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This product specification is based on recognized industry standards for project documentation found within the Construction Specification Institute (CSI) Project Resource Manual – CSI Manual of Practice [5<sup>th</sup> Edition], MasterFormat™ [2004 Edition], SectionFormat™ [1997 Edition] and PageFormat™ [1999 Edition].

This specification is based on JVC VN-E4U Network Video Encoder and may be used as a manufacturer based proprietary specification or edited to a performance based specification. Optional text is presented in brackets [ ]; delete optional text as required in final project documentation. Specifier Notes are intended to provide information and guidance relative to the specific product or system ensuring proper configuration, performance and operation; delete these notes in final project documentation.

## Section 28 23 23 Video Surveillance Systems Infrastructure

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section includes: Four channel Network Video Encoder hardware, firmware and software for use in commercial /industrial security applications
  - 1. Network Video Encoder: Hardware interface for converting NTSC composite video signals to digital video signals capable of being used over Ethernet or the Internet
  - 2. Viewer Software: Software interface for the configuration and monitoring of cameras and managing encoder network settings

#### 1.02 RELATED SECTIONS

- A. 01.61.13 Software Licensing Requirements
- B. 01.86.33 Electronic Safety and Security Performance Requirements

*Specifier Note: Projects may vary in scope and complexity; as such it is important to identify those sections which may have an impact on system operation or infrastructure integrity. It is important these sections be reviewed and addressed if the project warrants it and/or is the practice of the Specifier. Edit or revise those sections which do not apply to a specific project. Contact a JVC Representative for further assistance.*

- C. 28.01.20 Operation and Maintenance of Electronic Surveillance
- D. 28.05.00 Common Work Results for Electronic Safety and Security

- E. 28.06.20 Schedules for Electronics Surveillance
- F. 28.08.00 Commissioning of Electronic Safety and Security Systems
- G. 28.13.33.33 Access Control Interfaces to Video Surveillance
- H. 28.16.33.33 Intrusion Detection Interfaces to Video Surveillance
- I. 28.23.13 Video Surveillance Control and Management Systems
- J. 28.23.19 Digital Video Recorders and Analog Recording Devices
- K. 28.23.26 Video Surveillance Remote Positioning Equipment
- L. 28.23.29 Video Surveillance Remote Devices and Sensors
- M. 28.31.33.33 Fire Detection and Alarm Interfaces to Video Surveillance

*Specifier Note: The convergence of IT Infrastructures and Network Video technology may often require the integration of equipment enclosures and related hardware typically found in data center environments. Edit or revise those sections as required for a specific project or specification practices*

- N. 27.11.16 Communication Cabinets, Racks, Frames and Enclosures
- O. 27.21.00 Data Communication Network Equipment
- P. 27.22.00 Data Communication Hardware

*Specifier Note: Within large scope projects communication and cabling may often be related to requirements found in the overall building electrical requirements. Edit or revise those sections as required for a specific project or specification practices.*

- Q. 26.05.19 Low-Voltage Electrical Power Conductors and Cables
- R. 26.41.23 Lighting Protection, Surge Arrestors and Suppressors
- S. 26.55.53 Security Lighting
- T. 26.56.00 Exterior Lighting

### 1.03 REFERENCES

- A. UL
- B. FCC Part 15 Radio Frequency Radiators
- C. CE EN55022 / EN50130-4: Emission
- D. RoHS
- E. IEC 60297-1 Ed. 3.0 b:1986: Mechanical Structures for Electronic Equipment

- F. IEEE 1394: SCSI Standard
- G. IEEE802.3 Network communication standard

#### 1.04 SUBMITTALS

- A. General: In compliance with Conditions of the Contract and Division 1 Submittal requirements.
  - 1. Product Data: Submit original equipment manufacturers product, installation, operation and maintenance data
  - 2. Samples: Provide sample [video] [IP Address] from representative network video system consisting of [number] network based cameras

