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: QNV-C9083R
		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 – Max. 30/25fps (60Hz/50Hz) at all resolution
				2. MJPEG – Max. 30fps(@8MP 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. The camera shall be able to configure various resolution selections.
				1. 16:9 aspect ratio: 3840x2160, 3328x1872, 3072x1728, 2688x1520, 1920x1080, 1280x720, 800x448, 640x360
				2. 4:3 aspect ratio: 2592x1944, 1600x1200, 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 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, Dynamic GOV and Dynamic fps to efficiently manage bit rate of the video stream and reduce storage.
			8. The camera shall provide WiseNRⅡ that working based on AI engine for reduce noise and blur on image.
		2. Camera – The camera device shall have the following physical and performance properties:
			1. IP66, IK10 rated for protection against impacts
			2. True day/night operation with removable IR cut filter
			3. The camera shall be able to produce clear images in highly contrast scenes with multi-exposure wide dynamic range up to 120dB.
			4. The camera shall support digital noise reduction using both 2D and 3D noise reduction technology.
			5. The camera shall be able to configure 32 privacy masking areas with 4 points quadrangle zones.
			6. 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
				1. Analytics events based on AI engine(Person, Vehicle)

Motion detection

Object detection: Person/Vehicle(Car/Bus/Truck/Motorcycle/Bicycle)

Virtual line(Crossing/Direction)

Virtual area(Loitering/Intrusion/Enter/Exit)

* + - * 1. Analytics events

Defocus detection

Tampering

Virtual area(Appear/Disappear)

* + - 1. Motion detection with 8 definable detection areas with 8 point polygonal zones, and minimum/maximum object size
			2. Defocus detection that event can be created when defocus of the camera lens is detected
			3. Tampering detection that event can be created when the screen is blocked or the camera position is changed
			4. Classified object types are Person and Vehicle.
			5. Attribute support Vehicle Type(car/bus/truck/motorcycle/bicycle)
			6. Camera supports DetectionShot
		1. Interoperability – The camera shall be ONVIF Profile S, G, T and M compliant.
		2. The camera shall possess the following further characteristics:
			1. Built-in web server, accessed via non-plugin browsers including Google Chrome, IE11, MS Edge, Mozilla Firefox and Apple Safari.
			2. Micro SD/SDHC/SDXC memory card with configurable pre-alarm and post-alarm recording intervals
			3. NAS recording option with configurable pre-alarm and post-alarm recording intervals
			4. Alarms and notifications
				1. alarm notification triggers:

Alarm input

Motion detection

Video analytics

Network disconnect

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

File Upload via FTP and E-mail

Notification via E-mail

Local storage (SD / SDHC / SDXC) or NAS recording at event triggers

Alarm output

Handover(PTZ preset, Send message by HTTP/HTTPS/TCP)

Audio clip playback

* + - 1. Pixel Counter available in the web viewer.
			2. PoE capable including heater by PoE
			3. IP66, IK10 capable
	1. **DETAILED SPECIFICATIONS**
		1. Video
			1. Imaging device: 1/2.8" CMOS
			2. Scanning: Progressive
			3. Minimum Illumination
				1. Color: 0.06Lux (F1.6, 1/30sec)
				2. BW: 0.006Lux (F1.6, 1/30sec, 30IRE)
				3. 0Lux(IR LED on)
		2. Lens:
			1. Focal length: 3.2~10.2mm(3.2x) motorized varifocal
			2. Max. Aperture Ratio: F1.6(Wide) ~ F3.1(Tele)
			3. Field of View
				1. H: 104°(Wide)~31°(Tele)
				2. V: 55°(Wide)~17°(Tele)
				3. D: 124°(Wide)~35°(Tele)
			4. Min. Object Distance: 1.2m (3.93ft)
			5. Focus Control: Simple Focus
			6. Lens Type: DC auto iris(IR Corrected)
		3. Pan & Tilt & Rotate
			1. Range: 0°~350° / -35°~70°/ 0°~355°
		4. Operational Functions
			1. Camera Title: Off / On (Displayed up to 85 characters)
			2. Day/Night Setting: Auto (ICR) / Color / B/W / Schedule
			3. IR Viewable Length: 30m(98.42ft)
			4. Backlight Compensation: Off / BLC / WDR
			5. WDR: 120dB
			6. Digital Noise Reduction: SSNRⅤ, WiseNRⅡ(Based on AI engine)
			7. Digital Image Stabilization: None
			8. Defog: None
			9. Motion Detection: 8ea, 8point Polygonal zones
			10. Privacy Masking: 32ea, 4point quadrangle zones
			11. Gain Control: Off / Low / Middle / High
			12. White Balance: ATW / AWC / Manual / Indoor / Outdoor
			13. Lens Distortion Correction: Support
			14. Electronic Shutter Speed: Min / Max / Anti-flicker (1/5 ~ 1/12,000sec)
			15. Digital PTZ: Support(Preset, Group)
			16. Image Rotation: Flip, Mirror, Hallway view(90°/270°)
			17. Alarm I/O
				1. Input 1ea
				2. Output 1ea
				3. Alarm I/O is supported through an optional cable(SPP-C7400)
			18. Alarm Triggers: Analytics, Network disconnect, Alarm input
			19. 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. Audio clip playback
			20. Pixel Counter: Support
			21. Storage: Micro SD/SDHC/SDXC 256GB (1 slots) , NAS support
			22. Intelligent Analytics with AI
				1. Motion detection
				2. Object detection: Person/Vehicle((Car/Bus/Truck/Motorcycle/Bicycle)
				3. Virtual line(Crossing/Direction),
				4. Virtual area(Loitering/Intrusion/Enter/Exit)
			23. Analytics events
				1. Defocus detection
				2. Tampering
				3. Virtual area(Appear/Disappear)
			24. Video Out (Installation)
				1. USB: Micro USB Type B, 1280x720 for installation
			25. Memory: 2GB RAM, 1GB Flash
		5. Video Streams
			1. Video compression: H.265, H.264, MJPEG
			2. Resolution: 3840x2160, 3328x1872, 3072x1728, 2592x1944, 2688x1520, 1920x1080, 1600x1200, 1280x1024,1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240800 x 448, 720 x 576, 720 x 480, 640 x 480, 640 x 360
			3. Maximum Framerate
				1. H.265 / H.264: Max. 30fps at all resolutions
				2. MJPEG: Max. 30fps(@8MP Max. 5fps)
			4. Smart Codec: Manual Mode (area-based: 5EA), WiseStream Ⅱ: Support
			5. Bitrate Control Method
				1. H.265 / H.264: CBR or VBR
				2. MJPEG: VBR
			6. Streaming Capability: Multiple streaming (Up to 5 profiles)
			7. Streaming method: Unicast / Multicast
			8. Simultaneous Users: 20 maximum (Unicast)
			9. Profile set: Max. 10ea
			10. Storage and Recording
				1. The camera shall have onboard SD card storage.

