



Network

Thermal

# TNO-C3020TRA

QVGA Radiometric AI Thermal Camera



## Key Features

- AI based object classification (person, vehicle)
- High performance detector applied (17 $\mu$ m, NETD 30mK)
- QVGA resolution (384x288) with wide angle
- Wide temperature monitoring range -40 $^{\circ}$ ~ 550 $^{\circ}$ C (-40 $^{\circ}$ F ~ 1,022 $^{\circ}$ F)
- Smaller and light camera ( $\Phi$ 147 \* 233.5mm, 1.7KG) for easy and simple installation
- Maximum 30fps @ all resolutions (H.265/H.264/MJPEG)

## TNO-C3020TRA

QVGA Radiometric AI Thermal Camera



### Specifications

#### Video

Imaging Device	Type	Uncooled micro bolometer (384x288)
Resolution		768x576, 384x288
Max. Framerate	H.265/H.264	30fps
	MJPEG	30fps
Spectral Range		8~14 $\mu$ m
NETD		$\leq$ 30mK
Pixel Size		17 $\mu$ m
Video Out		USB: Micro USB Type B

#### Lens

Focal Length (mm)		6.6
Max Aperture Ratio (F number)	Wide	1.0
Angular Field of View	Horizontal	60
	Vertical	44
	Diagonal	78
iFoV		2.6mRad
Min. Object Distance		1.4m(4.59ft)
Focus Control		Fixed

#### Pan / Tilt / Rotate

Pan / Tilt / Rotate Range	Pan	0°~350°
	Tilt	0°~90°
	Rotate	0°~350°

#### Operational

Motion Detection	Quantity	8ea
	Shape	8point Polygonal zones

## Operational

Privacy Masking	Quantity	6ea
	Shape	Rectangular zones
	Color / Option	Gray, Black, White
Video Rotation		Flip, Mirror, Hallway view(90°/270°)
Serial Interface		RS-485
Alarm Interface	In/Out	2 configurable I/O ports
Alarm Triggers		Analytics, Network disconnect, Alarm input, Time schedule, MQTT subscription
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, MQTT: publication
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
Thumbnail		BestShot
Analytics Events	Based on AI Engine	Object detection, Virtual line(Crossing/Direction), Virtual area(Loitering/Intrusion/Enter/Exit), Motion detection
	Normal	Motion detection, Tampering, Audio detection, Sound classification, Shock detection, Virtual area(Appear/Disappear)

## Radiometry

Temperature Detect Range		-40°C~550°C
Temperature Accuracy		±2°C(≤150°C), ±15%(>150°C)
Temperature Detection ROI Zones	Quantity	10ea
	Shape / Option	Polygonal
Hybrid Palettes		Support
Spot Temperature Reading		Support
ROI Condition Monitoring		Above, Below, Increase, Decrease

## Network

Ethernet		Metal shielded RJ-45(10/100/1000BASE-T)
Video Compression		H.265/H.264: Main/Baseline/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		Manual, WiseStream II , WiseStreamIII
Bitrate Control		H.265/H.264: CBR or VBR, MJPEG: VBR

## Network

Streaming	Unicast	Up to 20 users
	Multicast	Support
	Multiple Streaming	Up to 10 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), MQTT
Application Programming Interface	ONVIF	S, G, T, M
	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, Prevent brute-force attack	
Network authentication	IEEE 802.1X(EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2)	
Secure Communication	HTTPS, WSS(WebSocket Secure), SRTP	
Access Control	IP-based access control	
Data Protect	Encryption credentials	
Audit	Access / System / Event Log management	
Device ID	Device certificate(Hanwha Vision Root CA)	
Secure Storage	TPM(Trusted platform module), SDcard partition encrypt(AES-256)	
Security Certificate	TPM 2.0 with FIPS 140-2 level2	

## General

Memory	RAM	2GB
	Flash	512MB
Edge Storage	Micro SD/SDHC/SDXC	Max. 1TB x 1slot

## Environmental & Electrical

Operating Condition	Temperature	-40°C~+60°C(-40°F~+140°F)
	Humidity	0~95% RH(non-condensing)
Storage Condition	Temperature	-50°C~+60°C(-58°F~+140°F)
	Humidity	0~95% RH(non-condensing)
Input Voltage		PoE(IEEE802.3af, Class3), 12VDC
Power Consumption	PoE	Max. 10.8W, typical 9W
	12VDC	Max. 9.4W, typical 7.7W

## Mechanical

Color	White	
Material	Aluminum, PC(Polycarbonate)	

