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**

**4MP ePoE STARLIGHT+ VARI-FOCAL 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. 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 4MP Starlight+ Bullet camera shall be a full-featured network Bullet camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 4MP Starlight+ Bullet camera shall use a high performance 1/1.8-in. 4MP Progressive-scan CMOS sensor.
			3. The 4MP Starlight+ Bullet camera shall offer Starlight+ technology for low-light applications that delivers a color image in 0.0024 lux at F1.8.
			4. The 4MP Starlight+ Bullet camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			5. The 4MP Starlight+ Bullet camera shall support Ethernet over Coax (EoC) technology for IP/Analog hybrid system with transmission distances up to
			1000 m (3281 ft).
			6. The 4MP Starlight+ Bullet camera shall provide direct network connection using Smart H.265+, H.265, Smart H.264+ or H.264 compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			7. The 4MP Starlight+ Bullet camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3at, class 0)
				3. The 4MP Starlight+ Bullet camera shall default to use power from the PoE power supply, if connected.
				4. The 4MP Starlight+ Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			8. The 4MP Starlight+ Bullet camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			9. The 4MP Starlight+ Bullet camera shall offer Analytics+ functionality for advanced Face Capture with Metadata Extraction, Perimeter Protection and People Counting.
			10. The 4MP Starlight+ Bullet camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video security.
			11. The 4MP Starlight+ Bullet camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			12. The 4MP Starlight+ Bullet camera shall offer three separate and configurable streams with individually configurable 4MP, 1080p, and D1 streams.
			13. The 4MP Starlight+ Bullet camera shall offer a 2.7 mm to 12 mm motorized vari-focal lens.
			14. The 4MP Starlight+ Bullet camera housing shall conform to the IP67 Ingress Protection standard and to the IK10 Vandal Resistance rating.
	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. 4MP ePoE STARLIGHT+ VARI-FOCAL BULLET NETWORK CAMERA N45DB7Z

