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-A26081
		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 / H.264: Max. 30fps
				2. MJPEG: Max. 30fps (@26MP Max. 1fps)
			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. 6240x4160 (WiseAI off 30fps, WiseAI on 20fps), 3840x2160, 2880x1920, 1920x1280, 1600x1200, 1440x960, 1280x800, 1024x768, 1280x720, 720x480, 640x480
			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 WiseStreamⅢ on AI engine 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. 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.
			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 8point polygonal 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. Classified object type: Person / Face / Vehicle / License plate
			2. Attributes: Person (Gender, Color and Bag), Face (Age, Gender, Mask and Glasses), Vehicle (Type: car / bus / truck / motorcycle / bicycle and Color)
			3. Support Bestshot per object
			4. Analytics events based on AI engine
				1. Object detection: Person / Face / Vehicle / License plate
				2. Virtual line\* (Crossing / Direction), Virtual area\* (Loitering / Intrusion / Enter / Exit) \*Some of the video analytics only works with people and vehicle detection
				3. Motion detection: 8 definable detection areas with 8 points
				4. Audio Detection
			5. Analytics events: Defocus detection, Tampering, Audio detection, Virtual area (Appear / Disappear)
			6. Business Intelligence based on AI engine.
				1. People counting, Queue management, Heatmap, Vehicle counting.
		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. PoE++ capable including heater
			5. Impact protection, Water & Dust protection
			6. 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.
			7. NDAA Compliant
	3. **DETAILED SPECIFICATIONS**
		1. Video
			1. Imaging device: Diagonal 28.3mm 1.8" CMOS
			2. Resolution: 6240x4160(WiseAI off 30fps, WiseAI on 20fps), 3840x2160, 2880x1920, 1920x1280, 1600x1200, 1440x960, 1280x800, 1024x768, 1280x720, 720x480, 640x480
			3. Maximum Framerate
				1. H.265 / H.264: Max. 30fps
				2. MJPEG: Max. 30fps@26MP Max. 1fps
			4. Minimum Illumination
				1. Color: 0.2Lux (F4.0, 1/30sec)
				2. BW: 0.02Lux (F4.0, 1/30sec)
			5. Video Out: Micro USB Type C, 1280x720 for installation
		2. Lens:
			1. Focal length: 55 ~ 250mm (4.54x) manual varifocal
			2. Max. Aperture Ratio: F4(Wide) ~ F5.6(Tele)
			3. Field of View
				1. H:24°(Wide) ~ 5.4°(Tele)
				2. V:16°(Wide) ~ 3.6°(Tele)
				3. D:29°(Wide) ~ 6.5°(Tele)
			4. Min. Object Distance: 0.85m (2.8ft)
			5. Focus Control: Simple focus
			6. Lens Type: Canon EF-S 55~250mm F4-5.6 IS STM
		3. Operational Functions
			1. Camera Title: Displayed up to 85 characters
			2. Day & Night: Auto (ICR)
			3. Backlight Compensation: BLC / SSDR
			4. Digital Noise Reduction: SSNRⅤ, WiseNRⅡ(Based on AI engine)
			5. Motion Detection: 8ea, 8 point polygonal zones
			6. Privacy Masking: 6ea, rectangle zones (Color: Gray / Black / White)
			7. Gain Control: Off / Low / Middle / High
			8. White Balance: ATW / AWC / Manual / Indoor / Outdoor
			9. Electronic Shutter Speed
				1. Min / Max / Anti-flicker (1/5 ~ 1/12,000sec)
				2. Prefer shutter control (Based on AI engine)
			10. Digital PTZ: support
			11. Video Rotation: Flip, Mirror, Hallway view (90° / 270°)
			12. Analytics
				1. Classified object type: Person / Face / Vehicle / License plate
				2. Attributes: Person (Gender, Color and Bag), Face (Age, Gender, Mask and Glasses), Vehicle (Type: car / bus / truck / motorcycle / bicycle and Color)
				3. Support Bestshot per object
				4. Analytics events based on AI engine

Object detection

Virtual line\* (Crossing / Direction), Virtual area\* (Loitering / Intrusion / Enter / Exit) \*Some of the video analytics only works with people and vehicle detection

