



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,<br>Notification: e-mail,<br>Recording: SD/SDHC/SDXC or NAS recording at event triggers,Alarm output,<br>Handover: PTZ preset,<br>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,<br>G.726: 16kbps,24kbps,32kbps,40kbps,<br>AAC-LC: 48kbps at 16kHz |
| Smart Codec       |  | Manual, WiseStream II , WiseStreamIII                                                                                         |
| Bitrate Control   |  | H.265/H.264: CBR or VBR,<br>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                                                                                                                                                               |

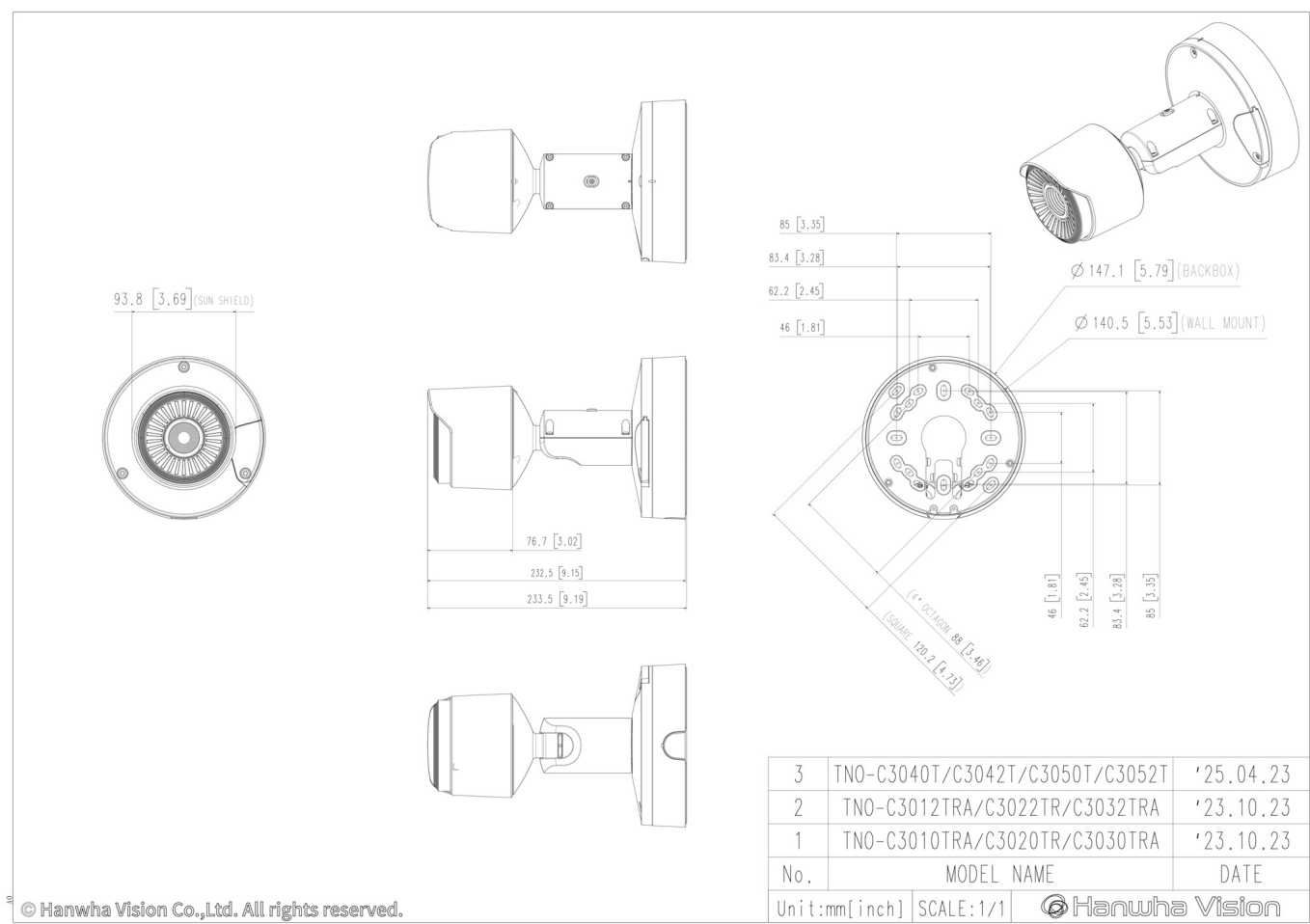
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QVGA Radiometric AI Thermal  
Camera



CAD

Unit: mm [inch]



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