DECEMBER 2020

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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**

**Section 28 21 13.11: Panoramic Cameras**

**MULTI-FLEX™ 4 x 5 MP IP CAMERA**

1. **– GENERAL**
	1. SUMMARY
		1. Section Includes
			1. Section 28 21 13: Video Surveillance – Surveillance Cameras – IP Cameras
			2. Section 28 21 17: Video Surveillance – Surveillance Cameras – Camera Housings
			3. Section 28 21 19: Video Surveillance – Surveillance Cameras – Camera Mounts
			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. Electromagnetic Compatibility
			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 Flexible Multi-sensor Network camera shall be a full-featured network dome video camera for discrete video surveillance applications in indoor or outdoor environment.
			2. The Flexible Multi-sensor Network camera shall contain four (4) independent 1/2.7-in 5 MP CMOS Sensors. Each sensor can be positioned and configured independently of the others allowing flexible, multi-directional video surveillance
			3. The Flexible Multi-sensor Network camera shall produce four (4) individual video streams, one from each sensor.
			4. The Flexible Multi-sensor Network camera shall deliver a maximum resolution of 4 x 2592 x 1944 pixels.
			5. The Flexible Multi-sensor Network camera shall offer s FlexStream that combines the video streams from the four individual sensors into one channel.
			6. The Flexible Multi-sensor Network camera shall employ Starlight Ultra-low Light Technology to capture color images in low light down to 0.005 lux.
			7. The Flexible Multi-sensor Network camera shall offer two (2) IR LEDs per sensor that have a maximum distance of 30 m (98.43 ft).
			8. The Flexible Multi-sensor Network 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.
			9. The Flexible Multi-sensor Network camera shall come with a day/night mechanical IR cut filter to deliver color images in daylight and monochrome images as the scene darkens.
			10. The Flexible Multi-sensor Network camera shall offer Wide Dynamic Range on on all video channels for clear images in extreme high-contrast environments.
			11. The Flexible Multi-sensor Network camera shall offer Perimeter Protection, Face Detection, and the Intelligent Video System to detect and analyze moving objects for improved video surveillance.
			12. The Flexible Multi-sensor Network camera shall conform to the ONVIF (Profile S/Profile G/Profile T), CGI, Milestone, Genetec, RTMP, P2P standards to provide interoperability with other conformant systems.
			13. The Flexible Multi-sensor Network camera shall offer three (3) separate and configurable streams per sensor with individually configurable HD streams.
			14. The Flexible Multi-sensor Network camera shall accept three (3) incoming alarm connections and offer one (1) outgoing alarm connection.
			15. The Flexible Multi-sensor Network camera housing shall conform to the IP67 Ingress Protection and to the IK10 Vandal Resistance standards.
	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.

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. MULTI-FLEX™ 4 x 5 MP IP CAMERA DH-IPC-PDBW82041N-B360

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			14. The Flexible Multi-sensor Network camera shall accept three (3) incoming alarm connections and offer one (1) outgoing alarm connection.
			15. The Flexible Multi-sensor Network camera housing shall conform to the IP67 Ingress Protection and to the IK10 Vandal Resistance standards.
		2. Imaging
			1. The Flexible Multi-sensor Network camera shall offer four (4) 1/2.7-in. 5 MP CMOS progressive-scan imagers.
			2. The Flexible Multi-sensor Network camera shall offer 4 x 2592(H) x 1944(V) effective picture elements.
			3. The Flexible Multi-sensor Network cameras shall offer a 2.8 mm to 12 mm motorized lens with each sensor.
			4. The Flexible Multi-sensor Network camera shall have a horizontal angle of view of 100° to 36° and a vertical angle of view of 74° to 27° per sensor.
			5. The Flexible Multi-sensor Network camera shall offer an aperture of F1.7.
			6. The Flexible Multi-sensor Network camera shall produce a color image with a minimum scene illumination of 0.005 lux at F1.8 and a monochrome image, when in the night mode, with a minimum illumination of 0 lux at F1.7 with IR on.
		3. Video Characteristics
			1. The Flexible Multi-sensor Network camera shall offer CBR/VBR bit rate control.
			2. The Flexible Multi-sensor Network camera shall offer the following video compression protocols
				1. Smart H.265+
				2. H.265
				3. Smart H.264+
				4. H.264
				5. H.264B
				6. H.264H
				7. MJPEG (sub stream)
			3. The Flexible Multi-sensor Network camera shall offer the following bit rates:
				1. H.264: 3 Kbps to 19456 Kbps
				2. H.265: 3 Kbps to 19456 Kbps
			4. The Flexible Multi-sensor Network camera shall offer BLC, HLC, SSA, and True WDR modes of backlight compensation.
			5. The Flexible Multi-sensor Network camera shall offer Auto and Manual white balance modes.
			6. The Flexible Multi-sensor Network camera shall offer 3D DNR noise reduction.
			7. The Flexible Multi-sensor Network camera shall offer motion detection (four zones) and region of interest (four zones) controls.
			8. The Flexible Multi-sensor Network camera shall offer four (4) privacy masking areas.
		4. Streaming Capability
			1. The Flexible Multi-sensor Network camera shall offer three (3) separate configurable video streams per sensor.
			2. The Flexible Multi-sensor Network camera shall generate 5 MP at 30 fps maximum resolution.
			3. The Flexible Multi-sensor Network camera shall offer Unicast and Multicast streaming methods.
			4. The Flexible Multi-sensor Network camera shall offer the following resolutions:
				1. Individual Streams

