# FLEXIDOME IP 7000 RD

www.boschsecurity.com

**BOSCH**
Invented for life

- ▶ 1/2.7-inch Day/Night CMOS with progressive scan
- ▶ Intelligent noise reduction reduces bandwidth and storage requirements by up to 30%
- ▶ High-impact, ruggedized enclosure with choice of lens
- ▶ Auto back focus for fast installation
- ▶ Content-based scene analysis optimizes the image processing

FLEXIDOME IP 7000 RD cameras are 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 FLEXIDOME IP 7000 RD 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.

## Functions

### 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 Image Technology (C-BIT) 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.

### Low bandwidth consumption

The intelligent Dynamic Noise Reduction (iDNR) actively analyzes the contents of the scene to reduce bandwidth and storage requirements. This removes noise artifacts so effectively that compression efficiency is very high (up to 30% improvement). 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 via temporal and spatial noise filtering.

Area-based encoding reduces unnecessary bandwidth. Compression parameters for up to eight user-definable regions can be set. This allows uninteresting regions to be highly compressed, thus lowering bandwidth consumption and storage requirements. Important

regions can be tuned for best image quality, thus allowing the user to allocate bandwidth to important parts of the scene.

### Flexible lens choice
The camera comes with a choice of tele, mid-range, and ultra wide angle lenses. These varifocal SR (Super Resolution) lenses have an advanced iris design to ensure that the high resolution HD sensor produces the sharpest image possible, even in the corners. The optically corrected ultra wide angle lens provides outstanding performance without the need for de-warping software.

### Simple installation
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:
- **Outdoor** – general day-to-night changes with sun highlights and street lighting
- **Indoor** – general day-to-night changes without 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

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.

### 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.

### 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 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.

### 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.

### Regions of interest
Two Regions of Interest (ROI) can be user defined. The remote 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.
The IVA Intelligent tracker can also follow objects within the defined regions of interest. The Intelligent tracker can autonomously detect and track moving objects or the user can click on an object which the Intelligent tracker will then follow.

### Rugged design
The cast-aluminum housing, polycarbonate window, and hardened inner liner can withstand the equivalent of 55 kg (120 lbs) of force (>IK10). Ideal for outdoor use, the camera is protected against water and dust to IP67 (NEMA -4X) standards. Using the proprietary pan/tilt/rotation mechanism, installers can select the exact field of view. Mounting options are numerous, including surface, wall, corner, and suspended-ceiling mounting.

### 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.

## Surveillance software
There are many ways to access the camera's video and IVA-based features: using a web browser, with the Bosch Video Management System, with the Bosch Recording System, with the free-of-charge 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. It also provides easy live viewing of multiple cameras, playback, forensic search and export.
Access to IVA metadata is available to integrators via RTSP.

## 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.

## Connections
The camera conforms to the ONVIF (Open Network Video Interface Forum) Profile S specification which guarantees interoperability between network video products regardless of manufacturer. For trouble-free network cabling, the camera supports Auto-MDIX which allows the use of straight or cross-over cables. Camera power is supplied via PoE (Power-over-Ethernet) or via the 24 VAC/12 VDC connector.
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.

## Typical applications
• Care facilities
• Traffic monitoring
• Hotels, bars and nightclubs
• Commercial and government buildings
• City surveillance and safety
• Border control

