

NDP-5522-Z30C PTZ 2MP 30x HDR in-ceiling

AUTODOME IP starlight 5000i



- ▶ Starlight camera technology with excellent low-light performance
- ▶ 120dB dynamic range lets you capture details in overexposed situations with confidence
- ▶ Intelligent streaming, IDNR and H.265 reduce bit rate by up to 80%
- ▶ Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data
- ▶ High resolution bubble to ensure maximum effective resolution output
- ▶ Simple installation with flexible mounting options (in-ceiling or pendant mounting)

Specially designed and tuned for applications requiring surveillance in scenes with varying light levels, the AUTODOME IP starlight 5000i camera has an integrated 30X optical zoom to identify people at a maximum distance of 183 m (600 ft) with minimal loss of detail.

Functions

Low-light performance

The latest sensor technology, combined with sophisticated noise suppression and a High dynamic range of 120 dB, results in an exceptional sensitivity in color. 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.

- Sodium-lighting: For scenarios where the video is captured under sunlight in the day or under sodium vapor lamp at night.
- Standard: For indoor fluorescent lighting.
- 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 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, such as motion or objects found with the analytics, are encoded.

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.

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.

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.

With the AUTO Privacy Mask, the color of the Privacy Mask will adapt to the color of the surroundings.

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:

| | 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) |

| | DORI definition | Distance | |
|------------------|------------------------|-----------------|--------------------|
| | | WIDE 1X | TELE 30X |
| 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) |

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

Software sealing

After camera configuration is set and should not be changed, system administrators can enable software protection that seals the camera configuration. Any change of the sealing status and any change to static configuration, accidentally or intentional, will break the seal. The camera then sends an alarm message that the video management system can use to start an appropriate alarm scenario. The camera creates a separate log file of all changes that have an effect on the sealing status.

System integration and ONVIF conformance

The camera conforms to the ONVIF Profile S, ONVIF Profile G and ONVIF Profile T specifications. 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.

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.

Snap to zoom

Drawing a box in the image will trigger the camera to zoom to the correct position.

Ease of installation and servicing

The camera has been designed for quick and easy installation, a key feature of IP video products from Bosch. 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.

Regulatory information

For a full list of all related certifications/standards, refer to the Product Test Reports, 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.

| Standard | Type |
|-------------|---|
| cULus | UL 62368-1, 3rd Ed. (Includes CSA 22.2 No. 62368-1:19, 3rd Ed.) |
| FCC/ICES | 47 CFR FCC Part 15 (USA) (Class A) ICES-003 (Canada) (Class A) |
| CE (Europe) | Electromagnetic Compatibility (EMC) Directive EN 55032:2015 + A11: 2020 + A1: 2020 (Class A) EN 50130-4:2011/A1:2014 EN 61000-3-2:2019 + A1: 2021 EN 61000-3-3:2013 + A1: 2019 + A2: 2021 + AC: 2022 Product Safety: Low Voltage Directive (IECEE CB scheme certificate and report are required) EN 62368-1:2020+A11:2020 (with national differences) |

| Standard | Type |
|-------------------------|---|
| | IEC 62368-1: 2018 (ed 3) |
| Image performance | IEC 62676-5 |
| Color representation | ITU-R BT.709-6 |
| ONVIF conformance | EN 50132-5-2, EN 62676-2 |
| HD | SMPTE 296M-2001 (Resolution: 1280x720) SMPTE 274M-2008 (Resolution: 1920x1080) |
| Other labels / markings | BIS; RCM; China RoHS; WEEE |
| Compliance | NDAA compliant TAA compliant |

| Region | Regulatory compliance/quality marks | |
|---------------|-------------------------------------|--|
| Europe | CE | Declaration of Conformity (DoC) - AUTO-DOME IP starlight 5000i,-IR |
| | CE | AUTODOME IP starlight 5000i/-IR 5100i IR |
| Global | IEC 62443 | Industrial Cyber Security Capability |
| USA | UL CAP | Cybersecurity Assurance Program |
| Great Britain | UKCA | F01U345122-UK_DoC_AUTODOME IP starlight 5000i |

