

Hanwha Vision is a global leading supplier of solutions for IP and analog video surveillance. Building on the company's history of innovation, Hanwha Vision is dedicated to providing systems solutions with the highest levels of performance, reliability and cost-effectiveness. Hanwha Vision is committed to the continued development of innovative systems products for professional security applications.

For additional information, https://www.hanwhavision.com/en/, https://hanwhavisionamerica.com

1. **PRODUCTS**
   1. **EQUIPMENT**
      1. Manufacturer: Hanwha Vision (https://www.hanwhavision.com/en, https://hanwhavisionamerica.com)
      2. Model: TNO-C3032TRA
      3. Alternates: TNO-C3012TRA, TNO-C3022TRA
   2. **GENERAL DESCRIPTION**
      1. Video Compression and Transmission – The camera shall have the following properties relating to the video signals it produces.
         1. H.265, H.264 and MJPEG compression, each derived from a dedicated encoder and capable of being streamed independently and simultaneously.
            1. H.265 / H.264: Max. 8fps
            2. MJPEG: Max. 8fps
         2. The camera shall be able to configure up to 10 independent video stream profiles with differing encoding, quality, frame rate, resolution, and bit rate settings.
         3. The camera shall be able to configure various resolution selections.
            1. 4:3 aspect ratio: 768x576, 384x288 (original)
         4. The camera shall support unicast video streaming up to 20 users.
         5. The camera shall support multicast video streaming.
         6. The camera shall be able to configure Dynamic DNS (DDNS). DDNS shall be provided with no additional cost by the manufacturer.
         7. The camera shall provide WiseStream Ⅱ, WiseStreamⅢ on AI engine to efficiently manage bit rate of the video stream and reduce storage.
      2. Camera – The camera device shall have the following physical and performance properties
         1. Rated for protection against impacts.
            1. IK10 rated for protection against impacts.
            2. Dust proof and water proof (IP66 rated)
            3. NEMA 4X
         2. The camera shall be able to configure 6 privacy masking areas with rectangle zones.
         3. The camera shall provide video display on smart phone (iPhone, Android) to adjust viewing angle, rotation and focus.
      3. Intelligence and Analytics – The camera shall have a suite of intelligent analytic functions.
         1. Analytics events based on AI engine
            1. Object detection: Person / Vehicle
            2. Virtual line\* (Crossing / Direction), Virtual area\* (Loitering / Intrusion / Enter / Exit) \*Some of the video analytics only works with person and vehicle detection
         2. Analytics events: Motion detection, Tampering, Audio detection, Sound classification, Shock detection, Virtual area (Appear / Disappear)
            1. Motion detection with 8 definable detection areas with polygonal zones, and minimum/maximum object size.
         3. Business Intelligence based on AI engine.
         4. Support BestShot per object.
      4. Interoperability – The camera shall be ONVIF Profile S, G, T and M compliant.
      5. The camera shall possess the following further characteristics:
         1. Micro SD/SDHC/SDXC memory card with configurable pre-alarm and post-alarm recording intervals
         2. NAS recording option with configurable pre-alarm and post-alarm recording intervals
         3. Alarm triggers and notifications
         4. Pixel Counter available in the web viewer.
         5. PoE capable
         6. Impact protection, Water & Dust protection
         7. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunder stroke, communication interruption.
         8. NDAA Compliant
   3. **DETAILED SPECIFICATIONS**
      1. Video
         1. Imaging device: Uncooled micro bolometer (Spectral range: 8~14 um)
         2. Pixel Size: 17 um
         3. NETD: < 30mK
         4. Video Out
            1. USB : Micro USB type B, 768 x 576, for installation
      2. Lens:
         1. Focal length: 9.7mm fixed focal
         2. Max. Aperture Ratio: F1.0
         3. Field of View
            1. H: 37.9˚, V: 28.7°, D: 46.7°
            2. iFov: 1.8mRad
         4. Min. Object Distance: 2.8m (9.19ft)
      3. Pan & Tilt & Rotate
         1. Pan Range: 0° ~ 350°
         2. Tilt Range: 0° ~ 90°
         3. Rotate Range: 0° ~ 350°
      4. Operational Functions
         1. Camera Title: Displayed up to 85 characters
         2. Motion Detection: 8ea, 8 point Polygonal zones
         3. Privacy Masking: 6ea, Rectangle zones (Color: Gray / Black / White)
         4. Video Rotation: Flip, Mirror, Hallway view (90° / 270°)
         5. Analytics
            1. Classified object type: Person / Vehicle
            2. Support BestShot per object
            3. Analytics events based on AI engine

