

# NDN-498 FlexiDome2X Day/Night IP Cameras

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**BOSCH**  
Invented for life



- ▶ 1/3-inch Day/Night CCD with progressive scan
- ▶ 20-bit image processing technology
- ▶ Wide Dynamic Range, 2X-dynamic engine and SmartBLC
- ▶ Quad streaming
- ▶ Flexible recording options

FlexiDome2X Day/Night IP cameras are progressive scan CCD cameras in a compact, high-impact rated, vandal-resistant housing. Equipped with 20-bit DSP with 2X-dynamic, they have a wide dynamic range for sharper, more detailed images with outstanding color reproduction. They can quad-stream video simultaneously – on two H.264 streams, an I-frame recording stream, and an M-JPEG stream. Features such as multicasting, internet streaming and iSCSI recording are fully supported. FlexiDome2X IP cameras have built-in video motion detection and additional processing power for video content analysis systems. Supported by the award-winning Dinion2X digital imaging technology, they provide a proven, dependable solution for many security and surveillance requirements, day or night.

## Functions

### Progressive scan

To capture sharp images, even in busy scenes with high motion content, the Dinion camera uses progressive scan technology.

### Superior image quality

With a 1/3-inch CCD and Bosch's advanced digital signal processing, the FlexiDome2X Day/Night IP camera provides outstanding image quality in virtually all situations. The highly accurate 20-bit digital signal is automatically processed to reveal every detail of the image in both the high and low-light areas of the scene simultaneously.

### 20-bit Image Processing

The highly accurate digital signal processing optimally captures the detail in both bright highlights and deep shadows simultaneously. By combining 20-bit image processing and wide dynamic range, the FlexiDome2X maximizes the information visible in the picture even with strong backlight.

### Wide Dynamic Range

The superior wide dynamic range performance for all lighting conditions reveals details previously unseen.

### 2X-Dynamic and SmartBLC

Using 2X-Dynamic technology, pixel-by-pixel analysis provides 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, pixel by pixel.

#### **Programmable Modes**

Six independent, pre-programmed operating modes support typical applications, but are fully programmable for individual situations.

#### **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, manually via the alarm input, or remotely via a web browser. An internal, through-the-lens IR detector enhances monochrome mode stability by preventing the camera from returning to color mode when IR-illumination is dominant.

#### **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 speed captures fast moving objects when sufficient light is available. 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 FlexiDome2X IP to deliver three H.264 streams (two 4CIF streams and an 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.

FlexiDome2X IP cameras offer unparalleled recording options. Attached to the network, they can use iSCSI targets directly without any additional recording software. The recording capabilities of the system can be further enhanced by using the Bosch Video Recording Manager.

The camera also supports local recording on a microSD 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**

The advanced Intelligent Video Analysis (IVA) option bases the IVA algorithm on digital imaging technology that uses multi-level image analysis of pixels, texture, and object direction.

#### **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, parking garages, retail and industrial buildings.

Installation is quick and easy, as the camera comes completely assembled and ready to use. 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. 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, or with the Bosch Video Client. The camera is also ideal for use with a Divar 700 Series digital video recorder. By routing a video stream to a Bosch video decoder, you can also present the video with ultimate clarity on an analog monitor.

#### **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.

FlexiDome2X IP cameras have a service mode for easy installation using the control buttons and an analog video output on the camera as an alternative to configuration over IP. The service mode is simply activated by pressing a button on the camera. This routes the video to the analog output, bypassing the IP video output. The On-Screen Display (OSD) simplifies back focus adjustment and network configuration, minimizing installation and support costs. The Lens Wizard automatically detects the lens type and helps focus the lens at the maximum opening to maintain proper focus.

