JUNE 2020

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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**

**DUAL 2 MP STARLIGHT HUNTER 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 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. European Standards
        1. EN 55032
        2. EN 55024
        3. EN 50130-4
     3. 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 Dual 2 MP Network PTZ camera shall be a full-featured dual 2 MP network PTZ camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Dual 2 MP Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
        3. The Dual 2 MP Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.6.
        4. The Dual 2 MP Network PTZ camera shall offer Predictive Focus Algorithm to improve zoom accuracy and to decrease focus time as the camera zooms into a target.
        5. The Dual 2 MP Network PTZ camera shall deliver a panoramic scene plus a PTZ scene simultaneously.
        6. The Dual 2 MP Network PTZ camera shall monitor the panoramic scene for alarm triggers and automatically position the PTZ camera to track and record the scene.
        7. The Dual 2 MP Network PTZ camera shall offer advanced analytics that offer tripwire and intrusion alarms, and that distinguish between human and vehicular objects in a scene.
        8. The Dual 2 MP Network PTZ camera shall offer Smart H.265+, H.265, Smart H.264+, H.264 codecs.
        9. The Dual 2 MP Network PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        10. The Dual 2 MP Network PTZ camera shall achieve an operational temperature down to –40 °C (–40 °F).
        11. The Dual 2 MP Network PTZ camera shall offer two (2) 1/2.8 in. CMOS sensors each with an effective pixel density of 1920 (H) x 1080 (V), at 60 fps.
        12. The Dual 2 MP Network PTZ camera shall have a motorized lens with a focal length between 3.95 mm to 177.7 mm and an autofocus lens with 45x optical zoom.
        13. The Dual 2 MP Network PTZ camera shall offer the following illumination methods:
            1. Panoramic: White light up to 30 m (98.43 ft).
            2. PTZ: IR up to 100 m (328.08 ft).
        14. The Dual 2 MP Network PTZ camera shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
        15. The Dual 2 MP Network PTZ camera shall offer an Intelligent Video System with Auto-tracking.
        16. The Dual 2 MP Network PTZ camera shall support the following dual, redundant power options:
            1. 36 VDC, 2.23 A
            2. Hi-PoE
            3. The Dual 2 MP Network camera shall default to use power from the PoE power supply, if connected.
            4. The Dual 2 MP Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
        17. The Dual 2 MP Network PTZ camera housing shall conform to the IP67 Ingress Protection standard.
  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. 2 MP DUAL 2MP STARLIGHT HUNTER NETWORK PTZ CAMERA T5X225WAN  
     1. General Characteristics:
        1. The Dual 2 MP Network PTZ camera shall be a full-featured dual 2 MP network PTZ camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Dual 2 MP Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
        3. The Dual 2 MP Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.6.
        4. The Dual 2 MP Network PTZ camera shall offer Predictive Focus Algorithm to improve zoom accuracy and to decrease focus time as the camera zooms into a target.
        5. The Dual 2 MP Network PTZ camera shall deliver a panoramic scene plus a PTZ scene simultaneously.
        6. The Dual 2 MP Network PTZ camera shall monitor the panoramic scene for alarm triggers and automatically position the PTZ camera to track and record the scene.
        7. The Dual 2 MP Network PTZ camera shall offer advanced analytics that offer tripwire and intrusion alarms, and that distinguish between human and vehicular objects in a scene.
        8. The Dual 2 MP Network PTZ camera shall offer Smart H.265+, H.265, Smart H.264+, H.264 codecs.
        9. The Dual 2 MP Network PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        10. The Dual 2 MP Network PTZ camera shall achieve an operational temperature down to –40 °C (–40 °F).
        11. The Dual 2 MP Network PTZ camera shall offer two (2) 1/2.8 in. CMOS sensors each with an effective pixel density of 1920 (H) x 1080 (V), at 60 fps.
        12. The Dual 2 MP Network PTZ camera shall have a motorized lens with a focal length between 3.95 mm to 177.7 mm and an autofocus lens with 45x optical zoom.
        13. The Dual 2 MP Network PTZ camera shall offer the following illumination methods:
            1. Panoramic: White light up to 30 m (98.43 ft).
            2. PTZ: IR up to 100 m (328.08 ft).
        14. The Dual 2 MP Network PTZ camera shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
        15. The Dual 2 MP Network PTZ camera shall offer an Intelligent Video System with Auto-tracking.
        16. The Dual 2 MP Network PTZ camera shall support the following dual, redundant power options:
            1. 36 VDC, 2.23 A
            2. Hi-PoE
            3. The Dual 2 MP Network camera shall default to use power from the PoE power supply, if connected.
            4. The Dual 2 MP Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
        17. The Dual 2 MP Network PTZ camera housing shall conform to the IP67 Ingress Protection standard.
     2. Imaging
        1. The Dual 2 MP Network PTZ camera shall offer two 1/2.8-inch CMOS Sensors.
        2. The Dual 2 MP Network PTZ camera shall offer an effective number of pixels of 1920 (H) x 1080 (V), 2 MP effective picture elements, for each sensor.
        3. The Dual 2 MP Network PTZ camera shall offer:
           1. Panoramic: 6 mm fixed lens
           2. PTZ: 25x optical zoom lens (4.8 mm to 120 mm) with a further 16x digital zoom.
        4. The Dual 2 MP Network PTZ camera shall have a horizontal angle of view of:
           1. Panoramic: 53.70°
           2. PTZ: between 59.60° to 4.80°.
        5. The Dual 2 MP Network PTZ camera shall offer an aperture of:
           1. Panoramic: F1.6
           2. PTZ: between F1.6 to F3.5.
        6. The Dual 2 MP Network 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 IR mode, with a minimum illumination of 0 lux at F1.6.
        7. The Dual 2 MP Network PTZ camera shall offer automatic focus and iris control with manual override.
        8. The Dual 2 MP Network PTZ camera shall offer a dynamic range of 120 dB.
     3. PTZ Features
        1. The Dual 2 MP Network PTZ camera shall provide a pan range of:
           1. Panoramic: 0˚ to 360˚, endless
           2. PTZ: 0°to 250°.
        2. The Dual 2 MP Network PTZ camera shall provide a tilt angle of:
           1. Panoramic: 0˚ to 30˚
           2. PTZ: –10° to 90° relative to the horizon.
        3. The Dual 2 MP Network 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 Dual 2 MP Network PTZ camera shall provide the following modes for variable pan/tilt speeds:
           1. Panoramic Camera:

Manual Control:

Pan: 7°/s to 117°/s

Tilt: 3°/s to 25°/s

Preset Mode:

Pan: 242°/s

Tilt: 58°/s

* + - * 1. PTZ Camera:

Manual Control:

Pan: 1.8°/s to 131°/s

Tilt: 0.5°/s to 65°/s

Preset Mode:

Pan: 430°/s

Tilt: 243°/s

* + - 1. The Dual 2 MP Network 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 Dual 2 MP Network PTZ camera shall support 300 presets.
      3. The Dual 2 MP Network 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 Dual 2 MP Network 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 Dual 2 MP Network PTZ camera shall automatically restore the previous PTZ and lens status after the camera powers up after a power failure.
      6. The Dual 2 MP Network PTZ camera shall support the DH-SD and the Pelco-P/D protocols. The camera shall automatically recognize the Pelco protocol.
    1. Illumination
       1. The Dual 2 MP Network PTZ camera shall have:
          1. Panoramic: integrated white light illuminators.
          2. PTZ: integrated IR illuminators
       2. The Dual 2 MP Network PTZ camera shall offer an IR distance of up to:
          1. Panoramic: 30.0 m (98.43 ft).
          2. PTZ: 100.0 m (328.08 ft).
    2. DORI Distance
       1. The Dual 2 MP Network PTZ camera shall to conform to EN 62676-4, the standard that defines the criteria for the Detect, Observe, Recognize, and Identify classifications.
       2. The Dual 2 MP Network PTZ camera shall offer the following detect, observe, recognize, and identify distances:
          1. Panoramic Camera:

Detect (8 ppf): 88.30 m (289.70 ft)

Observe (19 ppf): 35.30 m (115.81 ft)

Recognize (38 ppf): 17.70 m (58.07 ft)

Identify (76 ppf): 8.80 m (28.87 ft)

* + - * 1. PTZ Camera:

Detect (8 ppf): 1613.80 m (5294.62 ft)

Observe (19 ppf): 645.50 m (2117.78 ft)

Recognize (38 ppf): 322.80 m (1059.06 ft)

