These pre-packaged camera kits are complete surveillance systems that are quick and easy to install thanks to their plug-and-play design. Each kit includes a housing with a factory-installed high-performance DINION camera and varifocal lens, plus a swivel mount.

DINION IP 7000 HD cameras are 1080p30 progressive scan CMOS cameras that use the Bosch-designed digital imaging technology. The camera delivers the highest standards of performance and reliability in any security and surveillance scenario, day or night. Features such as multicasting, internet streaming and iSCSI recording are fully supported.

**System overview**

Compared to SD cameras, the DINION IP 7000 HD offers, at no higher cost, motorized autofocus, higher resolution, better sensitivity, higher frame rates, and improved picture quality, and is still more bandwidth-efficient. Video storage costs are significantly reduced.

**Hybrid operation**

A surge-protected analog video output allows full hybrid operation. This means that high resolution IP video streaming and an analog video output are available simultaneously. The hybrid functionality offers an easy migration path from legacy CCTV to a modern IP-based system.

**Functions**

**Secure and easily-installed**

The sleek and sturdy housing design meets IP66 and NEMA 4X enclosure standards to protect your video surveillance equipment from adverse elements. A built-in heater and fan keep the internal temperature of the housing within the specified operating temperatures. A permanent low-power window defroster keeps the housing window clear in high humidity and icy condition. A sunshield is fitted to the top of the housing. Tamper-resistant screws for the locking clasps prevent illegitimate access to the housing contents. The supplied mounting bracket has a swivel and tilt head for maximum mounting flexibility. User connections for power, ethernet and/or telemetry can be routed through seal-tight fittings in the rear or in the foot of the housing.

The unique, hinged, side-opening design in the housing provides easy access to the camera/lens controls when the kit is mounted. The auto-focus lens wizard makes it easy for an installer to accurately focus the camera for both day and night operation. The wizard is
activated from the web browser or from the on-board camera push button making it easy to choose the workflow that suits best. The automatic motorized back focus adjustment with 1:1 pixel mapping ensures the camera is always focused accurately.

**Power failover**
To increase power reliability, the camera can be simultaneously connected to both Power-over-Ethernet (PoE) and the housing power supply. If the housing power supply fails and PoE is available, the camera switches seamlessly to the PoE power input. This ensures the camera remains operational during a local power supply failure. After the housing power supply is restored, the camera switches back to the housing power input.

**Pre-wired**
For easy connection, some kit models have a 1.5 m (5 ft) power cable pre-wired through a seal-tight cable gland in the housing foot. An ethernet cable and other cables can be later fed through a second fitting in the foot, or through fittings in the rear of the housing.

**Outstanding image quality**
With a 1/2.7-inch CMOS HD sensor, the camera delivers outstanding image quality. Image performance and color reproduction are superb even under challenging lighting conditions. This true day/night can automatically switch from color to monochrome mode by sensing the illumination level or manually via the alarm input or a web browser.

**Content Based Imaging Technology**
Content Based Imaging Technology (CBIT) is used to radically improve image quality in all lighting conditions and to identify areas for enhanced processing. The camera examines the scene using intelligent video analytics and provides feedback to re-tune the image processing. This provides better detail in the areas that matter and better all-round performance.

**Intelligent Dynamic Noise Reduction reduces bandwidth and storage requirements**
The camera uses Intelligent Dynamic Noise Reduction 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 50% 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**
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>1080p</th>
<th>720p</th>
<th>480p</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1600</td>
<td>1200</td>
<td>600</td>
</tr>
<tr>
<td>15</td>
<td>1274</td>
<td>955</td>
<td>478</td>
</tr>
<tr>
<td>12</td>
<td>1169</td>
<td>877</td>
<td>438</td>
</tr>
<tr>
<td>5</td>
<td>757</td>
<td>568</td>
<td>284</td>
</tr>
<tr>
<td>2</td>
<td>326</td>
<td>245</td>
<td>122</td>
</tr>
</tbody>
</table>

**Multiple streams**
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.

An upright mode can be selected for the second stream. In this mode an image of 400 x 720 (9:16 aspect ratio) is cropped from the full sensor image. When the scene to be monitored is suitable to this mode, the bandwidth and storage requirements are reduced.

**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.

With IVA, Intelligent Tracking can follow objects within the defined regions of interest. Intelligent Tracking can autonomously detect and track moving objects or the user can click on an object which the tracker will then follow.

