**SECTION 28 23 29**

**VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

**Uniview Technology IPV540 StarView Vandal Dome IP Camera**

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*This guide specification is intended for use by the design/construction professional and any user of Uniview Technology 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. IPV540, 5MP Resolution, StarView, TRUE Day/Night, WDR, IR, Fixed Lens, Vandal Dome, IP Camera
		2. Performance Requirements
			1. 1/2.7”, OmniVision CMOS Sensor
			2. StarView Low-Light Color Illumination with Hisilicon H.265 DSP
			3. 5M, 2592 x 1944 resolution
			4. Progressive Scanning
			5. Triple Video Streams Simultaneously, up to 20-ips, 1944p Resolution using H.265, Ultra H.265, H.264 or MJPEG Compression
			6. U-code enhanced encoding technology
			7. TRUE Day/Night functionality
			8. Wide Dynamic Range
			9. Two-way audio
			10. ONVIF Profile S compliant
			11. Smart IR LED
			12. Powerful Video Content Analysis Features such as Cross Line Detection, Audio Detection, Scene Change, People Counting
			13. Cloud Upgradable with connection to uniview tec NVR
			14. High impact, IK-10 rated vandal-resistant enclosure
			15. Weather resistant IP67 rated
			16. Wide voltage range tolerance
			17. Lightning Surge Protection
			18. Optical Defog technology
			19. Supports Automatic Network Replenishment (ANR)
			20. Corridor mode viewing option
			21. Wide operating temperature range
			22. PoE function optional use as backup to DC power loss
			23. The camera shall be of manufacturer’s official product line, designed for commercial/industrial continuous 24/7 use.
			24. High security levels for password setup with password strength evaluation
			25. Supports a Micro-SD Memory Card Slot for Local, Event Detection Recording
			26. 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. H.265 (also known as MPEG-H Part 2): a powerful encoding format that has become the successor to H.264 (MPEG-4 Part 10) standard. Recording video in H.265 format requires approximately 50% less storage than video recorded with H.264.
		3. 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: IPV540
		3. Product Description: 5MP Resolution, StarView, TRUE Day/Night, WDR, IR, Fixed Lens, Vandal Dome, IP Camera
		4. Camera Image Sensor: 1/2.7” OmniVision CMOS
		5. Lens: 4mm fixed, F1.6
		6. General Characteristics:
			1. The IP vandal dome camera shall be a IK10 rated impact, vandal-resistant, cast-aluminum housing, polycarbonate dome and hardened inner liner able to withstand the equivalent of 55kg (120lbs) of force; and shall provide protection against water and dust ingress up to IP 66 (NEMA 4X) standards.
			2. The IP vandal dome camera shall utilize 1/2.7-inch OmniVision CMOS sensor with progressive scanning, capable of producing up to 2592 x 1944 resolution.
			3. The IP vandal dome camera shall provide direct network connection using H.265, Ultra H.265, H.264 and MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
				1. Low bitrate of approximately 2Mbps with 5MP resolution using Ultra H.265 compression
			4. The IP vandal dome shall provide U-Code, an enhanced encoding technology based on H.264 / H.265, which can reduce storage space for video by up to 80-90%.
			5. The IP vandal dome camera shall offer Progressive Scanning for sharper video motion images.
			6. The IP vandal dome camera shall offer Power over Ethernet (IEEE 802.3af).
			7. The IP vandal dome camera shall be ONVIF Profile S compliant.
			8. The IP vandal dome camera shall offer wide dynamic range technology that allows for the capture of clear images from both light and dark areas in the same scene.
			9. The IP vandal dome camera shall provide eight independent, fully programmable privacy mask areas.
			10. The IP vandal dome camera shall have a 4mm fixed lens.
			11. The IP vandal dome camera shall have StarView Low-Light Color Illumination with Hisilicon H.265 DSP which provides a color image with a minimum scene illumination of 0.005 Lux; and a monochrome image, when in the night mode and the IR LED’s on, with a minimum scene illumination of 0.0Lux.
			12. 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.
			13. The IP vandal dome camera shall provide an on-screen display to simplify the camera/lens adjustments and network configuration settings.
			14. The IP vandal dome camera shall provide Smart IR LED for 0 Lux night time operation up to 98 feet (30m). Smart IR shall automatically adjust IR LED intensity to avoid over-exposure.
			15. 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.
			16. The IP vandal dome camera shall provide angle adjustment of 355° Pan; 70° Tilt; 355° Rotation.
			17. The IP vandal dome camera shall provide support for two-way audio capability.
			18. The IP vandal dome camera shall provide micro-SD memory card slot for local continuous and event recording.
		7. Installation Requirements
			1. Shall contain a full-featured camera and integral fixed lens.
			2. Shall be capable of being mounted to a surface, wall, corner or suspended ceiling.
			3. Shall provide power, video, and control via an Ethernet connection.
			4. Shall provide secondary power connection on a barrel connector.
			5. Shall provide a multi-language on-screen display.
			6. Shall provide audio in/out pair of leads
		8. Alarm Handling Features:
			1. The IP dome camera shall provide an alarm input / output (pair of leads) 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.
		9. 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).
			3. The IP vandal dome camera shall be capable of capturing and storing images using H.265, Ultra H.265, H.264 and MJPEG encoding and compression at following resolution levels: 2592 x 1944 ~ 720 x 576.
			4. The IP vandal dome camera shall deliver high quality, 2592 x 1944 resolution video at rates up to 20 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.265, Ultra H.265, H.264 or MJPEG streams simultaneously.
			6. The IP vandal dome camera shall be ONVIF Profile S compliant.
		10. Sensor
			1. Type: 1/2.7-inch OmniVision CMOS
			2. Active Pixels:
				1. NTSC: 2592(H) x 1944(V)
		11. IP Video
			1. Video Compression: H.265, Ultra H.265, H.264, MJPEG
			2. H.264 Profile: Baseline, Main, High
			3. U-Code, an enhanced encoding technology based on H.264 / H.265, which can reduce storage space for video by up to 80-90%.
			4. Low bitrate of approximately 2Mbps with 5MP resolution using Ultra H.265 compression
			5. Streaming: Multiple, individually configurable streams in H.265, Ultra H.265, H.264 or MJPEG, simultaneously
			6. Frame rate per stream:
				1. Main: 5MP (2592 x 1944) @20 fps; 5MP (2592 x 1944) @25fps (WDR OFF); 4MP (2560 x 1440) @30 fps; 3MP (2048x 1536) @30 fps; 2MP (1920 x 1080) @30 fps
				2. Sub: 2MP (1920 x 1080) @ 30fps
				3. Third Stream: D1 (720×576) @ 30fps
		12. Video
			1. OmniVision CMOS Sensor
			2. Hisilicon H.265 DSP (StarView Low-Light Color Illumination)
				1. Min. Illumination:

