April 2017

**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 11: Analog Cameras**

**2MP WDR HDCVI IR EYEBALL CAMERA**

## PART 1 – GENERAL

1.1 SUMMARY

A. 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

B. 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.

1.2 REFERENCES

A. CONFORMITE EUROPEENNE (CE)
   1. EN55032
   2. EN55024
   3. EN50130-4
B. Federal Communications Commission (FCC) (www.fcc.gov)
   1. CFR 47 FCC Part 15 Subpart B

C. Underwriters Laboratories, Inc. (UL) (www.ul.com)
   1. UL60950-1

D. CSA Group (www.csagroup.org)
   1. CAN/CSA C22.2 No.60950-1

E. ANSI Standard
   1. ANSI C63.4-2014

F. HD standards
   1. Complies with the SMPTE 274M-2008 Standard in:
      a. Resolution: 1920x1080
      b. Scan: Progressive
      c. Color representation: complies with ITU-R BT.709
      d. Aspect ratio: 16:9
      e. Frame rate: 25 and 30 frames/s
   2. Complies with the 296M-2001 Standard in:
      a. Resolution: 1280x720
      b. Scan: Progressive
      c. Color representation: complies with ITU-R BT.709
      d. Aspect ratio: 16:9
      e. Frame rate: 25, 30, 50 and 60 frames/s
      f. Interference-Causing Equipment Standards

1.3 SYSTEM DESCRIPTION

A. Section Includes
   1. Video Surveillance – Surveillance Cameras – Analog Cameras

B. Performance Requirements
   1. The 2MP HDCVI IR Eyeball camera shall be a full-featured 2MP IR HDCVI Eyeball camera unit designed for discrete video surveillance applications in indoor and outdoor environments.
   2. The 2MP HDCVI IR Eyeball camera shall transmit simultaneously high-definition and standard-definition video over coaxial cable.
   3. The 2MP HDCVI IR Eyeball camera shall offer an HDCVI and a CVBS output each with a BNC connector.
   4. The 2MP HDCVI IR Eyeball camera shall be a high performance 1/2.7-in. progressive-scan CMOS sensor with 2MP resolution.
   5. The 2MP HDCVI IR Eyeball camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
   6. The 2MP HDCVI IR Eyeball camera shall have a fixed focal length of [3.6mm] [6mm].

7. The 2MP HDCVI IR Eyeball camera shall offer microcrystalline IR LED that provides integrated infrared illumination to capture images in low light or total darkness at a distance of 30.0 m (98 ft). The IR LED is able to be turn on/off automatically or be set to normally closed (IR NC).
8. The 2MP HDCVI IR Eyeball camera shall offer Smart IR that adjusts to the intensity of camera's infrared LEDs to compensate for the distance of an object, and prevents IR LEDs from overexposing images as the object come closer to the camera.
9. The 2MP HDCVI IR Eyeball camera shall offer:
    a. IP67 environmental protection
    b. 4KV lightning resistance.

## 1.4 SUBMITTALS

A. Submit under provisions of Section [01 33 00.]

B. 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.

C. Dimensional Drawings; include
1. Overall device dimensions.
2. Dimensions specific for installation.

D. Closeout Submittals
1. User manual.
2. Parts list.
3. Maintenance requirements.

## 1.5 QUALITY ASSURANCE

A. Manufacturer:
1. Minimum of [10] years of experience in manufacture and design Video Surveillance Devices.

B. Video Surveillance System:
1. List certifying bodies (UL, CSA, etc.)
2. Provide evidence of compliance upon request.

C. Installer:
1. Minimum of [5] years of experience installing Video Surveillance System.

## 1.6 DELIVERY, STORAGE AND HANDLING

A. Comply with requirements of Section 01 60 00.

B. Deliver materials in manufacture's original, unopened, undamaged containers; and unharmed original identification labels.

C. Protect store materials from environmental and temperature conditions following manufacturer's instructions.

D. Handle and operate products and systems according to manufacturer's instructions.

## 1.7 WARRANTY

A. Provide manufacturer's warranty covering [2] years for replacement and repair of defective equipment. Warranty varies country to country.

