



JVC Professional Products Company
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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 [5th Edition], MasterFormat™ [2004 Edition], SectionFormat™ [1997 Edition] and PageFormat™ [1999 Edition].

This specification is based on JVC model VR-N900U 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 19

Digital Video Recorders and Analog Recording Devices

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Hybrid, network enabled, digital and analog video recording system
- B. Related 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 integrity. Closed circuit television systems often interface or integrate with other building systems. Within certain projects communication and electrical cabling may often be related to requirements found in the overall building wiring requirements. Edit or revise those sections as required for specific project or are specification practices. It is important these sections be reviewed and addressed if the project warrants or are specification practices. Contact a JVC Representative for further assistance.

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|----|----------|------------------------------------------------------|
| 1. | 26 05 19 | Low-Voltage Electrical Power Conductors and Cables |
| 2. | 26 41 23 | Lighting Protection, Surge Arrestors and Suppressors |
| 3. | 26 55 53 | Security Lighting |
| 4. | 26 56 00 | Exterior Lighting |

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 specific project or are specification practices

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|----|----------|------------------------------------------------------|
| 5. | 27 11 16 | Communication Cabinets, Racks, Frames and Enclosures |
| 6. | 27 21 00 | Data Communication Network Equipment |
| 7. | 27 22 00 | Data Communication Hardware |

C. Multi-Section Requirements:

Specifier Note: Product(s) in this section require interface to or integration with other closed circuit television components to operate as a complete system. As projects vary in scope and complexity; it is important to identify those sections which may require product integration, have an impact on system operation or infrastructure integrity. Edit or revise those sections which may apply to a specific project. Contact a JVC Representative for further assistance.

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|-----|-------------|-----------------------------------------------------------|
| 1. | 01 61 13 | Software Licensing Requirements |
| 2. | 01 86 33 | Electronic Safety and Security Performance Requirements |
| 3. | 28 01 20 | Operation and Maintenance of Electronic Surveillance |
| 4. | 28 05 00 | Common Work Results for Electronic Safety and Security |
| 5. | 28 06 20 | Schedules for Electronics Surveillance |
| 6. | 28 08 00 | Commissioning of Electronic Safety and Security Systems |
| 7. | 28 13 33.33 | Access Control Interfaces to Video Surveillance |
| 8. | 28 16 33.33 | Intrusion Detection Interfaces to Video Surveillance |
| 9. | 28 23 13 | Video Surveillance Control and Management Systems |
| 10. | 28 23 16 | Video Surveillance Monitoring and Supervisory Devices |
| 11. | 28 23 23 | Video Surveillance Infrastructure |
| 12. | 28 23 26 | Video Surveillance Remote Positioning Equipment |
| 13. | 28 23 29 | Video Surveillance Remote Devices and Sensors |
| 14. | 28 31 33.33 | Fire Detection and Alarm Interfaces to Video Surveillance |

1.02 REFERENCES

A. Abbreviations and Acronyms:

1. CIF – Common Intermediate Format: a video format originally designed for video conferencing, widely used for viewing video clips via computer
2. DDNS – Dynamic Domain Name System: a method of keeping a domain name linked to a changing IP address
3. DHCP – Dynamic Host Configuration Protocol: a protocol for assigning dynamic IP addresses to devices on a network
4. IP - Internet Protocol: specifies the packet format and the addressing scheme. When combined with TCP it establishes a virtual connection between a destination and a source.
5. NTP - Network Time Protocol: an Internet standard protocol (built on top of TCP/IP) that assures accurate synchronization to the millisecond of computer clock times in a network of computers. NTP synchronizes client workstation clocks to the U.S. Naval Observatory Master Clocks in Washington, DC and Colorado Springs CO.
6. PPPoE – Point to Point Protocol over Ethernet: a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem.
7. TCP/IP - Transmission Control Protocol: one of the main protocols in TCP/IP networks. Where as IP protocol deals only with packets, TCP enables two hosts to establish a connection and exchange streams of data.

B. Reference Standards:

1. National Television System Committee - NTSC (North America)
2. Underwriters Laboratory – UL
3. Federal Communications Commission – FCC
4. Joint Photographic Experts Group – JPEG
5. Moving Pictures Expert Group - MPEG
6. Restriction of Hazardous Substances Directive (RoHS)

1.03 ADMINISTRATIVE REQUIREMENTS

Specifier Note: Closed Circuit Television systems are often installed in multiple phases, similar to certain electrical components. It is important to schedule these phases in conjunction with construction phases. Improperly run wires or undesirable mounting locations may degrade system performance, and, may void the manufacturer's warranty.