Installation/configuration notes

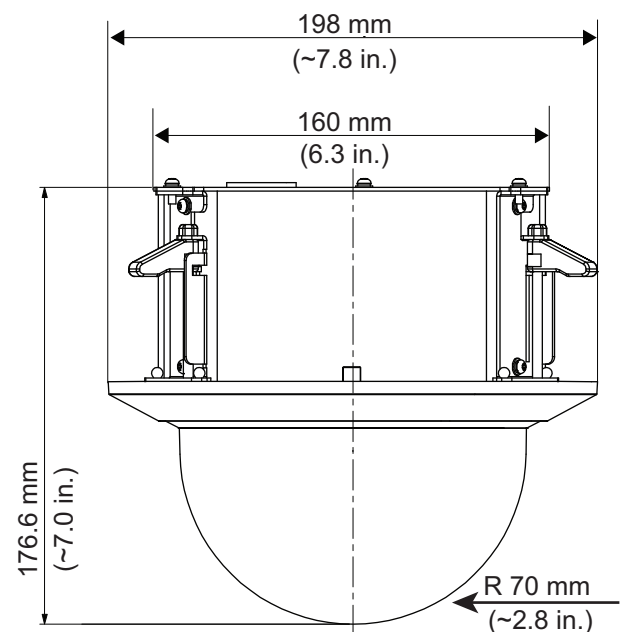


Fig. 1: In-ceiling model
Dimensions in mm (inch)

Parts included

| Quantity | Component |
|----------|---|
| 1 | AUTODOME IP starlight 5000i in-ceiling camera |
| 1 | Mounting template |
| 1 | Screwdriver, T10 Torx |
| 4 | MAC address labels |
| 1 | Quick Installation Guide |
| 1 | Safety instructions |

Technical specifications**Sensor**

| | |
|--------------------------|-----------------|
| Sensor type | 1/2.8 inch CMOS |
| Effective pixels (H x V) | 1,945 x 1,097 |
| Total sensor pixels | 2.13 MP approx. |

Optical

| | |
|------------------------------|-----------------|
| Lens zoom (x) | 30x |
| Lens focal length (mm) | 4.5 mm – 135 mm |
| Lens aperture (/F) | 1.6 /F – 4.4 /F |
| Horizontal field of view (°) | 2.4° – 60.9° |
| Digital zoom (x) | 16x |

Sensitivity

| | |
|----------------------|-----------------------------|
| Low light technology | starlight |
| Measuring method | IEC 62676 Part (1/30, F1.6) |
| Color (lx) | 0.0186 lx |
| Monochrome (lx) | 0.0040 lx |

Platform

| | |
|-------------------------|--------------------------|
| Common Product Platform | CPP7.3 |
| Memory (RAM) (MB) | 512 MB RAM, 256 MB Flash |

Video functions

| | |
|------------------------|---|
| Backlight compensation | On/Off; Intelligent Auto Exposure (IAE) |
|------------------------|---|

| | |
|---|---|
| Camera functionality | Backlight compensation (BLC); Display stamping |
| Day/night modes | Auto; Color; Monochrome |
| Gain control | AGC |
| WDR technology | HDR |
| High Dynamic Range (HDR) (dB) | 120 dB |
| Measured according to IEC 62676 Part 5 (dB) | 107 dB |
| Number of privacy masks | 32 |
| Number of sectors | 16 |
| Privacy masks pattern | Black; White; Gray; Auto color |
| Shutter modes | Automatic Electronic Shutter (AES) |
| 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 |
| White balance modes | Basic; Standard; Dominant color; Sodium lamp auto |

Video content analysis

| | |
|----------------|--|
| Analysis type | Essential Video Analytics |
| Alarm triggers | Any object; Object in field; Line crossing; Enter / leave field; Loitering; Follow route; Idle / removed object; Counting; Occupancy; Crowd density estimation; Condition change; Similarity search; Tampering |
| Configurations | Silent VCA; Profiles 1 - 16 |
| Object filters | Duration; Size; Aspect ratio; Speed; Direction; Color; Object classes (4) |
| Calibration | Automatic self-calibrating when height is set |

Video streaming

| | |
|---------------------------|--------|
| Camera processing latency | <200ms |
| Frame rate (fps) | 60 fps |

| | |
|-------------------|--|
| Resolution | 1920 x 1080; 1280 x 1024; 1280 x 720; 768 x 432; 512 x 288; 704 x 576; 640 x 480 |
| Type of stream | High resolution H.26x stream; M-JPEG stream; I-frame only from stream 1 |
| Video compression | H.264 (ISO/IEC 14496-10); M-JPEG; H.265/HEVC |

Network

| | |
|-----------------------|--|
| Ethernet type | 10/100BASE-T |
| Conformity | ONVIF Profile S; ONVIF Profile G; ONVIF Profile T |
| Protocols / standards | 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, MIBII); SNMP (V3, MIBII); 802.1x, EAP/TLS; DNS; DNSv6; DDNS (DynDNS.org, selfHOST.de, no-ip.com); SMTP; iSCSI; DiffServ (QoS); LLDP; SOAP; CHAP; Digest authentication |

