SECTION 28 23 19

Honeywell Video Systems
HRDPX16 H.264 Embedded Digital Recording and Transmission System

PART 1 GENERAL

1.1 SECTION INCLUDES

A. The intent of this document is to specify the minimum criteria for the design, supply, installation, and commissioning of The Embedded Digital Recording and Transmission system.

1.2 RELATED SECTIONS

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

A. Section 260500 – Common Work Results for Electrical, for interface and coordination with building electrical systems and distribution.

B. Section 280513 – Conductors and Cables for Electronic Safety and Security, for cabling between system servers, panels and remote devices.

C. Section 280528 – Pathways for Electronic Safety and Security, for conduit and raceway requirements.

D. Section 281300 – Security Management System, for interface and coordination with electronic access control systems.

E. Section 282323 – Video Surveillance System Infrastructure.

1.3 REFERENCES

A. 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. Conformity for Europe (CE)
3. Electronic Industry Association (EIA)
4. Federal Communications Commission (FCC)
5. Joint Photographic Experts Group (JPEG)
6. National Television Systems Committee (NTSC)
7. Phase Alternating by Line (PAL)
8. Underwriters Laboratories Inc. (UL)
9. Electrical Testing Laboratories (ETL)
10. RoHS Compliant (RoHS)

1.4 SYSTEM DESCRIPTION

A. The Embedded Digital Recording and Transmission 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 a 16 channel configuration with recording capability up to 480/400 IPS (NTSC/PAL).

B. The Embedded Digital Recording and Transmission 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.

1.5 SUBMITTALS

A. General: Submittals shall be made in accordance with the Conditions of the Contract and Submittal Procedures Section.

B. Manufacturer's Product Data: Submit manufacturer's data sheets indicating systems and components proposed for use, including instruction manuals.)

C. Shop Drawings and Schematics: Submit complete shop drawings including connection diagrams for interfacing equipment, list of connected equipment, and locations for major equipment components.

D. 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.

E. Operation and Maintenance Data: Submit manufacturer's operation and maintenance data, customized to the system installed. Include system and operator manuals.

F. 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.

G. 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.

1.6 QUALITY ASSURANCE

A. Manufacturer: Minimum ten years experience in manufacturing and maintaining Digital Video Recording (DVR) and Transmission Systems. Manufacturer shall provide toll-free technical assistance and support available 24/7.

B. Installer: Minimum two years experience installing similar systems, and acceptable to the manufacturer of the video management system.

C. Environmental Conditions: Digital Video Recording (DVR) and Transmission Systems shall be designed to function in the following environmental conditions:

1. Operating Temperature: 32°F to 104°F (0°C to 40°C) non-condensing.

2. Emissions: FCC: Part 15, Subpart B, Class B; CE: EN 55022:2006 + A1:2007 Class B; FCC Part 15, Subpart B, Class B

3. Immunity: CE: EN 50130-4:1995 + A1:1998 +A2:2003

4. Safety: IEC 60950-1:2005 2nd Edition + EN60950-1:2006 + A11:2009

D. Power Requirements: Components shall have the following electrical specifications:

1. Power Requirement: 12 VDC, 5A

1.7 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.8 WARRANTY

A. Manufacturer's Warranty: Submit manufacturer's warranty of thirty-six (36) months from the manufacture date code under normal use and service for the Embedded Digital Recording and Transmission system. Submit manufacturer's warranty of thirty-six (36) months from date of manufacture for hard drives.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Embedded Digital Recording and Transmission System Manufacturer: Embedded Digital Recording and Transmission system, www.honeywellvideo.com or www.honeywellintegrated.com .

2.2 SYSTEM COMPONENTS

A. 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.

B. 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.

C. A Multi-site Remote Video Software single license.

2.3 OPERATIONAL REQUIREMENTS

A. 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 Linux Embedded OS.

2. Be preconfigured with a DHCP-enabled IP address and subnet mask to allow for installation in many IP settings without the need to reconfigure TCP/IP settings.

3. Be available with sixteen (16) BNC composite video inputs. All models must include corresponding BNC looping video outputs.

4. The sixteen (16) input Embedded Digital Recorder shall record at a rate of 480 images per second (ips), with real-time viewing of 30 ips per camera for live video.

5. Utilize H.264 image compression, and offer the following resolutions (depending on the model) available on a per camera basis:

   - 352x480 (NTSC)
   - 352x288 (PAL)
   - 704x480 (NTSC)
   - 704x288 (PAL)
   - 704x480 (NTSC)
   - 704x576 (PAL)

6. 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.

7. Offer the following on-board storage hard drive capacity options for the 16-channel recorder: 1.0 Terabyte, 2.0 Terabytes, 4.0 Terabytes.

8. Be housed in a metal case. The case shall be no higher than two (2) rack units (2U), and be designed to fit into a 19” EIA rack.

9. 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 compression format that can only be read by the digital recorder’s backup program. No other viewer can read the video.

10. Include backup viewer software that allows the user to play back the exported video in its proprietary format on a PC.

11. 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.