- A. Coordination: Ensure Closed Circuit Television System installation is fully coordinated with provisions of Division 1, section 01 31 00 – Project Management and Coordination
- B. Scheduling: Ensure pre-installation of cabling, mounting hardware and equipment installation is fully coordinated with Division 1, Section 01 32 00 – Construction Progress Documentation
 1. Building envelop must be substantially completed and HVAC systems installed and operationally prior to final equipment installation

1.04 SUBMITTALS

- A. General: In compliance with Conditions of the Contract and Division 1, Section 01 33 00 Submittal Procedures
- B. Product and technical data:
 1. Manufacturers technical data sheets and bulletins
 2. Manufacturers installation and operation manuals
 3. Manufacturer Maintenance data
 4. Spare parts list and recommended hardware
 - a. Recommended maintenance contract
- C. Shop Drawings:
 1. Point-to-Point Wiring diagrams
 2. Equipment placement locations
 3. Schedules and tables: Product quantity and placement

Specifier Note: When comparing/choosing digital video security equipment, many products may be derivatives of consumer electronics. The following language ensures the Owner 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:

1. Obtain [products] [systems] from a manufacturer experienced in the engineering, production and support of digital closed circuit television systems, and, with sufficient production capability to meet the required project schedule
2. Manufacturer capable of providing field representation during design, installation and commissioning of systems

Specifier Note: Regulations specific to this section vary by geographic location and Owner requirements. Coordinate article below with Local Authority Having Jurisdiction and/or Owner for requirements. Edit or revise article below as required for a specific project or specifiers practice.

C. Regulatory Requirements:

1. Emission / Immunity:
 - a. FCC Part 15, Subpart B, Class A Digital Device
2. Video Compression:
 - a. JPEG
 - b. Motion JPEG
 - c. MPEG-4
3. Sustainability:
 - a. RoHS Directive Compliant

1.06 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Division 1, Section 01 61 00 Common Product Requirements 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. Deliver individual components in the manufacturers original packaging and labeling
 2. Prevent physical damage, soiling or wetting
 3. Provide secure storage prior to and during installation

1.07 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

1.08 WARRANTY

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

Specifier Note: Coordinate sub-paragraph below with manufacturers warranty policies and procedures if different from General Conditions, specifically Division 01, Section 01 78 36 - Warranties

1. Warranty Period: *[specify term]* commencing with the Date of Substantial Completion

PART 2 PRODUCTS

2.01 HYBRID, NETWORK BASED DIGITAL VIDEO RECORDER

Specifier Note: Edit or revise paragraph as required for proprietary or performance method specification

- A. Manufacturer:
 1. JVC Professional Products Company
Division of JVC AMERICAS CORP.
1700 Valley Road, Wayne, NJ; (800) 582-5825
www.JVC.com/pro
- B. General:
 1. Provide a digital surveillance recording platform capable of recording video from network, Internet Protocol (IP), and analog cameras. Platform shall be capable of operating as standalone system or as an edge device on a Milestone XProtect Enterprise network.
 2. Provide hybrid recording with the ability to record digital video and/or analog video via four (4) channel encoder
 3. Provide four (4) levels of visual metering indicating recorder performance load
 4. Recorder shall be an open platform enabling third-party device integration
 5. System shall be fully scalable to multi-server, multi-site applications
- C. System Hardware:
 1. Provide a built in four (4) channel analog to digital video encoder
 2. System shall provide:
 - a. Pentium 4® CPU processor
 - b. 512 MP random Access Memory
 - c. Internal 250 gigabyte hard drive, expandable to 1.25 terabytes
 - d. External storage expansion capability
 - e. Built in USB 2.0 interface
 - f. Dedicated uninterruptible power supply (UPS)
- D. Computer system requirements for direct connection:
 1. Operating System compatibility:
 - a. Microsoft Windows 2000 Professional
 - b. Windows 2000 Server and Advanced Server
 - c. Windows XP Professional (32 and 64 bit)
 - d. Windows 2003 Server (32 and 64 bit)
 2. Central Processing Unit:
 - a. Intel Pentium 4 or higher
 - b. 2.4 GHz or higher
 3. Random Access Memory: Minimum 512 MB
 4. Network Card: Ethernet 100 Mbit or higher

5. Graphics Card:
 - a. AGP or PCI-Express
 - b. 1024 by 768, 16 bit color
 - c. Hard Disk Space: 50 MB free space
 - d. PC Software requirements:
 1. .Net Framework 2.0
 2. DirectX 9.0 or newer
 3. Microsoft Internet Explorer 6.0 or higher

