AUTODOME IP starlight 7000i

The AUTODOME IP starlight 7000i camera incorporates the latest in Video Analytics, starlight technology, and video streaming. With starlight imaging technology for excellent low-light sensitivity and the most robust Intelligent Video Analytics on the market, the camera delivers unmatched picture quality. Even under the most challenging light conditions, the 30x PTZ dome camera delivers high-definition (HD) 1080p video. Easy to install, the camera is available in either a field-proven, outdoor pendant housing or an indoor, in-ceiling housing.

**Functions**

**Exceptional low-light performance**
The latest sensor technology combined with the 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.

**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.

**High dynamic range**
The dynamic range of the camera is outstanding and is obvious in real-world performance comparisons. In extended dynamic range mode, the camera uses an electronic shutter to capture four images with different exposure time and reproduce a high-contrast frame. The result is that you can view details in both the bright areas (highlights) and the dark areas (shadows) of a scene at the same time. You can easily distinguish objects and features (for example, faces) with bright backlight.

**Camera Trainer**
Based on examples of target objects and non-target objects, the Camera Trainer program uses machine learning to allow the user to define objects of interest and generate detectors for them. In contrast to the moving objects that the Intelligent Video Analytics application detects, the Camera Trainer program detects both moving and non-moving objects and classifies them immediately. Using Configuration Manager, you can configure the Camera Trainer program using both live video as well as recordings.
available through the respective camera. The resulting detectors can be downloaded and uploaded for distribution to other cameras.

**Intelligent Video Analytics on the edge**
With built-in video content analysis (VCA), the camera reinforces the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The camera comes with the state-of-the-art VCA method by Bosch, Intelligent Video Analytics, that reliably detects, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image.

With this method, the camera is able to detect idle and removed objects as well as loitering, multiple line crossing, and trajectories. This method also supports BEV (Bird’s Eye View) People counting.

**Video Analytics while camera is moving**
Outside of pre-positions and even while the PTZ camera is moving, whether on guard tours or manually, the Intelligent Video Analytics application can detect and start alarms when objects are in alarm fields. These alarm fields are defined once across all PTZ camera views. The camera can automatically trigger an alarm if any part of a field within the camera’s view becomes active while on a guard tour sweeping across the monitored areas.

**Intelligent Tracking**
The camera utilizes the built-in Intelligent Video Analytics to follow an individual or an object continuously.

When Intelligent Video Analytics detects objects while the camera is in a stationary position, the camera activates the Intelligent Tracking feature. This feature controls the pan/tilt/zoom actions of the camera to track the objects and keep them in view in the scene. The new Intelligent Tracking is based on robust flow detection algorithms which can reliably track moving objects even under challenging scenes.

The tracking and detection reliability can be enhanced further with virtual masking for scenes with a lot of background motion such as trees or other objects creating constant motion in the scene.

**Auto mode:** When configured in this mode, the camera actively analyzes the video to detect any moving object. If it detects movement, it begins to track the object. This mode is most useful for scenarios where normally no motion is expected.

**One Click mode:** In this mode, users can click an object moving in the live video image to enable the camera to track the movement of the selected object. This mode is most useful for scenarios where normal scene activity is expected.

**Intelligent streaming reduces bandwidth and storage requirements**
The low-noise image and the efficient H.265 compression technology provide clear images while reducing bandwidth and storage by up to 80% compared to standard H.264 cameras. With this new generation of cameras an extra level of intelligence is added with Intelligent Streaming. The camera provides the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio. The smart encoder continuously scans the complete scene as well as regions of the scene and dynamically adjust compression based on relevant information like movement. Together with Intelligent Dynamic Noise Reduction, which actively analyzes the contents of a scene and reduces noise artifacts accordingly, bitrates are reduced by up to 80%. Because noise is reduced at the source during image capture, the lower bitrate does not compromise image quality. This results in substantially lower storage costs and network strain and still retain a high image quality and smooth motion.

**Image Stabilization**
As PTZ cameras continue to increase their optical zoom capabilities, image stabilization becomes critical to eliminate movement caused by unstable camera mounts. Minor movement of the camera mount can shift the field of view by a large distance when the camera is zoomed to a high value. This can render images unusable. The camera incorporates an Image Stabilization algorithm; when turned on, the camera detects continuous vibration. If it detects vibration, the camera dynamically corrects the shaky video in both the vertical and horizontal axis, resulting in improved image clarity and a stable field of view on the monitor.

