



**BOSCH**

Invented for life

# NDN-921 FlexiDomeHD 720p Day/Night IP Camera



- ▶ **1/3-inch Day/Night HD CCD with progressive scan**
- ▶ **15-bit image processing technology**
- ▶ **XF dynamic engine and SmartBLC**
- ▶ **Local Storage for flexible recording options**
- ▶ **Intelligence at the edge**
- ▶ **ONVIF conformant**
- ▶ **High-impact, vandal-resistant enclosure**

FlexiDomeHD Day/Night IP cameras are progressive scan HD cameras in a compact, high-impact rated, vandal-resistant housing.

They are equipped with a 15-bit DSP and an XF dynamic engine for sharper images with outstanding color reproduction. Features such as multicasting, internet streaming and iSCSI recording are fully supported. FlexiDomeHD cameras have built-in video motion analysis and additional processing power for video content analysis systems.

Supported by the Bosch-designed Dinion digital imaging technology, they provide a proven, dependable solution for any security and surveillance requirements, day and night.

## Functions

### 720p HD Cameras

The FlexidomeHD is designed using the latest HD CCD sensor which can deliver high resolution 720p streaming video in HD format (16:9). The camera now brings the unmatched Dinion Image performance to HD-standard video.

### Superior image quality

With a 1/3-inch HD CCD sensor and Bosch's advanced digital signal processing, the FlexiDomeHD provides outstanding image quality for a wide range of security applications.

### Digital Image Processing

The highly accurate digital signal processing optimally processes the image to bring out the details in the scene making it suitable for applications requiring identification of facial characteristics or alphanumeric characters.

### XF-Dynamic and SmartBLC

The XF-Dynamic technology uses pixel-by-pixel analysis to provide the user with the most detailed information. Turn on SmartBLC to automatically compensate the image without the need for complicated set-up or without compromising dynamic range. Features such as Autoblack and Sharpness further improve the details in a scene.

### Programmable Modes

Six independent, pre-programmed configuration modes, which have been optimized for typical applications, makes camera programming on-site easy and user-friendly. The installer just needs to select a mode from the menu that best defines the environment in which the camera is being installed. However, the operator still has the ability to customize these modes, if necessary, for the specific requirements of the site.

### **Day/Night switching**

In night mode, the camera enhances low-light viewing by switching the IR (infrared) filter out of the optical path and providing a monochrome image. The camera can switch from color to monochrome mode automatically by sensing the illumination level, via the alarm input, or remotely via a web browser. In scenes with predominantly IR light, use the alarm input for reliable Day/Night filter switching.

### **Privacy masking**

Four different privacy zones allow specific parts of a scene to be blocked. A mask for any part of the scene can be pre-programmed.

### **Default Shutter**

The default shutter allows the camera to use a higher shutter speed when sufficient light is available (for applications such as traffic management). When light levels fall and other adjustments have been exhausted, the shutter speed reverts to a standard setting to maintain sensitivity.

### **SensUp Dynamic**

By increasing the integration time up to 10 times on the CCD, the effective sensitivity is dramatically enhanced. This is especially useful when relying only on moonlight for illumination.

### **Efficient bandwidth and storage management**

The cameras use H.264 (Main Profile) compression, bandwidth throttling, and multicasting capabilities to manage bandwidth and storage requirements efficiently, while delivering high image quality and resolution.

Bosch's innovative Quad-streaming feature enables the FlexiDomeHD to deliver three H.264 streams (a 720p HD stream, a downscaled resolution stream, and a HD I-frame only stream) together with an M-JPEG stream. These four streams facilitate bandwidth-efficient viewing and recording options as well as integration with third-party video management systems.

FlexiDomeHD cameras offer unparalleled recording options. Attached to the network, they can use iSCSI targets directly without needing any recording software. The recording management capabilities of the system can be further enhanced by using the Bosch Video Recording Manager (VRM).

