DINION IP starlight 7000 KIT

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BOSCH
Invented for life

- Stylish and sturdy housing (IP66; NEMA 4x)
- Excellent low-light performance (0.017 lx in color)
- Intelligent noise reduction reduces bandwidth and storage requirements by up to 50%
- Outstanding wide dynamic range (100 dB with IAE)
- Auto back focus for fast installation

These pre-packaged camera kits are complete surveillance systems that are quick and easy to install thanks to their plug-and-play design. Each kit includes a housing with a factory-installed high-performance DINION camera and varifocal lens, plus a swivel mount.

The DINION IP starlight 7000 HD camera provides clear images 24/7 – even at night or under low-light conditions.

High sensitivity in color (0.017 lx) and monochrome mode (0.0057 lx) enables this camera to work with a minimum of ambient light. This exceptional light sensitivity combined with Content-Based Imaging Technology (C-BIT) ensures crisp, clear, detailed images in all lighting conditions. The camera can also provide up to 60 images per second.

System overview

Compared to SD cameras, the DINION IP starlight 7000 HD offers, at no higher cost, motorized autofocus, higher resolution, better sensitivity, higher frame rates, and improved picture quality, and is still more bandwidth-efficient. Video storage costs are significantly reduced.

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.

Functions

Secure and easily-installed
The sleek and sturdy housing design meets IP66 and NEMA 4X enclosure standards to protect your video surveillance equipment from adverse elements. A built-in heater and fan keep the internal temperature of the housing within the specified operating temperatures. A permanent low-power window defroster keeps the housing window clear in high humidity and icy condition. A sunshield is fitted to the top of the housing. Tamper-resistant screws for the locking clasps prevent illegitimate access to the housing contents. The supplied mounting bracket has a swivel and tilt head for maximum mounting flexibility. User connections for power, ethernet and/or telemetry can be routed through seal-tight fittings in the rear or in the foot of the housing.

The unique, hinged, side-opening design in the housing provides easy access to the camera/lens controls when the kit is mounted. The auto-focus lens wizard makes it easy for an installer to accurately focus the camera for both day and night operation. The wizard is activated from the web browser or from the on-board camera push button making it easy to choose the workflow that suits best. The automatic motorized back focus adjustment with 1:1 pixel mapping ensures the camera is always focused accurately.

Power failover
To increase power reliability, the camera can be simultaneously connected to both Power-over-Ethernet (PoE) and the housing power supply. If the housing power supply fails and PoE is available, the camera switches seamlessly to the PoE power input. This ensures the camera remains operational during a local power supply failure. After the housing power supply is restored, the camera switches back to the housing power input.

Pre-wired
For easy connection, some kit models have a 1.5 m (5 ft) power cable pre-wired through a seal-tight cable gland in the housing foot. An ethernet cable and other cables can be later fed through a second fitting in the foot, or through fittings in the rear of the housing.

Exceptional low-light performance
The latest sensor technology combined with the sophisticated noise suppression results in a sensitivity of 0.017 lx 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.
The camera is a true day/night camera with a mechanical filter for truly outstanding nighttime performance (0.0057 lx in monochrome). The filter can be switched remotely, or automatically via a light level sensor or contact input.

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 Analysis (IVA) 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 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. The average typical optimized bandwidth in kbits/s for various image rates is shown in the table:

IPS	720p	480p
60	1400	
30	1163	600
15	926	478
12	850	438
5	550	284
2	237	122

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.

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.
An upright mode can be selected for the second stream. In this mode an image of 400 x 720 (9:16 aspect ratio) is cropped from the full sensor image. When the scene to be monitored is suitable to this mode, the bandwidth and storage requirements are reduced.

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.
With IVA, 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.

Simple set-up
The camera has a very intuitive user interface that allows fast and easy configuration. Six configurable user modes are provided with the best settings for a variety of applications:
- **Indoor** – general day-to-night changes without sun highlights and street lighting
- **Outdoor** – general day-to-night changes with sun highlights and street lighting
- **Motion** – monitoring traffic or fast moving objects; motion artifacts are minimized
- **Lowlight** – optimized for sufficient details at low light.
- **Intelligent AE** – for people moving in front of a bright background
- **Vibrant** – enhanced contrast, sharpness and saturation

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
The MicroSD card slot supports up to 2 TB of storage capacity. A microSD card can be used for local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, or — if microSD card recording is used — extends the effective life of the storage medium.

