**SECTION 28 23 29**

**VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

**Advanced Technology Video NVW4K311M IP Vandal Dome Camera**

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*This guide specification is intended for use by the design/construction professional and any user of Advanced Technology Video (ATV) products to assist in developing project specifications for security and video surveillance systems.*

*Notes in Italics, such as this one, are explanatory and intended to guide the design professional/specifier and user in the proper selection and use of materials. This specification should be modified where necessary to accommodate individual project conditions.*

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1. **GENERAL**
	1. SUMMARY
		1. Section includes Video Surveillance Remote Devices and Sensors.
		2. Related Sections:
			1. Section 28 23 13 – Video Surveillance Control and Management Systems
			2. Section 28 23 16 – Video Surveillance Monitoring and Supervisory Interfaces
			3. Section 28 23 19 – Digital Video Recorders and Analog Recording Devices
			4. Section 28 23 23 – Video Surveillance Systems Infrastructure
	2. SYSTEM DESCRIPTION
		1. Description: Video surveillance and monitoring at points as indicated on Drawings.
			1. NVW4K311M 4K (8MP) Resolution, Vari-Focal Lens, IP Vandal Dome Camera
		2. Performance Requirements
			1. 1/2.5” format Sony Starvis CMOS sensor
			2. 4K (8MP), 3840 x 2160 resolution
			3. Quad Video Streams Simultaneously up to 30-ips at 2160p Resolution using H.264 / H.265 and MJPEG Compression
			4. TRUE Day/Night functionality
			5. True Wide Dynamic Range
			6. ONVIF Profile S compliant
			7. IR LED lights
			8. Weather resistant, metal enclosure
			9. Supports a Micro-SD Memory Card Slot for Local, Event Detection Recording
			10. The camera shall be of manufacturer’s official product line, designed for commercial/industrial continuous 24/7 use.
			11. The camera shall be based upon standard components and proven technology.
	3. DEFINITIONS
		1. TRUE Day/Night (infrared sensitive): A camera that has normal color operation in situations where there is sufficient illumination (day conditions), but where the sensitivity can be increased when there is little light available (night conditions). This is achieved by removing the infrared cut filter required for good color rendition. The sensitivity can be further enhanced by integrating a number of fields to improve the signal-to-noise ratio of the camera (this may introduce motion blur).
		2. Privacy Masking: The ability to mask out a specific area to prevent it from being viewed in order to comply with privacy laws and particular site requirements.
	4. SUBMITTALS
		1. Submit under provisions of Section 01 33 00 - Submittal procedures.
		2. Shop Drawings: Indicate electrical characteristics and connection requirements, including system wiring diagram.
		3. Product Data: Submit catalog data showing electrical characteristics and connection requirements for each component.
	5. CLOSEOUT SUBMITTALS
		1. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
		2. Project Record Documents: Record actual locations of cameras and routing of cabling.
		3. Operation and Maintenance Data: Submit instructions for operating system and performing routine trouble shooting procedures.
	6. QUALIFICATIONS
		1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.
		2. Supplier: Authorized distributor of specified manufacturer with minimum 5 years documented experience.
		3. Installer: Authorized installer of specified manufacturer with 5 years documented experience and service
	7. ENVIRONMENTAL REQUIREMENTS
		1. Section 01 60 00 - Product Requirements.
		2. Conform to manufacturer’s standard service conditions during and after installation of components.
	8. FIELD MEASUREMENTS
		1. Verify field measurements prior to fabrication.
	9. DELIVERY, STORAGE AND HANDLING
		1. Comply with requirements of Section [01 60 00].
		2. Deliver materials in manufacture’s original, unopened, undamaged containers; and unharmed original identification labels.
		3. Protect store materials from environmental and temperature conditions following manufacturer’s instructions.
		4. Handle and operate products and systems according to manufacturer’s instructions.
	10. MAINTENANCE SERVICE
		1. Section 01 70 00 - Execution and Closeout Requirements: Maintenance service.
		2. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
		3. Provide factory direct technical support via phone and e-mail.
		4. Furnish service and maintenance of video surveillance system for one year from Date of Substantial Completion.
2. PRODUCTS
	1. CAMERAS
		1. Manufacturers:
			1. Advanced Technology Video
			2. Substitutions: Section 01 60 00 - Product Requirements: Not Permitted.
		2. Model: NVW4K311M
		3. Product Description: 4K (8MP) Resolution, Vari-Focal Lens, IP Vandal Dome Camera
		4. Camera Image Sensor: 1/2.5” format Sony Starvis CMOS.
		5. Lens: Motorized Vari-focal 3.6 ~ 11mm, F1.5
