June 2018

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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**

**4 MP VARI-FOCAL DOME ePoE NETWORK CAMERA**

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. 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 Surveillance – Surveillance Cameras – IP Cameras
		2. Performance Requirements
			1. The 4 MP Vari-focal Dome camera shall be a full-featured network Vari-focal Dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 4 MP Vari-focal Dome camera shall use a high performance 1/3-in. 4 MP Progressive-scan CMOS sensor.
			3. The 4 MP Vari-focal Dome camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			4. The 4 MP Vari-focal Dome camera shall support Ethernet over Coax (EoC) technology for IP/Analog hybrid system with transmission distances up to
			1000 m (3281 ft).
			5. The 4 MP Vari-focal Dome 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.
			6. The 4 MP Vari-focal Dome 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.
			7. The 4 MP Vari-focal Dome camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 4 MP Vari-focal Dome camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP Vari-focal Dome camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			8. The 4 MP Vari-focal Dome camera shall offer a maximum IR LED distance of
			50 m (164.04 ft).
			9. The 4 MP Vari-focal Dome camera shall offer True Wide Dynamic Range
			(120 dB) for clear images in extreme high-contrast environments.
			10. The 4 MP Vari-focal Dome camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
			11. The 4 MP Vari-focal Dome camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			12. The 4 MP Vari-focal Dome camera shall offer three separate and configurable streams with individually configurable 4 MP, 1080p and D1 streams.
			13. The 4 MP Vari-focal Dome camera shall offer a 2.7 mm to 13.5 mm vari-focal lens.
			14. The 4 MP Vari-focal Dome camera housing shall conform to the IP67 Ingress Protection standard.
			15. The 4 MP Vari-focal Dome camera housing shall conform to the IK10 Vandal Resistance 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.