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.

Video analytics
With built-in video content analysis, the camera reinforces the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent.
The latest generation of the Bosch Intelligent Video Analysis (IVA) software is the guard-assistant system of choice when reliable indoor or outdoor video analytics is needed. The state-of-the-art system reliably detects, tracks, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image.
The face detection feature detects faces in the scene and forwards a high quality JPEG image of the best shot of each face when the face disappears from the scene.
Retrospective forensic search capabilities are available remotely from the web browser or the Bosch Video Client.

Access security
Password protection with three levels and 802.1x authentication is supported. To secure Web browser access, use HTTPS with a SSL certificate stored in the camera. The video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional encryption site license.

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, 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 specification. This 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.

True day/night switching
The camera incorporates mechanical filter technology for vivid daytime color and exceptional night-time imaging while maintaining sharp focus under all lighting conditions.

Lens options
Two super resolution megapixel lens versions are available for the housing kits:
- One with a 9-40 mm IR-corrected varifocal lens
- One with a 3.8-13 mm varifocal lens

Certifications and approvals

HD standards
Complies with the 296M-2001 Standard in:
- – Resolution: 1280x720
- – Scan: Progressive
- – Color representation: complies with ITU-R BT.709
- – Aspect ratio: 16:9
- – Frame rate: 50 and 60 frames/s

Standards

Emission	EN55022 Class B FCC Part 15, class B
Immunity	EN50130-4 (PoE, +12 VDC, 24 VAC)* EN50121-4
Safety	EN60950-1 UL60950-1 (2nd edition) CAN/CSA-C 22.2 No. 60950-1
Vibration	Camera with lens as per IEC60068-2-6 (5 m/s^2, operational)
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,

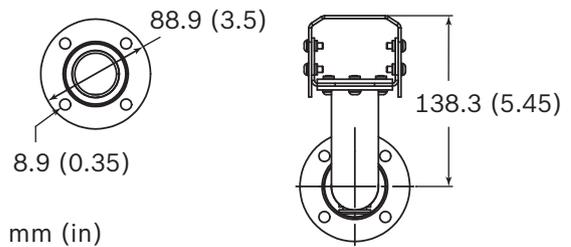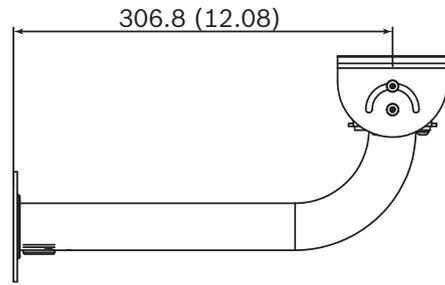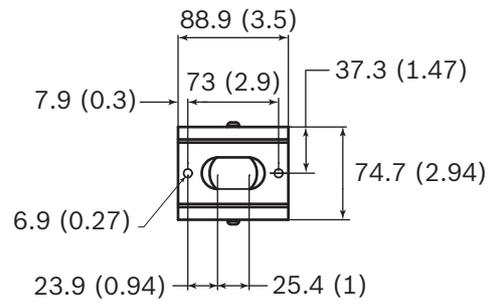then any power supplies used must comply with this standard.

Region	Certification
Europe	CE
USA	UL
Canada	ULC

Installation/configuration notes

Housing dimensions
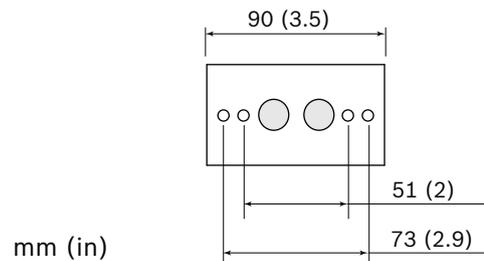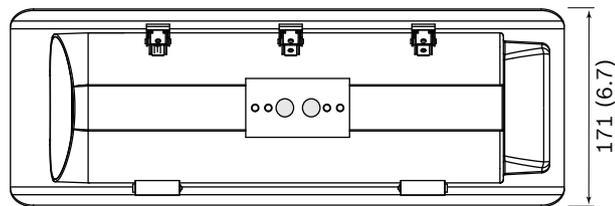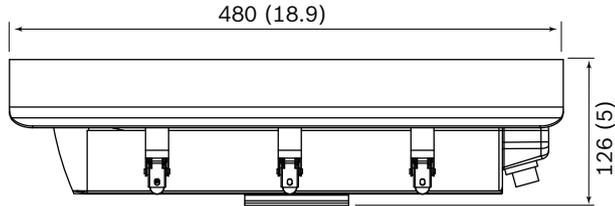
mm (in)