**Auto Exposure (AE) region and Focus region**
With the Auto Exposure (AE) function, the camera computes the lighting condition of the entire scene. Then the camera determines the optimum level of iris, gain, and shutter speed.

In AE region mode, users can designate a specified area of the scene, based on pre-positions. The camera computes the lighting condition of the specified area. The camera determines the optimum level of iris, gain, and shutter speed to get an image. Focus region mode, unlike normal auto focus mode, allows users to focus on a specified area of the scene. Users have the ability to customize these modes, if necessary, for the specific requirements of the site.

**Simple set-up**
The camera has a very intuitive user interface that allows fast and easy configuration. Configurable scene modes are provided with the best settings for a variety of applications.

- **Standard**
  This mode is optimized for most standard scenes both indoor and outdoor.

- **Color Only (Traffic)**
  In this mode, the camera does not switch to monochrome mode at low light levels. The mode is optimized to minimize motion artifacts and to capture the color of vehicles/pedestrians and traffic lights, even at night, for scenarios such as city surveillance and traffic monitoring.
- **Indoor**
  This mode is ideal for indoor applications where lighting is constant and does not change. Auto white balance will be mainly focused on low color temperature 3200K.
- **Sensitivity boost**
  This mode provides maximum sensitivity in low light scenes by using longer exposure times, resulting in bright images even in extreme low light.
- **Fast movement**
  This mode is used for monitoring fast moving objects like cars in traffic scenes. Motion artifacts are minimized and the image is optimized for a sharp and detailed picture in color and monochrome.
- **Vibrant**
  This mode provides a more vivid image with increased contrast, sharpness, and saturation.

**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:

The nylon bubble material is required to meet the IK10 shock rating. The optical characteristics of nylon compared to the standard acrylic bubble affect the resolution and sharpness of the video image. For the camera to give the best image that fits your application, consider the important limitations in the table that follows:

<table>
<thead>
<tr>
<th>DORI</th>
<th>Distance to object (30x optical zoom)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard bubble (acrylic)</td>
</tr>
<tr>
<td></td>
<td>WIDE 1X</td>
</tr>
<tr>
<td>Detection</td>
<td>25 px/m</td>
</tr>
<tr>
<td>Observation</td>
<td>63 px/m</td>
</tr>
<tr>
<td>Recognition</td>
<td>125 px/m</td>
</tr>
<tr>
<td>Identification</td>
<td>250 px/m</td>
</tr>
</tbody>
</table>

**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.

**Pre-positions and tours**

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.

**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

**Power options**

The camera can be powered by one of the devices in the list that follows:

- a 30 W (IEEE 802.3at) midspan
- a 30 W network switch
- a 60 W midspan

In a PoE configuration, a single (Cat5e/Cat6e) cable connection provides power while simultaneously supporting data and video transmission. For maximum reliability, the camera can operate in a redundant configuration, with both a 24 VAC power source and a...
midspan or a switch connected simultaneously. If either power source fails, the camera switches automatically to the other power source. The camera can also accept a standard 24 VAC power source if a PoE network interface will not be used.

For pendant models used in outdoor applications that require heaters, a 60 W Bosch midspan or a 60 W switch is required to power both the camera and its internal heaters.

For in-ceiling or indoor pendant applications that do not require heater power, a standard 30 W (IEEE 802.3at) midspan or a 30 W switch can be used to power the camera.

**System integration and ONVIF conformance**

The camera conforms to the ONVIF (Open Network Video Interface Forum) specification which guarantees interoperability between network video products regardless of manufacturer. The ONVIF Profile S specification allows easy integration with other conformant devices and VMS. ONVIF conformant devices are able to exchange live video, audio, metadata, and control information, and ensure that they are automatically discovered and connected to network applications such as video management systems.

**PTZ drive and mechanism**

The camera offers a reliable drive platform, designed for continuous tours for at least three years. It provides an unlimited three-year warranty. Its design provides optimum smoothness in motion when used at low speeds or with a joystick.

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 variable pan/tilt speeds from a crawl speed of only 0.1 degrees per second to a full 400 degrees per second. The camera is capable of pan speeds of 400 degrees per second and tilt speeds of 300 degrees per second between pre-positions. The camera provides a tilt angle 18 degrees above the horizon, and a pan range of up to 360 degrees continuous rotation.

