MARCH 2018

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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 00 00: Electronic Safety and Security**

**Section 28 05 00: Common Work Results For Electronic Safety and Security**

**Section 28 05 19.15: Network Video Recorders**

**16-CHANNEL 4K ePoE 1U NETWORK VIDEO RECORDER**

1. **– GENERAL**
	1. SUMMARY
		1. Section Includes
			1. Section 28 05 23: Storage Area Network Electronic Safety and Security
			2. Section 28 05 25: Cloud Based Storage for Electronic Safety and Security
			3. Section 28 05 29: Storage Management Software for Electronic Safety and Security
			4. Section 28 05 31: Communications Equipment for Electronic Safety and Security
		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. Federal Communications Commission (FCC) ([www.fcc.gov](http://www.fcc.gov))
				1. CFR 47 FCC Part 15 Subpart B
			2. ANSI
				1. ANSI C63.4-2014
		2. Safety
			1. Underwriters Laboratories, Inc. (UL) (www.ul.com)
				1. UL 60950-1
		3. European Standards
			1. EN55032
			2. EN55024
			3. EN50130-4
			4. EN60950-1
	2. SYSTEM DESCRIPTION
		1. Section Includes
			1. Network Video Recorders
		2. Performance Requirements
			1. The 16-channel ePoE NVR shall use an embedded Quad-core processer with embedded Linux operating system to record video from 16 IP camera inputs.
			2. The 16-channel ePoE NVR shall offer 16 PoE (IEEE 802.3af/at) channels.
			3. The 16-channel ePoE NVR shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m
			(2625 ft) via ports 1 through 8.
			4. The 16-channel ePoE NVR shall support Ethernet over Coax (EoC) technology for IP/Analog hybrid system with transmission distances up to 1000 m (3281 ft) via ports 1 through 8.
			5. The 16-channel ePoE NVR shall be capable of storing up to 20 TB of data from 16 IP camera inputs with up to 12 MP resolution for each IP input.
			6. The 16-channel ePoE NVR shall use the Smart H.265+, H.265, Smart H.264+, H.264, and MJPEG Video compression protocols.
			7. The 16-channel ePoE NVR shall offer 4K resolution for display and up to 12 MP resolution for recording.
			8. The 16-channel ePoE NVR shall offer a feature to customize the live view layout with support for panoramic displays.
			9. The 16-channel ePoE NVR shall have a maximum incoming bandwidth of
			320 Mbps.
			10. The 16-channel ePoE NVR shall offer a selection of built-in recording options and schedules.
			11. The 16-channel ePoE NVR shall offer Automatic Network Replenishment (ANR) technology that automatically stores video data on a connected IP camera’s SD card when the network is disconnected, then automatically retrieves the video data when the network connection is restored.
			12. The 16-channel ePoE NVR shall offer Automatic Number Plate Capture technology to record vehicle registration plates on images.
			13. The 16-channel ePoE NVR shall be capable of recording data and images from an IP camera enabled with the Intelligent Video System.
			14. The 16-channel ePoE NVR shall come in a 1U-high casing.
	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. 16-CHANNEL 4K ePoE 1.5U NETWORK VIDEO RECORDER [N54B3P]