FlexidomeHD supports local storage on micro SD card. This can be used for local alarm recording or for Automatic Network Replenishment (ANR) to improve the overall reliability of video recording.

### **Standard intelligence**

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, which is built into all camera versions, is the perfect solution for applications where basic video content analysis features are required. This motion analysis algorithm is based on pixel change and includes object size filtering capabilities and sophisticated tamper-detection capabilities.

### **Hardware enhanced version**

The hardware-enhanced version of the camera gives you the opportunity to upgrade the video content analysis features of the camera with the more advanced Intelligent Video Analysis (IVA) option. This option contains such features as idle object, line crossing, flow detection, crowd detection etc. The camera can be ordered with IVA pre-installed from the factory or IVA can be activated on hardware enhanced versions by installing a license on-site.

### **ONVIF conformance**

The camera conforms to the ONVIF (Open Network Video Interface Forum) specification which guarantees interoperability between network video products regardless of manufacturer. ONVIF conformant devices are able to exchange live video, audio, metadata and control information. They are automatically discovered and connected to network applications such as video management systems.

### **Tough design**

The cast-aluminum housing, polycarbonate dome, and hardened inner liner can withstand the equivalent of 55 kg (120 lbs) of force. The enclosure contains the full-featured camera and integral varifocal lens. Ideal for outdoor use, the cameras are protected against water and dust to IP 66 (NEMA 4X) standards. The camera enclosure provides the extra protection necessary for applications such as schools, banks, prisons, retail outlets and industrial buildings.

Installation is quick and easy, as the camera comes completely assembled and ready to use. The camera uses Bosch designed lens and optics to deliver true HD resolution with different light levels.

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. The compact, sleek design and virtually flush-mount appearance complements any decor.

### Unsurpassed flexibility

There are many ways to access the camera's video: on a PC using a web browser, with the Bosch Video Management System (VMS), or with the Bosch Video Client. The Bosch Video Client is provided free of charge with each camera. This easy-to-use software can easily configure and operate up to 16 cameras. A license upgrade adds support for up to 64 cameras.

### Cost effective, simple installation

Three power options, PoE (Power-over-Ethernet), 24 VAC and 12 VDC are available. Using PoE makes installation easier and more cost-effective, as cameras do not require a local power source. 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.

For trouble-free network cabling, the cameras support Auto-MDIX which allows the installer to use straight or cross-over cables.

### Easy Upgrade

Remotely upgrade the camera whenever new firmware becomes available. This ensures up-to-date products, thus protecting investment with little effort.

### Access Security

Various security levels are available for accessing the network, the camera, and the data channels. As well as password protection with three levels, 802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server is supported. To secure Web browser access, use HTTPS with a SSL certificate stored in the camera. For total data protection, the video and audio communication channels can be independently AES encrypted with 128-bit keys by installing the optional encryption site license.

### Typical applications

- Prisons and correctional facilities
- Retail outlets
- Commercial and government buildings
- Schools
- Hospitals
- Banks
- City surveillance
- Places with high crowd density or mass gatherings

## Certifications and Approvals

### HD standards

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

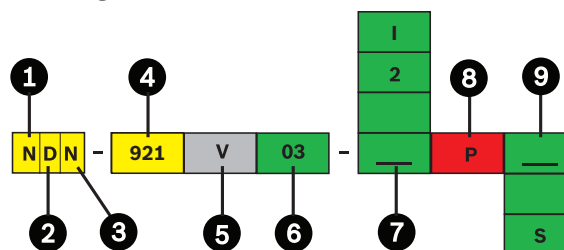
Region	Certification
Europe	CE
USA	UL FCC
Canada	CSA

Electro Magnetic Compatibility	
Emission	EN55022 Class B EN61000-3-2 EN61000-3-3 FCC Part 15: Class B
Immunity	EN50130-4 (PoE, +12 VDC) EN55024 (24 VAC) EN50121-4
Safety	EN60950-1 UL60950-1 (2nd edition) CAN/CSA-C 22.2 No. 60950-1
Vibration	As per IEC60068-2-6 (5 m/s <sup>2</sup> , operational)

