**SECTION 28 23 19**

**DIGITAL VIDEO RECORDERS AND ANALOG RECORDING DEVICES**

**Uniview Technology NR12816 Network Recorder**

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*This guide specification is intended for use by the design/construction professional and any user of Uniview Technology products to assist in developing project specifications for security and video surveillance systems.*

*Notes in Italics, such as this one, are explanatory and intended to guide the design professional/specifier and user in the proper selection and use of materials. This specification should be modified where necessary to accommodate individual project conditions.*

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1. **GENERAL**
	1. SUMMARY
		1. Section includes Digital Video Recorders and Analog Recording Devices.
		2. Related Sections:
			1. Section 28 23 13 – Video Surveillance Control and Management Systems
			2. Section 28 23 16 – Video Surveillance Monitoring and Supervisory Interfaces
			3. Section 28 23 26 – Video Surveillance Remote Positioning Equipment
			4. Section 28 23 23 – Video Surveillance Systems Infrastructure
	2. SYSTEM DESCRIPTION
		1. Description: Video surveillance and monitoring at points as indicated on Drawings.
			1. NR12816: 128 Channel, 12MP Resolution, 16-Bay HDD, H.265 Network Recorder
		2. Performance Requirements
			1. Fully integrated, stand-alone video recording solution for network surveillance systems of up to 128 channels (cameras).
			2. Capable of recording 4000 x 3000, 12MP resolution video
			3. Supports H.265 compression for Best-in Class recording and storage
			4. ONVIF compliant for network video interoperability
			5. Upgradable via the “Cloud”
			6. Connected cameras can be upgraded via the “Cloud”
			7. 8MP (4K), 3840 x 2160 display capability on both HDMI monitor outputs
			8. Concurrent displays on first HDMI and VGA monitor outputs
			9. Supports Video Wall applications up to 15 monitors with optional HDMI-output decoding cards
			10. High security levels for password setup with password strength evaluation
			11. Supports HDD Hot Sway and RAID storage modes
			12. Supports two (2) Mini-SAS interfaces for external storage disk enclosures
			13. Powerful Video Content Analysis Features such as Cross Line Detection, Audio Detection, Scene Change, People Counting
			14. Supports Various Fisheye Camera Dewarping Modes for Live View and Playback Through GUI and VMS Software
			15. Supports Automatic Network Replenishment (ANR)
			16. Supports optional redundant power supply
			17. Stable embedded operating system.
			18. Easy plug and play functionality with automatic device discovery and display
			19. Maximum incoming throughput of 512Mbps and Outgoing of 384Mbps
			20. Maximum internal storage of 16 SATA HDD up to 10TB each
			21. Supports Mobile Phone Applications with Apple and Android Operating Systems
			22. Pan-Tilt-Zoom (PTZ) camera control
			23. 2-way audio communication
	3. DEFINITIONS
		1. H.265 (also known as MPEG-H Part 2): a powerful encoding format that has become the successor to H.264 (MPEG-4 Part 10) standard. Recording video in H.265 format requires approximately 50% less storage than video recorded with H.264.
		2. PTZ: refers to a movable camera that has the ability to pan left and right, tilt up and down, and zoom or magnify a scene.
	4. SUBMITTALS
		1. Submit under provisions of Section 01 33 00 - Submittal procedures.
		2. Shop Drawings: Indicate electrical characteristics and connection requirements, including system wiring diagram.
		3. Product Data: Submit catalog data showing electrical characteristics and connection requirements for each component.
	5. CLOSEOUT SUBMITTALS
		1. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
		2. Project Record Documents: Record actual locations of cameras and routing of cabling.
		3. Operation and Maintenance Data: Submit instructions for operating system and performing routine trouble shooting procedures.
	6. QUALIFICATIONS
		1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.
		2. Supplier: Authorized distributor of specified manufacturer with minimum 5 years documented experience.
		3. Installer: Authorized installer of specified manufacturer with 5 years documented experience and with service
