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**MEGApix® IVA™ 20MP MLTI-USER PANORAMIC 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® IVA™ 20MP MLTI-USER PANORAMIC DOME IP CAMERA**

1. **GENERAL**
	1. **SUMMARY**
		1. The section includes a 20 MP high definition panoramic multi-sensor IP video camera with vandal-resistant IP-67 rated, IK10 impact-resistant vandal dome housing.
		2. The section includes a high-resolution 90o, 180o, 270o, and 360o user-configurable panoramic camera suitable for outdoor deployment.
		3. Product - A high definition IP Flex™ vandal dome camera, based on H.265, H.264 and MJPEG compression, capable of dual streaming four 30fps at resolution streams at up to 2592(H) x 1944(W), with color in near-total darkness technology and 4x 2.8 ~ 8.0mm vari-focal lenses, capable of producing multiple zoom streams from a single master IP stream.
		4. The MEGApix IVA cameras have a powerful engine to detect and classify people and vehicles in real-time. IVA+ license upgrade offers advanced Video Content Analysis detection capabilities.
		5. 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. APIPA - Automatic Private IP Addressing
			3. ARP – Address Resolution Protocol
			4. AWB - Automatic White Balance
			5. BLC – Backlight compression
			6. DHCP - Dynamic Host Configuration Protocol
			7. DNR – Digital Noise Reduction
			8. DNS - Domain Name Server
			9. fps - frames per second
			10. FTP - File Transfer Protocol
			11. GOP – Group of Pictures
			12. GUI – Graphical User Interface
			13. HLC – Highlight Compensation
			14. HTTP - Hypertext Transfer Protocol
			15. ICMP – Internet Control Message Protocol
			16. IGMP - Internet Group Management Protocol
			17. IP - Internet Protocol
			18. JPEG - Joint Photographic Experts Group
			19. MJPEG - Motion JPEG
			20. MP - Megapixel
			21. MPEG - Moving Pictures Experts Group
			22. NTP - Network Time Protocol
			23. PoE - Power over Ethernet
			24. RTP - Real-Time Transport Protocol
			25. RTSP - Real-Time Streaming Protocol
			26. SMTP - Simple Mail Transfer Protocol
			27. SNMP – Simple Network Management Protocol
			28. TCP - Transmission Control Protocol
			29. UDP - User Datagram Protocol
			30. UPnP – Universal Plug and Play
			31. VMS - Video Management System
			32. WDR – Wide Dynamic Range
			33. ZeroConf – Zero Configuration Networking
		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 B
			2. Environmental
				1. ANSI / IEC60529 – Degrees of Protection Provided by Enclosures
				2. International Electrotechnical Commission (IEC) – Ingress Protection Rating IP67
	1. **SUBMITTALS**
		1. Product Data
			1. Manufacturer’s printed or electronic data sheets
			2. Manufacturer’s installation and operation manuals
			3. Warranty documentation
	2. **QUALIFICATIONS**
		1. The manufacturer shall have a minimum of five years’ experience in 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°C to 50°C), 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