5 MP (2592 x 1944), 4 MP (2688 x 1520), 3 MP (2048 x 1536),
2304 x 1296, 2 MP (1920 x 1080), 1.3 MP (1280 x 960),
720p (1280 x 720), VGA (640 x 480), D1 (704 x 480), CIF (352 x 240)

* + - * 1. FlexStream

8 MP (3296 x 2472), 5 MP (2592 x 1944), 1600 x 1200,
1.3 MP (1280 x 960), D1 (704 x 480), CIF (352 x 240)

* + - 1. The Flexible Multi-sensor Network camera shall generate three (3) streams per sensor at the following maximum resolutions:
				1. Individual Streams

Main Stream: 5 MP at 30 fps

Sub Stream 1: D1 at 30 fps

Sub Stream 2: 2 MP at 30 fps

* + - * 1. FlexStream

Main Stream: 1600 x 1200 at 30 fps

Sub Stream 1: D1 at 30 fps

Sub Stream 2: 8 MP at 30 fps

* + 1. IP Connectivity
			1. The Flexible Multi-sensor Network camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The Flexible Multi-sensor Network camera shall deliver 4 x 2592 x 1944 resolution at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100/1000 Base-T) connection.
			3. The Flexible Multi-sensor Network camera shall conform to the ONVIF (Profile S/Profile G/Profile T), CGI, Milestone, Genetec, RTMP, P2P standards to provide interoperability with other conformant systems.
			4. The Flexible Multi-sensor Network camera shall offer Quality of Service (QoS) configuration options.
			5. The Flexible Multi-sensor Network camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The Flexible Multi-sensor Network 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 Flexible Multi-sensor Network camera shall support the following protocols: HTTP, HTTPS, TCP, ARP, RTSP, RTP, UDP, SMTP, FTP, DHCP, DNS, DDNS, PPPOE, IPv4/v6, QoS, UPnP, NTP.
			8. The Flexible Multi-sensor Network camera shall support the DMSS and DSS management software.
			9. The Flexible Multi-sensor Network camera shall support the Android, Windows, and the IOS mobile operating systems.
		2. Interfaces
			1. The Flexible Multi-sensor Network camera shall support the following audio compression technologies: PCM,G.711a, G.711Mu, AAC, G.726, G.723.
			2. The Flexible Multi-sensor Network camera shall offer one (1) audio input and one (1) audio output.
			3. The Flexible Multi-sensor Network shall offer one (1) RS485 port for PTZ control.
			4. The Flexible Multi-sensor Network camera shall offer three (3) alarm inputs channel and one (1) alarm output channel.
		3. Analytics
			1. The Flexible Multi-sensor Network shall offer Perimeter Protection and Face Detection functions.
			2. The Flexible Multi-sensor Network shall offer intelligent video analytics built-in to the 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 detect multiple object behaviors such as abandoned or missing objects.
			5. The Intelligent Video System shall support Tripwire analytics to detect when an object has crossed a pre-determined line on the video image.
		4. Installation Requirements
			1. The Flexible Multi-sensor Network 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 Flexible Multi-sensor Network camera shall accept a 12 VDC power input or power from a PoE (IEEE802.3atf Class 0) source.
		5. Housing Options
			1. The Flexible Multi-sensor Network camera shall be offered in a metal housing.
			2. The Flexible Multi-sensor Network camera housing shall conform to the IP67 Ingress Protection standard.
			3. The Flexible Multi-sensor Network shall conform to the IK10 Vandal Resistance standard.
	1. ACCESSORIES
		1. The Flexible Multi-sensor Network camera shall offer the following optional accessories:
			1. [Power supply.]
			2. [Wall mount.]
			3. [Mount adapter.]
			4. [Junction box.]
			5. [Pole mount.]
			6. [Corner mount.]
			7. [Ceiling mount.]
			8. [Parapet mount.]
			9. [Wall mount.]
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