AUTODOME IP 5000i

www.boschsecurity.com















- ➤ 30x optical zoom that clearly identifies people (183 m / 600 ft maximum) without loss of identification details
- ► Excellent low-light performance
- ► Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data
- ► Simple installation with flexible mounting options (in-ceiling or pendant mounting)

With AUTODOME IP 5000i cameras, you can capture full details of your surveillance space and identify activity details in the scene. The integrated 30x optical zoom lens allows covering large field of views from a single camera.

Functions

Low-light performance

The latest sensor technology combined with 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.

Pre-programmed user modes

The camera has several pre-configured scene modes with the best settings for various applications. With one click, users can optimize image settings to match the camera's lighting conditions. Users can also configure individual image settings.

- · Standard: For indoor fluorescent lighting.
- Sodium-lighting: For scenarios where the video is captured under sunlight in the day or under sodium vapor lamp at night.
- Vibrant: For enhanced contrast, sharpness, and saturation

H.265 high-efficiency video encoding

The camera is designed on the most efficient and powerful H.264 and H.265/HEVC encoding platform. The camera is capable of delivering high-quality and high-resolution video with very low network load. With a doubling of encoding efficiency, H.265 is the new compression standard of choice for IP video surveillance systems.

Intelligent streaming

Smart encoding capabilities, together with Intelligent Dynamic Noise Reduction technology and analytics, make the bandwidth consumption drop to extremely low levels. Only relevant information in the scene, like motion, or objects found with the analytics, need to be encoded.

The camera is capable of quad streaming which allows the camera to deliver independent, configurable streams for live viewing, recording, or remote monitoring via constrained bandwidths.

Recording and storage management

Recording management can be controlled by the Bosch Video Recording Manager application, or the camera can use local storage and iSCSI targets directly without any recording software.

A memory card with a maximum of 32 GB (microSDHC) / 2 TB (microSDXC) can be used for recording "at the edge" or for Automatic Network Replenishment (ANR) technology to improve the overall recording reliability.

Pre-alarm recording in RAM reduces bandwidth consumption on the network and extends the effective life of the memory card.

Essential Video Analytics on the edge

The camera includes the latest release of Essential Video Analytics application from Bosch for use on Pre-positions.

The Essential Video Analytics application provides reliable video analytics for small and medium business, large retail stores, commercial buildings, and warehouses.

Advanced tasks like multiple line crossing, loitering, idle / removed object detection, crowd density estimation, occupancy and people counting are available for live alarming and forensic search. Object filters based on size, speed, direction, aspect ratio, and color can be defined.

A simplified calibration mode reduces installation time significantly, because you only need to enter the installation height once for each camera, independent of pre-positions.

After the camera is calibrated, the analytics engine can automatically classify objects as upright person, car, bike, or truck.

Data security

Special measures are necessary to ensure the highest level of security for device access and data transport. On initial setup, the camera is only accessible over secure channels. You must set a service-level password in order to access camera functions. Web browser and viewing client access can be protected using HTTPS or other secure protocols that support state-of-the-art TLS 1.2 protocol with updated cipher suites including AES encryption with 256 bit keys. No software can be installed in the camera, and only authenticated firmware can be uploaded. A threelevel password protection with security recommendations allows users to customize device access. Network and device access can be protected using 802.1x network authentication with EAP/TLS protocol. Superior protection from malicious attacks is guaranteed by the Embedded Login Firewall, on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support.

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

System integration and ONVIF conformance

The camera conforms to the Open Network Video Interface Forum (ONVIF) Profile S and Profile G specifications. For H.265 configuration the camera also supports Media Service 2 which is part of the future ONVIF Profile T. 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.

Superior privacy masking

The camera allows for a total of 32 individual privacy masks, with up to eight masks displayed in the same scene. Each mask can be programmed with eight corners. Each mask changes size and shape smoothly and quickly, ensuring that the covered object cannot be seen.

PTZ drive and mechanism

The camera supports 256 pre-positions and two styles of Guard Tours: Pre-position and Record/Playback. The Pre-position tour has capability for up to 256 pre-positions with a configurable dwell time between pre-positions and can be customized as to the order and the frequency that each Pre-position is visited. The camera also provides support for two (2) recorded tours, which have a total duration of 15 minutes of movements. These are recorded macros of an operator's movements, including pan, tilt, and zoom activities, and can be played back in a continuous manner.

