

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, visit <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: TNM-C3622TDR
      3. Alternates: None
   2. **GENERAL DESCRIPTION**
      1. Thermal VGA camera shall provide thermographic image so user can recognize object with heat even in dark scene. And the camera shall provide 2MP normal image simultaneously with thermographic image.
      2. Video Compression and Transmission – The camera shall have the following properties relating to the video signals it produces.
         1. H.264, H.265 and MJPEG compression, each derived from a dedicated encoder and capable of being streamed independently and simultaneously.
            1. H.265 and H.264

Thermal: Max. 8fps

Visible: Max. 30fps/25fps(60Hz/50Hz)

* + - * 1. MJPEG

Thermal: Max. 8fps

Visible: Max. 30fps/25fps(60Hz/50Hz)

* + - 1. 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.
      2. The camera shall be able to configure various resolution selections for thermal image.
         1. 4:3 aspect ratio: 1280x960, 640x480, 320x240
      3. The camera shall be able to configure various resolution selections for visible image.
         1. 16:9 aspect ratio:1920x1080, 1280x720, 800x448, 640x360
         2. 4:3 aspect ratio: 1280x960, 1024x768, 800x600, 640x480, 320x240
         3. 5:4 aspect ratio: 1280x1024, 720x576
         4. 3:2 aspect ratio: 720x480
      4. The camera shall support unicast video streaming up to 20 users.
      5. The camera shall support multicast video streaming.
      6. The camera shall support multiple video streaming up to 6 profiles.
      7. The camera shall be able to configure Dynamic DNS (DDNS). DDNS shall be provided with no additional cost by the manufacturer.
      8. The camera shall provide WiseStream Ⅱ, Dynamic GOV and Dynamic FPS to efficiently manage bit rate of the video stream and reduce storage.
      9. The camera shall provide SSNR V for reduce noise and blur on image.
    1. Camera – The camera device shall have the following physical and performance properties:
       1. True day/night operation with scheduling and options for external devices.
          1. Low light level operation to 0.05 lux at F1.6 in color mode, 0.005 lux at F1.6 in black and white mode on visible camera.
       2. The camera shall be able to produce clear images in highly contrast scenes with multi-exposure wide dynamic range up to 150dB(extremeWDR).
       3. The camera shall be able to configure 6 privacy masking areas with rectangle zones.
       4. The camera shall provide video display on smart phone (iPhone, Android) to adjust viewing angle and focus.
    2. Intelligence and Analytics – The camera shall have a suite of intelligent analytic functions.
       1. Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line, Audio detection, Temperature detection
       2. AI based Object detection (person/face, visible channel only)
    3. Interoperability – The camera shall be ONVIF Profile S / T / M compliant.
    4. 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. Alarms and notifications
          1. alarm notification triggers: Analytics, Network disconnect, Alarm input, MQTT subscription
          2. available notification means upon trigger:

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)

MQTT: publication

* + - 1. Pixel Counter available in the web viewer.
      2. **NDAA Compliant**
  1. **DETAILED SPECIFICATIONS**
     1. Video
        1. Thermal
           1. Imaging device: Uncooled QVGA microbolometer
           2. Resolution: 320x240(can be scales up to 1280x960), 1280x960, 640x480, 320x240
           3. NETD: <50mK
           4. Pixel Size: 12㎛
        2. Visible
           1. Imaging device: 1/2.8" 2MP CMOS
           2. Resolution: 1920x1080, 1600x1200, 1280x1024,1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320X240
           3. Minimum Illumination

Color: 0.05Lux (F1.6, 1/30sec)

BW: 0.005Lux (F1.6, 1/30sec), 0Lux (IR LED on)

* + - * 1. Video out for installation

CVBS: 1.0 Vp-p / 75Ω composite, 720x480(N) / 720x576(P)

