

FLEXIDOME IP outdoor 5000i



The 5MP outdoor dome cameras from Bosch are professional surveillance cameras that provide high quality images for demanding security and surveillance network requirements. These robust domes are true day/night cameras offering excellent performance day or night.

There is a version with a built-in active infrared illuminator that provides high performance in extreme low-light environments.

System overview

Vandal resistant outdoor dome with varifocal lens

Ideal for outdoor use, the IK10-rated design is suitable for installations where a vandal resistance is important. The camera is protected against water and dust to IP66 standards. The varifocal lens allows you to choose the coverage area to best suit your application. Mounting options are numerous, including surface, wall, and suspended-ceiling mounting. 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.











- ► Easy to install with auto zoom/focus lens, wizard and pre-configured modes
- ► Fully configurable H.265 multi-streaming
- ► 5MP resolution with image quality up to 30 fps for highly detailed images
- Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data
- ► High Dynamic Range to see every detail in both bright and dark areas of the scene

Functions

Essential Video Analytics

The built-in video analysis reinforces the Intelligenceat-the-Edge concept and now delivers even more powerful features. Essential Video Analytics is ideal for use in controlled environments with limited detection ranges.

The system reliably detects, tracks, and analyzes objects, and alerts you when predefined alarms are triggered. A smart set of alarm rules makes complex tasks easy and reduces false alarms to a minimum. 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.

High Dynamic Range

The camera has High Dynamic Range. This 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 standardized measurements, 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 Essential Video Analytics and provides feedback to retune the image processing. This provides better detail in the areas that matter and better all-round performance. Intelligent Auto Exposure technology, for example, allows you to view moving objects in bright and dark areas of a scene.

Intelligent streaming reduces bandwidth and storage requirements

The low-noise image and the efficient H.265 compression technology provide clear images while reducing bandwidth and storage by up to 80% compared to standard H.264 cameras. With this new generation of cameras an extra level of intelligence is added with Intelligent Streaming. The camera provides the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio. The smart encoder continuously scans the complete scene as well as regions of the scene and dynamically adjust compression based on relevant information like movement. Together with Intelligent Dynamic Noise Reduction, which actively analyzes the contents of a scene and reduces noise artifacts accordingly, bitrates are reduced by up to 80%. Because noise is reduced at the source during image capture, the lower bitrate does not compromise image quality. This results in substantially lower storage costs and network strain and still retain a high image quality and smooth motion.

Bitrate optimized profile

The average typical optimized bitrate in kbits/s for various frame rates when in H.265 mode is shown in the table:

fps	5MP	4MP	3МР	1080p
30	1597	1210	864	600
12	1205	913	652	438
5	799	605	432	284
2	344	261	186	122

Multiple streams

The multi-streaming feature delivers various H.264 or H.265 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.

The camera can run multiple independent streams that allows to set a different resolution and frame rate on the first and second stream. The user can also choose to use a copy of the first 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.

Two-way audio and audio alarm

Two-way audio allows the operator to communicate with visitors or intruders via an external audio line input and output. Audio detection can be used to generate an alarm if needed.

Tamper and motion detection

A wide range of configuration options is available for alarms signaling camera tampering. A built-in algorithm for detecting movement in the video can also be used for alarm signaling.

Storage management

Recording management can be controlled by the Bosch Video Recording Manager () 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. 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/24 VAC power supplies. To increase system reliability, the camera can be simultaneously connected to both PoE and +12 VDC/24 VAC supplies. Additionally, uninterruptible power supplies (UPS) can be used, which will allow continuous operation, even during a power failure.

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.

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

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.

Hybrid mode

An analog video output enables the camera to operate in hybrid mode. This mode provides simultaneous high resolution HD video streaming and an analog video output via an SMB connector. The hybrid functionality offers an easy migration path from legacy CCTV to a modern IP-based system.

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 BVMS, 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 integrated Bosch Dynamic Transcoding on the DIVAR IP recorders, 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 G, ONVIF Profile M, ONVIF Profile S, and ONVIF Profile T specifications. 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.

