BOSCH

DINION IP thermal 9000 RM

▶ Calibrated thermal sensor for human skin temperature detection in indoor applications

▶ Component of the Human Skin Temperature Detection Solution

The DINION IP thermal 9000 RM camera, based on an un-cooled vanadium oxide microbolometer, is a contactless tool to measure surface temperature at short range. The camera has a QVGA sensor with a frame rate of 9 FPS.

The camera is part of the indoor system for surface temperature measurement. Key components of the system include the camera, an embedded VIDEOJET decoder 7000 computer with thermal data analytics (VJD-7513), a keyboard (KBD-UXF), and a specific firmware license.

ⓘ **Notice**
On its own, the camera does not have the ability to perform the system features described below.
For complete system configuration and model numbers to purchase, see the Ordering Information section.

The system combines thermal temperature detection with the market-leading Intelligent Video Analytics from Bosch. Quick, on-site calibration and temperature threshold setup enables the system for alarming in cases where the surface temperature of an object or of human skin is warmer than the configured threshold. The system can monitor historical temperature data continuously for deviations, and will then estimate the new threshold in order to mitigate the environmental influences.

Functions

Temperature detection
The camera has a high-sensitivity thermal sensor which obtains long-wavelength infrared (LWIR) from target objects. LWIR lets users detect target temperature quickly, without physical contact.

Intelligent Video Analytics
The integrated video analytics is both robust and intelligent. The Intelligence-at-the-Edge concept now delivers even more powerful features:

- Simple calibration

- False alarm reduction

- Extended range identification

The video analytics reliably detects, tracks, and analyzes objects, and alerts you when predefined alarms are triggered. A smart set of alarm rules, together with object filters and tracking modes, makes complex tasks easy.

Calibration is quick and easy – just enter the height of the camera. The internal gyro/accelerometer sensor provides the rest of the information to precisely calibrate the video analytics.

Bitrate optimized profile
The table that follows shows the average typical optimized bitrate, in kbits/s, for different frame rates:

IPS	QVGA
9	91

IPS	QVGA
3	52

Multiple streams

The innovative multi-streaming feature delivers various H.264 streams together with an M-JPEG stream. These streams facilitate bandwidth-efficient viewing and recording as well as integration with third-party video management systems.

The camera can run multiple independent streams that allows to set a different resolution and frame rate on the first and second stream. The user can also choose to use a copy of the first stream.

The third stream uses the I-frames of the first stream for recording; the fourth stream shows a JPEG image at a maximum of 10 Mbit/s.

Storage management

Recording management can be controlled by the Bosch Video Recording Manager (Video Recording Manager) or the camera can use iSCSI targets directly without any recording software.

Edge recording

Insert a memory card into the card slot to store up to 2 TB of local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, and extends the effective life of the memory card.

(i) **Notice**
No temperature data will be recorded on camera.

Hybrid operation

Analog video output with surge protection is available for local field of view adjustments of the camera.

Data security

Special measures have been put in place to ensure the highest level of security for device access and data transport. The three-level password protection with security recommendations allows users to customize device access. Web browser access can be protected using HTTPS and firmware updates can also be protected with authenticated secure uploads.

The on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support, guarantee superior protection from malicious attacks. The 802.1x network authentication with EAP/TLS, supports TLS 1.2 with updated cipher suites including AES 256 encryption.

