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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 VN-X235U/VPU 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 29

Video Surveillance Remote Devices and Sensors

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: One third inch Progressive Scan CCD Internet Protocol (IP) surveillance camera with automatic color to black and white switching and dual stream output
- 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.

- 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

- 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.

- 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 19 Digital Video Recorders and Analog Recording Devices
- 12. 28 23 26 Video Surveillance Remote Positioning Equipment
- 13. 28 23 23 Video Surveillance Infrastructure
- 14. 28 31 33.33 Fire Detection and Alarm Interfaces to Video Surveillance

1.02 REFERENCE STANDARDS

- A. National Television System Committee - NTSC (North America)
- B. Joint Photographic Experts group - JPEG
- C. Motion Joint Photographic Experts Group - MJPEG
- D. Moving Picture Experts group - MPEG
- E. Underwriters Laboratory – UL
- F. Federal Communications Commission - FCC
- G. Interference Causing Equipment Standard – ICES (Canada)
- H. Institute of Electronic and Electrical Engineers - IEEE
- I. International Standards Organization – ISO
- J. International Electrotechnical Commission -IEC
- K. 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. 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 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. Video Compression:
 - a. MPEG-4: Part 2 – ISO/IEC 1449602
 - b. MJPEG
 - 2. Emission / Immunity:
 - a. FCC Part 15, Subpart B, Class A Digital Device
 - 3. Transmission
 - a. Ethernet: IEEE 802.3 / 802.3u / 802.3af
 - 4. Safety:
 - a. UL Listed 60950-1
 - 5. Ingress Protection:
 - a. IEC IP66
 - 6. Environmental 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 INTERNET PROTOCOL CAMERA

Specifier Note: The following specification is for a common camera with two different housing options. Differences will be noted by part numbers and enclosed with [brackets]. Select the appropriate camera/housing combinations and delete the specifications for the remaining camera/lens combination.

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 Internet Protocol (IP) camera with simultaneous (Dual Stream) distribution of Motion-JPEG and MPEG-4 at 15 frames per second for each video stream
2. One third inch 1.25 mega pixel Progressive Scan CCD Chip
3. Resolution
 - a. MJPEG
 1. 1280 x 960
 - b. MPEG-4
 1. 640 x 480
 2. 320 x 240
4. Provide Color to Black and White Switching (Day/Night) Automatic switching IR cut filter mechanism, increases or decreases sensitivity (color mode) based on ambient light conditions
5. Provide Power over Ethernet (PoE)
6. [VN-X235VPU] Provide IP66 rated vandal proof dome housing
7. [VN-X235U] Provide vandal-resistant dome housing

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.

8. Scene illumination
 - a. Color Mode:
 1. 0.8 lx F1.2, AGC SUPER, 50% video
 2. 0.4 lx, F1.2, AGC SUPER, 25% video
 - b. B/W Mode:
 1. 0.08 lx F1.2, AGC SUPER, 50% video
 2. 0.04 lx F1.2, AGC SUPER, 25% video
9. Sensitivity Adjustment (Sens Up):
 - a. Off
 - b. x2 – x22
10. Back Light Compensation: On/Off (switchable)
11. White Balance:
 - a. Continuous Auto Tracking White (ATW)
 - b. Auto White Control (AWC)
12. Electronic Shutter:

- a. Automatic 1/15 – 1/10000
- b. Flickerless control
- 13. Provide Integrated Manually Variable Focal Length Lens with Auto Iris:
 - a. Focal Length: 3.0 mm to 9.0 mm, x3.0
 - b. Aperture: F1.2 to F2.1
 - c. View Angle:
 - 1. 3.0 mm: 93 degrees horizontal x 68 degrees vertical
 - 2. 9.0 mm: 31 degrees horizontal x 23 degrees vertical
 - d. Iris: DC
- 14. Provide manually adjustable lens angle adjustment range of:
 - a. Horizontal: plus or minus 175 degrees
 - b. [VN-X235U] Vertical: plus or minus 80 degrees
 - c. [VN-X235VPU] Vertical: plus or minus 70 degrees
 - d. [VN-X235U] Rotation: plus or minus 100 degrees
 - e. [VN-X235VPU] Rotation: plus or minus 175 degrees
- 15. Alarm Management:
 - a. Provide IP camera with two (2) hardwired alarm inputs.
 - b. Alarm outputs:
 - 1. Two (2) hardwire alarm outputs
 - 2. Image upload over FTP
 - 3. Network notification via TCP, UDP or email
 - c. Provide IP camera with digital motion detection using a programmable 8x6 grid, with user definable sensitivity levels:
 - d. Privacy Mask: Free shape building
 - e. Provide 8MB for pre and post alarm image recording buffer
- 16. Viewing adjustments:
 - a. Free Scaling image clipping
 - b. Digital Pan, Tilt and Zoom functions
 - c. Focus Assistance
- 17. Display Mode
 - a. Custom
 - b. LCD1
 - c. LCD2
 - d. CRT
- 18. Provide Audio:
 - a. Two Way
 - 1. Full or Half Duplex
 - b. One Way
 - c. Mike. input
 - d. Monaural line level audio output

C. Hardware

- 1. Provide IP camera with built in FTP Client capability for storage of alarm images
- 2. Minimum Personal Computer requirements:
 - a. Operating system: Windows Vista Business Service Pack 1 or Windows XP (Professional or Home Edition) Service Pack 2
 - b. Processor: Pentium 4 2GHz or higher
 - c. Memory: 2GB or higher
 - d. Hard Disk space: 512MB or more

- e. Video Card: 1600 x 1200 pixels or higher, True Color, 24 or 32 bit
 - f. VRAM: 256MB
 - g. Web Browser: Internet Explorer 7.0 (Windows Vista) or 6.0 (Windows XP)
3. Provide firmware update via HTTP