## Certifications and approvals

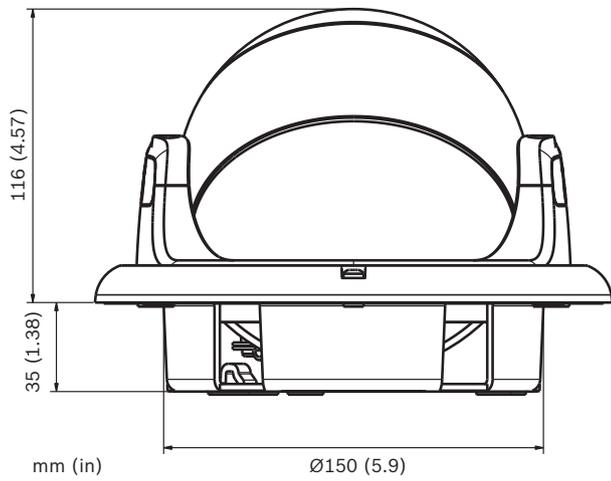### HD Standards
Complies with the SMPTE 274M-2008 Standard in:
– Resolution: 1920x1080
– Scan: Progressive
– Color representation: complies with ITU-R BT.709
– Aspect ratio: 16:9
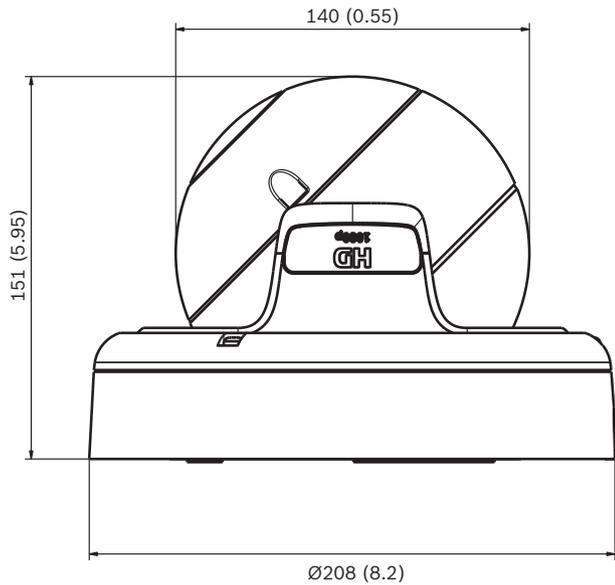– Frame rate: 25 and 30 frames/s
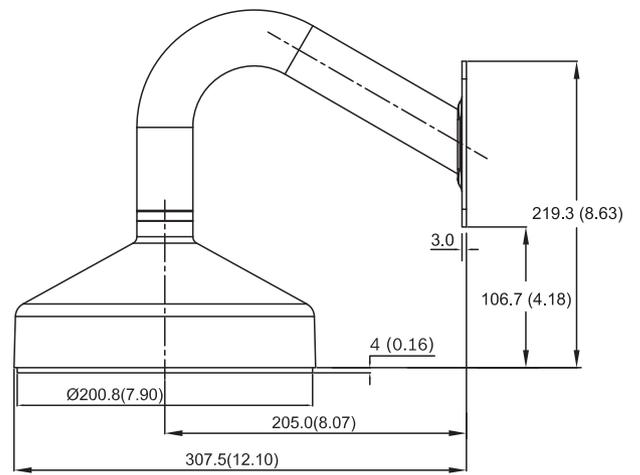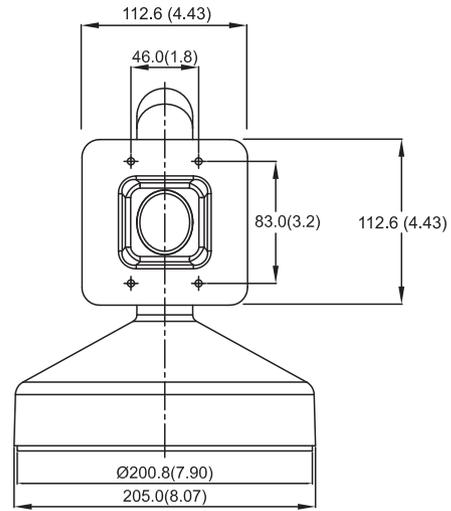Complies with the 296M-2001 Standard in:
– Resolution: 1280x720
– Scan: Progressive
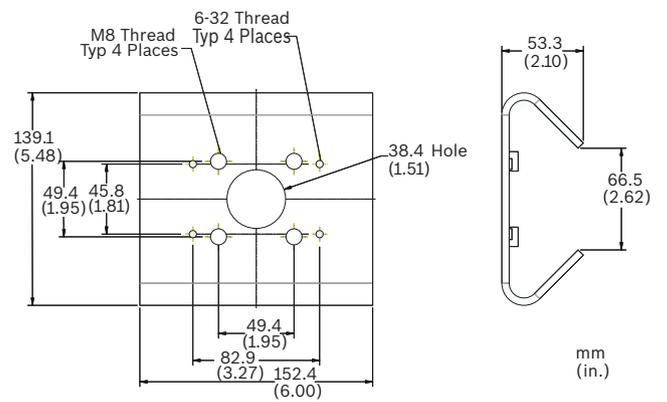– Color representation: complies with ITU-R BT.709

– Aspect ratio: 16:9
– Frame rate: 25 and 30 frames/s

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

* 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.

| Region | Certification |
|---|---|
| Europe | CE |
| USA | UL |
| | FCC |
| Canada | CSA |

## Installation/configuration notes

### Dimensions

140 (0.55)

151 (5.95)

Ø208 (8.2)

116 (4.57)

35 (1.38)

mm (in)

Ø150 (5.9)

### Mounting brackets (not included)

112.6 (4.43)

46.0(1.8)

83.0(3.2)

112.6 (4.43)

Ø200.8(7.90)

205.0(8.07)

219.3 (8.63)

3.0

106.7 (4.18)

4 (0.16)

Ø200.8(7.90)

205.0(8.07)

307.5(12.10)

*VDA-832FHD-WMT Wall mount dimensions*

M8 Thread
Typ 4 Places

6-32 Thread
Typ 4 Places

53.3
(2.10)

139.1
(5.48)

38.4 Hole
(1.51)

49.4  45.8
(1.95) (1.81)

66.5
(2.62)

49.4
(1.95)

82.9
(3.27)  152.4
(6.00)

mm
(in.)

