JVC®

Video Surveillance Products

Color Camera

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Contents

Line-up Chart

Analog Recorder

Super LoLux 4 Channel Digital Video Recorder
w/500MB HDD

VR-D1004-500

500GB Hard Drive	HDMI
H.264	4 Channel
Mobile App Viewer	

► **P. 2**   Specifications **P. 3**

Super LoLux 16 Channel Digital Video Recorder
w/1TB HDD

VR-D1016-1TB

1TB Hard Drive	HDMI
H.264	16 Channel
Mobile App Viewer	

► **P. 2**   Specifications **P. 3**

Super LoLux 8 Channel Digital Video Recorder
w/1TB HDD

VR-D1008-1TB

1TB Hard Drive	HDMI
H.264	8 Channel
Mobile App Viewer	

► **P. 2**   Specifications **P. 3**

Color Camera

1/3" Super LoLux Camera

TK-C9300UA

600 TVL	3D Noise Reduction	Display Mode
ExDR	Focus Adjustment	
True D/N	Privacy Mask	

► **P. 4**   Specifications **P. 8**

1/3" Super LoLux Mini Dome Camera (Vandal Resistant)

TK-C2201UA

600 TVL	Focus Adjustment	Vandal Resistant
Easy D/N	Privacy Mask	
3D Noise Reduction	Display Mode	

► **P. 5**   Specifications **P. 11**

1/3" Super LoLux Camera

TK-C9200UA

600 TVL	Focus Adjustment
Easy D/N	Privacy Mask
3D Noise Reduction	Display Mode

► **P. 4**   Specifications **P. 9**

1/3" Super LoLux Dome Camera (Vandal Proof)

TK-C2201WPUA

600 TVL	Focus Adjustment	Vandal Proof
Easy D/N	Privacy Mask	IP66
3D Noise Reduction	Display Mode	

► **P. 6**   Specifications **P. 12**

1/3" Super LoLux Camera with IR

TK-C8301RU

600 TVL	IR-LED	Privacy Mask
ExDR	3D Noise Reduction	Display Mode
True D/N	Focus Adjustment	

► **P. 5**   Specifications **P. 10**

1/3" Super LoLux Dome Camera with IR
(Vandal Proof)

TK-C2301WPRU

600 TVL	3D Noise Reduction	Display Mode	IP66
ExDR	Focus Adjustment	IR-LED	
True D/N	Privacy Mask	Vandal Proof	

► **P. 7**   Specifications **P. 13**

Network Camera

LoLux HD Network Camera

VN-T16U

Easy D/N | H.264HP
Megapixel | Dual Stream
Bi-directional Audio

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Super LoLux HD Network Camera

VN-H37U

True D/N | Privacy Mask | H.264HP
3D Noise Reduction | Display Mode | Dual Stream
CLVI | Megapixel

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Super LoLux HD Network Camera

VN-H137U

Easy D/N | Privacy Mask | H.264HP
3D Noise Reduction | Display Mode | Dual Stream
CLVI | Megapixel

► P.15 Specifications P.21

Super LoLux HD Network Camera

VN-H57U

True D/N | Privacy Mask | H.264HP
3D Noise Reduction | Display Mode | Bi-directional Audio
CLVI | Megapixel | Dual Stream

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Super LoLux HD Network Bullet Camera

VN-H157WPU

True D/N | Privacy Mask | H.264HP | Dual Stream
3D Noise Reduction | Display Mode | Bi-directional Audio
CLVI | Megapixel | IP66

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LoLux HD Network Mini Dome Camera

VN-T216U

Easy D/N | H.264HP
Megapixel | Dual Stream
Bi-directional Audio

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LoLux HD Network Dome Camera with IR (Vandal Proof)

VN-T216VPRU

True D/N | Bi-directional Audio | IP66
Megapixel | IR-LED | Dual Stream
H.264HP | Vandal Proof

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Super LoLux HD Network Mini Dome Camera (Vandal Resistant)

VN-H237U

Easy D/N | Privacy Mask | H.264HP
3D Noise Reduction | Display Mode | Vandal Resistant
CLVI | Megapixel | Dual Stream

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Super LoLux HD Network Dome Camera (Vandal Proof)

VN-H237VPU

True D/N | Privacy Mask | H.264HP | Dual Stream
3D Noise Reduction | Display Mode | Vandal Proof
CLVI | Megapixel | IP66

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Super LoLux HD Network Mini Dome Camera (Vandal Resistant)

VN-H257U

True D/N | Privacy Mask | H.264HP | Dual Stream
3D Noise Reduction | Display Mode | Bi-directional Audio
CLVI | Megapixel | Vandal Resistant

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Super LoLux HD Network Dome Camera (Vandal Proof)

VN-H257VPU

True D/N | Privacy Mask | H.264HP | IP66
3D Noise Reduction | Display Mode | Bi-directional Audio | Dual Stream
CLVI | Megapixel | Vandal Proof

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10x PTZ Network Dome Camera

VN-H557U

Display Mode | 3D Noise Reduction
Dual Stream | Privacy Mask

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18x PTZ Network Dome Camera

VN-H657U

True D/N | Display Mode | One-Touch Lock
3D Noise Reduction | Dual Stream
Privacy Mask | Direct Drive

► P.26 Specifications P.28

18x Outdoor PTZ Network Dome Camera

VN-H657WPU

True D/N | Display Mode | IP66
3D Noise Reduction | Dual Stream
Privacy Mask | Direct Drive

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Recorder

Multi Codec Network Video Recorder

VR-X1600U

System Information | H.264HP
milestone
Milestone XProtect Enterprise embedded

► P.30 Specifications P.32

Multi Codec Network Video Recorder

VR-X3200U

System Information | H.264HP
milestone
Milestone XProtect Enterprise embedded

► P.30 Specifications P.32

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4 Channel Super LoLux Series Digital Video Recorder

VR-D1004-500

| Mobile App Viewer | H.264 | 4 Channel | 500GB Hard Drive | HDMI |

▶ H.264 Video Compression
▶ WD1 (960x576) resolution real-time recording
▶ WD1/4CIF/2CIF/CIF/QCIF Encoding/Playback resolutions
▶ HDMI and VGA output at up to 1920x1080p resolution
▶ Alarm In (x4) / Alarm Out (x1)
▶ Two-way audio
▶ Synchronous playback: Up to 4-ch
▶ Hard Disk: 1 SATA Interface, 500GB Capacity
▶ Mobile app viewer, Mouse and Remote included

VR-D1004-500 rear

8 Channel Super LoLux Series Digital Video Recorder

VR-D1008-1TB

| Mobile App Viewer | H.264 | 8 Channel | 1TB Hard Drive | HDMI |

▶ H.264 Video Compression
▶ WD1 (960x576) resolution real-time recording
▶ WD1/4CIF/2CIF/CIF/QCIF Encoding/Playback resolutions
▶ HDMI and VGA output at up to 1920x1080p resolution
▶ Alarm In (x8) / Alarm Out (x4)
▶ Two-way audio
▶ Synchronous playback: Up to 8-ch
▶ Hard Disk: 2 SATA Interface, 1TB Capacity
▶ Mobile app viewer, Mouse and Remote included

VR-D1008-1TB rear

16 Channel Super LoLux Series Digital Video Recorder

VR-D1016-1TB

| Mobile App Viewer | H.264 | 16 Channel | 1TB Hard Drive | HDMI |

▶ H.264 Video Compression
▶ WD1 (960x576) resolution real-time recording
▶ WD1/4CIF/2CIF/CIF/QCIF Encoding/Playback resolutions
▶ HDMI and VGA output at up to 1920x1080p resolution
▶ Alarm In (x16) / Alarm Out (x4)
▶ Two-way audio
▶ Synchronous playback: Up to 16-ch
▶ Hard Disk: 2 SATA Interface, 1TB Capacity
▶ Mobile app viewer, Mouse and Remote included

VR-D1016-1TB rear

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	VR-D1004-500	VR-D1008-1TB	VR-D1016-1TB
Video input	4-ch BNC analog camera	8-ch BNC analog camera	16-ch BNC analog camera
Video compression	Standard H.264	Standard H.264	Standard H.264
Audio input	1-ch RCA	1-ch RCA	1-ch RCA
Audio compression	G.711	G.711	G.711
Two-way audio	1-ch RCA (2.0 Vp-p, 1KΩ) (Using AUDIO in)	1-ch RCA (2.0 Vp-p, 1KΩ) (Using AUDIO in)	1-ch RCA (2.0 Vp-p, 1KΩ) (Using AUDIO in)
HDMI output	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz
VGA output	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz	1-ch, resolution: 1920 x 1080P / 60Hz 1280 x 1024 / 60Hz 1280 x 720 / 60Hz 1024 x 768 / 60Hz
CVBS	1-ch, BNC (1.0 Vp-p, 75Ω) Resolution: PAL: 704 x 576, NTSC: 704 x 480	1-ch, BNC (1.0 Vp-p, 75Ω) Resolution: PAL: 704 x 576, NTSC: 704 x 480	1-ch, BNC (1.0 Vp-p, 75Ω) Resolution: PAL: 704 x 576, NTSC: 704 x 480
Encoding resolution	WD1 / 4CIF / 2CIF / CIF / QCIF	WD1 / 4CIF / 2CIF / CIF / QCIF	WD1 / 4CIF / 2CIF / CIF / QCIF
Frame rate	30fps NTSC / 25fps PAL	30fps NTSC / 25fps PAL	30fps NTSC / 25fps PAL
Video bit rate	32kbps-3072kbps, or user defined (Max. 3072kbps)	32kbps-3072kbps, or user defined (Max. 3072kbps)	32kbps-3072kbps, or user defined (Max. 3072kbps)
Audio output	1-ch, RCA (Linear, 1KΩ)	1-ch, RCA (Linear, 1KΩ)	1-ch, RCA (Linear, 1KΩ)
Audio bit rate	64kbps	64kbps	64kbps
Dual-stream	Support, (Sub-stream at CIF / QCIF)	Support, (Sub-stream at CIF / QCIF)	Support, (Sub-stream at CIF / QCIF)
Stream type	Video, Video & Audio	Video, Video & Audio	Video, Video & Audio
Playback resolution	WD1 / 4CIF / 2CIF / CIF /QCIF	WD1 / 4CIF / 2CIF / CIF /QCIF	WD1 / 4CIF / 2CIF / CIF /QCIF
Sync. playback	4-ch	8-ch	16-ch
SATA	1 SATA interface	2 SATA interface	2 SATA interface
Capacity	500GB HDD	1TB HDD	1TB HDD
Network interface	1, RJ45 10M/100M adaptive Ethernet interface	1, RJ45 10M/100M adaptive Ethernet interface	1, RJ45 10M/100M adaptive Ethernet interface
Network bandwidth	60Mbps	60Mbps	60Mbps
Network connection number	128	128	128
Serial interface	1 RS-485 interface, half-duplex	1 RS-485 interface, half-duplex	1 RS-485 interface, half-duplex
USB interface	2, USB2.0	2, USB2.0	2, USB2.0
Alarm in	4	8	16
Alarm out	1	4	4
Power supply	12 VDC	12 VDC	12 VDC
Consumption	≤10W	≤15W	≤20W
Working humidity	10% - 90%	10% - 90%	10% - 90%

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1/3" Super LoLux Camera

TK-C9200UA

600TVL | Easy D/N | 3D Noise Reduction | Focus Adjustment | Privacy Mask | Display Mode

14-bit processing

Lens not included

SuperLoLux™

TK-C9200UA rear

► 1/3" high resolution IT CCD with 380,000 effective pixels
► High performance 14-bit DSP
► 600 TV lines of horizontal resolution*
► Easy day/night function
► Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.015 lx F1.2 (B&W mode)
► S/N ratio 52 dB (AGC off)
► 3D noise reduction (3DNR)
► Low power consumption
► Built-in menu screen
► Automatic electronic shutter (AES) on/off
► Automatic gain control (AGC) on/off (mid/high)
► Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
► Backlight compensation (BLC) on/off
► Slow shutter capability: x2 to x128
► Digital zoom and reverse mode capability
► DC iris lens control
► CS lens compatible
► 4 areas privacy mask
► Built-in display mode (CRT or LCD selectable)
► 24 VAC/12 VDC power supply

Optional Accessories

YV10X5BSA2L	FUJINON VARIFOCAL SD 5-50mm Lens
YV2.8x2.8LA-SA2L	FUJINON VARIFOCAL SD 2.9-8mm Lens

*Tamron M13VM246 at wide angle

1/3" Super LoLux Camera

TK-C9300UA

600TVL | ExDR | True D/N | 3D Noise Reduction | Focus Adjustment | Privacy Mask | Display Mode

14-bit processing

Lens not included

SuperLoLux™

TK-C9300UA rear

► 1/3" high resolution IT CCD with 380,000 effective pixels
► High performance 14-bit DSP
► True Day/Night surveillance with auto IR cut filter on/off (Color/B&W shooting)
► 600 TV lines of horizontal resolution*
► Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.003 lx F1.2 (B&W mode)
► S/N ratio 52 dB (AGC off)
► 3D noise reduction (3DNR)
► Low power consumption
► Extended dynamic range (ExDR) function
► Built-in menu screen
► Automatic gain control (AGC) off/on (mid/high)
► Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
► Backlight compensation (BLC) on/off
► Slow shutter capability: x2 to x128
► Digital zoom and reverse mode capability
► DC iris lens control
► CS lens compatible
► 4 areas privacy mask
► Built-in motion detection
► Built-in display mode (CRT or LCD selectable)
► 24 VAC/12 VDC power supply

Optional Accessories

YV27X29LR4DSA	FUJINON VARIFOCAL SD DN 2.9-8mm Lens
YV5X27R4BSA2L	FUJINON VARIFOCAL SD DN 2.7-13.5mm Lens

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Color Camera

1/3" Super LoLux Camera with IR

TK-C8301RU

600TVL | **ExDR** | **True D/N** | **IR-LED** | **3D Noise Reduction** | **Focus Adjustment** | **Privacy Mask** | **Display Mode**

14-bit processing

- ▶ 1/3" high resoluution IT CCD with 380,000 effective pixels
- ▶ High perfoemance 14-bit DSP
- ▶ True Day/Night surveillance with auto IR cut filter and IR-LED on/off (Color and 0 lx B&W shooting)
- ▶ 600 TV lines of horizontal resolution
- ▶ Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.006 lx F1.2 (B&W mode)
- ▶ S/N ratio 52 dB (AGC off)
- ▶ Low power consumption
- ▶ Built-in 3.75x variable focal length auto iris lens (f=2.8mm to 10.5mm)
- ▶ Visored lens protection with dust shield
- ▶ Extended dynamic range (ExDR) function
- ▶ Built-in menu screen
- ▶ Automatic gain control (AGC)
- ▶ Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
- ▶ Backlight compensation(BLC) on/off
- ▶ Slow shutter capability x2 to x128
- ▶ Digital zoom and reverse mode capability
- ▶ 4 areas privacy mask
- ▶ Built-in display mode (CRT or LCD selectable)
- ▶ 12 LEDs cover 20m distance
- ▶ 24 VAC/12 VDC power supply