## Installation/Configuration Notes

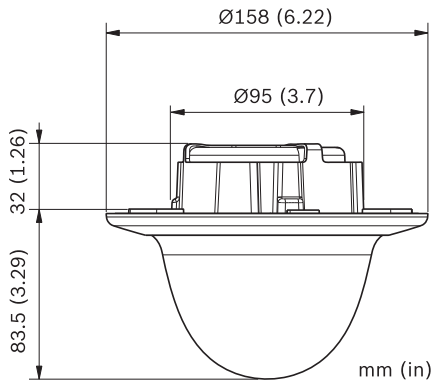
### Ordering chart



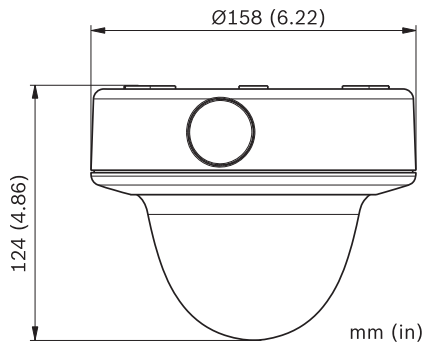
1	N	Network camera
2	D	Dome (FlexiDome fixed dome)
3	N	Day/Night
4	921	DinionHD performance
5	V	Varifocal lens, auto iris
6	03	3 to 9 mm F1.4
7		Motion+
	2	IVA Ready*
	I	IVA enabled
8	P	PoE
9		Flush mount (blank)
	S	Surface mount

\* No license included

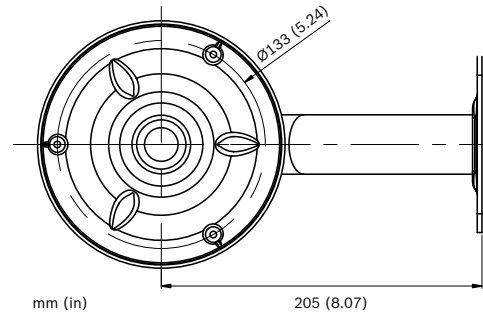
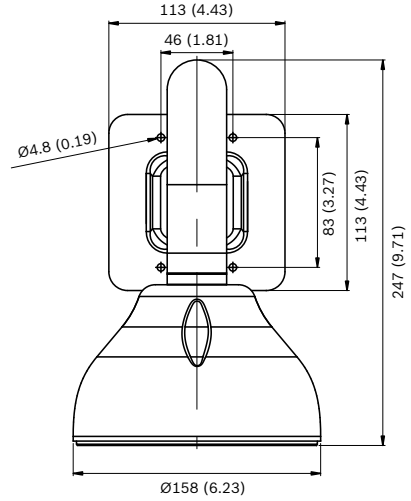
**Flush Mounting**