		6. General Characteristics:
			1. The IP vandal dome camera shall be a cast-aluminum housing and shall provide protection against water and dust ingress up to IP66 (NEMA 4X) standards. It shall also be rated IK10 for impact resistant standards.
			2. The IP vandal dome camera shall utilize 1/2.5-inch Sony Starvis CMOS sensor capable of producing up to 3840 x 2160 resolution.
			3. The IP vandal dome camera shall provide direct network connection using H.264 / H.265 and MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			4. The IP vandal dome camera shall offer Progressive Scanning for sharper video motion images.
			5. The IP vandal dome camera shall offer Power over Ethernet (IEEE 802.3af Class 0).
			6. The IP vandal dome camera shall be ONVIF Profile S compliant.
			7. The IP vandal dome camera shall offer true wide dynamic range technology that allows for the capture of clear images from both light and dark areas in the same scene.
			8. The IP vandal dome camera shall provide eight independent, fully programmable privacy mask areas.
			9. The IP vandal dome camera shall have a motorized 3.6 ~ 11mm, vari-focal, F1.5 lens.
			10. The IP vandal dome camera shall provide an on-screen display to simplify the camera/lens back focus and network configuration settings.
			11. The IP vandal dome camera shall provide IR LED lights for 0Lux night time operation up to 98 feet.
			12. The IP vandal dome camera shall provide a color image with a minimum scene illumination of 0.03Lux and a monochrome image, when in the night mode and the IR LED’s on, with a minimum scene illumination of 0.0Lux.
			13. The IP vandal dome camera shall provide enhanced night viewing through the increase of IR sensitivity by automatically switching a motorized IR filter from color to monochrome operation in low-light or IR illuminated applications. Allow the IR filter to be preprogrammed in a camera mode or profile.
			14. The IP vandal dome camera shall utilize pixel-by-pixel analysis to automatically compensate for bright areas of a high contrast scene (Back light) without having to define a window or area.
			15. The IP vandal dome camera shall provide support for two-way audio capability.
			16. The IP vandal dome camera shall have 3-axis gimbal for maximum camera adjustment.
			17. The IP vandal dome camera shall provide micro-SD memory card slot for local, event recording.
		7. Installation Requirements
			1. Shall contain a full-featured camera and integral, vari-focal length lens.
			2. Shall be capable of being mounted to a surface, wall, corner, and suspended ceiling.
			3. Shall provide power, video, and control via an Ethernet connection.
			4. Shall provide secondary power connection on barrel connector.
			5. Shall provide audio in/out connection (terminal block)
			6. Shall provide a multi-language on-screen display.
		8. IP Connectivity
			1. The IP vandal dome camera shall allow full camera control and configuration capabilities over the network.
			2. The IP vandal dome camera shall offer Power over Ethernet (IEEE 802.3af Class 0).
			3. The IP vandal dome camera shall be capable of capturing and storing images using H.264 / H.265 and MJPEG encoding and compression at following resolution levels: 3840 x 2160 ~ 320 x 240.
			4. The IP vandal dome camera shall deliver high-quality 3840 x 2160 resolution video at rates up to 30 images per second, via TCP/IP over Cat5/Cat6 UTP cable; and leverage bandwidth throttling and multicasting capabilities to manage bandwidth and storage requirements efficiently while delivering the best possible image quality and resolution.
			5. The IP vandal dome camera shall generate independent H.264 /H.265 and MJPEG streams simultaneously.
			6. The IP vandal dome camera shall be ONVIF Profile S compliant.
		9. Alarm Handling Features:
			1. The IP dome camera shall provide an alarm input / output (Terminal Block) that may be signal the camera to react on events. The input can be activated from an external alarm to the camera, manual activation from the browser, upon video motion detection, or video loss. The output can activate external devices such as buzzers or lights.
		10. Sensor
			1. Type: 1/2.5-inch Sony Starvis CMOS
			2. Active Pixels:
				1. NTSC: 3840(H) x 2160(V)
		11. IP Video
			1. Video Compression: H.264 / H.265, MJPEG
			2. H.264 / H.265 Profile: Baseline, Main, High
			3. Streaming: Multiple, individually configurable streams in H.264 / H.265 and MJPEG, simultaneously in controllable frame rate and bandwidth VBR/CBR H.264 and MPEG-4
			4. Frame rate:
				1. 30-ips at all resolutions
			5. Resolution:
				1. 320 x 240 up to 3840 x 2160
		12. Video
			1. Shutter: 1/10,000 to 1 sec
			2. Min. Illumination: Color, 0.03Lux; B/W, 0Lux (F1.5, 50IRE with IR LED’s On)
			3. TRUE Day / Night (ICR)
			4. Wide Dynamic Range (WDR): 120dB
			5. Backlight Compensation
			6. 2D & 3D-DNR
			7. Image Effect:
				1. Flip: the video image is flipped horizontally