23 Hubble, 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 VARI-FOCAL DOME ePoE NETWORK CAMERA [N45CL5Z]

		1. General Characteristics:
			1. The 4 MP Vari-focal Dome camera shall be a full-featured network Vari-focal Dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 4 MP Vari-focal Dome camera shall use a high performance 1/3-in. 4 MP Progressive-scan CMOS sensor.
			3. The 4 MP Vari-focal Dome camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			4. The 4 MP Vari-focal Dome camera shall support Ethernet over Coax (EoC) technology for IP/Analog hybrid system with transmission distances up to
			1000 m (3281 ft).
			5. The 4 MP Vari-focal Dome 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.
			6. The 4 MP Vari-focal Dome 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.
			7. The 4 MP Vari-focal Dome camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 4 MP Vari-focal Dome camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP Vari-focal Dome camera shall reboot and switch to the 12 VDC power supply if power from the PoE power supply is lost.
			8. The 4 MP Vari-focal Dome camera shall offer a maximum IR LED distance of
			50 m (164.04 ft).
			9. The 4 MP Vari-focal Dome camera shall offer True Wide Dynamic Range
			(120 dB) for clear images in extreme high-contrast environments.
			10. The 4 MP Vari-focal Dome camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
			11. The 4 MP Vari-focal Dome camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			12. The 4 MP Vari-focal Dome camera shall offer three separate and configurable streams with individually configurable 4 MP, 1080p and D1 streams.
			13. The 4 MP Vari-focal Dome camera shall offer a 2.7 mm to 13.5 mm vari-focal lens.
			14. The 4 MP Vari-focal Dome camera housing shall conform to the IP67 Ingress Protection standard.
			15. The 4 MP Vari-focal Dome camera housing shall conform to the IK10 Vandal Resistance standard.
			16. The 4 MP Vari-focal Dome camera shall come with a built-in heater to extend the operating temperature range to –30° C to +60° C (–22° F to 140° F).
		2. Imaging
			1. The 4 MP Vari-focal Dome camera shall offer a 1/3-in. 4 MP Progressive-scan STARVIS™ CMOS imager.
			2. The 4 MP Vari-focal Dome camera shall offer an effective number of pixels of 1920 x 1080 (2.0 MP) effective picture elements.
			3. The 4 MP Vari-focal Dome camera shall offer a 16:9 aspect ratio.
			4. The 4 MP Vari-focal Dome camera shall offer a 2.7 mm to 13.5 mm vari-focal lens.
			5. The 4 MP Vari-focal Dome camera shall have a horizontal angle of view between 106° to 31° and a vertical angle of view between 58° to17°.
			6. The 4 MP Vari-focal Dome camera shall offer a maximum aperture of F1.4.
			7. The 4 MP Vari-focal Dome camera shall produce a color image with a minimum scene illumination of 0.03 lux at F1.4 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.4 when in IR mode.
		3. Illumination
			1. The 4 MP Vari-focal Dome camera shall have three (3) integrated LEDs.
			2. The 4 MP Vari-focal Dome camera shall offer an IR distance of up to 50.0 m
			(164.04 ft).
		4. Video Characteristics
			1. The 4 MP Vari-focal Dome camera shall offer CBR/VBR bit rate control.
			2. The 4 MP Vari-focal Dome camera shall offer the following video compression protocols
				1. H.265 (14 to 9984 Kbps)
				2. H.264 (24 to 10240 Kbps)
			3. The 4 MP Vari-focal Dome camera shall offer Smart H.265+ and Smart H.264+ video compression protocols.
			4. The 4 MP Vari-focal Dome camera shall offer BLC, HLC, and True WDR modes of backlight compensation.
			5. The 4 MP Vari-focal Dome camera shall offer Auto, Natural, Street Lamp, Outdoor, and Manual modes.
			6. The 4 MP Vari-focal Dome camera shall offer 3D DNR noise reduction.
			7. The 4 MP Vari-focal Dome camera shall offer motion detection (four zones) and region of interest (four zones) controls.
			8. The 4 MP Vari-focal Dome camera shall offer four (4) privacy masking areas.
			9. The 4 MP Vari-focal Dome camera shall offer a Flip mode at 0°, 90°, 180°, and 270°.
		5. Streaming Capability
			1. The 4 MP Vari-focal Dome camera shall generate full 1920 x 1080 pixels at 60 fps resolution using Smart H.265+ compression.
			2. The 4 MP Vari-focal Dome camera shall offer Unicast and Multicast streaming methods.
			3. The 4 MP Vari-focal Dome camera shall offer the following resolutions:
				1. 4 MP (2688 x 1520)
				2. 3 MP (2304 x 1296)
				3. 1080p (1920 x 1080)
				4. SXGA (1280 x 1024)
				5. 1.3 MP (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 4 MP Vari-focal Dome camera shall generate three streams at the following maximum resolutions:
				1. Main Stream: 4 MP at 30 fps
				2. Sub Stream 1: D1 at 30 fps
				3. Sub Stream 2: 720p at 30 fps
		6. IP Connectivity
			1. The 4 MP Vari-focal Dome camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 4 MP Vari-focal Dome camera shall deliver 4 MP video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
			3. The 4 MP Vari-focal Dome camera shall conform to the ONVIF, PSIA, and the CGI standard.
			4. The 4 MP Vari-focal Dome camera shall offer Quality of Service (QoS) configuration options.
			5. The 4 MP Vari-focal Dome camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 4 MP Vari-focal Dome 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 4 MP Vari-focal Dome 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 4 MP Vari-focal Dome camera shall support the Smart PSS and DSS management software.
			9. The 4 MP Vari-focal Dome camera shall support the Android and the IOS mobile operating systems.
		7. Intelligent Video System
			1. The 4 MP Vari-focal Dome 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 4 MP Vari-focal Dome 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.

Tripwire: a target crosses a user-defined line.

Intrusion: a target enters or exits a defined perimeter.

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. Installation Requirements
			1. The 4 MP Vari-focal Dome camera shall be capable of operating in an outdoor environment within a temperature range of –30° C to +60° C (–22° F to 140° F).
			2. The 4 MP Vari-focal Dome camera shall accept power, transmit video, and accept control via an Ethernet connection.
			3. The 4 MP Vari-focal Dome camera shall support the following dual, redundant power options:
				1. 12 VDC
				2. PoE (IEEE 802.3af, class 0)
				3. The 4 MP Vari-focal Dome camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP Vari-focal Dome 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 4 MP Vari-focal Dome camera shall be offered in a metal housing.
			2. The 4 MP Vari-focal Dome camera housing shall conform to the IP67 Ingress Protection standard.
			3. The 4 MP Vari-focal Dome camera housing shall conform to the IK10 Vandal Resistance standard.
	1. ACCESSORIES
		1. The 4 MP Vari-focal Dome camera shall offer the following optional accessories:
			1. [Mount adapter.]
			2. [Junction box.]
			3. [Pole mount.]
			4. [In-ceiling mount.]
			5. [Ceiling mount.]
			6. [Wall mount.]
			7. [12 VDC, 2 A Power Adapter.]
			8. [24 VAC, 1.5 A Power Adapter.]
		2. The 4 MP Vari-focal Dome 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