FLEXIDOME IP starlight 7000 VR

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BOSCH
Invented for life

▶ Excellent low-light performance

▶ Built-in Intelligent Video Analytics to trigger relevant alerts and quickly retrieve data

▶ Intelligent Dynamic Noise Reduction reduces bandwidth and storage requirements by up to 50%

▶ Extended Dynamic Range mode to see details in bright and dark areas simultaneously

▶ Easy to install with auto zoom/focus SR lens, wizard and pre-configured modes

This camera provides clear images 24/7 – even at night or under low-light conditions.
The exceptional starlight sensitivity enables this camera to work with a minimum of ambient light. The extended dynamic mode provides detailed images in scenes with challenging lighting.
The camera is available in 1080p or 720p resolution versions and provides up to 60 images per second.
The aesthetic vandal-resistant housing makes the camera suitable for indoor or outdoor installation.

Functions

Exceptional low-light performance
The latest sensor technology combined with the sophisticated noise suppression results in an exceptional sensitivity in color. The low-light performance is so good that the camera continues to provide excellent color performance even with a minimum of ambient light.

Fast performance
The 60 images-per-second mode provides for optimum performance in fast action scenes and is particularly suitable for casino and banking applications.

Extended dynamic range mode
The extended dynamic range mode is based on a multiple-exposure process that captures more details in the highlights and in the shadows even in the same scene. The result is that you can easily distinguish objects and features, for example, faces with bright backlight.
The actual dynamic range of the camera is measured using Opto-Electronic Conversion Function (OECF) analysis according to IEC 62676 Part 5. This method is used to provide a standard result which can be used to compare different cameras.

Content Based Imaging Technology
Content Based Imaging Technology (CBIT) is used to radically improve image quality in all lighting conditions and to identify areas for enhanced processing. The camera examines the scene using Intelligent Video Analytics and provides feedback to re-tune the image processing. This provides better detail in the areas that matter and better all-round performance. With IVA, the Intelligent Auto Exposure technology, for example, allows you to view moving objects in bright and dark areas of a scene.

Intelligent Video Analytics

The built-in video analytics is both robust and intelligent. The Intelligence-at-the-Edge concept now delivers even more powerful features:

- Simple calibration
- False alarm reduction
- Extended range identification
- Crowd and queue management
- Density and flow counting

The mission critical video analytics reliably detects, tracks, and analyzes objects, and alerts you when predefined alarms are triggered. A smart set of alarm rules, together with object filters and tracking modes, makes complex tasks easy.

The system is also extremely robust and is able to reduce false alarms, for example from foliage or shaking objects, even in harsh weather conditions. Metadata is attached to your video to add sense and structure. This enables you to quickly retrieve the relevant images from hours of stored video. Metadata can also be used to deliver irrefutable forensic evidence or to optimize business processes based on people counting or crowd density information.

Calibration is quick and easy – just enter the height of the camera. The internal gyro/accelerometer sensor provides the rest of the information to precisely calibrate the video analytics.

Intelligent Dynamic Noise Reduction reduces bandwidth and storage requirements

The camera uses Intelligent Dynamic Noise Reduction which actively analyzes the contents of a scene and reduces noise artifacts accordingly.

The low-noise image and the efficient H.264 compression technology provide clear images while reducing bandwidth and storage by up to 50% compared to other H.264 cameras. This results in reduced-bandwidth streams that still retain a high image quality and smooth motion. The camera provides the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio.

Area-based encoding

Area-based encoding is another feature which reduces bandwidth. Compression parameters for up to eight user-definable regions can be set. This allows uninteresting regions to be highly compressed, leaving more bandwidth for important parts of the scene.

Bitrate optimized profile

The average typical optimized bandwidth in kbits/s for various image rates is shown in the table:

IPS	1080p	720p	480p
60	1900	1400	722
30	1600	1200	600
15	1274	955	478
12	1169	877	438
5	757	568	284
2	326	245	122

Multiple streams

The innovative multi-streaming feature delivers various H.264 streams together with an M-JPEG stream. These streams facilitate bandwidth-efficient viewing and recording as well as integration with third-party video management systems.

Depending on the resolution and frame rate selected for the first stream, the second stream provides a copy of the first stream or a lower resolution stream.

