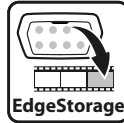
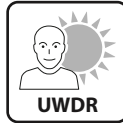
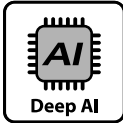


# Panamera® S4 Perimeter Series

Multifocal Sensor System, 30 fps, H.265, day/night, UWDR, long and narrow field of view for perimeter applications, AI Perimeter object classification, AI Perimeter App, AI Extended Tamper Detection App, Mountera® mounting system



The Panamera® S4 Perimeter is a multifocal sensor system designed to **capture the typically narrow strip along a fence** (sterile zone) and provides a total **resolution of 200 MPe** for integrated AI video analysis. This significantly reduces the infrastructure requirements. Where several megapixel cameras were previously necessary, a single Panamera® is now sufficient.

## Panamera® Perimeter

The Panamera® S4 Perimeter allows the definition and capture of a **long corridor with constant width** along fences, buildings or roads and offers the **highest resolution quality with continuous depth of field** throughout the entire capture area. The Panamera® effect resulting from the optimally tuned sensors has an effective dynamic range of 130 dB and delivers a video stream with a **resolution of over 125 px/m up to a distance of 200 m**.

## Panamera® Geometry

The **sensors** of the Panamera® S4 perimeter are **aligned on the right or left side** depending on the model and are arranged in a special perimeter geometry (perspective alignment). This **avoids the capture of uninteresting areas beyond the perimeter**, which is required in many cases due to **data protection**. Unlike conventional cameras, the perimeter geometry means that only a **minimal dead angle** needs to be taken into account. The **upper body of a standing person** can be captured already at a **distance of 4 m**.

## Outstanding Low-Light Properties

The Panamera® S4 Perimeter is equipped with image sensors of the latest generation, which have **three times the IR light sensitivity of their predecessors**. In combination with the sophisticated image processing, they enable detailed color images even at the onset of darkness and, thanks to the outstanding infrared sensitivity, the **best results with weaker IR lighting**.

## AI Perimeter Object Classification

The Panamera® is equipped with a **neural network specially trained for perimeter protection**. It reliably detects **persons with unusual body postures** (bent over, squatting, lying down) and **movement types** (very slow, very fast, crawling, creeping, rolling). The type of clothing (light, dark) is irrelevant and the net has been intensively trained to **detect people in camouflage suits** (British Smock, Camouflage Central Europe, Ghillie etc.).

## AI Perimeter App

The new AI Perimeter App has been developed **specifically for the requirements of perimeter protection**. It enables the definition of **particularly protected areas (sterile zone) with pre-zones**. If relevant objects (people, vehicles, etc.) penetrate these zones, it allows the **escalation of corresponding messages** to direct the attention of the operators to the most important events.

## AI Extended Tamper Detection App

The extended AI Tamper Detection App supports the **detection of tampering attempts** that are typically expected at a perimeter. In addition to the classic approaches (twisting, defocusing, spraying and covering the camera or IR illumination) the **blinding of the camera** (laser pointer, flashlight, strobe light) is also reliably detected. Furthermore, indirect manipulation by deliberately **fogging the detection area** using pyrotechnics (fog grenades, smoke pots) is detected and alerted.

## Further features

- Hardened operating system Domera® OS
- GDPR-compliant functions for data protection and security
- Compatible with ONVIF Profile M, Profile S and Profile T
- Weather-proof (IP69) housing with integrated heater
- Housing coating tested for seawater resistance
- Compatible with the Mountera® Quick-Lock System
- Network protocol MQTT supported

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## AI Perimeter Apps



The **AI Perimeter App** allows the definition of particularly protected areas (sterile zone) along a perimeter and issues an alarm message as soon as an object intrudes them. The object type relevant for the message can be defined as a person or vehicle, for example. In order to direct the operators' attention in a targeted manner, a pre-zone can be defined for each protected area, which allows the messages to be escalated. In conjunction with the neural network specially trained for perimeter protection, even attacks by well-prepared groups of perpetrators who use unusual forms of movement or camouflage clothing can be reliably alerted.

