Dahua TECHNOLOGY

Thermal Network Bullet Camera with Thermometry
640 x 512 VOx Uncooled Thermal Sensor Technology

ArcticPro

- 640 x 512 VOx Uncooled Thermal Sensor Technology
- Athermalized Lens, Focus-free
- H.265 Video Compression
- 7.5 mm, 13 mm, or 25 mm Fixed Thermal Lens Options
- ≤ 40 mK Thermal Sensitivity
- Designed for Remote Temperature Measurement (not suitable for human temperature monitoring)
- Enhanced Power and Data Transmission Distances (ePoE)
- Two (2) Alarm Inputs, Two (2) Alarm Outputs
- Support for PoE and Micro SD Memory Storage
- ArcticPro Series Camera – Operational down to –40° C (–40° F)
- IP67 Ingress Protection
- Five-year Warranty*

Pro Series | **40mK** °C | **Fire Detection** | **Analysis** | **PoE** | **IP67**

System Overview

The Dahua Thermal Network Bullet camera combines an uncooled VOx Microbolometer sensor with an athermalized lens to produce long-range thermal images. The camera produces clear images in total darkness, and delivers usable images in fog, rain, and snow, offering truly covert surveillance without the need for external light. The camera offers a rapid temperature detection and alarm functionality that identifies an abnormal rise in temperature and sends an alert to warn of a potential fire. Dahua thermal cameras are ideal for forestry, border security, and industrial applications.

Functions

Uncooled Vanadium Oxide (VOx) Technology
Dahua thermal cameras use an uncooled Vanadium Oxide (VOx) sensor that delivers higher thermal sensitivity in a more compact and cost-effective package. Vanadium Oxide cameras are also more reliable, as compared to other thermal imaging technologies, due to less moving parts.

Athermalized Lens
The athermalized lens used in Dahua thermal cameras maintains the focus position passively and without power over a wide temperature range.

High Thermal Sensitivity
The VOx detector offers high thermal sensitivity (< 40 mK) that allows Dahua thermal cameras to distinguish objects in a scene with minimal temperature differences. The camera captures detailed images where thermal contrast between object and background is minimal.

Temperature Monitoring
The thermal camera provides remote temperature monitoring that has the ability to trigger an alarm for a temperature that exceeds a set threshold. This feature is ideal for industrial applications where it is dangerous for humans and where maintaining a consistent temperature is vital.

Thermal Color Palettes
Dahua thermal cameras provide a choice of color palettes onboard the camera that help to distinguish thermal variations and patterns in an image. The color tones correspond to the apparent surface temperatures of the target.

Rapid Temperature Rise and Alarm
The camera can detect a rapid rise in temperature over a short time and issue an alarm for a potential fire event even at long distances. Because thermal cameras are sensitive to temperature, they provide higher fire detection accuracy than standard cameras, making them particularly fit for applications such as forest fire prevention.

Enhanced Power over Ethernet (ePoE) Technology
Dahua's innovative ePoE technology offers a plug-and-play solution to transmit power and data over long distances via Ethernet or coaxial cables, reducing installation time and saving money. ePoE technology is a viable, cost-effective solution for extending transmission distances and for converting existing, coax-based analog systems into IP systems. For video security and surveillance installers, ePoE technology saves time and money by reducing overall cabling requirements, allowing for existing coax cable to be used, and minimizing the number of peripheral devices needed. For new installations, ePoE offers the ability to design long-distance applications without the need for additional repeaters.

Intelligent Video System (IVS)
IVS is a built-in video analytic algorithm that delivers intelligent functions to monitor a scene for Tripwire violations, intrusion detection, and human/vehicle classification. A camera with IVS quickly and accurately responds to monitoring events in a specific area.

Environmental
With a temperature range of –40 °C to +70 °C (–40 °F to +158 °F), the camera is designed for extreme temperature environments. The camera complies with the IP67 rating makes it suitable for demanding outdoor applications.

