JULY 2022

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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**

**4MP Night Color 2.0 Fusion Network Eyeball**

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. CFR 47 FCC Part 15 Subpart B
     2. Underwriters Laboratories, Inc. (UL) (www.ul.com)
        1. UL/CUL: UL62368-1
        2. CAN/CSA C22.2 No. 62368-1-14
     3. European Standards
        1. Electromagnetic Compatibility Directive 2014/30/EU
     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 4MP Night Color 2.0 Fusion Network Eyeball shall be a full-featured network eyeball camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall use two high performance 1/1.8-in. 4 MP Progressive-scan CMOS sensor.
        3. The 4MP Night Color 2.0 Fusion Network Eyeball shall utilize Night Color 2.0 Technology with a high-performance sensor and large aperture lens.
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer a white-light LED to produce color images in total darkness.
        5. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
        6. The 4MP Night Color 2.0 Fusion Network Eyeball shall include a built-in microphone.
        7. The 4MP Night Color 2.0 Fusion Network Eyeball Camera shall provide direct network connection using AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H or MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        8. The 4MP Night Color 2.0 Fusion Network Eyeball shall provide long-range PoE transmission distance using a built-in ePoE protocol.
        9. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the following dual, redundant power options:
           1. 12 VDC +30%
           2. PoE (IEEE 802.3af, class 0)
           3. ePoE
           4. The 4MP Night Color 2.0 Fusion Network Eyeball shall default to use power from the PoE power supply, if connected.
           5. The 4MP Night Color 2.0 Fusion Network Eyeball shall reboot and switch to the 12 VDC +30% power supply if power from the PoE power supply is lost.
        10. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer Digital Dynamic Range for clear images in extreme high-contrast environments.
        11. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer three (3) separate and configurable streams with individually configurable 4 MP, D1, and 1080p streams.
        12. The 4MP Night Color 2.0 Fusion Network Eyeball shall have a 2.8 mm fixed lens.
        13. The 4MP Night Color 2.0 Fusion Network Eyeball shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
        14. The 4MP Night Color 2.0 Fusion Network Eyeball housing shall conform to the IP67 Ingress Protection standard.
  3. SUBMITTALS

Submit under provisions of Section [01 33 00.]

* + 1. 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.
    2. Dimensional Drawings; include
       1. Overall device dimensions.
       2. Dimensions specific for installation.
    3. 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.