	7. ENVIRONMENTAL REQUIREMENTS
		1. Section 01 60 00 - Product Requirements.
		2. Deliver materials in manufacturer’s original, unopened, undamaged packaging; 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 for installation, environmental, mechanical or electrical requirements and within thermal stress limits.
		5. Ensure conformance with operating limitations according to applicable data sheet.
	8. FIELD MEASUREMENTS
		1. Verify field measurements prior to fabrication.
	9. WARRANTY
		1. Provide manufacturer’s warranty covering [3] years for CCTV products to repair or replace defective equipment.
		2. Exchanges available for product failures.
	10. MAINTENANCE SERVICE
		1. Section 01 70 00 - Execution and Closeout Requirements: Maintenance service.
		2. Make ordering of new equipment for expansions, replacements, and spare parts available to dealers and end users.
		3. Provide factory direct technical support via phone or e-mail, or any time via Web.
			1. Provide toll-free numbers to contact customer support.
		4. Provide on-site training and on-line training via web.
2. PRODUCTS
	1. DIGITAL VIDEO RECORDERS
		1. Manufacturers:
			1. Uniview Technology
			2. Substitutions: Section 01 60 00 - Product Requirements: Not Permitted.
		2. Model: NR12816
		3. Product Description: 128 Channel, 12MP Resolution, 16-Bay HDD, H.265 Network Recorder
		4. General Requirements:
			1. The NR12816 Network Video Recorder (NVR) shall provide these features:
				1. Flexible and scalable network video management system in an easy to use versatile design.
				2. View, record, and control cameras, handle alarms and check device status through one interface.
				3. Simultaneously view and record video from up to 128 different IP video sources
				4. 1000M Base-T Adaptive and SFP Optical Ethernet
				5. Remote configuration and management of devices on surveillance system.
				6. Easy Plug and Play functionality with automatic device discovery and display
				7. Internal storage of sixteen (16) SATA HDD’s, up to 10TB each.
				8. Capable of delivering live video to mobile devices
		5. The NVR shall feature H.265 video compression to reduce bandwidth and storage requirements.
		6. The NVR shall be capable of recording up to 12MP, 4000 x 3000 resolution video images.
		7. The NVR shall provide 3rd party network IP camera connectivity for ONVIF compatible cameras.
		8. The NVR shall be capable of displaying Full HD, 1920 x 1080 output on a VGA monitor and 4K, 3840 x 2160, output on two (2) HDMI monitors.
		9. The NVR shall provide Network Time Synchronization and Daylight Savings Time change functionality.
		10. The NVR shall offer push notifications generated by programmed alarm activity
		11. The NVR shall support mobile phone applications for iPhone and Android.
		12. The NVR shall have multiple simultaneous functions with single software interface:
			1. Live viewing
			2. Recording
			3. Playback
			4. Network transmission
			5. Backup (Export)
		13. The NVR shall support “Cloud Upgrade” for NVR and connected cameras, with automatic detection of latest firmware and upgrades.
		14. The NVR shall offer password security strength evaluation with different criteria for LAN and WAN, with strong password mandated for WAN only.
		15. The NVR shall support Automatic Network Replenishment (ANR) to enhance storage reliability when the network is disconnected
		16. The NVR shall support Video Content Analysis (VCA): Analytics
			1. Behavior
				1. Intrusion detection
				2. Cross Line detection
				3. Motion detection
			2. Exception
				1. Audio detection
			3. Identification
				1. Face detection
				2. Defocus detection
				3. Scene Change detection
			4. Statistical
				1. People Counting
		17. The NVR shall offer various Fisheye Camera Dewarping Modes for Live View and Playback Through GUI and VMS Software
		18. The NVR shall support recording and playback of multiple cameras simultaneously displayed in the “Corridor Mode”
		19. The NVR shall support optional redundant power supply device
		20. The NVR shall support two (2) optional HDMI-Output decoding cards, 4 & 6 port, for video walls, up to 12 additional HDMI output ports
		21. Electrical:
			1. Input Power: 100~240VAC