1/3" Super LoLux Mini Dome Camera (Vandal Resistant)

TK-C2201UA

600TVL | **Easy D/N** | **3D Noise Reduction** | **Focus Adjustment** | **Privacy Mask** | **Display Mode** | **Vandal Resistant**

14-bit processing

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ High performance 14-bit DSP
- ▶ 600 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.015 lx F1.2 (B&W mode)
- ▶ S/N ratio 52 dB (AGC off)
- ▶ 3D noise reduction (3DNR)
- ▶ Low power consumption
- ▶ Built-in 3.75x variable focal length auto iris lens (f = 2.8 mm to 10.5 mm)
- ▶ Fine focus adjustment mechanism
- ▶ 3 axis gimble for wide lens angle adjustment (350˚H × ±80˚V × ±100˚R)
- ▶ Monitor video output (RCA) for easy camera setup
- ▶ Automatic gain control (AGC) on/off (mid/high)
- ▶ Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
- ▶ Backlight compensation (BLC) on/off
- ▶ Slow shutter capability: x2 to x128
- ▶ Digital zoom capability
- ▶ 4 areas privacy mask
- ▶ Built-in display mode (CRT or LCD selectable)
- ▶ Vandal resistant dome cover
- ▶ Inner cover to mask the direction of the lens
- ▶ Compact design
- ▶ 24 VAC/12 VDC power supply

Inside cover

Recessed Ceiling Mount

RC-IFD

Optional Accessories

PM-IFD — Pendant Mount
WM-IFD — Wall Mount
RC-IFD — Recessed Ceiling Mount

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1/3" Super LoLux Dome Camera (Vandal Proof)

TK-C2201WPUA

600TVL | Easy D/N | **3D** Noise Reduction | **Focus** Adjustment | **Privacy** Mask | **Display** Mode | **Vandal** Proof | **IP66**

14-bit processing

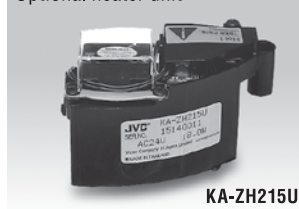

SuperLoLux™

Pendant mount

Wall mount

WM-VPOD

PM-VPOD

Ceiling recessed bracket

RC-VPOD

- ► 1/3" high resolution IT CCD with 380,000 effective pixels
- ► High performance 14-bit DSP
- ► Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ► Triple axis rotation system for wide lens angle adjustment
- ► 600 TV lines of horizontal resolution
- ► Easy day/night function
- ► Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.015 lx F1.2 (B&W mode)
- ► S/N ratio 52 dB (AGC off)
- ► 3D noise reduction (3DNR)
- ► Low power consumption
- ► Built-in 3.75x variable focal length auto iris lens (f = 2.8 mm to 10.5 mm)
- ► Fine focus adjustment mechanism
- ► 3 axis gimble for wide lens angle adjustment (350˚H × ±80˚V × ±100˚R)
- ► Monitor video output (RCA) for easy camera setup
- ► Automatic gain control (AGC) on/off (mid/high)
- ► Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
- ► Backlight compensation (BLC) on/off
- ► Slow shutter capability: x2 to x128
- ► Digital zoom capability
- ► 4 areas privacy mask
- ► Built-in display mode (CRT or LCD selectable)
- ► Inner cover to mask the direction of the lens
- ► 24 VAC/12 VDC power supply
- ► Optional heater unit: **KA-ZH215U** allows to meet – 22˚F (–30˚C) operation

Optional heater unit

KA-ZH215U

Optional Accessories

PM-VPOD	Pendant Mount
WM-VPOD	Wall Mount
POLEM-VPOD	Pole Mount Adaptor
JB-VPOD	Junction Box Adaptor
RC-VPOD	Recessed Ceiling Mount
KA-ZH215U	Heater Unit

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1/3" Super LoLux Dome Camera with IR (Vandal Proof)

TK-C2301WPRU

`600 TVL` `ExDR` `True D/N` `3D Noise Reduction` `Focus Adjustment` `Privacy Mask` `Display Mode` `IR-LED` `Vandal Proof` `IP66`

14-bit processing

Super**L**o**L**ux™

Pendant mount

PM-VPOD

Wall mount

WM-VPOD

Ceiling recessed bracket

RC-VPOD

► 1/3" high resolution IT CCD with 380,000 effective pixels
► High performance 14-bit DSP
► Outdoor-ready vandal and tamper proof structure (complies with IP66)
► Triple axis rotation system for wide lens angle adjustment
► 600 TV lines of horizontal resolution
► True Day/Night surveillance with auto IR cut filter and IR-LED on/off (Color and 0 lx B&W shooting)
► Super LoLux™ sensitivity: 0.025 lx F1.2 (color mode), 0.015 lx F1.2 (B&W mode)
► S/N ratio 52 dB (AGC off)
► 3D noise reduction (3DNR)
► Low power consumption
► Built-in 3.75x variable focal length auto iris lens (f = 2.8 mm to 10.5 mm)
► Fine focus adjustment mechanism
► 3 axis gimble for wide lens angle adjustment (350˚H × ±80˚V × ±100˚R)
► Monitor video output (RCA) for easy camera setup
► Automatic gain control (AGC) on/off (mid/high)
► Auto tracking white balance (ATW) wide/narrow, AWC and Manual Paint
► Backlight compensation (BLC) on/off
► Slow shutter capability: x2 to x128
► Digital zoom capability
► 4 areas privacy mask
► Built-in display mode (CRT or LCD selectable)
► Inner cover to mask the direction of the lens
► 12 LEDS cover 20m distance
► 24 VAC/12 VDC power supply
► Optional heater unit: **KA-ZH215U** allows
to meet – 22˚F (−30˚C) operation

Optional heater unit

KA-ZH215U

Optional Accessories

PM-VPOD	Pendant Mount
WM-VPOD	Wall Mount
POLEM-VPOD	Pole Mount Adaptor
JB-VPOD	Junction Box Adaptor
RC-VPOD	Recessed Ceiling Mount
KA-ZH215U	Heater Unit

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Color Camera Specifications

	TK-C9300UA
Camera	
Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines*
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC on) 0.025 lx (25%, F1.2, AGC on) ⟨ 0.006 lx (50%, F1.2, AGC on) ⟩ 0.003 lx (25%, F1.2, AGC on)
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	ExDR (by dual shutter)
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	—
Lens	
Lens mount	CS
Focal length < angle of vision >	—
Max. aperture ratio	—
Angle adjustment range	—
General	
Power supply	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.5 W
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—
Dimensions (W × H × D)	2-3/16 inches ×2-7/16 inches × 5 inches (55 mm × 61 mm × 126 mm)
Weight (approx.)	0.6 lbs. (280 g)
Accessories	—

*Tamron M13VM246 at wide angle. **Tamron M12VM412 at wide angle.

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	TK-C9200UA
Camera	
Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines*
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC on) 0.025 lx (25%, F1.2, AGC on) ⟨ 0.03 lx (50%, F1.2, AGC on) ⟩ ⟨ 0.015 lx (25%, F1.2, AGC on) ⟩
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	—
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	on/off (1/60 s to 1/100,000 s)
Lens	
Lens mount	CS
Focal length < angle of vision >	—
Max. aperture ratio	—
Angle adjustment range	—
General	
Power supply	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.3 W
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—
Dimensions (W × H × D)	2-3/16 inches ×2-7/16 inches × 5 inches (55 mm × 61 mm × 126 mm)
Weight (approx.)	0.6 lbs. (280 g)
Accessories	—

*Tamron M13VM246 at wide angle. **Tamron M12VM412 at wide angle.

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	TK-C8301RU
Camera	
Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines*
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH) ⟨ 0.006 lx (50%, F1.2, AGC HIGH) 0.003 lx (25%, F1.2, AGC HIGH) ⟩ 0 lx with IR LED ON
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	ExDR (by dual shutter)
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	—
Lens	
Lens mount	—
Focal length < angle of vision >	2.8mm to 10.5mm, 3.75x vari-focal <100˚ (H) x 73˚ (V) to 24˚ (H) x 21˚ (v)>
Max. aperture ratio	F1.2
Angle adjustment range	—
IR-LED	12 LEDs Cover 20mm
General	
Power supply	24 VAC (50 Hz/60 Hz)
Power consumption	2.5 W
Operating temperature range < recommended >	−10 ˚C to 50 ˚C < 0 ˚C to 40 ˚C >
Dust and water protection	—
Dimensions (W × H × D)	2-3/16 inches × 2-7/16 inches × 6-15/16 inches (55 mm × 61 mm × 175 mm)
Weight (approx.)	0.77 lbs.(350 g)
Accessories	—

*Tamron M13VM246 at wide angle. **Tamron M12VM412 at wide angle.

Color Camera
Network Camera
Recorder
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TK-C2201UA	
Camera	
Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH) ⟨ 0.03 lx (50%, F1.2, AGC HIGH) ⟩ 0.015 lx (25%, F1.2, AGC HIGH)
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	—
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	—
Lens	
Lens mount	—
Focal length < angle of vision >	2.8 mm to 10.5 mm, 3.75x vari-focal < 100˚ (H) × 73˚ (V) to 24˚ (H) × 21˚ (V) >
Max. aperture ratio	F1.2
Angle adjustment range	Horizontal: 350˚, Vertical: ±80˚, Rotation: ±100˚
IR-LED	—
General	
Power supply	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.3 W
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—
Dimensions (W × H × D)	ø 3-3/8 inches × 3-7/8 inches (H) (ø 110 mm × 97 mm (H))
Weight (approx.)	0.73 lbs. (330 g)
Accessories	—

*Tamron M13VM246 at wide angle. **Tamron M12VM412 at wide angle.

Color Camera / Network Camera / Recorder / System Information / Technical Information / Glossary

TK-C2201WPUA	
Camera	
Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH) ⟨ 0.03 lx (50%, F1.2, AGC HIGH) ⟩ ⟨ 0.015 lx (25%, F1.2, AGC HIGH) ⟩
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	—
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	—
Lens	
Lens mount	—
Focal length < angle of vision >	2.8 mm to 10.5 mm, 3.75x vari-focal < 100˚ (H) × 73˚ (V) to 24˚ (H) × 21˚ (V) >
Max. aperture ratio	F1.2
Angle adjustment range	Horizontal: 350˚, Vertical: ±80˚, Rotation: ±100˚
IR-LED	—
General	
Power supply	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.3 W *without optional heater
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	IP66
Dimensions (W × H × D)	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	2.9 lbs. (1.3 kg)
Accessories	Wrench × 1 Silica gel × 1

*Tamron M13VM246 at wide angle. **Tamron M12VM412 at wide angle.

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

TK-C2301WPRU

Camera

Image device	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Sync system	Internal
Scanning system	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—
Video S/N ratio	52 dB (AGC off)
Horizontal resolution	600 TV lines
Minimum illumination (typical) < B&W mode >	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH) ⟨ 0.006 lx (50%, F1.2, AGC HIGH) ⟩ ⟨ 0.003 lx (25%, F1.2, AGC HIGH) ⟩
Communication	—
Iris control	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >
Wide dynamic range function	ExDR (by dual shutter)
Display mode	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)
AES	—

Lens

Lens mount	—
Focal length < angle of vision >	2.8 mm to 10.5 mm, 3.75x vari-focal < 100° (H) × 73° (V) to 24° (H) × 21° (V) >
Max. aperture ratio	F1.2
Angle adjustment range	Horizontal: 350°, Vertical: ±80°, Rotation: ±100°
IR-LED	12 LEDs, 20m

General

Power supply	24 VAC (50 Hz/60 Hz) /12 VDC, UL listed
Power consumption	2.5 W *without optional heater
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >
Dust and water protection	IP66
Dimensions (W × H × D)	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	2.9 lbs. (1.3 kg)
Accessories	Wrench × 1 Silica gel × 1

LoLux HD Network Camera

VN-T16U

Easy D/N   Megapixel   Bi-directional Audio   H.264HP   Dual Stream

► 1/2.7" Mega pixel CMOS
► Full frame 1920 x 1080 H.264, MPEG-4 or Motion JPEG Multi codec
► Day/Night surveillance with Easy day/night function
► Digital noise reduction
► Web based setup and viewing tool
► Multiple user access levels with password protection
► Bi-directional audio communication
► Alarm terminal (input x 1, output x 1)
► Alarm recording on SD card
► ONVIF protocol support
► PoE and 24 VAC/12 VDC power supply selectable

LoLux HD™

Optional Accessories

YV27X22SASA2	FUJINON VARIFOCAL 3MP 2.2-6mm lens
YV28X28SASA2	FUJINON VARIFOCAL 3MP 2.8-8mm lens
YV43X28SASA2	FUJINON VARIFOCAL 3MP 2.8-12mm lens
YV33X15SASA2	FUJINON VARIFOCAL 3MP 15-50mm lens

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

Super LoLux HD Network Camera

VN-H37U

True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Dual Stream

Clear Logic Video Intelligence

C.L.V.I

JVC

Super LoLux HD™

Lens not included

Super**L**o**L**ux **HD**™

Optional Accessories

|	
YV27X22SR4ASA2	FUJINON VARIFOCAL 3MP DN 2.2-6mm lens
YV28X28SR4ASA2	FUJINON VARIFOCAL 3MP DN 2.8-8mm lens
YV3.3x15SR4A-SA2	FUJINON VARIFOCAL 3MP DN 15-50mm lens
YV3x6SR4A-SA2	FUJINON VARIFOCAL 3MP DN 6-18mm lens

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filer on/off
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
► Password protection and IP address filtering
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by blockage detection
► Full-time SD recording
► ONVIF/PSIA protocol support
► Power over ethernet (PoE)

Built-in setup tool and viewer

Super LoLux HD Network Camera

VN-H137U

Easy D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Dual Stream

Clear Logic Video Intelligence

C.L.V.I

JVC

Super LoLux HD™

Super**L**o**L**ux **HD**™

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.75x variable focal length auto iris lens (f = 2.8mm to 10.5mm)
► Visored lens protection with dust shield
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► Day/Night surveillance with Easy day/night function
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
► Password protection and IP address filtering
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by blockage detection
► Full-time SD recording
► ONVIF/PSIA protocol support
► Power over ethernet (PoE)

Built-in setup tool and viewer

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

Super LoLux HD Network Camera

VN-H57U

| True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Bi-directional Audio | Dual Stream |