DORI coverage

DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a person viewing the video to distinguish persons or objects within a covered area. The maximum distance at which a camera/lens combination can meet these criteria is shown below:

5MP Camera with 3-10 lens

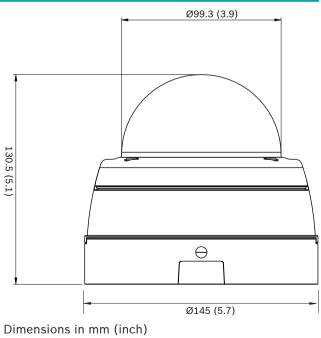
DORI	DORI definition	Distance 3mm / 10mm	Horizontal width
Detect	25 px/m	59 m / 238 m	123 m
	8 px/ft	195 ft / 780 ft	403 ft
Observe	63 px/m	24 m / 94 m	49 m
	19 px/ft	77 ft / 309 ft	160 ft
Recognize	125 px/m	12 m / 48 m	25 m
	38 px/ft	39 ft / 156 ft	81 ft
Identify	250 px/m	6 m / 24 m	12 m
	76 px/ft	19 ft / 78 ft	40 ft

Regulatory information Standards IEC 62471 (IR version) EN 60950-1 UL 60950-1 UL 60950-22 CAN/CSA-C22.2 NO. 60950-1-03 CAN/CSA-C22.2 NO. 60950-22

	EN 50130-4
	EN 50130-5
	FCC Part15 Subpart B, Class B
	EMC directive 2014/30/EU
	EN 55032 class B
	EN 55024
	AS/NZS CISPR 32 (equal to CISPR 32)
	ICES-003 Class B
	VCCI J55022 V2/V3
	EN 50121-4:2016
	EN 60950-22
ONVIF compliance	EN 50132-5-2; IEC 62676-2-3
Product certifications	CE, FCC, UL, cUL, RCM, CB, VCCI, CMIM, EAC

Region	Regulatory compliance/quality marks	
Great Britain	UKCA	
Europe	CE	
USA	UL	outdoor 4/5000i

Installation/configuration notes



Technical specifications

Power	
Input voltage	+12 VDC ±5%, 24 VAC ±10% or Power-over-Ethernet (48 VDC nominal)
Power consumption (DC)	7.15 W max.
Power consumption (AC)	6.15 W max.
Power consumption (PoE)	7 W max.
PoE IEEE standard	IEEE 802.3af (802.3at Type 1) Power level: Class 3

Power (IR version)	
Input voltage	+12 VDC ±5%, 24 VAC ±10% or Power-over-Ethernet (48 VDC nominal)
Power consumption (DC)	10.8 W max.
Power consumption (AC)	8.75 W max.
Power consumption (PoE)	9.2 W max.
PoE IEEE standard	IEEE 802.3af (802.3at Type 1)

Platform	
Common product platform	CPP7.3

Power level: Class 3

Sensor	
Туре	1/2.9-inch CMOS
Effective pixels	3072 (H) x 1944 (V)

Video performance - Sensitivity

Sensitivity - (3100K, reflectivity 89%, 1/25, F1.3, 30IRE)

•	Color	0.24 lx
•	Mono	0.03 lx
•	With IR	0.0 lx

Video per	formance - D	ynamic range
-----------	--------------	--------------

	•
High Dynamic Range	120 dB WDR
Measured according	107 dB WDR

Video performance - Dynamic range		
to IEC 62676 Part 5		
Video streaming		
Video compression	H.265; H.264; M- JPEG	
Streaming	Multiple configurable streams in H.264 or H.265 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)	
Camera processing latency	<120 ms (max. average at 5MP30)	
GOP structure	IP	
Encoding interval	1 to 25 [30] fps	
Encoding regions	Up to 8 areas with encoder quality settings per area	
Video resolution		
5MP (16:9)	3072 x 1728	
Upright mode 5MP	1728 x 3072	
4MP (16:9)	2688 x 1512	
Upright mode 4MP	1512 x 2688	
3MP (16:9)	2304 x 1296	
Upright mode 3MP	1296 x 2304	
1080p HD	1920 x 1080	
Upright mode 1080p	1080 x 1920	
1.3MP (16:9)	1536 x 864	
720p	1280 x 720	
480p SD	640 x 480	
SD	768 x 432	

Video functions	
Day/Night	Color, Monochrome, Auto (adjustable switch points)
Adjustable picture settings	Contrast, Saturation, Brightness

720 x 480

D1

Video functions	
White Balance	2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium vapor, Dominant color), Manual mode and Hold mode
Shutter	Automatic Electronic Shutter (AES); Fixed (1/25[30] to 1/15000) selectable; Default shutter
Backlight compensation	On/off/Intelligent Auto Exposure (IAE)
Contrast enhancement	On/off
Signal-to-noise ratio (SNR)	>55 dB
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	Eight independent areas, fully programmable
Video Analysis	Essential Video Analytics
Scene modes	Standard, Sodium Lighting, Traffic, Intelligent AE, Vibrant, Low bitrate, Sports & Gaming, Retail
Other functions	Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, Location
Camera rotation	Automatic detection with manual override (0° / 90°/ 180°/ 270°)
Video content analysis	
Analysis type	Essential Video Analytics
Features	Rule based alarms and tracking Line crossing Enter /leave field Follow route Loitering Idle / removed object People counting Crowd density estimation 3D tracking Audio detection (if microphone used)
Calibration / Geolocation	Automatic based on gyro / accelerometer data and camera height

