OCTOBER 2019

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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 BULLET 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 Bullet 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 Bullet camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The Hybrid Thermal Bullet camera shall contain a 256 x 192 VOx uncooled thermal sensor with a 3.5 mm athermalized, focus-free lens.
			4. The Hybrid Thermal Bullet camera shall offer a 1/2.8-in. 2 MP progressive-scan CMOS Sensor and a 4 mm fixed lens.
			5. The Hybrid Thermal Bullet camera shall come with one (1) LED illuminator with an IR distance of 35.0 m (114.83 ft) for the visible-light sensor.
			6. The Hybrid Thermal Bullet camera shall offer < 50 mK thermal sensitivity.
			7. The Hybrid Thermal Bullet camera shall incorporate a built-in heater to achieve an operational temperature down to –30° C (–22° F).
			8. The Hybrid Thermal Bullet camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			9. The Hybrid Thermal Bullet camera shall accept two (2) incoming alarm channels and offer two (2) outgoing alarm channels.
			10. The Hybrid Thermal Bullet camera shall offer an Intelligent Video System with Fire Detection, Cold/Hot Spot Trace, and can distinguish between human and vehicular targets.
			11. The Hybrid Thermal Bullet 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. 256 x 192 HYBRID THERMAL NETWORK BULLET CAMERA – DH-TPC-BF2221N-B3

		1. General Characteristics:
			1. The Hybrid Thermal Bullet 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 Bullet camera shall simultaneously transmit and receive video, audio, and control signals over a TCP/IP connection.
			3. The Hybrid Thermal Bullet camera shall contain a 256 x 192 VOx uncooled thermal sensor with a 3.5 mm athermalized, focus-free lens.
			4. The Hybrid Thermal Bullet camera shall offer a 1/2.8-in. 2 MP progressive-scan CMOS Sensor and a 4 mm fixed lens.
			5. The Hybrid Thermal Bullet camera shall come with one (1) LED illuminator with an IR distance of 35.0 m (114.83 ft) for the visible-light sensor.
			6. The Hybrid Thermal Bullet camera shall offer < 50 mK thermal sensitivity.
			7. The Hybrid Thermal Bullet camera shall incorporate a built-in heater to achieve an operational temperature down to –30° C (–22° F).
			8. The Hybrid Thermal Bullet camera shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m (2624 ft).
			9. The Hybrid Thermal Bullet camera shall accept two (2) incoming alarm channels and offer two (2) outgoing alarm channels.
			10. The Hybrid Thermal Bullet camera shall offer an Intelligent Video System with Fire Detection, Cold/Hot Spot Trace, and can distinguish between human and vehicular targets.
			11. The Hybrid Thermal Bullet camera housing shall conform to the IP67 Ingress Protection standard.
		2. Thermal Imaging
			1. The Hybrid Thermal Bullet camera shall offer a 256 x 192 uncooled VOx Microbolometer thermal imaging sensor.
			2. The Hybrid Thermal Bullet camera shall have a pixel size of 12 $µ$m.
			3. The Hybrid Thermal Bullet camera shall offer a thermal sensitivity (NETD) of
			≤ 50 mK.
			4. The Hybrid Thermal Bullet camera shall offer a spectral range of 8 $µ$m to 14 $µ$m.
			5. The Hybrid Thermal Bullet camera shall offer 18 color palettes.
			6. The Hybrid Thermal Bullet camera shall offer a fixed 3.5 mm athermalized, focus-free lens.
			7. The Hybrid Thermal Bullet camera shall support a maximum detection distance (human) of 146 m (479 ft).
		3. Visible-light Imaging
			1. The Hybrid Thermal Bullet camera shall offer a 1/2.8-inch progressive-scan CMOS sensor.
			2. The Hybrid Thermal Bullet camera shall offer an effective number of pixels of 1920(H) x 1080(V), 2 MP effective picture elements.
			3. The Hybrid Thermal Bullet camera shall offer 4 mm fixed lens with a maximum aperture of F2.0.
			4. The Hybrid Thermal Bullet camera shall have a horizontal angle of view of 80° and a vertical angle of view of 45°.
			5. The Hybrid Thermal Bullet camera shall produce a color image with a minimum scene illumination of 0.005 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 Bullet camera shall offer CBR/VBR bit rate control.
			2. The Hybrid Thermal Bullet camera shall offer the H.265, H.264M, H.264H, H.264B, and the MJPEG video compression protocols.
			3. The Hybrid Thermal Bullet camera shall offer four (4) privacy masking areas.
		5. Streaming Capability
			1. The Hybrid Thermal Bullet camera shall generate a maximum resolution of:
				1. Thermal Imager: 1280 x 960 at 30 fps
				2. Visible Imager: 1920 x 1080 at 30 fps
		6. IP Connectivity
			1. The Hybrid Thermal Bullet camera shall allow full camera control and configuration capabilities via a TCP/IP network.
			2. The Hybrid Thermal Bullet 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 Bullet camera shall conform to the ONVIF Profile
			S & G and the API standard.
			4. The Hybrid Thermal Bullet camera shall offer Quality of Service (QoS) configuration options.
			5. The Hybrid Thermal Bullet camera shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			6. The Hybrid Thermal Bullet camera shall offer local and network storage options that include: MicroSD (maximum 256 GB), Network Attached Storage (NAS), and recording to a local PC for instant recording.
			7. The Hybrid Thermal Bullet 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 Bullet camera shall support the SmartPSS and DSS management software.
			9. The Hybrid Thermal Bullet camera shall support the Android and the IOS mobile operating systems.
		7. Interfaces
			1. The Hybrid Thermal Bullet camera shall support the following audio compression technologies: G.711a, G.711Mu, PCM, and AAC.
			2. The Hybrid Thermal Bullet camera shall offer an audio interface with one (1) channel in (3.5 mm jack) and one (1) channel out (3.5 mm jack).
			3. The Hybrid Thermal Bullet camera shall offer one RS485 connection.
			4. The Hybrid Thermal Bullet camera shall offer an alarm interface with two (2) channels in and two (2) channels out.
			5. The Hybrid Thermal Bullet camera shall offer one (1) SD video output with a BNC connector.
		8. Intelligent Video System
			1. The Intelligent Video System shall offer intelligent video analytics built-in to Thermal Bullet 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 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. The Intelligent Video System shall support Tripwire and Intrusion analytics to detect when an object has crossed a pre-determined line on the video image.
			2. The Intelligent Video System shall offer Fire Detection to detect a rapid rise in temperature over a short time and issue an alarm for a potential fire.
			3. The Intelligent Video System shall offer Cold/Hot Spot Trace to indicate the coldest and the hottest spot of the scene.
			4. The Intelligent Video System shall be capable of detecting human or vehicle violations in conjunction with the Tripwire and Intrusion detection methods.
		1. Installation Requirements
			1. The Hybrid Thermal Bullet 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 Hybrid Thermal Bullet camera shall support a 12 VAC, 1 A or a PoE power supply.
		2. Housing Options
			1. The Hybrid Thermal Bullet camera shall be offered in a metal housing.
			2. The Hybrid Thermal Bullet camera housing shall conform to the IP67 Ingress Protection standard.

2.3 ACCESSORIES

* + 1. The Hybrid Thermal Bullet camera shall offer the following accessories:
			1. Optional mounting hardware:
				1. [Junction box.]
				2. [Pole mount.]
				3. [Corner mount.]
				4. [12 VDC, 1 A Power Supply.]
				5. [EoC Passive Converter]
				6. [Single-port EoC Receiver]

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