Card type: Micro SD/SDHC/SDXC

Capacity: Up to 256GB (1 slot)

* + - * 1. NAS
			1. Interoperability: ONVIF Profile S / G / T/ M, SUNAPI
		1. Audio
			1. Audio In
				1. Selectable(mic in/line in)
				2. Audio In is supported through an optional cable(SPP-C7400)
			2. Audio Out
				1. Line out
				2. Max. output level 0.5Vrms
				3. Audio Out is supported through an optional cable(SPP-C7400)
			3. 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
		2. Network
			1. Connectivity – 10/100 Base-T Ethernet via RJ-45 connector
			2. Protocol
				1. IP v4 / v6, TCP, UDP
				2. Configuration: DHCP, LLDP
				3. Web service: HTTP, HTTPS
				4. Network Service: ARP, Bonjour, DNS, ICMP, NTP, SNMP v1/2c/3 – MIB-2, UPnP
				5. Media: RTP, RTCP, RTSP
				6. Unicast: SRTP
				7. Multicast: IGMP
				8. Notifications: FTP, SMTP
				9. Remote Access: PPPoE
			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. User password protection
				2. The device shall not provide a manufacture default password. Default password change shall be required to access the camera.
				3. A minimal level of password complexity shall be required by the camera.
				4. The camera shall not have a manufacture back-door password.
				5. The manufacturer shall provide a tool that provides the ability to make password changes to multiple cameras at the same time.
				6. IP address filtering – List of allowed or blocked IP addresses
				7. SRTP secured video communication for multicast.
				8. Digest login authentication.
				9. User access log.
				10. 802.1X Authentication (EAP-TLS, EAP-LEAP)
				11. Device Certificate (Hanwha Vision Root CA)
				12. HTTPS(SSL/TLS) login authentication and secured video communication with TLS v1.3
				13. Disk encryption on SD card recording (AES-256)
				14. File encryption on local disk recording via web browser (AES-256)
				15. Mutual Authentication (Client Authentication) for secure communication
				16. Secure OS and Security Boot
			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. Power
				1. Input Voltage / Current: PoE (IEEE 802.3af, Class3)
				2. Power Consumption: Max 12.95W, typical 5.3W
		4. Mechanical And Environmental
			1. Color/Material: White / Aluminum
				1. Bubble: Hard-coated dome
			2. Dimensions (W x H): ø140x110.2mm(ø5.51x4.34")
			3. Weight: 875g(1.93 lb)
			4. Compatible Conduit Hole: None
			5. Gangbox: single, double, 4” octagon
			6. Hanging Mount(Dome): SBP-140HMW
			7. Temperature And Humidity
				1. Operating: 30°C~+55°C(-22°F ~ +131°F) / 0~95% RH(non-condensing)

Starts up should be done at above -30°C

Humidity control /w Air vent

* + - * 1. Storage: -50°C~+60°C(-58°F ~ +140°F) / 0~95% RH
			1. Mechanical (Vandal) Protection: IK10
			2. Ingression Protection: IP66
		1. DORI Distance
			1. Detect(25PPM/ 8PPF): Wide: 60.0m(196.86ft) / Tele: 276.9m(908.57ft)
			2. Observe(63PPM/ 19PPF): Wide: 24.2m(78.74ft) / Tele: 111.7m(363.43ft)
			3. Recognize(125PPM/ 38PPF): Wide: 12.0m(39.37ft) / Tele: 55.4m(181.71ft)
			4. Identify(250PPM/ 76PPF): Wide: 6.0m(19.69ft) / Tele: 27.7m(90.86ft)
		2. EMC & Safety
			1. FCC
				1. 47 CFR Part 15 Subpart B(ANSI C63.4a-2017 Class A)
				2. ICES-003 Issue 7(ANSI C63.4a-2017 Class A)
			2. CE
				1. EMC-Directive 2014/30/EU(EN 55032:2015/A11:2020 Class A, EN 50130-4:2011)
			3. UKCA
				1. Regulations 2016(EN 55032:2015/A11:2020 Class A, EN 50130-4:2011)
			4. RCM AS/NZS CISPR 32:2015 AMD 1:2020 Class A
			5. VCCI CISPR 32:2016 Class A
			6. KS C 9832 Class A, KS C9835
			7. UL 62368-1, CSA C22.2 62638-1:19, IEC 62471
			8. CE EN IEC 63000:2018 (hazardous substances)

END OF SECTION