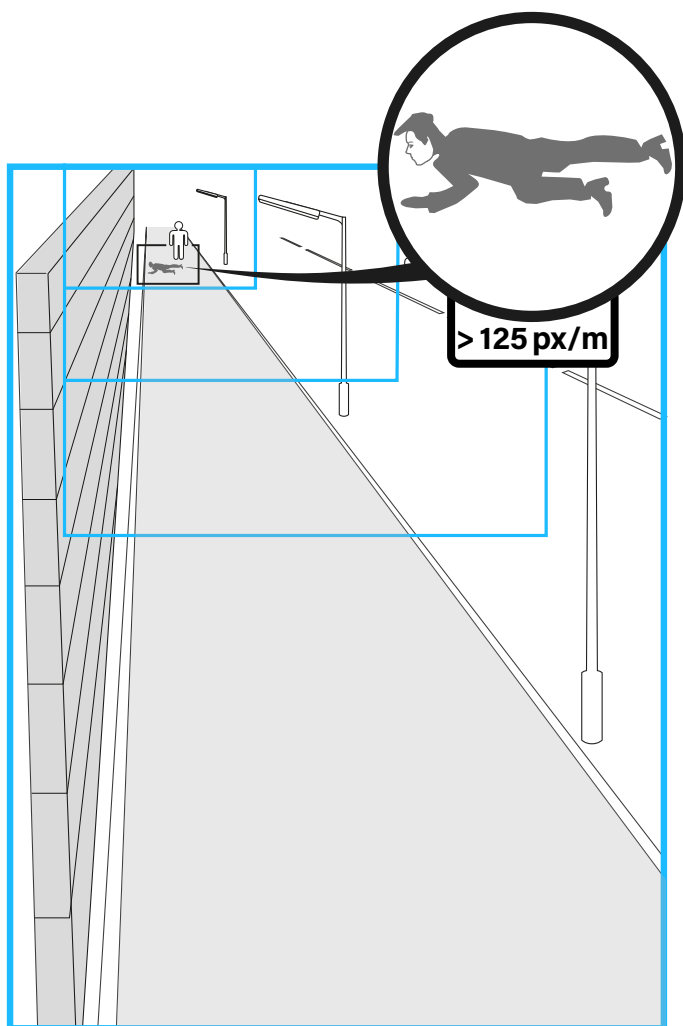


The **AI Extended Tamper Detection App** is used for detecting and reporting attempted tampering with the camera. The app detects a change in the captured scene, which typically occurs when manually rotating, defocusing, spraying and covering the camera or IR illumination, and immediately issues a corresponding message. With the special extension for perimeter protection, indirect manipulation with the aim of preventing the detection of intruders is also signaled as a corresponding message. This includes blinding the camera with powerful flashlights or laser pointers as well as deliberately fogging the detection area with pyrotechnics.

