SECTION 28 23 19

Honeywell Video Systems
Fusion IV Rev B PC-based hybrid DVR system

1. GENERAL
	1. SECTION INCLUDES
		1. The intent of this document is to specify the minimum criteria for the design, supply, installation, and commissioning of the PC-based hybrid DVR system.
	2. RELATED SECTIONS

NOTE TO SPECIFIER: Include related sections as appropriate if DVR is integrated to other systems.

* + 1. Section 260500 – Common Work Results for Electrical, for interface and coordination with building electrical systems and distribution.
		2. Section 280513 – Conductors and Cables for Electronic Safety and Security, for cabling between system servers, panels and remote devices.
		3. Section 280528 – Pathways for Electronic Safety and Security, for conduit and raceway requirements.
		4. Section 281300 – Security Management System, for interface and coordination with electronic access control systems.
		5. Section 282323 – Video Surveillance System Infrastructure
	1. REFERENCES
		1. Reference Standards: Provide systems which meet or exceed the requirements of the following publications and organizations as applicable to the Work of this Section:
1. Canadian ICES-003
2. Consultative Committee for International Radio (CCIR)
3. Conformity for Europe (CE)
4. Electronic Industry Association (EIA)
5. Federal Communications Commission (FCC)
6. Joint Photographic Experts Group (JPEG)
7. National Television System Committee (NTSC)
8. Phase Alternation by Line (PAL)
9. Underwriters Laboratories Inc. (UL)
	1. SYSTEM DESCRIPTION
		1. The PC-based hybrid DVR system shall offer the latest in digital technology, providing unparalleled stability, security, and ease of use, with advanced algorithms, fast capture rates, and a unique Graphical User Interface (GUI). Available in 8, 16, and 32 channel configurations with recording capability up to 480/400 IPS (NTSC/PAL) @ CIF resolution.
		2. The PC-based hybrid DVR system is a complete analog digital video recording solution. The combination of motion detection, audio, image rates, mapping capabilities, and remote notification technologies shall provide an extremely flexible and reliable system.
	2. SUBMITTALS
		1. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedures Section.
		2. Manufacturer’s Product Data: Submit manufacturer’s data sheets indicating systems and components proposed for use, including instruction manuals.
		3. Shop Drawings and Schematics: Submit complete shop drawings including connection diagrams for interfacing equipment, list of connected equipment, and locations for major equipment components.
		4. Record Drawings: During construction maintain record drawings indicating location of equipment and wiring. Submit an electronic version of record drawings not later than Substantial Completion of the project.
		5. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance data, customized to the system installed. Include system and operator manuals.
		6. Field Tests: Submit results of field testing of every device including date, testing personnel, retesting date if applicable, and confirmation that every device passed field testing.
		7. Maintenance Service Agreement: Submit a sample copy of the manufacturer’s maintenance service agreement, including cost and services for a one year period for Owner’s review. Maintenance shall include, but not be limited to, labor and materials to repair the system, provide test and adjustments, and regular inspections.
	3. QUALITY ASSURANCE
		1. Manufacturer: Minimum ten years experience in manufacturing and maintaining PC-based hybrid DVR system. Manufacturer shall provide toll-free technical assistance and support available 24/7.
		2. Installer: Minimum two years experience installing similar systems, and acceptable to the manufacturer of the video management system.
		3. Environmental Conditions: PC-based hybrid DVR system shall be designed to function in the following environmental conditions:
			1. Operating Temperature: 40°F to 104°F (5°C to 40°C) non-condensing.
			2. Emissions: FCC: Part 15, Subpart B, Class B; CE: EN 55022, Class B;
			3. Immunity: CE : EN 50130-4
			4. Safety: ANSI/UL 60950-1
		4. Power Requirements: Components shall have the following electrical specifications:
			1. Power Requirement: 115 – 230 VAC
	4. DELIVERY, STORAGE, AND HANDLING
		1. Deliver materials in manufacturer’s labeled packages. Store and handle in accordance with manufacturer’s requirements, in a facility with environmental conditions within recommended limits.
