**SECTION 28 23 19**

**DIGITAL VIDEO RECORDERS AND ANALOG RECORDING DEVICES**

**Advanced Technology Video DR-6232H Hybrid Network Recorder**

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*This guide specification is intended for use by the design/construction professional and any user of Advanced Technology Video (ATV) 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. DR-6232H: Real Time 32 Channel, Full HD, Hybrid Network Video Recorder
		2. Performance Requirements
			1. Fully integrated, stand-alone video recording solution for network surveillance systems of up to 32 channels (cameras).
			2. 16 composite, “loop-through” video connectors and 1 network Ethernet connector for network IP connections
			3. Capable of recording 2048 x 1536 resolution video with H.264 compression
			4. ONVIF compliant for network video interoperability
			5. Real time recording of analog and/or network IP cameras, up to a total of 32.
			6. Full high definition (Full HD), 1920 x 1080 display capability on concurrent HDMI and VGA monitor outputs.
			7. 2-way audio communication
			8. Text input for ATM or Point of Sale (POS)
			9. Self-diagnostics automatic notification including hard disk drive S.M.A.R.T. protocol
			10. Stable embedded operating system.
			11. iRAS Remote Management software included with recorder features Live Monitoring, Playback Recording, Setup, PTZ control, Upgrades and Full Triplex Operation, User Defined 64-Channel View, Map Integration, Multi-Site System Health Monitoring with User Defined Customizable Panel Design
			12. Multiple Recording Modes: Time-Lapse, Event, Pre-event, Text-in, Panic
			13. Maximum Incoming Throughput of 330Mbps
			14. Powerful Search Modes: Time-lapse, Event, Motion, Text-in
			15. Maximum 6-HDD’s internal storage and two, 4-bay eSATA external storage
			16. Supports Mobile Phone Applications with Apple and Android Operating Systems
			17. USB Mouse and Infrared Remote Control
			18. Pan-Tilt-Zoom (PTZ) camera control
	3. DEFINITIONS
		1. H.264 (also known as MPEG4 Part 10): a powerful encoding format that compresses video much more effectively than older (MPEG4) standards. Recording video in H.264 format requires approximately 30% less storage than traditional MPEG-4.
		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. Advanced Technology Video
			2. Substitutions: Section 01 60 00 - Product Requirements: Not Permitted.
		2. Model: DR-6232H
		3. Product Description: Real Time 32 Channel, Full HD, Hybrid Network Video Recorder.
		4. General Requirements:
			1. The DR-6232H Hybrid 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. Record up to sixteen looped-through, auto-terminating analog camera inputs and/or up to thirty-two IP network cameras, using high resolution H.264 video compression.
				4. Built-in web viewer for remote viewing, playback, control and configuration.
				5. Gigabit Ethernet (GigE) network interface.
				6. Remote configuration and management of devices on surveillance system.
				7. Easy Plug and Play functionality with automatic device discovery and display
				8. Internal storage of 6-HDD bays and external storage of two, 4-bay eSATA storage devices.
				9. Manual export and backup of video via USB device, eSATA or network.
				10. Capable of delivering live video to mobile devices
				11. Multiple control options via USB mouse, front panel and remote control.
		5. The Hybrid NVR shall feature H.264 video compression to reduce bandwidth and storage requirements.
		6. The Hybrid NVR shall record a maximum of 30 images per second per channel at 1080p resolution.
		7. The Hybrid NVR shall be capable of recording up to 2048 x 1536 resolution.
		8. The Hybrid NVR shall provide 3rd party network IP camera connectivity for ONVIF compatible cameras.