Video content analysis			
Tamper detection	Maskable		
Audio detection	Detection of audio to generate an alarm		
Night vision (IR version	Night vision (IR version only)		
Distance	30 m (98 ft)		
LED	10 LED high efficiency array, 850 nm		
IR intensity	Adjustable		
Optical			
Lens type	3 to 10 mm Automatic Varifocal (AVF) lens, IR corrected DC Iris F1.3 - 360		
Lens mount	Board mounted		
Adjustment	Motorized zoom/focus		
Iris control	Automatic iris control		
Day/Night	Switched mechanical IR filter		
Horizontal field of view	31°-99°		
Vertical field of view	18°-53°		
Input/output			
Analog video out	SMB connector, CVBS (NTSC), 1 Vpp, 75 Ohm, approx. 500 TVL		
Audio line in	0.707 Vrms max, 10 kOhm typical		
Audio line out	0.707 Vrms at 16 Ohm typical		
Alarm input	1 input		
Alarm input activation	Short or DC 5V activation		
Alarm output	1 output		
Alarm output voltage	30 VDC, max. load 0.5 A		
Ethernet	RJ45		
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		

Audio streaming		
	50.10	
Signal-to-Noise Ratio	>50 dB	
Audio Streaming	Full-duplex / half duplex	
Local storage		
Internal RAM	5 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	
Network		
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, noip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (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, ONVIF Profile M, ONVIF Profile T	
Mechanical		
3-axis adjustment (pan/tilt/rotation)	350° / 130° / 350°	
Dimensions (Ø x H)	145 x 131 mm (5.71x 5.14 in)	
Weight	1102 g (2.43 lb)	
Color	RAL 9003, RAL 9017	
Housing material	Aluminum	
Dome bubble	Polycarbonate, clear with anti-scratch coating	
Environmental		
Operating temperature	-40 °C to +50 °C (-40 °F to +122 °F) for continuous operation; -34 °C to +74 °C (-30 °F to +165 °F) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile	

Environmental	
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Operating humidity	5% to 93% RH non condensing 5% to 100% RH condensing
Ingress protection	IP66 and NEMA 4X
Impact protection	IK10

Ordering information

NDE-5503-A Fixed dome 5MP HDR 3-10mm IP66

Vandal-resistant IP dome cameras for outdoor MP surveillance with H.265 and Essential Video Analytics. Fixed dome 5MP HDR 3-10mm auto IP66. NDAA compliant

Order number NDE-5503-A | F.01U.379.282

NDE-5503-AL Fixed dome 5MP HDR 3-10mm IR IP66

Vandal-resistant IP dome camera for outdoor MP surveillance with H.265, Essential Video Analytics and integrated infrared.

Fixed dome 5MP HDR 3-10mm auto IP66.

NDAA compliant

Order number NDE-5503-AL | F.01U.379.283

Accessories

BUB-TIN-FDO Bubble, tinted, outdoor

Tinted polycarbonate bubble for dome camera. Outdoor

Order number BUB-TIN-FDO | F.01U.319.960

BUB-CLR-FDO Bubble, clear, outdoor

Clear polycarbonate bubble for dome camera Outdoor

Order number BUB-CLR-FDO | F.01U.319.962

NDA-5030-PIP Pendant interface plate NDE-4/5000

Pendant interface plate for outdoor FLEXIDOME 4000i / 5000i.

Order number NDA-5030-PIP | F.01U.324.951

NDA-U-WMT Pendant wall mount

Universal wall mount for dome cameras, white Order number NDA-U-WMT | F.01U.324.939

NDA-U-PMT Pendant pipe mount, 12" (31cm)

Universal pipe mount for dome cameras, 31 cm, white Order number NDA-U-PMT | F.01U.324.940

NDA-U-PMAS Pole mount adapter small

Pole mount adapter small

Universal pole mount adapter, white; small. Order number **NDA-U-PMAS | F.01U.324.943**

NDA-U-PMTE Pendant pipe extension, 20" (50cm)

Extension for universal pipe mount, 50 cm, white Order number **NDA-U-PMTE** | **F.01U.324.941**