	5. WARRANTY
		1. Manufacturer’s Warranty: Submit manufacturer’s warranty of thirty-six (36) months from the manufacture date code under normal use and service for the PC-based hybrid DVR system. Submit manufacturer’s warranty of thirty-six (36) months from date of manufacture for hard drives.
10. PRODUCTS
	1. MANUFACTURER
		1. PC-based hybrid DVR system Manufacturer: PC-based hybrid DVR system, [www.honeywellvideo.com](http://www.honeywellvideo.com) or [www.honeywellintegrated.com](http://www.honeywellintegrated.com) .
	2. SYSTEM COMPONENTS
		1. The Digital Video Recorder (DVR), that includes the hard drive(s) and back panel interface points such as sensor inputs for connection to security equipment in the system.
		2. Remote video software (HFRVS), that runs on a Microsoft Windows-based, personal computer (PC). HFRVS is used for configuring communications from PCs to DVRs, administering operator accounts for the DVR, setting up sequential touring of DVRs and configuring communications from DVR to Alarm Station. Data about multiple DVRs must be stored in a database.
		3. A Multi-site Remote Video Software single license.
	3. OPERATIONAL REQUIREMENTS
		1. DIGITAL VIDEO RECORDER – The digital video recorder shall include, as a minimum, the following features/functions/specifications. The digital video recorder shall:
			1. Offer stability, security, and ease of use, and allow the user to edit network settings The Digital Recorder shall be optimized and support the Windows 7 OS.
			2. Hybrid operation allowing a mix of IP and analog cameras up to the total quantity of cameras per DVR ordered (8, 16, 32).
			3. IP camera licensing to add IP cameras to enable up to a combined total of 32 IP and analog cameras per DVR.
			4. Include a single license (installation on one PC) per DVR of multi-site software.
			5. Support static IP and DHCP IP address and subnet mask to allow for installation in many IP settings without the need to reconfigure TCP/IP settings.
			6. Be available with eight (8), sixteen (16), and thirty-two (32) BNC composite video inputs. Eight and sixteen input models must include corresponding BNC looping video outputs.
			7. The PC-based hybrid DVR shall record at a rates of up to 480 images per second (ips), with real-time viewing of 30 ips per camera for live video for analog cameras.
			8. Support multiple compression types including H.264 image compression, and offer the following resolutions (depending on the model) available on a per camera basis:
				* 360x240 (NTSC)
				* 360x288 (PAL)
				* 720x240 (NTSC)
				* 720x288 (PAL)
				* 720x480 (NTSC)
				* 720x576 (PAL)
			9. Allow the user to adjust the resolution, quality, motion sensitivity, and number of images per second each camera will record. These adjustments shall be configurable per video input.
			10. Offer the following on-board storage hard drive capacity options for the 16-channel recorder: 1.0 Terabytes, 2.0 Terabytes, 4.0 Terabytes, 8 Terabytes.
			11. Be housed in a metal case. The case shall be no higher than five (5) rack units (5U), and be designed to fit into a 19” EIA rack.
			12. Have the ability to easily backup important video to an external media location, CD or DVD disk, or a USB Drive. The unit must not stop recording during the backup process. To ensure the integrity of data, the digital recorder shall use a proprietary viewer that can detect image tampering. Alternatively, video clips can be saved as avi files.
			13. Include backup viewer software that allows the user to play back the exported video in its proprietary format on a PC.
			14. Include a DVD-RW recorder allowing for up to 4+ Gigabytes of video data to be stored on each DVD, and one (1) front accessible USB input as standard.
