

NDP-5523-Z20C PTZ 4MP HDR 20x clear in-ceiling AUTODOME IP starlight 5100i



The AUTODOME IP starlight 5100i camera extends the camera range of the series to the next level. The camera has a 1/2-inch, 4MP sensor, which is specially tuned for applications that need surveillance in scenes with varying light levels.

The camera has an integrated 20X optical zoom to identify people at a maximum distance of 168 meters (551 feet).

The smart camera features Essential Video Analytics, which detects objects within, entering, or leaving an area or crossing a line and provides instant alerts. This feature lets operators react early and quickly to possible intrusions, and prevent damage of property or assets.

Functions

Outstanding image quality

The 1/1.8-inch CMOS HD sensor combines outstanding sensitivity and sophisticated noise suppression with High dynamic range of 133dB. The camera provides superior low-light performance as well as outstanding image quality, with sharp focus details and excellent color reproduction even under challenging lighting conditions.

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.

- ▶ 20X, 4MP high detail at fast speeds (60 fps)
- ▶ Starlight technology with 1/1.8 inch ultra HD sensor for excellent low-light performance
- ▶ HDR X -- High Dynamic Range to see every detail in both bright and dark areas of the scene without motion-related artifacts
- ▶ Intelligent streaming, IDNR and H.265 for a decreased bit rate of up to 80%
- ▶ Built-in Essential Video Analytics to trigger relevant alerts and quickly retrieve data

- 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 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.

Support for H.264 and H.265 with Encoder Regions

Set a region in the field of view and define a specific encoder profile to it. This setting reduces the bitrate of the stream further than intelligent streaming alone.

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 | Distance to object | | |
|------|--------------------|----------|-------------|
| | WIDE 1X | TELE 20X | Scene width |
| | | | |

| | | | |
|--|------------------|---------------------|-------------------|
| Detection 25 px/m (8 px/ft) | 87m (285 ft) | 1676 m (5498 ft) | 102 m (336 ft) |
| Observation 63 px/m (19 px/ft) | 34 m (113 ft) | 665 m (2182 ft) | 41 m (133 ft) |
| Recognition 125 px/m (38 px/ft) | 17 m (57 ft) | 335 m (1100 ft) | 20 m (67.2 ft) |
| Identification 250 px/m (76 px/ft) | 9 m (28 ft) | 168 m (550 ft) | 10 m (33.6 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 it should not be changed, and system administrators can enable software protection to seal the camera configuration. Any change of the sealing status or of the static configuration, accidental 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. For H.265 configuration, the camera 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. 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.

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.

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 1 screw.

The pendant housing is rated to provide IP66 protection and offers an operating temperature range down to -40°C (-40°F). The pendant camera comes fully assembled with a sunshield and ready for pendant arm 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.

Project Assistant

Project Assistant by Bosch is the market's most easy-to-use app for initial installation and basic configuration of IP cameras. Off-site and without connection to the camera, basic configurations can be created and then shared with colleagues. On-site, these pre-configurations can be pushed onto the camera, making the installation procedure easier and

less time-consuming. Cameras previously configured can be integrated as well. The app allows easy viewing and adjustment of the camera's field of view. The app automatically generates a comprehensive report of the commissioned cameras.

Certifications and approvals

| Region | Regulatory compliance/quality marks | |
|--------|-------------------------------------|---|
| Europe | CE | Declaration of Conformity (DoC) (AUTODOME IP starlight 5100i, -IR) |
| USA | UL | UL-US-2007091-0 Certificate of Compliance (AUTODOME IP starlight 5100i) |
| | UL | IEC CB Test Certificate (AUTODOME IP starlight 5100i) |

Installation/configuration notes

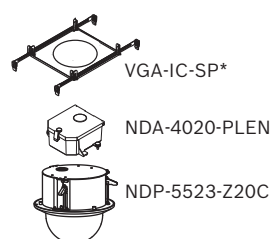


Fig. 1: In-ceiling mount
*Optional

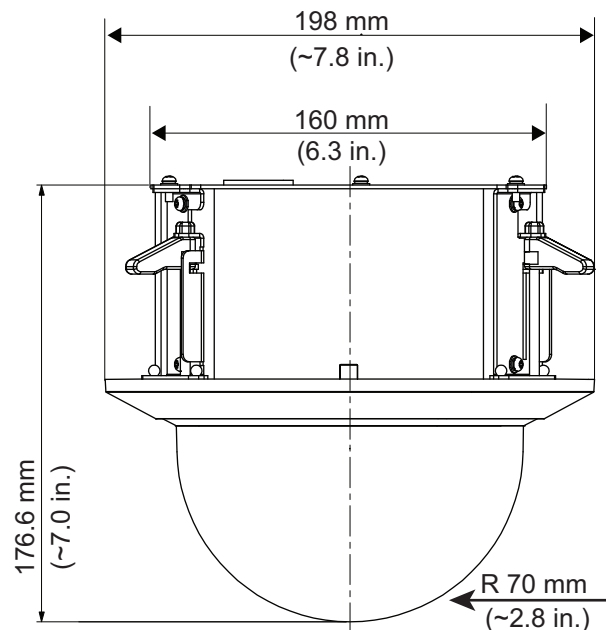


Fig. 2: In-ceiling model

Parts included

| Quantity | Component |
|----------|---|
| 1 | AUTODOME IP starlight 5100i in-ceiling camera |
| 1 | Mounting template |

| Quantity | Component |
|----------|--------------------------|
| 1 | Screwdriver, T10 Torx |
| 4 | MAC address labels |
| 1 | Quick Installation Guide |
| 1 | Safety instructions |