*Specifier Note: When comparing/choosing digital video security equipment, many products may be derivatives of consumer electronics. The following language ensures the Owner of the proper equipment is being used for the intended purpose.*

#### 1.05 QUALITY ASSURANCE

- A. The system shall be manufactured for the intended purpose in a commercial /industrial, 24 hour day, 7 days per week, and 365 days per year operating environment
- B. Manufacturer Qualifications: Obtain [products] [systems] from a manufacturer experienced in the engineering, production and support of networked digital video systems, and, with sufficient production capability to meet the required project schedule
  - 1. Specified Manufacturer to provide field engineering support services
  - 2. Specified manufacturer to provide on demand web based training for installers and technicians

*Specifier Note: Security and safety systems often integrate with other building systems, and, must rely on the Owners network infrastructure for optimum performance. As each project may vary, the following paragraph ensures the product/software may be optimized by qualified technicians for a specific operating environment. Without this option available the Owner may not fully realize the total benefits of the technology. Edit or revise those sections as required for a specific project or specification practices.*

- 3. Specified manufacturer to provide Custom Software Application Development Guide describing API and other protocols necessary to optimize or otherwise customize product performance

*Specifier Note: Certification or licensing requirements for contractors, installers or integrators of safety and security systems vary from state to state in the continental United States. Verify requirements with the Authority Having Jurisdiction for the specific project. Edit or revise those sections as required for a specific project or specification practices.*

- C. Installer Qualifications:
  - 1. Engage Installer with [license] [certification] [type] as required by the [State of] [City of] with demonstrated successful experience designing, installing, commissioning, training and servicing network based video systems

2. The installer shall have staff members trained and familiar with Microsoft Networks and Cisco Systems network hardware and software
3. Installer shall have completed factory training and be certified by the manufacturer as qualified to install, operate and maintain product(s) specified

#### 1.06 WARRANTY

- A. Provide original equipment manufacturers warranty documentation for acceptance by the Owner

<i>Specifier Note: Coordinate paragraph below with manufacturers warranty requirements</i>
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1. Warranty Period: [*specify term*] years commencing with the Date of Substantial Completion

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Division 1 Product Requirement Section and the manufacturers recommended procedures for receiving and protection of the equipment
- B. Storage and Protection: Store materials protected from exposure to extreme or harmful environmental conditions and at temperature and humidity levels recommended by the manufacturer
  1. Prevent physical damage, soiling or wetting
  2. Provide secure storage prior to and during installation
  3. Provide individual components in the manufacturers original packaging and labeling

#### 1.08 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
  1. Site should be substantially enclosed and secure prior to installation of hardware
  2. Environmental systems should be in place and operational
  3. Deliver materials onsite at least 24 hours prior to installation to allow materials to reach temperature and humidity equilibrium

### **PART 2 PRODUCTS**

#### 2.01 NETWORK VIDEO ENCODER

- A. General
  1. Provide Network Video Encoder (NVE) for converting NTSC composite video signals into digital JPEG images capable of being transmitted over local/wide area networks (Ethernet) and the Internet
    - a. Four (4) NTSC composite video inputs, 1 V(p-p) at 75 Ohms resistance
    - b. JPEG compression at 640 x 480 pixels (VGA) and 320 x 240 pixels (QVGA)
    - c. Channel transfer rate of 30 frames per second for each video channel, with a total transfer rate of 120 frames per second per encoder
  2. Simultaneous, multi-streaming encoding of VGA and QVGA video per video channel
  3. Provide multicast transmission for up to 10 streams of any combination of video and audio streams enabling simultaneous viewing by many software viewers at one time

*Specifier Note: Maximum number of viewers is dependent on multicast network performance*

