AUTODOME IP 4000i

www.boschsecurity.com

BOSCH
Invented for life

- Luxury-looking golden camera perfect for casino applications
- Good light transmission to allow you to capture details in warm light temperatures
- Perfect combination of style and technology for indoor installations that require high-quality imaging in a compact and aesthetic dome housing
- Integrated 12x optical zoom with high-end imaging platform for monitoring details under typical indoor lighting conditions
- Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data

The AUTODOME IP 4000i is a compact, indoor PTZ dome camera with a high-resolution 1080p60 HD sensor and a 12x optical zoom that allows operators to monitor wide scenes without losing any details. The camera's aesthetic design and flexible mounting options allow unobtrusive surveillance of large halls, reception areas, or waiting areas that would otherwise require multiple cameras for effective surveillance.

Functions

Superior imaging performance
Built on the digital imaging technology from Bosch, the camera is carefully tuned to maintain accurate color reproduction and to deliver high-resolution HD video with flexibility to zoom in to small details of objects.

Pre-programmed user modes
The camera comes with 3 pre-tuned scene modes to match various lighting conditions found in indoor scenes. Users can complete the configuration without going through multiple imaging 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, reduce the bandwidth consumption 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.

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.

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 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 specifications for ONVIF Profile S and ONVIF Profile G. (ONVIF is the acronym for Open Network Video Interface Forum.) For H.265 configuration, the camera also supports Media Service 2, which is part of 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. For more information, see the Bosch Integration Partner Program (IPP) website (ipp.boschsecurity.com).

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 160 degrees per second and maximum tilt speed of 120 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 three-step installation process can save up to 5 minutes per camera installation compared to any conventional PTZ dome.
The camera models are available with a choice of in-ceiling or surface mount.
In-ceiling models are ideal for suspended ceilings, flush-in for an aesthetic look.
Surface-mount models are designed for easy installation on hard ceilings or can be pendant-mounted on a wall or a pipe 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 12X
Detect	25 px/m (8 px/ft)	69 m (226 ft)	897 m (2943 ft)
Observe	63 px/m (19 px/ft)	27 m (89 ft)	356 m (1168 ft)
Recognize	125 px/m (38 px/ft)	14 m (46 ft)	179 m (587 ft)
Identify	250 px/m (76 px/ft)	7 m (23 ft)	90 m (295 ft)

Certifications and approvals

Marking	Applicable Standard
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)

For a full list of all related certifications/standards, 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, contact your sales representative.

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

Technical specifications

Imager	1/2.8" progressive scan CMOS
Effective Picture Elements	1945 x 1097 (2.13 MP)
Lens Focal Length	12x Zoom 5.3 mm to 64 mm (F1.6 to F2.8)
Field of View (FOV)	4.9° to 58.5°
Focus	Automatic with manual override
Iris	Automatic
Digital zoom	16x
Video performance - Sensitivity	
(3100K, reflectivity 89%, 1/30, F1.6, 30 IRE)	
Color	0.05 lx
Mono	0.01 lx
Note: Sensitivity is measured with a clear acrylic bubble.	
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
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 - 160°/s; Tilt: 0.1°/s - 120°/s
Pre-position Speed	Pan: 160°/s Tilt: 120°/s
Pan Range	360° continuous
Tilt Angle	-90° to 0° (Auto-flip 180°)
Pre-position Accuracy	± 0.1° typ.
Pre-positions	256
Tours	Two (2) types of tours: • 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	24 VAC: 12 W PoE+: 12 W

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

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.)

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)

Audio

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

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.

Communications / Software Control

Serial protocols	Bosch OSRD, Pelco P/D, Forward Vision, and Cohu **Note**: A separate license (MVS-FCOM-PRCL) is required.

Operating temperature	-10 ºC to +55 ºC (+14 ºF to +131 ºF)
Humidity	Up to 90% RH, non-condensing
Storage temperature	-40 ºC to +60 ºC (-40 ºF to +140 ºF)

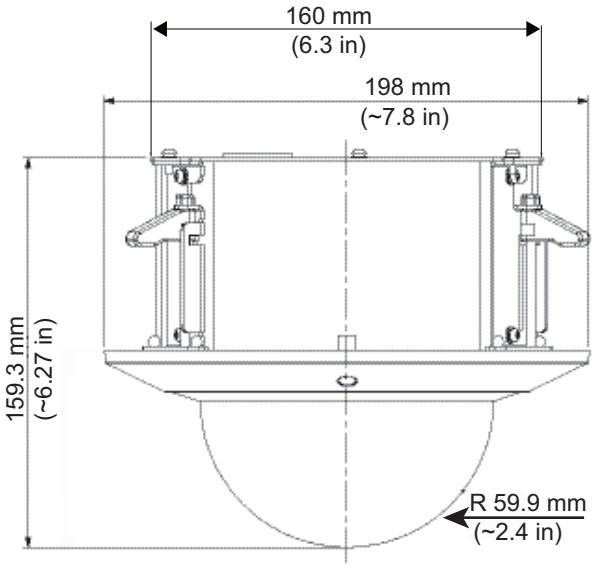
Environmental (in-ceiling model)

Ingress Protection Rating/ Standard	IP51

Construction (in-ceiling model)

Dimensions (DIA x H)	198 mm x 159.3 mm (7.8 in x 6.27 in)
Weight	1.81 kg (3.99 lb)
Construction material	Housing: SPCC Trim ring: PC/ABS Bubble: Polycarbonate
Standard color	Golden

Dimensional Drawings



In-ceiling model

Ordering information

NDP-45A2-Z12C PTZ dome 2MP 12x clear in-ceiling
IP in-ceiling camera, 12x zoom, 1080p HD. Essential Video Analytics, Intelligent Dynamic Noise Reduction, remote camera access, and dual power options.
Order number **NDP-45A2-Z12C**

EWE-AD4HD-IW 12mths wrty ext AUTODOME IP 4000 HD
12 months warranty extension without moving parts, wear parts are excluded
Order number **EWE-AD4HD-IW**

NDP-45A2-Z12CY PTZ dome 2MP 12x golden in-ceiling
IP in-ceiling camera, 12x zoom, 1080p HD. Essential Video Analytics, Intelligent Dynamic Noise Reduction, remote camera access, and dual power options.
Order number **NDP-45A2-Z12CY**

EWE-AD4HD-IW 12mths wrty ext AUTODOME IP 4000 HD
12 months warranty extension without moving parts, wear parts are excluded
Order number **EWE-AD4HD-IW**

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 Midspan, 60W, single port, AC in
60 W indoor midspan for cameras without illuminators
Order number **NPD-6001B**

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT
Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras, for MIC-IP-PSU for MIC analog cameras and for the Surveillance cabinets (NDA-U-PA0, NDA-U-PA1 and NDA-U-PA2).
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**

Software Options

MVS-FCOM-PRCL License key for serial protocol
Serial Protocol Software License (e-license) for IP Cameras
Order number **MVS-FCOM-PRCL**

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