

# DINION capture 5000

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Invented for life



- ▶ DINION 2X technology produces clear, consistent, accurate license plate images
- ▶ Night Capture Imaging System ensures 24/7 performance and eliminates headlight glare
- ▶ Advanced Ambient Compensation minimizes overexposed plates for improved ALPR accuracy
- ▶ Adjustable imaging modes allow configuration for regional plate characteristics
- ▶ IP and analog versions

The DINION capture 5000 is a specialty camera designed to capture consistent, high-quality images of vehicle license plates. Available in IP and analog versions, it is ideal for monitoring parking lots, public areas, and for controlling vehicle access.

The DINION capture 5000 overcomes the problems encountered when using conventional surveillance cameras in vehicle identification and automatic license plate recognition applications. The Night Capture Imaging System delivers a burst of infrared illumination and simultaneously filters out visible light to ensure clear license plate images in complete darkness while eliminating the negative effects of headlight glare.

Advanced Ambient Compensation minimizes plate overexposure from sunlight for more accurate automatic license plate recognition. Finally, adjustable imaging modes allow for fine-tuning the imager for specific regions or license plate recognition algorithms.

## System overview

The DINION capture 5000 is available with a high performance analog camera or with a progressive scan CCD IP camera. Both models use high intensity short pulse width IR illumination to attain a crystal clear

plate image while minimizing the effects of ambient light. Automatic Mode Switching can be used to overcome scenarios where the plate image may become overexposed, such as when the sun is behind the camera.

With an operational range of up to 28 m (92 ft), the DINION capture 5000 delivers high contrast number plate images across the complete spectrum of ambient lighting conditions, from total darkness to direct glare from sunlight and vehicle headlights. The camera can capture clear plate images from vehicles moving at speeds of up to 225 km/h (140 mph) enabling effective capture on motorways, highways and in other high speed applications.

The DINION capture 5000 easily integrates with the Bosch Divar 700 Digital Video Recorder, the Bosch Video Management System, and with the Bosch Video client. The imager is also specifically designed to work with third-party ANPR software.

## Analog Cameras

The DINION capture 5000 features a 1/3-inch, wide dynamic range CCD sensor and incorporates advanced (20-bit) digital signal processing for outstanding picture performance.

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.

### IP Cameras

The DINION capture 5000 IP features a CCD with progressive scan technology. These models can quad-stream video simultaneously — on two H.264 streams, an I-frame recording stream, and an M-JPEG stream. Equipped with a 20-bit DSP the signal is automatically processed to reveal every detail of the image in both the high- and low-light areas of the scene simultaneously.

The DINION capture 5000 IP uses H.264 (Main Profile) compression, bandwidth throttling, and multicasting capabilities to manage bandwidth and storage requirements efficiently, while delivering high image quality and resolution.

Three power options, PoE+ (Power-over-Ethernet+), 11–30 VDC, and 24 VAC 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 11–30 VDC/24 VAC supplies.

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.

## Functions

### Night Capture Imaging System

Capturing usable images of vehicle license plates is one of the most challenging problems in video surveillance, particularly at night. Typically there is not enough light on scene to properly expose the plate image and vehicle headlights only reduce the exposure making the plate image even dimmer. The DINION capture 5000 overcomes these problems by using the Night Capture Imaging System.

The Night Capture Imaging system illuminates a license plate with a burst of infrared light and simultaneously filters out visible light ensuring clear license plate images 24-hours a day.

### Advanced Ambient Compensation

The DINION capture 5000 uses Advanced Ambient Compensation to decrease overexposure, unreadable plate images, and false ALPR readings. Advanced Ambient Compensation combines high-intensity pulsed infrared illumination, and ultra-fast shutter, and automatic mode switching to deliver a clear, consistent license plate image, day or night.

## Certifications and approvals

Electromagnetic Compatibility	
• Emission	EN 55022 Class A FCC Part 15, Class A
• Immunity	EN 50130-4
Safety	EN 60065 UL 60065 CAN/CSA E60065
Vibration	EN 60068-2-6, EN 60068-2-64
Shock	EN 60068-2-27

## Installation/configuration notes

### Camera Selection Tables

#### Ranges based on capturing:

520 x 115 mm (approximate) license plates on PAL units (xER-L2Ry-1)

12 x 6 in. (approximate) license plates on NTSC units (xER-L2Ry-2)