**Design for challenging environments**

Pendant housings are rated to provide IP66 protection and offer an operating temperature range down to -40 °C (-40 °F). The pendant model comes fully assembled with a sunshield which can be easily removed for use in indoor applications. In addition, both pendant and in-ceiling camera models have a high-resolution acrylic bubble for enhanced image clarity.

**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 offers a full complement of hardware and accessories (sold separately) for wall, corner, mast, roof, and pipe mount for indoor and outdoor environments, which allow the camera to be adapted easily to individual site requirements. Remotely upgrade the camera whenever new firmware becomes available. This ensures up-to-date products, thus protecting investment with little effort.

**Fiber Optic Kit**

Bosch offers the optional VG4-SFPSCKT, a unique media converter module for use with various Bosch devices. This media converter module is designed to accept a wide-range of 10/100 Mbps SFP modules for use with Multimode or Single-mode optical fiber with LC or SC connectors.

The media converter module along with the SFP module is user-installed directly into the camera’s power supply box to provide an integrated fiber optic solution.

**Camera Diagnostics**

The camera has several built-in sensors / advanced diagnostics that display warnings on the camera’s OSD about the health of the camera. The diagnostics log records the events such as:

- Low voltage - a drop in incoming power below the level where the camera becomes non-functional
- High temperature - the internal temperature exceeds specifications
- Low temperature - the internal temperature exceeds minimum levels
- High humidity - the internal humidity exceeds 70%
- Total hours of camera operation

Certain events also appear on the camera’s OSD. These diagnostic records are available for the installation or service technician to review.

**Regulatory information**

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.

|-------------------------------------|---------------------------------------------------------------|

<table>
<thead>
<tr>
<th>Product Safety</th>
<th>Complies with UL, CE, CSA, EN, and IEC standards including: UL 62368-1 EN 62368-1 EN 60950-1 CAN/CSA-C22.2 No. 62368-1-14 IEC 62368-1 Ed.2 IEC 60950-1 Ed.2 IEC 60950-22 Ed.2</th>
</tr>
</thead>
</table>
### Installation/configuration notes

**Fig. 1:** Dimensions, AUTODOME7000 pipe mount, pendant mount

1. Power supply box and sunshield
2. Sunshield removed
3. Mounting plate
4. Power supply box

**Fig. 2:** AUTODOME 7000 series In-ceiling
**Pendant mounts**

Pendant cameras require a pendant arm or pipe mount (sold separately) to make connections from the camera to a network and/or other connections (24 VAC, fiber optic cable, alarms/relays, audio).

<table>
<thead>
<tr>
<th>Pendant Arm Mounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pendant Arms with Power Box</td>
</tr>
<tr>
<td>VG4-A-PA0 (no transformer)</td>
</tr>
<tr>
<td>VG4-A-PA1 (120 VAC transformer)</td>
</tr>
<tr>
<td>VG4-A-PA2 (230 VAC transformer)</td>
</tr>
<tr>
<td>Pendant Arm with Wiring</td>
</tr>
<tr>
<td>VG4-ARM</td>
</tr>
<tr>
<td>Wall Mount Plate</td>
</tr>
<tr>
<td>VG4-PEND-WPLATE</td>
</tr>
</tbody>
</table>

**Pipe Mounts**

| Pipe Mount Kit                              |
| VG4-A-9543                                  |

**Pendant Roof Mounts**

| Roof (Parapet) Mount                        |
| VG4-ROOF-MOUNT (with 1.5-inch NPT tapered male threads) |

**Optional Mounting Plates**

| Corner Mounting Plate                       |
| VG4-A-9542                                  |
| Pole Mounting Plate                         |
| VG4-A-9541                                  |
| Flat Roof Adapter for Roof (Parapet) Mount  |
| LTC 9230/01                                 |

**In-ceiling bubbles**

| Clear HD high-resolution acrylic            |
| VG4-BUBHD-CCLA                              |
| Tinted HD high-resolution acrylic           |
| Included with in-ceiling camera models.     |
| VG4-BUBHD-CTIA                              |

**Pendant bubbles**

| Clear high-resolution acrylic (Included with pendant camera models.) |
| VG4-BUBBLE-PCLA                                                       |
| Tinted high-resolution acrylic                                         |
| VG4-BUBBLE-PTIA                                                       |
| Clear rugged IK10-rated nylon*                                         |
| VG4-BUBBLE-IK10                                                        |

*Included with NDP-7512-230K
Wiring requirements for outdoor installation
- Ethernet cable must use shielded cable such as F/UTP shielded cable with twisted pairs (often referred to as FTP) or S/UTP braided shield with twisted pairs (often referred to as STP).
- Make sure that the routing of external wiring is through a permanently earthed metal conduit.
- Bosch highly recommends that you use surge/lightning protection devices (sourced locally) to protect network and power cables and the camera installation site.

