The DINION IP dynamic 7000 HD camera is a 1080p30 progressive scan CMOS camera that uses Bosch-designed digital imaging technology to achieve a very high dynamic range.

The camera uses an internal feedback system based on the intelligent analysis of the scene, to re-tune the video processing. This provides better detail in the areas that matter and better all-round performance, day or night. Features such as multicasting, internet streaming and iSCSI recording are fully supported.

System overview

High Dynamic Range
The High Dynamic Range (HDR) of the camera means that you can view details in the bright and the dark areas of a scene at the same time. HDR is based on a dual exposure process that captures more details in highlights and shadows even under challenging lighting conditions. The result is that you can distinguish objects and features easily.

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

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 Analysis (IVA) and provides feedback to re-tune the image processing. This provides better detail in the areas that matter and better all-round performance. With IVA, the Intelligent Auto Exposure technology, for example, allows you to view moving objects in bright and dark areas of a scene.

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.

**Scene modes**

The camera has a very intuitive user interface that allows fast and easy configuration. Nine configurable modes are provided with the best settings for a variety of applications. Different scene modes can be selected for day or night situations.

- **Indoor** – general day-to-night changes in an indoor environment without sun highlights or street lighting effects.
- **Outdoor** – general day-to-night changes in an outdoor environment with sun highlights and street lighting effects.
- **Traffic** – for monitoring traffic movement on roads or parking lots. It can also be used in industrial applications where fast moving objects are to be monitored. Motion artifacts are minimized.
- **Night-optimized** – optimized for details in low light environments.
- **Intelligent AE** – optimized for scenes with fluctuating front and back light caused by sunlight or other illuminated objects in the scene.
- **Vibrant** – enhanced contrast, sharpness and saturation.
- **Low bit rate** – reduces bandwidth requirements.
- **Sports and gaming** – high-speed capture, and improved color rendition and sharpness.
- **Retail** – improved color rendition and sharpness with reduced bandwidth requirements.

**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.

Easy installation
Power for the camera can be supplied via a Power-over-Ethernet 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/24 VAC power supplies. To increase system reliability, the camera can be simultaneously connected to both PoE and +12 VDC/24 VAC supplies. Additionally, uninterruptible power supplies (UPS) can be used, which will allow continuous operation, even during a power failure. 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.

Typical applications
- Tunnels – viewing details in bright and dark areas
- Entrances and exits – identification with strong backlight
- Traffic – capturing moving vehicles at night

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>Emission</th>
<th>EN55022 Class B</th>
<th>FCC Part 15, class B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunity</td>
<td>EN50130-4 (PoE, +12 VDC, 24 VAC)*</td>
<td>EN50121-4</td>
</tr>
<tr>
<td>Safety</td>
<td>EN60950-1</td>
<td>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>
<td></td>
</tr>
<tr>
<td>ONVIF conformance</td>
<td>EN 50132-5-2; IEC62676-2-3</td>
<td></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.
### Regional Certifications

<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>

### Installation/Configuration Notes

#### Controls

1. Data (RS485/422/232)
2. Alarm in, relay out
3. 10/100 Base-T Fast Ethernet
4. MicroSD card slot
5. Menu button
6. Reset button
7. Video out
8. Power supply input
9. Earth
10. Audio in / Audio out

#### Dimensions

- **Width (W)**: 78 (3.07) mm
- **Height (H)**: 140 (5.51) mm
- **Depth (D)**: 66 (2.60) mm

### Parts Included

### Technical Specifications

#### Power

- **Power Supply**: 24 VAC 50/60 Hz
- **12 VDC Power-over-Ethernet**: 48 VDC nominal

- **Current Consumption**
  - 500 mA (12 VDC)
  - 450 mA (24 VAC)
  - 175 mA (PoE 48 VDC)

- **Power Consumption**
  - 6 W (12 VDC)
  - 10.8 W (24 VAC)
  - 8.4 W (PoE 48 VDC)

- **PoE**: IEEE 802.3af (802.3at Type 1)

#### Sensor

- **Type**: 1/3-inch CMOS
- **Pixels**: 2048 x 1536 (3MP)

#### Video Performance

- **Sensitivity**
  - Color: 0.25 lx (0.025 fc)
  - Mono: 0.08 lx (0.008 fc)

- **Dynamic Range**
  - 90 dB High Dynamic Range (HDR)
  - 106 dB HDR (with IAE)

#### Video Streaming

- **Video Compression**: H.264 (MP); MJPEG
- **Streaming**: Multiple configurable streams in H.264 and MJPEG, 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 4:3 (cropped)**: 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
## Video streaming