Micro USB Type B, 1280x720

* + 1. Lens
       1. Thermal
          1. Focal length: 4.7mm fixed focal
          2. Max. Aperture Ratio: F1.0
          3. Field of View: H(50°) / V(36.4°) / D(65.3°)
          4. Min. Object Distance: 1m(3.28ft)
          5. Focus Control: Fixed
       2. Visible
          1. Focal length: 4mm fixed focal
          2. Max. Aperture Ratio: F1.6
          3. Field of View: H(87.6°) / V(46.4°) / D(104.5°)
          4. Min. Object Distance: None
          5. Focus Control: Fixed
    2. Operational Functions
       1. Camera Title: Displayed up to 17 characters
       2. Day/Night: Auto (ICR) / Color / B/W / External / Schedule
       3. Backlight Compensation: Off / BLC / WDR / SSDR
       4. Wide Dynamic Range: extremeWDR(150dB)
       5. Digital Noise Reduction: SSNRⅤ
       6. Digital Image Stabilization: Support (built-in gyro sensor)
       7. Motion Detection: Off / On (8ea, 8-point polygonal)
       8. Privacy Masking: Off / On (24ea, polygonal zones)
       9. Gain Control: Off / Low / Middle / High
       10. White Balance: ATW / AWC / Manual / Indoor / Outdoor
       11. Lens Distortion Correction: Support
       12. Electronic Shutter Speed: Min / Max / Anti-flicker (2 ~ 1/12,000sec)
       13. Analytics events
           1. Directional detection, Motion detection, Enter/Exit, Tampering, Virtual line, Audio detection, Temperature detection
           2. AI based Object detection (person/face, visible channel only)
       14. Alarm I/O: Input 1ea / Output 2ea
       15. Alarm Triggers: Analytics, Network disconnect, Alarm input, MQTT subscription
       16. Alarm Events
           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
       17. Audio input: Selectable (mic in/line in) \*Supply voltage (2.5V DC, 4mA), Input impedance(2KOhm)
       18. Audio Out: Line out (Max. output level 1Vrms)
       19. Edge Storage: Micro SD/SDHC/SDXC 1 slots 256GB
       20. Memory: 4608MB RAM, 512MB Flash
       21. Thermal Color Palettes: Whitehot, Blackhot, Rainbow, Rainbow2, Sepia, Red, Iron, Custom
    3. Radiometry(Thermal)
       1. Temperature detect range: -20°C ~ 130°C(-4°F ~ 266°F)
       2. Temperature accuracy: ±5°C (≤100°C ), ±20°C(＞100°C )
       3. Temperature detection: 6 Quadrangle ROI zones, whole FoV area
       4. Hybrid palettes, Spot temperature reading
    4. Stream
       1. Video compression: H.265, H.264, MJPEG
       2. 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
       3. Smart Codec
          1. Thermal: WiseStream Ⅱ
          2. Visible: Manual(5ea area), WiseStream Ⅱ
       4. Max. Framerate
          1. H.265 and H.264

Thermal: Max. 8fps

Visible: Max. 30fps/25fps(60Hz/50Hz)

* + - * 1. MJPEG

Thermal: Max. 8fps

Visible: Max. 30fps/25fps(60Hz/50Hz)

* + - 1. Bitrate Control Method
         1. H.265 / H.264: CBR or VBR
         2. MJPEG: VBR
      2. Streaming Capability: Unicast(20 users) / Multicast, Multiple streaming(Up to 6 profiles)
      3. Streaming method: Unicast / Multicast
      4. Simultaneous Users: 20 maximum (Unicast)
      5. Profile set: Max. 10 ea
      6. Interoperability
         1. ONVIF Profile S / T / M
         2. SUNAPI(HTTP API)
    1. Network
       1. Connectivity: Metal shielded RJ-45(10/100/1000BASE-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, 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
          3. Network authentication: IEEE 802.1X (EAP-TLS, EAP-LEAP, EAP-PEAP, MSCHAPv2)
          4. Secure Communication: HTTPS, WSS (WebSocket Secure)
          5. Access Control: IP-based access control
          6. Data Protect: Encryption Credentials, Encrypt compress for live recording file
          7. Audit: Access / System / Event Log management
          8. Device ID: Device certificate (Hanwha Private Root CA)
          9. Secure Storage: HTPM(Hanwha Trusted Platform Module), SDcard partition encrypt
          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.
    2. Electrical
       1. Input Voltage: PoE+(IEEE802.3at, Class4), 12VDC
       2. Power Consumption
          1. PoE+: Max 17.0W, Typical 12.5W
          2. 12VDC: Max 14.5W, Typical 11.0W
    3. Mechanical And Environmental
       1. Color / Material: White/Aluminum
       2. RAL Code: RAL9003
       3. Dimension (W x H x D): 135 x 77 x 188.5 mm (5.31 x 2.95 x 7.42 ")
       4. Weight: 1.7 kg (3.77 lb)
       5. Temperature / Humidity
          1. Operating: -10°C to +55°C(+14°F to +131°F) / Less than 95% RH(non-condensing)
          2. Storage: -30°C to +60°C(-22°F to +140°F) / Less than 95% RH (non-condensing)
    4. DORI (Visible)
       1. Detect (25PPM/ 8PPF): 40.0m(131.36ft)
       2. Observe (63PPM/ 19PPF): 16.0m(52.54ft)
       3. Recognize (125PPM/ 38PPF): 8.0m(26.27ft)
       4. Identify (250PPM/ 76PPF): 4.0m(13.14ft)
    5. Certification & Standards
       1. EMC
          1. FCC 47 CFR Part 15, Subpart B ANSI C63.4 2014 CLASS A
          2. IC Regulation ICES 003: 2016 ANSI C63.4 2014 CLASS A
          3. CE / UKCA: EN 55032:2015/A11:2020 CLASS A, EN 50130-4:2011/A1:2014 CLASS A, EN 61000-3-2:2014 CLASS A, EN 61000-3-3:2013 CLASS A
          4. VCCI CISPR 32: 2016 CLASS A
       2. Safety
          1. UL / CSA 62368-1
          2. KC 62368-1
       3. Environment
          1. IEC/EN 63000

END OF SECTION