NOVEMBER 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 Security**

**Section 28 21 13: IP Cameras**

**5MP STARLIGHT VARI-FOCAL EYEBALL NETWORK CAMERA**

1. **– GENERAL**
	1. SUMMARY
		1. Section Includes
			1. Section 28 21 17: Video Security – Security Cameras – Camera Housings
			2. Section 28 21 19: Video Security – Security Cameras – Camera Mounts
			3. Section 28 21 21: Video Security – Security Cameras – Illuminators
			4. Section 28 27 00: Video Security – Video Security 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 Security – Security Cameras – IP Cameras
		2. Performance Requirements
			1. The 5MP Eyeball camera shall be a full-featured network Eyeball camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 5MP Eyeball camera shall use a high performance 1/2.7-in. 5MP Progressive-scan CMOS sensor.
			3. The 5MP Eyeball camera shall utilize Starlight technology to produce color images in illumination down to 0.005 lux at F1.5.
			4. The 5MP Eyeball camera shall provide direct network connection using Smart H.265+, H.265, Smart H.264+, H.264, or MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			5. The 5MP Eyeball 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 5MP Eyeball camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 5MP Eyeball camera shall default to use power from the PoE power supply, if connected.
				4. The 5MP Eyeball camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			7. The 5MP Eyeball camera shall offer a maximum IR LED distance of 40 m
			(131.23 ft).
			8. The 5MP Eyeball camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			9. The 5MP Eyeball camera shall offer Analytics+ functions to detect human or vehicle targets using tripwire or intrusion methods.
			10. The 5MP Eyeball camera shall offer Smart Motion Detection technology to improve alarm accuracy and decrease the number of false alarms.
			11. The 5MP Eyeball camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video security.
			12. The 5MP Eyeball camera shall offer a built-in microphone.
			13. The 5MP Eyeball camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			14. The 5MP Eyeball camera shall offer three (3) separate and configurable streams with individually configurable 5MP, D1, and 720p streams.
			15. The 5MP Eyeball camera shall have a 2.7 mm to 13.5 mm vari-focal lens.
			16. The 5MP Eyeball camera shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			17. The 5MP Eyeball camera 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 Security Devices.
		2. Video Security 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 Security 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]

