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**

**4MP 32X STARLIGHT IN-CEILING PTZ NETWORK 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 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. 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. UL
			1. UL62368-1 + CAN/CSA C22.2, No. 62368-1
		4. 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 Enhanced Starlight Network PTZ Camera (32x) shall be a full-featured 4MP network camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.6.
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer advanced analytics that offer perimeter protection functions, and that distinguishes between human and vehicular objects in a scene.
			5. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall incorporate a built-in heater to achieve an operational temperature down to –30 °C (–22 °F).
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer a 1/2.8 in. CMOS sensor with an effective pixel density of 2560 x 1440 at 30 fps.
			7. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall have a motorized lens with a focal length between 4.8 mm to 154.0 mm and an autofocus lens with 32x optical zoom.
			8. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			9. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
			10. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer an Intelligent Video System with Auto-tracking.
			11. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A ± 25%
				2. PoE+ (IEEE 802.3at)
				3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall default to use power from the PoE power supply, if connected.
				4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
			12. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 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 [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. 4MP 32X STARLIGHT NETWORK IN-CEILING PTZ CAMERA 52C432GBNR

		1. General Characteristics:
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall be a full-featured 4MP network camera designed for discrete video security applications in indoor and outdoor environments.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer Starlight Technology for ultra-low light sensitivity that produces color images in light down to 0.005 lux at F1.6.
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer advanced analytics that offer perimeter protection functions and distinguishes between human and vehicular objects in a scene.
			5. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall incorporate a built-in heater to achieve an operational temperature down to –30 °C (–22 °F).
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer a 1/2.8 in. CMOS sensor with an effective pixel density of 2560 x 1440 at 30 fps.
			7. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall have a motorized lens with a focal length between 4.8 mm to 154.0 mm and an autofocus lens with 32x optical zoom.
			8. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer True Wide Dynamic Range (120 dB) for clear images in extreme high-contrast environments.
			9. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall accept two (2) incoming alarm channels and offer one (1) outgoing alarm channel.
			10. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer an Intelligent Video System with Auto-tracking.
			11. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A + 25%
				2. PoE+ (IEEE 802.3at)
				3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall default to use power from the PoE power supply, if connected.
				4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
			12. The 4MP Enhanced Starlight Network PTZ Camera (32x) housing shall conform to the IK10 Vandal Resistance rating.
		2. Imaging
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer a 1/2.8-inch type CMOS Sensor.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer an effective number of pixels of 2560(H) x 1440(V), 4MP effective picture elements.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer a 32x optical zoom lens (4.8 mm to 154.0 mm) with a further 16x digital zoom.
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall have a horizontal angle of view of between 55.8° to 2.3°.
			5. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer an aperture of F1.6 to F4.0.
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall produce a color image with a minimum scene illumination of 0.005 lux at F1.6.
			7. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer automatic, semi-automatic, and manual focus control and iris control with automatic and manual control.
			8. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer a dynamic range of 120 dB.
		3. PTZ Features
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall provide a pan range of 360° endless.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall provide a tilt angle of 0° to 90° relative to the horizon.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) shall provide a feature that automatically rotates, or pivots, the camera to simplify tracking of a person walking directly under the camera.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support 300 presets.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) shall automatically restore the previous PTZ and lens status after the camera powers up after a power failure.
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the DH-SD and the Pelco-P/D protocols.
		1. DORI Distance
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall to conform to EN 62676-4, the standard that defines the criteria for the Detect, Observe, Recognize and Identify classifications.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer the following detect, observe, recognize, and identify distances:
				1. Detect (8 ppf): 3,080 m (10,104.99 ft)
				2. Observe (19 ppf): 1,216.6 m (3,991.47 ft)
				3. Recognize (38 ppf): 616 m (2,021.00 ft)
				4. Identify (76 ppf): 308 m (1,010.50 ft)
		2. Video Characteristics
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer CBR/VBR bit rate control.
			2. The 4MP Starlight In-Ceiling Network PTZ camera shall offer the following video compression protocols
				1. H.265: 38 to 8,960 Kbps
				2. H.264: 96 to 14,848 Kbps
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer BLC, HLC, and True WDR (120 dB) modes of backlight compensation.
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer Auto, Indoor, Outdoor, ATW, Manual, Sodium Lamp, Natural, and Street Lamp white balance modes.
			5. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer 2D/3D noise reduction.
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer 24 privacy masking areas.
		3. Streaming Capability
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall generate full 4MP (2560 x 1440 pixels) at 30 fps resolution using H.265 compression.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer Unicast and Multicast streaming methods.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer the following resolutions:
				1. 4MP (2560 × 1440)
				2. 3MP (2048 × 1536)
				3. 2304 × 1296,
				4. 1080p (1920 × 1080)
				5. 720p (1280 × 720)
				6. D1 (704 × 576/704 × 480)
				7. CIF (352 × 288/352 × 240)
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall generate three streams at the following maximum resolutions:
				1. Main Stream: 4MP/3MP/1080p/1.3MP/720p at 1 to 30 fps
				2. Sub Stream 1: D1/CIF at 1 to 30 fps
				3. Sub Stream 2: 1080p/1.3M/720p at 1 to 30 fps
		4. IP Connectivity
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 Enhanced Starlight Network PTZ Camera (32x) shall conform to the ONVIF, PSIA, and the CGI standard.
			4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer Quality of Service (QoS) configuration options.
			5. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the DMSS and the DSS management software.
			9. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the Android and the IOS mobile operating systems.
		5. Interfaces
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the following audio compression technologies: PCM, G.711a, G.711Mu, G.726, MPEG2-Layer2, G722.1, G729, G723, AAC.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer an audio interface with one (1) channel IN and one (1) channel OUT.
			3. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x).
			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 4MP Laser PTZ camera shall offer the following built-in Analytics+ functions to provide advanced analytics for any scene:
				1. Perimeter Protection

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. Face Detection

Supports five group libraries that store up to 200,000 faces on the camera.

Captures faces, compares to stored images, and produces match statistics.

Extracts six attributes and eight expressions from a face capture.

Offers face enhancement, face exposure, and a face angle filter for clear facial images.

* + - * 1. Upgraded Smart Motion Detection+

Differentiates between and classifies human and vehicle objects.

Filters false alarms due to leaves, lights, animals, and other inconsequential objects.

Extracts human or vehicle objects from recorded video for quick target search and retrieval.

* + 1. Installation Requirements
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) 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 4MP Enhanced Starlight Network PTZ Camera (32x) shall support the following dual, redundant power options:
				1. 24 VDC, 2.5 A + 25%
				2. PoE+ (IEEE 802.3at)
				3. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall default to use power from the PoE power supply, if connected.
				4. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall reboot and switch to the 24 VAC power supply if power from the PoE power supply is lost.
		2. Housing Options
			1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall be offered in a metal housing.
			2. The 4MP Enhanced Starlight Network PTZ Camera (32x) housing shall conform to the IK10 Vandal Resistance standard.

2.3 ACCESSORIES

* + 1. The 4MP Enhanced Starlight Network PTZ Camera (32x) shall offer the following accessories:
			1. Included:
				1. Power supply.
			2. Optional mounting hardware:
				1. [Polycarbonate Smoke Tinted Bubble.]
				2. [Integrated Mount Tester.]
				3. [MicroSDXC Memory Cards.]

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