*LTC 9213/01 Pole Mount Adapter dimensions*
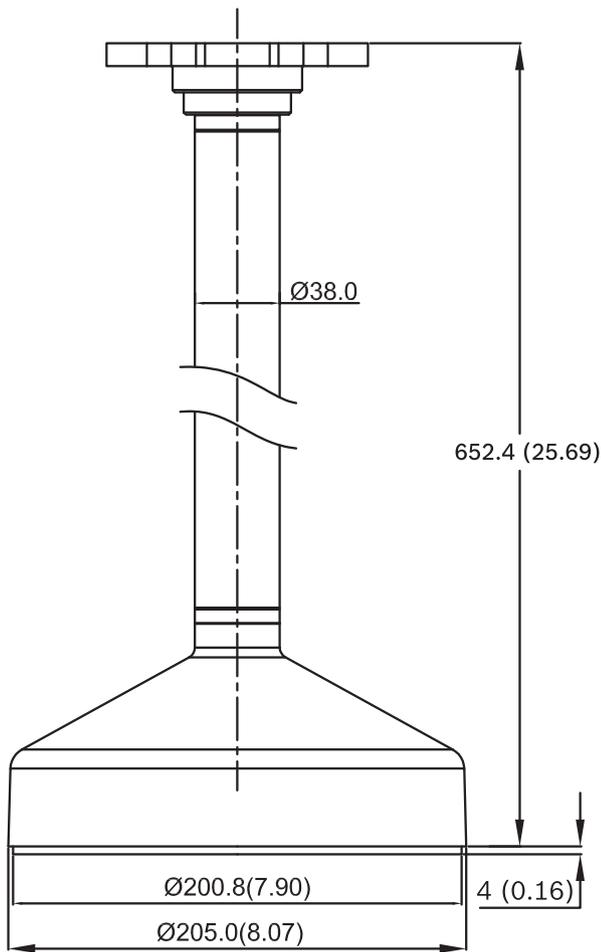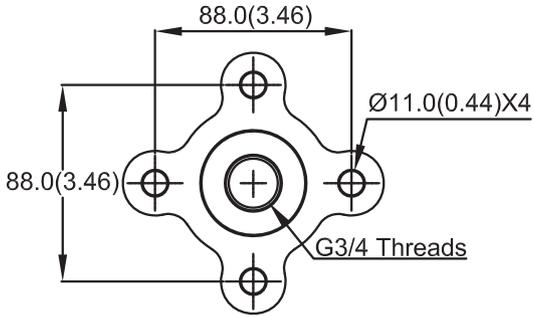
*VDA-832FHD-PMT Pipe mount dimensions*

## Technical specifications

### Electrical

| Power Supply | 24 VAC 50/60 Hz<br>12 VDC<br>Power-over-Ethernet 48 VDC nominal |
|---|---|
| Current Consumption | 0.8 A \| 1 A IVA (12 VDC)<br>0.7 A \| 0.8 A IVA (24 VAC)<br>0.25 A \| 0.3 A IVA (PoE 48 VDC) |

| Power Consumption<br>Heater on | 9.6 W \| 11 W IVA (12 VDC)<br>13.4 W \| 15.8 W IVA (24 VAC)<br>12.2 W \| 13.4 W IVA (PoE 48 VDC) |
|---|---|
| Power Consumption<br>Heater off | 4.8 W \| 6 W IVA (12 VDC)<br>8.4 W \| 10.8 W IVA (24 VAC)<br>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 streams

| Video compression | H.264 (ISO/IEC 14496-10); M-JPEG, JPEG |
|---|---|
| Streaming | Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth.<br>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 |
| • D1 4:3 (cropped) | 704 x 480 |
| • SD upright (cropped) | 400 x 720 |
| • 480p SD | Encoding: 704 x 480;<br>Displayed: 854 x 480 |
| • 432p SD | 768 x 432 |
| • 288p SD | 512 x 288 |
| • 240p SD | Encoding: 352 x 240;<br>Displayed: 432 x 240 |
| • 144p SD | 256 x 144 |

