The HD 1080p and 5MP outdoor dome cameras from Bosch are professional surveillance cameras that provide high quality HD and MP images for demanding security and surveillance network requirements. These robust domes are true day/night cameras offering excellent performance day or night. The cameras are available in 1080p and 5M versions and there is a 1080p version with a built-in active infrared illuminator that provides high performance in extreme low-light environments.

**System overview**

**iDNR reduces bandwidth and storage requirements**
The camera uses intelligent Dynamic Noise Reduction (iDNR) which actively analyzes the contents of a scene and reduces noise artifacts accordingly. The low-noise image and the efficient H.264 compression technology provide clear images while reducing bandwidth and storage by up to 30% compared to other H.264 cameras. This results in reduced-bandwidth streams that still retain a high image quality and smooth motion. The camera provides the most usable image possible by cleverly optimizing the detail-to-bandwidth ratio.

Area-based encoding is another feature which reduces bandwidth. Compression parameters for up to eight user-definable regions can be set. This allows uninteresting regions to be highly compressed, leaving more bandwidth for important parts of the scene. The average typical optimized bandwidth in kbits/s for various image rates is shown in the table:

<table>
<thead>
<tr>
<th>IPS</th>
<th>5MP</th>
<th>1080p</th>
<th>720p</th>
<th>480p</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>-</td>
<td>1600</td>
<td>1200</td>
<td>600</td>
</tr>
<tr>
<td>15</td>
<td>-</td>
<td>1274</td>
<td>955</td>
<td>478</td>
</tr>
<tr>
<td>12</td>
<td>1753</td>
<td>1169</td>
<td>877</td>
<td>438</td>
</tr>
<tr>
<td>5</td>
<td>1136</td>
<td>757</td>
<td>568</td>
<td>284</td>
</tr>
<tr>
<td>2</td>
<td>489</td>
<td>326</td>
<td>245</td>
<td>122</td>
</tr>
</tbody>
</table>

**Vandal resistant outdoor dome with varifocal lens**
Ideal for outdoor use, the IK10-rated design is suitable for installations where a vandal resistance is important. The camera is protected against water and dust to IP66 (NEMA Type 4X) standards. The 3 to 10 mm varifocal lens allows you to choose the coverage area to best suit your application. Mounting options are numerous, including surface, wall, and suspended-ceiling mounting.
1080p or 5MP resolutions with multiple streams
The camera is available in a 1080p resolution version at 30 images per second (ips) or a 5MP resolution version at 12 ips. The innovative multi-streaming feature delivers various H.264 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.

Regions of interest and E-PTZ
Regions of Interest (ROI) can be user defined. The remote E-PTZ (Electronic Pan, Tilt and Zoom) controls allow you to select specific areas of the parent image. These regions produce separate streams for remote viewing and recording. These streams, together with the main stream, allow the operator to separately monitor the most interesting part of a scene while still retaining situational awareness.

Two-way audio and audio alarm
Two-way audio allows the operator to communicate with visitors or intruders via an external audio line input and output. Audio detection can be used to generate an alarm if needed.

Tamper and motion detection
A wide range of configuration options is available for alarms signaling camera tampering. A built-in algorithm for detecting movement in the video can also be used for alarm signaling.

Edge recording
The internal MicroSD card slot supports up to 2 TB of storage capacity. A microSD card can be used for local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, or — if microSD card recording is used — extends the effective life of the storage medium.

Cloud-based facilities
The camera supports time-based or alarm-based JPEG posting to four different accounts. These accounts can address FTP servers or cloud-based storage facilities (for example, Dropbox). Video clips or JPEG images can also be exported to these accounts. Alarms can be set up to trigger an e-mail or SMS notification so you are always aware of abnormal events.

Easy installation
Power for the camera can be supplied via a Power-over-Ethernet (IEEE 802.3af) compliant network cable connection. With this configuration, only a single cable connection is required to view, power, and control the camera. Using PoE makes installation easier and more cost-effective, as cameras do not require a local power source.

The camera can also be supplied with power from +12 VDC power supplies. To increase system reliability, the camera can be simultaneously connected to both PoE and +12 VDC supplies. Additionally, uninterruptible power supplies (UPS) can be used, which will allow continuous operation, even during a power failure. For trouble free network cabling, the cameras support Auto-MDIX.

True day/night switching
The camera incorporates mechanical filter technology for vivid daytime color and exceptional night-time imaging while maintaining sharp focus under all lighting conditions.

