November 2023

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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**

**8MP TiOC Network Black Eyeball Camera (2.8 mm)**

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. UL62368-1
			2. CAN/CSA C22.2 No. 62368-1-14
		3. European Standards
			1. EN62368-1
		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 – IP Cameras
		2. Performance Requirements
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall be a full-featured network bullet camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall use a high performance 1/2.8-in. 8MP Progressive-scan CMOS sensor.
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall integrate and IR and white-light illuminators for smart dual illumination.
			4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a white-light LED to produce color images in total darkness.
			5. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
			6. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer active alarm functionality to respond automatically to a triggered alarm.
			7. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall include two (2) built-in microphones and Voice Catcher technology.
			8. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a built-in speaker.
			9. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall provide direct network connection using AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H, and MJPEG (sub stream only) compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			10. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (802.3af)
				3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall default to use power from the PoE power supply, if connected.
				4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			11. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			12. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer three (3) separate and configurable streams with individually configurable 8MP, 704 x 480, and 1920 x 1080 streams.
			13. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall have a vari-focal lens with a focal length of 2.8 mm.
			14. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			15. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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]

* + 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. 4 MP THREE-IN-ONE FIXED BULLET NETWORK CAMERA N43BX82

		1. General Characteristics:
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall be a full-featured network eyeball camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall use a high performance 1/2.8-in. 8MP Progressive-scan CMOS sensor.
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall integrate and IR and white-light illuminators for smart dual illumination.
			4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a white-light LED to produce color images in total darkness.
			5. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
			6. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer active alarm functionality to respond automatically to a triggered alarm.
			7. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall include two (2) built-in microphones and Voice Catcher technology.
			8. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a built-in speaker.
			9. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall provide direct network connection using AI Coding, 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.
			10. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (802.3af)
				3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall default to use power from the PoE power supply, if connected.
				4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			11. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			12. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer three (3) separate and configurable streams with individually configurable 8MP, 704 x 480, and 1920 x 1080 streams.
			13. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall have a vari-focal lens with a focal length of 2.8 mm.
			14. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			15. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) housing shall conform to the IP67 Ingress Protection standard.
		2. Imaging
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer 1/2.8-in. 8MP Progressive-scan CMOS imager.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer an effective number of pixels of 3840 (H) × 2160 (V) effective picture elements.
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a fixed lens with a focal length of 2.8 mm.
			4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall have a horizontal angle of 106° and a vertical angle of 55°.
			5. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a maximum aperture of F1.0.
			6. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall produce a color image with a minimum scene illumination of 0.004 lux at F1.0.
		3. Illumination
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall have two (2) integrated white-light LEDs and two (2) integrated IR LEDs.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer an IR distance of up to 30.0 m (98.43 ft) and a white-light distance of up to 30.0 m (98.43 ft).
		4. Video Characteristics
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer CBR/VBR bit rate control.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer the following video compression protocols
				1. H.264: 3 kbps to 20480 kbps
				2. H.265: 3 kbps to 20480 kbps
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H, and MJPEG (sub stream only) video compression protocols.
			4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer BLC, HLC, SSA, and True WDR (120 dB) modes of backlight compensation.
			5. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer Auto, Natural, Street Lamp, Outdoor, Manual, and Custom Area modes.
			6. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer 3D NR noise reduction.
			7. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer four (4) zones of motion detection.
			8. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer eight (8) privacy masking areas.
			9. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer a Flip mode at 0°, 90°, 180°, and 270°.
		5. Streaming Capability
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall generate full 8MP (3840 × 2160 pixels) at 30 fps resolution using Smart H.265+ compression.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer the following resolutions:
				1. 8MP (3840 × 2160)
				2. 6MP (3072 × 2048)
				3. 5MP (3072 x 1728)
				4. 2592 x 1944
				5. 4MP (2688 x 1520)
				6. 2560 x 1440
				7. 3MP (2048 x1536)
				8. 2304 x 1296
				9. 1080p (1920 x 1080)
				10. 1.3 MP (1280 x 960)
				11. 720p (1280 x 720)
				12. D1 (704 x 480)
				13. VGA (640x 480)
				14. CIF (352 x 240)
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall generate three streams at the following maximum resolutions:
				1. Main Stream: 8MP (3840 × 2160) at 30 fps
				2. Sub Stream 1: 704 x 480 at 30 fps
				3. Sub Stream 2: 1920 x 1080 at 30 fps
		6. IP Connectivity
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall deliver 8MP video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall conform to the ONVIF S, G, and T profiles.
			4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer Quality of Service (QoS) configuration options.
			5. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the following protocols: IPv4, IPv6, HTTP, TCP, UDP, ARP, RTP, RTSP, RTCP, RTMP, SMTP, FTP, SFTP, DHCP, DNS, DDNS, QoS, UPnP, NTP, Multicast, ICMP, IGMP, NFS, SAMBA, PPPoE, and SNMP.
			8. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the DSS management software and the DMSS mobile application.
			9. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the Android and the iOS mobile operating systems.
		7. Analytics+
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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 detection methods.
				2. Search and retrieve video based on target type.
				3. Deliver a configurable automatic visual or auditory response to a triggered alarm.

Red/Blue Light illuminator activation

Siren activation. Includes 11 built-in siren sounds plus ability to record custom recordings

* + - 1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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.

* + - * 1. Premium Features

Motion Detection: An object is moving in a designated area.

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

* + 1. Installation Requirements
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) 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 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall accept power, transmit video, and accept control via an Ethernet connection.
			3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (802.3af)
				3. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall default to use power from the PoE power supply, if connected.
				4. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
		2. Housing Options
			1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall be offered in a metal and plastic housing.
			2. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) housing shall conform to the IP67 Ingress Protection standard.
	1. ACCESSORIES
		1. The 8MP TiOC Network Black Eyeball Camera (2.8 mm) shall offer the following optional accessories:
			1. [Mount adapter.]
			2. [Waterproof junction box.]
			3. [Ceiling mount extender.]
			4. [Ceiling mount.]
			5. [Pole mount.]
			6. [Junction box.]
			7. [Corner 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