			15. Include a minimum of the following front panel controls and LEDs:
* DVD-RW drive
* Hard drive activity LED
* Power LED
* 2 – USB ports
* Power switch
* Hard drive array – up to 4 HDDs
	+ - 1. Include a minimum of the following rear-panel connectors:
		- BNC Connectors for Camera Inputs and Looping Outputs
		- Sensor/Alarm Inputs
		- Control Outputs
		- Power input
		- Sensor inputs
		- USB inputs
		- HDMI
		- RJ-45 Network Jack
		- RS-485 Interface (with RX, TX)
		- eSATA
		- DVI-I
		- Line in / Speaker out – RCA
		- RCA video out
		- Audio in / out
			1. Include the following components:
		- USB Mouse
		- USB Keyboard QWERTY
		- DVR Repair Disc
		- Remote Video Software Disc
		- Power Adapter
		- PTZ Adapter
		- Rack mount attachments with screws
		- DVR key
		- User Manual (Digital format)
		- Honeywell Mouse pad
		- DVI to VGA adapter
			1. Be pre-configured for fast and seamless integration within existing IT infrastructures. The unit must offer the following network setup options:
				1. The ability to throttle the bandwidth of the digital recorder to ensure that images and system messages are delivered as quickly as possible within the capabilities of the network’s available bandwidth.
				2. The ability to view the IP configuration of the digital recorder.
			2. Include a System Log to record and display information pertaining to alarm events, digital recorder reboots, and other related information, record/display hardware information pertaining to system recording successes and failures, and other related information. The user shall have the ability to export the log information.
			3. Include an Administrator privilege level, which allows the user to create, edit, and delete user accounts. Each account can be assigned different permissions that limit the usage of the system including:
		- Search
		- Set up
		- Pan/Tilt
		- Backup
		- Forbidden Cameras
		- Shut down
			1. Include a forbidden camera feature, which allows an administrator to hide certain cameras from a user. The camera must continue recording, but the user will not be able to view the camera in Live or Search mode.
			2. An optional TV Out card must be available from the manufacturer of the Digital Recorder to provide four analog video outputs on the back of the unit. The outputs shall be programmable to sequence through any number of cameras, and the operator shall have the ability to temporarily stop the defined sequence and manually select a camera to the output. The sequence must be easily reactivated by simply enabling the sequence again.
			3. The Digital Recorder shall come pre-configured for fast and seamless integration within existing IT infrastructures. The unit must offer the following network setup options:
			4. The ability to enable or disable access to the digital recorder from remote locations.
			5. A designated time-out period that the connection will be terminated after unsuccessful user attempts to connect to the digital recorder.
			6. An Emergency port used to connect with the Alarm Monitor Software.
			7. A primary port used to connect to remote software.
			8. An Image port used to transfer video to the remote software.
			9. A Search port, used to transfer search information to the remote software.
			10. The ability to enable or disable access by the Web Viewer Software, allowing a user to view live video using a Microsoft Internet Explorer browser.
			11. The ability to adjust the resolution setting when sending video to remote clients.
			12. The ability to throttle the bandwidth of the digital recorder to ensure that images and system messages are delivered as quickly as possible within the capabilities of the network’s available bandwidth.
			13. The ability to view the IP configuration of the digital recorder.
			14. The ability to configure an IP address via Static or DHCP.
			15. The Digital Recorder must include an Alarm log to record and display information pertaining to alarm events, an Event log to record and display information pertaining to user logins, digital recorder reboots, configuration changes such as schedule and frame-rate changes, backup operations which will include user name, date & time, camera name and clip duration, remote backup operations, AVI/JPG exports and a System log to record/display hardware information pertaining to scan disks, system recording successes and failures, and other related information. The user shall have the ability to export the log information in one (1) week increments. These log files must include the ability to be exported in their native format or as text documents.
			16. The Digital Recorder shall include a User Management Console, which allows the user to create, edit, and delete user accounts. Each account can be assigned different privileges that limit the usage of the system. Privileges shall include, but not be limited to, the following functions:
			* Search
			* Setup
			* Pan/Tilt
			* Backup
			* Shutdown
			* Intensive
			* Relay Out
			* Pan/Tilt Advance
			* Hidden Cameras/Audio
			* User Ranking
			* Auto Log Off
			1. Allow the user to view the software version of the digital recorder.
			2. Run a series of self tests during power up, and display messages as the various hardware and software sub-systems are activated. After power up, the digital recorder’s software must automatically load and display the main screen.