Pan and tilt preset repeatability are accurate to within ±0.1 degrees to ensure that the correct scene is captured every time. The camera delivers maximum pan speed of 300 degrees per second and maximum tilt speed of 200° degrees per second. The camera is capable of manual speeds (pan and tilt) of 0.1 to 120 degrees per second. The camera provides a pan range of up to 360 degrees continuous rotation.

Sophisticated alarm responses

The camera supports advanced alarm control that uses sophisticated rules-based logic to determine how to manage alarms. In its most basic form, a "rule" could define which input(s) should activate which output(s). In a more complex form, inputs and outputs can be combined with pre-defined or user-specified commands to perform advanced camera functions.

Ease of installation and servicing

The camera has been designed for quick and easy installation, a key feature from Bosch IP video products. All housings feature recessed screws and latches for increased tamper resistance.

Bosch designed the camera with the knowledge that field cables and mounts are installed before the camera is mounted. The installation concept allows a

single person to connect the cables directly to the camera without re-routing cables. The camera is easily secured to the mount with a single screw.

The pendant housings are rated to provide IP66 protection and offer an operating temperature range down to -40 °C (-40 °F). The pendant camera comes fully assembled with a sunshield and ready for wall or pipe applications with the proper mounting hardware (sold separately).

Bosch offers a full complement of hardware and accessories (sold separately) for wall, corner, mast, roof, pipe mount, and in-ceiling applications for indoor and outdoor environments, which allow the camera to be adapted easily to individual site requirements.

DORI coverage

DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a camera 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:

	DORI definition	Distance		
	aetinition	WIDE 1X	TELE 30X	
Detect	25 px/m	65 m	1833 m	
	(8 px/ft)	(213 ft)	(6014 ft)	
Observe	63 px/m	26 m	727 m	
	(19 px/ft)	(85 ft)	(2385 ft)	
Recognize	125 px/m	13 m	367 m	
	(38 px/ft)	(43 ft)	(1204 ft)	
Identify	250 px/m	7 m	183 m	
	(76 px/ft)	(23 ft)	(600 ft)	

Certifications and approvals

For a full list of all related certifications/standards, please refer to the Product Tests Report, available on the online catalog, on the Documents tab of the product page for your device. If the document is unavailable on the product page, please contact your sales representative.

HD standards

- Complies with the SMPTE 274M-2008 Standard in:
 - Resolution: 1920x1080
 - Scan: Progressive
 - Color representation: complies with ITU-R BT.709
 - Aspect ratio: 16:9
 - Frame rate: 25 and 30 frames/s
- 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: 25 and 30 frames/s

Marking	Applicable Standard
cULus	• UL60950-1/-22 (ed 2) (Includes CSA 22.2 No. 60950-1/-22)
FCC Part 15 (USA)	47CFR Part 15ICES-003 (Canada)
CE (Europe)	Electromagnetic Compatibility (EMC) Directive EN55032:2012/AC:2013 EN 50130-4:2011/A1:2014 EN 61000-3-2:2014 EN 61000-3-3:2013 Product Safety: Low Voltage Directive (IECEE CB scheme certificate and report are required) EN 60950-1:2006+A11:2009+A1:2010 +A12:2011+A2:2013 (with national differences) IEC 60950-1/-22 (ed 1)
Other labels / markings	RCM, EAC, WEEE, China RoHS, BIS

Region	Regulatory compliance/quality marks	
Europe	CE	AUTODOME IP 4000i, 5000i, 5000i IR
USA	UL	

Installation/configuration notes

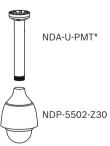
Wall mount

NDA-U-WMT NDP-5502-Z30

Wall mount with surveillance cabinet (IP66)



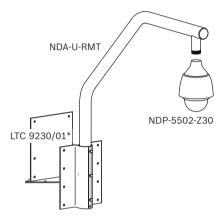
Pendant pipe mount



* NDA-U-PMTE: optional 50cm / 20" extension pipe

Pole mount (IP66) Corner mount (IP66) NDA-U-PMAL NDA-U-PAX NDA-U-PAX NDA-U-WMT NDP-5502-Z30

Roof mount (IP66)



^{*} optional for flat roof mount

In-ceiling mount



* optional

For more options, see Quick Selection Guide: Modular camera mounts & accessories.

