OCTOBER 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**

**256 x 192 HYBRID THERMAL NETWORK EYEBALL 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. Federal Communications Commission (FCC) ([www.fcc.gov](http://www.fcc.gov))
			1. FCC Part 15 Subpart B
		2. Safety Certification
			1. Underwriters Laboratories, Inc. (UL) (www.ul.com)
				1. UL60950-1
			2. CSA Group
				1. CAN/CSA C22.2 No. 60950-1-07
		3. CE
			1. EN 60950:2000
	2. SYSTEM DESCRIPTION
		1. Section Includes
			1. Video Surveillance – Surveillance Cameras – IP Cameras
		2. Performance Requirements
			1. The Hybrid Thermal Eyeball camera shall be a full-featured 256 x 192 Thermal network camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The Hybrid Thermal Eyeball camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The Hybrid Thermal Eyeball camera shall contain a 256 x 192 VOx uncooled thermal sensor with a [2 mm] [3.5 mm] [7 mm] athermalized, focus-free lens.
			4. The Hybrid Thermal Eyeball camera shall offer a 1/2.7-in. 4 MP progressive-scan CMOS Sensor and a [2 mm] [4 mm] [8 mm] fixed lens.
			5. The Hybrid Thermal Eyeball camera shall offer Fire and Smoking Detection with active alarm.
			6. The Hybrid Thermal Eyeball camera shall come with one (1) LED illuminator with an IR distance of 30.0 m (98.43 ft) for the visible-light sensor.
			7. The Hybrid Thermal Eyeball camera shall offer ≤ 50 mK thermal sensitivity.
			8. The Hybrid Thermal Eyeball camera shall accept one (1) incoming alarm channel and offer one (1) outgoing alarm channel.
			9. The Hybrid Thermal Eyeball camera shall offer one (1) audio input and one (1) audio output.
			10. The Hybrid Thermal Eyeball camera housing shall conform to the IP67 Ingress Protection 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 [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. 300 x 400 HYBRID THERMAL NETWORK EYEBALL CAMERA –
	[DH-TPC-DF1241N-D2F2 ] [DH-TPC-DF1241N-D3F4] [DH-TPC-DF1241N-D7F8]