			3. Display the camera status for each camera next to the camera number (or name) in the video display area. The information must include:
		- Camera number and custom name
		- Recording status, which must show whether a camera is currently recording continuously, or whether a camera is recording based on motion.
		- Special recording status, which must indicate whether a camera’s associated sensor has been activated, and/or when the user activates the instant recording option for the selected camera.
			1. Offer to the operator of the digital recorder the following screen division sets (depending on the model):
		- Display the first four videos (1–4) in the video display area.
		- Display the next four videos (5–8) in the video display area.
		- Display the next four videos (9–12) in the video display area.
		- Display the next four videos (13–16) in the video display area.
		- Display all sixteen (16) videos in the video display area.
			1. Allow for user-definable, descriptive camera names of up to seven (7) alpha-numeric characters.
			2. Have the ability to adjust each video input’s brightness, contrast, and hue, to optimize the clarity and detail of recorded video.
			3. Incorporate motion detection, including the ability to create multiple detection regions for each video input. .
			4. Include the ability for post-alarm recording, which must record video for a specified time before and/or after a motion or sensor alarm has occurred. The time period must be selectable from zero (0) to ninety nine (50) seconds.
			5. For analog cameras - include the ability to record continuously with one frame rate and then record at an increased frame rate when motion is detected.
			6. Include a video loss alarm function to allow an alarm event to occur when a camera loses the signal for any reason (e.g. camera power failure, cable being cut, camera damage, etc.). When a video loss event occurs, the operator shall have the option to enable an alarm output.
			7. Include Alarm Monitor software to stream video across a LAN to a client PC when an alarm is detected on the unit. The operator shall have the ability to stop, play forward and backward, frame by frame or at real speed, the video that streams across. The program must constantly monitor for a signal from the digital recorder, and when an alarm signal is detected the Alarm Monitor must notify the operator of an event. The Alarm Monitor image viewer shall also allow the user to search through past events that have been recorded on the client PC.
			8. The Instant Recording feature allows users to manually initiate recording on a specific camera, overriding the current schedule.
			9. Provide, through the remote software, the ability to export single images in the JPG file format and save video clips in the AVI format. A digital signature must be attached to every JPG and AVI file exported by the unit for use with the bundled Digital Verifier application. This function must be unique to the unit and its verification software, and shall not interfere with viewing files using other applications.
			10. Incorporate an internal RS-485 connector, that provides the ability to control multiple pan/tilt/zoom (PTZ) cameras. Depending on the model, control must include multiple pan, tilt, zoom, and focus speeds, iris control (including return to auto-iris), focus control (including return to auto-focus), programming presets, and viewing presets.
			11. Support the Honeywell VCL and Honeywell MAXPRO protocols.
			12. Include play controls to play back the recorded video either forward or reverse, at multiple speeds.
			13. Allow the operator to perform an index search based upon motion detection, sensor activation and video loss events, greatly reducing the amount of time required to search through saved video.
			14. Allow the operator to perform a preview search. The Preview Search gives a 24 Hour visual overview of a single camera by separating a 24 hour period (1 day) into 24 images, one image for each hour of the day.
			15. Adjust for Daylight Savings Time changes, with no loss of video when the hour jumps forward. When the hour falls back, the unit shall record both duplicated hours, and allow the operator to select which duplicated hour to play back.
			16. Incorporate a hardware watchdog for restarting the system in the event of a system lock-up.
		1. REMOTE VIDEO SOFTWARE – The Remote Video Software shall include, as a minimum, the following features/functions/specifications. The Remote Video Software shall:
			1. Allow a user to remotely operate and maintain the Digital Recorder, and must connect using standard TCP/IP protocol through connection types such as DSL, Cable Modems, T1, ISDN, LAN.
