January 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**

**2 MP IR VARIFOCAL NETWORK DOME 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 2 MP Dome camera shall be a full-featured Dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 2 MP Dome camera shall feature Smart Scene Adaptive (SSA) intelligent image technology to automatically evaluate and compensate for changes in the luminance of a scene.
			3. The 2 MP Dome camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.002 lux at F1.53.
			4. The 2 MP Dome camera shall provide direct network connection using Smart H.265+ and Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			5. The 2 MP 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.
			6. The 2 MP Dome camera shall utilize an algorithm that dynamically adjusts the cameras contrast settings to provide usable image quality in scenes affected by fog, smog, mist, smoke or other low contrast scene.
			7. The 2 MP Dome camera shall be a high performance 1/1.9-in. progressive-scan CMOS sensor with 2 MP resolution at 60 fps.
			8. The 2 MP Dome camera shall support the following dual, redundant power options:
				1. 12 VDC or 24 VAC
				2. PoE+ (802.3at, class 4)
				3. The 2 MP Dome camera shall default to use power from the PoE+ power supply, if connected.
				4. The 2 MP Dome camera shall reboot and switch to the 12 VDC or 24 VAC power supply if power from the PoE+ power supply is lost.
			9. The 2 MP Dome camera shall offer a maximum IR LED distance of 50 m (164.04 ft).
			10. The 2 MP Dome camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			11. The 2 MP Dome camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
			12. The 2 MP Dome camera shall offer People Counting and Heat Map business analytics.
			13. The 2 MP Dome camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			14. The 2 MP Dome camera shall offer three separate and configurable streams with individually configurable 2 MP and D1 streams.
			15. The 2 MP Dome camera shall have a motorized varifocal lens with a focal length between 4.1 mm to 16.4 mm.
			16. The 2 MP Dome camera housing shall conform to the IP67 Ingress Protection standard.
			17. The 2 MP Dome camera housing shall conform to the IK10 Vandal Resistance standard.
	3. SUBMITTALS

* + 1. Submit under provisions of Section [01 33 00.]
		2. 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.
		3. Dimensional Drawings; include
			1. Overall device dimensions.
			2. Dimensions specific for installation.
		4. 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. 2 MP IR VARIFOCAL NETWORK DOME CAMERA N28BL7Z