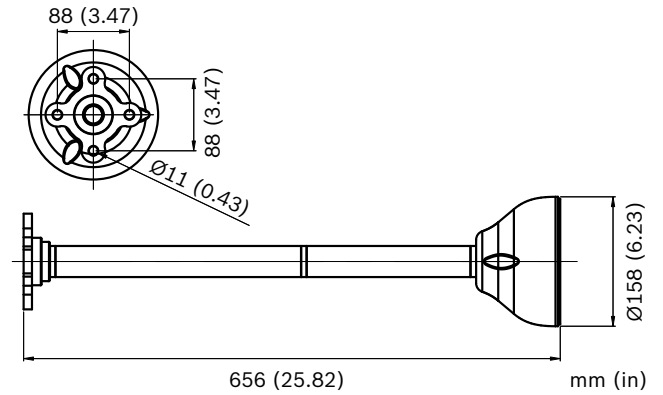
**Surface Mounting**



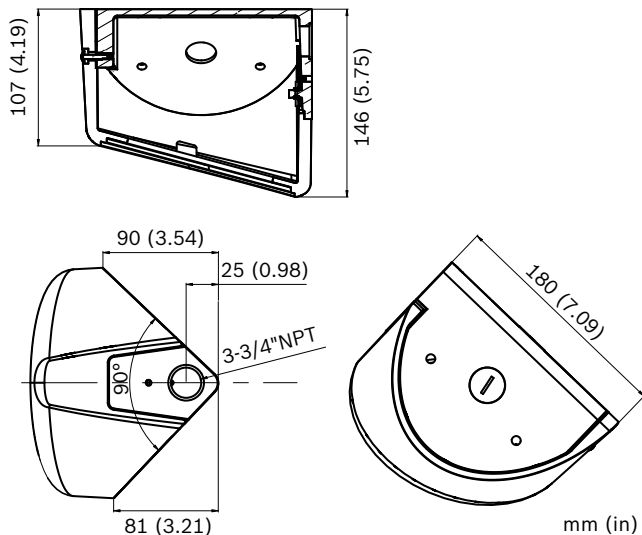
**VDA-WMT-DOME -Pendant Wall Mount**



**VDA-PMT-DOME -Pendant Pipe Mount**



**VDA-CMT-DOME –Corner Mount**



**Parts Included**

Quantity	Component
1	NDN-921 Series FlexiDomeHD Day/Night IP Camera
1	Lens adjustment cap (focus aid)
1	Safety instructions
1	Quick Install Guide
1	Mini DVD-ROM with manuals, software, and tools
1	Mounting hardware kit + screwdriver bit
1	RJ45 network connector
1	Template for flush mount

**Technical Specifications**

**Electrical**

Power Supply	24 VAC ±10% 50/60 Hz 12 VDC ±10% Power-over-Ethernet 48 VDC nominal
Current Consumption	550 mA   700 mA IVA (12 VDC) 550 mA   700 mA IVA (24 VAC) 200 mA (PoE 48 VDC)
Power Consumption	6.6 W   8.4 W IVA (12 VDC) 8.2 W   10.4 W IVA (24 VAC) 9.6 W (PoE 48 VDC)

**Sensor**

Type	1/3-inch CCD
Active Pixels	1280 x 960

**Network Video Output**

Video compression	H.264 (ISO/IEC 14496-10); M-JPEG, JPEG
Streaming	Four individually configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth.
Two independently configurable H.264 streams	<b>Stream 1:</b> H.264 Main Profile (MP) 720p 25/30 <b>Stream 2:</b> H.264 Baseline Profile plus (BP+) or H.264 MP Standard Definition (SD), or Copy of stream 1
Two additional streams	M-JPEG stream and High Definition (HD) I-frame only stream.
Data rate	9.6 Kbps to 10 Mbps
HD Resolution (H x V)	720p: 1280 x 720
480p Resolution (H x V)	Encoding: 704 x 480 Displayed: 854 x 480
240p Resolution (H x V)	Encoding: 352 x 240 Displayed: 432 x 240
Overall IP Delay	Min. 120 ms, Max. 240 ms
GOP structure	IP, IBP, IBBP
<b>Sensitivity (3200 K, scene reflectivity 89%)</b>	
	Minimum illumination (30 IRE)
Color	1 lx
Color + SensUp 10x	0.1 lx
Monochrome	0.4 lx
Monochrome + SensUp 10x	0.04 lx
Day/Night	Color, Mono, Auto
Pre-configured modes	6 preset programmable modes
Dynamic range	70 dB
Dynamic engine	XF-Dynamic, SmartBLC
SmartBLC	On / Off
AGC	AGC On or Off (0 - 35 dB) selectable
White Balance	ATW (2500 to 10000K), ATWhold and manual
Shutter	Auto (1/50 [1/60] to 1/10000) selectable Auto (1/50 [1/60] to 1/50000) automatic Fixed selectable
Sensitivity up	Adjustable from Off up to 10x
Auto Black	Automatic continuous, Off
Dynamic Noise Reduction	Auto, On/off selectable
Sharpness	Sharpness enhancement level selectable
Privacy Masking	Four independent areas, fully programmable
Video Motion Analysis	Motion+ or IVA

