OCTOBER 2019

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**Product Guide Specification**

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, based on *MasterFormat 2016* and *The Project Resource Manual—CSI Manual of Practice. The Manufacturer is responsible for technical accuracy.*

The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Words and sentences within brackets [ ] are choices to include or exclude a particular item or statement. Coordinate this section with other specification sections and the Drawings. Delete all “Specifier Notes” after editing this section.

**Section 28 21 00: Video Surveillance**

**Section 28 21 13: IP Cameras**

**4 MP 45X IR PTZ NETWORK CAMERA**

1. **– GENERAL**
   1. SUMMARY
      1. Section Includes
         1. Section 28 21 17: Video Surveillance – Surveillance Cameras – Camera Housings
         2. Section 28 21 19: Video Surveillance – Surveillance Cameras – Camera Mounts
         3. Section 28 21 21: Video Surveillance – Surveillance Cameras – Illuminators
         4. Section 28 27 00: Video Surveillance – Video Surveillance Sensors
      2. Related Sections
         1. [Section 28 33 15: Security Detection, Alarm and Monitoring – Security Monitoring and Control – Security Monitoring and Control Software].

\*\*\*\*\*\*\*\*\*\*Specifier’s note: Include those standards referenced elsewhere in this SECTION.

* 1. REFERENCES
     1. Electromagnetic Compatibility
        1. FCC Part 15 Subpart B
        2. ANSI C63.4-2014
     2. Underwriters Laboratories, Inc. (UL) (www.ul.com)
        1. UL60950-1 + CAN/CSA C22.2, No.60950-1
     3. European Standards
        1. EN 55032
        2. EN 55024
        3. EN 50130-4
     4. HD standards
        1. Complies with the SMPTE 274M-2008 Standard in:
           1. Resolution: 1920x1080
           2. Scan: Progressive
           3. Color representation: complies with ITU-R BT.709
           4. Aspect ratio: 16:9
           5. Frame rate: 25 and 30 frames/s
        2. Complies with the 296M-2001 Standard in:
           1. Resolution: 1280x720
           2. Scan: Progressive
           3. Color representation: complies with ITU-R BT.709
           4. Aspect ratio: 16:9
           5. Frame rate: 25, 30, 50 and 60 frames/s
           6. Interference-Causing Equipment Standards
  2. SYSTEM DESCRIPTION
     1. Section Includes
        1. Video Surveillance – Surveillance Cameras – IP Cameras
     2. Performance Requirements
        1. The 4 MP PTZ camera shall be a full-featured 4 MP camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 4 MP PTZ camera shall provide direct network connection using Smart H.265+ and the Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        3. The 4 MP PTZ camera shall offer a 1/2.8-in Progressive-scan CMOS STARVIS™ imager with an effective pixel density of 2560 x 1440 at 30 fps.
        4. The 4 MP PTZ camera shall have a motorized lens with a focal length between 4.5 mm to 135.0 mm and an autofocus lens with 45x optical zoom.
        5. The 4 MP PTZ camera shall support the following dual, redundant power options:
           1. 24 VAC
           2. PoE+ (IEEE 802.3at, class 0)
           3. The 4 MP PTZ camera shall default to use power from the PoE power supply, if connected.
           4. The 4 MP PTZ camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
        6. The 4 MP PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        7. The 4 MP PTZ camera shall offer Analytics+ Functions — Perimeter Protection.
        8. The 4 MP PTZ camera shall offer Auto-tracking that controls the pan/tilt/zoom actions of the camera to automatically track an object in motion and to keep it in the scene.
        9. The 4 MP PTZ camera shall incorporate a built-in defog mode that dynamically adjusts the camera’s contrast to provide improved image quality in scenes affected by fog, smog, mist, smoke or other low-contrast interference.
        10. The 4 MP PTZ camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
        11. The 4 MP PTZ camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
        12. The 4 MP PTZ camera shall offer three separate and configurable streams with individually configurable HD streams.
        13. The 4 MP PTZ camera shall offer bi-directional audio.
        14. The 4 MP PTZ camera shall accept seven (7) incoming alarm connections and offer two (2) outgoing alarm connections.
        15. The 4 MP PTZ camera housing shall conform to the IP67 Ingress Protection and to the IK10 Vandal Resistance.
  3. SUBMITTALS