Technical specifications
AUTODOME IP starlight 7000i

| **Imager** | 1/2.8 in. CMOS sensor |
| **Effective Picture Elements (Pixels)** | 1944 x 1212 (2.35 MP) |
| **Lens** | 30x motorized Zoom 4.3 mm to 129 mm F1.6 to F4.7 |
| **Field of View (FOV)** | 2.3° to 64.7° |
| **Focus** | Automatic with manual override |
| **Iris** | Automatic with manual override |
| **Digital Zoom** | 12x |
| **Day/Night switch** | Automatic IR cut filter |

Video performance - Sensitivity
(3100K, reflectivity 89%, 1/30, F1.6, 30 IRE)

- **Color** 0.0077 lx
- **Monochrome** 0.0008 lx

Video performance - Dynamic range

| **High dynamic range** | 120 dB WDR |
| **Measured according to IEC 62676 Part 5** | 100 dB WDR |
| **Gain control** | AGC, Fixed, Region per pre-position |
| **Aperture Correction** | Horizontal and vertical |
| **Electronic Shutter Speed (AES)** | 1/1 sec to 1/30,000 sec (22 steps) |
| **Signal-to-Noise Ratio (SNR)** | >55 dB |

Backlight compensation (BLC) | On / Off / Intelligent Auto Exposure (IAE) |
White balance | 2000 K to 10,000 K ATW, AWB Hold, Extended ATW, Manual, Sodium Lamp Auto, Sodium Lamp, indoor, outdoor |
Day/Night | Monochrome, Color, Auto |
Defog mode feature | Improves visibility when viewing foggy or other low-contrast scenes. |
Noise Reduction | Intelligent Dynamic Noise Reduction |
Sectors/Title | 4, 8, 12, or 16 user-selectable, independent sectors, each with 20 characters per Title |
Privacy Masks | 32 individually configurable Privacy Masks; maximum 8 per Pre-position; programmable with 3, 4 or 5 corners; selectable color of Black, White, Gray, “Auto” (average background color) |
Virtual Masking | 24 individually configurable Virtual Masks to hide parts of the scene (background motion such as moving trees, pulsating lights, busy roads, etc.) which should not be considered for flow analysis to trigger Intelligent Tracking. |
Pre-positions | 256 Pre-positions, each with 20 characters per Title |
Guard Tours | Custom Recorded Tours - two (2), total duration 30 minutes: Pre-position tour - one (1), consisting of up to 256 scenes consecutively, and one (1) customized with up to 64 user-defined scenes |
Supported Languages | English, Czech, Dutch, French, German, Italian, Polish, Portuguese, Russian, Spanish, Japanese, Chinese |

Video content analysis

| Analysis type | Intelligent Video Analytics |
**Configurations**
Off / Global VCA / Profiles 1 - 16

**Calibration**
Automatic self-calibrating when height is set

**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, Object classes (Upright persons, Bikes, Cars, Trucks), Color

**Network**

<table>
<thead>
<tr>
<th>Video compression</th>
<th>H.265, H.264, M-JPEG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streaming</td>
<td>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</td>
</tr>
<tr>
<td>Frame rate</td>
<td>1080p: 30fps; 720p: 60fps</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10BASE-T/100BASE-T, auto-sensing, half/full duplex</td>
</tr>
<tr>
<td>Encryption</td>
<td>TLS 1.0, TLS 1.1, TLS 1.2, DES, 3DES, AES</td>
</tr>
<tr>
<td>Ethernet connector</td>
<td>RJ45</td>
</tr>
<tr>
<td>GOP Structure</td>
<td>IP, IVP, IBBP</td>
</tr>
<tr>
<td>Data Rate (H.265, 1080P)</td>
<td>61 kbps to 2.8 Mbps (depending on the scene, the frame rate, and the quality settings)</td>
</tr>
<tr>
<td>Overall IP Delay</td>
<td>60 fps: 166 ms (typical) 30 fps: 233 ms (typical)</td>
</tr>
<tr>
<td>Interoperability</td>
<td>ONVIF Profile S; ONVIF Profile G; ONVIF Profile M; ONVIF Profile T</td>
</tr>
<tr>
<td>Protocols</td>
<td>IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPV6, RTSP, FTP, ARP, DHCP, APABA (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, CHAP, digest authentication</td>
</tr>
</tbody>
</table>