Technical specifications

Imager	1/2.8" progressive scan CMOS
Effective Picture Elements	1945 x 1097 (2.13 MP)
Lens	30x zoom 4.5 mm - 135 mm (F1.6 - F4.4)
Optical Zoom Field of View (FOV)	2.4°-60.9°
Focus	Automatic with manual override

Iris	Automatic with manual override
Digital Zoom	16x

Video performance - Sensitivity

(3100K, reflectivity 89%, 1/30, F1.6, 30 IRE)

(0100K, Tellectivity 00%, 1/00, 11.0, 00 IIIL)		
Color	0.05 lx	
Mono	0.01 lx	
High dynamic range	94 dB (measured according to IEC 62676 Part 5)	
Electronic Shutter Speed (AES)	1/30 s to 1/15000 s (12 steps)	
Signal-to-noise Ratio (SNR)	>55 dB (AGC off)	
Noise Reduction	Intelligent Dynamic Noise Reduction	
Backlight Compensation (BLC)	On/Off, Intelligent Auto Exposure (IAE)	
Intelligent Defog	Automatically adjusts parameters for best picture in foggy or misty scenes (Auto/Off)	
White Balance	Standard Auto, Sodium Lamp Auto, Basic Auto, Manual, Hold, Dominant Color Auto	
Day/Night	Mechanical switchable IR filter (Auto/On/off) Monochrome	

Video content analysis	
Analysis type	Essential Video Analytics
Configurations	Silent VCA / Profile1 - 16
Alarm rules (combinable)	Any object Object in field Crossing line Entering field Leaving field Loitering Following route Idle object Removed object Counter Occupancy Crowd detection Condition change Similarity search Tampering

Video content analy	rsis	Bitrate	The average typical opti	mized bitrate in kbits/	
Object filters	Duration Size		second for various frame following table:	e rates is shown in the	
	Aspect ratio v/h Speed	Video compression	H.2	65	
	Direction	IPS	1080p	720p	
	Color Object classes (Upright persons, Bikes, Cars,	60	1649	1249	
	Trucks)	30	1413	1096	
Calibration	Automatic self-calibrating when height is set	15	1157	902	
Mechanical		10	1075	841	
Pan/Tilt Modes	Normal: 0.1°/s - 120°/s	5	746	597	
	Turbo: Pan: 0.1°/s - 300°/s; Tilt: 0.1°/s - 200°/s	2	407	343	
Pre-position Speed	Pan: 300°/s Tilt: 200°/s	Ethernet	10/100BASE-T		
	·	Encryption	TLS 1.0, SSL, DES, 3DE	S, AES	
Pan Range	360° continuous	Protocols	IPv4, IPv6, UDP, TCP, H		
Tilt Angle	-90° to 0°		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,		
Pre-position Accuracy	± 0.1° typ.				
Pre-positions	256			erv (QoS), LLDP, SOAP,	
Tours	Two (2) types of tours: • Recorded tours: two (2), maximum total duration 15 minutes (depending on the amount of commands sent during recording)	Interoperability	Dropbox™, CHAP, diges ONVIF Profile S, ONVIF F		
		GB/T 28181			
	 Pre-position tour: one (1), consisting 	Audio			
	of up to 256 scenes consecutively, and one (1), customized up to 64 scenes	Compression	G.711, 8kHz sampling r L16, 16kHz sampling ra AAC, 16kHz sampling ra	ite	
Electrical		Interface	1/1 Channel In/Out		
Input voltage	24 VAC and PoE+	Local Storage	2/ 2 3114111131111/ 342		
Power consumption	14 W (heater off) / 24 W (heater on)		C		
Network Video compression	H.265	Memory card slot	Support a memory card with a maximum of 32 GB (microSDHC) / 2 TB (microSDXC) (usersupplied). (An SD card of Class 6 or higher is		
·	H.264 M-JPEG	recommended for HD recording. Fiber Optic Kit (sold separately)		ecording.)	
Streaming	Four (4) streams: Two (2) configurable	VG4-SFPSCKT	(Sold Separately)		
-	streams in H.264 or H.265 One (1) I-frames-only stream based on first	Description	Fiber Optic Ethernet Me	dia Converter kit*	
	stream One (1) M-JPEG Stream	Description	Requires a small form-fa module (sold separately	ctor pluggable (SFP)	
Frame rate	60fps at all resolutions	Data Interface	Ethernet		
Resolution	1080p 720p D1 4:3 (cropped) SD (432p, 288p)	Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port		
IP delay (typical)	60 fps: 200 ms	Compatible Receiver	CNFE2MC		
2 (.21:)					

Installation	Installed inside a NDA-U-PAO, NDA-U-PA1 or a NDA-U-PA2 power supply box with supplied mounting hardware
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^{*} Kit available separately and must be installed inside the AUTODOME power supply box.