## 1.8 MAINTENANCE

A. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.

B. Provide factory direct technical support via phone and e-mail.

## PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. [Acceptable Manufacturer:
Dahua Technology Co., Ltd.
1199 Bin'an Road, Hangzhou China
Tel: +86 (571) 8768 8883
Fax: +86 (571) 8768 8815
Email: overseas@dahuatech.com]

B. 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.]

2.2 2MP WDR HDCVI IR EYEBALL CAMERA – [DH-HAC-HDW2221MP] [DH-HAC-HDW2221MN]

A. General Characteristics:
   1. The 2MP HDCVI IR Eyeball camera shall be a full-featured 2MP IR HDCVI Eyeball camera unit designed for discrete video surveillance applications in indoor and outdoor environments.
   2. The 2MP HDCVI IR Eyeball camera shall transmit simultaneously high-definition and standard-definition video over coaxial cable.
   3. The 2MP HDCVI IR Eyeball camera shall offer an HDCVI and a CVBS output each with a BNC connector.
   4. The 2MP HDCVI Eyeball camera shall transmit 2MP video up to 800 m (0.49 miles) via RG6 coaxial cable, and up to 300 m (0.19 miles) via CAT5e UTP cable. Actual transmission distance may vary due to the quality and deployment of the cable.
   5. The 2MP HDCVI IR Eyeball camera shall be a high performance 1/2.7-in. progressive-scan CMOS sensor with 2MP resolution.
   6. The 2MP HDCVI IR Eyeball camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
   7. The 2MP HDCVI IR Eyeball camera shall have a fixed focal length of [3.6mm] [6mm].
   8. The 2MP HDCVI IR Eyeball camera shall offer microcrystalline IR LED that provides integrated infrared illumination to capture images in low light or total darkness at a distance of 30.0 m (98 ft). The IR LED is able to be turn on/off automatically or be set to normally closed (IR NC).
   9. The 2MP HDCVI IR Eyeball camera shall offer Smart IR that adjusts to the intensity of camera's infrared LEDs to compensate for the distance of an object, and prevents IR LEDs from overexposing images as the object come closer to the camera.
   10. The 2MP HDCVI IR Eyeball camera shall offer:
       a. IP67 environmental protection
       b. 4KV lightning resistance.

B. Imaging
   1. The 2MP HDCVI IR Eyeball camera shall be a high performance 1/2.7-in. progressive-scan CMOS sensor with 2MP resolution.
   2. The 2MP HDCVI IR Eyeball camera shall offer an effective number of pixels of 1920 x 1080 (2MP).
   3. The 2MP HDCVI IR Eyeball camera shall offer a 16:9 aspect ratio.
   4. The 2MP HDCVI IR Eyeball camera shall have a fixed focal length of [3.6mm] [6mm].
   5. The 2MP HDCVI IR Eyeball camera shall have a close focus distance of [800 mm (31.50 in.)] [1800 mm (70.87 in.)].
   6. The 2MP HDCVI Eyeball camera shall have a [90 º] [59.4 º] horizontal field of view.
   7. The 2MP HDCVI IR Eyeball camera shall offer an aperture of F2.0.
   8. The 2MP IR HDCVI Eyeball camera shall be capable to produce a color image with a minimum scene illumination of 0.03 lux at F2.0 and a monochrome image. The image can be set to Auto, which means the image automatically switches between color and black/white modes based on the scene illumination, or be set to Color or Black/White, which means the image always keep in color or black/white mode.
   9. The 2MP IR HDCVI Dome camera shall offer configurable threshold and waiting time for switching between color and black/white modes.
   10. The 2MP HDCVI IR Eyeball camera shall produce an image at 0 lux when in IR mode.