Identify (76 ppf): 161.40 m (529.53 ft)

* + 1. Video Characteristics
       1. The Dual 2 MP Network PTZ camera shall offer CBR/VBR bit rate control.
       2. The Dual 2 MP Network PTZ camera shall offer the following video compression protocols
          1. H.265: 512 Kbps to 5632 Kbps
          2. H.264: 1792 Kbps to 9216 Kbps
       3. The Dual 2 MP Network PTZ camera shall offer BLC, HLC, and True WDR   
          (120 dB) modes of backlight compensation.
       4. The Dual 2 MP Network PTZ camera shall offer Auto, Manual, Aperture Priority, Gain Priority, Shutter Priority white balance modes.
       5. The Dual 2 MP Network PTZ camera shall offer 2D/3D noise reduction.
    2. Streaming Capability
       1. The Dual 2 MP Network PTZ camera shall generate two simultaneous streams:
          1. Panoramic Camera: 1080p, 1.3 MP, or 720p at 60 fps resolution using Smart H.265+ video compression.
          2. PTZ Camera: 1080p, 1.3 MP, or 720p at 60 fps resolution using Smart H.265+ video compression.
       2. The Dual 2 MP Network PTZ camera shall offer the following resolutions:
          1. 1080p (1920 x 1080)
          2. 1.3 MP
          3. 960p (1280 x 960)
          4. 720p (1280 x 720)
          5. D1 (704 x 480)
          6. CIF (52 x 240)
       3. The Dual 2 MP Network PTZ camera shall generate three streams at the following maximum resolutions:
          1. Main Stream: 1080p, 1.3 MP, or 720p at 60 fps
          2. Sub Stream 1: D1 or CIF at 30 fps
          3. Sub Stream 2: 1080p, 1.3 MP, 720p, or CIF at 30 fps
    3. IP Connectivity
       1. The Dual 2 MP Network PTZ camera shall allow full camera control and configuration capabilities via a TCP/IP network.
       2. The Dual 2 MP Network PTZ camera shall deliver 2 MP video, at rates up to 60 frames per second via TCP/IP over an RJ45 (10/100 Base-T) connection.
       3. The Dual 2 MP Network PTZ camera shall conform to the ONVIF and the CGI standard.
       4. The Dual 2 MP Network PTZ camera shall offer Quality of Service (QoS) configuration options.
       5. The Dual 2 MP Network PTZ camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
       6. The Dual 2 MP Network 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 Dual 2 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 Dual 2 MP Network PTZ camera shall support the Smart PSS and DSS management software.
       9. The Dual 2 MP Network PTZ camera shall support the Android and the IOS mobile operating systems.
    4. Interfaces
       1. The Dual 2 MP Network PTZ camera shall support the following audio compression technologies: G.711a, G.711Mu, G.726, AAC, G.722.1, G.729, G.723, MPEG2-L2.
       2. The Dual 2 MP Network PTZ camera shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
       3. The Dual 2 MP Network PTZ camera shall offer one RS485 connection for PTZ control.
       4. The Dual 2 MP Network PTZ camera shall offer an alarm interface with two (2) channels IN and one (1) channel OUT.
    5. Intelligent Video System
       1. The Intelligent Video System shall offer intelligent video analytics built-in to The Dual 2 MP Network 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 Facial Detection to search and identify individuals.
       6. 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.
    6. Analytics+
       1. The Dual 2 MP Network PTZ camera shall offer the following built-in Analytics+ functions to provide advanced analytics for any scene:
          1. Detect human or vehicle violations using the following methods:

Tripwire: a target crosses a defined line.

Intrusion: a target enters or exits a defined perimeter.

* + - * 1. Monitor a combination of ten (10) detection methods.
        2. Search and retrieve video based on target type.
    1. Installation Requirements
       1. The Dual 2 MP Network 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 Dual 2 MP Network PTZ camera shall support the following dual, redundant power options:
          1. 36 VDC, 2.23 A
          2. Hi-PoE
          3. The Dual 2 MP Network camera shall default to use power from the PoE power supply, if connected.
          4. The Dual 2 MP Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
    2. Housing Options
       1. The Dual 2 MP Network PTZ camera shall be offered in a metal housing.
       2. The Dual 2 MP Network PTZ camera housing shall conform to the IP67 Ingress Protection standard.

2.3 ACCESSORIES

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