 Phone: (866) 446-3595

 Web: www.digital-watchdog.com

 E-mail: dw-tech@digital-watchdog.com

* + 1. Model DWC-PVX20WATW, DWC-PPVX20WATW

**Digital Watchdog model differences:**

 **DWC-PVX20WATW MEGApix IVA license pre-loaded**

 **DWC-PPVX20WATW MEGApix IVA+ license pre-loaded**

* + 1. Alternates: None
	1. **GENERAL DESCRIPTION**
		1. The 20MP Panoramic Weather-Resistant Camera (“panoramic camera”) shall employ four 5MP CMOS sensors to produce 90°, 180°, 270° and 360° user-configurable panoramic images at up to 30fps at 20MP via a single IEEE 802.3bt compliant connection.
		2. The panoramic camera can be purchased with four (4) 2.8 ~ 8.0mm, F1.6 modules.
		3. The panoramic camera shall provide video performance capable of providing four (4) streams with selectable resolutions up to 2592(H) x 1944(V) pixels at 30 frames per second (fps) with IVA and advanced IVA+ video analytics capabilities.
		4. A single IP video stream from the panoramic camera shall be able to produce multiple zoom streams with virtual camera operation.
		5. The panoramic camera shall be housed in a vandal-resistant IP-67 rated weatherproof, Ik-10 impact-resistant enclosure, suitable for outdoor deployment.
		6. Each lens in the panoramic camera shall be motorized allowing for remote control of rotation and focus and shall have the ability to be tilted to accommodate specific heights and distance from the target.
		7. The panoramic camera shall be ONVIF Profile S compliant.
		8. The panoramic camera shall possess the following further characteristics:
			1. H.265, H.264 and MJPEG compression
			2. Intelligent Video Analytics (IVA)
			3. Intelligent Video Analytics (IVA) with extended features (IVA+)
			4. Two independent IP video streams (dual streaming)
			5. Day/night operation with IR cut filter
			6. A low light level operation to 0.05 lux (color)
			7. 3D digital noise reduction
			8. Two-way audio
			9. Alarm input and output
			10. PoE capable
			11. Built-in web server
			12. 4 Micro SD/SDHC/SDXC
			13. Integral motion detection
			14. Wide Dynamic Range (WDR): 120 dB minimum
			15. Multicast or unicast capable
	2. **VIDEO**
		1. Imager
			1. Sensors (4): 1/2.8" 5.14MP CMOS
				1. pixels per sensor: 2592(H) x 1944(V)
			2. Minimum illumination
				1. Color mode: 0.41 lux (F1.6)
				2. B/W mode: 0.1 lux (F1.6)
			3. Image Control Settings shall be available for:
				1. Automatic white balance (AWB)
				2. Exposure modes: automatic or manual

In manual exposure mode, configurable settings for:

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

slow speed: 1 ~ 1/5,1/7.5,1/10 seconds

Anti-flicker shutter setting to address video flickering issues

Automatic Gain Control (AGC)

Wide Dynamic Range (WDR) level

* + - * 1. Day and night settings, to allow configuration for Day (color), Night (Black and White), or Automatic.
				2. Image mirror or flip
				3. Digital noise reduction
			1. Lenses (4): 2.8 ~ 8.0mm, F1.6 vari-focal lens with motorized zoom and auto-focus
				1. Angle of view

Horizontal Field of view (HFoV): 4x 51° ~ 93°

Vertical Field of view (VFoV): 4x 39° ~ 68°

Double shutter Wide Dynamic Range

Shutter speed: 1/15 sec to 1/32000

* + - * 1. Manual functions:

Motorized zoom

Focus adjustment

* + - * 1. The lenses shall have the option for auto-focus which will locate the sharpest image setting averaged over the entire individual scene and maintain lens focus position even after a reboot
		1. Video Streams
			1. The panoramic camera shall support two configurable video streams per channel, each of which may have the following properties:
				1. Resolution: 4x 2592(H) x 1944(V)
				2. Streams:

Number: 4

Frames per second: 30fps

GOP size: user-controllable

* + - * 1. Compression Type and Resolution:

4x H.265: 2592x1944, 2560x1440, 1920x1080, 704x576, 704x480, 640x480, 640x360, 352x288, 352x240

4. H.264: 2592x1944 2560x1440 1920x1080 704x576 704x480 640x480 640x360 352x288 352x240

4x MJPEG: 1920x1080, 1280x720, 800x600, 768x432, 704x576, 704x480, 640x480, 640x360, 352x288, 352x240

* + - * 1. Bit rate: 100 Kbps – 10 Mbps, controllable for minimum and maximum
				2. Frame rates vs. resolution:

20 MP: up to 30 fps, per sensor

* + 1. Motion Detection – The IP camera shall have the ability to detect motion within user-defined areas of the video image.
			1. Configuration settings shall be available for sensitivity and dwell time.
		2. Storage and Recording
			1. The panoramic control shall have onboard SD card storage.
				1. Card Type: 4 x Micro SDHC Class 10
			2. Local recording on the SD card shall commence upon loss of network connectivity, based on a pre-programmed schedule.
			3. The local SD storage shall have the ability to be backed up to alternate media without the removal of the SD card from the camera.
		3. ONVIF – Video streams shall be capable of supporting ONVIF protocol, profile S.
		4. 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 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: 10/1000 Base-T Ethernet via RJ-45 connector
		2. Protocols supported
			1. Transmission Control Protocol(TCP), Internet Protocol (IP) v4 and v6, User Datagram Protocol (UDP)
			2. Configuration: Dynamic Host Configuration Protocol (DHCP)
			3. Web services: Hypertext Transfer Protocol (HTTP), Secure HTTP (HTTPS)
			4. Network services: Domain Name System (DNS), Network Time Protocol (NTP), Internet Control Message Protocol (ICMP), Simple Network Management Protocol (SNMP)
			5. Media: Real-Time Transport Protocol (RTP), Real-Time Streaming Protocol (RTSP)
			6. Notifications: File Transfer Protocol (FTP), Simple MailTransfer Protocol (SMTP), Telnet
		3. Flow Control. The panoramic camera shall support TCP and Layer 3 QoS protocols to control network congestion.
		4. DDNS – The Panoramic camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
		5. Security
			1. The panoramic 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 panoramic camera shall provide three levels of user access with password protection.
	3. **EMBEDDED ANALYTICS**
		1. IVA license: intrusion, line crossing, counting line, loitering, enter, exit, tamper.
		2. IVA+ license: object removed, tailgating, direction, stopped, appear, disappear, object left, logical rules.
	4. **ADDITIONAL FEATURES**
		1. Auxiliary Inputs and Outputs
			1. Input: Alarm sensor (contact closure)
			2. Output: Relay
		2. System Information
			1. The system settings of the panoramic camera shall be exportable as a separate file.
			2. The panoramic 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 panoramic 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 video viewer and configuration tools to implement the following actions:
			1. Camera discovery
			2. Configuration and control
				1. imager:

active noise filter

localized exposure

back-light compensation

exposure control for ac lighting anti-flicker

advanced exposure settings

metering mode

metering area

exposure target factor

min and max shutter time settings

definable sensor gain control

focus control

day/night settings

* + - * 1. image:

saturation

brightness

hue

manual contrast

sharpness

auto digital WDR

auto contrast

white balance

* + - * 1. events and notifications

motion-related

* + - * 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 record 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. The panoramic camera shall be supported by Video Management Systems from the Manufacturer and third-party manufacturers.
	1. **ELECTRICAL**
		1. Power
			1. Sources
				1. 12 VDC
				2. PoE: PoE IEEE 802.3bt PoE+ class 5 (PoE injector included)
			2. Power Consumption:
				1. 12 VDC: Max 28W
				2. PoE: Max 31W
			3. Ethernet: RJ-45connector
			4. External power (12 VDC): 2-wire pigtail
	2. **MECHANICAL AND ENVIRONMENTAL**
		1. Material:
			1. Housing: Aluminum vandal housing, polycarbonate dome
		2. Configuration: panoramic dome
		3. Dimensions (D x H): 8.26" x 3.61" (210 x 91.8 mm)
		4. Weight: 4.18 lbs (1.9 kg)
		5. Options:
			1. Ceiling Mount Bracket DWC-PV20CMW
			2. Wall Mount Bracket DWC-PV20QWMW
			3. Junction box DWC-V20JUNCW
			4. Flush mount DWC-V20FMW
			5. Corner Mount DWC-V1CNMW
			6. Adapter for Parapet Mount DWC-PV20ADPW
			7. Parapet Mount DWC-PZPARAM (DWC-PZADP required, sold separately)
			8. Pole Mount Bracket DWC-PMB-WLW
		6. Temperature:
			1. Operating
				1. standard: -4°F ~ 122°F (-20°C ~ 50°C)
		7. Humidity: 10 - 90%RH, non-condensing
		8. Environmental Rating: IP67-rated

IK-10 impact-resistant

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 issued instructions for the installation of the product.
		2. Before permanent installation of the system, the Contractor shall test the system in conditions simulating the final installed environment
			1. A report indicating successful test results shall be produced.
	4. **STORAGE**
		1. The panoramic camera hardware shall be stored in an environment where temperature and humidity are in the range specified by the Manufacturer.
	5. **ATTACHMENTS**
		1. Supported Third-Party VMS Systems

END OF SECTION

**Attachment A – Supported Third-Party VMS Systems**

Genetec

Milestone

Exacq