Motion detection

* + - * 1. Analytics events: Defocus detection, Tampering, Audio detection, Virtual area (Appear / Disappear)
			1. Business Intelligence: (based on AI engine) People counting, Queue management, Heatmap, Vehicle counting
			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/video clip): e-mail/FTP/SFTP
				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
				7. MQTT: publication
			5. Audio in
				1. Selectable (mic in / line in)
				2. Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm
			6. Audio out: Line out, Max output level 1Vrms
			7. Edge Storage: Micro SD/SDHC/SDXC 2 slot 1TB
			8. Memory: 8GB RAM, 16GB EMMC
		1. Network
			1. Ethernet: Metal shielded RJ-45 (10/100/1000 BASE-T), SFP slot(100/1000Mbps)
			2. Video compression
				1. H.265 / H.264: Main / High
				2. MJPEG
			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
			4. Smart Codec: Manual (5ea area), WiseStream Ⅲ (using AI engine)
			5. Bitrate Control Method
				1. H.265 / H.264: CBR or VBR
				2. MJPEG: VBR
			6. Streaming
				1. Unicast (20 users) / Multicast
				2. Multiple streaming: Up to 10 profiles
			7. Protocol: IPv4, IPv6, TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL/TLS, DHCP, FTP, SFTP, SMTP, SMTPS ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, UPnP, Bonjour, LLDP, CDP, SRTP (TCP, UDP Unicast), MQTT
			8. DDNS – The camera shall support DDNS services offered by the manufacturer and others publicly available service offerings
			9. QoS – Layer 3 DSCP
			10. Application Programming Interface
				1. ONVIF Profile S / G / T/ M
				2. SUNAPI (HTTP API)
		2. 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, 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 Techwin Root CA)
			9. Secure Storage: TPM, SD card partition encrypt
			10. Security Certificate: TPM with FIPS 140-3 level 3
			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
		3. General
			1. Discovery – The manufacturer shall offer a discovery program to identify all devices of them on the network.
			2. Configuration – The manufacturer shall offer a configuration program that remotely allows users to change settings on multiple cameras simultaneously.
			3. Firmware upgrade – The manufacturer shall offer a program capable of upgrading multiple cameras at the same time (not requiring access to individual cameras).
			4. 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.
			5. 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.
		4. Electrical
			1. Input Voltage: IEEE802.3bt type3, Class6, Injector not included), DC12
			2. Power Consumption
				1. PoE++: Max 44.3W, typical 24.9W
				2. 12VDC: Max 35.4W, typical 19.6W
		5. Mechanical And Environmental
			1. Color/Material: White / Aluminum, PC(Polycarbonate)
			2. RAL Code: RAL9003
			3. Dimensions (W x H x D): 193.5x193.5x532mm (7.62" x 7.62" x 20.94"),
			4. Weight: 8100g(17.86lb)
			5. Operating Temperature & Humidity: -40°C ~ +55°C (-40°F ~ +131°F) / Less than 90% RH
			6. Storage Temperature & Humidity: -50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH
		6. DORI Distance
			1. Detect (25PPM / 8PPF): Wide: 587.1m(1,926.3ft) / Tele: 2,646.4m(8,682.3ft)
			2. Observe (63PPM / 19PPF): Wide: 234.9m(770.5ft) / Tele: 1,600m(3,472.9ft)
			3. Recognize (125PPM / 38PPF): Wide: 117.4m(385.3ft) / Tele: 529.3m(1,736.5ft)
			4. Identify (250PPM / 76PPF): Wide: 58.7m(192.6ft) / Tele: 264.6m(868.2ft)
		7. Certification
			1. EMC
				1. FCC 47 CFR 15 Subpart B Class A
				2. ICES-3(A)/NMB-3(A)
				3. CE/UKCA: EN 55032 Class A, EN 50130-4, EN 61000-3-2, EN 61000-3-3
				4. RCM AS/NZS CISPR 32 Class A
			2. Safety
				1. UL 62368-1
				2. CAN/CSA C22.2 NO. 62368-1
				3. IEC/EN 62471
			3. Environment
				1. IEC/EN 63000
				2. IEC/EN 60529 IP66/67,
				3. IEC/EN 62262 IK10
				4. NEMA 250 type 4X

END OF SECTION