Test Pattern Generator	Color bars 100%, Grayscale 11-step, Sawtooth 2H, Checker board, Cross hatch, UV plane
------------------------	---

Synchronization	Internal, Line Lock, HV-lock and Genlock (Burst lock) selectable
-----------------	--

### Audio

Standard	G.711, 8kHz sampling rate L16, 16kHz sampling rate
----------	---

Signal-to-noise ratio	> 50 dB
-----------------------	---------

Audio Streaming	Full duplex
-----------------	-------------

### Input/output

Audio	1 x mono line in, 1 x mono line out
-------	-------------------------------------

- signal line in 9 kohm typical, 5.5 Vpp max
- signal line out 3.0 Vpp at 10 kOhm typical, 2.3 Vpp at 32 Ohm typical, 1.7 Vpp at 16 Ohm typical

Alarm	1 non-isolated closing contact
-------	--------------------------------

- 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

### Software Control

Unit Configuration	Via web browser or Configuration Manager
--------------------	--

Flicker Control	50/60 Hz, selectable
-----------------	----------------------

Software update	Flash ROM, remote programmable
-----------------	--------------------------------

### Network

Protocols	RTP, RTSP, Telnet, UDP, TCP, IP, HTTP, HTTPS, FTP, DHCP, IGMP V2/V3, ICMP, ARP, SMTP, SNTP, SNMP, 802.1x, UPnP
-----------	--

Encryption	TLS 1.0, SSL, AES (optional)
------------	------------------------------

Ethernet	STP, 10/100 Base-T, auto-sensing, half/full duplex, RJ45
----------	--

PoE SUPPLY	IEEE 802.3af compliant
------------	------------------------

### Optical

Varifocal lens	IR corrected, manual zoom and focus adjustment
----------------	--

Iris control	Automatic iris control
--------------	------------------------

Viewing angle	92.9° to 31.7° horizontal 67.9° to 23.7° vertical
---------------	--

### Mechanical

Weight	0.67 kg (1.48 lb) +SMB: 1.29 kg (2.84 lb)
--------	--

Mounting	Flush mount or surface mount
----------	------------------------------

Color	White (RAL9010) trim ring with black inner liner
-------	--

Adjustment range	360° pan, 90° tilt, ±90° azimuth
------------------	----------------------------------

Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
-------------	--

Trim ring	Aluminum
-----------	----------

### Environmental

	Motion+ versions	IVA versions
Operating temperature default (with heater off)	-20 °C to +50 °C (-4 °F to +122 °F) cold start	-20 °C to +45 °C (-4 °F to +113 °F) cold start

Operating temperature (with heater on)	-50 °C to +50 °C (-58 °F to +122 °F)	-50 °C to +45 °C (-58 °F to +113 °F)
--	--------------------------------------	--------------------------------------

Storage temperature	-50 °C to +70 °C (-58 °F to +158 °F)
---------------------	--------------------------------------

Operating humidity	5% to 93% relative humidity
--------------------	-----------------------------

Storage humidity	Up to 98% relative humidity
------------------	-----------------------------

Impact protection	IEC 60068-2-75 test Eh, 50 J
-------------------	------------------------------

	EN 50102, exceeding IK 10
--	---------------------------

Water/dust protection	IP 66 and NEMA-4X
-----------------------	-------------------

Environmental Test Method	EN50130-5:1999 Alarm systems Part 5 (Class 4 Outdoor in general)
---------------------------	--