* + 1. Submit under provisions of Section [01 33 00.]
    2. Product Data:
       1. Manufacturer’s data, user and installation manuals for all equipment and software programs including computer equipment and other equipment required for complete video management system.
    3. Dimensional Drawings; include
       1. Overall device dimensions.
       2. Dimensions specific for installation.
    4. Closeout Submittals
       1. User manual.
       2. Parts list.
       3. Maintenance requirements.
  1. QUALITY ASSURANCE
     1. Manufacturer:
        1. Minimum of [10] years of experience in manufacture and design Video Surveillance Devices.
     2. Video Surveillance System:
        1. List certifying bodies (UL, CSA, etc.)
        2. Provide evidence of compliance upon request.
     3. Installer:
        1. Minimum of [5] years of experience installing Video Surveillance System.
  2. 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.
  3. WARRANTY
     1. Provide manufacturer’s warranty covering [2] years for replacement and repair of defective equipment. Warranty varies country to country.
  4. MAINTENANCE
     1. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
     2. Provide factory direct technical support via phone and e-mail.

1. **– PRODUCTS**
   1. MANUFACTURERS
      1. [Acceptable Manufacturer:

Dahua Technology USA Inc.

23 Hubble, Irvine, CA 92618

Tel: (949) 679-7777

Fax: (949) 679-5760

Email: [sales.usa@global.dahuatech.com](mailto:sales.usa@global.dahuatech.com)]

* + 1. Substitutions: [Not permitted.] [Under provisions of Division 1.]
       1. [All proposed substitutions must be approved by the Architect or Engineer professional.]
       2. [Proposed substitutions must provide a line-by-line compliance documentation.]
  1. 4 MP 45X IR PTZ NETWORK CAMERA 6CE445XANR  
     1. General Characteristics:
        1. The 4 MP PTZ camera shall be a full-featured 4 MP camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 4 MP PTZ camera shall provide direct network connection using Smart H.265+ and the Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        3. The 4 MP PTZ camera shall offer a 1/2.8-in Progressive-scan CMOS STARVIS™ imager with an effective pixel density of 2560 x 1440 at 30 fps.
        4. The 4 MP PTZ camera shall have a motorized lens with a focal length between 4.5 mm to 135.0 mm and an autofocus lens with 45x optical zoom.
        5. The 4 MP PTZ camera shall support the following dual, redundant power options:
           1. 24 VAC
           2. PoE+ (IEEE 802.3at, class 0)
           3. The 4 MP PTZ camera shall default to use power from the PoE power supply, if connected.
           4. The 4 MP PTZ camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
        6. The 4 MP PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        7. The 4 MP PTZ camera shall offer Analytics+ Functions — Perimeter Protection.
        8. The 4 MP PTZ camera shall offer Auto-tracking that controls the pan/tilt/zoom actions of the camera to automatically track an object in motion and to keep it in the scene.
        9. The 4 MP PTZ camera shall incorporate a built-in defog mode that dynamically adjusts the camera’s contrast to provide improved image quality in scenes affected by fog, smog, mist, smoke or other low-contrast interference.
        10. The 4 MP PTZ camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
        11. The 4 MP PTZ camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
        12. The 4 MP PTZ camera shall offer three separate and configurable streams with individually configurable HD streams.
        13. The 4 MP PTZ camera shall offer bi-directional audio.
        14. The 4 MP PTZ camera shall accept seven (7) incoming alarm connections and offer two (2) outgoing alarm connections.
        15. The 4 MP PTZ camera housing shall conform to the IP67 Ingress Protection and to the IK10 Vandal Resistance.
     2. Imaging
        1. The 4 MP PTZ camera shall offer a 1/2.8-inch type CMOS STARVIS™ progressive-scan imager.
        2. The 4 MP PTZ camera shall offer an effective number of pixels of 2560 x 1440 (4.0 MP) effective picture elements.
        3. The 4 MP PTZ camera shall offer a 45x optical zoom lens (3.95 mm to 177.75 mm) with a further 16x digital zoom.
        4. The 4 MP PTZ camera shall have a horizontal angle of view of between 1.8° to 70.3°.
        5. The 4 MP PTZ camera shall offer an aperture of F1.6 to F4.95.
        6. The 4 MP PTZ camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.6 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.6 when in IR mode.
        7. The 4 MP PTZ camera shall offer automatic focus and iris control with manual override.
        8. The 4 MP PTZ camera shall offer a dynamic range of 120 dB.
     3. PTZ Features
        1. The 4 MP PTZ camera shall provide a pan range of 360° endless.
        2. The 4 MP PTZ camera shall provide a tilt angle of –20° to 90° relative to the horizon.
        3. The 4 MP PTZ camera shall provide an automatic flip feature to automatically rotate and flip the camera as it tilts through the vertical position to maintain the correct orientation of the image.
        4. The 4 MP PTZ camera shall provide the following modes for variable pan/tilt speeds:
           1. Manual Control:

Pan: 0.1°/s to 260°/s

Tilt: 0.1°/s to 120°/s

* + - * 1. Preset Mode:

Pan: 300°/s

Tilt: 200°/s

* + - 1. The 4 MP PTZ camera shall provide a feature that automatically rotates, or pivots, the camera to simplify tracking of a person walking directly under the camera.
      2. The 4 MP PTZ camera shall support 300 presets.
      3. The 4 MP PTZ camera shall support the following PTZ modes:
         1. Five (5) PTZ pattern modes.
         2. Eight (8) PTZ tour modes.
         3. One (1) Auto Pan mode.
         4. One (1) Auto Scan mode.
      4. The 4 MP PTZ camera shall automatically activate a preset, pan, scan, tour, or pattern mode if the camera does not receive a command during a specified period.
      5. The 4 MP PTZ camera shall automatically restore the previous PTZ and lens status after the camera powers up after a power failure.
      6. The 4 MP PTZ camera shall support the DH-SD and the Pelco-P/D protocols.
    1. Illumination
       1. The 4 MP PTZ camera shall have six (6) integrated LEDs.
       2. The 4 MP PTZ camera shall offer an IR distance of up to 250.0 m (820.10 ft).
    2. Video Characteristics
       1. The 4 MP PTZ camera shall offer CBR/VBR bit rate control.
       2. The HD Mini PTZ camera shall offer the following video compression protocols
          1. H.265 (3 Kbps to 20480 Kbps)
          2. H.264 (3 Kbps to 20480 Kbps)
       3. The 4 MP PTZ camera shall offer BLC, HLC, and True WDR modes of backlight compensation.
       4. The 4 MP PTZ camera shall offer Auto, ATW, Indoor, Outdoor, Manual, Sodium Lamp, Natural, and Street Lamp modes.
       5. The 4 MP PTZ camera shall offer Ultra DNR (2D/3D) noise reduction.
       6. The 4 MP PTZ camera shall offer 24 privacy masking areas.
    3. Streaming Capability
       1. The 4 MP PTZ camera shall generate full 4 MP (2592 x 1520 pixels) at 30 fps resolution using H.265 compression.
       2. The 4 MP PTZ camera shall offer Unicast and Multicast streaming methods.
       3. The 4 MP PTZ camera shall offer the following resolutions:
          1. 4 MP (2560 x 1440)
          2. 3 MP (2048 x 1536)
          3. 1080p (1920 x 1080)
          4. 1280 x 960
          5. 720p (1280 x 720)
          6. D1 (704 x 480)
          7. CIF (352 x 240)
       4. The HD Mini PTZ camera shall generate three streams at the following maximum resolutions:
          1. Main Stream: 4 MP, 3 MP, 1080p, 1.3 MP, or 720p at 30 fps
          2. Sub Stream 1: D1 or CIF at 30 fps
          3. Sub Stream 2: 1080p or 720p at 30 fps
    4. IP Connectivity
       1. The 4 MP PTZ camera shall allow full camera control and configuration capabilities via a TCP/IP network.
       2. The 4 MP PTZ camera shall deliver 4 MP video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
       3. The 4 MP PTZ camera shall conform to the ONVIF standard.
       4. The 4 MP PTZ camera shall offer Quality of Service (QoS) configuration options.
       5. The 4 MP PTZ camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
       6. The 4 MP PTZ camera shall offer local and network storage options that include: MicroSD, Network Attached Storage (NAS), and recording to a local PC for instant recording.
       7. The 4 MP PTZ camera shall support the following protocols: IPv4/IPv6, HTTP, HTTPS, SSL, TCP/IP, UDP, UPnP, ICMP, IGMP, SNMP, RTSP, RTP, SMTP, NTP, DHCP, DNS, PPPOE, DDNS, FTP, IP Filter, QoS, Bonjour, 802.1x