4. Provide multiple methods for alarm signaling
    - a. Video motion detection with user enabled activity grids. Ensure motion sensitivity and speed parameters are user programmable
    - b. Alarm input/output terminals for connecting external sensors and notification devices
    - c. Up to one minute of pre and post alarm recording
  5. Provide bi-directional audio input and output capability
    - a. Line level audio input and output
    - b. Audio network distribution in  $\mu$ -Law (64 kbps) format
    - c. Allow network reception of audio signals in  $\mu$ -Law format to be output as line level audio signals
    - d. Provide built-in, multi-level echo cancellation and noise suppression
- B. Hardware
1. Provide built in Web Server allowing direct connection to LAN/WAN/Internet without the need for a personal computer
  2. Provide 2MB SDRAM internal memory for pre/post alarm storage
  3. Provide FTP Server capability
- C. Networking
1. Provide 10/100Base-Tx Ethernet connection
    - a. Support UDP/IP, TCP/IP, HTTP, FTP, DHCP, IGMP and ARP network protocols
    - b. Support programmable IP addressing allowing the installation of multiple NVE/'s on the same network environment
    - c. Provide NAT/IP Masquerade allowing multiple NVE's to share a single IP address when using NAT/IP masquerade enabled router
  2. Ensure full network communication compatibility with JVC model VR-N100U Network Digital Video Camera Controller and Recorder and VR-N100U-1320/2000 Network Digital Video Recorder Server(s)
- D. External Device Control
1. Provide two (2) user selectable RS-232 or RS-485 serial communication connections for controlling cameras or other devices
    - a. JVC manufactured cameras
    - b. Cameras using Pelco-D Communication Protocol
- E. Software
1. Provide three (3) access levels
    - a. Administrator
    - b. Operator
    - c. User
  2. Provide built-in ActiveX viewer to allow monitoring from any personal computer with access permissions to the NVE
  3. Provide FTP Client capability
    - a. Storage of pre and post alarm images for alarm activations from video motion detection or alarm sensor inputs
  4. Provide menu driven user setup and adjustment for:

- a. Video compression levels
- b. Color saturation and brightness levels
  
- c. Programmable IP Address
- d. Time and Date
- e. Camera control
- 5. Recommended Personal Computer requirements for NVE Software Viewer:
  - a. Operating System: Microsoft Windows XP Pro (SP2), XP Home (SP2)
  - b. Processor: Pentium 4, 3.4 GHz, or faster
  - c. Memory: 1 GB or larger
  - d. HDD: 20 GB or more
  - e. Video Card: AGP/PCI with 128MB or larger
  - f. Screen Resolution: XGA, more than 1024 x 768 pixels, true color (24 bit, 32 bit)
  - g. Sound Card: Sound Blaster PCI (for audio use only)
  - h. Connectivity: 100Base-TX or faster
  - i. Web-Browser: Windows Internet Explorer 6.0 or newer
  
- F. Hardware and Software Security
  - 1. Ensure system security and integrity by permitting or denying client access based on registered IP addresses
  - 2. Ensure secure settings via Web browser using built in SSL compliant Web browser
  
- G. Operation and Control:
  - 1. Provide full NVE control and operation through:
    - a. Built-in viewer software installed on a personal computer
    - b. Internet connection via Web Browser, Windows Internet Explorer 6.0 or higher
  
- H. Mechanical
  - 1. Dimensions: 7 9/32 inches (185mm) long by 7 7/16 inches (189mm) wide by 1 23/32 inches (44mm) high.
  - 2. Weight: 2.4 pounds (1.1 kg)
  - 3. Front Panel Lamps
    - a. Power: Unit is turned on
    - b. Link: Network connection established
    - c. 100M: Network operating at 100Base
    - d. FDX/COL: Full duplex network connection
    - e. STS: Startup and trouble status
    - f. ALM: Alarm activated
    - g. O.L.: Processor Over Load
    - h. CH1-4: Video transmission in process
  - 4. Back Panel
    - a. Audio input and output: RCA x 2, 2 Vrms, 10K Ohms input impedance, 600 Ohms output impedance
    - b. NTSC composite video input: BNC x 4, 1.0 Volt peak to peak, 75 Ohms impedance
    - c. COM1 and COM 2: D-Sub 9-pin (male) x 2, switch selectable RS-232 or RS-485
    - d. Control or Service slide switch
    - e. Alarm Input: Input x 4, COM x 1, mini screw terminal