ONVIF

Technical Specification

Thermal Camera

Image Sensor	Uncooled VOx Focal Plane Detector
Effective Pixels	640 (H) x 512 (V)
Pixel Size	17 µm
Thermal Sensitivity (NETD)	< 40 mK
Spectral Range	8 µm to 14 µm
Image Setting	Brightness, Sharpness, ROI, AGC, FFC, 3D DNR
Color Palettes	18, including: Whitehot, Blackhot, Icefire, Fusion, Rainbow, Globow, Ironbow1, and Sepia

Thermal Lens

Lens Type	Fixed			
Focus Control	Athermalized, Focus-free			
Focal Length		7.5 mm	13 mm	25 mm
Angle of View		H: 91.2° V: 70.3°	H: 48.9° V: 38.8°	H: 24.6° V: 19.8°
Effective Distance, human (1.80 m x 0.50 m)[1]	Detection	221 m (725 ft)	382 m (1253 ft)	735 m (2411 ft)
	Recognition	57 m (187 ft)	98 m (322 ft)	189 m (620 ft)
	Identification	28 m (92 ft)	49 m (161 ft)	95 m (312 ft)
Effective Distance, vehicle (4.0 m x 1.40 m)[1]	Detection	558 m (1608 ft)	1020 m (3346 ft)	1961 m (6434 ft)
	Recognition	147 m (482 ft)	255 m (837 ft)	490 m (1608 ft)
	Identification	74 m (243 ft)	127 m (417 ft)	245 m (804 ft)

Temperature Measurement

Range	Low	−20° C to 150° C (−4° F to 302° F)
	High	0° C to 550° C (32° F to 1022° F)
Accuracy		±2.0° C (±3.6° F), when operating temperature is between −20° C to 60° C (−4° F to 140° F)
Mode		Spot, Line, Area
Rule		Supports 12 Rules Simultaneously: • Spot: 12 • Line: 12 • Area: 12

	7.5 mm	13 mm	25 mm
Temperature Measurement Distance			
Target Size: 0.1 m x 0.1 m, Recommended Distance	4.10 m (13.45 ft)	7.60 m (24.93 ft)	14.70 m (46.26 ft)
Target Size: 0.3 m x 0.3 m, Maximum Distance	12.40 (40.68 ft)	22.90 m (75.13 ft)	44.10 m (144.69 ft)
Rapid Temperature Rise Detection Distance			
Target Size: 0.2 m x 0.2 m, Recommended Distance	22.0 m (72.18 ft)	39.0 m (127.95 ft)	75.0 m (246.06 ft)
Target Size: 0.2 m x 0.2 m, Maximum Distance	46.40 m (152.23 ft)	80.50 m (264.10 ft)	154.80 m (507.87 ft)
Target Size: 2.0 m x 2.0 m, Recommended Distance	220.0 m (721.78 ft)	390.0 m (1279.53 ft)	750.0 m (2460.63 ft)
Target Size: 2.0 m x 2.0 m, Maximum Distance	464.0 m (1522.31 ft)	805.0 m (2641.08 ft)	1548.0 m (5078.74 ft)

Video

Compression		H.265, H.264, H.264H, H.264B, MJPEG
Frame Rate	Main Stream	1280 x 1024, 720p, or 640 x 512 at 30 fps
	Sub Stream	640 x 512, 640 x 480, or 400 x 300 at 30 fps
Bit Rate Control		CBR/VBR
Bit Rate		H.264: 640 Kbps to 8192 Kbps
Noise Reduction		2D, 3D
Gain Control		Auto, Manual
Advanced Features		Electronic Thermal Image Stabilization, Digital Detail Enhancement
Motion Detection		Off, On (4 zones, Rectangle)
Region of Interest		Off, On (4 zones)
Digital Zoom		4x
Flip		90°, 180°, 270°
Mirror		Off, On
Privacy Masking		Off, On (4 areas, Rectangle)

Audio

Compression	G.711a, G.711Mu, AAC, PCM

Network

Ethernet	RJ-45 (10/100 Base-T)
Protocol	HTTP; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPOE; IPv4/v6; SNMP; QoS; UPnP; NTP
Interoperability	ONVIF, CGI, Dahua SDK
Streaming Method	Unicast/Multicast
Maximum User Access	20 Users (64 Mbps)
Edge Storage	FTP Micro SD Card Slot, maximum 128 GB
Web Browser	IE 8 or later
Management Software	DSS
Mobile Operating System	Android, IOS

1. The Detection, Recognition, and Identification values shown are nominal values and should be used as estimates only. Exact value calculations depend on a wide variety of conditions.

