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**MEGApix® Ai CaaS™ 4K LOW-PROFILE VANDAL DOME IP CAMERA**

**DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

**28 20 00 Video Surveillance**

**28 21 00 Surveillance Cameras**

**28 21 13 IP Cameras**

**Notes to Specifier:**

1. Where several alternative parameters or specifications exist or where the specifier has the option of inserting text, such choices are presented in **<bold text>.**

2. Explanatory notes and comments are presented in **colored** text.

3. CSI MasterFormat 2016 incorporates numerous significant changes affecting electronic safety and security. This document is written to provide flexibility in using either format, although the adoption of MasterFormat 2016 is encouraged. The following is a guide to the MasterFormat numbers relevant to the product referenced in this specification.

4. MasterFormat 2014 Specification Category:

28 23 29 - Video Surveillance Remote Devices and Sensors

**MEGApix® Ai™ 4K low-profile vandal dome IP camera with AI and color in near-total darkness**

1. **GENERAL**
	1. **SUMMARY**
		1. The section includes a 4K high-definition outdoor IP video camera with embedded Video Management System (VMS) server software (“IP edge camera”) in a vandal-resistant IP-67 rated, IK10 impact-resistant low-profile vandal dome housing.
		2. Product - A high-definition IP low-profile vandal dome camera, based on H.265, H.264 and MJPEG compression, capable of dual streaming 30fps at resolutions up to 3840(H) x 2160(V), with color in near-total darkness technology and a 2.7-13.5mm vari-focal lens in a weather-resistant low-profile vandal dome housing, with embedded video management server software.
		3. The MEGApix Ai cameras have an edge-based AI engine with real-time object classification for intelligent video solutions.
		4. Related Requirements
			1. 27 15 01.13 – Video Surveillance Communications Conductors and Cables
			2. 28 05 03 – Safety and Security Network Communications Equipment
			3. 28 05 19 – Storage Appliances for Electronic Safety and Security
			4. 28 06 20 – Schedules for Video Surveillance
			5. 28 23 00 – Video Management System
	2. **REFERENCES**
		1. Abbreviations
			1. AGC - Automatic Gain Control
			2. ARP – Address Resolution Protocol
			3. AWB - Automatic White Balance
			4. BLC – Backlight compression
			5. DHCP - Dynamic Host Configuration Protocol
			6. DNR – Digital Noise Reduction
			7. DNS - Domain Name Server
			8. DDNS – Dynamic Domain Name Server
			9. fps - frames per second
			10. FTP - File Transfer Protocol
			11. GUI – Graphical User Interface
			12. HLC – Highlight Compensation
			13. HTTP - Hypertext Transfer Protocol
			14. ICMP – Internet Control Message Protocol
			15. IGMP - Internet Group Management Protocol
			16. IP - Internet Protocol
			17. JPEG - Joint Photographic Experts Group
			18. MJPEG - Motion JPEG
			19. NTP - Network Time Protocol
			20. PoE - Power over Ethernet
			21. QoS – Quality of Service
			22. RARP – Reverse Address Resolution Protocol
			23. RTP - Real-Time Transport Protocol
			24. RTSP - Real-Time Streaming Protocol
			25. SMTP - Simple Mail Transfer Protocol
			26. TCP - Transmission Control Protocol
			27. UDP - User Datagram Protocol
			28. VMS - Video Management System
			29. WDR – Wide Dynamic Range
		2. Reference Standards
			1. Network
				1. IEEE - 802.3 Ethernet Standards
			2. Video
				1. ISO / IEC 14496 – MPEG-4

ISO / IEC 14496–10, MPEG-4 Part 10 (ITU H.264)

* + - * 1. ISO / IEC 10918 – JPEG
				2. ONVIF – Profile S
			1. Emissions
				1. FCC-47 CFR Part 15 Class A
			2. Environmental
				1. ANSI / IEC60529 – Degrees of Protection Provided by Enclosures
				2. International Electrotechnical Commission (IEC) – Ingress Protection Rating IP67
				3. European standard EN 62262 — equivalent to International Electrotechnical Commission (IEC) – Impact Protection Rating IK10
	1. **SUBMITTALS**
		1. Product Data
			1. Manufacturer's printed or electronic datasheets.
			2. Manufacturer's installation and operation manuals.
			3. Warranty documentation.
	2. **QUALIFICATIONS**
		1. The Manufacturer shall have at least five years of experience producing IP video equipment.
		2. Installers shall be trained and authorized by the Manufacturer to install, integrate, test, and commission the system.
	3. **DELIVERY, STORAGE, AND HANDLING**
		1. Deliver the camera in the Manufacturer's original, unopened, and undamaged container with identification labels intact.
		2. Store the camera in a temperature environment of -4° F to 122° F (-20° F to 50° F), protected from mechanical and environmental conditions as designated by the Manufacturer.
	4. **WARRANTY AND SUPPORT**
		1. The Manufacturer shall provide a 5-year warranty for the product to be free of defects in material and workmanship.