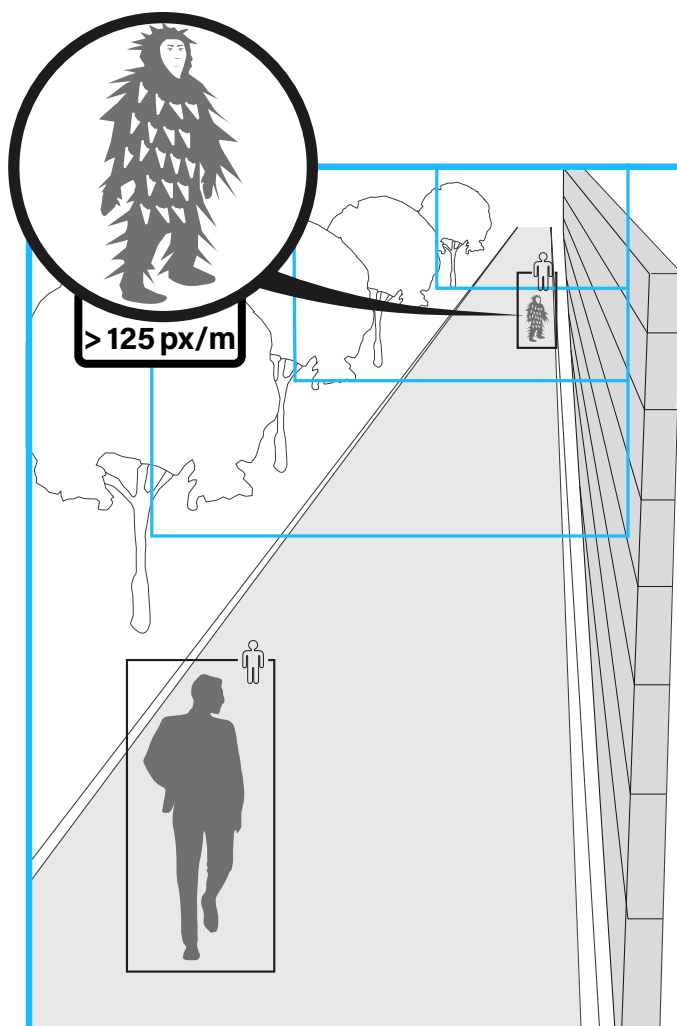


The Panamera® Perimeter also supports the **Essentials Apps** AI Intrusion Detection, AI Line Crossing, AI Loitering, and AI Vehicle Parking. The **Perimeter App** and the associated neural network cannot be used together with the Essentials Apps. However, **switching** between the two neural networks and apps is **supported**.

## Panamera® Perimeter Field of View and Geometry












**Panamera® S4 200/33 DN SL**  
Sensors aligned to the left



**Panamera® S4 200/33 DN SR**  
Sensors aligned to the right

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Panomera® S4 Perimeter	
	<b>009049 Panomera® S4 200/33 DN SL</b> Multifocal sensor system, 200 MPe, 30 fps, H.265, day/night, UWDR, AI Perimeter object classification, AI Perimeter App, AI Extended Tamper Detection App, sensors and field of view aligned to the left, resolution 125 px/m up to 200 m, Mountera® mounting system
	<b>009048 Panomera® S4 200/33 DN SR</b> Multifocal sensor system, 200 MPe, 30 fps, H.265, day/night, UWDR, AI Perimeter object classification, AI Perimeter App, AI Extended Tamper Detection App, sensors and field of view aligned to the right, resolution 125 px/m up to 200 m, Mountera® mounting system
3D Ball Joint Upgrade Kit (recommended for even easier adjustment over long distances)	
	<b>007901 Mountera® Ball Joint 30° 3D Adjustable</b> Surcharge for equipping a Panomera® of the S series with the 30° plug instead of the 15° standard plug, gimbal-mounted suspension with vertical tilt up to 30°, horizontal tilt up to 15°, stepless positioning and precise adjustment with four set screws, 15°/30° sleeve included (ex works only)
Accessories	
	<b>007054 Mountera® Box with PSU</b> Mountera® Box with power supply unit, 48V DC, 5.4 A, 260 W, IP69, white
	<b>009446 Mountera® Box with SRS Edge</b> Mountera Box® with SeMSy® Recording Server, recording of up to 16x video streams (1x included), total bit rate up to 140 Mbps, fanless, energy efficient, power supply unit 48V DC, 5.4 A, 260 W included, IP69, white, without SSD memory module <sup>1)</sup>
	<b>006979 Mountera® Wall Bracket</b> Mountera® bracket for the installation of camera systems on walls or on a Mountera® Box, Quick-Lock System included, robust aluminium construction, internal cable routing, vandal-resistant, powder-coated, white
	<b>006980 Mountera® Ceiling Bracket</b> Mountera® bracket for installation of camera systems on ceilings, Quick-Lock System included, robust aluminium construction, internal cable routing, vandal-resistant, powder-coated, white
Sunshield	
	<b>009252 Panomera® Sunshield</b> Sunshield for Panomera® S 4 and S8 models with Mountera® housing, aluminium, white with black front panel
Cable Set	
	<b>007428 Mountera® Cable Set C</b> Preassembled cable set for the connection of a camera system to a Mountera® Box, 1x cable seal, 1x cable power supply/grounding, 1x cable network (copper RJ45), each with matching plug, UV-resistant and flexible, length 80 cm

1) The M.2 SSD memory module is installed at the factory and must be ordered with the appliance. Subsequent installation or replacement is not possible.