       8. The 4 MP PTZ camera shall support the Smart PSS and DSS management software.
       9. The 4 MP PTZ camera shall support the Android and the IOS mobile operating systems.
    5. Interfaces
       1. The 4 MP PTZ camera shall support the following audio compression technologies: G.711a, G.711Mu, AAC, G.722, G.726, G.729, MPEG2-L2.
       2. The 4 MP PTZ camera shall offer one (1) RS485 interface.
       3. The 4 MP PTZ camera shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
       4. The 4 MP PTZ camera shall offer an alarm interface with seven (7) channels IN and two (2) channels OUT.
    6. Intelligent Video System
       1. The Intelligent Video System shall offer intelligent video analytics built-in to the 4 MP PTZ camera.
       2. The Intelligent Video System shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
       3. The Intelligent Video System shall detect multiple object behaviors such as abandoned or missing objects.
       4. The Intelligent Video System shall support Tripwire analytics to detect when an object has crossed a pre-determined line on the video image.
       5. The Intelligent Video System shall offer Auto-tracking, a feature that automatically controls the pan, tilt, and zoom functions of the camera to track a moving object and keep it in the scene.]
    7. Installation Requirements
       1. The 4 MP PTZ camera shall be capable of operating in an outdoor environment within a temperature range of –40° C to +70° C (–40° F to 158° F).
       2. The 4 MP PTZ camera shall accept power, transmit video, and accept control via a TCP/IP connection.
       3. The 4 MP PTZ camera shall support the following dual, redundant power options:
          1. 24 VAC ± 10%.
          2. PoE+ (IEEE 802.3at, class 0).
          3. The 4 MP Dome camera shall default to use power from the PoE power supply, if connected.
          4. The 4 MP Dome camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
    8. Housing Options
       1. The 4 MP PTZ camera shall be offered in a metal housing.
       2. The 4 MP PTZ camera housing shall conform to the IP67 Ingress Protection standard.
       3. The 4 MP PTZ camera housing shall conform to the IK10 Vandal Resistance rating.

2.3 ACCESSORIES

* + 1. The 4 MP PTZ camera shall offer the following accessories:
       1. Included mounting accessories:
          1. Power adapter
          2. Wall mount
       2. Optional mounting hardware:
          1. [Mount adapter.]
          2. [Power box.]
          3. [Ceiling mount.]
          4. [Junction box.]
          5. [Pole mount.]
          6. [Corner mount.]
          7. [Parapet mount.]

1. **– EXECUTION**
   1. 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.
   2. PREPARATION
      1. Protect devices from damage during construction.
   3. 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.
      5. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.
   4. 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.
   5. ADJUSTING
      1. Make proper adjustment to video system devices for correct operation in accordance with manufacturer’s instructions.
      2. Make any adjustment of camera settings to comply with specific customer’s need.
   6. DEMOSTRATION
      1. Demonstrate at final inspection that video management system and devices functions properly.

END OF SECTION