The third stream uses the I-frames of the first stream for recording; the fourth stream shows a JPEG image at a maximum of 10 Mbit/s.

Regions of interest and E-PTZ

Regions of Interest (ROI) can be user defined. The remote E-PTZ (Electronic Pan, Tilt and Zoom) controls allow you to select specific areas of the parent image. These regions produce separate streams for remote viewing and recording. These streams, together with the main stream, allow the operator to separately monitor the most interesting part of a scene while still retaining situational awareness.

Intelligent Tracking can follow objects within the defined regions of interest. Intelligent Tracking can autonomously detect and track moving objects or the user can click on an object which the tracker will then follow.

Storage management

Recording management can be controlled by the Bosch Video Recording Manager (VRM) or the camera can use iSCSI targets directly without any recording software.

Edge recording

Insert a memory card into the card slot to store up to 2 TB of local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, and extends the effective life of the memory card.

Cloud-based services

The camera supports time-based or alarm-based JPEG posting to four different accounts. These accounts can address FTP servers or cloud-based storage facilities (for example, Dropbox). Video clips or JPEG images can also be exported to these accounts.

Alarms can be set up to trigger an e-mail or SMS notification so you are always aware of abnormal events.

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. If one power source fails, the other source takes over without a reboot so providing power redundancy.

The automatic zoom/focus lens wizard makes it easy for an installer to accurately zoom and focus the camera for both day and night operation. The wizard is activated from the PC or from the on-board camera push button making it easy to choose the workflow that suits best.

The AVF (Automatic Varifocal) feature means that the zoom can be changed without opening the camera. The automatic motorized zoom/focus adjustment with 1:1 pixel mapping ensures the camera is always accurately focused.

Automatic image rotation

The integrated gyro/accelerometer sensor automatically corrects the image orientation in steps of 90° if the camera is mounted at right angles or upside down. The sensor image can also be rotated manually through steps of 90°.

To efficiently capture details in long hallways without loss of resolution, mount the camera at right angles. The image is displayed upright at full resolution on your monitor.

Scene modes

The camera has a very intuitive user interface that allows fast and easy configuration. Nine configurable modes are provided with the best settings for a variety of applications. Different scene modes can be selected for day or night situations.

Hybrid operation

A surge-protected analog video output allows full hybrid operation. This means that high resolution IP video streaming and an analog video output are available simultaneously. The hybrid functionality offers an easy migration path from legacy CCTV to a modern IP-based system.

Aesthetic vandal resistant design

The compact aesthetic design is suitable for installations where housing size and appearance are important. The cast-aluminum housing, polycarbonate window, and hardened inner liner can withstand the equivalent of 55 kg (120 lbs) of force (IK10). The camera is also protected against water and dust. Using the proprietary pan/tilt/rotation mechanism, installers can select the exact field of view. Mounting options are numerous, including surface, wall, corner, and suspended-ceiling mounting.

True day/night switching

The camera is a true day/night camera with a mechanical filter for vivid daytime color and exceptional night-time imaging while maintaining sharp focus under all lighting conditions. The filter can be switched remotely, or automatically via a light level sensor or contact input.

Data security

Special measures have been put in place to ensure the highest level of security for device access and data transport. The three-level password protection with security recommendations allows users to customize device access. Web browser access can be protected using HTTPS and firmware updates can also be protected with authenticated secure uploads.

The on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support, guarantee superior protection from malicious attacks. The 802.1x network authentication with EAP/TLS, supports TLS 1.2 with updated cipher suites including AES 256 encryption.

The advanced certificate handling offers:

- Self-signed unique certificates automatically created when required
- Client and server certificates for authentication
- Client certificates for proof of authenticity
- Certificates with encrypted private keys

Complete viewing software

There are many ways to access the camera's features: using a web browser, with the Bosch Video Management System, with the free-of-charge Bosch Video Client or Video Security Client, with the video security mobile app, or via third-party software.

Video security app

The Bosch video security mobile app has been developed to enable Anywhere access to HD surveillance images allowing you to view live images from any location. The app is designed to give you complete control of all your cameras, from panning and tilting to zoom and focus functions. It's like taking your control room with you.

