January 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**

**2 MP IR VARIFOCAL NETWORK BULLET 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. Federal Communications Commission (FCC) ([www.fcc.gov](http://www.fcc.gov))
        1. FCC Part 15 Subpart B
     2. Underwriters Laboratories, Inc. (UL) (www.ul.com)
        1. UL60950-1
     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 2 MP Bullet camera shall be a full-featured Bullet camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 2 MP Bullet camera shall feature Smart Scene Adaptive (SSA) intelligent image technology to automatically evaluate and compensate for changes in the luminance of a scene.
        3. The 2 MP Bullet camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.002 lux at F1.53.
        4. The 2 MP Bullet camera shall provide direct network connection using Smart H.265+ and Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        5. The 2 MP Bullet camera shall offer a mechanical day/night IR cut filter that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
        6. The 2 MP Bullet camera shall utilize an algorithm that dynamically adjusts the cameras contrast settings to provide usable image quality in scenes affected by fog, smog, mist, smoke or other low contrast scene.
        7. The 2 MP Bullet camera shall be a high performance 1/1.9-in. progressive-scan CMOS sensor with 2 MP resolution at 60 fps.
        8. The 2 MP Bullet camera shall support the following dual, redundant power options:
           1. 12 VDC
           2. PoE+ (802.3at, class 4)
           3. The 2 MP Bullet camera shall default to use power from the PoE+ power supply, if connected.
           4. The 2 MP Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE+ power supply is lost.
        9. The 2 MP Bullet camera shall offer a maximum IR LED distance of 50 m (164.04 ft).
        10. The 2 MP Bullet camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        11. The 2 MP Bullet camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
        12. The 2 MP Bullet camera shall offer People Counting and Heat Map business analytics.
        13. The 2 MP Bullet camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
        14. The 2 MP Bullet camera shall offer three separate and configurable streams with individually configurable 2 MP and D1 streams.
        15. The 2 MP Bullet camera shall have a motorized varifocal lens with a focal length between 4.1 mm to 16.4 mm.
        16. The 2 MP Bullet camera housing shall conform to the IP67 Ingress Protection standard.
        17. The 2 MP Bullet camera housing shall conform to the IK10 Vandal Resistance 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 [5] 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 IR VARIFOCAL NETWORK BULLET CAMERA N28BB7Z  
     1. General Characteristics:
        1. The 2 MP Bullet camera shall be a full-featured Bullet camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 2 MP Bullet camera shall feature Smart Scene Adaptive (SSA) intelligent image technology to automatically evaluate and compensate for changes in the luminance of a scene.
        3. The 2 MP Bullet camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.002 lux at F1.53.
        4. The 2 MP Bullet camera shall provide direct network connection using Smart H.265+ and Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        5. The 2 MP Bullet camera shall offer a mechanical day/night IR cut filter that delivers color images during daylight and automatically switches to a monochrome image as the scene darkens.
        6. The 2 MP Bullet camera shall utilize an algorithm that dynamically adjusts the cameras contrast settings to provide usable image quality in scenes affected by fog, smog, mist, smoke or other low contrast scene.
        7. The 2 MP Bullet camera shall be a high performance 1/1.9-in. progressive-scan CMOS sensor with 2 MP resolution at 60 fps.
        8. The 2 MP Bullet camera shall support the following dual, redundant power options:
           1. 12 VDC
           2. PoE+ (802.3at, class 4)
           3. The 2 MP Bullet camera shall default to use power from the PoE+ power supply, if connected.
           4. The 2 MP Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE+ power supply is lost.
        9. The 2 MP Bullet camera shall offer a maximum IR LED distance of 50 m (164.04 ft).
        10. The 2 MP Bullet camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
        11. The 2 MP Bullet camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
        12. The 2 MP Bullet camera shall offer People Counting and Heat Map business analytics.
        13. The 2 MP Bullet camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
        14. The 2 MP Bullet camera shall offer three separate and configurable streams with individually configurable 2 MP and D1 streams.
        15. The 2 MP Bullet camera shall have a motorized varifocal lens with a focal length between 4.1 mm to 16.4 mm.
        16. The 2 MP Bullet camera housing shall conform to the IP67 Ingress Protection standard.
        17. The 2 MP Bullet camera housing shall conform to the IK10 Vandal Resistance standard.
     2. Imaging
        1. The 2 MP Bullet camera shall offer a 1/1.9-inch type CMOS progressive-scan imager.
        2. The 2 MP Bullet camera shall offer an effective number of pixels of 1920 x 1080 (2.0 MP) effective picture elements.
        3. The 2 MP Bullet camera shall offer a varifocal lens with a focal length between 4.1 mm to 16.4 mm.
        4. The 2 MP Bullet camera shall have a horizontal angle of view between 32° to 80° and a vertical angle between 18° to 47°.
        5. The 2 MP Bullet camera shall offer a maximum aperture of F1.53.
        6. The 2 MP Bullet camera shall produce a color image with a minimum scene illumination of 0.002 lux at F1.53 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.53 when in IR mode.
     3. Illumination
        1. The 2 MP Bullet camera shall have four (4) integrated LEDs.
        2. The 2 MP Bullet camera shall offer an IR distance of up to 50.0 m   
           (164.04 ft).
     4. Video Characteristics
        1. The 2 MP Bullet camera shall offer CBR/VBR bit rate control.
        2. The 2 MP Bullet camera shall offer the following video compression protocols
           1. H.265 (24 to 10240 Kbps)
           2. H.264 (14 to 6144 Kbps)
        3. The 2 MP Bullet camera shall offer BLC, HLC, and Digital WDR modes of backlight compensation.
        4. The 2 MP Bullet camera shall offer Auto, Natural, Street Lamp, Outdoor, and Manual modes.
        5. The 2 MP Bullet camera shall offer 3D DNR noise reduction.
        6. The 2 MP Bullet camera shall offer motion detection (four zones) and region of interest (four zones) controls.
        7. The 2 MP Bullet camera shall offer four (4) privacy masking areas.
     5. Streaming Capability
        1. The 2 MP Bullet camera shall generate full 2 MP   
           (1920 x 1080 pixels) at 60 fps resolution using Smart H.265+ compression.
        2. The 2 MP Bullet camera shall offer Unicast and Multicast streaming methods.
        3. The 2 MP Bullet camera shall offer the following resolutions:
           1. 1080p (1920 x 1080)
           2. SXGA (1280 x 1024)
           3. 1.3 MP (1280 x 960)
           4. 720p (1280 x 720)
           5. D1 (704 x 480)
           6. VGA (640 x 480)
           7. CIF (352 x 240)
        4. The 2 MP Bullet camera shall generate three streams at the following maximum resolutions:
           1. Main Stream: 2 MP at 60 fps
           2. Sub Stream 1: D1 at 60 fps
           3. Sub Stream 2: 1080p at 60 fps
     6. IP Connectivity
        1. The 2 MP Bullet camera shall allow full camera control and configuration capabilities via a TCP/IP network.
        2. The 2 MP Bullet camera shall deliver 2 MP video, at rates up to 60 frames per second via TCP/IP over an RJ-45 (100/1000 Base-T) connection.
        3. The 2 MP Bullet camera shall conform to the ONVIF, PSIA, and the CGI standard.
        4. The 2 MP Bullet camera shall offer Quality of Service (QoS) configuration options.
        5. The 2 MP Bullet camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
        6. The 2 MP Bullet 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 2 MP Bullet 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, and 802.1x.
        8. The 2 MP Bullet camera shall support the Smart PSS and DSS management software.
        9. The 2 MP Bullet camera shall support the Android and the IOS mobile operating systems.
     7. Interface
        1. The 2 MP Bullet camera shall offer one (1) video output port for spot output during installation.
        2. The 2 MP Bullet camera shall offer one (1) audio input channel and one (1) audio output channel.
        3. The 2 MP Bullet camera shall offer two (2) alarm input channels and one (1) alarm (relay) output channel.
     8. Intelligent Video System
        1. The 2 MP Bullet 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 2 MP Bullet 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 trigger an alarm and take a defined action for the following events:
           1. Standard Features