D. Software

- 1. Access security:
 - a. Provide three (3) password protected User Access levels
 - b. Provide IP filter to deny or allow access from a specific IP address
- 2. Video Compression:
 - a. Motion JPEG - Selectable Compression Levels:
 - 1. VFS: Seven (7) steps
 - 2. AFS: 3KB - 200KB
 - b. MPEG-4
 - 1. Adjustable bit rate: 64kbps - 8000kbps
- 3. Audio Compression:
 - 1. μ -law 64kbps
 - 2. AD/DA 16 bits, Fs=8kHz
- 4. Provide built in ActiveX Viewer
 - a. Monitor from personal computer
 - b. Snapshot function
 - c. Viewer shall be customizeable via camera setup menu
- 5. Camera setup menu via Web Browser:
 - a. Backlight Compensation
 - b. Video Compression level
 - c. Image Resolution
 - d. Auto/Manual White Balance
 - e. Black level
 - f. Color level
 - g. Gamma Curve
 - h. Enhance
 - i. Shutter speed
 - j. Sensitivity Up
 - k. AGC
 - l. Exposure Value
 - m. Monitor Type
 - n. Day/Night
 - o. Motion Detection
 - p. Snapshot function
 - q. Video Overlay
 - 1. Camera ID
 - 2. Time/Date
 - 3. Privacy Mask
- 6. Provide dual Application Program Interface (API):
 - a. Compatibility:
 - 1. JVC
 - 2. Verint VSIP

E. Networking

1. Provide IP Camera with TCP/IP, UDP/IP, HTTP, FTP, ICMP, ARP, RTP, DHCP, SNTP, SMTP, IGMP, DSCP, IPv4, IPv6 and VSIP communication protocol(s)
2. LAN compliance shall be IEEE802.3, 802.3u and 802.3af
3. Data transmission
 - a. Unicast
 - b. Multicast: IGMP Versioin 2
4. Maximum Clients
 - a. 20 simultaneous users
 - b. Unlimited users by multicast
5. Network functions:
 - a. Mail notice
 - b. Web server
 - c. FTP client
 - d. DHCP client
 - e. SNTP client

F. Electrical

1. Input voltage:
 - a. Power Over Ethernet (PoE) IEEE802.3af compliant
 - b. 24 VAC, 50/60 hertz
2. Power consumption:
 - a. 48 VDC (PoE): 7W without heater
 - b. 24 VAC: 0.35A without heater
 - c. 24 VAC: 1.0A with heater
3. Alarm input: NPN Open collector, low level, latch or momentary, (500 ms and above). 1 mA current during low level. 3.3 VDC applied voltage during high level
4. Alarm output: NPN Open collector. 12 VDC, 50mA maximum inflow current
5. White Balance: Continuous Auto Tracking White (ATW) or Auto White Control (AWC)
6. Black level: 3 level adjustment
7. Gamma Level: Adjustable
8. Automatic Gain Control
9. Monitor output: NTSC composite video, 1.0 volt peak to peak, 75 ohms resistance
10. Signal to Noise Ratio: 50dB, AGC OFF

G. Mechanical

1. Dimensions:
 - a. [VN-X235U] 5 3/4 inches (145mm) diameter by 4 3/4 inches (120mm) high
 - b. [VN-X235VPU] 6 1/4 inches (160mm) diameter by 4 7/8 inches (125mm) high
2. Weight:
 - a. [VN-X235U] 1.8 pounds (800g)
 - b. [VN-X235VPU] 2.9 pounds (1300g)
3. Base controls, connectors or indicators:
 - a. Flying leads: Alternative power connection
 - b. Flying leads: 2 alarm input and 2 alarm output
 - c. Flying leads: Audio connection
 - d. RJ-45 (Category 5) 10BASE-T/100BASE-TX Network connection (auto negotiation)
 - e. RCA jack for monitor output (for installation only)
 - f. Monitor out setting switch
 - g. Status indicator

- h. Camera reset button
- i. [VN-X235VPU] Heater power connector

H. 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. 14 to 122 degrees Fahrenheit (-10 to 50 degrees Celsius)
 - b. Recommended: 32 to 104 degrees Fahrenheit (0 to 40 degrees Celsius)
 - c. [VN-X235VPU] With heater: -22 to 122 degrees Fahrenheit (-30 to 50 degrees Celsius)
2. Relative Humidity Range:
 - a. Storage: up to 85%, non-condensing
 - b. Operating: up to 85%, non-condensing.
3. [VN-X235U] The unit is suitable for indoor operation.
4. [VN-X235VPU] The unit is suitable for outdoor operation.

2.02 MANUFACTURED UNITS

A. JVC Model Number:

1. VN-X235U: Fixed IP Dome Camera with IR cut off filter and Vandal-resistant housing
2. VN-X235VPU: Fixed IP Dome Camera with IR cut off filter and Vandal Proof IP66 rated housing

B. Included Accessories:

1. Safety precautions
2. Read me First
3. CD-ROM including installation manual, setting manual and API guide
4. Service information card
5. Warranty card
6. Mounting template
7. [VN-X235VPU] Wrench
8. [VN-X235VPU] Silica gel

C. Optional accessories:

1. [VN-X235VPU] KA-ZH215U - Heater unit
2. JVC V.NETWORKS Products
3. VR-N900U/1600U Network Video Recorder
4. VN-RS800U Video Management Software

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 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. Install system using generally acceptable industry practices for network appliances
- E. Ensure system and network configuration is fully coordinated with the Owner's Information Technology Department.

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.

- F. Ensure system and all related components are 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
 - 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/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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