Technical specifications

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|----------------------------------|--|
| Imager | 1/1.8 inch CMOS |
| Effective picture elements | 2688 x 1520 (4 MP) |
| Lens | 20x motorized zoom 6.5 mm - 130 mm (F1.55 - F3.95) |
| Optical zoom Field of view (FOV) | 3.5° to 61.1° |
| Focus | Automatic with manual override |
| Iris | Automatic with iris priority feature |
| Digital zoom | 16x |
| Sensitivity | 3100K, reflectivity 89%, 1/30, F1.55, 30 IRE |
| Color | 0.0107 lux |
| Monochrome | 0.0016 lux |
| High dynamic range | 133 dB (HDR X) |
| Gain control | AGC, Variable 6 dB to 78 dB |
| Electronic Shutter Speed (AES) | 0.64 sec to 1/66666 sec |
| Signal-to-Noise Ratio (SNR) | >55 dB |
| Day/Night switch | Automatic IR cut filter |
| Backlight compensation (BLC) | On, Off, Intelligent Auto Exposure (IAE) |
| White balance | Basic auto, Standard auto, Sodium lamp auto, Dominant color auto, Manual |
| Day/Night (mode) | Monochrome, Color, Auto |

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|-----------------------|---|
| Defog mode feature | Improves visibility when viewing foggy or other low-contrast scenes. |
| 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) |

Video Content Analysis

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|---------------------------|---|
| Analysis type | Essential Video Analytics |
| Configurations | Silent VCA / Profile 1/2 / Scheduled / Event triggered |
| Alarm rules (combinable) | 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 |
| Object filters | Duration Size Aspect ratio Speed Direction Color Object classes (4) |
| Calibration / Geolocation | Accelerometer data and camera height |
| Tamper detection | Maskable |
| Detection | Audio |

Mechanical

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|----------------|--|
| Pan/Tilt modes | Normal: 0.1°/s - 120°/s Turbo: Pan: 0.1°/s - 300°/s; Tilt: 0.1°/s - 200°/s |
|----------------|--|

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|-----------------------|---|
| Pre-position speed | Pan: 300°/s Tilt: 200°/s |
| Pan Range | 360° continuous |
| Tilt Angle | -90° to 0° (Auto-flip 180°) |
| Pre-position Accuracy | ± 0.1° typ. |
| Pre-positions | 256 |
| 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

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|---|--|
| Power source | 24 VAC PoE+ (IEEE 802.3at, class 4 standard) |
| Power consumption (in-ceiling) | 14.4 W / 25.2VAC |
| Power consumption (pendant) (standard operation, with heater OFF) | 14.4 W / 25.2VAC |
| Power consumption (pendant) (maximum, with heater ON) | 20.1 W / 31.2VAC |

Network

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|-------------------|---|
| Ethernet | 10/100BASE-T |
| Encryption | TLS 1.2, 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, ONVIF Profile T, GB/T 28181 |
| Video compression | H.265 H.264 M-JPEG |

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|--------------------|--|
| Streaming | Four (4) streams: Two (2) configurable streams in H.264 or H.265 One (1) I-frame-only stream based on first stream One (1) M-JPEG Stream |
| Maximum frame rate | 60fps at all resolutions |
| IP delay (typical) | 60 fps: 200 ms |

Resolution

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|----------------------|-------------|
| 1440p | 2560 x 1440 |
| 1080p HD | 1920 x 1080 |
| 720p HD | 1280 x 720 |
| 1.3 MP 5:4 (cropped) | 1280 x 1024 |
| D1 4:3 (cropped) | 704 x 576 |
| 640 x 480 | 640 x 489 |
| 432p SD | 768 x 432 |
| 288p SD | 512 x 288 |
| 144p SD | 256 x 144 |

Bitrate 2560 x 1440

| FPS | H.264 | H.265 |
|-----|-------|-------|
| 60 | 7982 | 5973 |
| 30 | 4871 | 3662 |
| 25 | 4284 | 3218 |
| 15 | 3004 | 2240 |
| 8 | 1938 | 1458 |
| 4 | 1191 | 889 |
| 2 | 747 | 551 |
| 1 | 462 | 338 |

Actual bitrate may vary depending on the pictures settings of the scene and on encoding configurations.

Local Storage

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|------------------|--|
| 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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User Connections

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|-----------------|--|
| 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 maximum |
| Audio | 1x mono line in, 1x mono line out |
| Signal line in | 94 kOhm typical, 1 Vrms maximum |
| Signal line out | 1 kOhm typical, 1 Vrms maximum |

Audio

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

Environmental

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|-------------------------------------|---|
| 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) |
| Ingress Protection Rating/ Standard | IP51 |

Construction

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|-----------------------|---|
| 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) |

Ordering information

NDP-5523-Z20C PTZ 4MP HDR 20x clear in-ceiling
PTZ dome camera, 4MP HDR, 20x optical zoom, clear, indoor in-ceiling
Available in specific regions only.
Order number **NDP-5523-Z20C | F.01U.359.950**

Services

EWE-AD5HD-IW 12mths wrty ext AUTODOME IP 5000 HD
12 months warranty extension without moving parts, wear parts are excluded
Order number **EWE-AD5HD-IW | F.01U.346.303**

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