

AUTODOME IP 5000i IR

www.boschsecurity.com



BOSCH

Invented for life



- ▶ High-performance HD outdoor PTZ dome camera with integrated IR illumination for scenes with low or no ambient lighting
- ▶ Variable illumination ensures that IR light is uniformly distributed in the field to minimize dark spots or over-illuminated scenes
- ▶ Long distance illumination up to 180 m (590 ft)

Keep your security in focus with the many features of the AUTODOME IP 5000i IR camera. The camera is carefully tuned to deliver detailed 1080p60 HD images during daylight and full details under low-light or no light conditions with the intelligent IR illuminator. The illuminator automatically adjusts the IR intensity according to zoom and field of view to ensure that the scene is illuminated uniformly.

Functions

See in the dark

The camera's smart, variable IR illumination technology from Bosch produces outstanding video on a per-zone basis in low-light scenes. This configuration ensures that each scene receives the appropriate illumination intensity and avoids focus instability from mixed lighting conditions.

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 three-level 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 240 degrees per second and maximum tilt speed of 160° 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 security products.

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

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

Certifications and approvals

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	<ul style="list-style-type: none"> UL60950-1/-22 (ed 2) (Includes CSA 22.2 No. 60950-1/-22)
FCC Part 15 (USA)	<ul style="list-style-type: none"> 47CFR Part 15 ICES-003 (Canada)

CE (Europe)

Electromagnetic Compatibility (EMC) Directive

- EN 55032:2012/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)

Photobiological safety of lamps and lamp systems (LED)

- IEC 62471 (Risk Group 1)

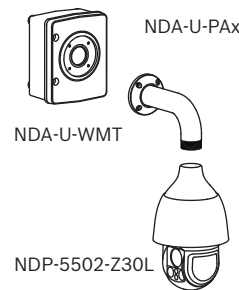
Other labels / markings

- RCM, EAC, WEEE, China RoHS, BIS

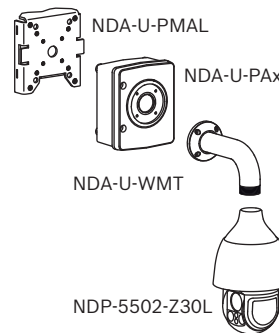
Region	Regulatory compliance/quality marks	
Europe	CE	AUTODOME IP 4000i, 5000i, 5000i IR
USA	UL	

Installation/configuration notes

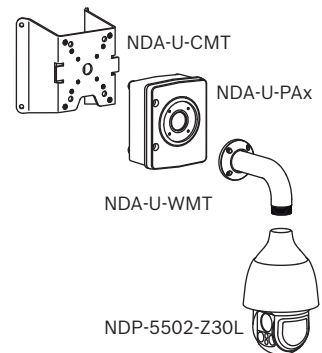
Wall mount with surveillance cabinet (IP66)

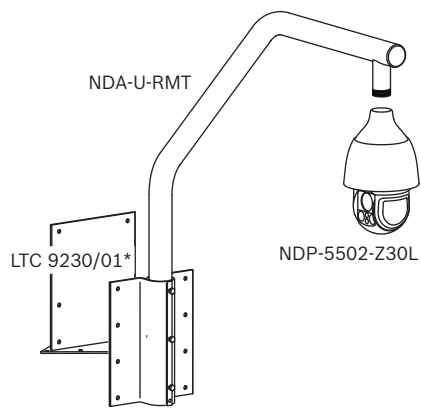


Pole mount (IP66)



Corner mount (IP66)



Roof mount (IP66)

* optional for flat roof mount

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)	
Color	0.05 lx
Mono	0.01 lx
With IR	0 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
Number of LEDs	4
Wavelength	850 nm
Distance	180 m (590 ft) (Detection)
Beam angle	Wide beam: 36° Narrow beam: 6.3°

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
Object filters	Duration Size Aspect ratio v/h Speed Direction Color Object classes (Upright persons, Bikes, Cars, Trucks)
Calibration	Automatic self-calibrating when height is set

Mechanical

Pan/Tilt Modes	Normal: 0.1°/s - 120°/s Turbo: Pan: 0.1°/s - 240°/s; Tilt: 0.1°/s - 120°/s
Preset Speed	Pan: 240°/s Tilt: 160°/s
Pan Range	360° continuous
Tilt Angle	-90° to 3°

Pre-position Accuracy	± 0.1° typ.
Pre-positions	256
Tours	Two (2) types of tours: <ul style="list-style-type: none"> Recorded tours: two (2), maximum total duration 15 minutes (depending on the amount of commands sent during recording) Pre-position tour: one (1), consisting of up to 256 scenes consecutively, and one (1), customized up to 64 scenes

Electrical

Input voltage	24 VAC and PoE+
Power consumption	20 W (IR off) / 25 W (IR on)