E. Network:

1. Connection:
 - a. 10BaseT/100BasesTX for client PC
 - b. 1000BaseT for IP cameras
2. Supported network protocols
 - a. HTTP
 - b. SMTP
 - c. TCP
 - d. DHCP
 - e. ARP
 - f. DNS
 - g. NTP
3. Stand alone operation or as an edge device for XProtect Enterprise
4. Allow simultaneous log on for up to ten client/users per recorder
5. PDA access and control – mobile surveillance- Windows Pocket PC™ 2003 and XProtect PDA client
6. JVC and other IP cameras supported
7. Provide Web Browser access viewing:
 - a. Live
 - b. Recording Playback
 - c. Camera Control
 - d. AVI Data Conversion

F. Software:

Specifier Note: Coordinate software licensing with Division 01, Section 01 61 03, Software Licensing Requirements

1. Provide software license per video channel independent of IP Camera MAC Address
2. Embedded Microsoft XP® operating system
3. Embedded Milestone XProtect Enterprise software (Milestone Systems AV)
4. Local surveillance via XProtect Matrix
5. Provide built in DHCP server for automatic IP address allocation
6. Provide automatic date and time synchronization for network attached devices via built in NTP server
7. Display frame rate:
 - a. Up to total of 60 frames per second for all cameras at VGA

8. Recording frame rate:
 - a. Up to 120 frames per second at VGA
 - b. Up to 30 frames per second at XVGA.
 9. Distribution frame rate:
 - a. Up to 30 frames per second (VGA)
 10. Analog Video frame rate:
 - a. Up to 30 frames per second
 11. Provide open platform enabling third party device integration-
 - a. ATM/POS with optional XProtect Transact/Retail
 - b. Access Control Systems
 - c. 3rd party IP cameras
 12. Video processing:
 - a. Motion JPEG
 - b. MPEG-4
 - c. AVI
 13. Video Integrity:
 - a. Provide secure Evidence Exporting in following formats:
 1. AVI
 2. JPG
 3. Encrypted Database
 14. Multi-thread, 32 bit programming
- G. Audio:
1. Provide audio recording via compatible IP digital camera with audio features
 2. Provide two (2) direct audio inputs
 3. Provide one (1) audio output
- H. Alarm Management:
1. Event record based on IP camera alarm input signal
 2. Built in Video Motion Detection
 - a. Provide sensitivity and threshold level adjustment
 - b. Provide programmable motion exclusion zones
 3. Programmable scheduled email notification based on motion detection activation
 4. Alarm frame rate independent of standard record/display frame rate
 5. Provide list access to twenty (20) video sequences before and after a specific event time and date
- I. Operation and Control:
1. Fifteen (15) speed Jog/Shuttle playback control:
 - a. Seven (7) forward
 - b. Seven (7) reverse
 - c. Still

2. Provide PTZ camera control with:
 - a. Analog PTZ camera Communication Protocol
 1. JVC Protocol
 2. Pelco-D Protocol
 - b. 50 programmable preset positions per camera
 - c. Auto Patrol function
 - d. Auto Return function
3. Calendar based weekly recording scheduling
4. Scheduled image transfer
5. Simultaneous recording and playback
6. Simultaneous viewing of recording and live
7. Provide advanced search capabilities:
 - a. Timeline Browser search function with color coding for:
 1. Motion
 2. No Motion
 3. No Recording
 - b. Provide Smart Search function allowing post recording activity presence detection
 - c. Search by specific time, date or alarm

Specifier Note: There are no industry standards for testing or determining Scene Illumination, or Sensitivity. Light source, scene reflectance, lens type and aperture opening all play a critical role in determining sensitivity (LUX) of a camera. Prior to selecting and specifying cameras you are encouraged to perform a side by side comparison with all variables being equal between cameras. Contact your JVC Representative for further information.

