JULY 2021

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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 32X STARLIGHT IN-CEILING PTZ 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 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. Electromagnetic Compatibility
			1. FCC Part 15 Subpart B
			2. ANSI C63.4-2014
		2. European Standards
			1. EN 55032
			2. EN 55024
			3. EN 50130-4
		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 Starlight In-Ceiling Network PTZ camera shall be a full-featured 4 MP network camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.35.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer advanced analytics that offer perimeter protection functions, and that distinguishes between human and vehicular objects in a scene.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall incorporate a built-in heater to achieve an operational temperature down to –30 °C (–22 °F).
			6. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer a 1/2.8 in. STARVIS™ CMOS sensor with an effective pixel density of 2560 x 1440 at 30 fps.
			7. The 4 MP Starlight In-Ceiling Network PTZ camera shall have a motorized lens with a focal length between 4.9 mm to 156.0 mm and an autofocus lens with 32x optical zoom.
			8. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			9. The 4 MP Starlight In-Ceiling Network PTZ camera shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
			10. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an Intelligent Video System with Auto-tracking.
			11. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A
				2. PoE+ (IEEE 802.3at, class 4)
				3. The 4 MP H.265 Network camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP H.265 Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
			12. The 4 MP Starlight In-Ceiling Network PTZ camera housing shall conform to the IK10 Vandal Resistance rating.
	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 [2] 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 32X STARLIGHT NETWORK IN-CEILING PTZ CAMERA 52C432XANR

		1. General Characteristics:
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall be a full-featured 4 MP network camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.35.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer advanced analytics that offer perimeter protection functions, and that distinguishes between human and vehicular objects in a scene.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall incorporate a built-in heater to achieve an operational temperature down to –30 °C (–22 °F).
			6. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer a 1/2.8 in. STARVIS™ CMOS sensor with an effective pixel density of 2560 x 1440 at 30 fps.
			7. The 4 MP Starlight In-Ceiling Network PTZ camera shall have a motorized lens with a focal length between 4.9 mm to 156.0 mm and an autofocus lens with 32x optical zoom.
			8. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			9. The 4 MP Starlight In-Ceiling Network PTZ camera shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
			10. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an Intelligent Video System with Auto-tracking.
			11. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A
				2. PoE+ (IEEE 802.3at, class 4)
				3. The 4 MP H.265 Network camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP H.265 Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
			12. The 4 MP Starlight In-Ceiling Network PTZ camera housing shall conform to the IK10 Vandal Resistance rating.
		2. Imaging
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer a 1/2.8-inch type STARVIS™ CMOS Sensor.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an effective number of pixels of 2560(H) x 1440(V), 4 MP effective picture elements.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer a 32x optical zoom lens (4.9 mm to 156.0 mm) with a further 16x digital zoom.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall have a horizontal angle of view of between 2.1° to 61.6°.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an aperture of F1.35 to F4.4.
			6. The 4 MP Starlight In-Ceiling Network PTZ camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.35.
			7. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer automatic focus and iris control with manual override.
			8. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer a dynamic range of 120 dB.
		3. PTZ Features
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall provide a pan range of 360° endless.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall provide a tilt angle of 05° to 90° relative to the horizon.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall provide an automatic flip feature to automatically rotate and flip the camera as it tilts through the vertical position to maintain the correct orientation of the image.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall provide the following modes for variable pan/tilt speeds:
				1. Manual Control:

Pan: 0.1°/s to 350°/s

Tilt: 0.1°/s to 250°/s

* + - * 1. Preset Mode:

Pan: 500°/s

Tilt: 500°/s

* + - 1. The 4 MP Starlight In-Ceiling Network PTZ camera shall provide a feature that automatically rotates, or pivots, the camera to simplify tracking of a person walking directly under the camera.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall support 300 presets.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the following PTZ modes:
				1. Five (5) PTZ pattern modes.
				2. Eight (8) PTZ tour modes.
				3. One (1) Auto Pan mode.
				4. One (1) Auto Scan mode.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall automatically activate a preset, pan, scan, tour, or pattern mode if the camera does not receive a command during a specified period.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall automatically restore the previous PTZ and lens status after the camera powers up after a power failure.
			6. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the DH-SD and the Pelco-P/D protocols.
		1. DORI Distance
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall to conform to EN 62676-4, the standard that defines the criteria for the Detect, Observe, Recognize and Identify classifications.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer the following detect, observe, recognize, and identify distances:
				1. Detect (8 ppf): 3120.0 m (10236.22 ft)
				2. Observe (19 ppf): 1232.0 m (4041.99 ft)
				3. Recognize (38 ppf): 624.0 m (2047.24 ft)
				4. Identify (76 ppf): 312.0 m (1023.62 ft)
		2. Video Characteristics
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer CBR/VBR bit rate control.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer the following video compression protocols
				1. H.265/H.264 3 Kbps to 20480 Kbps
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer BLC, HLC, and True WDR modes of backlight compensation.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer Auto, Indoor, Outdoor, ATW, Manual, Sodium Lamp, Natural, and Street Lamp white balance modes.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer 2D/3D noise reduction.
			6. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer 24 privacy masking areas.
		3. Streaming Capability
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall generate full 4 MP (2560 x 1440 pixels) at 30 fps resolution using H.265 compression.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer Unicast and Multicast streaming methods.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer the following resolutions:
				1. 4 MP (2560 x 1440)
				2. 3 MP (2048 x 1536)
				3. 1080p (1920 x 1080)
				4. 1.3 MP (1280 x 960)
				5. 720p (1280 x 720)
				6. D1 (704 x 480)
				7. CIF (352 x 240)
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall generate three streams at the following maximum resolutions:
				1. Main Stream: 4 MP at 30 fps
				2. Sub Stream 1: D1 or CIF at 30 fps
				3. Sub Stream 2: 720p at 17 fps
		4. IP Connectivity
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 4 MP Starlight In-Ceiling Network PTZ 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 Starlight In-Ceiling Network PTZ camera shall conform to the ONVIF, PSIA, and the CGI standard.
			4. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer Quality of Service (QoS) configuration options.
			5. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 4 MP Starlight In-Ceiling Network PTZ 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 Starlight In-Ceiling Network PTZ 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, 802.1x
			8. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the DMSS and the DSS management software.
			9. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the Android and the IOS mobile operating systems.
		5. Interfaces
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall support the following audio compression technologies: G.711a, G.711Mu, G.722.1, G.726, G.729,
			MPEG2-L2, G.723.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
			3. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer an alarm interface with two (2) channels IN and one (1) channel OUT.
		6. Intelligent Video System
			1. The Intelligent Video System shall offer intelligent video analytics built-in to The 4 MP Starlight In-Ceiling Network PTZ camera.
			2. The Intelligent Video System shall be capable of processing and analyzing video within the camera itself, with no extra hardware required.
			3. The Intelligent Video System shall detect multiple object behaviors such as abandoned or missing objects.
			4. The Intelligent Video System shall support Tripwire analytics to detect when an object has crossed a pre-determined line on the video image.
			5. The Intelligent Video System shall offer Auto-tracking, a feature that automatically controls the pan, tilt, and zoom functions of the camera to track a moving object and keep it in the scene.
		7. Analytics+
			1. The 4 MP Laser PTZ camera shall 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 ten (10) detection methods.
				2. Search and retrieve video based on target type.
		1. Smart Motion Detection
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall 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. Installation Requirements
			1. The 4 MP Starlight In-Ceiling Network PTZ 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 Starlight In-Ceiling Network PTZ camera shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A
				2. PoE+ (IEEE 802.3at, class 0)
				3. The 4 MP H.265 Network camera shall default to use power from the PoE power supply, if connected.
				4. The 4 MP H.265 Network camera shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
		3. Housing Options
			1. The 4 MP Starlight In-Ceiling Network PTZ camera shall be offered in a metal housing.
			2. The 4 MP Starlight In-Ceiling Network PTZ camera housing shall conform to the IK10 Vandal Resistance standard.

2.3 ACCESSORIES

* + 1. The 4 MP Starlight In-Ceiling Network PTZ camera shall offer the following accessories:
			1. Included:
				1. Power supply.
			2. Optional mounting hardware:
				1. [Polycarbonate Smoke Tinted Bubble.]

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