### Sensitivity (3200 K, scene reflectivity 89%, F1.2)

| | Minimum illumination (30 IRE) |
|---|---|
| Color | 0.22 lx<br>(0.022 fc) |
| Monochrome | 0.05 lx<br>(0.005 fc) |

| | |
|---|---|
| Day/Night | Color, Mono, Auto |
| White Balance | ATW (2500 to 10000K), ATWhold and manual |
| Shutter | Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/15000) selectable Default shutter |
| Backlight compensation | Off, Auto |
| Contrast enhancement | On/off |
| Sharpness | Sharpness enhancement level selectable |
| Dynamic Range | 76 dB WDR (92 dB with iAE) |
| Privacy Masking | Four independent areas, fully programmable |
| Video Motion Analysis | Motion+ or IVA option |

| Audio | |
|---|---|
| Standard | G.711, 8kHz sampling rate AAC |
| Signal-to-noise ratio | > 50 dB |
| Audio Streaming | Full duplex / half duplex |

| Input/output | |
|---|---|
| Analog Video out (service only) | CVBS (PAL/NTSC), 1 Vpp, 2.5 mm jack, 75 Ohm (non-protected) |
| Audio | 1 x mono line in, 1 x mono line out |
| • signal line in | 12 kOhm typical, 1 Vrms max |
| • signal line out | 1 Vrms at 1.5 kOhm typical, |
| Alarm | 2 inputs |
| • activation voltage | +5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor) |
| Relay | 1 output |
| • voltage | 30 VAC or +40 VDC Maximum 0.5 A continuous, 10VA |

| Local Storage | |
|---|---|
| Internal RAM | 10 s pre-alarm recording |
| Memory card slot | Supports SDHC and SDXC microSD cards up to 2 TB |
| Recording | Continuous recording, ring recording. alarm/events/schedule recording |

| Software Control | |
|---|---|
| Unit Configuration | Via web browser or Configuration Manager |
| Software update | Remote programmable |

| Network | |
|---|---|
| Protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, SNTP, SNMP (V1, MIB-II), 802.1x, DNS, DNSv6, DDNS, 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 |
| Ethernet connector | RJ45 |
| Connectivity | ONVIF Profile S, Auto-MDIX |

| Optical | |
|---|---|
| Varifocal lens | Manual zoom and focus adjustment |
| Iris control | Automatic iris control |
| Viewing angle | |
| 1.8 to 3 mm | Wide 115 x 84º (H x V) |
| | Tele 87º x 57º (H x V) |
| 3.8 to 13 mm | Wide: 87º x 48º (H x V) |
| | Tele: 26º x 14.3º (H x V ) |
| 9 to 40 mm | Wide: 37º x 20º (H x V) |
| | Tele: 8.5º x 4.8º (H x V ) |

| Mechanical | |
|---|---|
| Dimensions (D x H) | 208 x 151 mm (8.2 x 5.95 in) |
| Weight | 2200 g (4.85 lb) |

| Environmental | |
|---|---|
| Operating Temperature | -50ºC to +55ºC (-58ºF to 131ºF) |
| Operating Temperature (IVA) | -50ºC to +50ºC (-58ºF to 122ºF) |
| Storage Temperature | -30ºC to +70ºC (-22ºF to +158ºF) |
| Operating Humidity | 20% to 93% RH |
| Storage Humidity | up to 98% RH |
| Vandal Resistance | Ik10 |
| Ingress Resistance | IP67, NEMA 4x |

## Ordering information

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 1.8 to
3 mm SR lens; MOTION+
Order number **NDN-832V02-P**

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 1.8 to
3 mm SR lens; IVA
Order number **NDN-832V02-IP**

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 3.8 to
13 mm SR lens; MOTION+
Order number **NDN-832V03-P**

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 3.8 to
13 mm SR lens; IVA
Order number **NDN-832V03-IP**

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 9 to
40 mm SR lens; MOTION+
Order number **NDN-832V09-P**

**FLEXIDOME IP 7000 RD**
High-performance IP dome camera for HD surveillance.
1080p30; IP67; >IK10; iDNR; iAE; ROI; H.264 quad-
streaming; cloud services; free viewing Apps; 9 to
40 mm SR lens; IVA
Order number **NDN-832V09-IP**

**Accessories**

**VDA-832FHD-WMT**
Wall mount bracket for HD FlexiDomes
Order number **VDA-832FHD-WMT**

**VDA-832FHD-PMT**
Pendant pipe mount bracket for HD FlexiDomes
Order number **VDA-832FHD-PMT**

**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**

**S1460 Service/Monitor Cable**
2.5 mm jack to BNC video connector cable. 1 m
Order number **S1460**

**VJT-XTCXF**
High-performance video transcoder. H.264; CF card
slot; ROI; 2 channels
Order number **VJT-XTCXF**