## Mechanical

RAL Code	RAL9003
Product Dimensions	ø93.8x233.5mm(ø3.69x9.19")
Product Weight	1700g(3.75lb)
Compatible Conduit Hole	Support conduit compatibility via optional adaptor
Compatible Gang Box	Single, Double, 4" Octagon, Square

## Certifications & Standards

EMC	FCC 47 CFR 15 Subpart B Class 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, IC Regulation ICES-003 Issue 7 Class A
Safety	UL 62368-1, CAN/CSA C22.2 NO. 62368-1
Environment	IEC/EN 63000, IEC 60529 IP66, IEC 62262 IK10, NEMA 250 type 4X

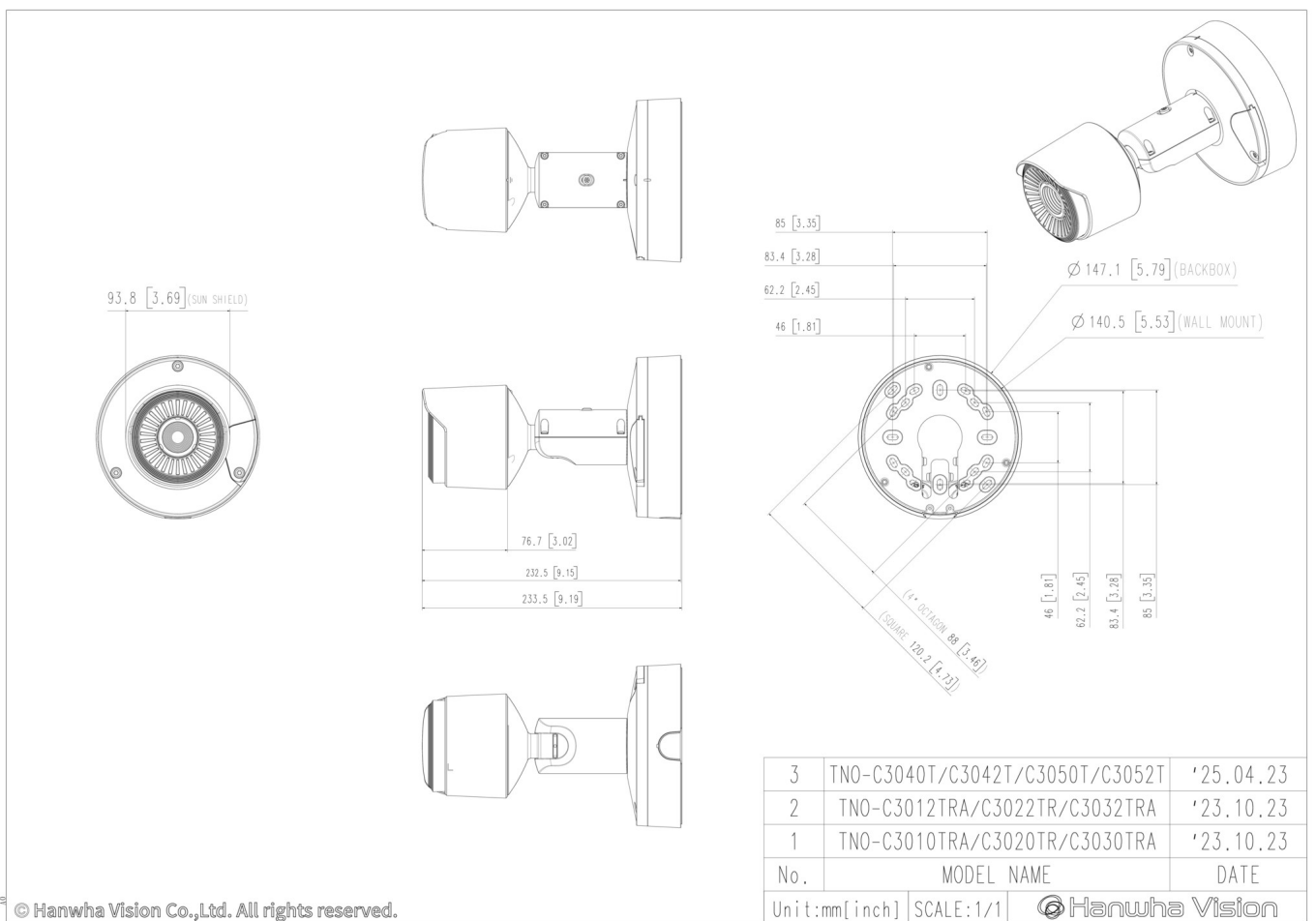
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### CAD

Unit: mm [inch]



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