				2. Mirror: the video image is reversed like a reflection in a mirror
				3. Defog: electronically compensates for weather conditions such as fog, smoke, drizzle, etc. to provide clearer image
				4. Aisle (Corridor View): rotates the video image 90° clockwise or counter clockwise for viewing narrow hallways or aisle.
			8. Privacy Masking: 8 zones
			9. Motion Detection: 16 areas
			10. Auto White Balance
			11. Digital Zoom
		13. Video Content Analysis (VCA): Analytics
			1. Tampering
			2. Intrusion Detector
			3. iVMD
		14. Audio
			1. Standard G.711
			2. Streaming: 2-way
		15. Advanced Intelligent Health Monitoring (AIHM)
			1. Triggers an event when abnormal camera functionality occurs
				1. Record status change
				2. Micro-SD card formatting
		16. Software Control
			1. Unit Configuration: SmartManager Utility tool or ATVision IP Remote Management Software
			2. Software Update: Web browser, SmartManager Utility tool or ATVision IP Remote Management Software
		17. Network
			1. Protocols: TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, QoS, FTP, uPnP, RTP, RTSP, RTCP, DHCP, ARP. Zeroconf, Bonjour
			2. Security: Multi-user authority, HTTPS, IP Filtering, Privacy Zone
			3. Ethernet: 10Base-T/100 Base-TX, RJ45
			4. Power over Ethernet: IEEE 802.3af Class 0
		18. Optical
			1. Motorized Vari-Focal 3.6 ~ 11mm lens
			2. Iris Control: electronic auto-iris
			3. Angle of View: 87° ~ 38°(H)
		19. Electrical:
			1. Input Power: 12V DC (+/- 10%), 60Hz or Power over Ethernet (PoE), IEEE 802.3af Class 0
			2. Power Consumption (with IR LED On): maximum 9.6W, 200mA 12VDC or 8.3W , 690mA PoE
		20. Mechanical:
			1. Pre-packaged, cast-aluminum housing: White color
			2. Complete vandal housing to be IP66 and IK10 rated
			3. Clear, polycarbonate dome bubble
			4. IR LED’s: 28 LED lights, 98ft (30M) maximum range indoor, 80ft (25M) maximum range outdoor
			5. 3-axis gimbal adjustment range:
				1. Pan: 355°
				2. Tilt: 70°
				3. Rotation: 355°
			6. Secondary Power Input: barrel connector
			7. Audio: 1 / 1; Terminal Block
			8. Alarm: 1 / 1; Terminal Block
			9. Dimensions (Dia x W): 5.7 x 3.86in (144 x 98mm)
			10. Weight: 1.7lbs (0.79kg)
			11. Operating Temperature: -22ºF ~ 140ºF (-30ºC ~ +60ºC)
			12. Operating Humidity: 0 to 90% RH (non-condensing)
		21. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. NEMA-4X (IP66)
			4. Underwriters Laboratories (UL)
			5. IEC (IK-10)
		22. Accessories
			1. HCS254V: Flush Mount
			2. HDB243X: Wall Mount
			3. HDB453: Pendant Mount
			4. HDA502: Junction Box
			5. HCM160: Corner Mount
			6. HDA401: Wedge Mount
			7. HPDA3: Pendant Cap
		23. Remote Management Software
			1. ATVision IP Remote Management Software and SmartManager Utility tool are complimentary and provided at no cost. Get the latest version at [www.atvideo.com](http://www.atvideo.com).
				1. Software available in Windows and Mac operating system versions
3. EXECUTION
	1. EXISTING WORK
		1. Disconnect and remove abandoned video surveillance equipment.
		2. Extend existing video surveillance installations using materials and methods compatible with existing installations as specified.
		3. Clean and repair existing video surveillance equipment remaining or to be reinstalled.
	2. EXAMINATION
		1. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.
		2. Do not begin installation until unacceptable conditions are corrected.
	3. PREPARATION
		1. Protect devices from damage during construction.
	4. INSTALLATION
		1. Install devices in accordance with manufacturer’s instruction at locations indicated on the floor drawings plans.
		2. Perform installation with qualified service personnel.
		3. Install devices in accordance with the National Electrical Code or applicable local codes.
		4. Ensure selected location is secure and offers protection from accidental damage.
			1. Ground and bond video surveillance equipment in accordance with Section 26 05 26.
		5. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.
	5. FIELD QUALITY CONTROL
		1. Test snugness of mounting screws of all installed equipment.
		2. Test proper operation of all video system devices.
		3. Determine and report all problems to the manufacturer’s customer service department.
	6. MANUFACTURER'S FIELD SERVICES
		1. Section 01 40 00 - Quality Requirements: Manufacturer's field services.
		2. Furnish manufacturer’s field representative to supervise final wiring connections and system adjustments.
	7. ADJUSTING
		1. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.
		2. Make proper adjustment to video system devices for correct operation in accordance with manufacturer’s instructions.
		3. Make any adjustment of camera settings to comply with specific customer’s need.
		4. Adjust manual lens irises to meet lighting conditions.
	8. DEMONSTRATION AND TRAINING
		1. Demonstrate at final inspection that video management system and devices function properly.
		2. Demonstrate at final inspection camera’s functionality and video recording capabilities.

END OF SECTION