**SECTION 28 23 29**

**VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

**Uniview Technology IPCSD4K22X PTZ 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. IPCSD4K22X, 4K (8MP) Resolution, TRUE Day/Night, WDR, IR, 22x PTZ Dome, IP Camera
		2. Performance Requirements
			1. 1/1.8”, progressive scan, CMOS sensor
			2. 4K (8MP), 3840 x 2160 resolution
			3. Triple Video Streams Simultaneously, up to 30-ips, 2160p Resolution using H.265, Ultra H.265, H.264 or MJPEG Compression
			4. TRUE Day/Night
			5. Wide Dynamic Range
			6. Two-way audio
			7. ONVIF Profile S compliant
			8. Smart IR LED Lights
			9. High speed PTZ dome with 1024 pre-set positions, 16 patrols and 16 patterns
			10. 22x, 6.5 – 143mm, auto-focus, optical zoom lens with 16x digital zoom function
			11. Weather resistant enclosure
			12. The camera shall be of manufacturer’s official product line, designed for commercial/industrial continuous 24/7 use.
			13. Supports a Micro-SD Memory Card Slot for Local, Event Detection Recording
			14. 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: IPCSD4K22X
		3. Product Description: 4K (8MP) Resolution, TRUE Day/Night, WDR, IR, 22x PTZ Dome, IP Camera
		4. Camera Image Sensor: 1/1.8” CMOS.
		5. Lens: 22x, 6.5 – 143mm, auto-focus, optical zoom lens with 16x digital zoom function
		6. General Characteristics:
			1. The IP camera shall provide protection against water and dust ingress up to IP 66 (NEMA 4X) standards.
			2. The IP camera shall utilize 1/1.8-inch CMOS sensor capable of producing up to 3840 x 2160 resolution.
			3. The IP 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.
			4. The IP camera shall offer Progressive Scanning for sharper video motion images.
			5. The IP camera shall be ONVIF Profile S compliant.
			6. The IP 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.
			7. The IP camera shall support the following modes:
				1. 1024 user-defined pre-set camera views
				2. Sixteen (16) patrols
				3. Sixteen (16) patterns
				4. Endless auto-pan capability
			8. The IP camera shall provide eight independent, fully programmable privacy mask areas.
			9. The IP camera shall offer a 22x, 6.5 – 143mm, auto-focus, optical zoom lens with 16x digital zoom function
			10. The IP camera shall provide pan and tilt preset repeatability accurate to within ±0.1 degrees.
			11. The IP camera shall provide an on-screen display to simplify the camera/lens adjustments and network configuration settings.
			12. The IP camera shall provide IR LED lights for 0 Lux night time operation up to 825 feet (250m).
			13. The IP camera shall provide a color image with a minimum scene illumination of 0.003 Lux and a monochrome image, when in the night mode and the IR LED’s on, with a minimum scene illumination of 0.0 Lux.
			14. The IP 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.
			15. The IP 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 camera shall provide support for two-way audio capability.
			17. The IP camera shall provide variable speed from 0.1º/sec to 300º/sec:
			18. The IP camera shall provide a pan range of 360 degrees of continuous rotation.
			19. The IP camera shall be able to be mounted to a wall mount or to a pendant pipe mount from a ceiling or overhang.
			20. The IP camera shall provide micro-SD memory card slot for local continuous and event recording.
		7. Installation Requirements
			1. Shall contain a full-featured PTZ camera dome and integral, motorized varifocal lens.
			2. Shall be capable of being mounted to a surface, wall, pole and corner.
			3. Shall provide video and control via an Ethernet connection.
			4. Shall provide power connection on a barrel connector.
			5. Shall provide a multi-language on-screen display.
			6. Shall provide audio in/out stereo jack connectors
		8. Alarm Handling Features:
			1. The IP PTZ dome shall provide a TTL input / output that may be selected for normally opened or normally closed operation. The input can be activated from an external alarm to the camera, manual activation from the browser, upon video motion detection, or video loss.