### 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 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
- Traffic monitoring (air, land and sea)
- Hotels, bars and nightclubs
- Commercial and government buildings
- City surveillance and safety
- Border control

## Certifications and approvals

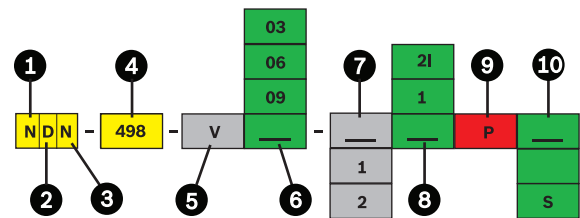
### Electro Magnetic Compatibility

<b>Emission</b>	EN55022 Class B EN61000-3-2 EN61000-3-3 CFR. 47 FCC Part 15: class B
<b>Immunity</b>	EN50130-4 (PoE, +12 VDC) EN55024 (24 VAC) EN50121-4
<b>Safety</b>	EN60950-1 UL60950-1 (2nd edition) CAN/CSA-C 22.2 No. 60950-1
<b>Vibration</b>	As per IEC60068-2-6 (5 m/s <sup>2</sup> , operational)

Region	Certification	
Europe	CE	Declaration of Conformity
USA	FCC	+ UL

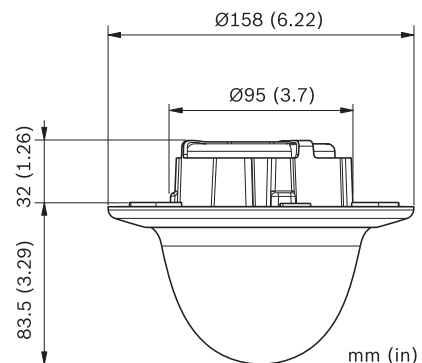
## Installation/configuration notes

### Ordering chart

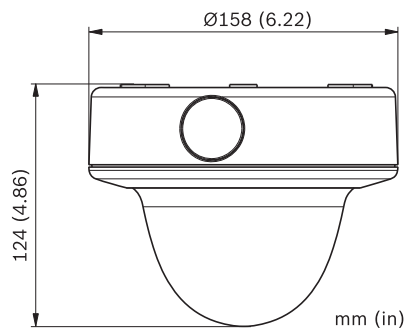


1	N	Network camera
2	D	Dome (FlexiDome fixed dome)
3	N	Day/Night
4	498	Dinion2X performance
5	V	Varifocal lens, auto iris
6	03	2.8 to 10 mm F1.2
	06	6 to 50 mm F1.6
	09	9 to 22 mm F1.4
7	1	PAL 50 Hz
	2	NTSC 60 Hz
8	1	Motion+
	2I	IVA enabled
9	P	PoE
10		Flush mount (blank)
	S	Surface mount

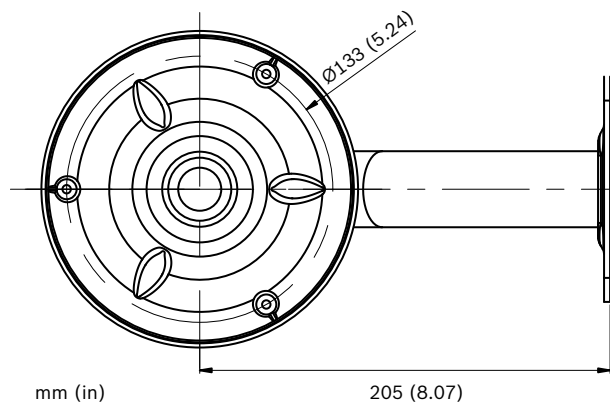
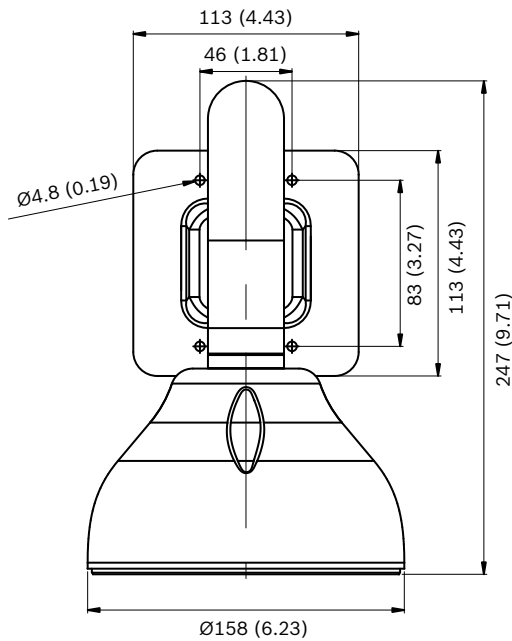
### Flush Mounting