* + 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. 5MP STARLIGHT VARI-FOCAL EYEBALL NETWORK CAMERA N53AJ5Z

		1. General Characteristics:
			1. The 5MP Eyeball camera shall be a full-featured network Eyeball camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 5MP Eyeball camera shall use a high performance 1/2.7-in. 5MP Progressive-scan CMOS sensor.
			3. The 5MP Eyeball camera shall utilize Starlight technology to produce color images in illumination down to 0.005 lux at F1.5.
			4. The 5MP Eyeball camera shall provide direct network connection using Smart H.265+, H.265, Smart H.264+, H.264, or MJPEG compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			5. The 5MP Eyeball 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 5MP Eyeball camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 5MP Eyeball camera shall default to use power from the PoE power supply, if connected.
				4. The 5MP Eyeball camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			7. The 5MP Eyeball camera shall offer a maximum IR LED distance of 40 m
			(131.23 ft).
			8. The 5MP Eyeball camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			9. The 5MP Eyeball camera shall offer Analytics+ functions to detect human or vehicle targets using tripwire or intrusion methods.
			10. The 5MP Eyeball camera shall offer Smart Motion Detection technology to improve alarm accuracy and decrease the number of false alarms.
			11. The 5MP Eyeball camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video security.
			12. The 5MP Eyeball camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			13. The 5MP Eyeball camera shall offer three (3) separate and configurable streams with individually configurable 5MP, D1, and 720p streams.
			14. The 5MP Eyeball camera shall have a 2.7 mm to 13.5 mm vari-focal lens.
			15. The 5MP Eyeball camera shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			16. The 5MP Eyeball camera housing shall conform to the IP67 Ingress Protection standard.
		2. Imaging
			1. The 5MP Eyeball camera shall offer a 1/2.7-in. 5MP Progressive-scan CMOS imager.
			2. The 5MP Eyeball camera shall offer an effective number of pixels of 2592 x 1944 (5.0MP) effective picture elements.
			3. The 5MP Eyeball camera shall have a 2.7 mm to 13.5 mm vari-focal lens.
			4. The 5MP Eyeball camera shall have a horizontal angle of between 99° to 26° and a vertical angle of between 72° to 20°.
			5. The 5MP Eyeball camera shall offer a maximum aperture of F1.5.
			6. The 5MP Eyeball camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.5 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.5 when in IR mode.
		3. Illumination
			1. The 5MP Eyeball camera shall have two (2) integrated IR LEDs.
			2. The 5MP Eyeball camera shall offer an IR distance of up to 40.0 m
			(131.23 ft).
		4. Video Characteristics
			1. The 5MP Eyeball camera shall offer CBR/VBR bit rate control.
			2. The 5MP Eyeball camera shall offer the following video compression protocols
				1. H.265 (3 to 8448 Kbps)
				2. H.264 (3 to 8448 Kbps)
			3. The 5MP Eyeball camera shall offer Smart H.265+ and Smart H.264+ video compression protocols.
			4. The 5MP Eyeball camera shall offer BLC, HLC, SSA, and True WDR modes of backlight compensation.
			5. The 5MP Eyeball camera shall offer Auto, Natural, Street Lamp, Outdoor, Manual, and Regional Custom White Balance modes.
			6. The 5MP Eyeball camera shall offer 3D DNR noise reduction.
			7. The 5MP Eyeball camera shall offer motion detection (four zones) and region of interest (four zones) controls.
			8. The 5MP Eyeball camera shall offer four (4) privacy masking areas.
			9. The 5MP Eyeball camera shall offer a Flip mode at 0°, 90°, 180°, and 270°.
		5. Streaming Capability
			1. The 5MP Eyeball camera shall generate full 5MP
			(2592 x 1944 pixels) at 20 fps resolution using Smart H.265+ compression.
			2. The 5MP Eyeball camera shall offer Unicast and Multicast streaming methods.
			3. The 5MP Eyeball camera shall offer the following resolutions:
				1. 5MP (2592 x 1944)
				2. 2688 x 1520
				3. 2304 x 1296
				4. 1080p (1920 x 1080)
				5. 1.3MP (1280 x 960)
				6. 720p (1280 x 720)
				7. D1 (704 x 480)
				8. VGA (640 x 480)
				9. CIF (352 x 240)
			4. The 5MP Eyeball camera shall generate three streams at the following maximum resolutions:
				1. Main Stream: 5MP at 20 fps or 4MP at 30 fps
				2. Sub Stream 1: D1 at 30 fps
				3. Sub Stream 2: 720p at 30 fps
		6. IP Connectivity
			1. The 5MP Eyeball camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 5MP Eyeball camera shall deliver 5MP video, at rates up to 20 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
			3. The 5MP Eyeball camera shall conform to the ONVIF Profile S and G.
			4. The 5MP Eyeball camera shall offer Quality of Service (QoS) configuration options.
			5. The 5MP Eyeball camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 5MP Eyeball 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 5MP Eyeball 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 5MP Eyeball camera shall support the DSS management software and the DMSS mobile application.
			9. The 5MP Eyeball camera shall support the Android and the IOS mobile operating systems.
		7. Analytics+
			1. The 5MP Eyeball camera 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. Smart Motion Detection
			1. The 5MP Eyeball camera 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.
		2. Intelligent Video System
			1. The 5MP Eyeball 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 5MP Eyeball 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.

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 5MP Eyeball 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 5MP Eyeball camera shall accept power, transmit video, and accept control via an Ethernet connection.
			3. The 5MP Eyeball camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 5MP Eyeball camera shall default to use power from the PoE power supply, if connected.
				4. The 5MP Eyeball 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 5MP Eyeball camera shall be offered in a metal housing.
			2. The 5MP Eyeball camera housing shall conform to the IP67 Ingress Protection standard.
	1. ACCESSORIES
		1. The 5MP Eyeball camera shall offer the following optional accessories:
			1. [Mount adapter.]
			2. [Gang box adapter.]
			3. [Pole mount.]
			4. [Junction box.]
			5. [Corner mount.]
			6. [Wall mount.]
			7. [Ceiling mount.]
			8. [12 VDC, 1 A 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