Access Security
Password protection with three levels and 802.1x authentication is supported. To secure Web browser access, use HTTPS with a SSL certificate stored in the camera. The video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional encryption site license.

Complete viewing software
There are many ways to access the camera’s video features: using a web browser, with the supplied Bosch Video Client, or with the video security mobile App.

The Bosch Video Client PC surveillance software offers a user-friendly interface to support easy installation and configuration, and is supplied completely free-of-charge. It provides easy live viewing of multiple cameras, playback, forensic search and export.

Video security App
The Bosch video security mobile App has been developed to enable Anywhere access to HD surveillance images allowing you to view live images from any location. The App is designed to give you complete control of all your cameras, from panning and tilting to zoom and focus functions. It’s like taking your control room with you.

This App, together with the separately available Bosch transcoder, will allow you to fully utilize our dynamic transcoding features so you can play back images even over low-bandwidth connections.

System integration
Bosch IP standard definition and high definition cameras, encoders and analytics work seamlessly with a wide range of security software and recording solutions from Bosch and other industry providers. Through ONVIF conformance, the open availability of Bosch video software development kits and a team dedicated to special integration and support projects, it is easy to manage Bosch video products within your system design (for details on the Bosch Integration Partner Program, visit ipp.boschsecurity.com).

Certifications and approvals

<table>
<thead>
<tr>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 62471 (IR version)</td>
</tr>
<tr>
<td>EN 60950-1</td>
</tr>
<tr>
<td>UL 60950-1</td>
</tr>
<tr>
<td>UL 60950-22</td>
</tr>
</tbody>
</table>
### Product certifications
- CE, FCC, UL, cUL, C-tick, CB, VCCI

### Ingress protection
- IP66

### Impact protection
- IK10

### Region Certification
- **Europe**: CE
- **USA**: UL

## Technical specifications

### Power
- **Input voltage**: +12 VDC or Power-over-Ethernet (48 VDC nominal)
- **Power consumption**: 4.5 W max., 6.0 W max. (IR version)
- **PoE**: IEEE 802.3af (802.3at Type 1) Power level: Class 1 (Class 2 IR version)

### Video
- **Sensor type**: 1/2.7-inch CMOS (NDN-50022, NDI-50022)
- **Sensor pixels**: 1920 x 1080 (NDN-50022, NDI-50022)
- **1080p Sensitivity**: 0.24 lx (color), 0.05 lx (mono), 0.0 lx (IR)
- **5MP Sensitivity**: 0.5 lx (color), 0.075 lx (mono)

### Dynamic range
- 76 dB (NDN-50022, NDI-50022)
- 65 dB (NDN-50051)

### True Day/Night
- Auto, Color, Monochrome

### Shutter speed
- Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/15000 for NDN-50022, NDI-50022) Fixed (1/12 to 1/15000 for NDN-50051)

### Video resolution
- 1080p, 720p, 432p, 288p, 144p (NDN-50022, NDI-50022)
- 5 Megapixels, 480p (NDN-50051)

### Aspect ratio
- 16:9 (NDN-50022, NDI-50022)
- 4:3 (NDN-50051)

### Video compression
- H.264 MP (Main Profile); M-JPEG

### Max. frame rate
- 30 ips (NDN-50022, NDI-50022)
- 12 ips (NDN-50051)

### Video Settings
- Video watermarking, Alarm mode stamping, Image mirror, Image flip, Contrast, Saturation, Brightness, White balance, Sharpness level, Contrast enhancement, Backlight Compensation, Privacy Mask, Motion detection, Tamper alarm, Upright mode, Pixel counter

### Night vision (IR version only)
- **Distance**: 15 m (50 ft)
- **LED**: 15 LED high efficiency array, 850 nm

### Lens
- **Lens type**: Varifocal 3 to 10 mm, DC Iris F1.3 - 360
- **Lens mount**: Board mounted
- **Horizontal field of view**: 36° - 117° (NDN-50022, NDI-50022)
- **Vertical field of view**: 27.8° - 86.6° (NDN-50022, NDI-50022)

### Connection
- **Analog video out**: (for installation only) BNC connector (1 Vpp CVBS, NTSC)
- **Alarm input**: Short or DC 5V activation
- **Relay out**: Input rating Maximum 1 A 24 VAC/VDC