Color 0.005 Lux (F1.6, AGC On)

B/W 0 Lux (with IR LED On)

* + - 1. Shutter: 1/6 ~ 1/100,000 sec
			2. Scanning Mode: Progressive
			3. TRUE Day / Night (ICR): IR-cut filter with auto switch
			4. Wide Dynamic Range (WDR): 120dB
			5. Digital Noise Reduction: 2D & 3D-DNR
			6. Image Effect:
				1. Defog: electronically compensates for weather conditions such as fog, smoke, drizzle, etc. to provide clearer image
				2. Corridor View: rotates the video image 90° clockwise or counter clockwise for viewing narrow hallways or aisle.

9:16 Ratio

* + - 1. Privacy Masking: up to 8 areas
			2. Motion Detection: up to 4 areas
			3. ROI: up to 8 areas
			4. OSD: up to 8 areas
			5. Back Light Compensation
			6. Auto White Balance
		1. Video Content Analysis (VCA): Analytics
			1. Behavior
				1. Intrusion detection
				2. Cross Line detection
				3. Motion detection
			2. Exception
				1. Audio detection
			3. Identification
				1. Face detection
				2. Defocus detection
				3. Scene Change detection
			4. Statistical
				1. People Counting
		2. Audio
			1. Standard G.711
			2. Streaming: 2-way
		3. Software Control
			1. Unit Configuration: Uniview tec Guard Tool Utility & Guard Station Software
			2. Software Update: Cloud Upgradable with connection to uniview tec NVR’s
		4. Network
			1. Protocols: IPv4, IGMP, ICMP, ARP, TCP, UDP, DHCP, PPPoE, RTP, RTSP, RTCP, DNS, DDNS, NTP, FTP, UPnP, HTTP, HTTPS, SMTP, 802.1x, SNMP
			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
			5. Edge Storage: Micro-SD card slot, with capacity for card storage of up to 128GB
			6. ANR (Automatic Network Replenishment) Function
				1. Automatically stores video data on the storage card when the network is disconnected
				2. After recovery of the network, the NVR automatically retrieves the video data stored on the camera
			7. Password security strength evaluation shall be employed with different criteria for LAN and WAN, with strong password mandated for WAN only.
		5. Optical
			1. Fixed focal length: 4mm lens
			2. Iris Control: electronic auto-iris
			3. Angle of View: 86.9°(H)
		6. Electrical:
			1. Input Power: 12VDC or Power over Ethernet (PoE), IEEE 802.3af
			2. Power Consumption (with IR LED On): PoE or 12VDC: maximum 5.5W
			3. PoE can function as backup to DC power loss
			4. Wide voltage range tolerance: +/- 25%
			5. Lightning surge protection: up to 6KV
		7. Mechanical:
			1. Vandal Resistant, pre-packaged, cast-aluminum housing
			2. Complete dome housing to be IP67 and IK10 rated
			3. Clear, polycarbonate dome bubble
			4. IR LED
				1. One (1) LED light
				2. 65° view angle
				3. Automatic intensity adjustment (Smart IR)
				4. 850nm wavelength
				5. 98ft (30M) maximum range, under the best conditions
			5. Adjustment range:
				1. Pan: 355°
				2. Tilt: 70°
				3. Rotation: 355°
			6. Secondary Power Input: barrel connector
			7. Audio: 1 / 1; Pair of Leads
			8. Alarm: 1 / 1; Pair of Leads
			9. Dimensions (Dia x H): 4.28 x 3.2in (108.5 x 81mm)
			10. Weight: 0.99lbs (0.45kg)
			11. Operating Temperature: -31ºF ~ 140ºF (-35ºC ~ 60ºC)
			12. Operating Humidity: 10 to 95% RH (non-condensing)
		8. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. NEMA-4X (IP67)
			4. IEC (IK-10)
		9. Accessories
			1. TR-WM03-A-IN: Wall Mount
			2. TR-UP06-IN: Pole Mount
			3. TR-JB03-D-IN: Junction Box
			4. TR-UM06-B-IN: Wedge Mount
			5. TR-CE45-IN: Pendant Mount
			6. TR-UF45-D-IN: Pendant Mount Adapter
		10. Remote Management Software
			1. Uniview tec Guard Station Software is complimentary and provided at no cost. Get the latest version at: <http://univiewtechnology.com/support-center/client-software-vms/>
				1. Available in Windows and Mac operating system versions
			2. Uniview tec Guard Tool Utility Software is also complimentary and available through the same link provided above.
1. 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