The advanced certificate handling offers:

- Self-signed unique certificates automatically created when required
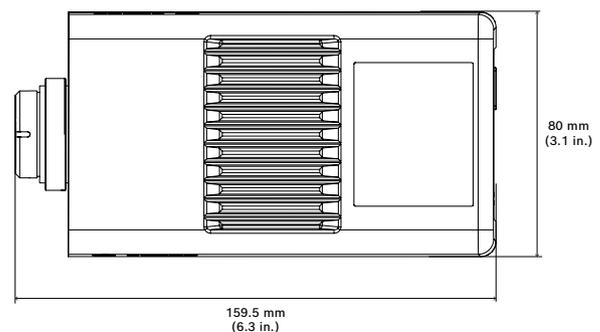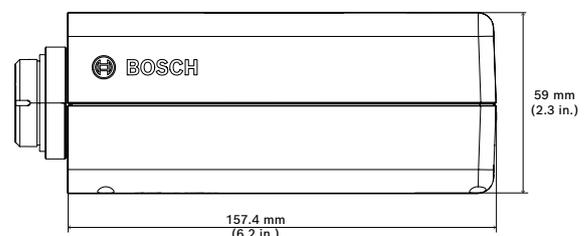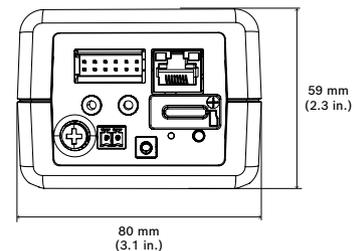
- Client and server certificates for authentication

- Client certificates for proof of authenticity

- Certificates with encrypted private keys

Certifications and approvals

Standards	Type
Emission	EN 55032 class A
	FCC: 47 CFR Part 15 B, class A
Immunity	EN 50130-4
	EN 55035
Environmental	EN 50130-5 Class 2 (excluding SO2 test)
Safety	UL/cUL/IEC62368-1, Ed.2
Marks	cUL, CE, WEEE, FCC, RoHS

Region	Regulatory compliance/quality marks
Europe	CE

Installation/configuration notes

59 mm (2.3 in.)
80 mm (3.1 in.)

BOSCH
59 mm (2.3 in.)
157.4 mm (6.2 in.)

80 mm (3.1 in.)
159.5 mm (6.3 in.)

Technical specifications

Power

Input voltage	Power-over-Ethernet or +12 VDC ±10% PoE and auxiliary power can be connected simultaneously for redundant operation
PoE IEEE standard	IEEE 802.3af (802.3at Type 1) Power level: Class 2
Power consumption	12 VDC; 5.4 W (max.) 52 V (POE); 5.6 W (max.)

Thermal module

Image sensor	Focal Plane Array (FPA), un-cooled vanadium oxide microbolometer
Picture elements	320(H) × 240(V)
Pixel pitch	17 µm
Spectral Band	8-14 µm
Thermal sensitivity	< 50 mK
Radiometric Accuracy	±0.5 °C (After proper on-site calibration)

Video resolution

QVGA	320 x 240 at 9 fps

Video functions – color

Adjustable picture settings	Contrast
Thermal color mapping	12 selectable modes

Lens FoV (H x V)

	QVGA
19 mm	16° x 12°

Video streaming

Video compression	H.264 (MP); M- JPEG

Video streaming

Streaming	Multiple configurable streams in H.264 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)
Camera processing latency	<55 ms
GOP structure	IP, IBP, IBBP

Camera installation

Analog output	Off, 4:3, 16:9 pillar box, 16:9 crop
Positioning	Coordinates / Mounting height

Video content analysis

Analysis type	Intelligent Video Analytics
Configurations	Silent VCA / Profile1/2 / Scheduled / Event triggered
Alarm rules (combinable)	Any object Object in field Line crossing Enter / leave field Loitering Follow route Counting Occupancy Condition change Similarity search Flow / counter flow
Object filters	Duration Size Aspect ratio Speed Direction Object classes (4)
Tracking modes	Standard (2D) tracking Ship tracking Museum mode
Calibration	Automatic based on gyro / accelerometer data and camera height

Additional functions	
Video authentication	Off / Watermark / MD5 / SHA-1 / SHA-256
Display stamping	Name; Logo; Time; Alarm message
Pixel counter	Selectable area

Local storage	
Internal RAM	5 s pre-alarm recording
Memory card slot	Supports up to 32 GB microSDHC / 2 TB microSDXC card. (A memory card of Class 6 or higher is recommended for HD recording)
Recording	Continuous recording, ring recording, alarm/events/schedule recording

(i) **Notice**
No temperature data will be stored in the SD card.

