

Elevated Temperature Screening Solution

Complete Solutions to detect and monitor temperatures



Solution Overview

The Elevated Temperature Screening Solution (ETSS) offers the latest hybrid thermal network camera that combines a Vanadium Oxide (VOx) sensor with a 2 MP visible-light sensor. The solution also provides a blackbody calibration device that maintains a customizable constant temperature as a reference point for the thermal camera. The thermal camera coupled with the blackbody calibration device and a display delivers a contactless solution for continuous and non-invasive comparison of human skin temperature compared to the blackbody device. Thermal imaging equipment can easily be installed and implemented to detect elevated skin temperature in environments such as airports, hospitals, and clinics.

The Elevated Temperature Screening Solution (ETSS) is not FDA-cleared or approved. The Solution should not be solely or primarily used to diagnose or exclude a diagnosis of COVID-19 or any other disease. Elevated body temperature should be confirmed with secondary evaluation methods (e.g., an NCIT or clinical grade contact thermometer). Users, through their experience with the Solution in the particular environment of use, should determine the significance of any fever or elevated temperature based on the skin telethermographic temperature measurement. Visible thermal patterns are only intended for locating the points from which to extract the thermal measurement.

Thermal Camera Functions

High Thermal Sensitivity

The VOx detector offers high thermal sensitivity (≤ 50 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.

Smart Alarm

The camera is equipped with a white-light illuminator and an external speaker that can be triggered when the camera detects an abnormal event (which relies on user-defined parameters) either via the thermal or the visible-light sensor. The camera also takes a snapshot of the scene and can record the snapshot.

Enhanced Power over Ethernet Technology

The 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 encompasses pure IP systems where a single CAT5E cable can carry signals up to 800 m (2624 ft), and IP/Analog hybrid systems where the technology leverages existing analog infrastructure to transmit signals up to 1000 m (3281 ft) over RG59 coaxial cable.

Technical Specification

DH-TPC-BF5421-T Thermal Hybrid Camera

Thermal Camera

Image Sensor	Uncooled VOx Focal Plane Detector
Effective Pixels	300 (H) x 400 (V)
Pixel Size	17 μ m
Thermal Sensitivity (NETD)	\leq 40 mK
Spectral Range	8 μ m to 14 μ m
Image Settings	Electronic Thermal Image Stabilization Digital Detail Enhancement
Color Palettes	18, including: Whitehot, Blackhot, Icefire, Fusion, Rainbow, Globow, Ironbow1, and Sepia

Thermal Lens

Lens Type	Fixed-focal
Focus Control	Athermalized, Focus-free
Aperture	F1.0
Focal Length	13 mm
Angle of View	Horizontal: 30.0°

Visible-light Camera

Image Sensor	1/2.8-in. CMOS
Effective Pixels	1920 (H) x 1080 (V)
Electronic Shutter Speed	1/1 s to 1/30,000 s
Minimum Illumination	Color: 0.002 lux at F1.9
	B/W: 0.0002 lux at F1.9
	0 lux with IR On
IR Distance	35.0 m (114.83 ft)
IR LEDs	One (1)

Visible-light Lens

Focal Length	8 mm
Maximum Aperture	F1.9
Angle of View	Horizontal: 40°

Temperature Measurement

Range	30° C to 45° C (86° F to 113° F)
Accuracy	\pm 0.3° C (\pm 0.54° F), with blackbody
Mode	Spot, Line, Area
Rules	Supports 12 Rules Simultaneously: <ul style="list-style-type: none"> • Spot: 12 • Line: 12 • Area: 12