Clear Logic Video Intelligence
C.L.V.I

Lens not included

SuperLoLux HD™

Optional Accessories

YV27X22SR4ASA2   FUJINON VARIFOCAL 3MP DN 2.2-6mm lens

YV28X28SR4ASA2   FUJINON VARIFOCAL 3MP DN 2.8-8mm lens

YV3.3x15SR4A-SA2   FUJINON VARIFOCAL 3MP DN 15-50mm lens

YV3x6SR4A-SA2   FUJINON VARIFOCAL 3MP DN 6-18mm lens

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filer on/off
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Installer friendly remote backfocus adjustment function
► Password protection and IP address filtering
► Bi-directional audio communication
► Built-in Motion detecition
► Built-in intellgent audio detection
► Trigger input alarm terminal (input × 2, output × 2)
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by blockage detection
► Full-time SD recording
► ONVIF/PSIA protocol support

► PoE and 24 VAC power supply selectable
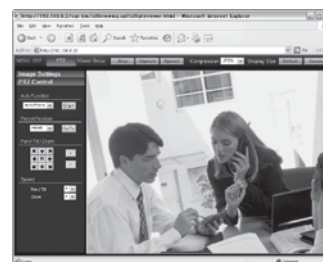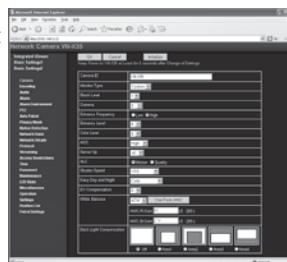
Built-in setup tool and viewer

Super LoLux HD Network Bullet Camera

VN-H157WPU

| True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Bi-directional Audio | IP66 | Dual Stream |

Clear Logic Video Intelligence
C.L.V.I

SuperLoLux HD™

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.0x variable focal length auto iris lens (f = 3.0mm to 9.0mm)
► Outdoor-ready water and dust proof housing for wall/ceiling mount coplies with IP66
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filer on/off
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Installer friendly remote focus adjustment function
► Password protection and IP address filtering
► Bi-directional audio communication
► Built-in Motion detetion
► Built-in intellgent audio detection
► Trigger input alarm cables (input × 2, output × 2)
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by impact and blockage detection
► Full-time SD recording
► ONVIF/PSIA protocol support
► PoE and 24 VAC power supply selectable

Ceiling mount*

Vertical 90°
Horizontal ±50°
Camera rotation ±110°

Wall mount*

*Mounting bracket (included)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

LoLux HD Network Mini Dome Camera

VN-T216U

`Easy D/N` `Megapixel` `Bi-directional Audio` `H.264HP` `Dual Stream`

- ► 1/2.7" Mega pixel CMOS
- ► H.264 High profile Super LoLux HD™ DSP
- ► Full frame 1920 x 1080 H.264, MPEG-4 or Motion JPEG Multi codec
- ► Built-in 3.0x variable focal length auto iris lens (f=3mm to 9mm)
- ► Day/Night surveillance with Easy day/night function
- ► Digital noise reduction
- ► Web based setup and viewing tool
- ► Multiple user access levels with password protection
- ► Bi-directional audio communication (Windows XP recommended)
- ► Alarm terminal (input x 1, output x 1)
- ► Alarm recording on SD card
- ► ONVIF protocol support
- ► PoE and 24 VAC/12 VDC power supply selectable

Optional Accessories

PM-IFD	Pendant Mount
WM-IFD	Wall Mount
RC-IFD	Recessed Ceiling Mount

LOLUX HD™

LoLux HD Network Dome Camera with IR (Vandal Proof)

VN-T216VPRU

`True D/N` `Megapixel` `H.264HP` `Bi-directional Audio` `IR-LED` `Vandal Proof` `IP66` `Dual Stream`

- ► 1/2.7" Mega pixel CMOS
- ► H.264 High profile Super LoLux HD™ DSP
- ► Full frame 1920 x 1080 H.264, MPEG-4 or Motion JPEG Multi codec
- ► Built-in 3.0x variable focal length auto iris lens (f=3mm to 9mm)
- ► Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ► True Day/Night surveillance with auto IR cut filter and IR-LED on/off (Color and 0 lx B&W shooting)
- ► Digital noise reduction
- ► Web based setup and viewing tool
- ► Multiple user access levels with password protection
- ► Bi-directional audio communication (Windows XP recommended)
- ► Alarm terminal (input x 1, output x 1)
- ► Alarm recording on SD card
- ► ONVIF protocol support
- ► 21 LEDs cover 15m distance
- ► PoE and 24 VAC/12 VDC power supply selectable

Optional Accessories

PM-VPOD	Pendant Mount
WM-VPOD	Wall Mount
POLEM-VPOD	Recessed Ceiling Mount
JB-VPOD	Junction Box Adaptor
RC-VPOD	Recessed Ceiling Mount

LOLUX HD™

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

**Super LoLux HD Network
Mini Dome Camera (Vandal Resistant)**

VN-H237U

| Easy D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Vandal Resistant | Dual Stream |

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.75x variable focal length auto iris lens (f = 2.8mm to 10.5mm)
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► Day/Night surveillance with Easy day/night function
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
► Fine focus adjustment and triple axis rotation mechanism
► Vandal resistant dome cover
► Password protection and IP address filtering
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by blockage detection
► Full-time SD recording
► ONVIF/PSIA protocol support
► Power over ethernet (PoE)

Optional Accessories

PM-IFD	Pendant Mount
WM-IFD	Wall Mount
RC-IFD	Recessed Ceiling Mount

Recessed Ceiling Mount

RC-IFD

**Super LoLux HD Network
Dome Camera (Vandal Proof)**

VN-H237VPU

| True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Vandal Proof | IP66 | Dual Stream |

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.75x variable focal length auto iris lens (f = 2.8mm to 10.5mm)
► Outdoor-ready vandal and tamper proof structure (complies with IP66)
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, and 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.25 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filer on/off
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
► Fine focus adjustment and triple axis rotation mechanism
► Vandal resistant dome cover
► Password protection and IP address filtering
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by impact and blockage detection
► Fuii-time SD recording
► ONVIF/PSIA protocol support
► Power over ethernet (PoE)

Optional Accessories

PM-VPOD	Pendant Mount
WM-VPOD	Wall Mount
POLEM-VPOD	Pole Mount Adaptor
JB-VPOD	Junction Box Adaptor
RC-VPOD	Recessed Ceiling Mount

Recessed Ceiling Mount

RC-VPOD

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

**Super LoLux HD Network
Mini Dome Camera (Vandal Resistant)**

VN-H257U

| True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Bi-directional Audio | Vandal Resistant | Dual Stream |

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 x 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.0x variable focal length auto iris lens (f=3.0mm to 9.0mm)
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity : 0.15 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filter on/off
► C.L.V.I. - Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Fine focus adjustment and triple axis rotation mechanism
► Installer friendly remote focus adjustment function
► Password protection and IP address filtering
► Bi-directional audio communication
► Built-in Motion detection
► Built-in intellgent audio detection
► Trigger input alarm cables (input x 2, output x 2)
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by impact and blockage detection
► SD recording / NAS recording
► ONVIF/PSIA protocol support
► PoE and 24 VAC power supply selectable

Optional Accessories

PM-IFD   Pendant Mount
WM-IFD   Wall Mount
RC-IFD   Recessed Ceiling Mount

Recessed Ceiling Mount

RC-IFD

**Super LoLux HD Network
Dome Camera (Vandal Proof)**

VN-H257VPU

| True D/N | 3D Noise Reduction | CLVI | Privacy Mask | Display Mode | Megapixel | H.264HP | Bi-directional Audio | Vandal Proof | IP66 | Dual Stream |

► 1/3" CMOS with 2,120,000 effective pixels
► H.264 High profile Super LoLux HD™ DSP
► Full HD 1920 × 1080 H.264 High profile, MPEG-4 and Motion JPEG Multi codec
► Built-in 3.0x variable focal length auto iris lens (f = 3.0mm to 9.0mm)
► Outdoor-ready vandal and tamper proof structure coplies with IP66
► 30 fps Full HD H.264, 30 fps VGA MPEG-4, or 15 fps Full HD JPEG distribution
► Super LoLux HD™ sensitivity: 0.15 lx F1.2 (color mode)
► True Day/Night surveillance with auto IR cut filer on/off
► C.L.V.I. – Clear Logic Video Intelligence technology for wide dynamic range and anti fog
► 3D noise reduction (3DNR)
► Partial resizing and digital PTZ function
► Fine focus adjustment and triple axis rotation mechanism
► Installer friendly remote focus adjustment function
► Password protection and IP address filtering
► Bi-directional audio communication
► Built-in Motion detection
► Built-in intellgent audio detection
► Trigger input Alarm cables (input × 2, output × 2)
► 20 simultaneous users, unlimited users by multicasting
► Simultaneous analog video output
► Active tampering alarm by impact and blockage detection
► Fuii-time SD recording
► ONVIF/PSIA protocol support
► PoE and 24 VAC power supply selectable

Pendant mount

Wall mount

WM-VPOD

Recessed Ceiling Mount

PM-VPOD

RC-VPOD

Optional Accessories

PM-VPOD Pendant Mount
WM-VPOD Wall Mount
POLEM-VPOD Pole Mount Adaptor
JB-VPOD Junction Box Adaptor
RC-VPOD Recessed Ceiling Mount

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

VN-T16U	
Camera	
Image device	1/2.7" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.6 lx (50%, F1.2, AGC ON) 0.3 lx (25%, F1.2, AGC ON) < 0.6 lx (50%, F1.2, AGC ON) >
Iris control	DC iris
White balance	—
Wide dynamic range function	Yes
Backlight compensation	Yes
Lens	
Lens mount	CS
Focal length < angle of vision >	—
Max. aperture ratio	—
Angle adjustment range	—
General	
SD card recoding	Yes
Alarm I/O	Input x 1, Output x 1
Monitor output	—
Audio communication	Line in / Line out
Power supply	24 VAC (50 Hz/60 Hz)/12 VDC/48 VDC (PoE)
Power consumption	550 mA (12 VDC)/0.13 A (PoE)
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—
Dimensions (W × H × D)	2-1/4 inches × 2-11/16 inches × 4-15/16 inches 56 mm × 68 mm × 125 mm
Weight (approx.)	0.86 lbs. (390 g)
Network	
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, FTP, UDP/IP, ICMP, ARP, DHCP, HTTP, DNS, RTCP, IGMP, RTP, RTSP, ONVIF
Picture Resolution (pixel)	1,920 x 1,080, 1,280 x 720, 720 x 480, 704 x 480, 640 x 480
Compression	Motion JPEG, H264 (High/Baseline), MPEG-4
Frame rate	Max 30 fps
Audio compression	—
Internal storage capacity	—
Access protection	Password protection
Motion detection	Yes
Web server	Yes
Data transmission	Unicast/Multicast
System requirement (recommended)	
OS	Windows XP, Windows 7
CPU	Pentium 4 (2.4GHz)
Memory	More than 1 GB
HDD space	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)

	VN-H37U	VN-H137U
Camera		
Image device	1/3" CMOS	1/3" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2,AGC HIGH) >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.25 lx (50%, F1.2,AGC HIGH) >
Iris control	DC iris	DC iris
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	C.L.V.I.	C.L.V.I.
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	CS	—
Focal length < angle of vision >	—	2.8 mm to 10.5 mm, 3.75x vari-focal < 110 ˚(H) x 60 ˚(V) to 30 ˚(H) x 17 ˚(V) >
Max. aperture ratio	—	F1.2
Angle adjustment range	—	—
General		
SD card recoding	Yes	Yes
Alarm I/O	—	—
Monitor output	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)
Audio communication	—	—
Power supply	48 VDC (PoE)	48 VDC (PoE)
Power consumption	120mA (PoE)	120mA (PoE)
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—	—
Dimensions (W × H × D)	2-3/16 inches × 2-7/16 inches × 5 inches 55 mm × 61 mm × 126 mm	2-3/16 inches × 2-7/16 inches × 6-15/16 inches 55 mm × 61 mm × 175 mm
Weight (approx.)	0.75 lbs. (340 g)	0.86 lbs. (390 g)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA
Picture Resolution (pixel)	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080
Compression	Motion JPEG, H.264 (High/Baseline), MPEG-4	Motion JPEG, H.264 (High/Baseline), MPEG-4
Frame rate	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)
Audio compression	—	—
Internal storage capacity	16 MB (RAM)	16 MB (RAM)
Access protection	3 levels password, IP address filtering	3 levels password, IP address filtering
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro
CPU	Core 2 Duo (3 GHz)	Core 2 Duo (3 GHz)
Memory	More than 2 GB	More than 2 GB
HDD space	More than 1 GB	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

Network Camera Specifications

	VN-H57U	VN-H157WPU
Camera		
Image device	1/3" CMOS	1/3" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2,AGC HIGH) >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2,AGC HIGH) >
Iris control	DC iris	DC iris
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	C.L.V.I.	C.L.V.I.
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	CS	—
Focal length < angle of vision >	—	3.0 mm to 9.0 mm, 3.0x vari-focal < 103 °(H) x 56 °(V) to 79 °(H) x 44°(V) >
Max. aperture ratio	—	F1.2
Angle adjustment range	—	Horizontal: ±50°, Vertical: 90°, Rotation: ±110°
General		
SD card recoding	Yes	Yes
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)
Audio communication	Line in/Line out	Line in/Line out
Power supply	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)
Power consumption	0.5 A (24 VAC)/135 mA (PoE)	0.5 A (24 VAC)/135 mA (PoE)
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >
Dust and water protection	—	IP66
Dimensions (W × H × D)	2-3/16 inches × 2-7/16 inches × 5 inches 55 mm × 61 mm × 126 mm	5-9/16 inches × 6-5/8 inches × 10-1/8 inches 140 mm × 167 mm × 257 mm
Weight (approx.)	0.8 lbs. (360 g)	3.3 lbs. (1.5 kg)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA
Picture — Resolution (pixel)	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080
Compression	Motion JPEG, H.264 (High/Baseline), MPEG-4	Motion JPEG, H.264 (High/Baseline), MPEG-4
Frame rate	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)
Audio compression	μ-law 64 kbps mono AD/DA 16-bits	μ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	16 MB (RAM)	16 MB (RAM)
Access protection	3 levels password, IP address filtering	3 levels password, IP address filtering
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro
CPU	Core 2 Duo (3 GHz)	Core 2 Duo (3 GHz)
Memory	More than 2 GB	More than 2 GB
HDD space	More than 1 GB	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