			2. Power Consumption: 50W (w/o HDD)
		22. Video
			1. IP camera input: 1 – RJ45 Ethernet connector
			2. Supported video format: Ultra H.265, H.265, H.264
			3. Supported video resolution: up to 4000 x 3000
			4. Maximum Playback Frame Rate (fps): 3 x 12MP @ 25; 4 x 4K @ 30; 8 x 4MP @ 30; 16 x 1080p @ 30;  32 x 960p @ 25; 36 x 720P@30; 64 x D1 @ 25
			5. Monitor Outputs: 2 x HDMI (4K~ 720p); 1 x VGA (1080p ~ 720P); 1 x BNC
		23. Storage:
			1. Internal HDD: SATA, 16 bays, 10TB maximum for a total of 160TB
			2. Supports Hot Swap HDD with RAID 0, 1, 5, 6, 10, 50 and 60 modes
			3. Two (2) Mini-SAS Interfaces for external storage of disk enclosures, with up to 16 x 10TB SATA HDD each, for an additional of 320TB of external storage
			4. Backup
				1. 4 x USB 3.0
				2. 1 x eSATA
		24. Alarm Handling
			1. Alarm Inputs: 24 TTL (physical connections at the back of the NVR)
			2. Alarm Outputs: 8 TTL (physical connection at the back of the NVR)
		25. Network
			1. Supported Protocols: P2P, UPnP, NTP, DHCP, PPPoE
			2. Remote Access
				1. Guard Station Client Software (Mac and PC)
				2. Guard Tool Utility Software
				3. Guard Viewer Mobile Apps for iPhone and Android Devices
				4. Web Browser
			3. Web Browsers: IE, Firefox, Chrome, Opera
			4. Remote Connections: 128 Users
			5. Bandwidth Throughput (Maximum): 512Mbps Incoming, 384Mbps outgoing
		26. General
			1. Ethernet:
				1. 4 x RJ45 Ports, 10Mbps / 100Mbps / 1000Mbps; Adaptive Ethernet
				2. 2 x 1000M SFP Optical Ethernet
			2. USB: 4 x USB3.0 (rear)
			3. Audio: G711 Compression
				1. Input: 1 RCA
				2. Output: 1 RCA
			4. Serial Interface: 1 x RS232 and 1 x RS485
			5. Operating Temperature: -10°C ~ +55°C (+14°F ~ +131°F)
			6. Humidity: 0%RH ~ 90%RH
			7. Dimensions (W x D x H): 482 × 477 × 131mm (18.8 × 19 × 5.1")
			8. Weight: 22.05lbs (10kg) (w/o HDD)
		27. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. Underwriters Laboratories (UL) (Power Supply Only)
		28. Accessories
			1. Redundant Power Supply: PWR-300A-IN
			2. Mini-SAS Disk Enclosure: NASDE08
			3. 4-channel Decoder Card: FB-HDMI4-C-NB
			4. 6-channel Decoder Card: FB-HDMI6-C-NB
			5. 8-port PoE Switch: NSW081P
			6. 16-port PoE Switch: NSW162P
			7. 24-port PoE Switch: NSW242P
3. EXECUTION
	1. EXISTING WORK
		1. Disconnect and remove abandoned video surveillance equipment.
		2. Extend existing video surveillance installations using materials and methods compatible with existing installations as specified.
		3. Clean and repair existing video surveillance equipment remaining or to be reinstalled.
	2. 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.
		3. Non-compliance with security instructions may result in loss of data.
		4. Ensure environmental, mechanical and electrical requirements are met.
	3. PREPARATION
		1. Protect devices from damage during construction.
	4. INSTALLATION
		1. Install devices in accordance with manufacturer’s instruction at locations indicated on the floor plan drawings.
		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.
			1. Ground and bond video surveillance equipment in accordance with Section 26 05 26.
		5. Location must provide reasonable temperature and humidity conditions, free from sources of electrical and electromagnetic interference.
	5. FIELD QUALITY CONTROL
		1. Test proper operation of all video system devices.
			1. Communication between recorder and cameras.
			2. Independent operation of alarms, and cameras.
		2. Test proper operation of software programs.
		3. Determine and report all problems to the manufacturer’s customer service department.
	6. MANUFACTURER'S FIELD SERVICES
		1. Section 01 40 00 - Quality Requirements: Manufacturer's field services.
		2. Furnish manufacturer’s field representative to supervise final wiring connections and system adjustments.
	7. ADJUSTING
		1. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.
		2. Make proper adjustment to video system devices for correct operation in accordance with manufacturer’s instructions.
		3. Make any adjustment of camera settings to comply with specific customer’s need.
	8. DEMONSTRATION AND TRAINING
		1. Demonstrate at final inspection that video management system and devices function properly.

END OF SECTION