		1. General Characteristics:
			1. The Hybrid Thermal Eyeball camera shall be a full-featured 256 x 192 Thermal network camera designed for discrete video surveillance applications in indoor and outdoor environments.
			2. The Hybrid Thermal Eyeball camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The Hybrid Thermal Eyeball camera shall contain a 256 x 192 VOx uncooled thermal sensor with a [2 mm] [3.5 mm] [7 mm] athermalized, focus-free lens.
			4. The Hybrid Thermal Eyeball camera shall offer a 1/2.7-in. 4 MP progressive-scan CMOS Sensor and a [2 mm] [4 mm] [8 mm] fixed lens.
			5. The Hybrid Thermal Eyeball camera shall offer Fire and Smoking Detection with active alarm.
			6. The Hybrid Thermal Eyeball camera shall come with one (1) LED illuminator with an IR distance of 30.0 m (98.43 ft) for the visible-light sensor.
			7. The Hybrid Thermal Eyeball camera shall offer ≤ 50 mK thermal sensitivity.
			8. The Hybrid Thermal Eyeball camera shall accept one (1) incoming alarm channel and offer one (1) outgoing alarm channel.
			9. The Hybrid Thermal Eyeball camera shall offer one (1) audio input and one (1) audio output.
			10. The Hybrid Thermal Eyeball camera housing shall conform to the IP67 Ingress Protection standard.
		2. Thermal Imaging
			1. The Hybrid Thermal Eyeball camera shall offer a 256 x 192 uncooled VOx Microbolometer thermal imaging sensor.
			2. The Hybrid Thermal Eyeball camera shall have a pixel size of 12 $µ$m.
			3. The Hybrid Thermal Eyeball camera shall offer a thermal sensitivity (NETD) of
			≤ 50 mK.
			4. The Hybrid Thermal Eyeball camera shall offer a spectral range of 8 $µ$m to 14 $µ$m.
			5. The Hybrid Thermal Eyeball camera shall offer 18 color palettes.
			6. The Hybrid Thermal Eyeball camera shall offer a fixed [2 mm] [3.5 mm] [7 mm] athermalized, focus-free lens.
		3. Visible-light Imaging
			1. The Hybrid Thermal Eyeball camera shall offer a 1/2.7-inch progressive-scan CMOS sensor.
			2. The Hybrid Thermal Eyeball camera shall offer an effective number of pixels of 2336 (H) x 1752 (V), 4 MP effective picture elements.
			3. The Hybrid Thermal Eyeball camera shall offer [2 mm] [4 mm] [8 mm] fixed lens with a maximum aperture of F2.0.
			4. The Hybrid Thermal Eyeball camera shall have a horizontal angle of view of [71.2°] [33.4°] and a vertical angle of view of [52°] [25°].
			5. The Hybrid Thermal Eyeball camera shall produce a color image with a minimum scene illumination of 0.05 lux at F2.0 and a monochrome image, when in IR mode, with a minimum illumination of 0 lux at F2.0.
		4. Video Characteristics
			1. The Hybrid Thermal Eyeball camera shall offer CBR/VBR bit rate control.
			2. The Hybrid Thermal Eyeball camera shall offer the H.265, H.264M, H.264H, H.264B, and the MJPEG video compression protocols.
			3. The Hybrid Thermal Eyeball camera shall offer four (4) privacy masking areas.
		5. Streaming Capability
			1. The Hybrid Thermal Eyeball camera shall generate a maximum resolution of:
				1. Thermal Imager: 1280 x 960 at 30 fps
				2. Visible Imager: 2336 x 1752 at 30 fps
		6. IP Connectivity
			1. The Hybrid Thermal Eyeball camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The Hybrid Thermal Eyeball camera shall deliver video, at rates up to 30 frames per second via TCP/IP over an RJ-45 (10/100 Base-T) connection.
			3. The Hybrid Thermal Eyeball camera shall conform to the ONVIF standard.
			4. The Hybrid Thermal Eyeball camera shall offer Quality of Service (QoS) configuration options.
			5. The Hybrid Thermal Eyeball camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The Hybrid Thermal Eyeball camera shall offer local and network storage options that include: MicroSD (maximum 128 GB), Network Attached Storage (NAS), and recording to a local PC for instant recording.
			7. The Hybrid Thermal Eyeball 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 Hybrid Thermal Eyeball camera shall support the DSS Pro and the DSS Expressmanagement software.
			9. The Hybrid Thermal Eyeball camera shall support the Android and the IOS mobile operating systems.
		7. Interfaces
			1. The Hybrid Thermal Eyeball camera shall support the following audio compression technologies: G.711a, G.711Mu, PCM, and AAC.
			2. The Hybrid Thermal Eyeball camera shall offer an audio interface with one (1) channel in (RCA jack) and one (1) channel out (RCA jack).
			3. The Hybrid Thermal Eyeball camera shall offer one RS485 connection.
			4. The Hybrid Thermal Eyeball camera shall offer an alarm interface with one (1) channel in and one (1) channel out.
		8. Installation Requirements
			1. The Hybrid Thermal Eyeball camera shall be capable of operating in an environment within a temperature range of –30° C to +60° C
			(–22° F to 140° F).
			2. The Hybrid Thermal Eyeball camera shall support a 12 VDC or a PoE power supply.
		9. Housing Options
			1. The Hybrid Thermal Eyeball camera shall be offered in a metal housing.
			2. The Hybrid Thermal Eyeball camera housing shall conform to the IP67 Ingress Protection standard.

2.3 ACCESSORIES

* + 1. The Hybrid Thermal Eyeball camera shall offer the following accessories:
			1. Optional mounting hardware:
				1. [Mount Adapter.]
				2. [Junction box.]
				3. [Pole mount.]
				4. [Wall mount.]
				5. [Ceiling mount.]
				6. [Corner mount.]
				7. [12 VDC, 1 A Power Supply.]

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