This app, together with the separately available Bosch transcoder, will allow you to fully utilize our dynamic transcoding features so you can play back images even over low-bandwidth connections.

System integration

The camera conforms to the ONVIF Profile S, ONVIF Profile Q and ONVIF Profile G specifications. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer.

Third-party integrators can easily access the internal feature set of the camera for integration into large projects. Visit the Bosch Integration Partner Program (IPP) website (ipp.boschsecurity.com) for more information.

Certifications and approvals

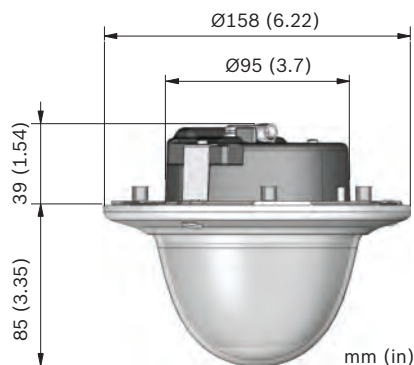| Standards	
Emission	EN 55032:2012 /AC2013 class B EN 50121-4:2006 /AC:2008 FCC: 47CFR15, class B (2015-10-1)
Immunity	EN 50130-4:2011 /A12014 (PoE, +12VDC)* EN 50121-4:2006 /AC:2008
Environmental	EN 50130-5:2011 Class IV
Safety	EN 62368-1:2014/AC:2015 EN 60950-1:2006 /A11:2009 /A1:2010 / A12:2011 /A2:2013 UL 62368-1, Ed. 2, Dec 1st, 2014 UL 60950-1, Ed. 2, October 14, 2014 CAN/CSA-C22.2 No. 62368-1 CAN/CSA-C22.2 No. 60950-1
HD	SMPTE 296M-2001 (Resolution: 1280x720) SMPTE 274M-2008 (Resolution: 1920x1080)
Color representation	ITU-R BT.709-6
ONVIF conformance	EN 50132-5-2:2011/AC:2012 EN 62676-2-3:2014

* 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.

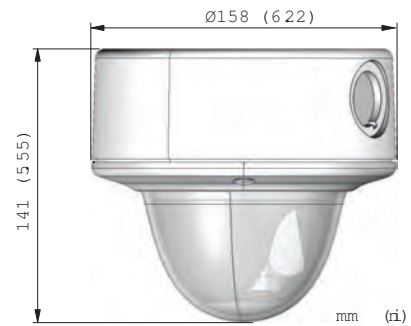| Marks	CE, cULus, WEEE, PADS, RCM, EAC and China RoHS

Region	Certification
Europe	CE
USA	UL

Installation/configuration notes

Dimensions flush mounting

Ø158 (6.22)
Ø95 (3.7)
39 (1.54)
85 (3.35)
mm (in)

Dimensions surface mounting

Ø158 (622)
141 (555)
mm (ri)

Technical specifications

Power	
Input voltage	Power-over-Ethernet (48 VDC nominal) and/ or +12 VDC ±10% (auxiliary)
PoE IEEE standard	802.3af (802.3at Type 1) Power level: Class 3
Power Consumption	7.2 W max.
Current draw (PoE)	200 mA max.
Current draw (12 VDC)	600 mA max.

Sensor (1080p version)	
Sensor type	1/2.8-inch CMOS
Effective pixels	1920 (H) x 1080 (V); 2MP (approx.)

Sensor (720p version)	
Sensor type	1/2.8-inch CMOS
Effective pixels	1280 (H) x 720 (V)

Starlight sensitivity	
(3100K, reflectivity 89%, 1/25, F1.4, 30IRE)	
Color	0.0075 lx
Mono	0.0011 lx

Dynamic range – HDR mode	
High Dynamic Range (10-bit, 3x exposure)	120 dB WDR
Measured according to IEC 62676 Part 5	110 dB WDR

Video streaming

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)
Camera processing latency	<55 ms (1080p60)
GOP structure	IP, IBP, IBBP
Encoding interval	1 to 50 [60] ips

Video resolution (H x V)

1080p HD	1920 x 1080 (1080p version only)
Upright mode 1080p	1080 x 1920 (1080p version only)
1.3 MP (4:3)	1280 x 960 (1080p version only)
720p HD	1280 x 720
Upright mode 720p	720 x 1280
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