		1. General Characteristics:
			1. The 4MP Starlight+ Bullet camera shall be a full-featured network Bullet camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 4MP Starlight+ Bullet camera shall use a high performance 1/1.8-in. 4MP Progressive-scan CMOS sensor.
			3. The 4MP Starlight+ Bullet camera shall offer Starlight+ technology for low-light applications that delivers a color image in 0.0024 lux at F1.8.
			4. The 4MP Starlight+ Bullet camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			5. The 4MP Starlight+ Bullet camera shall support Ethernet over Coax (EoC) technology for IP/Analog hybrid system with transmission distances up to
			1000 m (3281 ft).
			6. The 4MP Starlight+ Bullet camera shall provide direct network connection using Smart H.265+, H.265, Smart H.264+ or H.264 compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			7. The 4MP Starlight+ Bullet camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3at, class 0)
				3. The 4MP Starlight+ Bullet camera shall default to use power from the PoE power supply, if connected.
				4. The 4MP Starlight+ Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			8. The 4MP Starlight+ Bullet camera shall offer True Wide Dynamic Range for clear images in extreme high-contrast environments.
			9. The 4MP Starlight+ Bullet camera shall offer Analytics+ functionality for advanced Face Capture with Metadata Extraction, Perimeter Protection and People Counting.
			10. The 4MP Starlight+ Bullet camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video security.
			11. The 4MP Starlight+ Bullet camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			12. The 4MP Starlight+ Bullet camera shall offer three separate and configurable streams with individually configurable 4MP, 1080p, and D1 streams.
			13. The 4MP Starlight+ Bullet camera shall offer a 2.7 mm to 12 mm motorized vari-focal lens.
			14. The 4MP Starlight+ Bullet camera housing shall conform to the IP67 Ingress Protection standard and to the IK10 Vandal Resistance rating.
			15. The 4MP Starlight+ Bullet camera shall come with a built-in heater to extend the operating temperature range to –40° C to +60° C (–40° F to 140° F).
		2. Imaging
			1. The 4MP Starlight+ Bullet camera shall offer a 1/1.8-in. 4MP Progressive-scan CMOS imager.
			2. The 4MP Starlight+ Bullet camera shall offer an effective number of pixels of 2688(H) x 1520(V) (4MP) effective picture elements.
			3. The 4MP Starlight+ Bullet camera shall offer a 16:9 aspect ratio.
			4. The 4MP Starlight+ Bullet camera shall offer a 2.7 mm to 12 mm motorized vari-focal lens.
			5. The 4MP Starlight+ Bullet camera shall have a horizontal angle of between 114° and 47° and a vertical angle of between 62° and 26°.
			6. The 4MP Starlight+ Bullet camera shall offer a maximum aperture of F1.8.
			7. The 4MP Starlight+ Bullet camera shall produce a color image with a minimum scene illumination of 0.0024 lux at F1.8.
			8. The 4MP Starlight+ Bullet camera shall offer three (3) integrated IR LED illuminators capable of infrared illumination up to a distance of 50 m (164.04 ft).
		3. Video Characteristics
			1. The 4MP Starlight+ Bullet camera shall offer CBR/VBR bit rate control.
			2. The 4MP Starlight+ Bullet camera shall offer the following video compression protocols
				1. H.265 (19 to 8192 Kbps)
				2. H.264 (32 to 8192 Kbps)
			3. The 4MP Starlight+ Bullet camera shall offer Smart H.265+ and Smart H.264+ video compression protocols.
			4. The 4MP Starlight+ Bullet camera shall offer BLC, HLC, and True WDR modes of backlight compensation.
			5. The 4MP Starlight+ Bullet camera shall offer Auto, Natural, Street Lamp, Outdoor, and Manual modes.
			6. The 4MP Starlight+ Bullet camera shall offer 3D DNR noise reduction.
			7. The 4MP Starlight+ Bullet camera shall offer motion detection (four zones) and region of interest (four zones) controls.
			8. The 4MP Starlight+ Bullet camera shall offer four (4) privacy masking areas.
			9. The 4MP Starlight+ Bullet camera shall offer a Flip mode at 0°, 90°, 180°, and 270°.
		4. Streaming Capability
			1. The 4MP Starlight+ Bullet camera shall generate full 4MP
			(2688 x 1520 pixels) at 30 fps resolution using Smart H.265+ compression.
			2. The 4MP Starlight+ Bullet camera shall offer Unicast and Multicast streaming methods.
			3. The 4MP Starlight+ Bullet camera shall offer the following resolutions:
				1. 4MP (2688 x 1520)
				2. 3MP (2304 x 1296)
				3. 1080p (1920 x 1080)
				4. 1.3MP (1280 x 960)
				5. 720p (1280 x 720)
				6. D1 (704 x 480)
				7. VGA (640 x 480)
				8. CIF (352 x 240)
			4. The 4MP Starlight+ Bullet camera shall generate three streams at the following maximum resolutions:
				1. Main Stream: 4MP (2688 x 1520) at 30 fps
				2. Sub Stream 1: D1 at 30 fps
				3. Sub Stream 2: 1080p at 11 fps
		5. IP Connectivity
			1. The 4MP Starlight+ Bullet camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 4MP Starlight+ Bullet camera shall deliver 4MP video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
			3. The 4MP Starlight+ Bullet camera shall conform to the ONVIF Profile S & G.
			4. The 4MP Starlight+ Bullet camera shall offer Quality of Service (QoS) configuration options.
			5. The 4MP Starlight+ Bullet camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 4MP Starlight+ Bullet 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 4MP Starlight+ Bullet 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 4MP Starlight+ Bullet camera shall support the Smart PSS and DSS management software.
			9. The 4MP Starlight+ Bullet camera shall support the Android and the IOS mobile operating systems.
		6. Analytics+
			1. The 4MP Starlight+ Bullet camera shall offer built-in Analytics+ functions for advanced analytics
			2. Analytics+ shall offer Face Capture with Metadata Extraction to detect and capture faces and extract age, gender, expression, wearing glasses, wearing a mask, and facial hair attributes.
			3. Analytics+ shall offer Perimeter Protection that detects human or vehicle violations using the tripwire or the intrusion method. This feature shall distinguish between human and vehicular targets.
			4. Analytics+ shall offer People Counting to deliver accurate flow statistics from the line crossing or the region method.
		7. Intelligent Video System
			1. The 4MP Starlight+ Bullet camera shall 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 4MP Starlight+ Bullet 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: a person or object moves the camera to change the scene or covers the camera to obscure the scene.

Abandoned/Missing Object: a target leaves an object in a designated area, or a target removes and object from the same designated area.

* + - * 1. Advanced Features

Facial Detection: Detects and captures a snapshot of a human face in a defined area within a scene.

* + 1. Installation Requirements
			1. The 4MP Starlight+ 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 4MP Starlight+ Bullet camera shall accept power, transmit video, and accept control via an Ethernet connection.
			3. The 4MP Starlight+ Bullet camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3at, class 0)
				3. The 4MP Starlight+ Bullet camera shall default to use power from the PoE power supply, if connected.
				4. The 4MP Starlight+ Bullet camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
		2. Interface
			1. The 4MP Starlight+ Bullet camera shall offer one (1) audio input channel and one (1) audio output channel.
			2. The 4MP Starlight+ Bullet camera shall offer one (1) alarm input channels and one (1) alarm (relay) output channel.
		3. Housing Options
			1. The 4MP Starlight+ Bullet camera shall be offered in a metal and plastic housing.
			2. The 4MP Starlight+ Bullet camera housing shall conform to the IP67 Ingress Protection standard.
			3. The 4MP Starlight+ Bullet camera housing shall conform to the IK10 Vandal Resistance Standard.
	1. ACCESSORIES
		1. The 4MP Starlight+ Bullet camera shall offer the following optional accessories:
			1. [Junction box.]
			2. [Pole mount.]
			3. [Corner mount.]
			4. [In-ceiling mount.]
			5. [12 VDC, 1 A Power Adapter.]
		2. The 4MP Starlight+ Bullet camera shall support the following optional EoC accessories:
			1. [EoC Passive Converter.]
			2. [Single-port EoC Receiver.]
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