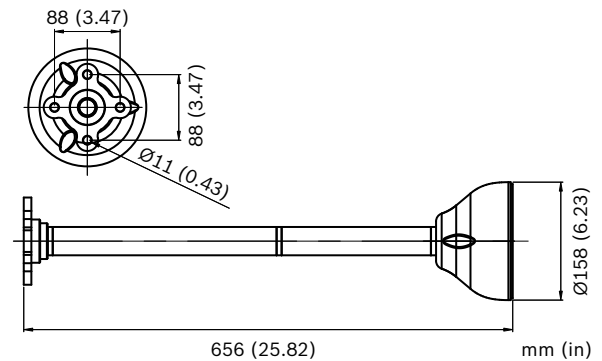
### Surface Mounting



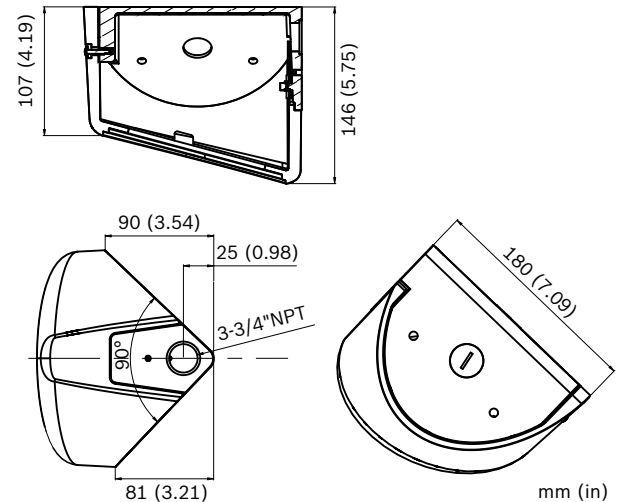
### VDA-WMT-DOME –Pendant Wall Mount



### VDA-PMT-DOME –Pendant Pipe Mount



### VDA-CMT-DOME –Corner Mount



### Parts included

Quantity	Component
1	NDN-498 Series FlexiDome2X 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



### Notice

MicroSD card is not included in a standard delivery.

## Technical specifications

### Electrical

Model No.	Rated Voltage	Rated Frequency
NDN-498Vxx-1xP	24 VAC ±10%	50 Hz
	12 VDC ±10%	
	Power-over-Ethernet	
NDN-498Vxx-2xP	24 VAC ±10%	60 Hz
	12 VDC ±10%	
	Power-over-Ethernet	
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, WDR, dual shutter
Active Pixels (PAL)	752 x 582
Active Pixels (NTSC)	768 x 494

### Video

Video compression	H.264 (ISO/IEC 14496-10); M-JPEG, JPEG
Data rate	9.6 Kbps to 6 Mbps
Resolution	Horizontal x vertical (PAL/NTSC ips)
• 4CIF	704 x 576/480 (25/30 ips)
• CIF	352 x 288/240 (25/30 ips)
Overall IP Delay	Min. 120 ms, Max. 240 ms
GOP structure	I, IP, IBBP
Frame rate	1 to 50/60 (PAL/NTSC) H.264 1 to 25/30 (PAL/NTSC) M-JPEG

### Video Out (service mode only)

Signal	Analog composite (NTSC or PAL) for service only
Connector	2.5 mm jack, 75 Ohm
Horizontal resolution	540 TVL
Video S/N	50 dB