	VN-T216U	VN-T216VPRU
Camera		
Image device	1/2.7" CMOS	1/2.7" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.6 lx (50%, F1.2, AGC ON) 0.3 lx (25%, F1.2, AGC ON) < 0.6 lx (50%, F1.2, AGC ON) >	0.6 lx (50%, F1.2, AGC ON) 0.3 lx (25%, F1.2, AGC ON) < 0 lx with IR-LED ON >
Iris control	DC iris	DC iris
White balance	ATW/Manual	—
Wide dynamic range function	—	Yes
Backlight compensation	Yes	Yes
Lens		
Lens mount	—	CS
Focal length < angle of vision >	3.0 mm to 9.0 mm, 3.0x vari-focal	—
Max. aperture ratio	F1.2	—
Angle adjustment range	—	—
IR-LED	—	21 LEDs, 15 m
General		
SD card recoding	Yes	Yes
Alarm I/O	Input x 1, Output x 1	Input x 1, Output x 1
Monitor output	—	—
Audio communication	Line in / Line out	Line in / Line out
Power supply	24 VAC (50 Hz/60 Hz)/12VDC/48VDC (PoE)	24 VAC (50 Hz/60 Hz)/12 VDC/48 VDC (PoE)
Power consumption	550 mA (12 VDC)/0.13 A (PoE)	550 mA (12VDC)
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—	IP66
Dimensions (W × H × D)	ø 5 inches × 4-3/16 inches ø 126 mm × 106 mm (H)	ø 6-1/8 inches × 4-7/16 inches ø 155 mm × 113 mm (H)
Weight (approx.)	1.1 lbs. (490 g)	3.0 lbs. (1,360 g)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, FTP, UDA/IP, ICMP, ARP, DHCP, HTTP, DNS, RTCP, IGMP, RTP, RTSP, ONVIF	TCP/IP, FTP, UDA/IP, ICMP, ARP, DHCP, HTTP, DNS, RTCP, IGMP, RTP, RTSP, ONVIF
Picture Resolution (pixel)	1,920 x 1,080, 1,280 x 720, 720 x 480, 704 x 480, 640 x 480	1,920 x 1,080, 1,280 x 720, 720 x 480, 704 x 480, 640 x 480
Compression	Motion JPEG, H264 (High/Baseline), MPEG-4	Motion JPEG, H264 (High/Baseline), MPEG-4
Frame rate	Max 25 fps	Max 25 fps
Audio compression	—	—
Internal storage capacity	—	—
Access protection	Password protection	Password protection
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	Windows XP, Windows 7	Windows XP, Windows 7
CPU	Pentium 4 (2.4GHz)	Pentium 4 (24GHz)
Memory	More than 1 GB	More than 1 GB
HDD space	More than 1 GB	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

	VN-H237U	VN-H237VPU
Camera		
Image device	1/3" CMOS	1/3" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.25 lx (50%, F1.2, AGC HIGH) >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2, AGC HIGH) >
Iris control	DC iris	DC iris
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	C.L.V.I.	C.L.V.I.
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	—	—
Focal length < angle of vision >	2.8 mm to 10.5 mm, 3.75x vari-focal < 110 °(H) x 60 °(V) to 30 °(H) x 17 °(V) >	2.8 mm to 10.5 mm, 3.75x vari-focal < 114 °(H) x 60 °(V) to 30 °(H) x 17 °(V) >
Max. aperture ratio	F1.2	F1.2
Angle adjustment range	Horizontal: 350°, Vertical: ±80°, Rotation: ±100°	Horizontal: 350°, Vertical: ±80°, Rotation: ±100°
General		
SD card recoding	Yes	Yes
Alarm I/O	—	—
Monitor output	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)
Audio communication	—	—
Power supply	48 VDC (PoE)	48 VDC (PoE)
Power consumption	120 mA (PoE)	120 mA (PoE)
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >
Dust and water protection	—	IP66
Dimensions (W × H × D)	ø 4-3/8 inches × 4-5/8 inches (H) ø 111 mm × 117 mm (H)	ø 6-1/4 inches × 4-7/8 inches (H) ø 160 mm × 125 mm (H)
Weight (approx.)	0.99 lbs. (450g)	2.9 lbs. (1.3kg)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF*, PSIA	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA
Picture Resolution (pixel)	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080
Compression	Motion JPEG, H.264 (High/Baseline), MPEG-4	Motion JPEG, H.264, MPEG-4
Frame rate	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)
Audio compression	—	—
Internal storage capacity	16 MB (RAM)	16 MB (RAM)
Access protection	3 levels password, IP address filtering	3 levels password, IP address filtering
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro
CPU	Core 2 Duo (3 GHz)	Core 2 Duo (3 GHz)
Memory	More than 2 GB	More than 2 GB
HDD space	More than 1 GB	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

	VN-H257U	VN-H257VPU
Camera		
Image device	1/3" CMOS	1/3" CMOS
Number of effective pixels	2,120,000 (1,944 H × 1,092 V)	2,120,000 (1,944 H × 1,092 V)
Minimum illumination (typical) < B&W mode >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2,AGC HIGH) >	0.3 lx (50%, F1.2, AGC HIGH) 0.15 lx (25%, F1.2, AGC HIGH) < 0.05 lx (50%, F1.2,AGC HIGH) >
Iris control	DC iris	DC iris
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	C.L.V.I.	C.L.V.I.
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	—	—
Focal length < angle of vision >	3.0 mm to 9.0 mm, 3.0x vari-focal <103˚ (H) x 56˚ (V) to 79˚ (H) x44˚ (V)>	3.0 mm to 9.0 mm, 3.0x vari-focal <103˚ (H) x 56˚ (V) to 79˚ (H) x44˚ (V)>
Max. aperture ratio	F1.2	F1.2
Angle adjustment range	Horizontal: 350˚, Vertical: ±80˚, Rotation: ±100˚	Horizontal: 350˚, Vertical: ±80˚, Rotation: ±100˚
General		
SD card recoding	Yes	Yes
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)	Composite video signal: 1.0 V (p-p), PAL/NTSC (RCA)
Audio communication	Line in / Line out	Line in / Line out
Power supply	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)
Power consumption	0.5 A (24 VAC)/135 mA (PoE)	0.5 A (24 VAC) /135 mA (PoE)
Operating temperature range < recommended >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >	14 ˚F to 122 ˚F (−10 ˚C to 50 ˚C) < 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C) >
Dust and water protection	—	IP66
Dimensions (W × H × D)	ø 4-3/8 inches × 4-5/8 inches (H) ø 111 mm × 117 mm (H)	ø 6-1/4 inches × 4-7/8 inches (H) ø 160 mm × 125 mm (H)
Weight (approx.)	0.99 lbs. (450g)	2.9 lbs. (1.3 kg)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, HTTPS, SNMP, ONVIF, PSIA
Picture — Resolution (pixel)	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080	All compression: 320 × 240, 640 × 480 Motion JPEG/H.264 only: 1,280 × 720, 1,280 × 960, 1,920 × 1,080
Compression	Motion JPEG, H.264 (High/Baseline), MPEG-4	Motion JPEG, H.264, MPEG-4
Frame rate	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 10 fps Motion JPEG (1,920 × 1,080)	30 fps H.264 (1,920 × 1,080), 30 fps MPEG-4 (640 × 480), 15 fps Motion JPEG (1,920 × 1,080)
Audio compression	µ-law 64 kbps mono AD/DA 16-bits	µ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	16 MB (RAM)	16 MB (RAM)
Access protection	3 levels password, IP address filtering	3 levels password, IP address filtering
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro	Windows Vista Business (SP2), Windows XP pro (SP3), Windows 7 pro
CPU	Core 2 Duo (3 GHz)	Core 2 Duo (3 GHz)
Memory	More than 2 GB	More than 2 GB
HDD space	More than 1 GB	More than 1 GB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

10x PTZ Network Dome Camera

VN-H557U

3D Noise Reduction | Privacy Mask | Display Mode | Dual Stream

- ▶ Small Full HD PTZ with an economical design
- ▶ Max. 1920x1080 Resolution at 30fps
- ▶ H.264 High Profile/Baseline Profile/JPEG
- ▶ Triple/Dual stream (FullHD+720P or Full HD+CIF+CIF)
- ▶ 10x Optical zoom, F1.8
- ▶ Min. illumination: .035 lx
- ▶ Pan 350deg. / Tilt 120deg
- ▶ Pan/tilt speed : 200deg./sec
- ▶ Easy D/N
- ▶ Bidirectional audio communication
- ▶ Alarm in/out
- ▶ PoE / AC24V / DC12V

18x PTZ Network Dome Camera

VN-H657U

True D/N | 3D Noise Reduction | Privacy Mask | Display Mode | Direct Drive | One-Touch Lock | Dual Stream

- ▶ 1/2.8" Super LoLux 2 Megapixel image sensor
- ▶ 18x optical zoom lens and 10x electronic zoom
- ▶ H.264 High Profile/Baseline, Motion JPEG, 30FPS, Multi stream
- ▶ True Day/Night surveillance with auto IR cut filter on/off
- ▶ 3D noise reduction (3DNR)
- ▶ Active gamma function (Easy wide-D) for backlight compensation
- ▶ Superior Direct Drive motor mechanism provides 2 million zoom / 5 million pan and tilt / 4million focus operations
- ▶ 8 areas privacy mask
- ▶ "One-touch lock" quick and easy installation
- ▶ Web based setup and viewing tool and access protection
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ 24 VAC/PoE Plus
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 16 MB
- ▶ Alarm terminal (input × 2, output × 2)

Optional Accessories

RC-IPTZ   Recessed Ceiling Mount
WM-IPTZ   Wall Mount
PM-IPTZ   Pendant Mount

Color Camera | Network Camera | Recorder | System Information | Technical Information | Glossary

18x Outdoor PTZ Network Dome Camera

VN-H657WPU

True D/N | 3D Noise Reduction | Privacy Mask | Display Mode | Direct Drive | IP66 | Dual Stream

Optional Accessories

PM-OPTZ   Pendant Mount
CM-OPTZ   Corner Mount Bracket
POLEM-OPTZ   Pole Mount Adaptor
PARM-OPTZ   Parapet Mount

- ► 1/2.8" Super LoLux 2 Megapixel image sensor
- ► Ready for outdoor installation with wall mount housing and IP66-compliant
- ► 18x optical zoom lens and 10x electronic zoom
- ► H.264 High Profile/Baseline, Motion JPEG, 30FPS, Multi stream
- ► True Day/Night surveillance with auto IR cut filter on/off
- ► 3D noise reduction (3DNR)
- ► Active gamma function (Easy wide-D) for backlight compensation
- ► Superior Direct Drive motor mechanism provides 2 million zoom / 5 million pan and tilt / 4million focus operations
- ► 8 areas privacy mask
- ► "One-touch lock" quick and easy installation
- ► Web based setup and viewing tool and access protection
- ► 20 simultaneous users, unlimited users by multicasting
- ► 24 VAC/PoE Plus
- ► Trigger input by built-in motion detection and external alarm input
- ► Pre/Post alarm buffer of 16 MB
- ► Alarm terminal (input × 2, output × 2)

➡ Please contact regional sales branches for detailed information of the optional brackets.

Options for VN-H657U

System Information

Wall mount

WM-IPTZ

Recessed ceiling mount

RC-IPTZ

Pendant mount

PM-IPTZ

➡ Please contact regional sales branches for detailed information of the optional brackets.

Options for VN-H657WPU

System Information

Pendant mount

PM-OPTZ

Corner mount

CM-OPTZ

Pole Mount Adapter

POLEM-OPTZ

Parepet Mount
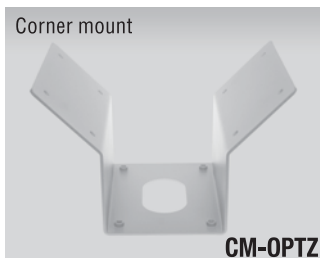
PARM-OPTZ

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

	VN-H557U	VN-H657U
Camera		
Image device	1/2.8" CMOS	1/2.8" CMOS
Number of effective pixels	2Mega pixels, (1920 H × 1080 V)	2Mega pixels, (1920 H × 1080 V)
Minimum illumination (typical)	0.9 lx (F1.8, 50IRE, 1/30)	0.7 lx (F1.6, 50IRE, 1/30)
< B&W mode >	0.7 lx (F1.8, 50IRE, 1/30)	0.3 lx (F1.6, 50IRE, 1/30)
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	Active gamma (Easy wide-D)	Active gamma (Easy wide-D)
Backlight compensation	Yes (4 areas are selectable)	Yes (4 areas are selectable)
Shutter speed	Select from menu (1/60 s to 1/10,000 s)	Select from menu (1/60 s to 1/10,000 s)
Lens		
Zoom ratio	10x optical	18x optical
Max. aperture ratio	F1.8	F1.6
Auto focus	Easy AF/One push AF	Easy AF/One push AF
Mechanism		
Preset position	100 positions	100 positions
Panning	−175 to +175°	360° endless rotation
Panning speed	0.1°/s to 300°/s	0.04 °/s to 400 °/s
Tilting	−5° to 185°	−5° to 185°
Tilting speed	0.1°/s to 200°/s	0.04 °/s to 400 °/s
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Power supply	AC24V/DC12V/ PoE	24 VAC/POE Plus
Power consumption	1.2 A (24 VAC) /12.95 W (PoE)	1.2 A (24 VAC/16W (POE)
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >
Dimensions	ø 4-3/4 inches x 6-3/4 (ø 120 mm (D) x 172 mm (H)	ø 6-1/4 inches × 7-7/8 inches (ø 160 mm × 201 mm (H))
Weight (approx.)	2.1 lbs. (.95 kg)	4.2 lbs. (1.9 kg)
Network		
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	IPv4, HTTP, TCP, RTSP/RTCP/RTP, ICMP, UDP, IGMP, DNS, DHCP, ARP, FTP Client, SMTP, NTP, RTSP/RTCP/RTP	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture — Resolution (pixel)	1920x1080,1280x960, 1280x720, 720x480, 640x480, 640x360, 352x240, 320x240	1920x1080,1280x960, 1280x720, 720x480, 640x480, 640x360, 352x240, 320x240
Compression	Motion JPEG, H.264 (High/Baseline)	Motion JPEG, H.264 (High/Baseline)
Frame rate	H.264: 1920x1080, 30fps, H.264: 30, 25, 15, 10, 7.5, 5 , 3, 2, 1 fps JPEG: 30, 15, 10, 7.5, 5 , 3, 2, 1 fps	H.264: 1920x1080, 30fps, H.264: 30, 25, 15, 10, 7.5, 5 , 3, 2, 1 fps JPEG: 30, 15, 10, 7.5, 5 , 3, 2, 1 fps
Internal storage capacity	SDHC Card Slot	
Access protection	3 levels password, IP address filtering	3 levels password, IP address filtering
Motion detection	Yes	Yes
Web server	Yes	Yes
Data transmission	Unicast/Multicast	Unicast/Multicast
System requirement (recommended)		
OS	OS :Microsoft Windows XP professional*, Windows Server 2003*, Windows Server 2008 R1*/R2* Windows Vista (Business*, Enterprise*, Ultimate*), Windows 7 (Professional*, Enterprise*, Ultimate*)	OS :Microsoft Windows XP professional*, Windows Server 2003*, Windows Server 2008 R1*/R2* Windows Vista (Business*, Enterprise*, Ultimate*), Windows 7 (Professional*, Enterprise*, Ultimate*)
CPU	CPU : Intel Core2 Duo 2.4GHz or higher	CPU : Intel Core2 Duo 2.4GHz or higher
Memory	More than 1 GB	More than 1 GB
HDD space	More than 512 MB	More than 512 MB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)	1,024 × 768 pixels, true color (24-bit or 32-bit)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