J. Electrical

1. Input voltage: 100 ~ 240v AC
2. Power consumption: 1.7 amps maximum
3. Analog video scanning system: 2-1 interlaced, 525 lines

K. Mechanical

1. Dimensions: 16.6 inches (420mm) wide by 14.6 inches (370) deep by 3.5 inches (88mm) high
2. Weight: 16.98 pounds (7.7 kg)
3. Front Panel Controls and Indicators:
 - a. Power On/Off
 - b. Soft touch buttons x 16
 1. Record Control
 2. Live/Browse
 3. Menu Select
 4. Pan/Tilt Zoom and Preset Control
 5. Navigation and Video Input Select x 9
 6. Zoom Out / Cancel Operation
 7. Zoom In / Enter
 - c. LED Indicators x 4
 1. System Warning
 2. Alarm

3. Hard Disk Drive
4. Lock
- d. Push Buttons x 9
 1. Function
 2. Search
 3. Key
 4. Alarm Clear
 5. Record/Stop
 6. Playback/Stop
 7. Play
 8. Skip Reverse
 9. Skip Forward
- e. Jog/Shuttle Dial
- f. Record Push Button
4. Rear panel connections
 - a. Power On/Off
 - b. AC Power Input
 - c. RCA x 3
 1. Audio In x 2
 2. Audio Out x 1
 - d. BNC x 4 – Composite video output
 - e. HD15- VGA video output
 - f. USB x 4
 1. UPS
 2. Joystick
 3. External Hard Disk Drive
 4. Serial Mouse
 - g. RS-485 – Camera Control
 - h. RJ-45:
 1. 10BaseT/100BasesTX for client PC
 2. 1000BaseT for IP cameras
 - i. Alarm Input x 4
 - j. Alarm Output x 1
 - k. Warning Output x 1
 - l. Record tally Output x 1

L. Environmental

Specifier Note: JVC provides environmental specifications for optimal operation while achieving maximum in service life of its products. JVC will not mislead owners with the maximum thresholds products will operate to if they reduce the product life cycle. JVC products may operate to more extreme (higher/lower) ratings if required, however the product lifecycle may be shortened. Should you require different environmental conditions please contact your JVC Representative for assistance in specifying the proper products and/or optional accessories.

1. Temperature Range
 - a. Operating: 41 to 104 degrees Fahrenheit (5 to 40 degrees Celsius)
2. Relative Humidity Range
 - a. Operating: 30% to 80%, non-condensing.
3. The unit is suitable for indoor operation only

2.02 MANUFACTURED UNITS

- A. JVC Model Number: VR-N900U
- B. Included Accessories:
 - 1. Start Up Guide
 - 2. User Manual (CD)
 - 3. AC Power Cord
 - 4. Rack mount brackets
- C. Optional Software:
 - 1. XProtect Transact/Retail
 - 2. XProtect Central
 - 3. XProtect PDA Client
 - 4. XProtect Remote Client/Smart Client
- D. Optional accessories:
 - 1. VR-DOU external Hard Disk Drive
 - a. 500 GB
 - b. 1T
 - c. 2T

PART 3 EXECUTION

3.01 INSTALLATION

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. Coordinate article with Section 28 08 00 Commissioning of Electronic Safety and Security. Edit or revise articles below as required for a specific project or specification practices.

- A. Installer Qualifications:
 - 1. Engage Installer with [license] [certification] [*specify type*] as required by the [State of] [City of] with demonstrated successful experience designing, installing, commissioning, training and servicing internet protocol closed circuit television systems
 - 2. Installer shall have completed factory approved training and be certified by the manufacturer as qualified to install, operate and maintain product(s) specified
- B. Install the system in accordance with the equipment manufacturers recommended procedures
- C. Install system using generally acceptable industry practices for closed circuit television systems
- D. Ensure electrical and communication wiring is coordinated with Section 28 05 13.13 CCTV Communication Conductors and Cables

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 a system performance specification specific to a particular project.

- E. Ensure system and all related components are installed and configured to support performance requirements outlined in Division 1, 01.86.33 Electronic Safety and Security Performance Requirements

3.02 EXAMINATION

Specifier Note: There are often changes to building interior structures during the course of construction. It is imperative as built mounting locations be assessed to ensure the desired field of view can be achieved. Owners often require very specific views of their facility and physical changes to the structure may prevent ideal mounting locations. Coordinate and/or revise Division 1, Section 01 86 33 Electronic Safety and Security Performance Requirements

- A. Verification of Conditions:
 - 1. Ensure wiring cable chase requirements are available
 - 2. Ensure substrate for physical mounting locations meet manufacturer recommendations
- B. Examination and Assessment:
 - 1. Review mounting location of each device to ensure required field of view is achievable

3.03 FIELD QUALITY ASSURANCE

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

3.04 COMMISSIONING

Specifier Note: Edit and revise paragraphs below 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 for 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 Division 1, Section 01.86.33 Electronic Safety and Security Performance Requirements, and 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/or software user guides for each level of authorized users

3.05 INSPECTION/MAINTANENCE

- 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

END OF SECTION

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