WiseMD

Object detection

Virtual line\* (Crossing / Direction)

Virtual area\* (Loitering / Intrusion / Enter / Exit)

* + - * 1. Analytics events

Motion detection

Tampering

Audio detection

Sound classification

Shock detection

Virtual area (Appear / Disappear)

* + - 1. Business Intelligence: Temperature data
      2. Alarm I/O: 2 configurable I/O ports
      3. Alarm Triggers: Analytics, Network disconnect, Alarm input, Time schedule, MQTT subscription
      4. Alarm Events (When alarm trigger occurred)
         1. File upload(image): e-mail/FTP
         2. Notification: e-mail
         3. Recording: SD/SDHC/SDXC or NAS recording at event triggers
         4. Alarm output
         5. Handover: PTZ preset, Send message by HTTP / HTTPS / TCP
         6. MQTT: publication
      5. Audio in: Selectable (mic in / line in)
      6. Audio out: Line out
      7. Audio Compression
         1. G.711 u-law / G.726 Selectable,
         2. G.726(ADPCM) 8KHz, G.711 8KHz
         3. G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps,
         4. AAC-LC: 48Kbps at 16KHz
      8. Color Palettes: Whitehot, Blackhot, Rainbow, Rainbow2, Sepia, Red, Iron, Custom, Hybrid palettes
      9. Edge Storage: Micro SD/SDHC/SDXC 1 slot Max.1TB
      10. Memory: 2GB RAM, 512MB Flash
    1. Radiometry
       1. Temperature detect range -40°C ~ 550°C (-40°F ~ 1,022°F)
       2. Temperature accuracy ±2°C (≤150°C ), ±15%(＞150°C )

\* in a room temperature environment

* + - 1. Temperature detection Off / On (10ea Polygonal ROI zones, whole FoV area)
      2. Additional Hybrid palettes, Spot temperature reading

(ROI condition monitoring: Above/Below/Increase/Decrease)