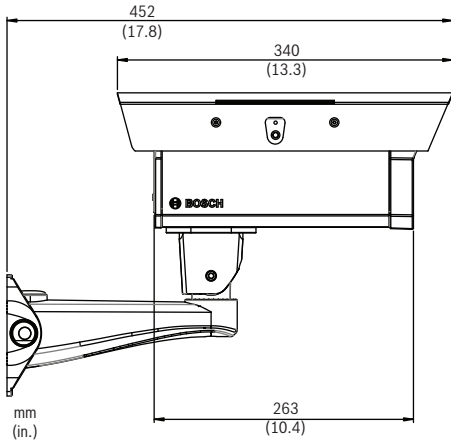
#### Field of View at Optimal Capture Distance:

2.8 x 2.1 m (PAL units)

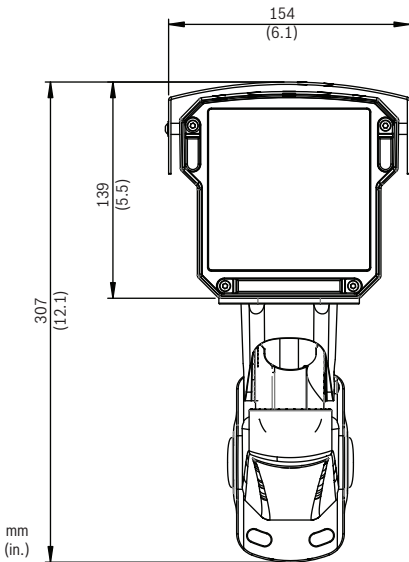
6 ft 6 in. x 4 ft 11 in. (NTSC units)

Note:  $x = V$  (Analog) or N (IP)

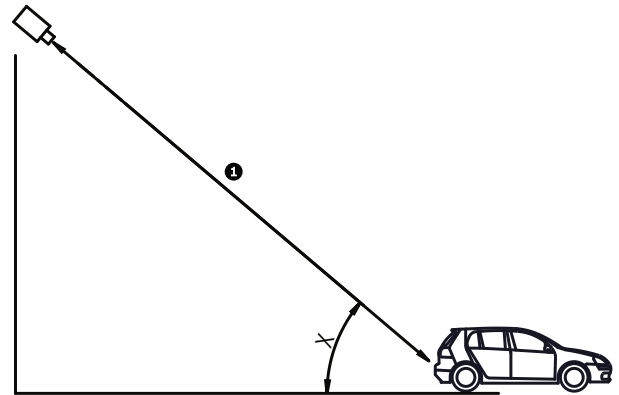
Model	Capture Range	Optimal Distance	HFOV	VFOV
xER-L2R1-1	3.8–6.4 m (12.5–21.0 ft)	4.9 m (16.0 ft)	31.9°	24.2°
xER-L2R1-2			23.0°	17.3°
xER-L2R2-1	5.5–9.1 m (18–30 ft)	7.1 m (23.1 ft)	22.3°	16.8°
xER-L2R2-2			16.0°	12.0°
xER-L2R3-1	7.9–13.7 m (26–45 ft)	10.2 m (33.5 ft)	15.6°	11.8°
xER-L2R3-2			11.1°	8.3°
xER-L2R4-1	11.3–19.5 m (37–64 ft)	14.8 m (48.4 ft)	10.8°	8.1°
xER-L2R4-2			7.7°	5.8°
xER-L2R5-1	16.5–28.0 m (54–92 ft)	21.3 m (70.0 ft)	7.5°	5.6°
xER-L2R5-2			5.3°	4.0°



DINION capture 5000, side view



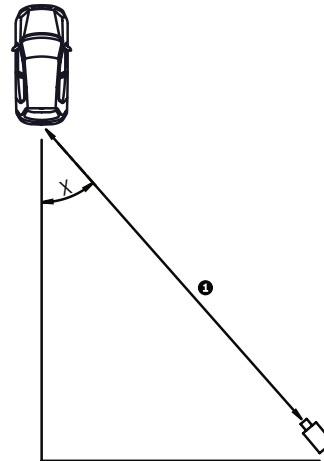
DINION capture 5000, front view



Recommended Vertical Mounting Angle

X	Vertical Mounting Angle <ul style="list-style-type: none"> <li>• <math>\leq 40^\circ</math> for vehicle speeds up to 160 km/h (100 mph), or</li> <li>• <math>\leq 30^\circ</math> for vehicle speeds up to 225 km/h (140 mph)</li> </ul>
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1	Capture Range
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Recommended Horizontal Mounting Angle

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1	Capture Range
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Parts included