VN-H657WPU	
Camera	
Image device	1/2.8" CMOS
Number of effective pixels	2Mega pixels, (1920 H × 1080 V)
Minimum illumination (typical)	0.7 lx (F1.6, 50IRE, 1/30)
< B&W mode >	0.3 lx (F1.6, 50IRE, 1/30)
White balance	ATW/AWC
Wide dynamic range function	Active gamma (Easy wide-D)
Backlight compensation	Yes (4 areas are selectable)
Shutter speed	Select from menu (1/60 s to 1/10,000 s)
Lens	
Zoom ratio	18x optical
Max. aperture ratio	F1.6
Auto focus	Easy AF/One push AF
Mechanism	
Preset position	100 positions
Panning	360° endless rotation
Panning speed	0.04 °/s to 400 °/s
Tilting	−5° to 185°
Tilting speed	0.04 °/s to 400 °/s
General	
Alarm I/O	Input × 2, Output × 2
Power supply	24 VAC/POE Plus
Power consumption	1.2 A (24 VAC/16W (POE)
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C) < 32 °F to 104 °F (0 °C to 40 °C) >
Dimensions	ø 10-1/4* inches × 15-1/8** inches × 13-3/4** inches (ø 260* mm × 385** mm (H) × 350** mm (D))
Weight (approx.)	12.2 lbs. (5.5 kg)
Network	
Network interfaces	RJ-45 (Cat 5): 10 BASE-T/100 BASE-TX
Protocol	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture Resolution (pixel)	1920x1080,1280x960, 1280x720, 720x480, 640x480, 640x360, 352x240, 320x240
Compression	Motion JPEG, H.264 (High/Baseline)
Frame rate	H.264: 1920x1080, 30fps, H.264: 30, 25, 15, 10, 7.5, 5 , 3, 2, 1 fps JPEG: 30, 15, 10, 7.5, 5 , 3, 2, 1 fps
Internal storage capacity	
Access protection	3 levels password, IP address filtering
Motion detection	Yes
Web server	Yes
Data transmission	Unicast/Multicast
System requirement (recommended)	
OS	OS :Microsoft Windows XP professional*, Windows Server 2003*, Windows Server 2008 R1*/R2* Windows Vista (Business*, Enterprise*, Ultimate*), Windows 7 (Professional*, Enterprise*, Ultimate*)
CPU	CPU : Intel Core2 Duo 2.4GHz or higher
Memory	More than 1 GB
HDD space	More than 512 MB
Display/Video card	1,024 × 768 pixels, true color (24-bit or 32-bit)

Multi Codec Network Video Recorder

VR-X1600U
H.264HP **System Information** **Powerd by Milestone**

Optional Accessory: **VR-HDD0U** HDD Tray

Viewer sample

Milestone XProtect Enterprise embedded
Powered by Milestone

Notes:
Milestone is a registered trade mark of Milestone Systems A/S'.
XProtect Enterprise is license software by Milestone Systems A/S'.

► Pre-installed Xprotect Enterprise software for user-friendly interface and easy operation
► Can be used as a stand alone unit without PC or as edge devices for Xprotect Enterprise
► 24/7 turnkey solution for reliable performance
► Master/Slave configuration for large system
► Up to 16-ch recorder fully camera licensed, optional license up to 16 channels by additional license pack JVCNVRCL (32-ch Max.)
► Support H.264 High profile/Motion JPEG/MPEG-4 camera recording
► Full HD out put for precise monitoring
► Built-in 1TB HDD with 3 additional expansion slots (Optional bracket VR-HDD0U is required)
► Maintenance friendly HDD installation mechanism from the front panel
► Support RAID 1, 5, 10 initially and RAID 6 optionally
► 2800 ips powerful recording maximum [H.264 VGA]
► Frame rate
    Recording : 2800ips* at H.264 VGA
               900ips at H.264 720P
               480ips at H.264 Full HD
               270ips at MJPEG VGA
        * Actual ips is limited by the spec of the max number of cameras.

► Available remote viewing and setup
► Open platform for systems enabling integration of third party devices

► PTZ preset positions are saved inside camera without using camera setup tool
► Two-way audio communication and sound distribution
► Available NAS archiving, Data export function

VR-X1600U rear

Multi Codec Network Video Recorder

VR-X3200U
H.264HP **System Information** **Powerd by Milestone**

Optional Accessory: **VR-HDD0U** HDD Tray

Viewer sample

Milestone XProtect Enterprise embedded
Powered by Milestone

Notes:
Milestone is a registered trade mark of Milestone Systems A/S'.
XProtect Enterprise is license software by Milestone Systems A/S'.

► Pre-installed Xprotect Enterprise software for user-friendly interface and easy operation
► Can be used as a stand alone unit without PC or as edge devices for Xprotect Enterprise
► 24/7 turnkey solution for reliable performance
► Master/Slave configuration for large system
► Up to 32-ch recorder fully camera licensed, optional license up to 32 channels by additional license pack JVCNVRCL (64-ch Max.)
► Support H.264 High profile/Motion JPEG/MPEG-4 camera recording
► Full HD out put for precise monitoring
► Built-in 1TB HDD with 3 additional expansion slots (Optional bracket VR-HDD0U is required)
► Maintenance friendly HDD installation mechanism from the front panel
► Initially support RAID 1/5/10, and optionally supported RAID 6
► 2800 ips powerful recording maximum [H.264 VGA]
  Frame rate
    Recording : 2800ips* at H.264 VGA
               900ips at H.264 720P
               480ips at H.264 Full HD
               270ips at MJPEG VGA
        * Actual ips is limited by the spec of the max number of cameras.

► Available remote viewing and setup
► Open platform for systems enabling integration of third party devices

► PTZ preset positions are saved inside camera without using camera setup tool
► Two-way audio communication and sound distribution
► Available NAS archiving, Data export function

VR-X3200U rear

Color Camera | Network Camera | Recorder | System Information | Technical Information | Glossary

Storage period

Storage period (VR-X1600U/VR-X3200U)

Built-in 1TB
(Hour)

Image size	H.264								JPEG							
	FullHD 30ips	720P 30ips	FullHD 15ips	720P 30ips	VGA 30ips	VGA 15ips	VGA 1ips	VGA (Low quality) 1ips	VGA, 35KB							
Bit rate	3.6Mbps	2Mbps	1.8Mbps	1Mbps	660Kbps	330Kbps	128Kbps	64Kbps	30ips	15ips	10ips	5ips	3ips	1ips	0.5ips	0.2ips
16ch/without sound	—	58	65	117	181	632	933	1866	—	—	47	93	156	467	933	2333
16ch/with 2ch sound	—	58	65	116	179	353	878	1659	—	—	47	93	154	452	878	2018
32ch/without sound	—	—	—	58	90	181	467	933	—	—	—	47	78	233	467	1166
32ch/with 2ch sound	—	—	—	58	90	179	452	878	—	—	—	47	77	230	452	1082

8TB (4TB internal + 4TB external, no RAID)
(Hour)

Image size	H.264								JPEG							
	FullHD 30ips	720P 30ips	FullHD 15ips	720P 30ips	VGA 30ips	VGA 15ips	VGA 1ips	VGA (Low quality) 1ips	VGA, 35KB							
Bit rate	3.6Mbps	2Mbps	1.8Mbps	1Mbps	660Kbps	330Kbps	128Kbps	64Kbps	30ips	15ips	10ips	5ips	3ips	1ips	0.5ips	0.2ips
16ch/without sound	—	481	534	962	1492	2984	7692	15384	—	—	385	769	1282	3846	7692	19230
16ch/with 2ch sound	—	479	532	954	1474	2913	7240	13675	—	—	383	764	1269	3730	7240	16632
32ch/without sound	—	—	—	481	746	1492	3846	7692	—	—	—	385	641	1923	3846	9615
32ch/with 2ch sound	—	—	—	479	741	1474	3730	7240	—	—	—	383	638	1893	3730	8918

4TB internal, RAIDIO
(Hour)

Image size	H.264								JPEG							
	FullHD 30ips	720P 30ips	FullHD 15ips	720P 30ips	VGA 30ips	VGA 15ips	VGA 1ips	VGA (Low quality) 1ips	VGA, 35KB							
Bit rate	3.6Mbps	2Mbps	1.8Mbps	1Mbps	660Kbps	330Kbps	128Kbps	64Kbps	30ips	15ips	10ips	5ips	3ips	1ips	0.5ips	0.2ips
16ch/without sound	65	117	130	237	368	736	1899	3797	—	63	95	190	316	949	1899	4747
16ch/with 2ch sound	65	116	129	235	364	719	1787	3375	—	63	95	189	313	921	1787	4105
32ch/without sound	—	—	65	119	184	368	949	1899	—	—	—	95	158	475	949	2373
32ch/with 2ch sound	—	—	65	118	183	364	921	1787	—	—	—	95	157	467	921	2201

The actual recording time varies depending on the camera settings, input image contents and condition of the hard disk. Use this table as a guide.

■ 2 weeks　■ 1 month　□ 3 months +

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

	VR-X1600U	VR-X3200U
Camera channel	16 (Up to 32-ch in total by additional channel option)	32 (Up to 64-ch in total by additional channel option)
Video compression	H.264/JPEG/MPEG-4	H.264/JPEG/MPEG-4
Audio compression	µ-law (64kbps) A/D 8-bit, Fs 8 KHz	µ-law (64kbps) A/D 8-bit, Fs 8 KHz
Analogue video input	—	—
Frame rate (720P, H.264)	Recording/Display/Distribution: 900/0/100 (without live viewing)	Recording/Display/Distribution: 900/0/150 (without live viewing)
Recording frame rate for analogue input	—	—
CPU and memory	Intel G6950 Dual-Core (2.8 GHz) RAM: 4 GB	Intel Core i3 (3 GHz) RAM: 4 GB
HDD capacity	1 TB	1 TB
Additional HDD	3 TB (Optional bracket VR-HDD0U is required)	3 TB (Optional bracket VR-HDD0U is required)
NAS	Yes	Yes
RAID	1/5/10, 6 (optional)	1/5/10, 6 (optional)
Master slave configuration	Yes	Yes
Export function	Export media: USB memory, CD-R/RW or DVD-R/RW (USB external) Export format: AVI (video), JPEG (image), database (internal format)	
Recording function	Alarm recording, Scheduled recording, Manual recording	
Playback function	Normal/Slow/Fast playback, fast forward and reverse, Frame-by frame playback, simulataneous playback/recording	
Search function	Time/Date search, Alarm search, Motion detection on playback images	
Security	Protected by user name and password	
Language	English	
Supported protocol	HTTP, SMTP (client), TCP, DHCP (client/IP lease), ARP, DNS (client), NTP, SNMP (Ver. 1 and 2c), DDNS, SMNP	

Minimum requirements for remote PC		
OS	Microsoft Windows XP Professional*, Windows Server 2003*, Windows Server 2008 R1*/R2*, Windows Vista (Business*, Enterprise*, Ultimate*), Windows 7 (Professional*, Enterprise*, Ultimate*)	*32-bit or 64-bit
CPU	Intel Core2 Duo, 2.4 GHz or higher	
RAM	1 GB	
Network	Ethernet, 100 Mbit or higher	
Graphic card	AGP or PCI-Express, minimum 1,024 × 768 (1,280 × 1,024 recommended), 16-bit color	
HDD capacity for installation	Minimum 100 MB free	
Software	DirectX 9.0 or newer required to run Playback Viewer application. Microsoft .NET 4.0 Framework	

Remote PC operation	Live viewing, Playback of recording images, Camera control, Data export	

I/F		
LAN 1	1000 BASE-T, 100 BASE-TX, 10 BASE-T	
LAN 2	1000 BASE-T, 100 BASE-TX, 10 BASE-T	
Serial	USB 2.0 × 6	
Display output	RGB × 1 DVI × 1 (Digital only)	
External storage	eSATA × 1	
Audio in	mini jack	
Audio out	mini jack	
Alarm terminal	Alarm in × 8 Alarm reset in, OPE on/off, Warning out, REC tally	

Power supply	120 VAC – 240 VAC	
Power consumption	Max. 1.2 A (120 VAC)	
Operating temperature	41 °F to 104 °F (5 °C to 40 °C)	
Dimension (W × H × D)	16-5/8 inchs × 5-5/8 inchs × 14-5/3 inchs 420 mm × 140 mm × 350 mm	
Weight (approx.)	20 lbs. (9.1 kg) excluding power supply	
Accessories	Startup guide, Power cord, Rack mount brackets	

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

Combination of brackets and cameras

Camera / Bracket	VN-H657U	VN-H657WPU	TK-C2201UA TK-T2101RU VN-237U VN-257U	TK-C2301WPRU TK-C2201WPUA VN-H237VPU VN-H257VPU VN-T216VPRU
Optional bracket				
RC-IPTZ	Yes	No	No	No
WM-IPTZ	Yes	No	No	No
PM-IPTZ	Yes	No	No	No
PM-OPTZ	No	Yes	No	No
CM-OPTZ	No	Yes	No	No
POLEM-OPTZ	No	Yes	No	No
PARM-OPTZ	No	Yes	No	No
PM-IFD	No	No	Yes	No
WM-IFD	No	No	Yes	No
RC-IFD	No	No	Yes	No
PM-VPOD	No	No	No	Yes
WM-VPOD	No	No	No	Yes
POLEM-VPOD	No	No	No	Yes
JB-VPOD	No	No	No	Yes
RC-VPOD	No	No	No	Yes
PM-EXT1	Yes w/Pendant Mount	Yes w/Pendant Mount	Yes w/Pendant Mount	Yes w/Pendant Mount
PM-EXT3	Yes w/Pendant Mount	Yes w/Pendant Mount	Yes w/Pendant Mount	Yes w/Pendant Mount
Bracket-free				
Recessed Mount	RC-IPTZ	No	RC-IFD	RC-VPOD
Direct Mount	Yes, Ceiling	Yes, Wall	Yes, Ceiling/Wall	Yes, Ceiling/Wall
Outdoor Installation	No	Yes	No	Yes

Mounting drawings and specifications

RC-IPTZ
Recessed PTZ
Ceiling Mount
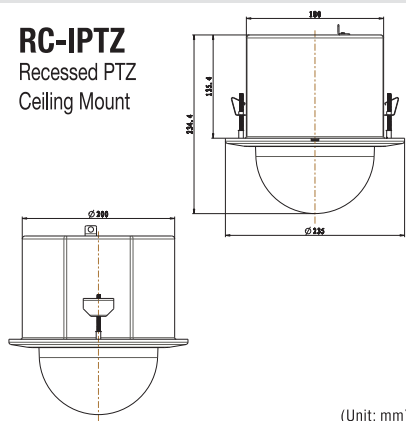
(Unit: mm)

