



TB9333-E (3.5mm)

Bi-spectrum Thermal & Optical Bullet Network

Bi-spectrum thermal • 256x192 & 4MP • < 50mK

Technical Specifications

System Information

Model	TB9333-E (3.5mm)
CPU	Multimedia SoC (System-on-Chip)
Flash	16GB
RAM	1GB

Camera Features

Image Sensor	Dual sensor: Uncooled VOx Micro bolometer 1/2.7" Progressive CMOS
Max. Resolution	Thermal lens: Effective pixels: 256x192 Image scale up to: 704x576 Optical lens: 2560x1440
Pixel Size	12 μm
Spectral Range	8 ~ 14 μm
Sensitivity	NETD < 50 mK
Lens Type	Fixed-focal (Thermal lens) Fixed-focal (Optical lens)
Focal Length	Thermal lens: f = 3.5 mm Optical lens: f = 4 mm
Aperture	Thermal lens: F1.0 Optical lens: F1.6
Iris Type	Fixed iris
Field of View	Thermal lens (3.5mm) 48° (Horizontal) 36° (Vertical) Optical lens (4mm) 92° (Horizontal) 46° (Vertical)



Day/Night	Yes
Removable IR-cut Filter	Yes
IR Illuminators	Built-in IR Illuminator up to 35 meters; White light for strobe light warning
Pan/Tilt/Zoom Functionalities	ePTZ: 4x digital zoom
Storage	MicroSD/SDHC/SDXC card (256GB capacity supported)

Video

Video Compression	H.265, H.264
Maximum Frame Rate	25 fps @ 2560x1440 (Optical) 25 fps @ 704x576 (thermal)
Maximum Streams	2 simultaneous streams each sensor
Video Streaming	Adjustable resolution, CBR/VBR, Smart Encode
Image Settings	General settings: video OSD and time format overlay, video mirror; Thermal settings: white balance, image adjustment (brightness, contrast, sharpness), Pseudocolors, FFC control, 2DNR, 3DNR; Privacy mask; Scheduled settings

Audio

Audio Capability	Two-way audio
Audio Compression	G.711, RAW_PCM
Audio Interface	External microphone input, External line output, Built-in speaker

Network

Users	Live viewing for up to 10 clients
Security	Access list, Password protection, user access log, user account management
Protocols	IPv4/IPv6, HTTP, RTSP/RTP/RTCP, TCP/UDP, DHCP, DNS, PPPOE, SMTP, HTTPS, 802.1x, QOS, NTP, TCP/IP, FTP, UPnP, DDNS, ICMP, IGMP
Interface	10 Base-T/100 Base-TX Ethernet (RJ-45) *It is highly recommended to use standard CAT5e & CAT6 cables which are compliant with the 3P/ETL standard.
ONVIF	Profile G, S, T supported, specification available at www.onvif.org

AI Analytics

Compute Capability	SoC with built-in hardware deep learning accelerator (1T)
Application	Temperature measurement alarms (difference, threshold, section, rise), Early Fire Detection (Fire spot detection, Smoking detection, Smoke & flame detection) VCA (Intrusion, Single line crossing, Double line crossing, Loitering, Wrong way, Enter, Leave) Support VCA alarms triggering by person, car, person or car; Support temperature alarms triggering by ignoring person, car, person or car

Temperature Measurement

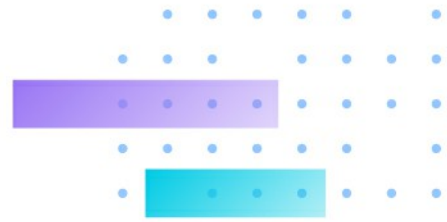
Temperature Range	-20°C to 150°C (-4°F to 302°F)
Measurement rule	Point, area, line (up to 20 rules in total)
Temperature alarm	Threshold alarm, Temperature difference alarm, Temperature rise alarm, Section alarm
Accuracy * depends on scene/setting	± 2°C / ±2%

Alarm and Event

Event Trigger	Motion detection, I/O alarm, Disk alarm, VCA alarm, Temperature alarm
Event Action	Event notification via audio clip, digital output, email, FTP, SD card; white light flashing and horn warning

General

Connectors	RJ-45 cable connector for 10/100 Mbps Network/PoE connection Audio input Audio output DC 12V power input AC 24V power input Digital input *2 Digital output *2 RS485
LED Indicator	System power and status indicator



Power Input	AC 24V, DC 12V, IEEE 802.3af PoE Class 3
Power Consumption	Max. 12W
Dimensions	ø141.8 x 325 × 106.7mm
Weight	1960g
Certifications	EMC: CE (EN 55032, Class B), FCC (FCC Part 15 Subpart B), UKCA (BS EN 55032 Class B) Environment: IP66
Operating Temperature	Working Temperature: -40°C ~ 60°C (-40°F ~ 140°F)
Humidity	90%

System Requirements

Operating System	Microsoft Windows 10/8/7 Mac 10.12 (Chrome only)
Web Browser	Chrome 58.0 or above Internet Explorer 10/11
Other Players	VLC: 1.1.11 or above

Included Accessories

Packing Contents	Quick installation guide, alignment sticker, screw pack, waterproof accessory bag, junction box, sunshield
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VCA Detection Range

VCA detection distance (Human: 1.8x0.5m)	30m (98.4ft)
VCA detection distance (Vehicle: 1.8x0.5m)	90m (295.3ft)
Temperature measurement Object: 1.8x0.5m	15m (49ft)
Temperature measurement Object: 1x1m	30m (98ft)
Fire detection Object: 1x1m	208m (682ft)
Fire detection Object: 0.2x0.2m	41.7m (136ft)
Smoking detection	13m (42ft)

Johnson's criteria (Thermal object detection distance. Verification by human eyes)

Human 1.8x0.5m Detection (1.5 pixels)	146m (479ft)
Human 1.8x0.5m Recognition (6 pixels)	36m (118ft)
Human 1.8x0.5m Identification (12 pixels)	18m (59ft)
Vehicle 4x1.5m Detection (1.5 pixels)	447m (1466ft)
Vehicle 4x1.5m Recognition (6 pixels)	112m (367ft)
Vehicle 4x1.5m Identification (12 pixels)	56m (183ft)