		1. General Characteristics:
			1. The 16-channel ePoE NVR shall use an embedded Quad-core processer with embedded Linux operating system to record video from 16 IP camera inputs.
			2. The 16-channel ePoE NVR shall offer 16 PoE (IEEE 802.3af/at) channels.
			3. The 16-channel ePoE NVR shall support Enhanced Power over Ethernet (ePoE) technology to transmit power and data via Ethernet cabling up to 800 m
			(2625 ft) via ports 1 through 8.
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			5. The 16-channel ePoE NVR shall be capable of storing up to 20 TB of data from 16 IP camera inputs with up to 12 MP resolution for each IP input.
			6. The 16-channel ePoE NVR shall use the Smart H.265+, H.265, Smart H.264+, H.264, and MJPEG Video compression protocols.
			7. The 16-channel ePoE NVR shall offer 4K resolution for display and up to 12 MP resolution for recording.
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			12. The 16-channel ePoE NVR shall offer Automatic Number Plate Capture technology to record vehicle registration plates on images.
			13. The 16-channel ePoE NVR shall be capable of recording data and images from an IP camera enabled with the Intelligent Video System.
			14. The 16-channel ePoE NVR shall come in a 1U-high casing.
			15. The 16-channel ePoE NVR shall be powered by a 100 to 240 VAC, 50/60 Hz power supply and consume less than 15.2 W of power.
		2. Display
			1. The 16-channel ePoE NVR shall offer one (10 HDMI output port
			(up to 3840 x 2160) and one (1) VGA output port (up to 1920 x 1080).
			2. The 16-channel ePoE NVR shall offer native display output resolutions of:
			3480 x 2160, 2560 x 1440 1920 × 1080, 1280 × 1024, 1280 × 720, and
			1024 × 768.
			3. The 16-channel ePoE NVR shall offer the following maximum decoding capabilities:
				1. Four (4) channels of 8 MP at 30 fps
				2. 16 channels of 1080p at 30 fps
			4. The 16-channel ePoE NVR shall offer 1/4/8/9/16 multi-screen display.
			5. The 16-channel ePoE NVR shall offer an on-screen display that lists the camera title, time, video loss indication, camera lock indication, motion detection, and recording indicator.
		3. Video Detection and Alarm
			1. The 16-channel ePoE NVR shall offer the following trigger events: recording, PTZ, tour, alarm out, video push, Email, FTP, snapshot, buzzer, and screen tips.
			2. The 16-channel ePoE NVR shall be capable of detecting motion (396 zones), video loss, tampering.
			3. The 16-channel ePoE NVR shall offer four (4) alarm inputs and two (2) relay outputs.
		4. Interface
			1. The 16-channel ePoE NVR shall have 16 PoE outputs. Ports 1 through 8 shall support ePoE and EoC transmission.
			2. The 16-channel ePoE NVR shall offer one (1) USB 2.0 auxiliary port and one (1) USB 3.0 auxiliary ports.
			3. The 16-channel ePoE NVR shall offer one (1) RCA audio input channel and one (1) RCA audio output channels.
			4. The 16-channel ePoE NVR shall allow two-way talk.
			5. The 16-channel ePoE NVR shall offer one (1) RS232 port for PC communication or keyboard connection.
			6. The 16-channel ePoE NVR shall offer one (1) RS485 port for PTZ control.
		5. Storage
			1. The 16-channel ePoE NVR shall come with two (2) SATA III ports that can each support a 10 TB HDD.
		6. Playback and Backup
			1. The 16-channel ePoE NVR shall support synchronous output to 1/4/9/16 playback devices.
			2. The 16-channel ePoE NVR shall allow recorded video searches by time/date, alarm, motion detection event, and Exact Search.
			3. The 16-channel ePoE NVR shall offer the following playback functions: Play, Pause, Stop, Rewind, Fast Play, Slow Play, Next File, Previous File, Next Camera, Previous Camera, Full Screen, Repeat, Shuffle, Backup Selection, and Digital Zoom.
			4. The 16-channel ePoE NVR shall allow data backup via a USB device, an eSATA drive, or another network.
		7. Recording
			1. The 16-channel ePoE NVR shall employ the Smart H.265+, H.265, Smart H.264+, H.264, and the MJPEG video compression protocols.
			2. The 16-channel ePoE NVR shall offer video recording resolutions of 12 MP, 8 MP, 6 MP, 5 MP, 4 MP, 3 MP, 1080p, 1.3 MP, 720p, D1, and CIF.
			3. The 16-channel ePoE NVR shall offer a maximum incoming bandwidth of
			320 Mbps.
			4. The 16-channel ePoE NVR shall allow a bit rate of 16 Kbps to 20 Mbps per channel.
			5. The 16-channel ePoE NVR shall offer the following built-in recording modes:
				1. Manual
				2. Schedule, regular or motion detection
				3. Alarm
				4. IVS
				5. Stop
			6. The 16-channel ePoE NVR shall offer a recording interval between 1 minute and 60 minutes. In addition, the 16-channel ePoE NVR shall offer a pre-record interval of between 1 second to 30 seconds, and a post-record interval of between 10 seconds to 300 seconds.
			7. The 16-channel ePoE NVR shall be capable of recording from third-party devices, including: Dahua, Arecont Vision, AXIS, Bosch, Brickcom, Canon, CP Plus, Dynacolor, Honeywell, Panasonic, Pelco, Samsung, Sanyo, Sony, Videotec, and Vivotek.
		8. IP Connectivity
			1. The 16-channel ePoE NVR shall allow full control and configuration capabilities via a TCP/IP network.
			2. The 16-channel ePoE NVR shall offer one RJ-45 port (10/100/1000 Mbps).
			3. The 16-channel ePoE NVR shall offer 16 PoE ports (IEEE802.3af/at).
			4. The 16-channel ePoE NVR shall support ePoE and EoC transmission distances via porta 1 through 8.
			5. Each PoE port shall provide a maximum of 25.5 W of power, with a total PoE power budget of 130 W.
			6. The 16-channel ePoE NVR shall support a maximum of 128 user access points.
			7. The 16-channel ePoE NVR shall conform to the ONVIF 2.4 and to the CGI standard.
			8. The 16-channel ePoE NVR shall support the IPv6 internet-layer protocol for packet switched internetworking across multiple IP networks.
			9. The 16-channel ePoE NVR shall support the 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, and 802.1x.
			10. The 16-channel ePoE NVR shall support the IOS and the Android mobile operating systems.
		9. Intelligent Video System
			1. The 16-channel ePoE NVR shall offer recording capabilities on all channels for Intelligent Video System features from an IP camera that has IVS enabled.
			2. The 16-channel ePoE NVR shall record standard and premium intelligence at-the-edge features, including detection of abandoned/missing objects, tripwire violations, and intrusion violations.
			3. The 16-channel ePoE NVR shall record business analysis data, including facial detection, people counting, and heat map, from IP cameras with built-in Intelligent Business Analytics.
		10. Installation Requirements
			1. The 16-channel ePoE NVR shall be capable of operating in temperatures between -10°C to +55°C (+14°F to +131°F).
			2. The 16-channel ePoE NVR shall receive power from a 100 to 240 VAC,
			50/60 Hz power source and consume less than 15.2 W of power.
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