RC-IFD
Recessed
Ceiling Mount
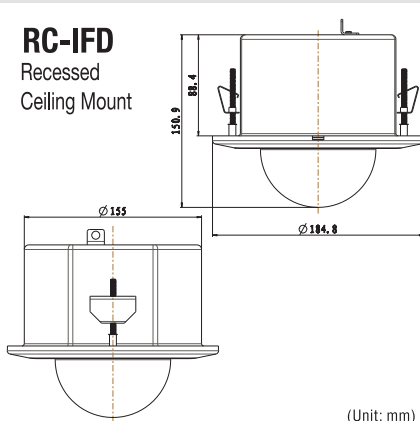
(Unit: mm)

RC-VPOD
Outdoor Recessed
Ceiling Mount

(Unit: mm)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary
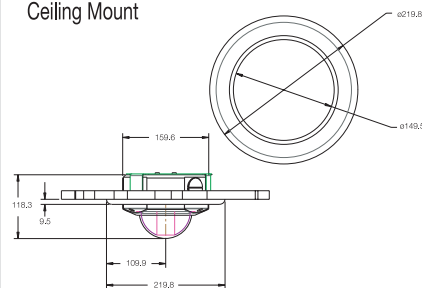
Mounting drawings and specifications

PM-VPOD
Outdoor Pendant Mount

(Unit: mm)
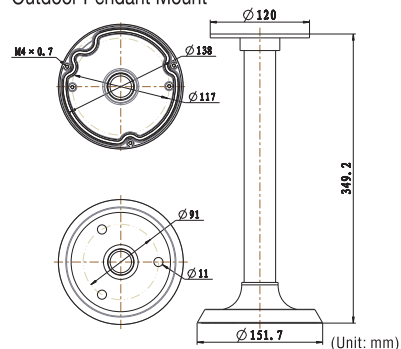
PM-OPTZ
Outdoor PTZ
Pendant Mount

(Unit: mm)

PM-IFD
Pendant Mount

(Unit: mm)
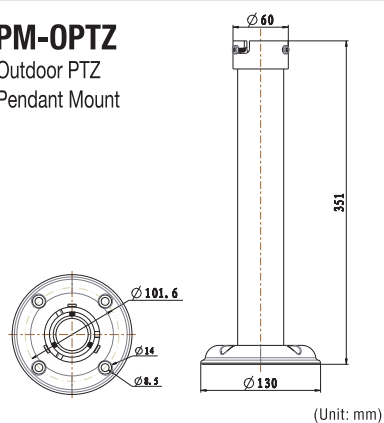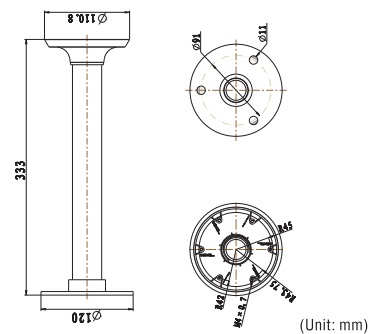
PM-IPTZ
PTZ Pendant Mount

(Unit: mm)
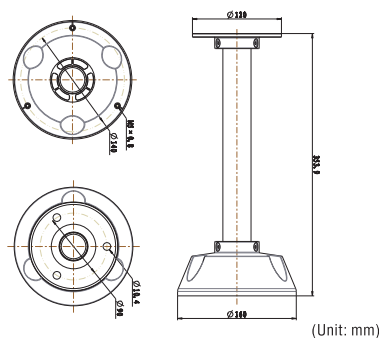
PM-EXT1
Pendant Mount Extension 1-foot for:

PM-IPTZ
PM-OPTZ
PM-IFD
PM-VPOD

(Unit: mm)
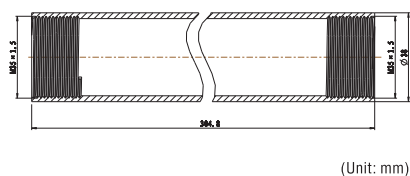
PM-EXT3
Pendant Mount Extension 3-foot for:

PM-IPTZ
PM-OPTZ
PM-IFD
PM-VPOD

(Unit: mm)

POLEM-OPTZ
Outdoor PTZ Pole Mount Adaptor

(Unit: mm)

POLEM-VPOD
Outdoor Pole Mount Adaptor

(Unit: mm)

PARM-OPTZ
Outdoor PTZ Parapet Mount

(Unit: mm)

WM-IPTZ
PTZ Wall Mount

(Unit: mm)

WM-IFD
Wall Mount

(Unit: mm)

WM-VPOD
Outdoor Wall Mount

(Unit: mm)

Color Camera
Network Camera
Recorder
System Information
Technical Information
Glossary

Mounting drawings and specifications

VN-T216VPRU
Direct Mount

10.79 ø155 68.15 24.73 47.5 ø6 24.73 64.42 64.42

• Weight: Approx. 3.0 lbs. (1.36 kg)

(Unit: mm)

TK-C2201UA
VN-H237U
VN-H257U
Direct Mount

△ Camera front

46 83.5 ø30 20 7.7 10

Cable direction

• Weight: Approx.
TK-C2201UA: 0.73 lbs (330g)
VN-V217U/H237U/H257U: 1.7 lbs (750g)

(Unit: mm)

TK-C2201WPUA
TK-C2301WPUA
VN-H237VPU
VN-H257VPU
Direct Mount

△ Camera front

42 113–121

• Weight:
Approx. 2.9 lbs. (1.3 kg)

(Unit: mm)

VN-H157WPU
Direct Mount

170 48.5 93.5 ø20 ø50

• Weight: Approx. 4.2 lbs. (1.9 kg)

(Unit: mm)

TK-T2101RU
Direct Mount

ø112 7 5 82 86

• Weight: Approx. 0.66 lbs. (300 g)

(Unit: mm)

VN-T216U
Direct Mount

ø125 82.5 92.5

• Weight: Approx. 1.1 lbs. (490 g)

(Unit: mm)

VN-H657U
Direct Mount

△ Camera front

120° 120° (ø140) (ø80)

• Weight: Approx. 4.2 lbs. (1.9 kg)
• Mansell number: Approx. 0.9PB8.5/0.4

(Unit: mm)

VN-H657WPU
Direct Mount

152 126 63 12 30 ø45 176 213 60 20

(Unit: mm)

VN-H557U
Direct Mount

△ Camera front

ø120 (4 46/64) Camera outer diameter FRONT Screw mounting hole 72 (2 53/64) CABLE 36 (1 27/64) 36 (1 27/64)

Unit:mm(Inch)

CM-OPTZ
Outdoor PTZ Corner Mount Bracket

M8×1.25 126.6 177.4 220 165 287.7 334.7

(Unit: mm)

JB-VPOD
Outdoor Junction Box Adaptor

83.15 62.7 120.9 90.4 45.2 62.7 119 (128.55) 4 ø49.4 165.7 UNC 10-24 ø5.1

(Unit: mm)

Mount legend:

WM = Wall Mount (for mounting a camera to a wall with a horizontal config.)
POLE = Pole mount adaptor, (for mounting a camera to a pole, works with Wall Mount)
PM = Pendant Mount (for mounting a camera hanging from the ceiling on a pendant)
PM-EXT1 = Pendant Mount Extension (1 foot extension for Pendant Mounts)
PM-EXT3 = Pendant Mount Extension (3 foot extension for Pendant Mounts)
RC = Recessed Ceiling (for mounting a camera inside the ceiling, plenum rated)
CM = Corner Mount (for mounting outdoor PTZ to the corner of a building)
PARM = Parapet Mount (for mounting the outdoor PTZ camera from a Parapet)
JB = Junction Box plate (for mounting the outdoor vandal proof dome to standard electrical junction box)

Camera legend:

IPTZ = Indoor PTZ (VNH657U, VNH657BU, VNV686BU, VNV685U, VNV686U)
OPTZ = Outdoor PTZ (VNH657WPU, VNH657WPBU, VNV686WPBU, VNV686WPU)
IFD = Indoor Fixed Dome (VNH257U, VNH237U, VNT216U, TKC2201U, TKC2101RU)
VPOD = Vandal Proof Outdoor Dome (VNH257VPU, VNH237VPU, VNT216VPRU, TKC2201WPU, TKC2301WPRU)

Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

VR-X1600U/X3200U series system configuration

VR-X1600U, VR-X3200U basic system configuration

Network cameras
Microphone
Speaker with amplifier
Mic amp
LAN or WAN
VR-X1600U VR-X3200U
Switch
NAS
Encoder
Analog cameras

1 Smart Client
2 Smart Client
3 Smart Client
10 Smart Client

Up to 10 clients are able to access to one VR-X1600U, VR-X3200U unit simultaneously at combined 80 ips = Max. 10 users can be logged in simultaneously

VR-X1600U, VR-X3200U system configuration with VN-H57U, VN-H157WPU, VN-H257U, VN-H257VPU audio function

Microphone
Speaker with amplifier
Listen to what is happening at the camera spot and give instructions/warnings by the operator
Microphone
Microphone
Speaker with amplifier
Mic amp
LAN or WAN
VR-X1600U VR-X3200U
Switch
NAS
Output the voice/warning through the laudspeaker and catch the sound around the camera by built-in mic or external mic
Microphone
VN-H57U, VN-H157WPU, VN-H257U, VN-H257VPU

1 Smart Client
2 Smart Client
3 Smart Client
10 Smart Client

Up to 10 clients are able to access to one VR-X1600U, VR-X3200U unit simultaneously at combined 80 ips = Max. 10 users can be logged in simultaneously

NVR viewer can hear the sound around the camera or the voice from NVR"Audio Source"

All GUI images are just sample.

Expanded system by Master/Slave configuration

Network cameras
Switch
Master NVR
VR-X series
NAS
Switch
Slave NVR1
VR-X series
NAS
Switch
Slave NVR2
VR-X series
NAS
Switch
Slave NVR3
VR-X series
NAS
Switch
Slave NVR6
VR-X series
It is strongly recommended that one Master/Slave system is configured with only the same series of VR-X.
LAN
LAN or WAN

1 Smart Client
2 Smart Client
3 Smart Client
10 Smart Client

Up to 10 clients are able to access to one VR-X series unit simultaneously = Max. 10 users can be logged in simultaneously

Color Camera

Network Camera

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1 Camera horizontal resolution chart

Horizontal resolution (TV line)

240	330	400	480	540	600
VHS standard mode	Excellent TV broadcast reception	S-VHS	High resolution		

TK-C1530U
TK-WD9601U

TK-C9300UA	TK-C2201UA
TK-C9200UA	TK-T8101WPRU
TK-C9510U	TK-T2101RU
TK-C8301RU	TK-C2201UA
TK-C2301WPRU	TK-C2201WPUA

2 Lens iris terminal
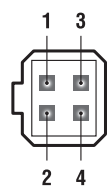
Lens Pin No.	DC iris does not contain EE amplifier	Video iris contain EE amplifier
1	Brake ⊖	9.5 V (max. 50 mA)
2	Brake ⊕	NC
3	Drive ⊖	VIDEO
4	Drive ⊕	GND

Object cameras: All box cameras have lens iris terminal.
TK-C9510U and TK-C1530U support DC iris/Video iris.

3 Wide dynamic range function   ExDR

Extended dynamic range (ExDR)

Under adverse backlighting conditions, conventional cameras can not make clear images. In this case, images in dark areas become almost black as pitch and images in bright areas become almost white. JVC's new digital signal processor (DSP) circuit, which enables the realization of a wide dynamic range function, solves these problems. By capturing clear images through the use of a low-speed shutter in dark areas and a high-speed shutter in bright areas and then combining these two images, a uniformly easy-to-view image can be achieved.

←— 1 frame —→   ←— 1 frame —→

CCD processing:

Dark areas	Bright areas
Shooting at 1/100 s	Shooting at 1/100 s to 1/200,000 s

Additional signal processing via the DSP →

Output image

←— 1 frame —→
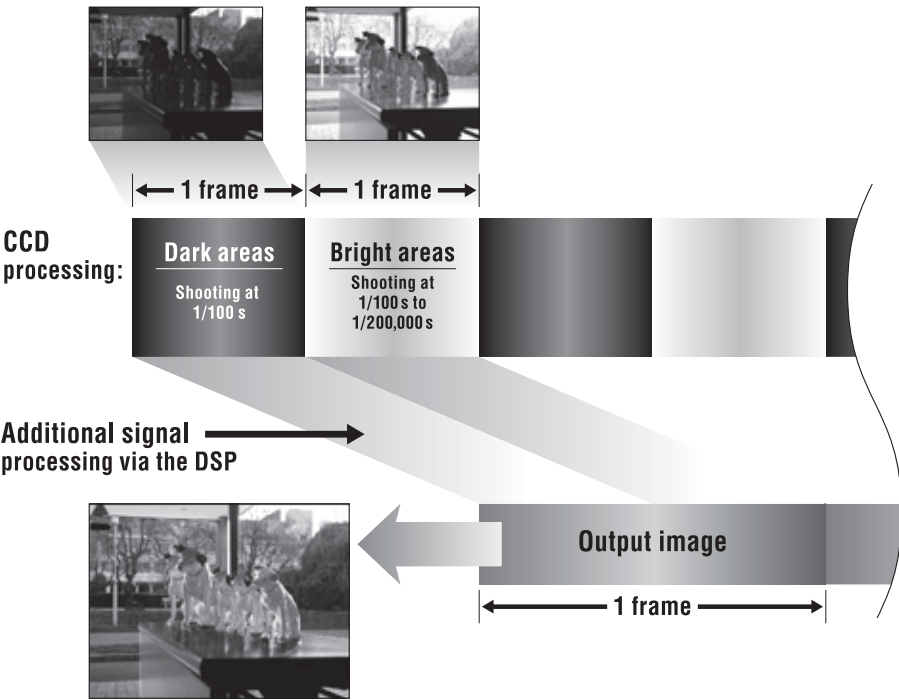
Selection guide for JVC line-up

		Morning	Day light	High contrast	Evening	Night time
		Auto tracking white balance (ATW)				

ExDR (W/IR on/off)	TK-C9510U TK-C9300UA TK-C8301RU TK-C2301WPRU	Auto iris normal mode	ExDR mode	AGC mode	IR cut filter off B&W mode
		Color			B&W

Summary
Ideal for
Morning Day light Evening Night time
Application example
• Banks • Retail shops • Prison

Super WDR	TK-WD9601U	Auto iris normal mode	WDR mode real time response	AGC mode	Easy day/night B&W mode
		Color			B&W

Summary
Ideal for
High contrast Evening
Application example
• Bank ATM • Train (platform) • Entrance

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4 | IR cut filter on/off function   `True D/N`

IR cut filter makes it possible to capture both color, black and white images with just one camera. This is done by turning the filter to "ON" when shooting in sunlight during the day for color images and turning it to "OFF" at night for black and white images. Therefore continuous twenty-four-hour surveillance is possible thanks to this function. * Noise will briefly occur on the screen when switching to the IR cut filter.