		9. The Hybrid NVR shall be capable of displaying Full HD, 1920 x 1080 output on two monitors simultaneously and shall provide full-screen, quad, multiscreen and sequenced viewing.
		10. The Hybrid NVR shall control pan/tilt/zoom (PTZ) equipment via RS485 or RS232 serial communications. The Hybrid NVR shall support over 50 different PTZ protocols, including but not limited to the following:
			1. Fastrax 2
			2. Pelco P and D
			3. Spectra
		11. The Hybrid NVR shall provide Network Time Synchronization.
		12. The Hybrid NVR shall have six internal SATA2 hard disk drive bays and allow local archiving via a USB device or via eSATA external storage device.
		13. The Hybrid NVR shall provide Daylight Savings Time change functionality.
		14. The Hybrid NVR shall offer email notifications generated by programmed alarm activity
		15. The Hybrid NVR shall support mobile phone applications for iPhone and Android.
		16. The Hybrid NVR shall have multiple simultaneous functions with single software interface:
			1. Live viewing
			2. Recording
			3. Playback
			4. Network transmission
			5. Backup (Export)
		17. The Hybrid NVR shall have multiple record modes:
			1. Time-Lapse
			2. Event
			3. Pre-event
			4. Text-in
			5. Panic
		18. The Hybrid NVR shall have multiple search modes:
			1. Time-lapse
			2. Event
			3. Motion
			4. Text-in
		19. The Hybrid NVR shall support connection to the ATV keyboards that allows loop through connections to control up to 16 digital video recorders from a single keyboard.
		20. Electrical:
			1. Input Power: 100-240VAC +/- 10%, 50/60Hz
			2. Power Consumption: 75W (w/ 6 HDD’s)
		21. Video
			1. Analog camera inputs: 16 composite, looping BNC connectors
			2. IP camera inputs: 1 – RJ45 Ethernet connector for up to 32 cameras. User determines exact number based on how many analog cameras (maximum 16) are connected.
			3. Supported video format: H.264, MJPEG
			4. Supported video resolution: 960H, 320 x 240 to 2048 x 1536
			5. Frame Rate: max 30-ips per channel @ 1920 x 1080 resolution. Up to 480-ips @ 960H analog + 240-ips @ 1080p, or up to 960-ips @ 1080p only
			6. Monitor Output: 1 – HDMI and 1 - VGA
		22. Storage:
			1. Internal HDD: 6 SATA2 bays, 24TB (6 x 4TB) total
			2. External: expansion by 2 eSATA ports, 32TB (8 x 4TB) total
		23. Alarm Handling
			1. Alarm Inputs: 16TTL, NC/NO programmable, 2.4V (NC) or 0.3V (NO) threshold, 5V DC + 16 Network IP
			2. Alarm Outputs: 1 TTL, terminal block + 16 Network IP
		24. Network
			1. Supported Protocols: Static IP, ASDL, DHCP, FEN
			2. Remote Access: iRAS Remote Management Software, Web Browser
			3. Web Browsers: IE
			4. Remote Connections: Admin: 2 / Watch: 10 / Search: 2
			5. Throughput: 330Mbps maximum
		25. General
			1. Ethernet: 2 x RJ45 Port (one for network connectivity, one for IP cameras); 10Mbps / 100Mbps / 1Gbps
			2. USB: 2 x USB2.0 (5V, less than 0.5A)
			3. eSATA: 2 external eSATA port
			4. RS-232 Serial Port: Terminal block, PTZ control, text insertion (POS/ATM)
			5. RS-485 Serial Port: Terminal block, telemetry control, remote control keyboard
			6. IR Remote Control Port: Handheld remote control
			7. Audio
				1. Input: 4 RCA + 12 D-sub, line level + 16 network IP
				2. Output: 1 RCA, line out + 16 network IP
			8. Operating Temperature: 0°C ~ +40°C (+32°F ~ +104°F)
			9. Humidity: 0%RH ~ 90%RH
			10. Dimensions: 16.9 x 3.5 x 16.2in (430 x 88 x 410.8mm)
			11. Weight: 14.1lbs (6.4kg) (with 1 HDD)
		26. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. Underwriters Laboratories (UL)
			4. National Certification Bodies (CB)
		27. Accessories
			1. eSATA External Storage Devices
			2. Recorder Lockbox: LB3L
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