Camera installation

Application variant	Starlight mode (default) / HDR - extended dynamic mode
Base frame rate	25/30/50/60 fps (PAL/NTSC for analog output)
Mirror image	On / Off
Flip image	On / Off
Rotate	0° / 90° / 180° / 270°
Camera LED	Enable/disable
Analog output	Off, 4:3 letterbox, 4:3 crop, 16:9
Positioning	Coordinates / Mounting height
Lens wizard	Autofocus, remote zoom

Video functions - color

Adjustable picture settings	Contrast, Saturation, Brightness
White Balance	2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium vapor, Dominant color), Manual mode and Hold mode

Video functions - ALC

ALC level	Adjustable
Saturation	Adjustable from peak to average
Shutter	Automatic Electronic Shutter (AES); Fixed shutter (1/25[30] to 1/15000) selectable; Default shutter
Day/Night	Auto (adjustable switch points), Color, Monochrome

Video functions - enhance

Sharpness	Sharpness enhancement level selectable
Backlight compensation	On/off
Contrast enhancement	On/off
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Intelligent defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)

Video content analysis

Analysis type	Intelligent Video Analytics (IVA)
Configurations	Silent VCA / Profile1/2 / Scheduled / Event triggered
Alarm rules (combinable)	Any object Object in field Line crossing Enter / leave field Loitering Follow route Idle / removed object Counting Occupancy Crowd density estimation Condition change Similarity search Flow / counter flow

Video content analysis

Object filters	Duration Size Aspect ratio Speed Direction Color Object classes (4)
Tracking modes	Standard (2D) tracking 3D tracking 3D people tracking Ship tracking Museum mode
Calibration / Geolocation	Automatic based on gyro / accelerometer data and camera height
Tamper detection	Maskable
Detection	Audio; Face

Additional functions

Scene modes	Nine default modes, Scheduler
Privacy Masking	Eight independent areas, fully programmable
Video authentication	Off / Watermark / MD5 / SHA-1 / SHA-256
Display stamping	Name; Logo; Time; Alarm message
Pixel counter	Selectable area
Camera rotation	Automatic detection with manual override (90º)

Local storage

Internal RAM	60 s pre-alarm recording
Memory card slot	Supports up to 32 GB microSDHC / 2 TB microSDXC card. (A memory card of Class 6 or higher is recommended for HD recording)
Recording	Continuous recording, ring recording. alarm/events/schedule recording

Input/output

Analog Video out	CVBS (PAL/NTSC), 1 Vpp, BNC, 75 Ohm (surge protected)
Audio signal line in	10 kOhm typical;, 1 Vrms max
Audio signal line out	1 Vrms; 1.5 kOhm typical
Alarm input (x2) activation voltage	+5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)
Alarm output voltage	30 VAC or +40 VDC Maximum 0.5 A continuous, 10VA

Audio streaming

Standard	G.711, 8 kHz sampling rate

Audio streaming

	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	Full-duplex / half duplex

Software

Unit discovery	IP Helper
Unit configuration	Via web browser or Configuration Manager
Firmware update	Remotely programmable
Software viewing	Web browser; Video Security Client; Video Security App; Bosch Video Management System; Bosch Video Client; or third party software
Latest firmware and software	http://downloadstore.boschsecurity.com/

Network

Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication
Encryption	TLS 1.2, SSL, DES, 3DES
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S; GB/T 28181

Optical

Lens	3 to 9 mm Automatic Varifocal (AVF) SR lens (IR corrected) - or – 10 to 23 mm Automatic Varifocal (AVF) SR lens (IR corrected)
Lens mount	Board mounted
Adjustment	Motorized zoom/focus
Iris control	Automatic iris control
Viewing angle (3 to 9 mm)	Wide: 117º x 59º (H x V) Tele: 37º x 21º (H x V)
Viewing angle (10 to 23 mm)	Wide: 32º x 18º (H x V) Tele: 14.4º x 8.1º (H x V)