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

- **Indoor** – general day-to-night changes without sun highlights and street lighting
- **Outdoor** – general day-to-night changes with sun highlights and street lighting
- **Motion** – monitoring traffic or fast moving objects; motion artifacts are minimized
- **Lowlight** – optimized for sufficient details at low light.
- **BLC** – for people moving in front of a bright background
- **Vibrant** – enhanced contrast, sharpness and saturation
Storage management
Recording management can be controlled by the Bosch Video Recording Manager (VRM) or the camera can use iSCSI targets directly without any recording software.

Edge recording
The 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.

Video analytics
With built-in video content analysis, the camera reinforces the Intelligence-at-the-Edge concept where edge devices become increasingly intelligent. The MOTION+ video motion analysis system that is built into all camera versions is the perfect solution for applications where standard video content analysis features are required.

The IVA version of the camera uses the latest generation of the Bosch Intelligent Video Analysis (IVA) software. This IVA system is the guard-assistant system of choice when reliable indoor or outdoor video analytics is needed. The state-of-the-art system reliably detects, tracks, and analyzes moving objects while suppressing unwanted alarms from spurious sources in the image.

The face detection feature detects faces in the scene and forwards a high quality JPEG image of the best shot of each face when the face disappears from the scene.

Retrospective forensic search capabilities are available remotely from the web browser or the Bosch Video Client.

Cloud-based services
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.

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 features: using a web browser, with the Bosch Video Management System, with the free-of-charge Bosch Video Client, with the video security mobile app, or via third-party software.

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
The camera conforms to the ONVIF Profile S specification. Compliance with this standard 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.

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.

Typical applications
• Retail, banks
• Stadiums
• Schools
• Care facilities
• Traffic monitoring (air, land and sea)
• Hotels, bars and nightclubs
• Commercial and government buildings
• City surveillance and safety
• Border control

Lens options
Two super resolution megapixel lens versions are available for the housing kits:
• One with a 9-40 mm IR-corrected varifocal lens
• One with a 3.8-13 mm varifocal lens

Certifications and approvals
HD standards
Complies with the SMPTE 274M-2008 Standard in:
- Resolution: 1920x1080
- Scan: Progressive
- Color representation: complies with ITU-R BT.709
- Aspect ratio: 16:9
- Frame rate: 25 and 30 frames/s

Complies with the SMPTE 296M-2001 Standard in:
- Resolution: 1280x720
- Scan: Progressive
- Color representation: complies with ITU-R BT.709
- Aspect ratio: 16:9
- Frame rate: 25 and 30 frames/s
### Standards

<table>
<thead>
<tr>
<th>Standards</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission</td>
<td>EN55022 Class B, FCC Part 15, class B</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN50130-4 (PoE, +12 VDC, 24 VAC)* EN50121-4</td>
</tr>
<tr>
<td>Safety</td>
<td>EN60950-1, UL60950-1 (2nd edition), CAN/CSA-C 22.2 No. 60950-1</td>
</tr>
<tr>
<td>Vibration</td>
<td>Camera with lens as per IEC60068-2-6 (5 m/s², operational)</td>
</tr>
<tr>
<td>ONVIF conformance</td>
<td>EN 50132-5-2; IEC 62676-2-3</td>
</tr>
</tbody>
</table>

* Chapters 7 and 8 (mains voltage supply requirement) are not applicable to the camera. However, if the system in which this camera is used needs to comply with this standard, then any power supplies used must comply with this standard.

### Installation/configuration notes

#### Housing dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>(in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>126</td>
</tr>
<tr>
<td>Height</td>
<td>480</td>
</tr>
</tbody>
</table>

#### Mount dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>(in)</th>
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</thead>
<tbody>
<tr>
<td>Width</td>
<td>88.9</td>
</tr>
<tr>
<td>Height</td>
<td>74.7</td>
</tr>
</tbody>
</table>

### Marks

CE, cULus, WEEE, PADS, RCM and China RoHS

### Region Certification

<table>
<thead>
<tr>
<th>Region</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>CE</td>
</tr>
<tr>
<td>USA</td>
<td>UL</td>
</tr>
<tr>
<td>Canada</td>
<td>ULC</td>
</tr>
</tbody>
</table>