C. Video Characteristics
   1. The 2MP HDCVI IR Eyeball camera shall generate:
      a. 1080p resolution at 25/30 fps
      b. 720p resolution at 25/30 fps
      c. 720p resolution at 50/60 fps.
   2. The 2MP HDCVI IR Eyeball camera shall offer one BNC HDCVI high-definition output and one BNC CVBS standard-definition output.
   3. The 2MP HDCVI IR Eyeball camera shall offer BLC, HLC, and WDR modes of backlight compensation.
   4. The 2MP HDCVI IR Eyeball camera shall offer 3DNR and 2DNR noise reduction.
   5. The 2MP HDCVI IR Eyeball camera shall offer Image Adjustment options including Sharpness, Brightness, Contrast, Saturation, Hue, Gamma, ACE, 2DNR and 3DNR.
   6. The 2MP HDCVI IR Eyeball camera shall offer maximum electronic shutter up to 1.3s, minimum electronic shutter down to 1/30,000s, adjustable exposure levels and up to 16X slow shutter.
   7. The 2MP HDCVI IR Eyeball camera shall offer White Balance modes including Auto, Manual and Regional WB (adjusting white balance of the image based on a configurable area), ATW and One Push.
   8. The 2MP HDCVI IR Eyeball camera shall offer 10 languages for the OSD menu, including Chinese, English, Spanish, Portuguese, German, French, Polish, Russian, Korean and Japanese.
   9. The 2MP HDCVI Eyeball camera shall offer at most 10 times digital zoom.
   10. The 2MP HDCVI IR Eyeball camera shall offer electronic defog feature.
   11. The 2MP HDCVI IR Eyeball camera shall offer 8 privacy masking areas.
   12. The 2MP HDCVI IR Eyeball camera shall offer 4 motion detect areas.
   13. The 2MP HDCVI IR Eyeball camera shall offer vertical and horizontal mirror feature.

D. Installation Requirements
   1. The 2MP HDCVI Eyeball camera shall be capable of operating in an environment within a temperature range of –30° C to +60° C (–22° F to 140° F) and a humidity less than 90% RH.
   2. The 2MP HDCVI IR Eyeball camera shall transmit video and data via a coaxial cable, or via UTP using balun, and shall accept power from power adapter or via coaxial cable using external POC modules.
   3. The 2MP HDCVI Eyeball camera shall accept power from a 12V DC source ±25% voltage fluctuation.
   4. The 2MP HDCVI Eyeball camera shall support monitoring angle adjusting according to 3 axis. Pan: 0° ~ 360°, Tilt: 0° ~ 90°, Rotation: 0° ~ 360°.

E. Housing Options
   1. The 2MP HDCVI Eyeball camera shall be offered in an aluminum housing.
   2. The 2MP HDCVI Eyeball camera housing shall conform to the IP67 standard for a weather-resistant package.

## 2.3 ACCESSORIES

A. The 2MP IR HDCVI IR Eyeball camera shall offer the following accessories:
   1. Optional mounting hardware:
      a. [Junction box]
      b. [Wall mount bracket]
      c. [Pole mount bracket].

## PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas to receive devices and notify adverse conditions affecting installation or subsequent operation.

B. Do not begin installation until unacceptable conditions are corrected.

3.2 PREPARATION

A. Protect devices from damage during construction.

3.3 INSTALLATION

A. Install devices in accordance with manufacturer's instruction at locations indicated on the floor drawings plans.

B. Perform installation with qualified service personnel.

C. Install devices in accordance with the National Electrical Code or applicable local codes.

D. Ensure selected location is secure and offers protection from accidental damage.

E. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.

3.4 FIELD QUALITY CONTROL

A. Test snugness of mounting screws of all installed equipment.

B. Test proper operation of all video system devices.

C. Determine and report all problems to the manufacturer's customer service department.

3.5 ADJUSTING

A. Make proper adjustment to video system devices for correct operation in accordance with manufacturer's instructions.

B. Make any adjustment of camera settings to comply with specific customer's need.

3.6 DEMOSTRATION

A. Demonstrate at final inspection that video management system and devices functions properly.

END OF SECTION