Mechanical

Dimensions (D x H)	158 x 124 mm (6.22 x 4.89 in)
Weight	0.85 kg (1.87 lb) 1.28 kg (2.82 lb) with SMB
Mounting	Flush mount or surface mount
Color	White (RAL9010) trim ring with black inner liner
Adjustment range	360º pan, 90º tilt, ±90º twist
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Trim ring	Aluminum

Environmental

Operating temperature	-30 ºC to +50 ºC (-22 ºF to +122 ºF) for continuous operation; -34 ºC to +74 ºC (-30 ºF to +165 ºF) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Cold start temperature	-20 ºC (-4 ºF)
Storage temperature	-50 ºC to +70 ºC (-58 ºF to +158 ºF)
Operating humidity	5% to 93% relative humidity
Storage humidity	Up to 98% relative humidity
Impact protection	IK10
Water/dust protection	IP 66 and NEMA Type 4X (with appropriate installation standards)

Ordering information

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
720p
3 to 9 mm SR lens
Order number **NIN-73013-A3A**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
720p
3 to 9 mm SR lens
Surface mount box
Order number **NIN-73013-A3AS**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
720p
10 to 23 mm SR lens
Order number **NIN-73013-A10A**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
720p
10 to 23 mm SR lens
Surface mount box
Order number **NIN-73013-A10AS**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
1080p
3 to 9 mm SR lens
Order number **NIN-73023-A3A**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
1080p
3 to 9 mm SR lens
Surface mount box
Order number **NIN-73023-A3AS**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
1080p
10 to 23 mm SR lens
Order number **NIN-73023-A10A**

FLEXIDOME IP starlight 7000 VR
High-performance IP dome camera for IVA-optimized, mission critical, HD surveillance in low light and with hybrid IP/analog operation.
1080p
10 to 23 mm SR lens
Surface mount box
Order number **NIN-73023-A10AS**

Accessories

VDA-WMT-DOME Dome Wall Mount
Sturdy wall mount bracket for dome cameras (Ø158)
Order number **VDA-WMT-DOME**

VDA-CMT-PTZDOME Corner Mount Adapter
Corner (270°) mount adapter for use with the appropriate wall mount
Order number **VDA-CMT-PTZDOME**

VDA-CMT-DOME Corner Mount
Sturdy bracket for mounting dome cameras (Ø158 mm) in a 90° corner
Order number **VDA-CMT-DOME**

LTC 9213/01 Pole Mount Adapter
Flexible pole mount adapter for camera mounts (use together with the appropriate wall mount bracket). Max. 9 kg (20 lb); 3 to 15 inch diameter pole; stainless steel straps
Order number **LTC 9213/01**

VDA-PLEN-DOME In-ceiling Housing for Plenums
In-ceiling housing for plenums kit for several series of Bosch dome cameras
Order number **VDA-PLEN-DOME**

VGA-IC-SP In-ceiling Support Kit
Suspended ceiling support kit for dome cameras. Aperture Ø177 mm (Ø7 in); maximum supported weight 11.3 kg (25 lb)
Order number **VGA-IC-SP**

VDA-455TBL Tinted bubble
Tinted bubble for FlexiDome series
Order number **VDA-455TBL**

VDA-455CBL Clear bubble
Clear Bubble for FlexiDome series
Order number **VDA-455CBL**

NPD-5001-POE Midspan PoE Injector
Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
Order number **NPD-5001-POE**

NPD-5004-POE Midspan PoE Injector
Power-over-Ethernet midspan injectors for use with PoE enabled cameras; 15.4 W, 4-ports
Order number **NPD-5004-POE**

NIN-DMY Dummy Camera
FLEXIDOME VR family dummy camera
Order number **NIN-DMY**

VIDEOJET XTC XF Video Transcoder
High-performance video transcoder. H.264; CF card slot; ROI; max resolution 1080p; 2 channels
Order number **VJT-XTCXF**

S1460 Service/Monitor Cable
2.5 mm jack to BNC video connector cable. 1 m
Order number **S1460**

VDA-455SMB-IP Surface Mount Box
Surface Mount Box for dome cameras; IP version
Order number **VDA-455SMB-IP**

VDA-PMT-DOME Pipe Mount
Sturdy pipe mount bracket for dome cameras (Ø158 mm)
Order number **VDA-PMT-DOME**