**Resolutions (H x V)**

| 1080p HD          | 1920 x 1080 |

**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
- Object classes (Upright persons, Bikes, Cars, Trucks)
- Color

**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: 1080p: 30fps; 720p: 60fps
- Ethernet: 10BASE-T/100BASE-T, auto-sensing, half/full duplex
- Encryption: TLS 1.0, TLS 1.1, TLS 1.2, DES, 3DES, AES
- Ethernet connector: RJ45
- GOP Structure: IP, IVP, IBBP
- Data Rate (H.265, 1080P): 61 kbps to 2.8 Mbps (depending on the scene, the frame rate, and the quality settings)
- Overall IP Delay: 60 fps: 166 ms (typical) 30 fps: 233 ms (typical)
- Interoperability: ONVIF Profile S; ONVIF Profile G; ONVIF Profile M; ONVIF Profile T
- Protocols: IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPV6, RTSP, FTP, ARP, DHCP, APABA (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, CHAP, digest authentication

**Resolutions (H x V)**

| Resolutions (H x V) | 1080p HD          | 1920 x 1080 |

| 720p HD          | 1280 x 720 |
| 1.3 MP 5:4 (cropped) | 1280x1024 |
| D1 4:3 (cropped) | 720 x 480 |
| 640x480         | 640 x 480 |
| 432p SD         | 768 x 432 |
| 288p SD         | 512 x 288 |
| 144p SD         | 256 x 144 |

The table that follows shows the average typical optimized bitrate, in kbits/s, for different frame rates:

<table>
<thead>
<tr>
<th>FPS</th>
<th>H.264</th>
<th>H.265</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>2470</td>
<td>2060</td>
</tr>
<tr>
<td>25</td>
<td>2410</td>
<td>1810</td>
</tr>
<tr>
<td>15</td>
<td>1690</td>
<td>1260</td>
</tr>
<tr>
<td>8</td>
<td>1090</td>
<td>820</td>
</tr>
<tr>
<td>4</td>
<td>670</td>
<td>500</td>
</tr>
<tr>
<td>2</td>
<td>420</td>
<td>310</td>
</tr>
<tr>
<td>1</td>
<td>260</td>
<td>190</td>
</tr>
</tbody>
</table>

Actual bitrate may vary depending on the scene, picture settings, and encoder profile settings.

**Mechanical**

<table>
<thead>
<tr>
<th>In-Ceiling</th>
<th>Pendant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pan Range</td>
<td>360° cont.</td>
</tr>
<tr>
<td>Tilt Angle</td>
<td>1° above horizon</td>
</tr>
<tr>
<td>Pre-position Speed</td>
<td>Pan: 400°/s Tilt: 300°/s</td>
</tr>
</tbody>
</table>

**Pan/Tilt Modes**

- Turbo mode (Manual Control) | Pan: 0.1°/s - 400°/s Tilt: 0.1°/s - 300°/s |
- Normal Mode | 0.1°/s-120°/s |
- Pre-position Accuracy | ± 0.1° typ. |

**Intelligent Tracking Speed** | >0.2°/second (minimum) |
# Electrical

<table>
<thead>
<tr>
<th></th>
<th>In-Ceiling</th>
<th>Pendant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input voltage</strong></td>
<td>24 VAC</td>
<td>51.0 W / 54.0 VA</td>
</tr>
<tr>
<td></td>
<td>60 W (using the midspan accessory NPD-6001B, required to power the heater)</td>
<td>19.2 W / 33.6 VA (without heaters)</td>
</tr>
<tr>
<td></td>
<td>30 W (IEEE 802.3at, class 4 standard, when used without powering the heater)</td>
<td>19.2 W / 33.6 VA (heaters off / without heater connected in 24 V power supply box)</td>
</tr>
<tr>
<td><strong>Power Consumption (typical), with heaters</strong></td>
<td>51.0 W / 54.0 VA</td>
<td></td>
</tr>
<tr>
<td><strong>Power Consumption (typical)</strong></td>
<td>19.2 W / 33.6 VA (without heaters)</td>
<td>19.2 W / 33.6 VA (heaters off / without heater connected in 24 V power supply box)</td>
</tr>
<tr>
<td>Current consumption, 24 VAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption, 60 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Redundant configuration</strong></td>
<td>Connect both a 60 W midspan and a separate 24 VAC power source. If either power source fails, the camera switches automatically to the other power source.</td>
<td></td>
</tr>
<tr>
<td><strong>Surge suppression</strong></td>
<td>Built-in surge suppression for power, data, and network interfaces (Refer to the A&amp;E Specifications for details.)</td>
<td></td>
</tr>
</tbody>
</table>