### Ordering Information

<b>NDN-921-V03-P FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, Motion+, PoE	<b>NDN-921-V03-P</b>
--	----------------------

<b>NDN-921-V03-2P FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, IVA ready, PoE	<b>NDN-921-V03-2P</b>
---	-----------------------

<b>NDN-921-V03-IP FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, IVA enabled, PoE	<b>NDN-921-V03-IP</b>
---	-----------------------

<b>NDN-921-V03-PS FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, Motion+, PoE, Surface mount	<b>NDN-921-V03-PS</b>
--	-----------------------

<b>NDN-921-V03-2PS FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, IVA ready, PoE, Surface mount	<b>NDN-921-V03-2PS</b>
---	------------------------

<b>NDN-921-V03-IPS FlexiDomeHD 720p</b> 1/3-inch Dome, HD 720p, H.264, IVA enabled, PoE, Surface mount	<b>NDN-921-V03-IPS</b>
---	------------------------

## Ordering Information

### Accessories

<b>VDA-WMT-DOME Wall Pendant Mount Bracket</b> Wall pendant mount bracket for FlexiDome cameras	<b>VDA-WMT-DOME</b>
<b>VDA-CMT-DOME Corner Mount Bracket</b> Corner mount bracket for FlexiDome cameras	<b>VDA-CMT-DOME</b>
<b>VDA-PMT-DOME Pendant Pipe Mount Bracket</b> Pendant pipe mount bracket for FlexiDome cameras	<b>VDA-PMT-DOME</b>
<b>UPA-2410-60 Power Supply</b> 120 VAC, 60 Hz, 24 VAC, 10 VA Out	<b>UPA-2410-60</b>
<b>UPA-2430-60 Power Supply</b> 120 VAC, 60 Hz, 24 VAC, 30 VA Out	<b>UPA-2430-60</b>
<b>UPA-2450-60 Power Supply</b> 120 VAC, 60 Hz, 24 VAC, 50 VA Out	<b>UPA-2450-60</b>
<b>UPA-2420-50 Power Supply</b> 220 VAC, 50 Hz, 24 VAC, 20 VA Out	<b>UPA-2420-50</b>
<b>UPA-2450-50 Power Supply</b> 220 VAC, 50 Hz, 24 VAC, 50 VA Out For use with certain 24 VAC camera models.	<b>UPA-2450-50</b>
<b>VDA-455TBL Tinted bubble</b> Tinted bubble for FlexiDome series	<b>VDA-455TBL</b>
<b>VDA-455CBL Clear bubble</b> Clear Bubble for FlexiDome series	<b>VDA-455CBL</b>
<b>Software Options</b>	
<b>MVC-FENC-AES BVIP AES 128 Bit Encryption</b> BVIP AES 128-bit encryption site license. This license is required only once per installation. It enables encrypted communication between BVIP devices and management stations.	<b>MVC-FENC-AES</b>
<b>MVC-FIVA4-CAM</b> IVA 4.x VCA software license for IP camera/dome (e-license)	<b>MVC-FIVA4-CAM</b>

**Americas:**  
Bosch Security Systems, Inc.  
130 Perinton Parkway  
Fairport, New York, 14450, USA  
Phone: +1 800 289 0096  
Fax: +1 585 223 9180  
security.sales@us.bosch.com  
www.boschsecurity.us

**Europe, Middle East, Africa:**  
Bosch Security Systems B.V.  
P.O. Box 80002  
5600 JB Eindhoven, The Netherlands  
Phone: + 31 40 2577 284  
Fax: +31 40 2577 330  
emea.securitysystems@bosch.com  
www.boschsecurity.com

**Asia-Pacific:**  
Robert Bosch (SEA) Pte Ltd, Security Systems  
11 Bishan Street 21  
Singapore 573943  
Phone: +65 6258 5511  
Fax: +65 6571 2698  
apr.securitysystems@bosch.com  
www.boschsecurity.asia

**Represented by**