15245 Alton Pkwy, #100, 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. 4MP Night Color 2.0 Fusion Network Eyeball – N45DUD2   
     1. General Characteristics:
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall be a full-featured network eyeball camera designed for discrete video surveillance applications in indoor and outdoor environments.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall use two high performance 1/1.8-in. 4 MP Progressive-scan CMOS sensor.
        3. The 4MP Night Color 2.0 Fusion Network Eyeball shall utilize Night Color 2.0 Technology with a high-performance sensor and large aperture lens.
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer a white-light LED to produce color images in total darkness.
        5. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
        6. The 4MP Night Color 2.0 Fusion Network Eyeball shall include a built-in microphone.
        7. The 4MP Night Color 2.0 Fusion Network Eyeball Camera shall provide direct network connection using AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H or MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
        8. The 4MP Night Color 2.0 Fusion Network Eyeball shall provide long-range PoE transmission distance using a built-in ePoE protocol.
        9. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the following dual, redundant power options:
           1. 12 VDC +30%
           2. PoE (IEEE 802.3af, class 0)
           3. ePoE
           4. The 4MP Night Color 2.0 Fusion Network Eyeball shall default to use power from the PoE power supply, if connected.
           5. The 4MP Night Color 2.0 Fusion Network Eyeball shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
        10. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer Digital Dynamic Range for clear images in extreme high-contrast environments.
        11. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer three (3) separate and configurable streams with individually configurable 4 MP, D1, and 1080p streams.
        12. The 4MP Night Color 2.0 Fusion Network Eyeball shall have a 2.8 mm fixed lens.
        13. The 4MP Night Color 2.0 Fusion Network Eyeball shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
        14. The 4MP Night Color 2.0 Fusion Network Eyeball housing shall conform to the IP67 Ingress Protection standard.
     2. Imaging
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer two 1/1.8-in. 4 MP Progressive-scan CMOS imager.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer an effective number of pixels of 2688(H) x 1520(V) effective picture elements.
        3. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer a 2.8 mm fixed lens.
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall have a horizontal angle of 107°, a vertical angle of 60°, and a diagonal angle for 115°.
        5. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer a maximum aperture of F1.0.
        6. The 4MP Night Color 2.0 Fusion Network Eyeball shall produce a color image with a minimum scene illumination of 0.0002 lux at F1.0.
     3. Illumination
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall have two (2) integrated white-light LEDs and two (2) IR lights.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer an LED distance of up to 50.0 m (164.04 ft).
     4. Video Characteristics
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer CBR/VBR bit rate control.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer the following video compression protocols
           1. H.265 (32 to 8192 Kbps)
           2. H.264 (19 to 8192 Kbps)
        3. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H, and MJPEG video compression protocols.
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer BLC, HLC, and DWDR modes of backlight compensation.
        5. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer Auto, Natural, Street Lamp, Outdoor, Manual, and Regional Custom White Balance modes.
        6. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer 3D DNR noise reduction.
        7. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer motion detection (four zones) and region of interest (four zones) controls.
        8. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer eight (8) privacy masking areas.
        9. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer a Flip mode at 0°, 90°, 180°, and 270°.
     5. Streaming Capability
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall generate full 4 MP   
           (2688 x 1520 pixels) at 30 fps resolution using Smart H.265+ compression.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer Unicast and Multicast streaming methods.
        3. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer the following resolutions:
           1. 4 MP (2688 x 1520)
           2. 1080p (1920 × 1080
           3. 1.3MP (1280 × 960)
           4. 720p (1280 × 720)
           5. D1 (704 × 576/704 × 480)
           6. VGA (640 × 480)
           7. CIF (352 × 288/352 × 240)
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall generate three streams at the following maximum resolutions:
           1. Main Stream: 4MP (2688 x 1520) at 30 fps
           2. Sub Stream 1: D1 (704 x 480) at 30 fps
           3. Sub Stream 2: 1080p (1920 x 1080) at 30 fps
     6. IP Connectivity
        1. The 4MP Night Color 2.0 Fusion Network Eyeball shall allow full camera control and configuration capabilities via a TCP/IP network.
        2. The 4MP Night Color 2.0 Fusion Network Eyeball 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 4MP Night Color 2.0 Fusion Network Eyeball shall conform to the ONVIF Profile S, G, and T.
        4. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
        5. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer local and network storage options that include: MicroSD, Network Attached Storage (NAS), and recording to a local PC for instant recording.
        6. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the following protocols: IPv4, IPv6, HTTP, TCP, UDP, ARP, RTP, RTSP, SMTP, FTP, DHCP, DNS, NTP, Multicast, DDNS.
        7. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the DSS management software and the DMSS mobile application.
        8. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the Android and the iOS mobile operating systems.
     7. Analytics+
        1. The 4MP Night Color 2.0 Fusion Network Eyeball 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. The 4MP Night Color 2.0 Fusion Network Eyeball offer the following built-in Smart Motion Detection+ functions to provide advanced motion analytics for any scene:
         1. Differentiate between and classify human and vehicle objects.
         2. Filter false alarms due to leaves, lights, animals, and other inconsequential objects.
         3. Extract human or vehicle objects from recorded video for quick target search and retrieval.
    1. Intelligent Video System
       1. The 4MP Night Color 2.0 Fusion Network Eyeball 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 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.

IP Address conflict

* + - * 1. Premium Features

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

* + 1. Installation Requirements
       1. The 4MP Night Color 2.0 Fusion Network Eyeball 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 4MP Night Color 2.0 Fusion Network Eyeball shall accept power, transmit video, and accept control via an Ethernet connection.
       3. The 4MP Night Color 2.0 Fusion Network Eyeball shall support the following dual, redundant power options:
          1. 12 VDC +30%
          2. PoE (IEEE 802.3af, class 0)
          3. ePoE
          4. The 4MP Night Color 2.0 Fusion Network Eyeball shall default to use power from the PoE power supply, if connected.
          5. The 4MP Night Color 2.0 Fusion Network Eyeball shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
    2. Housing Options
       1. The 4MP Night Color 2.0 Fusion Network Eyeball shall be offered in a metal housing.
       2. The 4MP Night Color 2.0 Fusion Network Eyeball housing shall conform to the IP67 Ingress Protection standard.
  1. ACCESSORIES
     1. The 4MP Night Color 2.0 Fusion Network Eyeball shall offer the following optional accessories:
        1. [Mount adapter]
        2. [Wall mount bracket]
        3. [Junction box]
        4. [Waterproof junction box]
        5. [Pole mount]
        6. [Ceiling mount]
        7. [Wall mount]
        8. [12 VDC, 1 A power adapter]
        9. [EoC passive converter]
        10. [Single-port EoC Receiver]
        11. [Integrated mount tester]
        12. [Corner mount]
        13. [256GB SD card]

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