## Audio

### Audio

- **Standard**
  - G.711, 8 kHz sampling rate
  - L16, 16 kHz sampling rate
  - AAC, 16 kHz sampling rate
- **Signal-to-Noise Ratio**
  - >50 dB
- **Audio Streaming**
  - Bidirectional (full-duplex)

## Local Storage

### Memory Card Slot

- User-supplied full SD card (maximum 2 TB)
  - Note: For this camera, Bosch does not recommend the use of microSD cards or of microSD to SD adapters.

### Recording

- Continuous recording of video and audio, alarm/events/schedule recording

## Fiber Optic Kit

### VG4-SFPSCKT

| **Description** | Fiber Optic Ethernet Media Converter kit. Requires a small form-factor pluggable (SFP) module (sold separately). |
| **Data Interface** | Ethernet |
| **Data Rate** | 100 Mbps |
| **Data Rate** | IEEE 802.3 Compliant |
| **Data Rate** | Full Duplex or Half Duplex Electrical Port |
| **Data Rate** | Full Duplex Optical Port |
| **Compatible Receiver** | CNFE2MC |
| **Installation** | Installed inside a VG4-A-PA0, VG4-A-PA1, VG4-A-PA2, VG4-A-PSU1, or a VG4-A-PSU2 power supply box with supplied mounting hardware |

### SFP Modules

<table>
<thead>
<tr>
<th><strong>Type</strong></th>
<th><strong>Connector</strong></th>
<th><strong>Wavelength (transmit / receive)</strong></th>
<th><strong>Max. Distance</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP-2</td>
<td>MMF</td>
<td>1310 nm / 1310 nm</td>
<td>2 km (1.2 miles)</td>
</tr>
<tr>
<td>SFP-3</td>
<td>SMF</td>
<td>1310 nm / 1310 nm</td>
<td>20 km (12.4 miles)</td>
</tr>
<tr>
<td>SFP-25</td>
<td>MMF</td>
<td>1310 nm / 1550 nm</td>
<td>2 km (1.2 miles)</td>
</tr>
<tr>
<td>SFP-26</td>
<td>MMF</td>
<td>1550 nm / 1310 nm</td>
<td>2 km (1.2 miles)</td>
</tr>
</tbody>
</table>

### Fiber Compatibility

- 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)
Video - AUTODOME IP starlight 7000i

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.

User Connections

Power, Network
RJ45 100Base-T

Power, Camera
24VAC, 50/60Hz

Alarm Inputs (7)
2 supervised, 5 non-supervised

Alarm Outputs (4)
1 dry contact relay, 3 open collector/transistor outputs Programmable for “normally open” or “normally closed” 32 VDC @ 150 mA maximum

Audio
1 x mono line in, 1 x mono line out Signal line in: 20 kOhm typical, 0.707 Vrms Signal line out: 0.707 Vrms at 16 Ohm, typical

Communications / Software Control

Serial protocols
Bosch OSRD, Pelco P/D, Forward Vision, and Cohu

Note: A separate license (MVS-FCOM-PRCL) is required.

Environmental

In-Ceiling
Pendant

Ingress Protection Rating/Standard
IP54, Plenum rated
IP66, NEMA 4X

Operating temperature (with heater wired)
-10 to +40 °C (+14 to +104 °F)
-40 to +55 °C (-40 to +131 °F)

Operating temperature (without heater wired)
-10 to +55 °C (+14 to +131 °F) (without heater wired)
Maximum temperature: 74 °C (165 °F) in accordance with NEMA TS 2-2003 (R2008)

Storage temperature
-40 to +60 °C (-40 to +140 °F)
-40 to +60 °C (-40 to +140 °F)

