**SECTION 28 23 19**

**DIGITAL VIDEO RECORDERS AND ANALOG RECORDING DEVICES**

**Advanced Technology Video HVR-16781 HD Analog Digital Video 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
	2. SYSTEM DESCRIPTION
		1. Description: Video surveillance and monitoring at points as indicated on Drawings.
			1. HVR-16781: HD Analog, 16 Channel Digital Video Recorder
		2. Performance Requirements
			1. Fully integrated, stand-alone video recording management solution in a compact design.
			2. High Definition Analog (HD Analog) over Coax Technology
			3. 16 composite video connectors
			4. Supports AHD, TVI, CVBS 960H and network IP cameras simultaneously
			5. Full High Definition (Full HD), 1920 x 1080 display capability
			6. 4 Alarm inputs and 1 Alarm output
			7. 4 Channel Audio Recording and 1-Channel Audio Playback
			8. Maximum 240-ips (Images per Second), up to 1920 x 1080 Record Resolution
			9. Concurrent HDMI and VGA main monitor video outputs with multiple display formats
			10. Intuitive Graphical User Interface (GUI) Menu System
			11. Powerful Pentaplex functionality with simultaneous live, recording, playback, backup and network transmission.
			12. USB Mouse and Infrared Remote Control
			13. Self-diagnostics automatic notification including hard disk drive S.M.A.R.T. protocol
			14. iPhone and Android Compatible
	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. Models: HVR-16781
		3. Product Description: HD Analog, 16 Channel Digital Video Recorder
		4. General Requirements:
			1. The Video Recorder shall provide these features:
				1. Fully integrated, stand-alone video recording management solution in a compact design.
				2. Record up to 16 auto-terminating HD Analog camera inputs using high resolution H.264 video compression.
				3. View recorded video at up to 1980 x 1020 resolution.
				4. View, record, control cameras, handle alarms and check device status through one interface.
				5. Multiple control options via USB mouse, IR remote control or client software.
				6. Remote configuration and management of devices on surveillance system.
				7. Powerful search functions that allow searches based on time/date stamps, motion or input triggers, and smart searches that allow searches on changes in recorded video.
				8. Capable of delivering live video to mobile devices.
				9. 10/100/1000Mb Base-T Ethernet port for local or wide area network connection.
				10. Stable embedded operating system.
				11. Low maintenance.
		5. The Video Recorder shall feature H.264 video compression to reduce bandwidth and storage requirements.
		6. The Video Recorder shall record automatically in the background.
		7. The Video Recorder shall record at up to 240 images per second at 1920 x 1080 or 960H resolution.
		8. The Video Recorder shall be capable of displaying output on two monitors simultaneously.
		9. The Video Recorder shall display Full High Definition (FHD), 1920 x 1080 resolution on both HDMI and VGA video monitors in full-screen, quad, multi-screen pictures, and PIP that can be frozen or zoomed on main monitors.
		10. The Video Recorder shall control pan/tilt/zoom (PTZ) equipment via RS485 serial communications and shall support Pelco P and D protocols.
		11. The Video Recorder shall provide remote management software, ATVision IP, via a network which will allow the user to view and manage an unlimited quantity of recorders.
		12. The Video Recorder shall provide primary storage via a SATA Hard Disk Drive, maximum of 2 at 10TB each.
		13. The Video Recorder shall provide secondary storage via iSCSI or USB flash drive.
		14. The Video Recorder shall offer email notifications generated by programmed alarm activity.
		15. The Video Recorder shall support Real Time Streaming Protocol (RTSP) to deliver live video over the Internet to an appropriate mobile device. (The video recorder has been tested and works with the following mobile devices: iPhone and Android.)
		16. Electrical
			1. Power Source: 12VDC, 5A (Power Adapter and Cable included)
		17. Video
			1. 16-BNC Inputs, Auto Terminating
			2. Monitor Outputs: HDMI, 1 Output; VGA, 1 Output; BNC (Spot) – 1 Output
			3. Monitor Display Mode: Full, 4/6/8/9 or 4/6/8/9/13/16 split, PIP, Zoom
			4. Display Resolution: Up to 1920 x 1080 (HDMI and VGA)
			5. Record Resolution: Up to 1920 x 1080
			6. Playback/Record Rate: 240 Images/Second total at 1920 x 1080
		18. General
			1. Compression: H.264
			2. Operating System (OS): Embedded Linux
			3. Storage: 2 HDD
			4. Data Export Medium: iSCSI or USB2.0 (HDD or Flash-Drive)
			5. Alarm Inputs: 4, Terminal Block
			6. Alarm Outputs: 1, Terminal Block
			7. Serial Interface: RS485, Terminal Block
			8. USB: v2.0 x 2
			9. PTZ Control: RS485, Terminal Block & UTC
			10. Audio Inputs: 4 RCA
			11. Audio Outputs: 1 RCA
			12. Dimensions (W x H x D) 14.9” x 1.85” x 12.5” (375 x 44.9 x 318.2mm)
			13. Weight 5.5lbs (1.8kg) (without HDD)
			14. Operating Temp 32°F ~ 114°F (0°C ~ 45°C)
			15. Operating Humidity 0% - 90% (Non-Condensing)
		19. Network
			1. Network Interface: RJ-45
			2. Network Interface Card 10/100/1000 Base T Ethernet
			3. Network Protocols: Static IP, ADSL, DHCP, DDNS, DVRNS
			4. Simultaneous Users: 10
			5. Remote Software: ATVision IP Remote Management Software, Smart Manager, Web Browser
			6. Web Browsers: IE, Chrome, Firefox
		20. Conformity Certifications:
			1. Federal Communications Commission (FCC)
			2. European Conformity (CE)
			3. Underwriters Laboratories (UL) – Power Adapter
		21. Accessories
			1. XDLBB2: Recorder Lock Box (Black)
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 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.
			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 snugness of mounting screws of all installed equipment.
		2. Test proper operation of all video system devices.
			1. Communication between recorder and cameras.
			2. Independent operation of alarms, and cameras.
		3. Test proper operation of software programs.
		4. 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.
		4. Adjust manual lens irises to meet lighting conditions.
	8. DEMONSTRATION AND TRAINING
		1. Demonstrate at final inspection that video management system and devices function properly.
		2. Demonstrate at final inspection camera’s functionality and video recording capabilities.

END OF SECTION