



Network

Thermal

TNM-C4960TD

Bi-spectrum AI Thermal Camera

Key Features

- Bi-spectrum: VGA thermal & 8MP visible sensor
- Dual (thermal & visible) channel by one device, one IP
- Maximum 30fps @ all resolutions (H.265/H.264)
- Lens : 25mm fixed thermal & 10.9~29mm motorized varifocal visible
- Day & Night(ICR), WDR(120dB)
- Noise reduction : WiseNR II (Based on AI engine, visible only)
- Smart codec : WiseStream III (Based on AI engine, visible), WiseStream II (thermal)
- Video Analytics based on AI (visible)
- IP66/IP67, NEMA4X
- PoE+(IEEE802.3at), 12VDC
- Wall & Pole mount all-in-one design

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Specifications

Video		Thermal	Visible
Imaging Device	Size		1/1.8"
	Type	Uncooled micro bolometer (640x480)	CMOS
Resolution		1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360	3840x2160, 3072x1728, 2688x1520, 2592x1944, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
Max. Framerate	H.265/H.264	30fps/25fps(60Hz/50Hz)	30fps/25fps(60Hz/50Hz)
	MJPEG	3fps	1fps
	Others	Max. 15fps when both channel AI on	Max. 15fps when both channel AI on
Spectral Range		8~14 μ m	
NETD		$\leq$ 60mK	
Pixel Size		12 μ m	
Min. Illumination (Lux)	Color(1/30sec, 30IRE)		0.06
	BW(1/30sec, 30IRE)		0.005
Video Out		USB: Micro USB Type B	

Lens

Focal Length (mm)		25	10.9~29
Max Aperture Ratio (F number)	Wide	1.0	1.7
	Tele		1.73
Angular Field of View	Horizontal	17°	42°(Wide)~15°(Tele)
	Vertical	13°	23°(Wide)~8°(Tele)
	Diagonal	22°	49°(Wide)~17°(Tele)
iFoV		0.48mRad	
Min. Object Distance		26m(85.30ft)	2.5m(8.20ft)
Focus Control		Fixed	Simple focus

Pan / Tilt / Rotate

Pan / Tilt / Rotate Range	Pan	-170°~+170°
	Tilt	-40°~50°

Pan / Tilt / Rotate

Sequence	Preset(255ea)
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Operational

Day & Night		Auto(ICR)
Backlight Compensation		BLC, WDR, SDR
Wide Dynamic Range (dB)		120
Digital Noise Reduction		WiseNR II (Based on AI engine), SSNR V
Digital Image Stabilization		Support(built-in gyro sensor)
Motion Detection	Quantity	8ea
	Shape	8point Polygonal zones
Privacy Masking	Quantity	6ea
	Shape	Rectangular zones
	Color / Option	Gray, Black, White
Gain Control		Low, Middle, High
White Balance		ATW, AWC, Manual, Indoor, Outdoor
LDC		Support
Electronic Shutter	Mode	Minimum, Maximum, Anti flicker, Prefer shutter control(Based on AI engine)
	Speed Range	1/5~1/12,000sec
Alarm Interface	In/Out	4 configurable I/O ports
Alarm Triggers		Analytics, Network disconnect, Alarm input
Alarm Events When Alarm Trigger Occurred		File upload(image): e-mail/FTP, Notification: e-mail, Recording: SD/SDHC/SDXC or NAS recording at event triggers,Alarm output, Handover: PTZ preset,send message by HTTP/HTTPS/TCP,Audio clip playback
Audio In		Selectable(mic in/line in)
Audio Out		Line out
Color Palettes		Whitehot, Blackhot, Rainbow, Rainbow2, Sepia, Red, Iron, Custom

Analytics

Classified Object Type		Person, Vehicle	Person, Face, Vehicle, License plate
Attributes	Vehicle		Type(car, bus, truck, motorcycle, bicycle)
Thumbnail		BestShot	BestShot
Analytics Events	Based on AI Engine	Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit), Stopped vehicle, Traffic jam	Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit), Stopped vehicle, Traffic jam
	Normal	Motion detection, Temperature change detection	Defocus detection, Motion detection, Tampering, Audio detection, Sound classification, Shock detection, Virtual area(Loitering, Intrusion, Enter/Exit, Appear/Disappear)