Operating Humidity
0% to 90% RH, (non-condensing)
0% to 100% RH, condensing

Vibration
IEC 60068-2-6
IEC 60068-2-6

Shock
IEC 60068-2-27
IEC 60068-2-27

Salt Mist Spray (Corrosion Test)
IEC 60068-2-52

External Mechanical Impact
IEC 60068-2-75: IK10 (only models ending in “-K”)

1. NEMA 4X for:
- Access to Hazardous parts
- Ingress of solid foreign objects (falling dirt, circulating dust, settling dust)
- Ingress of water (dripping and light splashing, hose down and splashing)

Effective Projected Area (EPA)
- On pendant arm + PSU box: 8.55 m² (0.9 ft²)
- On pipe mount: 4.8 m² (0.5 ft²)
- On parapet (roof) mount: 15 m² (1.6 ft²)

Construction

Dimensions
224 mm (8.8 in.) x 299.4 mm (11.8 in.)

Weight
In-ceiling: 2.6 kg (5.7 lb)
Pendant: 3.2 kg (7 lb)

Bubble Size
153.1 mm diameter (6.03 in.)

Construction Material, Housing
In-ceiling: Magnesium
Pendant: Cast aluminum

Construction Material, Bubble
In-ceiling: acrylic
Pendant: acrylic
Pendant (IK10): nylon

Standard Color
White (RAL 9003)

Standard Finish
Powder coated, sand finish

Ordering information

NDP-7512-Z30 PTZ 2MP HDR 30x clear IP66 pendant PTZ dome camera, 1080 (2MP) HD, 30x, starlight imaging, H.265, IVA.
Outdoor pendant mount
NDAA compliant
Order number NDP-7512-Z30 | F.01U.352.678
**Video - AUTODOME IP starlight 7000i**

**NDP-7512-Z30C PTZ 2MP HDR 30x clear IP54 in-ceiling PTZ dome camera; 1080 (2MP) HD, 30x, starlight imaging, H.265, IVA.
Indoor, in-ceiling mount, clear bubble
Order number NDP-7512-Z30C | F.01U.359.800**

**NDP-7512-Z30CT PTZ 2MP HDR 30x tinted IP54 in-ceiling PTZ dome camera; 1080 (2MP) HD, 30x, starlight imaging, H.265, IVA.
Indoor, in-ceiling mount, tinted bubble NDAA compliant
Order number NDP-7512-Z30CT | F.01U.352.677**

**NDP-7512-Z30K PTZ 2MP HDR 30x clear IK10 pendant PTZ dome camera, 1080 (2MP) HD, 30x, starlight imaging, H.265, IVA.
Outdoor pendant mount, IK10 NDAA compliant
Order number NDP-7512-Z30K | F.01U.352.676**

**Accessories**

**NPD-6001B Midspan, 60W, single port, AC in**
60 W indoor midspan for cameras without illuminators
Order number NPD-6001B | F.01U.347.358

**NPD-9501-E Midspan 95W 1 port outdoor**
95 W outdoor PoE midspan for AUTODOME and MIC cameras
Order number NPD-9501-E | F.01U.365.279

**NDA-9501-PMA Pole mount adapter for NPD-9501-E**
Pole mount adapter for outdoor midspan
Order number NDA-9501-PMA | F.01U.374.407

**VG4-A-PSU0 Power supply, 24VAC**
Power supply, 24 VAC input, for a PTZ camera in the AUTODOME Series. White, aluminum enclosure with cover, rated IP66 and IK 08. 100 W output.
Order number VG4-A-PSU0 | F.01U.261.376

**VG4-A-PSU1 PSU, 120VAC, for AUTODOME, MIC7000**
Power supply for AUTODOME 7000, MIC IP cameras without illuminators. 120VAC in, 24VAC out
Order number VG4-A-PSU1 | F.01U.081.593 F.01U.261.377

**VG4-A-PSU2 Power supply, 230VAC, AUTODOME, MIC7000**
Power supply for AUTODOME 7000, MIC IP cameras without illuminators. 230VAC in, 24VAC out
Order number VG4-A-PSU2 | F.01U.261.378 F.01U.096.639 F.01U.009.668

**VGA-SBOX-COVER Cover for AUTODOME power supply box**
Cover for AUTODOME Power Supply Boxes, white
Order number VGA-SBOX-COVER | F.01U.010.505

**VGA-SFPSCKT Ethernet to SFP interface kit**
Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME 7000i cameras and for the Surveillance cabinets (NDA-U-PA0, NDA-U-PA1 and NDA-U-PA2).
Order number VGA-SFPSCKT | F.01U.142.529

