

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: PNO-9080R
      3. Alternates: None
   2. **GENERAL DESCRIPTION**
      1. Video Compression and Transmission – The 4K 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 and H.264 – frame rates to 30 fps
            2. MJPEG – frame rates to 15 fps
         2. The 4K 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. Resolution selections
            1. 8M mode: 4096 x 2160, 3840 x 2160, 2592 x 194, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
            2. 12M mode: 4000 x 3000, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240
         4. Simultaneous unicast access by up to 20 users
         5. Multicast or unicast capable
         6. Dynamic DNS (DDNS) support.
         7. WiseStream and Dynamic GOV to efficiently manage bitrate of the video stream.
      2. Camera – The 4K camera device shall have the following physical and performance properties:
         1. IK10 rated for protection against impacts.
         2. Dust proof and water proof (IP66 rated)
         3. Auto day/night operation with removable IR cut filter
            1. Low light level operation to 0.01 lux (color) and 0 lux (black and white)
         4. 2D and 3D digital noise reduction
         5. Integral IR illumination, providing effective visibility of 40m at 0 Lux when activated in Black & White mode.
         6. 16 privacy masking regions utilizing polygons
      3. Intelligence and Analytics – The 4K camera shall have a suite of integral intelligent operations and analytic functions to include:
         1. Motion detection with eight definable detection areas, minimum / maximum object size definition and a learning algorithm that ignores false alarms such as trees and waves on water.
         2. Detection of logical events of specified conditions from the camera’s video input
            1. camera tamper (scene change)
            2. virtual line
            3. enter/exit
            4. appear/disappear
            5. audio detection
            6. defocus detection
            7. digital auto tracking with metadata
      4. Interoperability – The 4K camera shall be ONVIF Profile S and G compliant.
      5. The 4K camera shall possess the following further characteristics:
         1. Built-in web server, accessed via standard browsers including Internet Explorer, Firefox, Chrome & Safari
         2. Micro SD/SDHC/SDXC memory card and NAS recording options, with configurable pre-alarm and post-alarm recording intervals
         3. Bi-directional audio
         4. Alarms and notifications
            1. alarm notification triggers

alarm input

motion detection

video analytics

audio detection

network disconnect

* + - * 1. available notification means upon trigger:

file upload via FTP and e-mail

notification via e-mail

record to local storage (SD/SDHC/SDXC card)

NAS recording at event triggers

external output

* + - 1. Pixel Counter available in the plug-in web viewer.
      2. POE capable
  1. **CAMERA SOFTWARE**
     1. The 4K camera shall have a built in web server which supports browser-based configuration using Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari, for which web viewer plug-ins are available, from a PC or Mac.
     2. The web viewer shall provide a monitoring screen which displays live camera video and simultaneously provides same-screen access to the following functions:
        1. Live view window size
        2. Resolution setting
        3. Image (snapshot) capture
        4. Manual recording to SD or NAS
        5. Audio/microphone control
        6. Access Playback and Setup menus
     3. The web viewer shall provide a playback screen which provides access to the following functions:
        1. Search date and time range
        2. Search event type
        3. Play an event video
        4. Set resolution
        5. Play audio if present
        6. Generate a backup copy of saved video data
     4. The web viewer shall provide a setup screen which provides access to the following configuration settings and functions in the camera:
        1. Digital video profile to include compression type, maximum or target bit rate, frame rate, multicast parameters, crop encoding area
        2. User profile to include password, access level, authentication
        3. Date and time
        4. Network settings and IP version
           1. DDNS
           2. SSL, including certificate management
           3. 802.1x authentication
           4. Quality of Service settings
           5. SNMP to include version selection and settings
           6. Auto configuration
        5. Video setup to include flip and mirror mode, hallway view mode, video type, privacy zone
        6. Audio setup to include source, audio codec type, gain, and bit rate
        7. Camera settings to include image preset, sensor frame capture, dynamic range, white balance, back light, exposure, day/night operation, on-screen display, IR illumination, sharpness, contrast, and color level.
        8. Event detection setup to include notification parameters, recording rules, time schedule, tamper protection, motion detection, event triggers
        9. System function to include reboot, upgrade, check system and event logs, application (SDK) management
        10. View profile information
     5. Client requirements
        1. Acceptable Operating Systems: Windows 7 / 8.1 / 10, MAC OS X 10.9~10.11
        2. Acceptable browsers
           1. Plug-in free web viewer: Google Chrome 47, MS Edge 20
           2. Plug-in web viewer: MS Explore 11, Mozilla Firefox 43, Apple Safari 9 \* Mac OS X only
  2. **DETAILED SPECIFICATIONS**
     1. Video
        1. Imager
           1. Sensor: 1/1.7" 12.4M CMOS