Input/output	
Analog video out	CVBS (NTSC), 1 Vpp, SMB, 75 Ohm (surge protected)
Audio connectors	3.5 mm stereo jack (x2)
Audio line in	12 kOhm typical, 1 Vrms max
Audio line out	1 Vrms at 1.5 kOhm typical,
Alarm input connectors	Clamp (x2 non-isolated closing contact)
Alarm input activation voltage	+5 VDC to +40 VDC (+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)
Alarm output connector	Clamp
Alarm output voltage	30 VAC or +40 VDC Maximum 0.5 A continuous, 10VA
Ethernet	RJ45
Data port	RS-232/422/485

Audio streaming	
Standard	G.711, 8 kHz sampling rate
	L16, 16 kHz sampling rate
	AAC-LC, 48 kbps at 16 kHz sampling rate
	AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex

Software	
Common product platform	CPP7
Unit discovery	Project Assistant
Unit configuration	Via web browser or Configuration Manager
Firmware update	Remotely programmable
Software viewing	Web browser; Video Security Client; Video Security App; BVMS; Bosch Video Client; or third party software
Latest firmware and software	http://downloadstore.boschsecurity.com/

Network	
Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox™, CHAP, digest authentication
Encryption	TLS 1.2, SSL
Ethernet	10/100 Base-T, auto-sensing, half/full duplex

Network	
Connectivity	Auto-MDIX
Camera Interoperability	ONVIF Profile S, ONVIF Profile G, GB/T 28181

Mechanical	
Dimensions (H x W x L)	59 mm x 80 mm x 157.4 mm (2.3 in. x 3.1 in. x 6.2 in.)
Weight	0.61 kg (1.34 lb)
Construction	Aluminum casing
Color	RAL 9017 Black

Environmental	
Operating temperature	+10 °C to +50 °C (+50 °F to +122 °F) for continuous operation
Storage temperature	-55 °C to +70 °C (-67 °F to +158 °F)
Operating Humidity	5% to 95% RH, non-condensing
Storage Humidity	up to 98% RH

Ordering information

NBT-9000-F19QSM FIXED THERMAL <9Hz QVGA 19mm Radiometric
Thermal imaging IP camera
QVGA
9 fps
19 mm lens
Order number **NBT-9000-F19QSM | F.01U.386.806**

Accessories
VJD-7513 High-performance H.265 UHD decoder
High-performance video decoder. H.265/H.264 up to 4K UHD and MP; MPEG-4; audio; up to 60fps per stream; HDMI and DisplayPort monitor outputs.
Order number **VJD-7513 | F.01U.345.382**

KBD-UXF Keyboard, USB CCTV-oriented
USB CCTV-oriented keyboard for use with BVMS, BIS - Video Engine, or DIVAR IP systems.
Order number **KBD-UXF | F.01U.279.328**

UML-245-90 23.8 inch FHD LED monitor
23.8 inch FHD (1920 x 1080) LED monitor
Order number **UML-245-90 | F.01U.383.603**

NPD-5001-POE Midspan, 15W, single port, AC in
Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port
Weight: 200 g (0.44 lb)
Order number **NPD-5001-POE | F.01U.305.288**

IBB-5000-35 TEMPERATURE REFERENCE DEVICE 3" 35°C
3-inch temperature reference device calibrated at 35 °C.
Order number **IBB-5000-35 | F.01U.388.845**

0601096A00 Tripod BT 250 Professional 1/4"
1/4-inch professional tripod for fixed cameras.
Order number **0601096A00 | F.01U.387.950**

Services
EWE-D8IT19-IW 12mths wrty ext DINION thermal 19 mm
12 months warranty extension
Order number **EWE-D8IT19-IW | F.01U.346.370**