### Sensitivity (3200 K, scene reflectivity 89%)

	Full video (100 IRE)	Usable picture (50 IRE)	Minimum illumination (30 IRE)
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### NDN-498V03 (F1.2)

Color	2.48 lx (0.23 fc)	0.621 lx (0.058 fc)	0.28 lx (0.027 fc)
Color + SensUp 10x	0.248 lx (0.023 fc)	0.062 lx (0.0058 fc)	0.028 lx (0.0027 fc)
Monochrome	1.01 lx (0.093 fc)	0.23 lx (0.021 fc)	0.099 lx (0.0092 fc)
Monochrome + SensUp 10x	0.1 lx (0.0093 fc)	0.023 lx (0.0021 fc)	0.0099 lx (0.00092 fc)

### NDN-498V06 (F1.6)

Color	3.53 lx (0.356 fc)	0.90 lx (0.09 fc)	0.42 lx (0.042 fc)
Color + SensUp 10x	0.353 lx (0.035 fc)	0.09 lx (0.009 fc)	0.042 lx (0.0042 fc)
Monochrome	1.43 lx (0.144 fc)	0.35 lx (0.035 fc)	0.14 lx (0.014 fc)
Monochrome + SensUp 10x	0.14 lx (0.014 fc)	0.03 lx (0.003 fc)	0.014 lx (0.001 fc)

### NDN-498V09 (F1.4)

Color	2.7 lx (0.26 fc)	0.69 lx (0.064 fc)	0.321 lx (0.03 fc)
Color + SensUp 10x	0.27 lx (0.026 fc)	0.069 lx (0.0064 fc)	0.032 lx (0.003 fc)
Monochrome	1.1 lx (0.090 fc)	0.27 lx (0.026 fc)	0.11 lx (0.01 fc)
Monochrome + SensUp 10x	0.11 lx (0.01 fc)	0.027 lx (0.0026 fc)	0.011 lx (0.001 fc)

Day/Night	Color, Mono, Auto
Modes	6 preset programmable modes
Dynamic range	120 dB (20-bit image processing)
Signal-to-Noise Ratio	>50 dB
Dynamic engine	2X-Dynamic, XF-Dynamic, SmartBLC+2X-Dynamic
SmartBLC	On (includes 2X-Dynamic) / Off
AGC	AGC On or Off (0 - 30 dB) selectable
White Balance	ATW, ATWhold and manual (2500 to 10000K)
Shutter	Auto (1/50 [1/60] to 1/10000) selectable Auto (1/50 [1/60] to 1/50000) automatic flickerless, 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
Peak White Invert	On/Off
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
Controls	OSD with soft-key operation (multi-lingual)

<b>Audio</b>	
Standard G.711	300 Hz to 3.4 kHz at 8 kHz sampling rate
Signal-to-noise ratio	> 50 dB

### 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 and Storage

Protocols	RTP, Telnet, UDP, TCP, IP, HTTP, HTTPS, FTP, DHCP, IGMP V2/V3, ICMP, ARP, SMTP, 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
Local Storage	Supports microSD cards (SDHC)

### Optical

Varifocal lens	IR corrected, manual zoom and focus adjustment
Iris control	Automatic iris control
Viewing angle	
2.8 to 10 mm	Wide 100.8° x 73.7° (H x V) Tele 28.5° x 21.4° (H x V)
9 to 22 mm	Wide: 31.2° x 22.8° (H x V) Tele: 12.8° x 9.6° (H x V)
6 to 50 mm	Wide: 43.4° x 32.4° (H x V) Tele: 5.8° x 4.4° (H x V)

### 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

Operating temperature default (with heater off)	-20 °C to +50 °C (-4 °F to +122 °F) cold start
Operating temperature (with heater on)	-50 °C to +50 °C (-58 °F to +122 °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

### Ordering information

#### NDN-498V03-11P FlexiDome2X Day/Night IP Camera

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, PAL, 50 Hz, PoE, Flush mount, microSD slot  
Order number **NDN-498V03-11P**