* + 1. Video Streams
       1. Video compression: H.265, H.264, MJPEG
       2. Resolution: 3840x2160, 3072x1728, 2592x1944, 2688x1520, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024,1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360
       3. Maximum Framerate
          1. H.265 / H.264: Max. 8fps / 8fps (60Hz / 50Hz)
          2. MJPEG: Max. 8fps
       4. Smart Codec: Manual (5ea area), WiseStreamⅡ, WiseStreamⅢ (using AI engine)
       5. Bitrate Control Method
          1. H.265 / H.264: CBR or VBR
          2. MJPEG: VBR
       6. Streaming method: Unicast / Multicast
       7. Streaming Capability: Multiple streaming (Up to 10 profiles)
       8. Simultaneous Users: Max. 20 users (Unicast)
       9. Profile set: Max. 10ea
       10. Application Programming Interface
           1. ONVIF Profile S / G / T/ M
           2. SUNAPI (HTTP API)
           3. Wisenet open platform
    2. Network
       1. Ethernet: Metal shielded RJ-45 (10/100/1000 BASE-T)
       2. 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
       3. DDNS – The camera shall support DDNS services offered by the manufacturer and others publicly available service offerings
       4. QoS – Layer 3 DSCP
       5. Security Feature
          1. OS / Firmware Protect: Encrypted Firmware, Secure boot, Signed Firmware
          2. User authentication: Digest Authentication, Prevent brute-force attack
          3. Network authentication: IEEE 802.1X (EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)
          4. Secure Communication: HTTPS, SRTP, WSS (WebSocket Secure)
          5. Access Control: IP-based access control
          6. Data Protect: Encryption Credentials, Encrypt compress for live recording file
          7. Audit: User Access / System / Event Log management
          8. Device ID: Device certificate (Hanwha Root CA)
          9. Secure Storage: TPM (Trusted Platform module), SD card partition encryption
          10. Security Certificate: TPM with FIPS 140-2 level 2
          11. The device shall not provide a manufacture default password. Default password change shall be required to access the camera.
          12. A minimal level of password complexity shall be required by the camera.
          13. The camera shall not have a manufacture back-door password.
          14. The manufacturer shall provide a tool that provides the ability to make password changes to multiple cameras at the same time.
          15. IP address filtering – List of allowed or blocked IP addresses
       6. Discovery – The manufacturer shall offer a discovery program to identify all devices of them on the network.
       7. Configuration – The manufacturer shall offer a configuration program that remotely allows users to change settings on multiple cameras simultaneously.
       8. Firmware upgrade – The manufacturer shall offer a program capable of upgrading multiple cameras at the same time (not requiring access to individual cameras).
       9. Camera backup setting – The manufacturer shall provide a program that provides the ability to save multiple camera settings to a file and restore these camera settings if needed.
       10. Reporting – The manufacturer shall provide a tool that can generate a report including thumbnail view, MAC address, IP address, serial number and other camera settings.
    3. Electrical
       1. Input Voltage: PoE (IEEE802.3af, Class3), 12VDC
       2. Power Consumption
          1. PoE: Max 10.8W, typical 9W
          2. 12VDC: Max 9.4W, typical 7.7W
    4. Mechanical And Environmental
       1. Color/Material: White / Aluminum + PC
       2. RAL Code: RAL9003
       3. Dimensions (W x H): ø93.8 x 233.5mm (ø3.69 x 9.19")
       4. Weight: 1700g(3.75lb)
       5. Compatible Conduit Hole: SBP-060BA (Sold separately)
       6. Gangbox: single, double,4" octagon, 4" square
       7. Backbox: included
       8. Pole Mount: SBD-180PMW, SBP-300PMW2 (sold separately)
       9. Corner Mount: SBP-300KMW1 (sold separately)
       10. Cabinet: SBP-300NBW (sold separately)
       11. Conduit Adaptor: SBP-060BA (sold separately)
       12. Temperature & Humidity
           1. Operating: -40°C ~ +60°C (-40°F ~ +140°F) /0~95% RH (non-condensing)
           2. Storage: -50°C ~ +60°C (-58°F ~ +140°F) / Less than 95% RH
       13. Certification: IP66, IK10, NEMA4X
    5. DORI Distance
       1. Detect (25PPM / 8PPF): TBD
       2. Observe (63PPM / 19PPF): TBD
       3. Recognize (125PPM / 38PPF): TBD
       4. Identify (250PPM / 76PPF): Wide: TBD
    6. Certification
       1. EMC
          1. EN 55032:2015/A11:2020
          2. EN 50130-4:2011/A1:2014
          3. EN 61000-3-2:2014
          4. EN 61000-3-3:2013
          5. FCC - 47 CFR Part 15, Subpart B Class A
          6. FCC - IC Regulation ICES 003 Issue 7
          7. RCM - EN IEC 63000:2018 Class A
          8. VCCI - EN IEC 63000:2018 Class A
          9. KS - KS C 9832:2023 Class A
          10. KS - KS C 9835:2019 Class A
       2. Safety
          1. UL/CSA 62368-1
       3. Environment
          1. ROHS - EN IEC 63000:2018
          2. IK10 - KS C IEC 62262: 2005
          3. IP66 - IEC 60529:1989 +A1:1999+A2:2013
          4. NEMA4X - NEMA 250-2014

END OF SECTION