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## Included Support and License Interval

### Panomera® S4 Perimeter Support and License Interval Basic

License for the use of the support services of the Support Level Basic for 60 months.

License for the update of Domera® OS and of the neural network for the object classification with updates, upgrades and security updates<sup>2)</sup> for 60 months.

License for the use of the neural network AI Perimeter for the object classification of persons (also with unusual posture, movement type and clothing), cars, large vehicles and two-wheelers.

License for the use of the EdgeAnalytics AI Perimeter App with protected areas, pre-zones and escalation of messages based on object classification.

License for the use of the EdgeAnalytics AI Line Crossing App, AI Loitering Detection App and AI Motion Detection App based on object classification.

License for the use of the EdgeAnalytics AI Extended Tamper App with advanced tamper detection based on changes of the captured scene.

License for the use of the VCA functions Motion Detection, Tamper Detection, Intrusion Detection, Line Crossing based on motion detection.

Bring-in warranty for 24 months.

## Optional Maintenance (after the included 60 months)

### 008782 Panomera® S/W 4 Software Maintenance (Plus 12 Months)

License for the update of Domera® OS with updates, upgrades and security updates<sup>2)</sup> for 12 months.

License for the update of neural networks for object classification for 12 months.

## Optional Warranty

### 008783 Panomera® S/W 4 Hardware Warranty (Total of 60 Months)

Extension of bring-in warranty to a total of 60 months.

2) Security updates for relevant CVE vulnerabilities that become known will be provided (subject to technical feasibility) for the entire runtime of the software maintenance.

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Sensor System	
Type of sensors	CMOS
Number of sensors	4
Number of sensor pixels	49 MP
Light sensitivity	<0.0005lux
Dynamic range (UWDR)	130 dB (effective)
Resolution	
Effective resolution <sup>3)</sup>	200 MPe
Recognition distance (≥125 px/m)	Up to approx. 200 m with a continuous width of 5 m
Installation Height	
Recommended	5 m
Permissible	4 - 9 m
Tilt toward the ground	8°
Transition distance <sup>4)</sup>	95 m
Dead angle at installation height 5 m	Approx. 4 m (center of a standing person)
Field of View & Aspect Ratio	
Horizontal field of view	33.2° at the beginning of the field of view
Vertical field of view	39.0° at the beginning of the field of view
Aspect ratio (H:V)	4:5
Format and Encoding	
Video compression	H.264, H.265, MJPEG
Frame rate	Up to 30 fps at full resolution
Live streaming	Multicast or Unicast (for Viewing Client) Unicast (for recording)
Network and Recording	
Required network bandwidth	64 Mbps <sup>5)</sup> (nominal, for recording)
Recommended network bandwidth	1,000 Mbps
Functions	
Operating system	Domera® OS
Secure Boot	Supported (activation optional) <sup>6)</sup>
Day/Night switching	Ambient light sensing and removable IR cut filter (ICR)
Black-and-white mode	Automatic (at low light or in night mode)
Digital noise reduction	3D-DNR
Brightness control	Automatic (ALC)
Gain control	Automatic (AGC)
White balance	Automatic (AWB)
Privacy Zone Masking	Hiding/masking of up to 16 protected areas per sensor (up to 100% of the entire image)
Video Content Analysis (VCA)	VCA Motion Detection, VCA Tamper Detection, VCA Intrusion Detection, VCA Line Crossing
EdgeAnalytics AI Apps	AI Perimeter, AI Tamper Detection, AI Line Crossing, AI Loitering Detection, AI Motion Detection
EdgeAnalytics Object Classes	Person (also with unusual posture, movement type and clothing), cars, large vehicles, two-wheelers
EdgeAnalytics Tamper Detection	Twisting, defocusing, spraying, covering, blinding of the camera and pyrotechnics in the detection area
EdgeAnalytics Actions	Notification via DaVid/PGuard, switching of network relays, message via MQTT/HTTP

3) Effective resolution MPe: A conventional single sensor camera would have to be equipped with up to 200 megapixels image sensor in order to provide the same resolution across the entire object space as these Panomera® systems.