END OF SECTION

1. **PRODUCTS**
	1. **EQUIPMENT**
		1. Manufacturer: Digital Watchdog, Inc.

 16220 Bloomfield Avenue. Cerritos,

California USA 90703 USA

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 Web: www.digital-watchdog.com

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* + 1. Models DWC-XSDE08MiC1
		2. Alternates: None
	1. **GENERAL DESCRIPTION**
		1. The high-definition outdoor dome IP camera ("IP camera") shall provide video performance capable of providing selectable resolutions up to 3840(H) x 2160(V) pixels at 30 frames per second (fps) with color in darkness technology, Ai analytics capabilities, contained within an IP-67 rated, IK10 impact-resistant low-profile vandal dome housing.
		2. The camera shall include AI deep learning analytics at the edge preinstalled.
		3. The IP edge camera shall make its video viewing and control functions available via a client-side application that accesses the IP camera server's server software.
		4. The IP edge camera shall be able to coexist on an Enterprise network with Video Management servers connected to supported IP cameras that do not have their own embedded VMS server software.
		5. The IP camera server shall be accessible from mobile and web clients.
		6. The IP camera-server shall provide 1 TB of onboard video storage via SD card.
		7. The IP camera shall possess the following characteristics:
			1. H.265, H.264 and MJPEG compression
			2. 4K resolution
			3. Star-Light Plus™ color in near-total darkness technology (0.09 lux)
			4. AI Deep Learning object detection and tracking on one channel
			5. Two independent IP video streams (dual streaming)
			6. Day/night operation with IR cut filter
			7. X5 optical zoom
			8. Option for Integral IR LED illuminator providing 100-foot distance
			9. Integral motion detection
			10. True Wide Dynamic Range
			11. 3D digital noise reduction
			12. Two-way audio
			13. PoE capable
			14. Multicast or unicast capable
			15. Built-in web server
			16. Dynamic DNS (DDNS) support
			17. IP-67 rated
			18. IK-10 impact resistant
			19. NDAA compliant
			20. UL-listed
	2. **VIDEO**
		1. Imager
			1. Sensor: 4K 1/2.8" CMOS sensor
			2. Minimum illumination
				1. Color mode: 0.09 lux (F1.4 – 30IRE)
				2. Black & white mode:0 lux (F1.4 – 30IRE)
			3. Scanning - Progressive
			4. Image Control Settings shall be available for:
				1. Exposure modes: automatic or manual

In manual exposure mode, configurable settings for:

Brightness

Shutter mode: automatic or manual - 1/15 to 1/32000

Digital slow shutter to decrease the shutter speed in low light

Anti-flicker shutter setting to address video flickering issues

Automatic Gain Control (AGC)

Backlight Compensation (BLC)

Wide Dynamic Range (WDR) level

* + - * 1. Day and night settings allow configuration for Day (color), Night (Black and White), or Automatic.
				2. Frequency
				3. Image sharpness
				4. IR LED control
				5. Image mirror or flip
				6. Digital noise reduction
			1. Lens
				1. Lens type: 2.7~13.5mm Vari-focal p-iris lens with motorized zoom and auto-focus
				2. Optical zoom: x5
				3. Field of view (FOV): 33.1°~90.3°
				4. Vertical Field of view (FOV): 18.9°~49°
				5. IR distance: 100ft range
				6. Double shutter Wide Dynamic Range
				7. Shutter speed: 1/15 sec to 1/32000
		1. Video Streams
			1. The IP camera shall support two configurable video streams, selectable from H.265, H.264 and MJPEG.
			2. The IP camera shall support two configurable video streams, each of which may have the following properties:
				1. Compression Type and Resolution: 3840x2160 for H.265 and H.264 resolutions.

H.265: 2592x1944, 2560x1440, 1920x1080, 1280x720, 640x480, 640x360, 352x288, 352x240

H.264: 2592x1944, 2560x1440, 1920x1080, 1280x720, 640x480, 640x360, 352x288, 352x240

MJPEG: 1280x720, 800x600, 768x432, 704x576, 704x480, 640x480, 640x360, 352x288, 352x240

