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**MEGApix® Ai CaaS™ 5MP BULLET 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

**5 MP Automatic license-plate recognition (ALPR) and Make, Model and Color bullet IP camera with Ai**

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 bullet housing.
      2. Product - A high-definition IP bullet camera, based on H.265, H.264, and MJPEG compression, capable of dual streaming 30fps at resolutions up to 2592(H) X 1944(V), with Star-Light Plus™ color in near-total darkness technology and a 6 ~ 50mm vari-focal lens in a bullet 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. The camera shall include a preinstalled Automatic License Plate Recognition (ALPR) plug-in with make, model, and color (MMCR).
      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. ALPR – Automatic license-plate recognition
         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. DDNS – Dynamic Domain Name Server
         10. fps – frames per second
         11. FTP – File Transfer Protocol
         12. GUI – Graphical User Interface
         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. MMCR – Make, Model, Color
         20. NTP – Network Time Protocol
         21. PoE – Power over Ethernet
         22. RTP – Real-Time Transport Protocol
         23. RTSP – Real-Time Streaming Protocol
         24. SMTP – Simple Mail Transfer Protocol
         25. TCP – Transmission Control Protocol
         26. UDP – User Datagram Protocol
         27. VMS – Video Management System
         28. 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 B
      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 an environment with a temperature of -40 ° F to 122° F (-40 ° 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. Models DWC-XSBA05LiPC1
    2. Alternates: None
  1. **GENERAL DESCRIPTION**
     1. The high-definition bullet IP camera ("IP camera") shall provide video performance capable of delivering selectable resolutions up to 2592(H) X 1944(V) pixels at 30 frames per second (fps) with Star-Light Plus™ color in darkness technology, Ai analytics capabilities and, contained within an IP-67 rated, IK10 impact-resistant bullet housing.
     2. The camera shall include AI deep learning analytics at the edge preinstalled.
     3. The camera shall have a preinstalled Automatic License Plate Recognition (ALPR) plug-in with make, model, and color (MMCR).
     4. 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.
     5. 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.
     6. The IP camera server shall be accessible from mobile and web clients.
     7. The IP camera-server shall provide 1 TB of onboard video storage via SD card.
     8. The IP camera shall possess the following characteristics:
        1. H.265, H.264 and MJPEG compression
        2. 5MP resolution
        3. Color in darkness technology (0.1 lux)
        4. AI deep Learning object detection and tracking on one channel
        5. Automatic License Plate Recognition (ALPR) with Make, Model and color (MMCR) identification
        6. Two independent IP video streams (dual streaming)
        7. Day/night operation with IR cut filter
        8. 8x optical zoom
        9. Option for Integral IR LED illuminator providing 100-foot distance
        10. Integral motion detection
        11. True Wide Dynamic Range
        12. 3D digital noise reduction
        13. Two-way audio
        14. PoE capable
        15. Multicast or unicast capable
        16. Built-in web server
        17. Dynamic DNS (DDNS) support
        18. IP-67 rated
        19. IK-10 impact resistant
        20. NDAA-compliant
        21. TAA-compliant
        22. UL-listed
  2. **VIDEO**
     1. Imager
        1. Sensor: 1/2.8" 5.69MP Star-Light Plus™ CMOS sensor
        2. Minimum illumination
           1. Color mode: 0.1 lux (F1.6 – 30IRE)
           2. Black & white mode:0 lux (F1.6 – 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)

Wide Dynamic Range (WDR) level, 120dB

* + - * 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: 6~50mm Vari-focal p-iris lens with motorized zoom and auto-focus
         2. Optical zoom: 8x
         3. Horizontal field of view (HFOV): 6.9° ~ 40.8°
         4. Vertical Field of view (VFOV): 5.2° ~ 30.2°
         5. IR distance: 130ft range
         6. Double shutter Wide Dynamic Range, 120dB
         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:

H.265: 2592x1944, 2560x1440, 1920x1080, 1280x720, 800x600, 704x576, 704x480, 640x480, 640x360, 352x288, 352x240.

H.264: 2592x1944, 2560x1440, 1920x1080, 1280x720, 800x600, 704x576, 704x480, 640x480, 640x360, 352x288, 352x240.

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

* + - * 1. Frame rate: 0 – 30 fps
    1. IR Distance: 130 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 onboard SD card storage.
          1. Card Type: Micro SD/SDHC/SDXC Class 10
          2. Up to 1TB micro SD / FAT32
       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 be backed up to alternate media without removing the SD card from the camera.
    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 manufactured by his Manufacturer 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 access the camera simultaneously.
  1. **AUDIO**
     1. The IP camera shall provide one-line level (1.0Vms, 3K ohm) input and one-line level output.
     2. Compression and Sampling Rate: G.711
  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)
        3. Web services: Hypertext Transfer Protocol (HTTP)
        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)
     3. DDNS – The IP camera shall support DDNS services offered by the Manufacturer and other publicly available service offerings.
     4. Security
        1. The IP 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 camera shall provide digest authentication, ID and password protection.
        3. The IP 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.
     3. ALPR: Optical character recognition captures and reads vehicle license plates.
     4. Make, Model and Color (MMCR): Classify vehicles, make, model and color across numerous brands.
     5. ALPR range in day/night: 23 ~ 165ft (7 ~ 50m) / 23 ~ 131ft (7 ~ 40m)
     6. Vehicle speed range: 25 ~ 75mph
  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 IP camera system settings shall be exported 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 802.3at PoE+ Class4
        2. Power Consumption
           1. DC12V: 13.2W, 1.1A
           2. PoE: 14.4W, 48VDC 0.3A
     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: Aluminum die-casting bullet housing
     2. Configuration: Outdoor Bullet
     3. Environmental Rating: IP-67

IK-10

* + 1. Dimensions (D x H): 12.2” x 3.81” (310 x 97mm)
    2. Weight: 2.64 lbs (1.2 kg)
    3. Temperature:
       1. Operating: -40° F to 122° F (-40° C to 50° C)
    4. 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