

# DINION capture 7000

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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
- ▶ Overview camera for vehicle identification

The DINION capture 7000 is a specialty camera designed to capture consistent, high-quality images of vehicle license plates. It is ideal for monitoring parking lots, public areas, and for controlling vehicle access. The DINION capture 7000 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. Adjustable imaging modes allow for fine-tuning the imager for specific regions or license plate recognition algorithms. Finally, the overview camera provides a complete vehicle image in tandem with the plate image for positive vehicle identification.

## System overview

With an operational range of up to 28 m (92 ft), the DINION capture 7000 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 7000 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.

The DINION capture 7000 uses 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.

The license plate imager camera and the overview camera use a 1/3-inch, wide dynamic range CCD sensors and incorporate 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.

**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 7000 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 7000 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 Table**

**Ranges based on capturing:**

520 x 115 mm (approximate) license plates on PAL units (VER-D2Rx-1)

12 x 6 in. (approximate) license plates on NTSC units (VER-D2Rx-2)

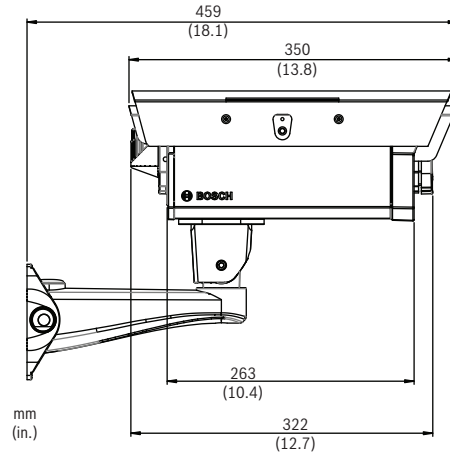
**Field of View at Optimal Capture Distance:**

2.8 x 2.1 m (PAL units)

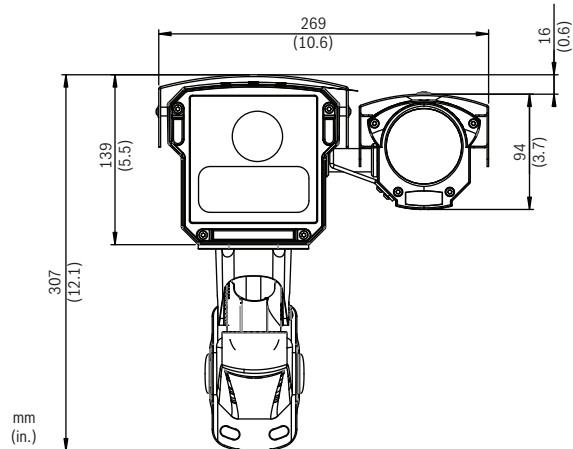
6 ft 6 in. x 4 ft 11 in. (NTSC units)

Model	Capture Range	Optimal Distance	HFOV	VFOV
VER-D2R1-1	3.8–6.4 m (12.5–21.0 ft)	4.9 m (16.0 ft)	31.9°	24.2°
VER-D2R1-2			23.0°	17.3°
VER-D2R2-1	5.5–9.1 m (18–30 ft)	7.1 m (23.1 ft)	22.3°	16.8°
VER-D2R2-2			16.0°	12.0°

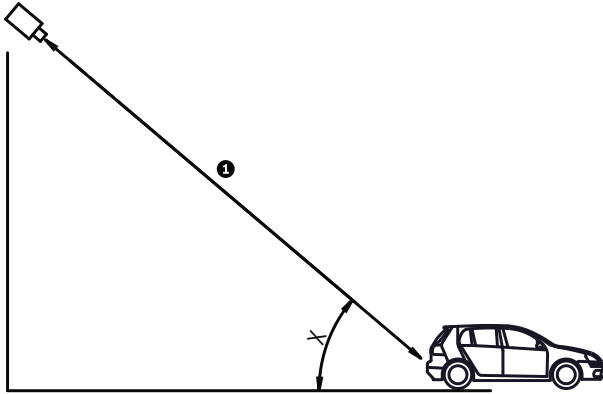
VER-D2R3-1	7.9–13.7 m (26–45 ft)	10.2 m (33.5 ft)	15.6°	11.8°
VER-D2R3-2			11.1°	8.3°
VER-D2R4-1	11.3–19.5 m (37–64 ft)	14.8 m (48.4 ft)	10.8°	8.1°
VER-D2R4-2			7.7°	5.8°
VER-D2R5-1	16.5–28.0 m (54–92 ft)	21.3 m (70.0 ft)	7.5°	5.6°
VER-D2R5-2			5.3°	4.0°



DINION capture 7000, side view



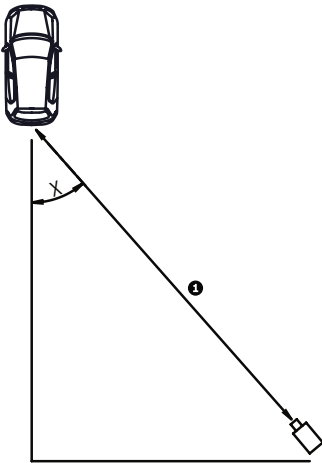
DINION capture 7000, front view



Recommended Vertical Mounting Angle

- X Vertical Mounting Angle
  - $\leq 40^\circ$  for vehicle speeds up to 160 km/h (100 mph), or
  - $\leq 30^\circ$  for vehicle speeds up to 225 km/h (140 mph)