			2. Provide the user with most of the features and functions available at the local Digital Recorder. The remote features and functions must include viewing live video, searching through archived video, exporting images and video clips, and most setup functions.
			3. Allow up to five (5) users to simultaneously connect to a single Digital Recorder. Each user can perform functions on the unit and not affect the other users. The unit shall only allow one user to access the setup and PTZ functions at any given time.
			4. Utilize user accounts with assigned privileges that or deny access to different functions, therefore ensuring that only authorized personnel are allowed to log in to the Digital Recorder.
	1. SYSTEM HARDWARE
		1. PC-based hybrid DVR system: shall operate with no performance degradation using the following standard hardware:
			1. Operating System: Windows 7
			2. Optical Drive: DVD-RW
			3. USB 2.0 Ports: 2 total
			4. Hard Disk Drives:
				1. Removable Hard Disk drive support
				2. Capacities supported to a maximum of 8 TB for the 16ch DVR model.
			5. Network Interface Card (NIC): 10/100/1000 base T Ethernet, standard RJ45 interface
			6. Recording and Transmission Compression Algorithm includes H.264
			7. Recording Rate: up to 480/400 IPS global (NTSC/PAL)
			8. Dimensions (W x H x D): 7.0” x 17.3” x 21.25” (180 mm x 440 mm x 552 mm)
			9. Weight: 64 lb (29 kg)
		2. Single / Multi-site Remote software: IBM-compatible PC workstation shall operate with no performance degradation using the following minimum hardware and operating system configuration:
* Intel Quad Core i7 processor (or equivalent)
* 2 GB System Memory
* DirectX 9 or Higher
* ATI 5750 Video Card (or equivalent)
* 512k Network Connection
* TCP/IP Installed
* Microsoft Windows® 7, Vista, or XP
* 1280 x 1024 Optimal Display Resolution
	1. MANUFACTURER SUPPORT
		1. Manufacturer shall provide customer service, pre-sales applications assistance, after-sales technical assistance, and access to technical online support.
		2. Manufacturer shall provide 24/7 technical assistance and support via a toll-free telephone number at no extra charge.
1. EXECUTION
	1. EXAMINATION
		1. Examine site conditions prior to installation. Notify Architect and Owner in writing if unsuitable conditions are encountered. Do not start installation until site conditions are acceptable.
	2. INSTALLATION
		1. Test all components before shipping to the project location.
		2. Digital Video Recording (DVR) and Transmission System shall be installed, programmed and tested in accordance with manufacturer’s installation instructions.
			1. Coordinate interfaces with Owner’s representative where appropriate.
			2. Provide backboxes, racks, connectors, supports, conduit, cable, and wire for a complete and reliable installation. Obtain Owner’s approval for exact location of all boxes, conduit, and wiring runs prior to installation.
			3. Install conduit, cable, and wire parallel and square with building lines, including raised floors areas. Do not exceed forty percent fill in conduits. Gather wires and tie to create an orderly installation.
			4. Coordinate with other trades to provide proper sequencing of installation.
	3. FIELD COMMISSIONING AND CERTIFICATION
		1. Field Commissioning: Test PC-based Hybrid DVR System as recommended by manufacturer, including the following:
			1. Conduct a complete inspection and testing of equipment, including verification of operation with connected equipment.
			2. Test devices and demonstrate operational features for Owner’s representative and authorities having jurisdiction as applicable. All testing must be witnessed by the Owner’s representative prior to acceptance.
			3. Correct deficiencies until satisfactory results are obtained.
			4. Submit written copies of test results.
	4. TRAINING
		1. Conduct on-site system administrator and security/surveillance operator training for a minimum session length of 4 hours, or as recommended by the video management system manufacturer. Training shall include, but not limited to PC-based hybrid DVR system operation and diagnostics.

 END OF SECTION