### Audio
- **Audio input**: Line in jack connector
- **Audio output**: Line out jack connector
- **Audio communication**: Two-way, full duplex
- **Audio compression**: AAC, G.711, L16 (live and recording)
Local Storage

<table>
<thead>
<tr>
<th>Internal RAM</th>
<th>10 s pre-alarm recording</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory card slot</td>
<td>Supports up to 32 GB microSDHC / 2 TB microSDXC card. (An SD card of Class 6 or higher is recommended for HD recording)</td>
</tr>
<tr>
<td>Recording</td>
<td>Continuous recording, ring recording, alarm/events/schedule recording</td>
</tr>
</tbody>
</table>

Software Control

| Unit configuration | Via web browser or PC surveillance software |

Network

| Protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, SNMP, SMTP (V1, V2c, V3), IPv6, DNS, DDNS, DDNSv6, DNSv6, DHCP, ARP, NDP, LLDP, SOAP, Dropbox, CHAP, Digest Authentication, TLS 1.0, SSL, DES, 3DES, AES (optional) |
| Encryption | TLS 1.0, SSL, DES, 3DES, AES (optional) |
| Ethernet | 10/100 Base-T, auto-sensing, half/full duplex |
| Ethernet connector | RJ45 |
| Connectivity | ONVIF Profile S, Auto-MDIX |

Mechanical

| 3-axis adjustment (pan/tilt/rotation) | 350° / 130° / 350° |
| Dimensions | Diameter: 145 mm (5.72 in) Height: 118 mm (4.66 in) |
| Weight | 1050 g (2.32 lb) approx. |
| Color | RAL 9004, RAL 9010 |

Environmental

| Operating temperature | -30 °C to +50 °C (-22 °F to +122 °F) |
| Storage temperature | -30 °C to +70 °C (-22 °F to +158 °F) |
| Humidity | 20% to 90% relative humidity (non condensing) |

Ordering information

**FLEXIDOME IP outdoor 5000 HD**
Vandal-resistant IP dome camera for outdoor HD surveillance. Varifocal 3 to 10 mm f1.3 lens; IP66; IK10; iDNR; day/night; H.264 quad-streaming; cloud services; ROI; motion/tamper/audio detection; 1080p; Infrared
Order number **NDI-50022-V3**

**FLEXIDOME IP outdoor 5000 MP**
Vandal-resistant IP dome camera for outdoor MP surveillance. Varifocal 3 to 10 mm f1.3 lens; IP66; IK10; iDNR; day/night; H.264 quad-streaming; cloud services; ROI; motion/tamper/audio detection; microphone; 5MP
Order number **NDN-50051-V3**

**FLEXIDOME IP outdoor 5000 HD**
Vandal-resistant IP dome camera for outdoor HD surveillance. Varifocal 3 to 10 mm f1.3 lens; IP66; IK10; iDNR; day/night; H.264 quad-streaming; cloud services; ROI; motion/tamper/audio detection; 1080p; Infrared
Order number **NDI-50022-V3**

Accessories

**VDA-WMT-AODOME Outdoor Wall Mount**
Outdoor wall mount
Order number **VDA-WMT-AODOME**

**NDA-WMT-DOME Dome Wall Mount**
Sturdy wall mount bracket for microdome/minidome cameras.
Order number **NDA-WMT-DOME**

**VDA-PMT-AODEOME Outdoor Pipe Mount**
Outdoor pipe mount
Order number **VDA-PMT-AODEOME**

**LTC 9213/01 Pole Mount Adapter**
Flexible pole mount adapter for camera mounts. Max. 9 kg (20 lb); 3 to 15 inch diameter pole; stainless steel straps
Order number **LTC 9213/01**

**NDA-ADT4S-MINDOME Dome 4S Mount**
Minidome surface mount adapter
Order number **NDA-ADT4S-MINDOME**

**VDA-PLEN-DOME In-ceiling Housing for Plenums Kit**
FLEXIDOME in-ceiling housing installation kit (plenum-rated) for various FLEXIDOME cameras
Order number **VDA-PLEN-DOME**

**NDA-FMT200-DOME Flush-mount Bracket**
In-ceiling flush mounting kit.
Order number **NDA-FMT200-DOME**

Software Options

**BVIP AES 128 Bit Encryption**
Single installation licence for BVIP AES 128-bit encryption site. Enables encrypted communication between BVIP devices and management stations.
Order number **MVS-FENC-AES**