pixels per sensor: 4168 (H) x 3062 (V) total; 4072 (H) x 3046 (V) effective

scanning: progressive

* + - * 1. Minimum illumination

Color mode: 0.3Lux (1/30sec, F1.6, 30IRE), 0.01Lux (2sec, F1.6, 30IRE)

Black & white mode:0Lux (IR LED on)

* + - * 1. The following features with control settings shall be available:

Camera Title: Off / On (Displayed up to 60 characters per line)

Day/night setting: Auto (ICR) / Color / B/W / External / Schedule

Backlight compensation (BLC): Off / BLC / WDR

WDR: 120dB

Contrast Enhancement: Off / On (Samsung Super Dynamic Range)

Digital Noise Reduction (DNR): Off / On (Samsung Super Noise Reduction)

Defog: Off / Auto / Manual

Motion Detection: Off / On (8ea polygonal zones)

Privacy Masking: Off / On (16ea polygonal zones)

Color: Gray / Green / Red / Blue / Black / White

Gain Control: Off / Low / Middle / High

White Balance: ATW / AWC / Manual / Indoor / Outdoor (Include mercury & sodium)

Electronic shutter speed:

settings: Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)

Image flip: Off / On

Image mirror: Off / On

Hallway view: Off / On (90°, 270°)

Alarm I/O: Input 1 / Output 1

Alarm Triggers: Alarm input, Motion detection, Video analytics, Audio detection, Network disconnect

Alarm Events: File upload via FTP and E-mail, Notification via E-mail, Local storage (SD/SDHC/SDXC) or NAS recording at event triggers, External output

Pixel Counter: Available in the plug-in web viewer.

* + - * 1. Lens: 4.5 ~ 10 mm (2.2x) motorized varifocal

Max. Aperture Ratio: F1.6

Angle of view

[4096 x 2160]: H 100.3˚(Wide) ~ 45.6˚(Tele) / V 49.7˚(Wide) ~ 24.0˚(Tele)

[3840 x 2160]: H 92.3˚(Wide) ~ 42.6˚(Tele) / V 49.7˚(Wide) ~ 24.0˚(Tele)

Min. Object Distance: 0.5 m (1.64ft)

Focus Control: Simple focus (Motorized V/F) / Manual, Remote control via network (Manual, Simple focus)

Lens Type: P-Iris Mode

Mount Type: Board-in Type

* + - 1. IR Viewable Length: 40 m (131.23ft)
      2. Video Streams
         1. The 4K camera shall be able to produce 10 video profiles, each of which may have the following properties.

Encoding type

H.265

H.264

MJPEG

Resolution

8M mode: 4096 x 2160, 3840 x 2160, 2592 x 194, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240

12M mode: 4000 x 3000, 3840 x 2160, 2592 x 1944, 2592 x 1464, 1920 x 1080, 1600 x 1200, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360, 320 x 240

Maximum frame rate

H.265 and H.264: 20fps@4000 x 3000, 30fps@4096 x 2160 or under

MJPEG: 2fps@4000 x 3000 ~ 2592 x 1464, 15fps@1920 x 1080 ~ 320 x 240

Smart Codec: Manual mode (Area-based: 5ea), WiseStream, Dynamic GOV

Bit rate control method

H.265 and H.264

target bitrate level control

constant bit rate (CBR) or variable bit rate (VBR)

MJPEG

quality level control

variable bit rate (VBR)

* + - 1. Number of multi-streaming profiles: 10 maximum
      2. Simultaneous users (total): 20 maximum (unicast)
      3. Storage and Recording
         1. The 4K camera shall have onboard SD card storage.

