October 2021

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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**

**Section 28 21 13.11: Panoramic Cameras**

**2 X 4 MP MULTI-SENSOR NETWORK IR DOME CAMERA**

1. **– GENERAL**
   1. SUMMARY
      1. Section Includes
         1. Section 28 21 13: Video Surveillance – Surveillance Cameras – IP Cameras
         2. Section 28 21 17: Video Surveillance – Surveillance Cameras – Camera Housings
         3. Section 28 21 19: Video Surveillance – Surveillance Cameras – Camera Mounts
         4. Section 28 21 21: Video Surveillance – Surveillance Cameras – Illuminators
         5. 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. Federal Communications Commission (FCC) ([www.fcc.gov](http://www.fcc.gov))
        1. CFR 47 FCC Part 15 Subpart B
     2. Underwriters Laboratories, Inc. (UL) (www.ul.com)
        1. UL 62368-1
        2. CAN/CSA C22.2 No. 62368-1-14
     3. European Standards
        1. Electromagnetic Compatibility Directive
        2. EN 62368-1
     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 – Panoramic Cameras
     2. Performance Requirements
        1. The Multi-Sensor camera shall be a full-featured HD dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Multi-Sensor camera shall come with two (2) 4 MP progressive-scan sensors that can be positioned and configured independently.
        3. The Multi-Sensor camera shall use two (2) high-performance 1/2.7-in. progressive-scan CMOS sensors each with 4 MP resolution.
        4. The Multi-Sensor camera shall deliver a maximum resolution of 8 MP   
           (3840 x 2160).
        5. The Multi-Sensor camera shall employ Starlight Ultra-low Light Technology to capture color images in low light down to 0.005 lux.
        6. The Multi-Sensor camera shall utilize eight (8) IR LEDs per sensor with a maximum IR distance of 30 m (98.43 ft) and shall produce usable images at 0 lux.
        7. The Multi-Sensor camera shall utilize an algorithm that dynamically restores the true color of scene illuminated by a sodium-vapor lamp.
        8. The Multi-Sensor camera shall offer a mechanical day/night filter that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
        9. The Multi-Sensor camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
        10. The Multi-Sensor camera shall have a built-in WizMind analytic function that provides analytic algorithms to monitor a scene for tripwire violations, intrusion detection, people counting, queue management, and Smart Motion Detection+.
        11. The Multi-Sensor camera shall allow operation down to –40° C (–40° F).
        12. The Multi-Sensor camera shall offer:
            1. IP67 Ingress Protection.
            2. 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. 2 x 4MP MULTI-SENSOR NETWORK IR DOME CAMERA   
     DH-IPC-HDBW5441FN-AS-E2
     1. General Characteristics:
        1. The Multi-Sensor camera shall be a full-featured HD dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The Multi-Sensor camera shall come with two (2) 4 MP progressive-scan sensors that can be positioned and configured independently.
        3. The Multi-Sensor camera shall use two (2) high-performance 1/2.7-in. progressive-scan CMOS sensors each with 4 MP resolution.
        4. The Multi-Sensor camera shall deliver a maximum resolution of 8 MP   
           (3840 x 2160).
        5. The Multi-Sensor camera shall employ Starlight Ultra-low Light Technology to capture color images in low light down to 0.005 lux.
        6. The Multi-Sensor camera shall utilize eight (8) IR LEDs per sensor with a maximum IR distance of 30 m (98.43 ft) and shall produce usable images at 0 lux.
        7. The Multi-Sensor camera shall utilize an algorithm that dynamically restores the true color of scene illuminated by a sodium-vapor lamp.
        8. The Multi-Sensor camera shall offer a mechanical day/night filter that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
        9. The Multi-Sensor camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
        10. The Multi-Sensor camera shall have a built-in WizMind analytic function that provides analytic algorithms to monitor a scene for tripwire violations, intrusion detection, people counting, queue management, and Smart Motion Detection+.
        11. The Multi-Sensor camera shall allow operation down to –40° C (–40° F).
        12. The Multi-Sensor camera shall offer:
            1. IP67 Ingress Protection.
            2. IK10 Vandal Resistance.
     2. Imaging
        1. The Multi-Sensor camera shall offer two (2) 1/2.7-inch progressive-scan imagers that can be positioned and configured independently.
        2. The Multi-Sensor camera shall offer 8 MP (3840 x 2160) effective picture elements.
        3. The Multi-Sensor camera shall offer a 2.8 mm focal length with a maximum aperture of F1.6.
        4. The Multi-Sensor camera offers 95° horizontal angle of view and a 52° vertical angle of view.
        5. The Multi-Sensor camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.6.
        6. The Multi-Sensor camera shall produce a usable image with a scene illumination of 0 lux when IR is enabled.
        7. The Multi-Sensor camera shall produce an effective image with IR illumination at a distance of 30.0 m (98.43 ft).
        8. The Multi-Sensor camera shall offer eight (8) IR LEDs per sensor.
        9. The Multi-Sensor camera shall have a signal to noise ratio of more than 56 dB.
     3. Video Characteristics
        1. The Multi-Sensor camera shall offer BLC, HLC, and True WDR modes of backlight compensation.
        2. The Multi-Sensor camera shall offer Auto, Natural, Street Lamp, Outdoor, Manual, Regional Custom white balance modes.
        3. The Multi-Sensor camera shall offer 3D DNR noise reduction.
        4. The Multi-Sensor camera shall offer motion detection (four zones) and region of interest (four zones) controls.
        5. The Multi-Sensor camera shall offer four (8) privacy masking zones.
     4. Streaming Capability
        1. The Multi-Sensor camera shall generate a maximum resolution of 8 MP   
           (3840 x 2160) using Smart H.265+ compression.
        2. The Multi-Sensor camera shall offer CBR/VBR bit rate control.
        3. The Multi-Sensor camera shall offer the following video compression protocols:
           1. AI Coding
           2. Smart H.65+
           3. H.265
           4. Smart H.264+
           5. H.264
           6. MJPEG (sub stream only)
        4. The Multi-Sensor camera shall offer the following bit rates:
           1. H.265: 12 Kbps to 8192 Kbps.
           2. H.264: 32 Kbps to 8192 Kbps.
        5. The Multi-Sensor camera shall support video resolutions of 8 MP   
           (3840 x 2160), 3072 x 2048, 3072 x 1728, 2592 x 1944, 4 MP (2688 x 1520),   
           3 MP (2048 x 1536, 2304 x 1296, 1080p (1920 x 1080), 1.3 MP (1280 x 960), 720p (1280 x 720), D1 (704 x 480), VGA (640 x 480), CIF (352 x 240).
        6. The Multi-Sensor camera shall generate three streams at the following maximum resolutions:
           1. Main Stream:

Channel 1: 2560 x 1440 at 30 fps

Channel 2: 2560 x 1440 at 30 fps

* + - * 1. Sub Stream 1:

Channel 1: 704 x 480 at 30 fps

Channel 2: 704 x 480 at 30 fps

* + - * 1. Sub Stream 2:

Channel 1: 1920 x 1080 at 30 fps

Channel 2: 1920 x 1080 at 30 fps

* + 1. IP Connectivity
       1. The Multi-Sensor camera shall allow full camera control and configuration capabilities via a TCP/IP network.
       2. The Multi-Sensor camera shall deliver 2560 x 1440 resolution video at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
       3. The Multi-Sensor camera shall conform to the ONVIF (Profile S/Profile G/Profile T), CGI, P2P, and Milestone standards.
       4. The Multi-Sensor camera shall offer Quality of Service (QoS) configuration options.
       5. The Multi-Sensor camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
       6. The Multi-Sensor 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 Multi-Sensor camera shall support the following protocols: HTTP, HTTPs, TCP, ARP, RTSP, RTP, UDP, SMTP, FTP, DHCP, DNS, DDNS, PPPOE, IPv4/v6, QoS, UPnP, NTP, Bonjour, 802.1x, Multicast, ICMP, IGMP, and SNMP.
       8. The Multi-Sensor camera shall support the Smart PSS, DMSS, and the DSS management software.
       9. The Multi-Sensor camera shall support the Android and the IOS mobile operating systems.
    2. Interface
       1. The Multi-Sensor camera shall support the following audio compression technologies: PCM, G.711a, G.711Mu, G.726, G.723.
       2. The Multi-Sensor camera shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
       3. The Multi-Sensor camera shall offer a built-in microphone.
       4. The Multi-Sensor camera shall offer two (2) alarm input channels and two (2) alarm output channels.
    3. Intelligence
       1. The Multi-Sensor camera offer a built-in Intelligent Video System to provide advanced analytics for any scene.
       2. The Intelligent Video System shall offer intelligent video analytics built-in to the Multi-Sensor camera.
       3. The Intelligent Video System shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
       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 people counting, queue management, and Smart Motion Detection+ advanced analytics.
    4. Installation Requirements
       1. The Multi-Sensor camera shall be capable of operating in an outdoor environment within a temperature range of –40° C to +60° C (–40° F to 140° F).
       2. The Multi-Sensor camera shall accept power, transmit video, and accept control via a TCP/IP connection.
       3. The Multi-Sensor camera shall support the following dual, redundant power options:
          1. 12 VDC
          2. PoE (IEEE 802.3af, class 0).
    5. Housing Options
       1. The Multi-Sensor camera shall be offered in a metal housing.
       2. The Multi-Sensor camera housing shall conform to the IP67 standard for ingress protection.
       3. The Multi-Sensor camera housing shall conform to the IK10 standard for vandal resistance.
  1. ACCESSORIES
     1. The Multi-Sensor camera shall include the following accessories:
        1. Mount adapter.
     2. The Multi-Sensor camera shall offer the following optional accessories:
        1. [Junction box.]
        2. [Pole mount.]
        3. [Corner mount.]
        4. [Ceiling mount.]
        5. [Wall 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