Certifications

Safety	UL 60950-1 CAN/CSA C22.2 No. 60950-1-07 EN 60950:2000
Electromagnetic Compatibility (EMC)	47 CFR FCC Part 15 Subpart B ANSI C63.4 - 2009 Canada ICES-003 Issue 5 CISPR Pub. 22

Interface

Video	One (1) Port BNC (CVBS) use for camera installation
Audio	Input: One (1) Channel, 3.5 mm Jack Output: One (1) Channel, 3.5 mm Jack
RS485	One (1) Port
Alarm	Input: Two (2) Channels Output: Two (2) Channel

Electrical

Power Supply	12 VDC ±20%, 1.2 A; or PoE (IEEE 802.3af), ePoE
Power Consumption	Basic: 5.0 W Maximum 13 W

Environmental

Operating Condition	−40° C to +70° C (−40° F to +158° F) Less than 95% RH
Storage Conditions	−50° C to +80° C (−58° F to +176° F)
Ingress Protection	IP67
Surge Protection	Surge: 6 KV Electrostatic, contact: 8 KV Electrostatic, air: 15 KV

Construction

Casing		Metal
Dimensions	Camera	291.0 mm x 103.80 mm x 97.20 mm (11.46 in. x 4.09 in. x 3.83 in.)
	Packaging	365.0 mm x 175.0 mm x 176.0 mm (14.37 in. x 6.89 in. x 6.93 in.)
Net Weight		1.40 kg (3.09 lb)
Gross Weight		1.90 kg (4.19 lb)

Intelligence

IVS triggers an alarm and takes a defined action for the following events:

Standard Features	• Tampering with the camera. • Camera loses or changes focus drastically. • Error writing to an onboard Micro SD card. • Error sending or receiving data over the network. • Unauthorized access to the camera.

Premium Features	
Tripwire	A target crosses a user-defined line.
Intrusion	A target enters or exits a defined perimeter.

Advanced Features	
Rapid Temperature Rise Detection	Detects a rapid rise in temperature over a short time and issues an alarm for a potential fire.
Cold/Hot Spot Trace	Indicates the coldest and the hottest spot of the scene.
Human/Vehicle Classification	Detects human or vehicle violations using Tripwire or Intrusion detection methods.

Via CAT5E/CAT6 Ethernet Cable
ePoE supply voltage 48 V
Maximum DC resistance < 10 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	53	IEEE/E100
200 (656)	100	25.5	33	E100
300 (984)	100	19	19	E100
400 (1312)	10	17	17	E10
500 (1640)	10	13	13	E10
800 (2625)	10	7	7	E10

Via CAT5E/CAT6 Ethernet Cable
ePoE supply voltage 53 V
Maximum DC resistance < 10 Ω/100 m

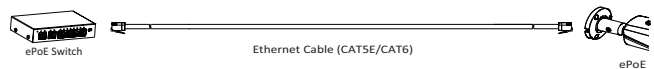| Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	53	IEEE/E100
200 (656)	100	25.5	47	E100
300 (984)	100	25.5	32	E100
400 (1312)	10	23	26	E10
500 (1640)	10	20	20	E10
800 (2625)	10	13	13	E10

Via RG-59 Coaxial Cable
ePoE supply voltage 48 V
Maximum DC resistance < 5 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	50	IEEE/E100
200 (656)	100	25.5	30	E100
300 (984)	100	18	18	E100
400 (1312)	100	15	15	E100
500 (1640)	10	12	12	E10
800 (2625)	10	6	6	E10
1000 (3281)	10	5	5	E10