Network

Video compression	H.265 H.264 M-JPEG	
Streaming	Four (4) streams: Two (2) configurable streams in H.264 or H.265 One (1) I-frames-only stream based on first stream One (1) M-JPEG Stream	
Frame rate	60fps at all resolutions	
Resolution	1080p 720p D1 4:3 (cropped) SD (432p, 288p)	
IP delay (typical)	60 fps: 200 ms	
Bitrate	The average typical optimized bitrate in kbits/second for various frame rates is shown in the following table:	
Video compression	H.265	
IPS	1080p	720p
60	1649	1249
30	1413	1096
15	1157	902
10	1075	841
5	746	597
2	407	343
Ethernet	10/100BASE-T	
Encryption	TLS 1.0, SSL, DES, 3DES, AES	

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), DiffServ (QoS), LLDP, SOAP, Dropbox™, CHAP, digest authentication
Interoperability	ONVIF Profile S, ONVIF Profile G; GB/T 28181

Audio

Compression	G.711, 8kHz sampling rate L16, 16kHz sampling rate AAC, 16kHz sampling rate
Interface	1/1 Channel In/Out

Local Storage

Memory card slot	Support a memory card with a maximum of 32 GB (microSDHC) / 2 TB (microSDXC) (user-supplied). (An SD card of Class 6 or higher is recommended for HD recording.)
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Fiber Optic Kit (sold separately)

VG4-SFPSCKT

Description	Fiber Optic Ethernet Media Converter kit*. Requires a small form-factor pluggable (SFP) module (sold separately).
Data Interface	Ethernet
Data Rate	10/100 Mbps IEEE 802.3 Compliant Full Duplex or Half Duplex Electrical Port Full Duplex Optical Port
Compatible Receiver	CNFE2MC
Installation	Installed inside a NDA-U-PA0, NDA-U-PA1 or a NDA-U-PA2 power supply box with supplied mounting hardware

* 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.)		
	Type	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	8–10/125 µm 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 32 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.

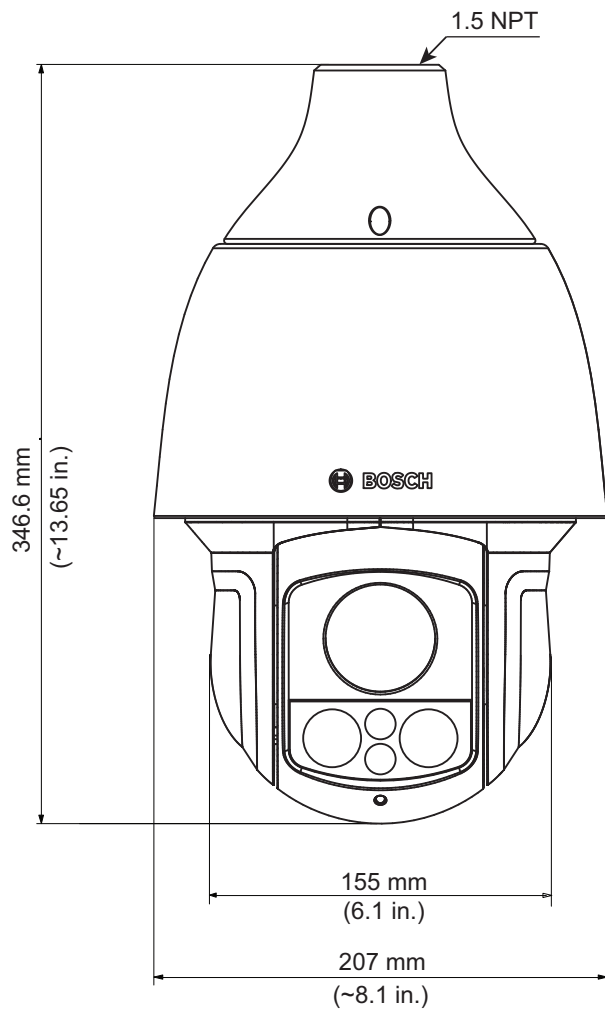
Environmental

Ingress Protection Rating/ Standard	IP66
Operating temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Humidity	Up to 90% RH, non-condensing
Storage temperature	-40 °C to +60 °C (-40 °F to +140 °F)

Construction

Dimensions (DIA x H)	207 mm x 346.6 mm (8.15 in x 13.65 in)
Weight	4.6 kg (10.14 lb)
Construction material	Housing: Aluminum Sunshield: Outdoor Grade Plastic
Standard color	White (RAL 9003)

Dimensional Drawings



Ordering information

NDP-5502-Z30L PTZ dome 2MP 30x IP66 pendant

Outdoor pendant IP dome camera with sunshield, integrated IR illumination up to 180 m (590 ft), 30x zoom, 1080p HD resolution. Essential Video Analytics, Intelligent Dynamic Noise Reduction, remote camera access, and dual power options.

Order number **NDP-5502-Z30L**

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 endant 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-RMT Pendant parapet mount

Universal roof mount for dome cameras, white

Order number **NDA-U-RMT**

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**

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**

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 nm
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**

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