Spectral sensitivity characteristics of the CCD

Sensivity

1.0

0.5

0.0

New CCD

Spectral sensitivity characteristics of the CCD

New CCD + IR cut filter

Conventional CCD

400   500   600   700   800   900   1,000

Visible light range (color images)

IR range (B&W images)

Wavelength (nm)
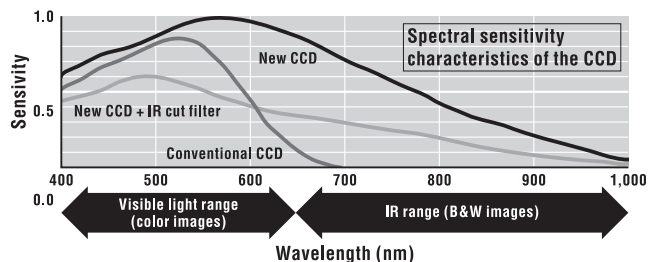
Object cameras: TK-C9300UA, TK-C9510U, TK-C8301RU, TK-C1530U, TK-T2101RU, TK-C2301WPRU, TK-T8101WPRU, VN-H37U, VN-H57U, VN-H157WPU, VN-T216VPRU, VN-H237VPU, VN-H257U, VN-H257VPU, VN-H557U, VN-H657U and VN-H657WPU

5 | Easy day/night function   `Easy D/N`

Camera uses color mode when the object is bright, and black and white mode when it is dark. (In this mode, AGC is always active regardless of the setting.)

Morning   Day light   High contrast   Evening   Night time

Auto tracking white balance (ATW)   AGC mode

Easy day/night off

Auto iris normal mode   AGC mode

Color

Easy day/night on

color signal off

Auto iris normal mode   AGC mode

B&W mode AGC more than 3.5 dB

Color   B&W
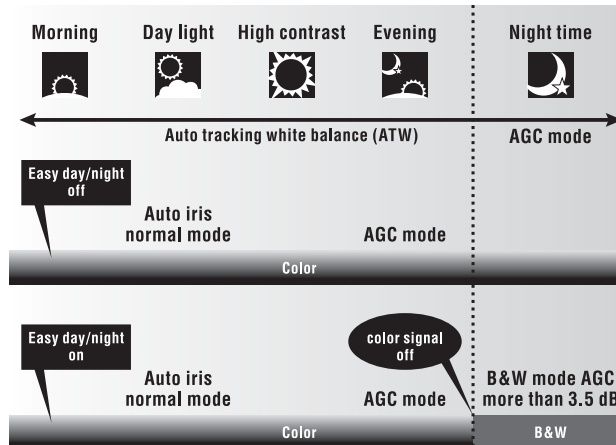
Object cameras: TK-C9200UA, TK-WD9601U, TK-C2201UA, TK-C2201WPUA, VN-T16U, VN-T216U, VN-H137U and VN-H237U

6 | 3D noise reduction   `3D Noise Reduction`

3D Noise reduction (3DNR) is the powerful method to provide clearer image with less noises even though it is shooted in dark places. The noise data is detected by comparing some continuous frames and the noise data is blended over time.

3DNR

Time   Time

Detect noise data by comparing the continuous frames

Reduce noise data by blending it into other frames over time

Normal   3DNR
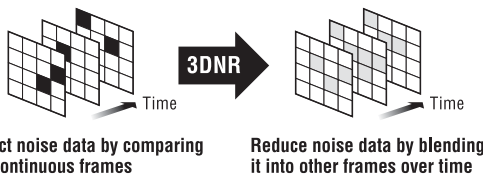
Object cameras: TK-C9300UA, TK-C9200UA, TK-C9510U, TK-WD9601U, TK-C8301RU, TK-C2201UA, TK-C2201WPUA, TK-C2301WPRU, VN-H37U, VN-H137U, VN-H57U, VN-H157WPU, VN-H237U, VN-H237VPU, VN-H257U, VN-H257VPU, VN-H557U, VN-H657U and VN-H657WPU

7 | CLVI — Clear Logic Video Intelligence   `CLVI`

CLVI — Clear Logic Video Intelligence is the image processing and adjusting technololy JVC developed originally offers superior wide dynamic performance, edge enhance and anti-fog capability. It assures clearer pictures by effectively compensating for strong backlighting or digitally removing ambient fog, haze or smoke.

Clear Logic Video Intelligence

C.L.V.I
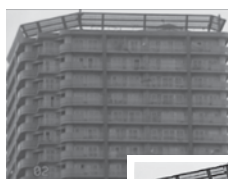
Wide dynamic range   **Edge enhancement**   **Anti fog**

Object cameras: TK-C9510U, VN-H37U, VN-H137U, VN-H57U, VN-H157WPU, VN-H237U, VN-H237VPU, VN-H257U and VN-H257VPU

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8 Focus adjustment function

When the focus adjustment function is turned "ON", the lens iris is focused fully open for about 30 seconds before returning to its original position. This results in a shallow depth of field (high-speed shutter) and makes it much easier to adjust focus.

What is depth of field ?

When a video is taken with the lens focused on the main object, there is a zone in which objects both in front of and behind the main object appear to be in focus. This zone is referred to as the "depth of field". When the zone of acceptable focus is broad, the depth of field is said to be "deep", and when the zone is narrow, the depth of field is said to be "shallow". If the depth of field is deep, the video will appear to be in focus from front to back. If the depth of field is shallow, however, only the main object will actually be in focus.

Depth of field	Shallow	Deep
Lens	Tele angle	Wide angle
Exposure	Open	Narrow
Position of object	Close	Far

Object cameras: TK-C9300UA, TK-C9200UA, TK-C9510U, TK-WD9601U, TK-C8301RU, TK-C1530U, TK-C2201UA, TK-C2201WPUA and TK-C2301WPRU

9 Privacy mask

Using the privacy mask function, operators can mask selected areas for the purpose of surveillance near privacy areas.

with privacy mask

without privacy mask

Object cameras: TK-C9300UA, TK-C9200UA, TK-C9510U, TK-WD9601U, TK-C8301RU, TK-C1530U, TK-C2201UA, TK-T2101RU, TK-C2201WPUA, TK-C2301WPRU, TK-T8101WPRU, VN-H37U, VN-H137U, VN-H57U, VN-H157WPU, VN-H237U, VN-H237VPU, VN-H257U, VN-H257VPU, VN-H557U, VN-H657U and VN-H657WPU

10 Active/Variable gamma function (Easy wide-D)

Gamma value is highly related to the total appearance of dark areas on the screen. Active gamma function provides automatic gamma adjustment according to the darkness of the image because of the backlight condition. Variable gamma function allows the users setup the gamma adjustment manually.

Normal
Near area is dark and can not be recognized against the lights.

Active/Variable gamma
Gamma is compensated so that the dark area can be recognized.

Object cameras of active gamma: VN-H557U, VN-H657U and VN-H657WPU

11 Display mode

By changing the "Monitor Type" setting according to the monitor used to display the video, the improved picture quality can be available. This setting is highly related to the value of gamma and enhance parameters. For example in CRT mode, dark areas are not reproduced with appropriate gray level and can be seen slightly whitish on LCD monitors, or some noises are visually-enhanced on black areas. Display mode can help reducing these kinds of problems happened by the characters of displays used.

Monitor type (mode)	
CRT	This mode offers the picture quality setting for CRT (cathode-ray tube) monitors.
LCD1/LCD2	This mode offers picture quality setting for LCD monitors, gamma and enhance value is tuned specifically for LCD monitors. LCD1 and LCD2 have different gamma values.
CUSTOM	Enables setting of picture quality according to the user's preference.

Object cameras: The models having the [Display mode] icon on the introduction pages have thsi function.

12 Image stabilizer

Image stabilizer function helps reduce image blur in cases where the camera is shook by the wind or vibrations coming from its surrounding. Stabilizer function is realized by two processes as following;

Process 1 : The sensor detects the direction, speed and range of vibration of the camera.

Process 2 : Cut out the appropriate area only from all pixels captured by CCD device depend on the detected direction, speed and range of vibration. The visible angle of view on the monitor is 1.3x magnified (digital zoom) image during the stabilizer function is effective to keep the margin of compensating and cutting out appropriate image.

Camera shakes this direction

Visible angle on monitor
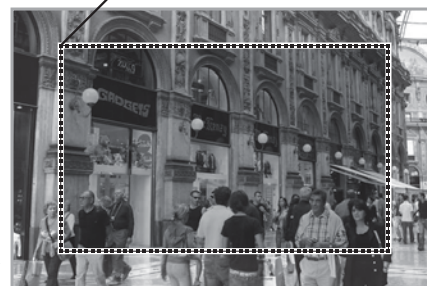
All pixels captured by CCD

Visible angle is compensated by cutting out to maintain the visible angle originally.
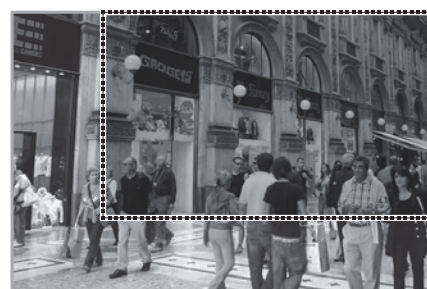
All pixels captured by CCD

Object cameras: VN-V685U, VN-V686BU and VN-V686WPBU

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13 Megapixel

Megapixel

The camera which has one million pixels or more image resolution is called "Megapixel camera". The image resolution provided by a megapixel camera is 4 to 6 times larger compared to a high-resolution analog camera or VGA size image of a network camera. The higher resolution image provides more detailed and precise image, that makes it possible to see or record the numbers, characters and faces precisely. Megapixel camera can shoot wider and larger area than non-mega pixel, it means much less number of megapixel cameras covers wide area. Megapixel resolution needs much more bandwidth and storage space than normal VGA resolution but H.264 format helps to save these network and storage resources effectively.
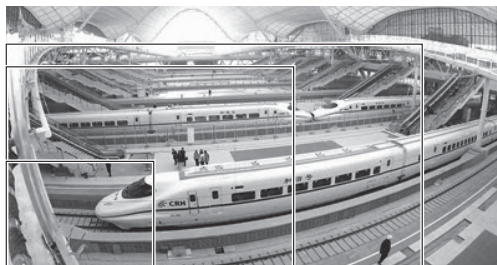
VGA/4CIF/PAL   Quad VGA   Full HD
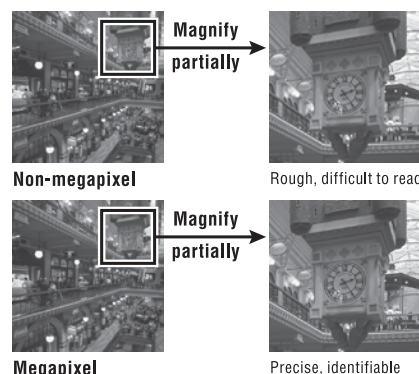
Magnify partially

Non-megapixel   Rough, difficult to read

Magnify partially

Megapixel   Precise, identifiable

Object cameras: VN-T16U, VN-H37U, VN-H137U, VN-H57U, VN-H157WPU, VN-T216U, VN-T216VPRU, VN-H237U, VN-H237VPU, VN-H257U, VN-H257VPU, VN-H557U, VN-H657U and VN-H657WPU

14 H.264 High Profile

H.264HP

H.264 standard can be classifyed according to a definition depending on each capability of encoding called "profile" which is targeting specific classes of applications. Many of visual equipment adopted Baseline profile and Main pfofile so far. High profile which is adopted by JVC is one of the upgraded version of Baseline profile and Main profile with new capability of "8×8 vs 4×4 Transform Adaptivity", "Quantization Scaling Matrices" and so on. High profile can support strongly both high compression and precise image quality compared with lower profile levels.

Baseline/Main profile

The same sampling and compression rate on each 4×4 pixels

Baseline/Main profile
Baseline/Main profile
Baseline/Main profile
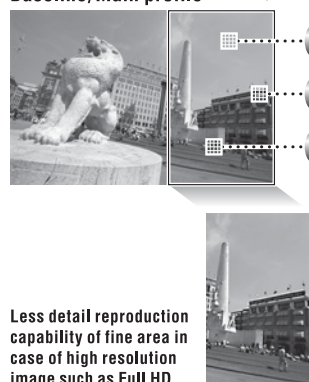
Less detail reproduction capability of fine area in case of high resolution image such as Full HD

High profile
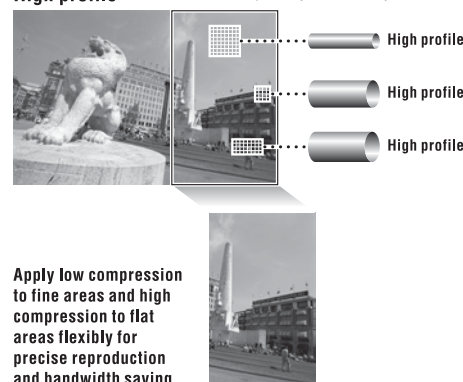
Flexible sampling and compression rate on each 8×8, 4×4, 8×4 pixels depending on the changes of tones

High profile
High profile
High profile

Apply low compression to fine areas and high compression to flat areas flexibly for precise reproduction and bandwidth saving

Object cameras: VN-T16U, VN-H37U, VN-H137U, VN-H57U, VN-H157WPU, VN-T216U, VN-T216VPRU, VN-H237U, VN-H237VPU, VN-H257U, VN-H257VPU, VN-H557U, VN-H657U and VN-H657WPU

15 Bi-directional audio

Bi-directional Audio

Bi-directional audio communication allows to listen to the sound or voice around the camera spot, and speak to or emit an alarm sound for the person near the camera at / from the monitoring room using the microphone and speaker attached at both side. This kind of function helps to make more advanced monitoring system with the capability of conversation and warning.

Speaker with amplifier

Microphone with amplifier
(VN-X35U, VN-H57U, VN-H157WPU, VN-V225U/VPU, VN-X235U/VPU, VN-H257VPU)

Built-in mic
(VN-V26U)

Headset

Network   VR-N1600U(A), PC*
*(with management software /e.g. VN-RS800U)
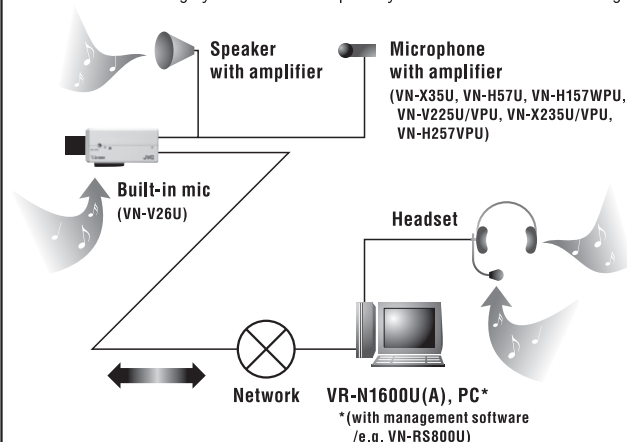
Object cameras: VN-T16U, VN-H57U, VN-H157WPU, VN-T216U, VN-T216VPRU, VN-H257U, VN-H257VPU, and VN-H557U

16 Fine focus adjust [Patent Pending]

For assisting focusing to the finest point, the Variable-Focal lens now incorporates a newly developed focus screw mechanism (Patent Pending).