4) Orientation point on the floor as an adjustment aid for optimum camera tilt. The transition between the two top sensors (with the grid displayed in the client software or in the web browser configuration) should be aligned with this point.

5) This value is based on the encoding of each sensor with 6 Mbps and the use of the recording system as a proxy for the live view.

6) Once Secure Boot has been activated, it is no longer possible to downgrade to an older version of the operating system that does not support Secure Boot.

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Protocols	
Ethernet protocols	IPv4 (ARP, ICMP, IGMPv2/IGMPv3), UDP, TCP, LLDP, CDP (v1,v2), DSCP (QoS), DNS, NTP, HTTP/HTTPS, RTSP/RTP/RTCP, SNMP (v1, v2c, v3), MQTT
Ethernet protocols in preparation	IPv6 (NDP, ICMPv6, MLDv1/MLDv2, SLAAC, RDNSS), UDPv6, TCPv6, DNSv6, LDAP
Communication protocols	DaVid, DaVidS, ONVIF Profile M, ONVIF Profile S, ONVIF Profile T, SNMP (v1, v2c, v3)
Security	HTTPS encryption, SSL/TLS 1.2, 1.3 (AES), network access control according to IEEE 802.1X
Connections	
Ethernet 1	Telegärtner STX V4 socket with STX RJ45 coupling Cat.6 for 1000BASE-T (1,000 Mbps)
Ethernet 2	Telegärtner STX V4 socket with STX RJ45 coupling Cat.6 for 1000BASE-T, PoE+ Out, 30 W, IEEE 802.at (100 Mbps, service port)
Power IN	HARTING connector (5-pole)
Electrical Data	
Voltage supply	Camera: 48 V DC $\pm$ 5% Heater: 48 V DC $\pm$ 5%
Power consumption	Camera: Max. 70 W <sup>7)</sup> Heater: Max. 60 W
Mechanical Data	
Dimensions (W x H x D)	Approx. 348 x 183 x 441 mm (13.7" x 7.2" x 17.4")
Weight	Approx. 16 kg (35.3 lb)
Material	Aluminium
Processing	Chromated
Finish	Powder coating, tested for seawater resistance according to DIN EN 60068-2
Color	Signal white (RAL 9003 <sup>8)</sup> ), housing Signal black (RAL 9004 <sup>8)</sup> ), front frame
Adjustment	Stepless alignment on 3-axes, vertical up to $\pm$ 15°, horizontal up to $\pm$ 7° (Mountera® Ball Joint 15°)
IP rating	IP69
Environmental Conditions	
Installation sites	Indoor and outdoor
Operating temperature	-40 °C to +60 °C (installation with Panamera® Sunshield recommended)
Minimum start-up temperature	> -30 °C
Heater On	< +10 °C
Heater Off	> +10 °C
Relative humidity	0%–90% RH, non-condensing
Miscellaneous	
Security module	Integrated (fTPM)
Ambient light sensor	Integrated
Removable IR-cut filter	Integrated
Local memory	50 MB RAM memory per sensor
Configuration and live video	Web browser (all major platforms), Dallmeier Device Manager (with Panamera® AutoCalibration add-on)
Languages	German, English,
Programming interface	Open platform for integration into 3rd party systems using API
ONVIF compliance	Profile M, Profile S, Profile T
GDPR compliance	Supported
NDAA compliance	Supported
Approvals/Certifications	
Type	CE, FCC, RCM, UL, EN 60950-22 compliant (outdoor parts)

7) Maximum power consumption camera 40 W, in connection with PoE+ Out (Ethernet 2) maximum 70 W.

8) The color of the powder coating may differ slightly from the RAL color indicated. This is due to production and does not constitute a defect.

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