		9. IP Connectivity
			1. The IP camera shall allow full camera control and configuration capabilities over the network.
			2. The IP 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: 3840 x 2160 ~ 720 x 576.
			3. The IP 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.
			4. The IP camera shall generate independent H.265, Ultra H.265, H.264 or MJPEG streams simultaneously.
			5. The IP camera shall be ONVIF Profile S compliant.
		10. Sensor
			1. Type: 1/1.8-inch CMOS
			2. Active Pixels:
				1. NTSC: 3840(H) x 2160(V)
		11. IP Video
			1. Video Compression: H.265, Ultra H.265, H.264, MJPEG
			2. H.264 Profile: Baseline, Main, High
			3. Streaming: Multiple, individually configurable streams in H.265, Ultra H.265, H.264 or MJPEG, simultaneously
			4. Frame rate per stream:
				1. Main: 4K (8MP) (3840 × 2160), Max.30fps; or 2MP (1920 × 1080) @ 30fps
				2. Sub: 2MP (1920 x 1080) @ 25fps
				3. Third Stream: D1 (720 × 576) @ 30fps
		12. Video
			1. Shutter: 1 ~ 1/100,000 sec
			2. Min. Illumination: Color 0.003 Lux (F1.5, AGC On); B/W 0 Lux (with IR LED’s On)
			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. Electronic Image Stabilization (EIS): an electronic process that compensates for vibration or movement of the camera due to machinery or wind, which causes the video image to be blurry.
			7. Privacy Masking: up to 24 areas
			8. Motion Detection: up to 8 areas
			9. ROI: up to 8 areas
			10. OSD: up to 8 areas
			11. Back Light Compensation
			12. Auto White Balance
		13. Video Content Analysis (VCA): Analytics
			1. Perimeter
			2. Exception
			3. Object
			4. Statistical
		14. Audio
			1. Standard G.711
			2. Streaming: 2-way
		15. Software Control
			1. Unit Configuration: Guard Tool Utility & Guard Station Software
			2. Software Update: Cloud Upgrade with connection to Uniview Tec NVR’s
		16. 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, QoS
			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 256GB
			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.
		17. Optical
			1. Lens: 22x, 6.5 – 143mm, auto-focus, motorized zoom lens
			2. Iris Control: electronic auto-iris
			3. Angle of View (H x V): 58.9° ~ 3.4° x 35.2° ~ 1.9° (wide ~ tele)
			4. 16x digital zoom function
		18. Electrical:
			1. Input Power: 24VAC, 24VDC or PoE (Injector Req’d)
			2. Power Consumption (with IR LED On): maximum 60W
		19. Mechanical:
			1. Cast-aluminum, weather resistant housing
			2. Complete dome housing to be IP66 rated
			3. IR LED Light: 656ft (200M) maximum range indoor, under the best conditions
			4. Power Input: barrel connector
			5. Audio: 1 / 1; RCA
			6. Alarm: 1 / 1; Terminal Block
			7. Dimensions (Ø x H): Ø227 x 359.4mm (Ø8.9” x 14.2”)
			8. Weight: 5.55kg (12.24lb)
			9. Operating Temperature: -40ºF ~ 158ºF (-40ºC ~ 70ºC)
			10. Operating Humidity: 10 to 95% RH (non-condensing)
		20. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. NEMA-4X (IP66)
		21. Accessories
			1. TR-WE45-A-IN: Wall Mount
			2. TR-UP08-A-IN: Pole Mount
			3. TR-UC08-A-IN: Corner Mount
			4. TR-CE45-IN: Pendant Mount
			5. TR-UF45-A-IN: Pendant Mount Adapter
			6. TR-WE45-B-IN: Parapet Mount
			7. KB-1100: Keyboard Controller
			8. TR-JB12-IN: Junction Box for the TR-WE45-A-IN Wall Mount
		22. 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
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