---

**DINION IP 7000 HD KIT**
### Technical specifications

#### Housing

**Mechanical**

| Dimensions (H x W x L) - closed and including sunshield | 126.5 x 171.3 x 480 mm (5 x 6.7 x 18.9 in.) |
| Weight (including camera and lens) | 3.9 kg (8.6 lbs) |
| Construction | Aluminum casing, neoprene gaskets, all stainless steel hardware, 3.3 mm (1/8 in.) thick glass window |
| Color | Gray |
| Locking clasps (3x) | Tamper-resistant screws provided |
| Camera mounting | Removable camera/lens tray, mounted with two screws |
| Max camera + lens size (H x W x L) | 91 x 81 x 262 mm (3.6 x 3.2 x 10.3 in) |
| Mounting | 2 x pair of tapped holes (1/4-20 thread)  
• inner pair: 50.8 mm (2.0 in) center spread  
• outer pair: 73.7 mm (2.9 in) center spread |
| Rear fittings (-20N models) | 1x cable diameter: 3.5 to 8.0 mm (0.14 to 0.32 in)  
2x cable diameter: 5.8 to 10 mm (0.23 to 0.39 in) |
| Rear connectors (-10N models) | 1x M20: 3.5 to 8.0 mm (0.14 to 0.32 in)  
1x 4-pin (power)  
1x BNC (hybrid analog video) |
| Bottom fittings (-20N models) | 2x cable diameter: 4.5 to 7.9 mm (0.18 to 0.31 in) |

#### Power

- **Power input** | 24 VAC |
- **Consumption** | 45 W |
- **Fuse** | 4 A |

#### Environmental

- **Operating temperature** | -40°C to +50°C (-40°F to 122°F) for continuous operation;  
-34 °C to +74 °C (-30°F to +165°F) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile |
- **Storage temperature** | -40°C to +70°C (-40°F to +158°F) |
- **Operating humidity** | 20% to 93% RH |
- **Storage humidity** | up to 98% RH |
- **Enclosure protection** | IP66, NEMA 4X |
## Camera

### Power

| Power Supply          | 24 VAC 50/60 Hz  
|                       | 12 VDC Power over-Ethernet 48 VDC nominal  
| Current Consumption   | 400 mA | 500 mA IVA (12 VDC)  
|                       | 350 mA | 450 mA IVA (24 VAC)  
|                       | 150 mA | 175 mA IVA (PoE 48 VDC)  
| Power Consumption     | 4.8 W | 6 W IVA (12 VDC)  
|                       | 8.4 W | 10.8 W IVA (24 VAC)  
|                       | 7.2 W | 8.4 W IVA (PoE 48 VDC)  
| PoE                   | IEEE 802.3af (802.3at Type 1)  

### Sensor

| Type                  | 1/2.7-inch CMOS  
| Pixels                | 1952 x 1092 (2.03MP)  

### Video performance

- Sensitivity – (3200K, reflectivity 89%, F1.2, 30IRE)
  - Color: 0.22 lx (0.022 fc)
  - Mono: 0.05 lx (0.005 fc)
- Dynamic range: 76 dB Wide Dynamic Range (92 dB with IAE)

### Video streaming

- Video compression: H.264 (MP); M-JPEG
- Streaming: Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)
- Overall IP Delay: Min. 120 ms, Max. 240 ms
- GOP structure: IP, IBP, IBBP
- Encoding interval: 1 to 30 (25) ips
- Resolutions (H x V):
  - 1080p HD: 1920 x 1080
  - 960p HD: 1280 x 960
  - 720p HD: 1280 x 720
  - Upright 9:16 (cropped): 400 x 720
  - D1 4:3 (cropped): 704 x 480
  - 480p SD: Encoding: 704 x 480; Displayed: 854 x 480
  - 432p SD: 768 x 432
  - 288p SD: 512 x 288

### Video functions

- Day/Night: Color, Mono, Auto
- Adjustable picture settings: Contrast, Saturation, Brightness
- White Balance: 4 automatic modes, manual mode and measure
- Shutter: Automatic Electronic Shutter (AES), Fixed (1/30 [1/25] to 1/15000) selectable
  Default shutter
- Backlight compensation: Off / On / Intelligent Auto Exposure (BLC)
- Contrast enhancement: On/off
- Noise reduction: Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
- Sharpness: Sharpness enhancement level selectable
- Intelligent defog: Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)
- Privacy Masking: Four independent areas, fully programmable
- Video Motion Analysis: MOTION+ or Intelligent Video Analysis
- Other functions: Image mirror, Image flip, Pixel counter, Video watermarking, Display stamping, Scene modes

### Audio streaming

- Audio Streaming: Full duplex / half duplex
- Signal-to-noise ratio: > 50 dB
- Audio compression: AAC-LC, G.711, L16 (live and recording)

### Local storage

- Internal RAM: 10 s pre-alarm recording
- Memory card slot: Supports up to 32 GB SDHC / 2 TB SDXC card. (An SD card of Class 6 or higher is recommended for HD recording)
- Recording: Continuous recording, ring recording, alarm/events/schedule recording
Network

