

Hanwha Vision is a leading supplier of advanced video surveillance solutions for IP-video, analog and hybrid systems. 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-efficiency. Hanwha Vision is committed to the continued development of innovative systems products for professional security applications.

For additional information, visit <http://www.hanwhavision.com/>

1. **PRODUCTS**
   1. **EQUIPMENT**
      1. Manufacturer : Hanwha Vision (https://www.hanwhavision.com)
      2. Model : PNM-C16083RVQ
      3. Alternates : none
   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 and H.264 – frame rates to 30/25 fps (60Hz/50Hz)
            2. MJPEG – frame rates to 30/25 fps (60Hz/50Hz) @4MP Max. 5fps
         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. Resolution selections
            1. 2592x1520, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
         4. Simultaneous unicast access by up to 10 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 camera device shall have the following physical and performance properties:
         1. The camera shall be able to produce clear images in highly contrast scenes with multi-exposure wide dynamic range.
         2. IP66, IK10, NEMA4X, NEMA-TS 2(2.2.8, 2.2.9) rated for protection against impacts.
         3. Auto day/night operation with removable IR cut filter
            1. Low light level operation to 0.075 lux (color) and 0 lux (black and white)
         4. 2D and 3D digital noise reduction
         5. Integral IR illumination, providing effective visibility of up to 20m(with HPoE) at 0 Lux when activated in Black & White mode.
         6. 6 privacy masking regions with polygonal.
         7. 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 integral intelligent operations and analytic functions to include:
         1. Motion detection with 8 definable detection areas with 8 point polygonal zones, and minimum/maximum object size.
         2. Detection of logical events of specified conditions from the camera’s video
            1. Classified object type:

Person

Vehicle

* + - * 1. Attributes

Vehicle Type: car/bus/truck/motorcycle/bicycle

* + - * 1. Support BestShot
        2. Analytics events based on AI engine

Object detection

Virtual line(Crossing/Direction)

Virtual area(Loitering/Intrusion/Enter/Exit)

* + - * 1. Analytics events

Defocus detection

Motion detection

Tampering

Audio detection

Sound classification

Virtual area(Appear/Disappear)

* + 1. Interoperability – The camera shall be ONVIF Profile S and T compliant.
    2. The 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:

Analytics

Network disconnect

Alarm input with NW I/O Box

App event

Time schedule

MQTT subscription

* + - * 1. 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

Audio clip playback

MQTT: publication

* + - 1. Pixel Counter available in the plug-in web viewer.
      2. HPoE capable
      3. IP66, NEMA4X, IK10
      4. 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.
  1. **CAMERA SOFTWARE**
     1. The 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. Image
           1. Sensor : 1/2.8" CMOS x 4CH
           2. Minimum illumination

Color mode : 0.075Lux (1/30sec, F1.6, 30IRE)

Black & white mode :

0.075Lux (IR LED off)

0Lux (IR LED on)

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

Camera Title

Off / On (Displayed up to 85 characters per line)

W/W : English / Numeric / Special characters

China : English / Numeric / Special / Chinese characters

Common : Multi-line (Max. 5), Color (Grey / Green / Red / Blue / Black / White), Transparency, Auto scale by resolution

Day/night setting

Auto (ICR) / Color / B/W / External / Schedule

Backlight compensation (BLC)

BLC, WDR, SSDR

WDR

120dB

Contrast Enhancement

Off / On

Digital Noise Reduction (DNR)

SSNRⅤ,

WiseNRⅡ(Based on AI engine)

Motion Detection

Off / On (8ea polygonal zones)

Privacy Masking

Off / On (6ea polygonal zones)

Color: Grey/Black/White

Gain Control

Low / Middle / Max

White Balance

ATW / AWC / Manual / Indoor / Outdoor

Electronic shutter speed

Minimum / Maximum / Anti flicker(1/5~1/12,000sec)

Prefer shutter control(Based on AI engine)

Image flip

Off / On

Image mirror

Off / On

Alarm I/O

External device support

Alarm Triggers

Analytics, Network disconnect, Alarm input, App event, Time schedule, MQTT subscription

Alarm Events

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

Audio clip playback

MQTT: publication

Pixel Counter

Available in the plug-in web viewer.

