100	60	33
<b>Smoke width [m]</b>			
<b>0.3</b>	12.9	19.3	33.8
<b>0.5</b>	21.5	32.2	56.4
<b>1</b>	43.1	64.5	112.9
<b>2</b>	86.2	129	225.9

Parts included	
Quant-ity	Component
1	AVIOTEC IP starlight 8000
1	Varifocal SR Megapixel Lens (LVF-5005C-S4109   F.01U.297.770)
1	TC9208 bracket (TC9208   F.01U.143.919)

Technical specifications	
Algorithm Overview	
Min. detection size for Smoke, standard setting (% of picture width)	1.6
Smoke speed (% of picture height /s)	0.7 - 16
Min. Smoke density (%)	40
Min. detection size for Flame, standard setting (% of picture width)	1.1
Min. illumination level (lx)	2
Min. illumination level with IR illumination (lx)	0

Audio streaming	
Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 kbps at 16 kHz sampling rate AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB

Audio streaming	
Audio Streaming	Full-duplex / half duplex

Environmental	
Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Storage Temperature	-30°C to +70°C (-22°F to +158°F)
Operating Humidity	20% to 93% RH
Storage Humidity	up to 98% RH

Input/output	
Analog video out	SMB connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm
Audio line in	1 Vrms max, 18 kOhm typical,
Audio line out	0.85 Vrms at 1.5 kOhm typical,
Audio connectors	3.5 mm mono jack
Alarm input	2 inputs
Alarm input activation	+5 VDC nominal; +40 VDC max. (DC-coupled with 50 kOhm pull-up resistor to +3.3 VDC) (< 0.5 V is low; > 1.4 V is high)
Alarm output	1 output
Alarm output voltage	30 VAC or +40 VDC max. Maximum 0.5 A continuous, 10VA (resistive load only)
Ethernet	RJ45
Data port	RS-232/422/485

Local storage	
Internal RAM	10 s pre-alarm recording
Memory card slot	Supports up to 32 GB microSDHC / 2 TB microS-DXC card. (An SD card of Class 6 or higher is recommended for HD recording)
Recording	Continuous recording, ring recording, alarm/ events/schedule recording

Mechanical	
Dimensions (W x H x L)	78 x 66 x 140 mm (3.07 x 2.6 x 5.52 inch) without lens
Weight	855 g (1.88 lb) without lens

<b>Mechanical</b>	
Color	RAL 9006 Metallic Titanium
Tripod Mount	Bottom and top 1/4-inch 20 UNC
Sustainability	PVC free
<b>Network</b>	
Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), Diff-Serv (QoS), LLDP, SOAP, CHAP, digest authentication
Encryption	TLS1.0/1.2, AES128, AES256
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S; ONVIF Profile G
<b>Optical</b>	
Lens mount	CS mount (C-mount with adapter ring)
Lens connector	Standard 4-pin DC-iris connector / P-iris* connector
Focus control	Motorized back-focus adjustment
Iris control	DC-iris and P-iris* control
<b>Power</b>	
Power Supply	12 VDC; Power-over-Ethernet 48 VDC nominal
Current Consumption	750 mA (12 VDC); 200 mA (PoE 48 VDC)
Power Consumption	9 W
PoE	IEEE 802.3af (802.3at Type 1) Class 3
<b>Sensor</b>	
Type	1/1.8" CMOS

<b>Sensor</b>	
Total sensor pixels	6.1 MP
<b>Software</b>	
Unit Configuration	Via web browser or Configuration Manager
Firmware update	Remotely programmable
Software viewer	Web browser, Bosch Video Client, or third party software
<b>Video resolution</b>	
1080p HD	1920 X 1080
720p HD	1280 x 720
Upright 9:16 (cropped)	400 x 720
D1 4:3 (cropped)	704 x 480
480p SD	Encoding: 704 x 480; Displayed: 854 x 480
432p SD	768 x 432
288p SD	512 x 288
240p SD	Encoding: 352 x 240; Displayed: 432 x 240
144p SD	256 x 144
<b>Video streaming</b>	
Video compression	H.264 (MP); M-JPEG
Streaming	Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)
Overall IP Delay	Min. 120 ms, Max. 340 ms
GOP structure	IP, IBP, IBBP
Encoding interval	1 to 30 [25] fps
Encoder regions	Up to 8 areas with encoder quality settings per area
<b>LVF-5005C-S4109</b>	
<b>Maximum sensor format</b>	1/1.8-inch
<b>Optical resolution</b>	5 Megapixels

<b>LVF-5005C-S4109</b>	
<b>Focal length</b>	4.1 - 9 mm
<b>Iris range</b>	F1.6 to F8
<b>Min object distance</b>	0.3 m (1 ft)
<b>Back focus distance</b> (values in air)	12.72 mm (wide), 19.94 mm (tele)
<b>Weight</b>	130 g (0.29 lb)
<b>Dimensions</b>	Ø 62.9 mm (excluding focus and zoom knobs) x 66.6 mm (excluding flange)
<b>Lens mount</b>	CS
<b>Angle of view (HxV)</b> <b>1/1.8-inch sensor 16:9</b>	101 x 56° Wide 46 x 26° Tele
<b>Iris control</b>	4-pin, DC control
<b>Focus ctrl</b>	manual
<b>Zoom ctrl</b>	manual
<b>IR corrected</b>	yes
<b>Environmental</b>	
- Operating Temperature	-10°C to +50°C (+14°F to +122°F)
- Storage Temperature	-40°C to +70°C (-40°F to + 158°F)
- Operating Humidity	Up to 93% non-condensing
- Certification	CE