Tampering with the camera.

Error writing to an onboard Micro SD Card.

Error sending or receiving data over the network.

Unauthorized access to the camera.

* + - * 1. Premium Features

Motion: object moves through any part of the scene.

Tripwire: a target crosses a user-defined line.

Intrusion: a target enters or exits a defined perimeter.

Scene Change: a person or object moves the camera to change the scene or covers the camera to obscure the scene.

Abandoned/Missing Object: a target leaves an object in a designated area, or a target removes and object from the same designated area.

* + - * 1. Advanced Features

Facial Detection: detects and captures a snapshot of a human face in a defined area within a scene.

People Counting: Measure the number of customers, visitors or passengers in a surveillance scene.

Heat Map: generates a visual representation of data.

* + 1. Installation Requirements
       1. The 2 MP Bullet 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 2 MP Bullet camera shall accept power, transmit video, and accept control via a TCP/IP connection.
       3. The 2 MP Bullet camera shall support the following dual, redundant power options:
          1. 12 VDC
          2. PoE+ (802.3at, class 4)
          3. The 2 MP Bullet camera shall default to use power from the PoE+ power supply, if connected.
          4. The 2 MP Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE+ power supply is lost.
    2. Housing Options
       1. The 2 MP Bullet camera shall be offered in a metal housing.
       2. The 2 MP Bullet camera housing shall conform to the IP67 Ingress Protection standard.
       3. The 2 MP Bullet camera housing shall conform to the IK10 Vandal Resistance standard.
  1. ACCESSORIES
     1. The 2 MP Bullet camera shall offer the following optional accessories:
        1. [Junction box.]
        2. [Pole mount.]
        3. [Power adapter.]

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