Video

Compression	H.265, H.264, H.264H, H.264B, MJPEG	
Frame Rate	Main Stream	
	Thermal	1280 x 960, 1024 x 768, 640 x 480, 256 x 192 at 30 fps
	Visible	1920 x 1080, 1280 x 720, 704 x 480 at 30 fps
	Sub Stream	
	Thermal	640 x 480, 256 x 192 at 30 fps
	Visible	704 x 480, 352 x 240 at 30 fps
Bit Rate Control	CBR, VBR	
Bit Rate	H.264: 640 Kbps to 8192 Kbps	
Day/Night	Auto (ICR), Color, B/W	
BLC Mode	BLC, HLC, WDR	
White Balance	Auto, Indoor, Outdoor, ATW, Manual, Natural, Street Lamp	
Motion Detection	Off, On (4 zones, Rectangle)	
Noise Reduction	2D, 3D	
Advanced Features	Electronic Thermal Image Stabilization Digital Detail Enhancement	
Region of Interest	Off, On (4 zones)	
Defog	Off, Manual, Auto	
Flip	90°, 180°	
Mirror	Off, On	
Privacy Masking	Off, On (4 areas, Rectangle)	

Network

Ethernet	RJ-45 (10/100 Base-T)
Protocol	IPv4/IPv6, HTTP, HTTPS, 802.1x, Qos, FTP, SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, ICMP, DHCP, PPPoE, ONVIF
Interoperability	ONVIF, CGI, Dahua SDK
Streaming Method	Unicast, Multicast
Edge Storage	FTP MicroSD Card slot (up to 256 GB)
Maximum User access	20 Users (64 Mbps total bandwidth)
User Management	Supports 20 users at one time and users are classified as one of two groups: administrator or user
Security	Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access
Web Viewer	IE 8 or later, Explorer with IE Core Google: 42 and the earlier Firefox: 42 and the earlier Safari: 10 and the earlier

Certification

Safety	UL 60950-1 CAN/CSA C22.2 No. 60950-1-07 EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013
Electromagnetic Compatibility (EMC)	CFR 47 FCC Part 15 Subpart B ANSI C63.4 2014 EN 55032:2015 EN 61000 3 2:2014

Technical Specification - Thermal Hybrid Camera, cont.

Interface

Video	Output: One (1) Channel, CVBS with BNC
Audio	Input: One (1) Channel, 3.5 mm Jack Output: One (1) Channel, 3.5 mm Jack
Audio Compression	G.711a, G.711Mu, AAC, PCM
RS485	One (1) Port
Alarm	Input: Two (2) Channels Output: Two (2) Channels
Alarm Linkage	SD Card Recording, On/off Output, Siren and Light, Email, PTZ, snapshot
Alarm Actions	Motion Detection, Privacy Mask, Audio Detection, SD Card Abnormality, Network Abnormality, antiburn warning

Electrical

Power Supply	12 VDC \pm 20% , PoE (IEEE802.3af Class 0), or ePoE (Refer to the ePoE/EoC chart on the last page)
Power Consumption	Standard: 5 W Maximum 12 W

Environmental

Operating Temperature	10° C to +30° C (50° F to 95° F), Less than 95% RH
Storage Conditions	-40° C to 70° C (-40° F to 158° F)
Ingress Protection	IP67
Static Discharge Protection	Physical Contact: 8 KV Via Air: 15 KV
Self-Adaptive	Toggles heater on or off, depending on ambient temperature

Construction

Casing	Metal
Dimensions, camera	279.90mm x 103.80mm x 95.80mm (11.02 in. x 4.09 in. x 3.77 in.)
Dimensions, packaging	365.0mm x 175.0mm x 176.0mm (14.37 in. x 6.89 in. x 6.93 in.)
Net Weight	1.40 kg (3.09 lb)
Gross Weight	\leq 1.90 kg (4.19 lb)

Installation Recommendations

Thermal Camera and Blackbody Setup

Lens Focal Length	Distance Between Camera and Blackbody	Distance Between the Human Forehead and the Camera
13.0. mm	3.0 m (118.11 in)	3.0 m (118.11 in.)

Monitoring

Height	Thermal Camera	2.0 m (78.74 in.)
	Blackbody	1.80 m (70.87 in.)
Distance	up to 4.57 m (15 ft or 180 in.)	
Rate	up to 30 people per second	

Installation Diagrams

The two diagrams below depict a suggested layout and configuration for temperature monitoring in a building lobby. These diagrams show the optimal camera and blackbody configuration and placement.