* + - * 1. Frame rate: 0 – 30 fps
		1. IR Distance: 100 feet
		2. Motion Detection – The IP camera shall be able to detect motion within user-defined areas of the video image.
			1. Configuration settings shall be available for sensitivity and dwell time.
		3. Storage and Recording
			1. The IP camera shall have non-removable SD card storage.
				1. Card Type: Micro SD/SDHC/SDXC Class 10
				2. Up to 1TB micro SD / FAT32
		4. ONVIF – Video streams shall be capable of supporting ONVIF protocol, profile S.
		5. Other
			1. Single Images - The IP camera shall support the jpg file image screenshot and export.
			2. Discovery - The Manufacturer shall offer a discovery program to identify all devices of his manufacture on the network.
			3. Emergency alarm – The IP camera shall allow the sending of a video clip of configurable duration to up to five server locations.
			4. Access - The IP camera shall permit up to five users to simultaneously access the camera.
	1. **AUDIO**
		1. The IP dome camera shall provide one-line level input and one-line level output.
		2. Compression and Sampling Rate: G.711 (8 kHz)
	2. **NETWORK**
		1. Connectivity: 1000Base-T (1Gbps) Ethernet with RJ-45 connector
		2. Protocols supported
			1. Transmission Control Protocol (TCP), Internet Protocol (IP) v4, User Datagram Protocol (UDP)
			2. Configuration: Dynamic Host Configuration Protocol (DHCP), AutoIP
			3. Web services: Hypertext Transfer Protocol (HTTP), HTTPS, SSL
			4. Network services: Domain Name System (DNS), Network Time Protocol (NTP), Internet Control Message Protocol (ICMP), Simple Network Management Protocol (SNMP), SMTP
			5. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP), ONVIF
		3. DDNS – The IP camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
		4. Security
			1. The IP dome camera shall support IP address filtering whereby users can enter a list of allowed or blocked IP addresses for viewing video and configuring camera settings.
			2. The IP dome camera shall provide digest authentication, ID and password protection.
			3. The IP dome camera shall provide three user access levels with password protection.
	3. **EMBEDDED ANALYTICS**
		1. Deep Learning object tracking
		2. Zones and lines, tamper, metadata, intrusion, line crossing, counting, counting lines, appear, disappear, stopped, enter, exit, direction, tailgating, dwell, logical rules.
	4. **ADDITIONAL FEATURES**
		1. Auxiliary Inputs and Outputs
			1. Input: Alarm sensor (contact closure)
			2. Output: Relay
			3. Event trigger: Motion alarm, network loss, temperature anomaly, illegal login, schedule, sensor detection
		2. System Information
			1. The system settings of the IP camera shall be exportable as a separate file.
			2. The IP camera shall maintain an access log of the system and motion-triggered events.
				1. The log shall be exportable to an Excel spreadsheet file.
	5. **CAMERA SOFTWARE**
		1. The IP camera shall have a built-in web server that supports browser-based configuration using Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari.
		2. The software GUI shall allow access to camera information and all primary software functions, including:
			1. Camera network address
			2. Configuration
			3. Stream Control
			4. Screen snapshot, print and export
			5. Start and stop recording
		3. The Manufacturer shall offer a video viewer and configuration to implement the following actions:
			1. Camera discovery
			2. Configuration
				1. video parameters
				2. events and notifications

motion-related

emergency

* + - * 1. camera network parameters
				2. SD card storage recording management
				3. image capture, export, and print
			1. Viewer - view video streams through the web browser
			2. Image print and export
			3. Instant recording and playback
			4. Alerts
				1. e-mail setup
				2. define web addresses for notifications
			5. System
				1. firmware upgrade
				2. reset to factory default
				3. set date, time, and NTP server synchronization
				4. user access control
				5. View and export camera settings
				6. view system logs
	1. **ELECTRICAL**
		1. Power
			1. Sources
				1. DC12V
				2. PoE (IEEE 802.3af. 802.3af Class 3)
			2. Power Consumption
				1. DC12V: 10.2W, 850mA
				2. PoE: 12.5W, 260mA
		2. Connectors
			1. Ethernet: RJ-45 connector
			2. External power (DC12V): 2-conductor power to a terminal block
	2. **MECHANICAL AND ENVIRONMENTAL**
		1. Housing Material: Die-cast Aluminum, polycarbonate dome
		2. Configuration: Outdoor Low-Profile Vandal Dome
		3. Environmental Rating: IP-67
		4. Dimensions (D x H): 4.92 in. x 3.62 in. (125 mm x 92 mm)
		5. Weight: 1.14 lb (0.52kg)
		6. Temperature:
			1. Operating: -4° F to 122° F (-20° C to 50° C)
		7. Humidity: 10 - 90%, non-condensing

END OF SECTION

1. **EXECUTION**
	1. **INSTALLERS**
		1. Contractor personnel shall comply with all applicable state and local licensing requirements.
	2. **PREPARATION**
		1. The network design and configuration shall be verified for compatibility and performance with the camera(s).
		2. Network configuration shall be tested and qualified by the Contractor before camera installation.
	3. **INSTALLATION**
		1. The Contractor shall follow all Manufacturer published installation procedures and guidelines.
		2. Before permanent installation of the system, the system shall be factory tested in conditions simulating the final installed environment
			1. A report indicating successful test results shall be produced.
	4. **STORAGE**
		1. The IP camera hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.

END OF SECTION