**LVF-8008C-P0413**

<b>Environmental</b>	
Operating Temperature	-10°C to +50°C (+14°F to +122°F)
Storage Temperature	-40°C to +60°C (-40°F to + 140°F)
Operating Humidity	Up to 90% non-condensing
<b>Angle of view with DINION IP starlight 8000 MP (HxV)</b>	
16:9 mode	Wide: 105x57°; Tele: 33x18.5°

**Angle of view with DINION IP starlight 8000 MP (HxV)**

4:3 mode Wide: 94x70°; Tele: 30x22°

**Mechanical**

Weight 172 g (0.38 lb)

Dimensions Ø 65 x 93 mm

Lens mount CS-mount

**Optical**

Maximum sensor format 1/1.8-inch

Focal range 4 – 13 mm

Iris range F1.5 to close

Min. object distance 0.3 m (1 ft)

Back focus distance 15.24 mm (in air)

Iris control P-iris stepping motor (120 steps)

Focus control Rotational ring and locking screw

Zoom control Rotational ring and locking screw

IR corrected Yes

**Ordering information****FCS-8000-VFD-B Video-based fire detection**

Fast and secure identification of smoke and flames by video-based fire detection.

Order number **FCS-8000-VFD-B****Accessories****UHI-OG-0 Indoor camera housing**

Indoor camera housing

Order number **UHI-OG-0****UHI-OGS-0 Indoor housing with sunshield**

Indoor camera housing with sunshield.

Order number **UHI-OGS-0****UHO-POE-10 POE outdoor housing, heater, blower**

Outdoor camera housing with PoE+ power supply.

Order number **UHO-POE-10****UHO-HBGS-11 Outdoor housing, 24VAC, feed-through**

Outdoor housing for (24 VAC / 12 VDC) camera with 24 VAC power supply, blower and feed-through cabling.

Order number **UHO-HBGS-11****UHO-HBGS-51 Outdoor housing, blower, 230VAC/35W**

Outdoor housing for (230 VAC / 12 VDC) camera with 230 VAC power supply, blower and feed-through cabling.

Order number **UHO-HBGS-51**

**UHO-HBGS-61 Outdoor housing, blower, 120VAC/35W**

Outdoor housing for (120 VAC / 12 VDC) camera.  
120 VAC power supply; blower; feed-through cabling  
Order number **UHO-HBGS-61**

**HAC-TAMP01 Tamper switch kit for UHI/UHO Series**

Tamper switch kit for HSG and UHI/UHO series enclosures  
Order number **HAC-TAMP01**

**LTC 9215/00 Wall mount with cable feed through, 12"**

Wall mount for camera housing, cable feed-through, 30 cm (12 in); for outdoor use.  
Order number **LTC 9215/00**

**LTC 9215/00S Wall mount for UHI/UHO**

Wall mount for camera housing, cable feed-through, 18 cm (7 in); for indoor use.  
Order number **LTC 9215/00S**

**LTC 9219/01 Feed through J mount**

J-mount for camera housing, 40 cm (15 in); for indoor use.  
Order number **LTC 9219/01**

**LVF-8008C-P0413 Varifocal lens, 4-13mm, 12MP, CS mount**

Varifocal megapixel lens; P-iris; CS-mount; 1/1.8" ; F1.5; 4-13mm  
Order number **LVF-8008C-P0413**

**IIR-50850-SR Illuminator, 850nm, short range**

Short range IR illuminator  
850 nm  
Order number **IIR-50850-SR**

**IIR-50940-SR Illuminator, 940nm, short range**

Short range IR illuminator  
940 nm  
Order number **IIR-50940-SR**

**IIR-50850-MR Illuminator, 850nm, medium range**

Medium range IR illuminator  
850 nm  
Order number **IIR-50850-MR**

**IIR-50940-MR Illuminator, 940nm, medium range**

Medium range IR illuminator  
940 nm  
Order number **IIR-50940-MR**

**IIR-50850-LR Illuminator, 850nm, long range**

Long range IR illuminator  
850 nm  
Order number **IIR-50850-LR**

**IIR-50940-LR Illuminator, 940nm, long range**

Long range IR illuminator  
940 nm  
Order number **IIR-50940-LR**

**IIR-50850-XR Illuminator, 850nm, extra range**

Extra long range IR illuminator  
850 nm  
Order number **IIR-50850-XR**

**IIR-50940-XR Illuminator, 940nm, extra range**

Extra long range IR illuminator  
940 nm  
Order number **IIR-50940-XR**

**NIR-50850-MRP Illuminator, 850nm, medium range, PoE+**

Medium range IR illuminator powered by PoE+  
850 nm  
Order number **NIR-50850-MRP**

**NIR-50940-MRP Illuminator, 940nm, medium range, PoE+**

Medium range IR illuminator powered by PoE+  
940 nm  
Order number **NIR-50940-MRP**

**Services****EWE-AVIOTEC-IW 12 mths wrty ext Aviotec starlight 8000**

12 months warranty extension  
Order number **EWE-AVIOTEC-IW**

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