**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 | F.01U.136.537

**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 | F.01U.136.538

**SFP-25 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-25 | F.01U.136.541

**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 | F.01U.136.542

**VG4-A-PA0 Pendant arm, power box, 24VAC, AUTODOME**
Pendant arm mount with power supply box for an AUTODOME Series camera, no transformer, white
Order number VG4-A-PA0 | F.01U.096.637 F.01U.261.373 F.01U.009.671

**VG4-A-PA1 Pendant arm, power box, 120VAC, AUTODOME**
Pendant arm mount with power supply box for an AUTODOME Series camera with a 120 VAC transformer, white
Order number VG4-A-PA1 | F.01U.081.571 F.01U.261.374

**VG4-A-PA2 Pendant arm, power box, 230VAC, AUTODOME**
Pendant arm mount with power supply box for an AUTODOME Series camera with a 230 VAC transformer, white
Order number VG4-A-PA2 | F.01U.261.375 F.01U.096.638 F.01U.009.664

**VGA-PEND-ARM Pendant arm with wiring, for AUTODOME**
Compatible with an AutoDome Series pendant housing
Order number VGA-PEND-ARM | F.01U.261.947

**VGA-PEND-WPLATE Mounting plate for VGA-PEND-ARM**
Mounting plate for VGA-PEND-ARM, compatible with an AutoDome Series camera
Order number VGA-PEND-WPLATE | F.01U.247.809

**VGA-ROOF-MOUNT Roof parapet mount for AUTODOME series**
Roof parapet mount, white, for AUTODOME cameras
Order number VGA-ROOF-MOUNT | F.01U.247.811
LTC 9230/01 Parapet roof mount adapter
Flat Roof Mount Adapter for mounting a unit in an upright position on a flat surface.
Order number LTC 9230/01 | F.01U.503.630

VG4-A-9541 Pole mount adapter
Pole mount adapter for an AUTODOME pendant arm or a DINION imager, designed for poles with a diameter of 100-380 mm (4-15 in.), white
Order number VG4-A-9541 | F.01U.123.433

VG4-A-9542 Corner mount adapter for AUTODOME
Corner mount adapter for an AUTODOME pendant arm or a DINION imager
Order number VG4-A-9542 | F.01U.123.434

VG4-A-9543 Pipe mount for AUTODOME, white
Pipe mount, white, for an AUTODOME pendant housing
Order number VG4-A-9543 | F.01U.009.673

VG4-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 VG4-IC-SP | F.01U.245.271

VGA-BUBBLE-PCLA Bubble, pendant, clear
Low-impact acrylic bubble
Order number VGA-BUBBLE-PCLA | F.01U.247.818

VGA-BUBBLE-PTIA Bubble, pendant, tinted
Low-impact acrylic bubble
Order number VGA-BUBBLE-PTIA | F.01U.247.820

VGA-BUBHD-CCLA Bubble, in-ceiling, clear
High-resolution acrylic bubble for AUTODOME HD in-ceiling cameras, clear
Order number VGA-BUBHD-CCLA | F.01U.281.737

VGA-BUBHD-CTIA Bubble, in-ceiling, tinted
High-resolution acrylic bubble for AUTODOME HD in-ceiling cameras, tinted
Order number VGA-BUBHD-CTIA | F.01U.281.738

VGA-BUBBLE-IK10 Bubble, pendant, IK10-rated
IK10-rated bubble qualified for use with AUTODOME 7000 HD cameras with pendant housings
Order number VGA-BUBBLE-IK10 | F.01U.315.882

Software Options

MVC-CT-PTZ License for PTZs
Camera Trainer license for Intelligent Video Analytics 7.10 on PTZ cameras.
Free-of-charge software module.
Order number MVC-CT-PTZ | F.01U.365.079

MVS-FCOM-PRCL License key for serial protocol
Serial Protocol Software License (e-license) for IP Cameras
Order number MVS-FCOM-PRCL | F.01U.314.101

MVS-FNTCIP NTCIP for moving cameras
NTCIP license for moving cameras
Available in NAM region only.
Order number MVS-FNTCIP | F.01U.329.682

Services

EWE-AD7IIP-IWMP 12 mths wrty ext AD 7x00i Series mov par
12 months warranty extension
Order number EWE-AD7IIP-IWMP | F.01U.402.733