Mount dimensions

mm (in)

Camera controls
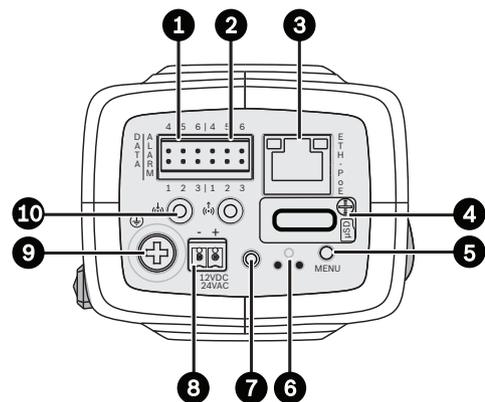
1	Data (RS485/422/232)	6	Reset button
2	Alarm in, relay out	7	Video out
3	10/100 Base-T Fast Ethernet	8	Power supply input
4	MicroSD card slot	9	Earth
5	Menu button	10	Audio in / Audio out

Parts included

	Item
1x	Housing (including built-in camera and lens, sunshield, heater and blower)
1x	Wall mount
1x	Documentation set
1x	Cable mounting package
1x	Identification labels

Technical specifications

Housing

Mechanical

Dimensions (H x W x L) - closed and including sunshield	126.5 x 171.3 x 480 mm (5 x 6.7 x 18.9 in.)
Weight (including camera and lens)	3.9 kg (8.6 lbs)
Construction	Aluminum casing, neoprene gaskets, all stainless steel hardware, 3.3 mm (1/8 in.) thick glass window
Color	Gray
Locking clasps (3x)	Tamper-resistant screws provided
Camera mounting	Removable camera/lens tray, mounted with two screws
Max camera + lens size (H x W x L)	91 x 81 x 262 mm (3.6 x 3.2 x 10.3 in)
Mounting	2 x pair of tapped holes (1/4-20 thread) • inner pair: 50.8 mm (2.0 in) center spread • outer pair: 73.7 mm (2.9 in) center spread
Rear fittings (-20N models)	1x cable diameter: 3.5 to 8.0 mm (0.14 to 0.32 in) 2x cable diameter: 5.8 to 10 mm (0.23 to 0.39 in)
Rear connectors (-10N models)	1x M20: 3.5 to 8.0 mm (0.14 to 0.32 in) 1x 4-pin (power) 1x BNC (hybrid analog video)
Bottom fittings (-20N models)	2x cable diameter: 4.5 to 7.9 mm (0.18 to 0.31 in)

Power

Power input	24 VAC
Consumption	45 W
Fuse	4 A

Environmental

Operating Temperature	-40°C to +50°C (-40°F to 122°F)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Operating Humidity	20% to 93% RH
Storage Humidity	up to 98% RH
Enclosure protection	IP66, NEMA 4X

Camera

Power

Power Supply	24 VAC 50/60 Hz 12 VDC Power-over-Ethernet 48 VDC nominal
Current Consumption	400 mA | 500 mA IVA (12 VDC) 350 mA | 450 mA IVA (24 VAC) 150 mA | 175 mA IVA (PoE 48 VDC)
Power Consumption	4.8 W | 6 W IVA (12 VDC) 8.4 W | 10.8 W IVA (24 VAC) 7.2 W | 8.4 W IVA (PoE 48 VDC)
PoE	IEEE 802.3af (802.3at Type 1)

Sensor

Type	1/3-inch CMOS
Pixels	1312 x 1069 (1.4MP)

Video performance

Sensitivity – (3200K, reflectivity 89%, 1/60 sec shutter time, F1.2, 30IRE)

• Color	0.017 lx (0.0017 fc)
• Mono	0.0057 lx (0.00057 fc)
Dynamic range	84 dB WDR 100 dB WDR (with IAE)

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)
Overall IP Delay	Min. 120 ms, Max. 240 ms
GOP structure	IP, IBP, IBBP
Encoding interval	1 to 60 (50) ips
Resolutions (H x V)	
• 720p HD	1280 x 720
• 1024p 5:4 (cropped)	1280 x 1024 (30p max., no IVA)
• Upright 9:16 (cropped)	400 x 720