SFP Modules

Description	Interchangeable modules available for use with MMF or SMF optical fiber.
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant
Weight (all SFP modules)	0.23 kg (0.05 lb)
Dimensions (LxWxH)	SFP-2, SFP-3: 55.5 x 13.5 x 8.5 mm (2.2 x 0.5 x 0.3 in.) SFP-25, SFP-26: 63.8 x 13.5 x 8.5 mm (2.5 x 0.5 x 0.3 in.)

	Туре	Connector	Wavelength (transmit / receive)	Max. Distance
SFP-2	MMF	Duplex LC	1310 nm / 1310 nm	2 km (1.2 miles)
SFP-3	SMF	Duplex LC	1310 nm / 1310 nm	20 km (12.4 miles)
SFP-25	MMF	Single SC	1310 nm / 1550 nm	2 km (1.2 miles)
SFP-26	MMF	Single SC	1550 nm / 1310 nm	2 km (1.2 miles)

Fiber Compatibility

Optical Fiber Compatibility, MMF	50/125 µm MMF. For 50/125 µm fiber, subtract 4 dB from the specified optical budget value. Must meet or exceed fiber standard ITU-T G.651.
Optical Fiber Compatibility, SMF	$810/125\mu\text{m}$ SMF. Must meet or exceed fiber standard ITU-T G.652.
Optical Distance Specifications	Specified transmission distances are limited to the optical loss of the fiber and any additional loss introduced by connectors, splices, and patch panels. The modules are designed to operate over the entire optical loss budget range, so they do not require a minimum loss in order to operate.

Miscellaneous

Sector/Titling	16 independent sectors with 20 characters per title
Privacy Masks	32 individually configurable privacy masks

Privacy Masks pattern	Black, White, Gray, Auto (average background color)
Supported Languages	English, German, Spanish, French, Italian, Dutch, Polish, Portuguese, Russian, Japanese, Chinese (simplified)

User Connections

Power	RJ45 10/100 Base-T PoE+ (IEEE 802.3at, class 4 standard) 21-30 VAC, 50/60 Hz
Alarm Inputs	2
Alarm Outputs	1 relay output 5 VDC, 150 mA max.
Audio	1x mono line in, 1x mono line out
Signal line in	94 kOhm typical, 1 Vrms max.
Signal line out	1 kOhm typical, 1 Vrms max.

Environmental (pendant model)

Ingress Protection Rating/ Standard	IP66
IK Rating	IK10
Operating temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Humidity	0% to 100% RH, condensing
Storage temperature	-40 °C to +60 °C (-40 °F to +140 °F)

Environmental (in-ceiling model)

Ingress Protection Rating/ Standard	IP51
Operating temperature	-10 °C to +60 °C (+14 °F to +140 °F)
Humidity	Up to 90% RH, non-condensing
Storage temperature	-40 °C to +60 °C (-40 °F to +140 °F)

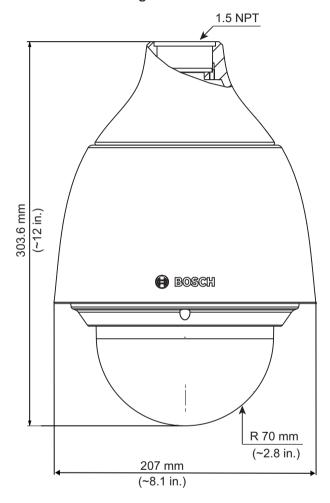
Construction (pendant model)

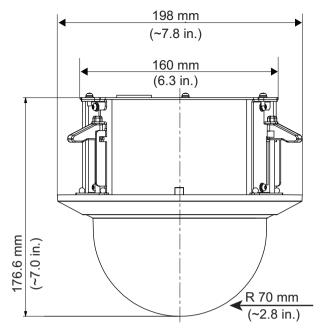
Dimensions (DIA x H)	207 mm x 303.6 mm (8.15 in x 11.95 in)
Weight	3.25 kg (7.17 lb)
Construction material	Housing: Aluminum Sunshield: Outdoor Grade Plastic Bubble: Polycarbonate
Standard color	White (RAL 9003)

Construction (in-ceiling model)

Dimensions (DIA x H)	198 mm x 176.6 mm (7.8 in x 6.95 in)
Weight	2.1 kg (4.63 lb)
Construction material	Housing: SPCC Trim ring: PC/ABS Bubble: Polycarbonate
Standard color	White (RAL 9003)

Dimensional Drawings





In-ceiling model

Ordering information

NDP-5502-Z30 PTZ dome 2MP 30x clear IP66 pendant IP dome camera with clear bubble and indoor/outdoor pendant housing. 30x zoom, 1080p HD. Essential Video Analytics, Intelligent Dynamic Noise Reduction, remote camera access, and dual power options. Order number NDP-5502-Z30

NDP-5502-Z30C PTZ dome 2MP 30x clear indoor inceiling

IP dome camera with clear bubble and indoor inceiling housing. 30x zoom, 1080p HD. Essential Video Analytics, Intelligent Dynamic Noise Reduction, remote camera access, and dual power options.