NDA-U-PSMB Pendant wall/ceiling mount SMB

Surface mount box (SMB) for wall mount or pipe mount. Order number **NDA-U-PSMB | F.01U.324.942**

NBN-MCSMB-03M Cable, SMB to BNC, camera-cable, 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 | F.01U.291.564

NBN-MCSMB-30M Cable, SMB to BNC, cameramonitor/DVR

3 m (9 ft) analog cable, SMB (female) to BNC (male) to connect camera to monitor or DVR

Order number NBN-MCSMB-30M | F.01U.291.565

NDN-IOC-30M Cable, IP66 certified, waterproof

An IP66 certified cable for easy waterproof installation Order number NDN-IOC-30M | F.01U.313.565

NDA-LWMT-DOME Wall mount, L-shaped, for dome camera

Sturdy wall L-shaped bracket for dome cameras Order number NDA-LWMT-DOME | F.01U.303.767

NDA-ADT4S-MINDOME Surface mount box for dome camera

Surface mount box (\emptyset 145 mm / \emptyset 5.71 in) for dome cameras (for indoor camera variant, use together with NDA-ADTVEZ-DOME).

Order number NDA-ADT4S-MINDOME | F.01U.285.200

NDA-FMT-DOME Inceiling flush mount for dome camera

In-ceiling flush mounting kit for dome cameras (Ø157 mm)

Order number NDA-FMT-DOME | F.01U.303.768

UPA-1220-60 Power supply, 120VAC 60Hz,12VDC 1A out

Power supply for camera. 100-240 VAC, 50/60 Hz In; 12 VDC, 1 A Out; regulated.

Input connector: 2-prong, North American standard (non-polarized).

Order number **UPA-1220-60 | F.01U.076.155**

NPD-5001-POE Midspan, 15W, single port, AC in

Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port

Weight: 200 g (0.44 lb)

Order number NPD-5001-POE | F.01U.305.288

NPD-5004-POE Midspan, 4 port x 15W, AC in

Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports

Weight: 620 g (1.4 lb)

Order number NPD-5004-POE | F.01U.305.289

NDA-U-CMT Corner mount adapter

Universal corner mount, white

Order number NDA-U-CMT | F.01U.324.946

NDA-U-PA0 Surveillance cabinet 24VAC

Surveillance cabinet, 24 VAC input, 24 VAC output, IP66 Order number NDA-U-PAO | F.01U.324.947

NDA-U-PMAL Pole mount adapter large

Universal pole mount adapter, white; large Order number NDA-U-PMAL | F.01U.324.944

NDA-U-RMT Pendant parapet mount

Universal roof mount for dome cameras, white Order number NDA-U-RMT | F.01U.324.945

NDA-U-PA1 Surveillance cabinet 120VAC

Surveillance cabinet, 100 - 120 VAC 50/60 Hz input, 24 VAC output, IP66

Order number NDA-U-PA1 | F.01U.324.948

NDA-U-PA2 Surveillance cabinet 230VAC

Surveillance cabinet, 230 VAC input, 24 VAC output, IP66 Order number NDA-U-PA2 | F.01U.324.949

VDA-WMT-AODOME Wall mount, outdoor, for dome, 166mm

Sturdy outdoor wall mount bracket for dome cameras (Ø166 mm)

Order number VDA-WMT-AODOME | F.01U.268.900

VDA-PMT-AODOME Pipe mount for AUTODOME, outdoor

Sturdy outdoor pipe mount bracket for dome cameras (Ø166 mm)

Order number VDA-PMT-AODOME | F.01U.268.901 F.01U.313.786

Represented by:

Europe, Middle East, Africa:
Bosch Security Systems B.V.
P.O. Box 80002
5600 JB Eindhoven, The Netherlands
Phone: + 31 40 2577 284
www.boschsecurity.com/xc/en/contact/
www.boschsecurity.com

Germany: Bosch Sicherheitssysteme GmbH Robert-Bosch-Ring 5 85630 Grasbrunn Tel: +49 (0)89 6290 0 Fax:+49 (0)89 6290 1020 de.securitysystems@bosch.com www.boschsecurity.com North America: Bosch Security Systems, LLC 130 Perinton Parkway Fairport, New York, 14450, USA Phone: +1 800 289 0096 Fax: +1 555 223 9180 onlinehelp@us.bosch.com www.boschsecurity.com Asia-Pacific:
Robert Bosch (SEA) Pte Ltd, Security Systems
11 Bishan Street 21
Singapore 573943
Phone: +65 6571 2808
Fax: +65 6571 2699
www.boschsecurity.com/xc/en/contact/
www.boschsecurity.com/