Quantity	Description
1	DINION capture 5000
1	3 mm Hex Key
1	5 mm Hex Key

1	Mounting Template
1	DINION capture 5000: Printed Manual DINION capture 5000 IP: CD, containing product documentation and support files

### Technical specifications

Operational Range	3.8 to 28.0 m (12.5 to 92.0 ft)
IR Illumination	Pulsed LED array, 850 nm
Nominal Plate Width	North America: 110 pixels Europe: 130 pixels (with 4CIF encoding at optimal capture distance)
Usable Plate Width	North America: 80–140 pixels Europe: 100–170 pixels (with 4CIF encoding over capture range)
Maximum Capture Speed	225 km/h (140 mph) Must meet 30° mounting criteria.
Automatic Mode Switching	Adjustable switch point depending on ambient light levels, mode selectable

### Analog Camera

<b>Sensor</b>	
Type	1/3-inch CCD, monochrome
Active Pixels (PAL)	752 x 582
Active Pixels (NTSC)	768 x 494
<b>Resolution</b>	
Horizontal Resolution	540 TVL
Video Output	Composite video 1 Vpp, 75 ohm
Synchronization	Internal only
Auto Black	Automatic continuous, Off
Dynamic Range	120 dB (20-bit image processing)
Dynamic Noise Reduction	Auto, On/off selectable
Sharpness	Sharpness enhancement level selectable
AGC	AGC On or Off (0 - 30 dB) selectable
Cable Compensation	Up to 1000 m (3000 ft) coax without external amplifiers (automatic set-up in combination with Bilinx coaxial communication)
Camera ID	17 character editable string, position selectable
Test Pattern Generator	Color bars 100%, Grayscale 11-step, Sawtooth 2H, Checker board, Cross hatch, UV plane
Modes	6 preset programmable modes
Remote Control	Bilinx coaxial bi-directional communication
Video Motion Detection	One area, fully programmable

Privacy Masking	Four independent areas, fully programmable
Controls	OSD operation (multi-lingual)
Lens	5-50 mm varifocal, calibrated to optimal capture distance

### IP Camera

<b>Sensor</b>	
Type	1/3-inch CCD, monochrome
Active Pixels (PAL)	752 x 582
Active Pixels (NTSC)	768 x 494
<b>Video</b>	
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 (per stream)	1 to 25/30 (PAL/NTSC) H.264 1 to 25/30 (PAL/NTSC) M-JPEG
Modes	6 preset programmable modes
Dynamic Range	120 dB (20-bit image processing)
AGC	AGC On or Off (0 – 30 dB) selectable
Auto Black	Automatic continuous, Off
Dynamic Noise Reduction	Auto, On/off selectable
Sharpness	Sharpness enhancement level selectable
Privacy Masking	Four independent areas, fully programmable
Controls	OSD operation (multi-lingual)
Video Motion Detection	One area, fully programmable
Test Pattern Generator	Color bars 100%, Grayscale 11-step, Sawtooth 2H, Checker board, Cross hatch, UV plane
Camera ID	17 character editable string, position selectable
Synchronization	Internal only
Lens	5-50 mm varifocal, calibrated to optimal capture distance

Network and Storage	
Protocols	RTP, 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 802.3at compliant
Local Storage	Supports microSD cards (SDHC)

### Electrical

Input Voltage	
• Analog Camera	11–30 VDC or 24 VAC ± 10%
• IP Camera	11–30 VDC, or 24 VAC ± 10%, Power over Ethernet+ (IEEE 802.3at, class 4)
Power Consumption	
• All Models	22 W, maximum
• 12 VDC	20 W, typical at –40°C (–40°F) 13 W, typical at 20°C (68°F)
• 24 VAC	18 W, typical at –40°C (–40°F) 11 W, typical at 20°C (68°F)
• PoE+	13 W, maximum 11 W, typical

### User Connections

Power	
• Analog Camera	Two-wire flying leads
• IP Camera	Two-wire flying leads and RJ-45 100 Base-TX Ethernet PoE+ IEEE 802.3at, class 4
Video and Control	
• Analog Camera	BNC
• IP Camera	RJ-45 100 Base-TX Ethernet, BNC (setup only)

### Environmental

Weatherproofing	IP 67, Type 4X (NEMA 4X)
Operating Temperature	
• PoE+	–20°C to +50°C (–4°F to 122°F)
• 11–30 VDC or 24 VAC	–40°C to +50°C (–40°F to 122°F)
Storage Temperature	–40°C to +70°C (–40°F to 158°F)
Cold Start-up Temperature	–40°C (–40°F), typically requires a 15-minute warm up prior to operation