Data security

| | |
|--------------------------|---|
| Crypto coprocessor (TPM) | AES/CBC 256 bit |
| PKI | X.509 certificates |
| End-to-end encryption | Full end-to-end with supported VMS |
| Encryption | TLS 1.2; TLS 1.1; AES 256; AES 128; TLS 1.3 |
| Local storage encryption | XTS-AES |
| Video authentication | MD5; SHA-1; SHA-256; Checksum |
| Firmware protection | Signed firmware; Secure reboot |

Storage

| | |
|------------------|------------------------|
| Internal storage | Memory card micro SD |
| Memory card slot | Micro SDHC; Micro SDXC |

Inputs and outputs

| | |
|---------------|--------------------------------------|
| Alarm inputs | 2 |
| Alarm outputs | 1 relay output 5 VDC, 150 mA maximum |

Audio

| | |
|--------------|----------|
| Audio input | Line-in |
| Audio output | Line-out |

| | |
|-------------------------------|-------------------------------------|
| Compression and sampling rate | G.711 8 kHz; L16 16 kHz; AAC; 16kHz |
|-------------------------------|-------------------------------------|

PTZ functions

| | |
|---------------------------------------|----------------------|
| Pan speed (°/s) | 0.1°/s – 300°/s |
| Pan range (°) | 0° – 360° continuous |
| Tilt range (°) | -90° – 0° |
| Number of pre-positions | 256 |
| Maximum pre-position pan speed (°/s) | 300°/s |
| Maximum pre-position tilt speed (°/s) | 200°/s |
| Pre-position accuracy (average) (°) | 0.10° |

Electrical

| | |
|---|-------------|
| Type of power supply | VAC; PoE |
| Input voltage (VAC) | 24 VAC |
| PoE input | PoE+ |
| Power consumption VAC (W) (typical – maximum) | 14 W – 24 W |

Environmental

| | |
|---|-----------------|
| IP rating | IP51 |
| Operating temperature (°F) | 14 °F – 140 °F |
| Operating temperature (°C) | -10 °C – 60 °C |
| Operating relative humidity, non-condensing (%) | 5% – 93% |
| Storage temperature (°C) | -40 °C – 60 °C |
| Storage temperature (°F) | -40 °F – 140 °F |
| Country of origin | Portugal |

Construction

| | |
|-------------------------|---|
| Dimensions (Ø x H) (mm) | 198 mm x 176.6 mm |
| Dimensions (Ø x H) (in) | 7.8 in x 7 in |
| Weight (kg) | 2.10 kg |
| Weight (lb) | 4.60 lb |
| Material | Housing: SPCC; Trim ring: Polycarbonate/ABS |

| | |
|-----------------|-----------------------|
| Color (RAL) | RAL 9003 Signal white |
| Bubble material | Clear polycarbonate |

Ordering information

NDP-5522-Z30C PTZ 2MP 30x HDR in-ceiling

In-ceiling IP PTZ dome camera; 1080p60; 30X optical, 4x4 digital zoom; 120dB HDR; starlight imaging; IAE; EVA; PoE; Intelligent Streaming; clear, high-resolution, coated bubble. Dual power options.
NDAA and TAA compliant.
Order number **NDP-5522-Z30C**

Accessories

NPD-6001B Midspan, 60W, single port, AC in

60 W indoor midspan for cameras without illuminators
Order number **NPD-6001B**

NPD-6001C Midspan, bt, 60W, indoor

Indoor midspan with Power-over-Ethernet for use with PoE-enabled cameras; 60 W, single-port, AC input
Order number **NPD-6001C**

NPD-6001C-E Midspan, bt, 60W, IP67

Outdoor midspan with Power-over-Ethernet for use with PoE-enabled cameras; 60 W, single-port
Order number **NPD-6001C-E**

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**

NDA-U-PA0 Surveillance cabinet 24VAC

Surveillance cabinet, 24 VAC input, 24 VAC output
Order number **NDA-U-PA0**

NDA-U-PA1 Surveillance cabinet 120VAC

Surveillance cabinet, 100 - 120 VAC 50/60 Hz input, 24 VAC output
Order number **NDA-U-PA1**

NDA-U-PA2 Surveillance cabinet 230VAC

Surveillance cabinet, 230 VAC input, 24 VAC output
Order number **NDA-U-PA2**

NDA-U-PSMB Pendant wall/ceiling mount SMB

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

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 support kit for AUTODOME

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

Order number **MNT-ICP-ADC**

VG4-SFPSCKT Ethernet to SFP interface kit

Ethernet media converter video transmitter/data receiver fiber optic kit

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**

Software Options

MVS-FCOM-PRCL License key for serial protocol

Serial Protocol Software License (e-license) for IP Cameras

Order number **MVS-FCOM-PRCL**

Services

EWE-AD5HD-IWMP 12 mths wrty ext AD IP 5000 mov par

12 months warranty extension

Order number **EWE-AD5HD-IWMP**



<https://www.boschsecurity.com>