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 Security**

**Section 28 21 13: IP Cameras**

**2 × 4MP TiOC Dual-lens Panoramic Network Bullet 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. 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 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall be a full-featured network bullet camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall use two (2) high performance 1/1.8-in. 4MP Progressive-scan CMOS sensor.
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer four (4) built-in warm light LEDs to produce color images in total darkness.
			4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
			5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer active alarm functionality to respond automatically to a triggered alarm.
			6. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall include a built-in microphone.
			7. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer a built-in speaker.
			8. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera 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.
			9. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE++ (802.3af)
				3. ePoE+
				4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall default to use power from the PoE+ power supply, if connected.
				5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall reboot and switch to the 12 VDC power supply if power from the PoE+ power supply is lost.
			10. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer Ultra Wide Dynamic Range for clear images in extreme high-contrast environments.
			11. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer three (3) separate and configurable streams with individually configurable 4096 × 1800, 1024 × 452, and 1920 × 832 streams.
			12. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall have a dual panoramic lens with a focal length of 3.6 mm.
			13. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			14. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet 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. 4 MP THREE-IN-ONE FIXED BULLET NETWORK CAMERA N43BX82

		1. General Characteristics:
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall be a full-featured network eyeball camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall use two (2) high performance 1/1.8-in. 4MP Progressive-scan CMOS sensor.
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer four (4) built-in warm light LEDs to produce color images in total darkness.
			4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer advanced analytics that detect and categorize between human and vehicular objects and technology that reduces the number of false alarms.
			5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer active alarm functionality to respond automatically to a triggered alarm.
			6. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall include a built-in microphone.
			7. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer a built-in speaker.
			8. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera 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.
			9. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE++ (802.3af)
				3. ePoE+
				4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall default to use power from the PoE+ power supply, if connected.
				5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall reboot and switch to the 12 VDC power supply if power from the PoE+ power supply is lost.
			10. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer Ultra Wide Dynamic Range for clear images in extreme high-contrast environments.
			11. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer three (3) separate and configurable streams with individually configurable 4096 × 1800, 1024 × 452, and 1920 × 832 streams.
			12. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall have a dual panoramic lens with a focal length of 3.6 mm.
			13. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall combine temperature-tolerant components with a waterproof enclosure to ensure flawless operation in temperatures as low as –40° C (–40° F).
			14. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera housing shall conform to the IP67 Ingress Protection standard.
		2. Imaging
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall use two (2) high performance 1/1.8-in. 4MP Progressive-scan CMOS sensor.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer an effective number of pixels of 4096 (H) × 1800 (V) effective picture elements.
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer a fixed lens with a focal length of 3.6 mm.
			4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall have a horizontal angle of 180° and a vertical angle of 48°.
			5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer a maximum aperture of F1.0.
			6. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.0.
		3. Illumination
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall have a four (4) built-in warm light.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer an illumination distance of 40 m (131.23 ft)
		4. Video Characteristics
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer CBR/VBR bit rate control.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer the following video compression protocols
				1. H.264: 9 kbps to 8192 kbps
				2. H.265: 9 kbps to 8192 kbps
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera 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 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer BLC, HLC, SSA, and Ultra WDR (140 dB) modes of backlight compensation.
			5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer Auto, Natural, Street Lamp, Outdoor, Manual, and Custom Area modes.
			6. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer 3D NR noise reduction.
			7. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer four (4) zones of motion detection.
			8. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer four (4) privacy masking areas.
		5. Streaming Capability
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall generate 4096 × 1800 at 20 fps resolution using Smart H.265+ compression.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer the following resolutions:
				1. 8MP (4096 × 1800)
				2. 6.5MP (3840 × 1680)
				3. 4MP (3840 × 1080)
				4. 4MP (2880 × 1264)
				5. 1.6MP (1920 × 832)
				6. 0.7MP (1280 × 560)
				7. 0.5MP (1024 × 452)
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall generate three streams at the following maximum resolutions:
				1. Main Stream

WDR On: 4096 × 1800 at 20 fps

WDR Off: 4096 × 1800 at 25 fps

* + - * 1. Sub Stream 1

WDR On: 1024 × 452 at 20 fps

WDR Off: 1024 × 452 at 25 fps

* + - * 1. Sub Stream 2

WDR On: 1920 × 832 at 20 fps

WDR Off: 1920 × 832 at 25 fps

* + 1. IP Connectivity
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera 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 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall conform to the ONVIF S, G, and T profiles.
			4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer Quality of Service (QoS) configuration options.
			5. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer local and network storage options that include: MicroSD and recording to a local PC for instant recording.
			7. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera 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 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the DSS management software, SmartPSS Lite, and the DMSS mobile application.
			9. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the Android and the iOS mobile operating systems.
		2. Analytics+
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet 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 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 2 × 4MP TiOC Dual-lens Panoramic Network Bullet 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. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera offer the following built-in Smart Object Detection functions:
				1. Detects when an object (luggage, bag, box, non-motor vehicle) remains or is removed from a designated area
				2. Triggers an alarm after a set amount of time (6 to 300 seconds)
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera offer the following built-in People Counting functions:
				1. Delivers accurate flow statistics from the following methods:

Line Crossing: Counts a person as they cross a threshold in a defined direction.

Region: Counts the number of people in a defined area.

* + - * 1. Counts people simultaneously from four (4) threshold lines and four (4) defined regions
		1. Intelligent Video System
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network 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 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

Fast Moving: Target exceeds a set speed when exiting a defined area.

Loitering Detection: Target is in motion inside a defined area longer than a specified amount of time.

Crowd Gathering: Specified number of people remain inside a defined area for a set time.

Parking Detection: Vehicle remains in a defined area without motion for a set period of time.

Heat Map: Generates a visual representation of data. Supports two-dimensional analysis, displays a visual representation of data for number of people or average wait time in a defined area over a given time.

* + 1. Installation Requirements
			1. The 2 × 4MP TiOC Dual-lens Panoramic Network 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 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall accept power, transmit video, and accept control via an Ethernet connection.
			3. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE++ (802.3af)
				3. ePoE+
				4. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall default to use power from the PoE+ power supply, if connected.
				5. The 2 × 4MP TiOC Dual-lens Panoramic Network 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 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall be offered in a metal and plastic housing.
			2. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera housing shall conform to the IP67 Ingress Protection standard.
	1. ACCESSORIES
		1. The 2 × 4MP TiOC Dual-lens Panoramic Network Bullet Camera shall offer the following optional accessories:
			1. [Pole mount.]
			2. [Junction box.]
			3. [Corner mount.]
			4. [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