12. Include a minimum of the following front panel controls, devices, and LEDs:
    - Hard Drive Activity LED
    - Power LED
    - DVD-RW Drive
    - DVD-RW Open Tray Button
    - One USB input
    - High Temperature Indicator LED
    - One Hard Disk Drive Activity LED
    - Operational and programming control
13. Include a minimum of the following rear-panel connectors:
    - BNC Connectors for Camera Inputs and Looping Outputs
    - Sensor/Alarm Inputs
    - Control Outputs
    - Low voltage power supply unit
    - DB9 Serial Input
    - RCA Audio Line In x4
    - RCA Audio Line Out
    - VGA Monitor Output
    - RS-485 Interface (with RX, TX)
    - RJ-45 Network Jack
14. Include the following components from the manufacturer:
    - Software CD (includes manual and remote software)
    - Power Adaptor and 120 VAC power cord
    - IR Remote Controller
    - User Manual

15. Be pre-configured for fast and seamless integration within existing IT infrastructures. The unit must offer the following network setup options:

    a. 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.

    b. The ability to view the IP configuration of the digital recorder.

16. 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.

17. 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
    - Pan/Tilt
    - Backup
    - Forbidden Cameras
    - Health Check
    - Camera Selection
    - DVR Configuration

18. 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.

19. Allow the user to view the software version of the digital recorder.

20. The sixteen (16) input digital recorder shall include sixteen (16) sensor inputs, for use with devices such as motion detectors, glass breakage alarms, door and window sensors, etc, and the inputs must be configurable via software for Normally Open (NO) or Normally Closed (NC).

21. Be capable of recording four (4) channels of audio.

22. 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.

23. 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.

24. 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 videos one through nine (1–9) in the video display area.
    - Display videos eight, nine, ten through sixteen (8, 9, 10–16) in the video display area.
    - Display all sixteen (16) videos in the video display area.

25. Allow for user-definable, descriptive camera names of up to seven (7) alpha-numeric characters.

26. Have the ability to adjust each video input's brightness, contrast, and color, to optimize the clarity and detail of recorded video.

27. Incorporate motion detection, including the ability to create multiple detection regions for each video input.

28. Include the option of displaying the associated video full screen upon a motion or sensor event.

29. 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 five (5) to ninety nine (99) seconds.

30. Include the ability to record continuously with one frame rate and then record at an increased frame rate when motion is detected.

31. Include a video loss alarm function to allow an alarm event to occur when a camera loses the signal for any reason (e.g. 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.

32. 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 shall automatically load at startup and appear in the taskbar. It 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 via a pop-up message window. An alarm beep must also be activated to alert the user. The Alarm Monitor image viewer shall also allow the user to search through past events that have been recorded on the client PC.

33. Offer instant recording for manually starting a camera recording, superseding the current schedule. This recording shall be started by pressing the Instant Recording button on the front control panel or the remote control.

34. 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.

35. 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.

36. Support the Honeywell VCL and Honeywell MAXPRO protocols.

37. Include play controls to play back the recorded video either forward or reverse, at multiple speeds.

38. 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.

39. 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.

40. Incorporate a hardware watchdog for restarting the system in the event of a system lock-up.

B. 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 four (4) 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 allow only one user to access the setup and PTZ functions at any given time.

4. Utilize user accounts with assigned privileges that allow or deny access to different functions, therefore ensuring that only authorized personnel are allowed to log in to the Digital Recorder.

2.4 SYSTEM HARDWARE

A. HRDPX16 H.264 Embedded Digital Recording and Transmission System: shall operate with no performance degradation using the following standard hardware:

1. Operating System: Linux

2. Optical Drive: Optional DVD-RW

3. USB 2.0 Ports: 2 total

4. Hard Disk Drives:

a. Internal Hard Disk drive support

b. Capacities supported to a maximum of 4 TB for the 16ch DVR model.

5. Network Interface Card (NIC): 10/100 base T Ethernet, standard RJ45 interface

6. Recording and Transmission Compression Algorithm: H.264

7. Recording Rate: 480/400 IPS global (NTSC/PAL)

8. Dimensions (W x H x D): 15.75” x 3.50” x 15.75” (400 mm x 88 mm x 400 mm)

9. Weight: 16 lb (7.2 kg)

B. HRDPX16 H.264 Embedded Digital Recording and Transmission System: IBM-compatible PC workstation shall operate with no performance degradation using the following minimum hardware and operating system configuration:

1. Windows XP, Vista or 7 Operating System

2. Intel Dual Core Processor

3. 1GB RAM

4. 256 MB+ NVIDIA or ATI Video Card

5. DirectX 9 or higher

6. 256k Network Connection

7. 32-bit color

8. 1280x1024 Resolution

2.5 MANUFACTURER SUPPORT

A. Manufacturer shall provide customer service, pre-sales applications assistance, after-sales technical assistance, and access to technical online support.

B. Manufacturer shall provide 24/7 technical assistance and support via a toll-free telephone number at no extra charge.

PART 3 EXECUTION

3.1 EXAMINATION

A. 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.

3.2 INSTALLATION

A. Test all components before shipping to the project location.

B. 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.

3.3 FIELD COMMISSIONING AND CERTIFICATION

A. Field Commissioning: Test Digital Video Recording (DVR) and Transmission 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.

3.4 TRAINING

A. 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 Embedded Digital Recording and Transmission System operation and diagnostics.

END OF SECTION