Card type: Micro SD/SDHC/SDXC

Capacity: Up to 128 GB per card

Image content on the card shall have the ability to be downloaded to a selected destination.

* + - * 1. NAS
      1. Interoperability - Video streams shall be capable of supporting ONVIF protocol, profiles S and G.
      2. Single Images - The 4K camera shall support jpg file image screenshot and export.
    1. Network
       1. Connectivity: 10/100 Base-T Ethernet via RJ-45 connector
       2. Protocols supported:
          1. Transmission Control Protocol (TCP), Internet Protocol (IP) v4 and v6, User Datagram Protocol (UDP)
          2. Configuration: Dynamic Host Configuration Protocol (DHCP)
          3. Web services: Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS)
          4. Network services: Address Resolution Protocol (ARP), Bonjour, Domain Name System (DNS), Internet Control Message Protocol (ICMP), Network Time Protocol (NTP), Protocol Independent Multicast-Sparse Mode (PIM-SM), Simple Network Management Protocol (SNMP v1/2c/3 – MIB-2), Universal Plug and Play (UPnP)
          5. Media: Real-Time Transport Protocol (RTP), Real-Time Control Protocol, Real-Time Streaming Protocol (RTSP)
          6. Multicast: Internet Group Management Protocol (IGMP)
          7. Notifications: File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP)
          8. Remote Access: Point-to-Point Protocol over Ethernet) (PPPoE)
       3. DDNS – The 4K camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
       4. Quality of Service (QoS) – Layer 3 DSCP
       5. Security features
          1. user password protection
          2. IP address filtering - list of allowed or blocked IP addresses
          3. HTTPS(SSL) login authentication
          4. HTTPS(SSL) secured communications
          5. Digest login authentication
          6. User access log
          7. 802.1x authentication
       6. Discovery - Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
    2. Audio
       1. Direction: bi-directional
       2. Audio In: Selectable (Mic in / Line in), Supply voltage: 2.5V DC (4mA), Input impedance: approx. 2K Ohm
       3. Audio Out: Line out (3.5mm mono jack), Max output level: 1Vrms
       4. Compression:
          1. G.726 (ADPCM) 8KHz
          2. G.711 8KHz
          3. G.726: 16Kbps, 24Kbps, 32Kbps, 40Kbps
          4. AAC-LC: 48Kbps at 16KHz
    3. Electrical
       1. Power
          1. Input Voltage / Current: PoE (IEEE802.3af, Class3), 24V AC, 12 DC
          2. Power Consumption

12V DC: Heater on Max. 11.55W, Heater off Max. 10.45W

PoE: Heater on Max. 12.95W, Heater off Max. 11.77W

24V AC (50/60Hz): Heater on Max. 14.08W, Heater off Max. 12.43W

* + 1. Mechanical And Environmental
       1. Material
          1. Housing: Aluminum
       2. Dimensions (W x H x D): 82.4 x 87.0 x 348.3 mm (3.24 x 3.43 x 13.71 in.) without sunshield
       3. Weight: 1.4kg (3.09 lb.)
       4. Temperature
          1. Operating: -40° C to 55° C (-40° F to 131° F)
          2. Storage: -40° C to 60° C (-40° F to 140° F)
       5. Humidity: 0 - 90%, non-condensing
       6. Environmental Rating
          1. Mechanical (Vandal) Protection: IK10
       7. Ingress Protection: IP66

END OF SECTION