AUGUST 2018

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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**

**400 x 300 THERMAL SENSOR / 2 MP 30X CMOS SENSOR HYBRID 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. 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 Thermal Hybrid Network PTZ camera shall be a full-featured 400 x 300 Thermal and 2 MP CMOS network camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Thermal Hybrid Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
        3. The Thermal Hybrid Network PTZ camera shall contain a 400 x 300 VOx uncooled thermal sensor and a 2 MP progressive-scan CMOS sensor in one housing.
        4. The Thermal Hybrid Network PTZ camera shall offer < 40 mK thermal sensitivity.
        5. The Thermal Hybrid Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.001 lux at F1.5.
        6. The Thermal Hybrid Network PTZ camera shall offer Wide Dynamic Range for clear images in extreme high-contrast environments.
        7. The Thermal Hybrid Network PTZ camera shall incorporate a built-in heater to achieve an operational temperature down to –40° C (–40° F).
        8. The Thermal Hybrid Network PTZ camera shall offer integrated IR illumination with an effective distance of 150 m (492.17 ft).
        9. The Thermal Hybrid Network PTZ camera shall accept seven (7) incoming alarm channels and offer two (2) outgoing alarm channels.
        10. The Thermal Hybrid Network PTZ camera shall offer an Intelligent Video System with Fire Detection and Alarm.
        11. The Thermal Hybrid Network PTZ camera housing shall conform to the IP66 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. 400 x 300 THERMAL SENSOR / 2 MP 30X CMOS SENSOR HYBRDI PTZ NETWORK CAMERA – DH-TPC-SD8420N-B  
     1. General Characteristics:
        1. The Thermal Hybrid Network PTZ camera shall be a full-featured 400 x 300 Thermal and 2 MP CMOS network camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Thermal Hybrid Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
        3. The Thermal Hybrid Network PTZ camera shall contain a 400 x 300 VOx uncooled thermal sensor and a 2 MP progressive-scan CMOS sensor in one housing.
        4. The Thermal Hybrid Network PTZ camera shall offer < 40 mK thermal sensitivity.
        5. The Thermal Hybrid Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.001 lux at F1.5.
        6. The Thermal Hybrid Network PTZ camera shall offer Wide Dynamic Range for clear images in extreme high-contrast environments.
        7. The Thermal Hybrid Network PTZ camera shall incorporate a built-in heater to achieve an operational temperature down to –40° C (–40° F).
        8. The Thermal Hybrid Network PTZ camera shall offer integrated IR illumination with an effective distance of 150 m (492.17 ft).
        9. The Thermal Hybrid Network PTZ camera shall accept seven (7) incoming alarm channels and offer two (2) outgoing alarm channels.
        10. The Thermal Hybrid Network PTZ camera shall offer an Intelligent Video System with Fire Detection and Alarm.
        11. The Thermal Hybrid Network PTZ camera housing shall conform to the IP66 Ingress Protection standard.
     2. Thermal Imaging
        1. The Thermal Hybrid Network PTZ camera shall offer a 400 x 300 uncooled VOx Microbolometer thermal imaging sensor.
        2. The Thermal Hybrid Network PTZ camera shall have a pixel size of 17 m.
        3. The Thermal Hybrid Network PTZ camera shall offer a thermal sensitivity (NETD) of < 40 mK at f/1.0.
        4. The Thermal Hybrid Network PTZ camera shall offer a spectral range of 7 m to 14 m.
        5. The Thermal Hybrid Network PTZ camera shall offer 14 color palettes.
        6. The Thermal Hybrid Network PTZ camera shall offer a fixed [25 mm] [50 mm] athermalized, focus-free lens.
        7. The Thermal Hybrid Network PTZ camera shall support a maximum detection distance (human) of [1000 m (3281 ft)] [1700 m (5577 ft)].
     3. Visible-light Imaging
        1. The Thermal Hybrid Network PTZ camera shall offer a 1/1.9-inch type progressive-scan CMOS sensor.
        2. The Thermal Hybrid Network PTZ camera shall offer an effective number of pixels of 1944(H) x 1092(V), 2 MP effective picture elements.
        3. The Thermal Hybrid Network PTZ camera shall offer a 30x optical zoom lens (6 mm to 180 mm) with a further 19x digital zoom.
        4. The Thermal Hybrid Network PTZ camera shall have a horizontal angle of view of between 59° to 2.4°.
        5. The Thermal Hybrid Network PTZ camera shall offer an aperture of F1.5 to F4.3.
        6. The Thermal Hybrid Network PTZ camera shall produce a color image with a minimum scene illumination of 0.001 lux at F1.5 and a monochrome image, when in IR mode, with a minimum illumination of 0 lux at F1.5.
        7. The Thermal Hybrid Network PTZ camera shall offer automatic focus and iris control with manual override.
     4. PTZ Features
        1. The Thermal Hybrid Network PTZ camera shall provide a pan range of 360° endless.
        2. The Thermal Hybrid Network PTZ camera shall provide a tilt angle of –10° to 90° relative to the horizon.
        3. The Thermal Hybrid Network PTZ camera shall provide the following modes for variable pan/tilt speeds:
           1. Manual Control:

Pan: 0.1°/s to 200°/s

Tilt: 0.1°/s to 120°/s

* + - * 1. Preset Mode:

Pan: 240°/s

Tilt: 200°/s

* + - 1. The Thermal Hybrid 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 Thermal Hybrid Network PTZ camera shall support 300 presets.
      3. The Thermal Hybrid 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 Thermal Hybrid 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 Thermal Hybrid Network PTZ camera shall automatically restore the previous PTZ and lens status after the camera powers up after a power failure.
      6. The Thermal Hybrid 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 Thermal Hybrid Network PTZ camera shall have four (4) integrated LEDs.
       2. The Thermal Hybrid Network PTZ camera shall offer an IR distance of up to   
          150.0 m (492.17 ft).
    2. Video Characteristics
       1. The Thermal Hybrid Network PTZ camera shall offer CBR/VBR bit rate control.
       2. The Thermal Hybrid Network PTZ camera shall offer the H.264 and the MJPEG video compression protocols.
       3. The Thermal Hybrid Network PTZ camera shall offer BLC, HLC, and WDR modes of backlight compensation.
       4. The Thermal Hybrid Network PTZ camera shall offer Auto, ATW, Indoor, Outdoor, and manual white balance modes.
       5. The Thermal Hybrid Network PTZ camera shall offer four (4) privacy masking areas.
    3. Streaming Capability
       1. The Thermal Hybrid Network PTZ camera shall generate the following maximum resolution:
          1. Thermal: 1280 x 1024 or 720p at 30 fps
          2. 2 MP (1920 x 1080 pixels) at 30 fps resolution
    4. IP Connectivity
       1. The Thermal Hybrid Network PTZ camera shall allow full camera control and configuration capabilities via a TCP/IP network.
       2. The Thermal Hybrid Network PTZ camera shall deliver video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
       3. The Thermal Hybrid Network PTZ camera shall conform to the ONVIF Profile   
          S & G, PSIA, and the CGI standard.
       4. The Thermal Hybrid Network PTZ camera shall offer Quality of Service (QoS) configuration options.
       5. The Thermal Hybrid Network PTZ camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
       6. The Thermal Hybrid 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 Thermal Hybrid Network 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 Thermal Hybrid Network PTZ camera shall support the SmartPSS and DSS management software.
       9. The Thermal Hybrid Network PTZ camera shall support the Android, Windows, and the IOS mobile operating systems.
    5. Interfaces
       1. The Thermal Hybrid Network PTZ camera shall support the following audio compression technologies: G.711a, G.711Mu, and AAC.
       2. The Thermal Hybrid Network PTZ camera shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
       3. The Thermal Hybrid Network PTZ camera shall offer one RS485 connection for PTZ control.
       4. The Thermal Hybrid Network PTZ camera shall offer an alarm interface with seven (7) channels IN and two (2) channels OUT.
       5. The Thermal Hybrid Network PTZ camera shall offer one (1) SD video output with a BNC connector.
    6. Intelligent Video System
       1. The Intelligent Video System shall offer intelligent video analytics built-in to Thermal Hybrid 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 Fire Detection to detect a rapid rise in temperature over a short time and issue an alarm for a potential fire.
    7. Installation Requirements
       1. The Thermal Hybrid 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 Thermal Hybrid Network PTZ camera shall support 24 VAC, 3 A power supply.
    8. Housing Options
       1. The Thermal Hybrid Network PTZ camera shall be offered in a metal housing.
       2. The Thermal Hybrid Network PTZ camera housing shall conform to the IP66 Ingress Protection standard.

2.3 ACCESSORIES

* + 1. The Thermal Hybrid Network PTZ camera shall offer the following accessories:
       1. Included:
          1. Power supply.
          2. Wall mount.
          3. Mount adapter.
       2. Optional mounting hardware:
          1. [Power box.]
          2. [Junction box.]
          3. [Ceiling mount.]
          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