- f. Alarm Output: COM and OUT mini screw terminal
  - g. LAN: RJ-45, 10/100Base-TX
  - h. Reset Button: Factory default reset
  - i. DC power jack: Power input
5. Bottom plate:
- a. MAC Address label: hexadecimal
- I. Electrical
- 1. Input voltage: DC 5.0 volts
  - 2. Power consumption: 3.0 amps
- J. Environmental
- 1. Temperature Range
    - a. Storage: 14 to 149 degrees Fahrenheit (-10 to 65 degrees Celsius)
    - b. Operating: 32 to 104 degrees Fahrenheit (0 to 40 degrees Celsius)
  - 2. Relative Humidity Range
    - a. Storage: 5% to 90%, non-condensing
    - b. Operating: 20% to 80%, non-condensing.

*Specifier Note: Similar to network servers using advanced processing power in data center environments, these products generate heat and require clean air to maintain proper operating conditions.*

- 3. The unit is suitable for indoor operation. Provide proper air ventilation and filtering to maintain operating temperature and air quality when mounted in equipment cabinets or other confined areas.

- K. Regulatory
- 1. Emission:
    - a. FCC Part 15, Subpart B, Class A Device
    - b. CE EN55022
  - 2. Safety:
    - a. UL 60590-1 Safety Standards for Information Technology Equipment
  - 3. Environmental Sustainability:
    - a. RoHS Directive
  - 4. Mechanical: IEC 60297-1 Ed. 3.0 b:1986

## 2.02 MANUFACTURED UNITS

- A. Network Video Encoder
- 1. JVC Model VN-E4U 4 Channel Network Video Encoder
- B. Included Software
- 1. Search Tool
- C. Included Accessories
- 1. AC power adapter
  - 2. Power Cord

- D. Optional Accessories
  - 1. JVC Model VN-BK10 rack mount bracket for single encoder
  - 2. JVC Model VN-BK11 rack mount bracket for dual encoders

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install the system in accordance with the equipment manufacturers recommended procedures.
- B. Install system using generally acceptable industry practices for network appliances.
- C. Ensure system and network configuration is fully coordinated with the Owner's Information Technology Department

### **3.02 FIELD QUALITY ASSURANCE**

- A. Provide Manufacturer Field Engineering Support for engineering, installation, testing and commissioning assistance as required in Division 1.

### **3.03 COMMISSIONING**

*Specifier Note: The following may be deleted for projects of smaller scope in which full Division 1 project documentation is not provided or required. It is recommended that performance requirements be specified within the project documentation to ensure proper configuration and operation of the system. Contact your JVC Representative for assistance in developing performance specification specific to a particular project.*

- A. Testing: Ensure system operates to manufacturers specifications
- B. Ensure system and all related components are configured to and comply with performance requirements in:
  - 1. Division 1, Section 01.86.33 Electronic Safety and Security Performance Requirements
  - 2. Division 28, section 28.01.20 Operation and Maintenance of Electronic Surveillance
- C. User/Owner Training:
  - 1. Provide original manufacturers [approved] [certified] training for system administrators and operators designated by the Owner.
- D. Documentation: Provide [x] set(s) of manufacturers hardware installation and software user guides for each level of authorized users.

### **3.04 INSPECTION/MAINTENANCE**

- A. Follow manufacturers recommended practices for preventative maintenance.
- B. Comply with Division 28, section 28.01.20 Operation and Maintenance of Electronic Surveillance



- C. Ensure continuous, unrestricted airflow in environment where equipment is installed
- D. Ensure continuous ambient server room temperature environment. Manufacturer recommendations for room to be cooler than 70 degrees Fahrenheit where equipment is installed

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