Video streaming

•	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

Video functions

Day/Night	Color, Mono, Auto
Adjustable picture settings	Contrast, Saturation, Brightness
White Balance	4 automatic modes, manual mode and measure
Shutter	Automatic Electronic Shutter (AES) Fixed (1/60 [1/50] to 1/15000) selectable Default shutter
Backlight compensation	Off / On / Intelligent Auto Exposure (BLC)
Contrast enhancement	On/off
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Sharpness	Sharpness enhancement level selectable
Intelligent defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)
Privacy Masking	Four independent areas, fully programmable
Video Motion Analysis	MOTION+ or Intelligent Video Analysis
Other functions	Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, Scene modes

Audio streaming

Audio Streaming	Full duplex / half duplex
Signal-to-noise ratio	> 50 dB
Audio compression	AAC-LC, G.711, L16 (live and recording)

Local storage

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

Network

Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/ RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, 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 1.0, SSL, DES, 3DES, AES (optional)
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	ONVIF Profile S , Auto-MDIX

Software

Unit Configuration	Via web browser or Configuration Manager
Firmware update	Remotely programmable
Software viewer	Web browser, Bosch Video Client, or third party software

Input/output

Analog video out		CVBS (PAL/NTSC), 1 Vpp, SMB, 75 Ohm (surge protected)
Analog video aspect ratio		4:3 letterbox, 4:3 cropped, or 16:9 mode
Audio		1 x mono line in, 1 x mono line out
•	connector	3.5 mm stereo jack
•	signal line in	12 kOhm typical, 1 Vrms max
•	signal line out	1 Vrms at 1.5 kOhm typical,
Alarm		2 inputs
•	connector	Clamp (non-isolated closing contact)
•	activation voltage	+5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)
Relay		1 output
•	connector	Clamp
•	voltage	30 VAC or +40 VDC Maximum 0.5 A continuous, 10VA
Data port		RS-232/422/485

Optical	
Lens mount	CS mount (C-mount with adapter ring)
Lens connector	Standard 4-pin DC-iris connector
Focus control	Motorized back-focus adjustment
Lens Controls	Wizard from web page or camera button
Iris control	Automatic iris control

Lens

LVF-5003N-S3813 Varifocal SR Megapixel Lens	
Focal length	3.8 – 13 mm
Iris range	F1.4 to F8
Min object distance	0.3 m (1 ft)
1/3-inch sensor 16:9 Angle of view (HxV)	79 x 43° Wide 23 x 13° Tele
Focus control	manual
Zoom control	manual
IR corrected	IR performance (not with IR illuminator)

LVF-5005C-S0940 Varifocal SR Megapixel Lens	
Focal length	9 – 40 mm
Iris range	F1.5 to F8
Min object distance	2.5 m (9.2 ft)
1/3-inch sensor 16:9 Angle of view (HxV)	33 x 17° Wide 7.7 x 4.4° Tele
Focus control	manual
Zoom control	manual
IR corrected	yes

Mount

Mount LTC 9215/00	
Length	300 mm (12 in)
Maximum Load	9 kg (20 lb)
Mounting Head	Adjustable 360° pan, 180° tilt
Finish	Light gray
Approx. Weight	0.4 kg (0.9 lb)
Mounting	2 x tapped holes Thread: 1/4-20 73.7 mm (2.9 in) center spread

Ordering information

DINION IP starlight 7000 KIT
Low-light IP camera and lens in 24 VAC (50 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 720p60; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 9-40 mm lens
Order number **NKN-71013-BA4-10N**

DINION IP starlight 7000 KIT
Low-light IP camera and lens in 24 VAC (50 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 720p60; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 3.8-13 mm lens
Order number **NKN-71013-BA3-10N**

DINION IP starlight 7000 KIT
Low-light IP camera and lens in 24 VAC (60 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 720p60; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 9-40 mm lens; pre-wired
Order number **NKN-71013-BA4-20N**

DINION IP starlight 7000 KIT
Low-light IP camera and lens in 24 VAC (60 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 720p60; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 3.8-13 mm lens; pre-wired
Order number **NKN-71013-BA3-20N**

Accessories

Monitor/DVR Cable SMB 0.3M
0.3 m (1 ft) analog cable, SMB (female) to BNC (female) to connect camera to coaxial cable.
Order number **NBN-MCSMB-03M**