		1. General Characteristics:
			1. The 2 MP Dome camera shall be a full-featured Dome camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 2 MP Dome camera shall feature Smart Scene Adaptive (SSA) intelligent image technology to automatically evaluate and compensate for changes in the luminance of a scene.
			3. The 2 MP Dome camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.002 lux at F1.53.
			4. The 2 MP Dome camera shall provide direct network connection using Smart H.265+ and Smart H.264+ compression and bandwidth throttling to efficiently manage bandwidth and storage requirements while delivering outstanding image quality.
			5. The 2 MP 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.
			6. The 2 MP Dome camera shall utilize an algorithm that dynamically adjusts the cameras contrast settings to provide usable image quality in scenes affected by fog, smog, mist, smoke or other low contrast scene.
			7. The 2 MP Dome camera shall be a high performance 1/1.9-in. progressive-scan CMOS sensor with 2 MP resolution at 60 fps.
			8. The 2 MP Dome camera shall support the following dual, redundant power options:
				1. 12 VDC or 24 VAC
				2. PoE+ (802.3at, class 4)
				3. The 2 MP Dome camera shall default to use power from the PoE+ power supply, if connected.
				4. The 2 MP Dome camera shall reboot and switch to the 12 VDC or 24 VAC power supply if power from the PoE+ power supply is lost.
			9. The 2 MP Dome camera shall offer a maximum IR LED distance of 50 m (164.04 ft).
			10. The 2 MP Dome camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			11. The 2 MP Dome camera shall offer the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
			12. The 2 MP Dome camera shall offer People Counting and Heat Map business analytics.
			13. The 2 MP Dome camera shall conform to the ONVIF standard to provide interoperability with other conformant systems.
			14. The 2 MP Dome camera shall offer three separate and configurable streams with individually configurable 2 MP and D1 streams.
			15. The 2 MP Dome camera shall have a motorized varifocal lens with a focal length between 4.1 mm to 16.4 mm.
			16. The 2 MP Dome camera housing shall conform to the IP67 Ingress Protection standard.
			17. The 2 MP Dome camera housing shall conform to the IK10 Vandal Resistance standard.
		2. Imaging
			1. The 2 MP Dome camera shall offer a 1/1.9-inch type CMOS progressive-scan imager.
			2. The 2 MP Dome camera shall offer an effective number of pixels of 1920 x 1080 (2.0 MP) effective picture elements.
			3. The 2 MP Dome camera shall offer a varifocal lens with a focal length between 4.1 mm to 16.4 mm.
			4. The 2 MP Dome camera shall have a horizontal angle of view between 32° to 92° and a vertical angle between 18° to 53°.
			5. The 2 MP Dome camera shall offer a maximum aperture of F1.53.
			6. The 2 MP Dome camera shall produce a color image with a minimum scene illumination of 0.002 lux at F1.53 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.53 when in IR mode.
		3. Illumination
			1. The 2 MP Dome camera shall have four (4) integrated LEDs.
			2. The 2 MP Dome camera shall offer an IR distance of up to 50.0 m
			(164.04 ft).
		4. Video Characteristics
			1. The 2 MP Dome camera shall offer CBR/VBR bit rate control.
			2. The 2 MP Dome camera shall offer the following video compression protocols
				1. H.265 (14 to 9984 Kbps)
				2. H.264 (24 to 16384 Kbps)
			3. The 2 MP Dome camera shall offer BLC, HLC, and Digital WDR modes of backlight compensation.
			4. The 2 MP Dome camera shall offer Auto, Natural, Street Lamp, Outdoor, and Manual modes.
			5. The 2 MP Dome camera shall offer 3D DNR noise reduction.
			6. The 2 MP Dome camera shall offer motion detection (four zones) and region of interest (four zones) controls.
			7. The 2 MP Dome camera shall offer four (4) privacy masking areas.
		5. Streaming Capability
			1. The 2 MP Dome camera shall generate full 2 MP
			(1920 x 1080 pixels) at 60 fps resolution using Smart H.265+ compression.
			2. The 2 MP Dome camera shall offer Unicast and Multicast streaming methods.
			3. The 2 MP Dome camera shall offer the following resolutions:
				1. 1080p (1920 x 1080)
				2. SXGA (1280 x 1024)
				3. 1.3 MP (1280 x 960)
				4. 720p (1280 x 720)
				5. D1 (704 x 480)
				6. VGA (640 x 480)
				7. CIF (352 x 240)
			4. The 2 MP Dome camera shall generate three streams at the following maximum resolutions:
				1. Main Stream: 2 MP at 60 fps
				2. Sub Stream 1: D1 at 60 fps
				3. Sub Stream 2: 1080p at 60 fps
		6. IP Connectivity
			1. The 2 MP Dome camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 2 MP Dome camera shall deliver 2 MP video, at rates up to 60 frames per second via TCP/IP over an RJ-45 (100/1000 Base-T) connection.
			3. The 2 MP Dome camera shall conform to the ONVIF, PSIA, and the CGI standard.
			4. The 2 MP Dome camera shall offer Quality of Service (QoS) configuration options.
			5. The 2 MP Dome camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 2 MP 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 2 MP 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 2 MP Dome camera shall support the Smart PSS and DSS management software.
			9. The 2 MP Dome camera shall support the Android and the IOS mobile operating systems.
		7. Interface
			1. The 2 MP Dome camera shall offer one (1) video output port for spot output during installation.
			2. The 2 MP Dome camera shall offer one (1) audio input channel and one (1) audio output channel.
			3. The 2 MP Dome camera shall offer two (2) alarm input channels and one (1) alarm (relay) output channel.
		8. Intelligent Video System
			1. The 2 MP 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 2 MP 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. Advanced Features

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

People Counting: Measure the number of customers, visitors or passengers in a surveillance scene.

Heat Map: generates a visual representation of data.

* + 1. Installation Requirements
			1. The 2 MP Dome 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 MP Dome camera shall accept power, transmit video, and accept control via a TCP/IP connection.
			3. The 2 MP Dome camera shall support the following dual, redundant power options:
				1. 12 VDC or 24 VAC
				2. PoE+ (802.3at, class 4)
				3. The 2 MP Dome camera shall default to use power from the PoE+ power supply, if connected.
				4. The 2 MP Dome camera shall reboot and switch to the 12 VDC or 24 VAC power supply if power from the PoE+ power supply is lost.
		2. Housing Options
			1. The 2 MP Dome camera shall be offered in a metal housing.
			2. The 2 MP Dome camera housing shall conform to the IP67 Ingress Protection standard.
			3. The 2 MP Dome camera housing shall conform to the IK10 Vandal Resistance standard.
	1. ACCESSORIES
		1. The 2 MP Dome camera shall offer the following optional accessories:
			1. [Wall mount.]
			2. [Junction box.]
			3. [In-ceiling mount.]
			4. [Ceiling mount.]
			5. [Pole mount.]
			6. [Mount adapter.]
			7. [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