<table>
<thead>
<tr>
<th>Protocols</th>
<th>IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, MI-B-II), B02.1.x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encryption</td>
<td>TLS 1.0, SSL, DES, 3DES</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100 Base-T, auto-sensing, half/full duplex</td>
</tr>
<tr>
<td>Connectivity</td>
<td>ONVIF Profile S, Auto-MDIX</td>
</tr>
</tbody>
</table>

Software

<table>
<thead>
<tr>
<th>Unit Configuration</th>
<th>Via web browser or Configuration Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware update</td>
<td>Remotely programmable</td>
</tr>
<tr>
<td>Software viewer</td>
<td>Web browser, Bosch Video Client, or third party software</td>
</tr>
</tbody>
</table>

Input/output

<table>
<thead>
<tr>
<th>Analog video out</th>
<th>CVBS (PAL/NTSC), 1 Vpp, SMB, 75 Ohm (surge protected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog video aspect ratio</td>
<td>4:3 letterbox, 4:3 cropped, or 16:9 mode</td>
</tr>
<tr>
<td>Audio</td>
<td>1 x mono line in, 1 x mono line out</td>
</tr>
<tr>
<td>• connector</td>
<td>3.5 mm stereo jack</td>
</tr>
<tr>
<td>• signal line in</td>
<td>12 kOhm typical, 1 Vrms max</td>
</tr>
<tr>
<td>• signal line out</td>
<td>1 Vrms at 1.5 kOhm typical,</td>
</tr>
<tr>
<td>Alarm</td>
<td>2 inputs</td>
</tr>
<tr>
<td>• connector</td>
<td>Clamp (non-isolated closing contact)</td>
</tr>
<tr>
<td>• activation voltage</td>
<td>+5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)</td>
</tr>
<tr>
<td>Relay</td>
<td>1 output</td>
</tr>
<tr>
<td>• connector</td>
<td>Clamp</td>
</tr>
<tr>
<td>• voltage</td>
<td>30 VAC or +40 VDC Maximum 0.5 A continuous, 10VA</td>
</tr>
<tr>
<td>Data port</td>
<td>RS-232/422/485</td>
</tr>
</tbody>
</table>

Optical

| Lens Controls | Wizard from web page or camera button |
| Iris control | Automatic iris control |

Lens

**LVF-5003N-S3813 Varifocal SR Megapixel Lens**

| Focal length | 3.8 – 13 mm |
| Iris range | F1.4 to F8 |
| Min object distance | 0.3 m (1 ft) |
| 1/3-inch sensor 16:9 | 79 x 43° Wide |
| Angle of view (HxV) | 23 x 13° Tele |
| Focus control | manual |
| Zoom control | manual |
| IR corrected | IR performance (not with IR illuminator) |

**LVF-5005C-S0940 Varifocal SR Megapixel Lens**

| Focal length | 9 – 40 mm |
| Iris range | F1.5 to F8 |
| Min object distance | 2.5 m (9.2 ft) |
| 1/3-inch sensor 16:9 | 33 x 17° Wide |
| Angle of view (HxV) | 7.7 x 4.4° Tele |
| Focus control | manual |
| Zoom control | manual |
| IR corrected | yes |

Mount

**Mount LTC 9215/00**

| Length | 300 mm (12 in) |
| Maximum Load | 9 kg (20 lb) |
| Mounting Head | Adjustable 360° pan, 180° tilt |
| Finish | Light gray |
| Approx. Weight | 0.4 kg (0.9 lb) |
| Mounting | 2 x tapped holes |
| Thread: 1/4-20 |
| 73.7 mm (2.9 in) center spread |

Ordering Information

**DINION IP 7000 HD KIT**

High-performance IP camera and lens in 24 VAC (50 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 1080p30; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 9-40 mm lens

Order number **NKN-71022-BA4-10N**
DINION IP 7000 HD KIT
High-performance IP camera and lens in 24 VAC (50 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 1080p30; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 3.8-13 mm lens
Order number NKN-71022-BA3-10N

DINION IP 7000 HD KIT
High-performance IP camera and lens in 24 VAC (60 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 1080p30; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 9-40 mm lens; pre-wired
Order number NKN-71022-BA4-20N

DINION IP 7000 HD KIT
High-performance IP camera and lens in 24 VAC (60 Hz) housing kit. IP66; NEMA 4X; hybrid IP/Analog; 1080p30; PoE; IDNR; IAE; ROI; IVA; H.264 quad-streaming; free viewing apps; cloud services; audio/motion detection; 3.8-13 mm lens; pre-wired
Order number NKN-71022-BA3-20N

Accessories
Monitor/DVR Cable SMB 0.3M
0.3 m (1 ft) analog cable, SMB (female) to BNC (female) to connect camera to coaxial cable
Order number NBN-MCSMB-03M