* + - * 1. Lens : 3.3~5.7mm(1.7x) motorized varifocal

Aperture Ratio

F1.5(Wide)~F1.9(Tele)

Angle of view:

H: 100°(Wide)~53°(Tele)

V: 54°(Wide)~30°(Tele)

D: 125°(Wide)~61°(Tele)

Min. Object Distance

1.3m(4.27ft)

Focus control

Simple focus

Lens Type

Fixed iris

* + - 1. IR Viewable Length :
         1. PoE+: WiseIR 15m(49.21ft)
         2. HPoE: WiseIR 20m(65.62ft)
      2. PTR
         1. PAN

360° Endless

* + - * 1. TILT

0°~65°

* + - * 1. Rotate

0°~90°

* + - 1. Video Streams
         1. The 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:

2592x1520, 1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240

Maximum frame rate:

H.265/H.264: Max. 30fps/25fps(60Hz/50Hz)

MJPEG: Max. 30fps/25fps(60Hz/50Hz) (@4MP Max. 5fps)

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. Audio
         1. Audio In

Selectable(mic in/line in)

* + - * 1. Audio Out

Line out

* + - * 1. 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

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

Card type : Micro SD/SDHC/SDXC

Capacity : 2slot 1TB(512GB x 2)

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

* + - 1. Interoperability
         1. Video streams shall be capable of supporting ONVIF protocol, profiles S and T.
      2. Single Images
         1. The camera shall support jpg file image screenshot and export.
      3. Memory
         1. 8GB RAM, 1GB Flash
    1. Network
       1. Connectivity
          1. Metal shielded RJ-45(10/100/1000BASE-T)
       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
          1. The camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
       4. Quality of Service (QoS)
          1. Layer 3 DSCP
       5. Security features
          1. Secure boot, Signed firmware, Firmware encryption
          2. Digest Authentication, Privent brute-force attack
          3. 802.1X Authentication(EAP-TLS, EAP-LEAP, EAP-PEAP MSCHAPv2)
          4. HTTPS, SRTP, WSS(Websocket secure)
          5. IP address filtering
          6. Authentication information encryption, ZIP compression encryption
          7. User Access/System/Event log
          8. Device Certificate(Hanwha Private Root CA)
          9. TPM 2.0 with FIPS 140-2 level2
       6. Discovery
          1. Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
    2. Application Programming Interface
       1. ONVIF Profile S/T
       2. SUNAPI(HTTP API)
       3. Wisenet open platform
    3. Electrical
       1. Power
          1. Input Voltage

PoE+(IEEE802.3at Type2, Class4)

HPoE(IEEE802.3bt Type3, Class6)

* + - * 1. Power Consumption

PoE+: Max 25.5W, typical 22.0W

HPoE: Max 33.0W, typical 22.0W

* + 1. Mechanical And Environmental
       1. Color / Material
          1. White / Aluminum
          2. Bubble: Hard-coated dome
       2. Dimensions (W x H)
          1. ø250x114.2mm(ø9.84x4.50")
       3. Weight
          1. 2730g(6.02 lb)
       4. RAL Code
          1. RAL9003
       5. Compatible Conduit hole / Gangbox
          1. Conduit hole: 19.1mm(3/4"")(M25)
          2. Gangbox: Single, Double, 4"" Octagon, Square
       6. Hanging Mount (Dome)
          1. SBP-250HMW, SBP-276HMW
       7. Temperature:
          1. Operating

-40°C~+55°C(-40°F~+131°F)

\* Start up should be done at above -35°C

* + - * 1. Storage

-50°C~+60°C(-58°F~+140°F) / 0~90% RH

* + - * 1. Humidity

0~95% RH(non-condensing)

Humidity control /w Air vent

* + - 1. Certifications
         1. EMC

FCC 47 CFR 15 Subpart B Class A

ICES-3(A)/NMB-3(A)

CE/UKCA

EN 55032 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

* + - * 1. Safety

UL 62368-1, CAN/CSA C22.2 NO. 62368-1

IEC/EN 62471

* + - * 1. Environmental

IEC/EN 63000

IEC/EN 60529 IP66, IEC/EN 62262 IK10

NEMA 250 type 4X

* + 1. DORI
       1. Detect (25PPM/ 8PPF) : Wide: 43.5m(142.71ft) / Tele: 104.0m(341.13ft)
       2. Observe (63PPM/ 19PPF) : Wide: 17.4m(57.09ft) / Tele: 41.6m(136.45ft)
       3. Recognize (125PPM/ 38PPF) : Wide: 8.7m(28.54ft) / Tele: 20.8m(68.23ft)
       4. Identify (250PPM/ 76PPF) : Wide: 4.3m(14.27ft) / Tele: 10.4m(34.11ft)

END OF SECTION