Order number NDP-5502-Z30C

Accessories

UPA-2450-50 PSU, 220VAC 50Hz, 24VAC 50VA out

Indoor power supply for camera. 220 VAC, 50 Hz in; 24 VAC, 50 VA out

Order number UPA-2450-50

UPA-2450-60 PSU, 120VAC 60Hz, 24VAC 50VA out

Indoor power supply for camera. 120 VAC, 60 Hz In; 24 VAC. 50 VA Out

Order number UPA-2450-60

NPD-6001B High PoE midspan

High PoE Midspan, 60 W, single port, AC in Order number NPD-6001B

NDA-U-PA0 Surveillance cabinet 24VAC

Surveillance cabinet, 24 VAC input, 24 VAC output, IP66

Order number NDA-U-PA0

NDA-U-PA1 Surveillance cabinet 120VAC

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

Order number NDA-U-PA1

NDA-U-PA2 Surveillance cabinet 230VAC

Surveillance cabinet, 230 VAC input, 24 VAC output, IP66

Order number NDA-U-PA2

NDA-U-CMT Corner mount adapter

Universal corner mount, white Order number NDA-U-CMT

NDA-U-PMAL Pole mount adapter large

Universal pole mount adapter, white; large Order number NDA-U-PMAL

NDA-U-PMAS Pole mount adapter small

Pole mount adapter small

Universal pole mount adapter, white; small.

Order number NDA-U-PMAS

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

Universal pipe mount for dome cameras, 31 cm, white Order number NDA-U-PMT

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

Extension for universal pipe mount, 50 cm, white Order number NDA-U-PMTE

NDA-U-PSMB Pendant wall/ceiling mount SMB

Surface mount box (SMB) for wall mount or pipe mount.

Order number NDA-U-PSMB

NDA-U-WMP Wall mount plate

Back plate for universal wall mount, corner mount and pole mount, white, IP66

Order number NDA-U-WMP

NDA-U-WMT Pendant wall mount

Universal wall mount for dome cameras, white Order number NDA-U-WMT

NDA-U-RMT Pendant parapet mount

Universal roof mount for dome cameras, white Order number NDA-U-RMT

LTC 9230/01 Roof mount adapter

Flat Roof Mount Adapter for mounting a unit in an upright position on a flat surface.

Order number LTC 9230/01

VGA-IC-SP Suspended ceiling support kit,7"

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

MNT-ICP-ADC Drop ceiling suppport kit for AUTO-DOME

Suspension ceiling support kit for AUTODOME IP 4000/5000/7000 AND VG5-100/600 series in-ceiling cameras

Order number MNT-ICP-ADC

NDA-4020-PLEN Plenum box for PTZ dome

In-ceiling housing for plenum spaces for AUTODOME IP 4000i and AUTODOME IP 5000i cameras. Available in specific regions only.

Order number NDA-4020-PLEN

NDA-5020-PTBL Tinted bubble for PTZ dome

Tinted bubble for pendant models of AUTODOME IP 5000i cameras.

Order number NDA-5020-PTBL

NEZ-A5-BUB-CTIP Bubble, tinted, for in-ceiling model

Tinted bubble for in-ceiling models of AUTODOME IP 5000i cameras.

Order number NEZ-A5-BUB-CTIP

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT

Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras and for MIC-IP-PSU for MIC analog cameras.

Order number VG4-SFPSCKT

SFP-2 Fiber module, multimode, 1310nm, 2LC

SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC connectors.

Multi-mode

1310 mm

Order number SFP-2

SFP-3 Fiber module, single-mode, 1310nm, 2LC

SFP Fiber Optic Module, 20 km (12.4 miles), 2 LC connectors.

Single-mode

1310 nm

Order number SFP-3

SFP-25 Fiber module, 1310/1550nm, 1SC

SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector

Multi-mode

1310/1550 nm Order number SFP-25

SFP-26 Fiber module, 1550/1310nm, 1SC SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector

Multi-mode 1550/1310 nm Order number SFP-26

Represented by:

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