Operating/Storage Humidity	0% to 100% relative, condensing
Wind Load	144 km/h (90 mph)

### Construction

Dimensions (H x W x L)	340 x 154 x 139 mm (13.3 x 6.1 x 5.5 in.), housing with sunshield only
Weight	4.4 kg (9.7 lb)
Construction Material	
• Housing	Robust, weather sealed aluminum casting and extrusion
• Window	Borosilicate
Color	Bosch White
Finish	All-weather coating
Bracket	Wall mount included

### Ordering information

#### VER-L2R1-1 DINION capture 5000

Analog PAL license plate camera, 3.8 to 6.4 m range  
Order number **VER-L2R1-1**

#### VER-L2R2-1 DINION capture 5000

Analog PAL license plate camera, 5.5 to 9.1 m range  
Order number **VER-L2R2-1**

#### VER-L2R3-1 DINION capture 5000

Analog PAL license plate camera, 7.9 to 13.7 m range  
Order number **VER-L2R3-1**

#### VER-L2R4-1 DINION capture 5000

Analog PAL license plate camera, 11.3 to 19.5 m range  
Order number **VER-L2R4-1**

#### VER-L2R5-1 DINION capture 5000

Analog PAL license plate camera, 16.5 to 28.0 m range  
Order number **VER-L2R5-1**

#### VER-L2R1-2 DINION capture 5000

Analog NTSC license plate camera, 12.5 to 21.0 ft range  
Order number **VER-L2R1-2**

#### VER-L2R2-2 DINION capture 5000

Analog NTSC license plate camera, 18 to 30 ft range  
Order number **VER-L2R2-2**

#### VER-L2R3-2 DINION capture 5000

Analog NTSC license plate camera, 26 to 45 ft range  
Order number **VER-L2R3-2**

#### VER-L2R4-2 DINION capture 5000

Analog NTSC license plate camera, 37 to 64 ft range  
Order number **VER-L2R4-2**

**VER-L2R5-2 DINION capture 5000**

Analog NTSC license plate camera, 54 to 92 ft range  
Order number **VER-L2R5-2**

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**NER-L2R1-1 DINION capture 5000 IP**

IP PAL license plate camera, 3.8 to 6.4 m range  
Order number **NER-L2R1-1**

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**NER-L2R2-1 DINION capture 5000 IP**

IP PAL license plate camera, 5.5 to 9.1 m range  
Order number **NER-L2R2-1**

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**NER-L2R3-1 DINION capture 5000 IP**

IP PAL license plate camera, 7.9 to 13.7 m range  
Order number **NER-L2R3-1**

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**NER-L2R4-1 DINION capture 5000 IP**

IP PAL license plate camera, 11.3 to 19.5 m range  
Order number **NER-L2R4-1**

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**NER-L2R5-1 DINION capture 5000 IP**

IP PAL license plate camera, 16.5 to 28.0 m range  
Order number **NER-L2R5-1**

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**NER-L2R1-2 DINION capture 5000 IP**

IP NTSC license plate camera, 12.5 to 21.0 ft range  
Order number **NER-L2R1-2**

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**NER-L2R2-2 DINION capture 5000 IP**

IP NTSC license plate camera, 18 to 30 ft range  
Order number **NER-L2R2-2**

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**NER-L2R3-2 DINION capture 5000 IP**

IP NTSC license plate camera, 26 to 45 ft range  
Order number **NER-L2R3-2**

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**NER-L2R4-2 DINION capture 5000 IP**

IP NTSC license plate camera, 37 to 64 ft range  
Order number **NER-L2R4-2**

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**NER-L2R5-2 DINION capture 5000 IP**

IP NTSC license plate camera, 54 to 92 ft range  
Order number **NER-L2R5-2**

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**Accessories****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**

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**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**

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**PSU-124-DC050 Universal Power Supply**

Universal Outdoor Power Supply, Input: 120 to  
230 VAC, 50/60 Hz; Output: 24 VDC, 50 W  
Order number **PSU-124-DC050**

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**MBE-15W White Pole Mount Adapter Plate**

White adapter plate used to attach a DINION capture  
5000/7000, an MBE-27, or an MBE-28 to a pole (also  
compatible with an EXMB.020B Heavy Duty L Bracket)  
Order number **MBE-15W**

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**MBE-17W White Wall Mount Adapter Plate**

White adapter plate used to attach a DINION capture  
5000/7000, an MBE-27, or an MBE-28 to a wall (also  
compatible with an EXMB.020B Heavy Duty L Bracket)  
Order number **MBE-17W**

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