#### NDN-498V03-11PS FlexiDome2X Day/Night IP Camera

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, PAL, 50 Hz, PoE, Surface mount, microSD slot  
Order number **NDN-498V03-11PS**

**NDN-498V03-12IP FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, PAL, 50 Hz, PoE, Flush mount, microSD slot, IVA enabled  
Order number **NDN-498V03-12IP**

**NDN-498V03-12IPS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, PAL, 50 Hz, PoE, Surface mount, microSD slot, IVA enabled  
Order number **NDN-498V03-12IPS**

**NDN-498V03-21P FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, NTSC, 60 Hz, PoE, Flush mount, microSD slot  
Order number **NDN-498V03-21P**

**NDN-498V03-21PS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, NTSC, 60 Hz, PoE, Surface mount, microSD slot  
Order number **NDN-498V03-21PS**

**NDN-498V03-22IP FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, NTSC, 60 Hz, PoE, Flush mount, microSD slot, IVA enabled  
Order number **NDN-498V03-22IP**

**NDN-498V03-22IPS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 2.8 to 10 mm Varifocal lens, NTSC, 60 Hz, PoE, Surface mount, microSD slot, IVA enabled  
Order number **NDN-498V03-22IPS**

**NDN-498V06-12IPS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 6 to 50 mm F1.6 Varifocal lens, PAL, 50 Hz, PoE, Surface mount, microSD slot, IVA enabled  
Order number **NDN-498V06-12IPS**

**NDN-498V06-22IPS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 6 to 50 mm F1.6 Varifocal lens, NTSC, 60 Hz, PoE, Surface mount, microSD slot, IVA enabled  
Order number **NDN-498V06-22IPS**

**NDN-498V09-11P FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 9 to 22 mm Varifocal lens, PAL, 50 Hz, PoE, Flush mount, microSD slot  
Order number **NDN-498V09-11P**

**NDN-498V09-11PS FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 9 to 22 mm Varifocal lens, PAL, 50 Hz, PoE, Surface mount, microSD slot  
Order number **NDN-498V09-11PS**

**NDN-498V09-12IP FlexiDome2X Day/Night IP Camera**

Vandal resistant, 1/3-inch Progressive Scan, H.264, 2X DSP, WDR, 9 to 22 mm Varifocal lens, PAL, 50 Hz, PoE, Flush mount, microSD slot, IVA enabled  
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Order number **NDN-498V09-22IPS**

**Accessories****VDA-455SMB**

High impact surface mount box for dome cameras  
Order number **VDA-455SMB**

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

Wall pendant mount bracket for FlexiDome cameras  
Order number **VDA-WMT-DOME**

**VDA-CMT-DOME Corner Mount Bracket**

Corner mount bracket for FlexiDome cameras  
Order number **VDA-CMT-DOME**

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

Pendant pipe mount bracket for FlexiDome cameras  
Order number **VDA-PMT-DOME**

**S1460 Service/Monitor Cable**

2.5 mm jack to BNC video connector cable. 1 m  
Order number **S1460**

**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**

**UPA-2450-60 Power Supply, 120 V, 60 Hz**

Indoor power supply for camera. 120 VAC, 60 Hz In; 24 VAC, 50 VA Out

Order number **UPA-2450-60**

**UPA-2420-50 Power Supply**

Power supply for cameras. 220 VAC, 50 Hz In; 24 VAC, 20 VA Out

Order number **UPA-2420-50**

**UPA-2450-50 Power Supply, 220 V, 50 Hz**

Indoor power supply for camera. 220 VAC, 50 Hz In; 24 VAC, 50 VA Out

Order number **UPA-2450-50**

**VDA-455TBL Tinted bubble**

Tinted bubble for FlexiDome series

Order number **VDA-455TBL**

**VDA-455CBL Clear bubble**

Clear Bubble for FlexiDome series

Order number **VDA-455CBL**

**Software Options****IVA license camera**

IVA 4.xx/5.xx VCA software license (e-license) for IP camera/dome

Order number **MVC-FIVA4-CAM**

**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**

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