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Displayed Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>432p SD</td>
<td>768 x 432</td>
</tr>
<tr>
<td>288p SD</td>
<td>512 x 288</td>
</tr>
<tr>
<td>240p SD</td>
<td>Encoding: 352 x 240; Displayed: 432 x 240</td>
</tr>
<tr>
<td>144p SD</td>
<td>256 x 144</td>
</tr>
</tbody>
</table>

## 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
- **High dynamic range**: On/off
- **Backlight compensation**: Off / On / Intelligent Auto Exposure
- **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**: 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)

## Input/output

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</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>

## 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

- **Protocols**: 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, 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
- **Encryption**: TLS 1.0, SSL, DES, 3DES, AES (optional)
- **Ethernet**: 10/100 Base-T, auto-sensing, half/full duplex
- **Connectivity**: ONVIF Profile S, Auto-MDIX

## Software

- **Unit Configuration**: Via web browser or Configuration Manager
- **Firmware update**: Remotely programmable
- **Software viewer**: Web browser, Bosch Video Client, or third party software

## Optical

- **Lens mount**: CS mount (C-mount with adapter ring)
- **Lens connector**: Standard 4-pin DC-iris connector
**Optical**

<table>
<thead>
<tr>
<th>Lens Types</th>
<th>Manual and DC-iris auto-detect with override DC-iris drive: max. 50 mA continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens Controls</td>
<td>Wizard from web page or camera button</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Dimensions (W x H x L)</th>
<th>78 x 66 x140 mm (3.07 x 2.6 x 5.52 inch) without lens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>690 g (1.52 lb) without lens</td>
</tr>
<tr>
<td>Color</td>
<td>RAL 9007 Metallic Titanium</td>
</tr>
<tr>
<td>Tripod Mount</td>
<td>Bottom (isolated) and top 1/4-inch 20 UNC</td>
</tr>
</tbody>
</table>

**Environmental**

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>-20°C to +50°C (-4°F to 122°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-30°C to +70°C (-22°F to +158°F)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>20% to 93% RH</td>
</tr>
<tr>
<td>Storage Humidity</td>
<td>up to 98% RH</td>
</tr>
</tbody>
</table>

**DINION IP dynamic 7000 HD**

High-performance IP box camera for intelligent HD surveillance. HDR; hybrid IP/Analog; 1080p30; PoE; IDNR; IAE; ROI; day/night; H.264 quad-streaming; free viewing Apps; cloud services; audio/motion detection; IVA

**Ordering information**

**Varifocal Megapixel Lens**

Varifocal megapixel IR corrected lens. 1/1.8" sensor max; C-mount; 4-pin DC-iris; 5 MP; 12 to 50 mm; F1.6 to T360

Order number LVF-5005N-S1250

**S1374 Adapter**

Adapter to convert C mount lens to CS mount camera

Order number S1374

**UPA-2410-60 Power Supply**

Power supply. 120 VAC, 60 Hz; 24 VAC, 10 VA Out

Order number UPA-2410-60

**UPA-2430-60 Power Supply**

Power supply for camera. 120 VAC, 60 Hz; 24 VAC, 30 VA Out

Order number UPA-2430-60

**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

**Monitor/DVR Cable SMB 3.0M**

3 m (9 ft) analog cable, SMB (female) to BNC (male) to connect camera to monitor or DVR

Order number NBN-MCSMB-30M

**VIDEOJET XTC XF Video Transcoder**

High-performance video transcoder. H.264; CF card slot; ROI; max resolution 1080p; 2 channels

Order number VJT-XTCXF

**Varifocal SR Megapixel Lens**

Varifocal SR megapixel IR corrected lens. 1/2.5" sensor; CS-mount; 4-pin SR-iris; 5 MP; 9 to 40 mm; F1.5 to F8

Order number LVF-5005C-S0940

**Varifocal SR Megapixel Lens**

Varifocal SR megapixel lens. 1/2" sensor; C-mount; 4-pin SR-iris; 3 MP; 3.8 to 13 mm; F1.4 to F8

Order number LVF-5003N-S3813

**Varifocal SR Megapixel Lens**

Varifocal SR megapixel IR corrected lens. 1/2.5" sensor; CS-mount; 4-pin SR-iris; 5 MP; 1.8 to 3 mm; F1.8 to F8

Order number LVF-5005C-S1803

**Varifocal SR Megapixel Lens**

Varifocal SR megapixel IR corrected lens. 1/1.8" sensor; CS-mount; 4-pin SR-iris; 5MP; 4.1 to 9 mm; F1.6 to F8

Order number LVF-5005C-S4109