Analytics

Business Intelligence	Normal	Vehicle counting	Vehicle counting
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Network

Ethernet		Metal shielded RJ-45(10/100/1000BASE-T)	
Video Compression		H.265/H.264: Main/High, MJPEG	
Audio Compression		G.711 u-law /G.726 selectable,G.726(ADPCM) 8kHz,G.711 8kHz, G.726: 16kbps,24kbps,32kbps,40kbps, AAC-LC: 48kbps at 16kHz	
Smart Codec		WiseStream II	Manual, WiseStreamIII
Bitrate Control		H.265/H.264: CBR or VBR, MJPEG: VBR	
Streaming	Unicast	Up to 6 users	
	Multicast	Support	
	Multiple Streaming	Up to 3 profiles	
Protocol		IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP(TCP, UDP Unicast)	
Application Programming Interface	ONVIF	S, T	
	Others	SUNAPI(HTTP API), Hanwha Vision Open Platform	
Direct Cloud Connection		Support	

Security

OS / Firmware Protect	Encrypted firmware, Secure boot, Signed firmware		
User authentication	Digest authentication		
Network authentication	IEEE 802.1X(EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2)		
Secure Communication	HTTPS, WSS(WebSocket Secure)		
Access Control	IP-based access control		
Data Protect	Encryption credentials, Encrypt compress for live recording file export		
Audit	Access / System / Event Log management		
Device ID	Device certificate(Hanwha Vision Root CA)		
Secure Storage	HTPM(Hanwha Trusted Platform Module), SDcard partition encrypt(AES-256)		
Security Certificate	TPM 2.0 with FIPS 140-2 level2		

General

Memory	RAM	4GB
	Flash	512MB
Edge Storage	Micro SD/SDHC/SDXC	Max. 256GB x 2slot(Total 512GB)

Environmental & Electrical

Operating Condition	Temperature	-40°C~+60°C(-40°F~+140°F)
	Humidity	0~95% RH(non-condensing)
	Others	Start up should be done at above -30°C
Storage Condition	Temperature	-50°C~+60°C(-58°F~+140°F)
	Humidity	0~90% RH(non-condensing)
Input Voltage		PoE+(IEEE802.3at, Class4), 12VDC
Power Consumption	PoE	Max. 23.5W, Typ 16.0W
	12VDC	Max. 19.5W, Typ 14.0W

Mechanical

Color	White
Material	Aluminum
RAL Code	RAL9003
Product Dimensions	353.4(W)x287.5(H)x191.2(D)mm(13.92x11.32x7.53")
Product Weight	4.53kg(9.99lb)

Certifications & Standards

EMC	FCC 47 CFR 15 Subpart B Class A, ICES-3(A)/NMB-3(A), CE/UKCA - EN55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3, VCCI CISPR 32 Class A, RCM AS-NZS CISPR 32 Class A, KS C 9832 Class A, KS C 9835
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1
Environment	IEC 60529 IP66, IEC 60529 IP67, IEC 62262 IK10, NEMA TS 2-2013 (2.2.7, 2.2.8, 2.2.9), NEMA 250 type 4X

DORI (EN62676-4 standard)

Detect (25PPM/ 8PPF)	Wide	200.1m(656.40ft)
	Tele	583.4m(1913.89ft)
Observe (63PPM/ 19PPF)	Wide	80.0m(262.56ft)
	Tele	233.3m(765.56ft)
Recognize (125PPM/ 38PPF)	Wide	40.0m(131.28ft)
	Tele	116.7m(382.78ft)
Identify (250PPM/ 76PPF)	Wide	20.0m(65.64ft)
	Tele	58.3m(191.39ft)

DRI (Johnson's Criteria)

Detection	Person(1.67PPM)	1,255m(4,117ft)
	Vehicle(0.65PPM)	3,207m(10,520ft)
Recognition	Person(6.67PPM)	314m(1,029ft)
	Vehicle(2.61PPM)	802m(2,630ft)

DRI (Johnson's Criteria)

Identification	Person(13.33PPM)	157m(515ft)	
	Vehicle(5.22PPM)	401m(1,315ft)	

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CAD

Unit: mm [inch]