1 Capture Range



Recommended Horizontal Mounting Angle

- X Horizontal Mounting Angle
  - $\leq \pm 40^\circ$  for vehicle speeds up to 160 km/h (100 mph), or
  - $\leq \pm 30^\circ$  for vehicle speeds up to 225 km/h (140 mph)

1 Capture Range

**Parts included**

Quantity	Description
1	DINION capture 7000
1	3 mm Hex Key
1	5 mm Hex Key
1	Mounting Template
1	Printed Manual

**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

**License Plate Imager Camera**

Sensor	
Type	1/3-inch CCD, monochrome
Active Pixels (PAL)	752 x 582
Active Pixels (NTSC)	768 x 494
Resolution	
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

### Overview Camera

<b>Sensor</b>	
Type	1/3-in. CCD, WDR, dual shutter
Active Pixels (PAL)	752 x 582
Active Pixels (NTSC)	768 x 494

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

	Full video (100 IRE)	Usable picture (50 IRE)	Usable picture (30 IRE)
Color	2.4 lx (0.223 fc)	0.47 lx (0.044 fc)	0.15 lx (0.0139 fc)
Color + SensUp 10x	0.24 lx (0.0223 fc)	0.047 lx (0.00437 fc)	0.015 lx (0.00139 fc)
Monochrome	0.98 lx (0.091 fc)	0.188 lx (0.0174 fc)	0.060 lx (0.0056 fc)
Monochrome + SensUp 10x	0.098 lx (0.0091 fc)	0.019 lx (0.00176 fc)	0.0060 lx (0.000557 fc)

Horizontal Resolution	520 TVL
Signal-to-Noise Ratio	>50 dB
Video Output	Composite video 1 Vpp, 75 ohm
Synchronization	Synchronized to pulsed infrared for night mode
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
Day/Night	Color, Mono, Auto
Auto Black	Automatic continuous, Off
Dynamic Engine	XF-Dynamic, 2X-Dynamic, SmartBLC
Dynamic Range	120 dB (20-bit image processing)
Dynamic Noise Reduction	Auto, On/off selectable
Sharpness	Sharpness enhancement level selectable
SmartBLC	On (includes 2X-Dynamic ) / Off
AGC	AGC On or Off (0 – 30 dB) selectable
Peak White Invert	On/Off
White Balance	ATW, ATWHold and manual (2500 to 10000K)

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 IR corrected varifocal, calibrated for vehicle overview capture

### Electrical

Input Voltage	11-30 VDC or 24 VAC ±10%
Power Consumption	
• All Models	36 W, maximum
• 12 VDC	32 W, typical at -40°C (-40°F) 17 W, typical at 20°C (68°F)
• 24 VAC	28 W, typical at -40°C (-40°F) 13 W, typical at 20°C (68°F)

### User Connections

Power	2-wire flying lead
Video and Control	2 BNC connectors, one for each camera

### Environmental

Weatherproofing	IP 67, Type 4X (NEMA 4X)
Operating Temperature	-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)	350 x 269 x 139 mm (13.8 x 10.6 x 5.5 in.), housing with sunshield only
Weight	6 kg (15 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-D2R1-1 DINION capture 7000

PAL license plate camera, 3.8 to 6.4 m range, with day/night overview camera  
Order number **VER-D2R1-1**

#### VER-D2R2-1 DINION capture 7000

PAL license plate camera, 5.5 to 9.1 m range, with day/night overview camera  
Order number **VER-D2R2-1**

#### VER-D2R3-1 DINION capture 7000

PAL license plate camera, 7.9 to 13.7 m range, with day/night overview camera  
Order number **VER-D2R3-1**

#### VER-D2R4-1 DINION capture 7000

PAL license plate camera, 11.3 to 19.5 m range, with day/night overview camera  
Order number **VER-D2R4-1**

#### VER-D2R5-1 DINION capture 7000

PAL license plate camera, 16.5 to 28.0 m range, with day/night overview camera  
Order number **VER-D2R5-1**

#### VER-D2R1-2 DINION capture 7000

NTSC license plate camera, 12.5 to 21 ft range, with day/night overview camera  
Order number **VER-D2R1-2**

#### VER-D2R2-2 DINION capture 7000

NTSC license plate camera, 18 to 30 ft range, with day/night overview camera  
Order number **VER-D2R2-2**

#### VER-D2R3-2 DINION capture 7000

NTSC license plate camera, 26 to 45 ft range, with day/night overview camera  
Order number **VER-D2R3-2**

#### VER-D2R4-2 DINION capture 7000

NTSC license plate camera, 37 to 64 ft range, with day/night overview camera  
Order number **VER-D2R4-2**

#### VER-D2R5-2 DINION capture 7000

NTSC license plate camera, 54 to 92 ft range, with day/night overview camera  
Order number **VER-D2R5-2**

### 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**

#### 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**

#### 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**

#### 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**

#### 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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