Via RG-59 Coaxial Cable
ePoE supply voltage 53 V
Maximum DC resistance < 5 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	52	IEEE/E100
200 (656)	100	25.5	48	E100
300 (984)	100	25.5	30	E100
400 (1312)	100	20	23	E100
500 (1640)	10	16	16	E10
800 (2625)	10	10	10	E10
1000 (3281)	10	8	8	E10

ePoE Applications

Pure Ethernet

ePoE Switch   Ethernet Cable (CAT5E/CAT6)   ePoE

Passive EoC

ePoE Switch   LR1002   Coaxial Cable   LR1002   ePoE

EoC with Single-port EoC Receiver

PoE Switch   Network Cable   LR1002-1EC   Coaxial Cable   LR1002   ePc
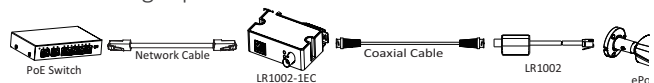
Ordering Information

Type	Part Number	Description
Thermal Network Camera	DH-TPC-BF5601N-TB7	Thermal Network Bullet Camera, 640 x 512, 7.5 mm lens, IVS
	DH-TPC-BF5601N-TB13	Thermal Network Bullet Camera, 640 x 512, 13 mm lens, IVS
	DH-TPC-BF5601N-TB25	Thermal Network Bullet Camera, 640 x 512, 25 mm lens, IVS
Mounting Accessories, optional	PFA121	Junction Box
	PFA151	Corner Mount
	PFA152-E	Pole Mount
	DH-PFM321D-US	12 VDC, 1 A Power Adapter
ePoE Accessories, optional	LR1002	EoC Passive Converter
	LR1002-1EC	Single-port EoC Receiver
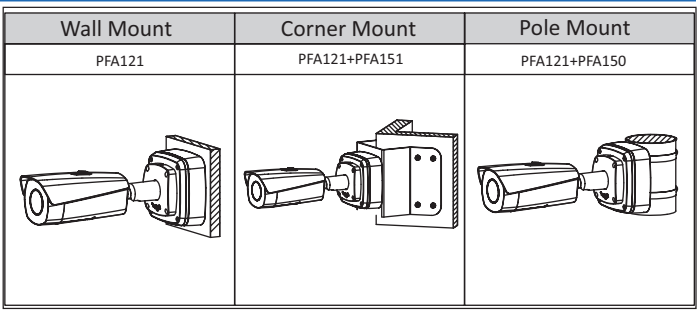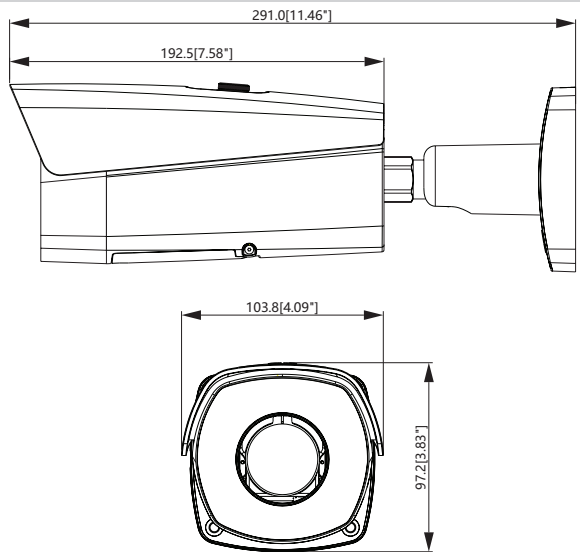
Accessories

Optional:
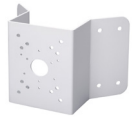
PFA121 Junction Box

DH-PFB120C Ceiling Mount Bracket

DH-PFB129W Wall/Ceiling Mount Bracket

DH-PFM321D-US 12 VDC, 1 A Power Adapter

PFA151 Corner Mount

PFA152-E Pole Mount

LR1002 EoC Passive Converter

LR1002-1EC Single-port EoC Receiver

Wall Mount	Corner Mount	Pole Mount
PFA121	PFA121+PFA151	PFA121+PFA150

Dimensions (mm/in.)

291.0[11.46"]
192.5[7.58"]
103.8[4.09"]
97.2[3.83"]