Rough adjustment by the normal focus ring and lock screw.
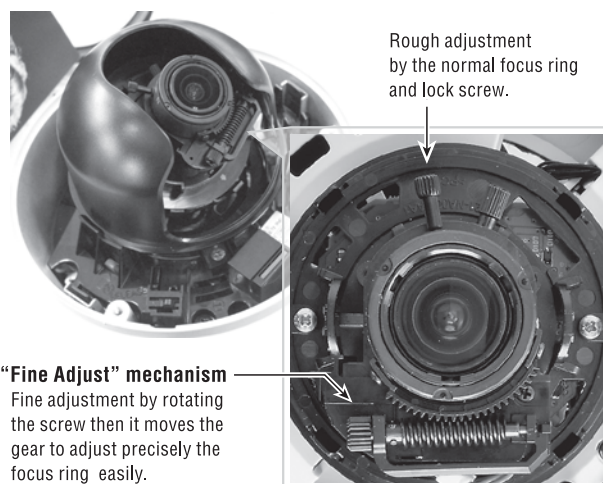
"Fine Adjust" mechanism
Fine adjustment by rotating the screw then it moves the gear to adjust precisely the focus ring easily.

Object cameras: TK-C2201UA, TK-C2201WPUA, VN-H137U, VN-H157WPU, VN-H237U, VN-H237VPU, VH-H257U and VN-H257VPU

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17 | Various functions of PTZ dome camera

Auto flip

With the function switched on, the camera automatically flips over 180 degrees when it reaches its tilting limit, making it possible for the camera to continue displaying right-way-up images once it has gone through the vertical.

The camera lens automatically rotates 180° horizontally when it reaches its tilting limit (90° vertically)
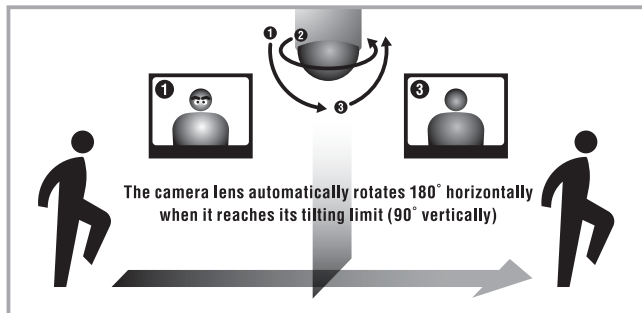
Digital flip

Digital flip inverts pictures on both vertical and horizontal axis once the tilt reaches 135 degrees, after the camera has passed through the vertical axis.

Auto pan

Use the Auto pan screen to set the Auto pan function, which allows the camera to be revolved slowly in a horizontal direction. Auto pan function has three modes, the return mode for continual movement between two positions, the right mode for clockwise rotation and the left mode for counterclockwise rotation.

Auto patrol

This function allows the camera to automatically move to multiple positions based on the preset position, sequence and time.

Object cameras: VN-H557U, VN-H657U and VN-H657WPU

Auto trace

Auto trace fu lets the operator repeat a series of manual camera operations performed over a period of 30 seconds. When Auto trace mode is activated, the 30 seconds sequence of manual operations is memorised and then automatically repeated every 30 seconds.

Auto return

The camera can be set to return automatically to its original position or to restart a specified operation (Auto pan or Auto patrol) at selected intervals.

AF for IR

Auto focus function activates when switching from color to black and white or vice versa, ensuring clear pictures even during switching.

Motion detection

The image view is divided into 48 separate sectors. In the setup menu the user can designate the sectors where movement is to be auto-detected, so triggering an alarm signal. The setup menu is smart and this serves to eliminate false alarms, making the JVC's PTZ dome camera very reliable surveillance device.

Auto tracking (VN-V685/686 series)
Intelligent auto tracking (VN-V685/686 series)

The camera can automatically track and shoot moving objects. Auto tracking function detects the moving object based on the brightness changes on screen when the camera is at the home position. Intelligent auto tracking function detects the moving object based on the specific color and keeps the same size of the object by zoom function. Both tracking function can be changed the sensitivity level of detection. The camera returns automatically to its home position after tracking if any movement can not be detected for a while depend on the setting.

18 | Direct drive for PTZ mechanism | Direct Drive

The newly developed direct drive rotation platform rotates the camera by motor mechanism instead of conventional belt drive mechanism. Smaller number of parts used inside this direct drive extends the life of pan/tilt movement mechanism than conventional method. The direct drive offers also the following advantages.

- **Accurate positioning**
  ±0.03° position accuracy
- **Fast movement**
  400° per a second at fastest
  : **VN-V685/686 series**
- **Slow movement**
  0.04° per a second at slowest
- **Silent pan/tilt movement**

Pan motor (inside)

Tilt motor
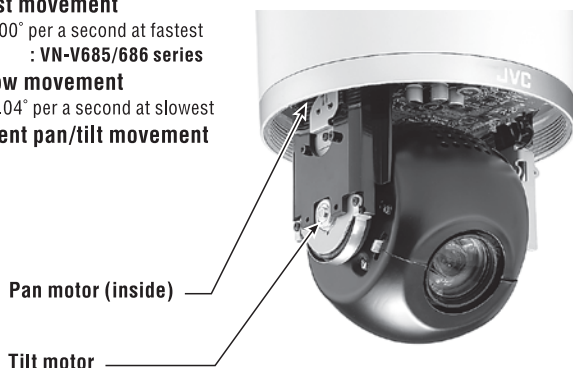
Object cameras: VN-H557U, VN-H657U and VN-H657WPU

19 | Vandal protection | Vandal Proof | Vandal Resistant | Vandal Protected
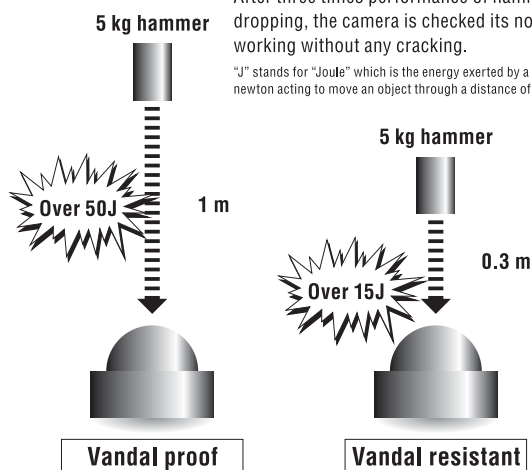
After three times performance of hammer dropping, the camera is checked its normal working without any cracking.

"J" stands for "Joule" which is the energy exerted by a force of one newton acting to move an object through a distance of one metre.

5 kg hammer

Over 50J — 1 m

5 kg hammer

Over 15J — 0.3 m

Vandal proof

Vandal resistant

Object cameras of vandal proof: TK-C2201WPUA, TK-C2301WPRU, VN-H237VPU, VN-T216VPRU and VN-H257VPU
Object cameras of vandal resistant: TK-C2201UA, VN-H237U and VN-H257U
Object camera of vandal protected: TK-T8101WPRU

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20 Dust and water protection (IP code)

Degrees of protection provided by electrical machinery and apparatus enclosures   IP66

IP-☐☐

↑ ↑ ↑ ↑

Protection

International
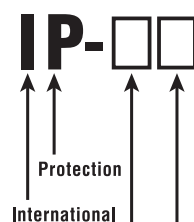
Degrees of protection against water

Second characteristic numeral	Degree of protection (summary)	Degree of protection (definition)
0	No protection	—
1	Protected against vertically falling water drops	Vertically falling water drops shall have no harmful effects
2	Protected against vertically falling water drops when the enclosure is tilted up to 15 degrees	Vertically falling water drops shall have no harmful effects when the enclosure is tilted at any angle up to 15 degrees
3	Protected against spraying water	Water sprayed vertically toward either side of the enclosure at an angle of up to 60 degrees shall have no harmful effects
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects
5	Protected against water jets	Water projected from a nozzle in jets against the enclosure from any direction shall have no harmful effects
6	Protected against powerful water jets	Water projected from a nozzle in powerful water jets against the enclosure from any direction shall have no harmful effects
7	Protected against the effects of temporary immersion in water	Temporary immersion of the enclosure in water under standardized conditions of pressure and time shall have no harmful effects
8	Protected against the effects of continuous immersion in water	Continuous immersion of the enclosure in water under conditions that shall be agreed upon between the manufacturer and user but which are more severe than those for numeral 7 shall have no harmful effects

Degrees of protection against solid foreign objects

First characteristic numeral	Degree of protection (summary)	Degree of protection (definition)
0	No protection	—
1	Protected against solid foreign objects of 50 mm diameter and greater	The object probe, a sphere with a 50 mm diameter, shall not fully penetrate
2	Protected against solid foreign objects of 12.5 mm diameter and greater	The object probe, a sphere with a 12.5 mm diameter, shall not fully penetrate
3	Protected against solid foreign objects of 2.5 mm diameter and greater	The object probe, a sphere of 2.5 mm diameter, shall not penetrate at all
4	Protected against solid foreign objects of 1.0 mm diameter and greater	The object probe, a sphere of 1.0 mm diameter, shall not penetrate at all
5	Dust protected	Penetration of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety
6	Dust tight	No penetration of dust

* Information regarding close proximity with dangerous places has been omitted.   * The full diameter of the solid probe shall not pass through the external opening.

Object cameras: TK-C2201WPUA, TK-C2301WPRU, TK-T8101WPRU, VN-H157WPU, VN-T216VPRU, VN-H237VPU, VN-H257VPU, and VN-H657WPU

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21 Easy installation

With an all aluminum die-cast camera case and specific poly carbonate cover, vandal proof cameras can withstand various rough environments while having a tough vandal proof structure. While it is tough on vandals and adverse environment conditions, this camera is user friendly. The following pictures illustrate the installation process of vandal proof cameras.
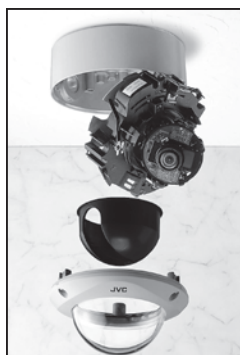
1. Pull out the camera unit by loosening the screws. *1
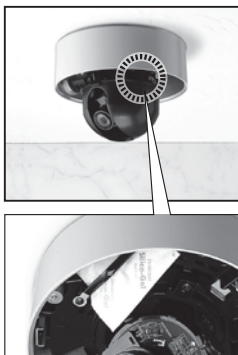
2. Mount the camera base to the ceiling using conduit. *2
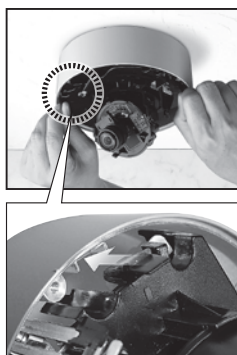
3. Slide the camera unit into the camera base and gently push until locks-in with a click.

4. Using a screwdriver secure the camera unit to the base by tightening the 2 screws.
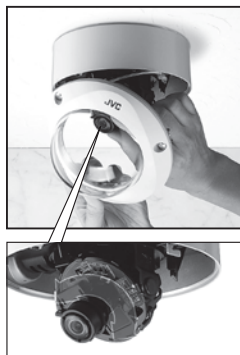
5. Adjust the angle and focus testing with the dome cover.

6. After lens setup, install silica gel bag and fit the inner cover.

7. Install and secure dome cover using supplied Allen hex wrench. Installation completed!

*1: These procedures showed by photos for leaflet and actually camera base and dome cover connected by a fall prevention wire.

*2: After wiring, video connectors should be inserted into camera unit.

Object cameras: TK-C2201WPUA, TK-C2301WPRU, VN-H237VPU and VN-H257VPU

22 One-touch lock installation

One-Touch Lock

Thanks to its "One-touch lock" mechanism, installation is extremely easy. Simply insert the camera unit to the bracket, and that's all, greatly reducing time and cost for installation and maintenance.

Eg.: Direct mount installation
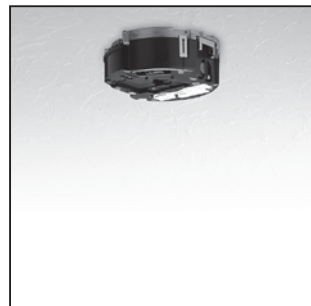
1. Screw the camera's ceiling mount section onto it at 3 points.

2. Push the camera straight up to the ceiling mount section. If done correctly, you will hear a click as it locks into place.

3. Installation completed!
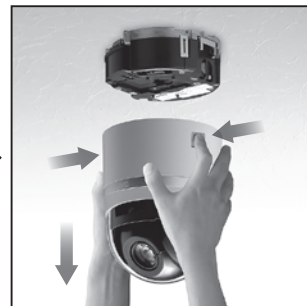
4. Detachment
To remove, press the Lock buttons located on both sides of the camera to release the locks, then pull the camera straight down.

Object cameras: VN-H657U and VN-H657WPU

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23 Relationship between focal length and field of view

This shooting is an image that was taken with a distance of 10 meters between object and camera.

1/4"

1/3"

Lens focal length

Simplified chart

Lens focal length (mm)	Horizontal angle of video (degree)	Vertical angle of video (degree)
1.8	90°	74°
2.6	69°	55°
3	62°	49°
3.8	51°	39°
4	49°	37°
6	33°	25°
8	25°	19°
12	17°	13°
48	4.3°	3.2°
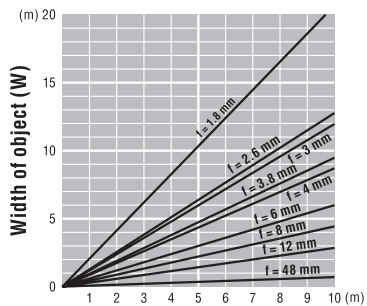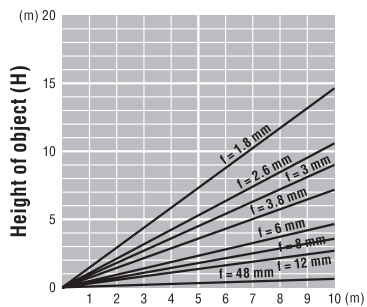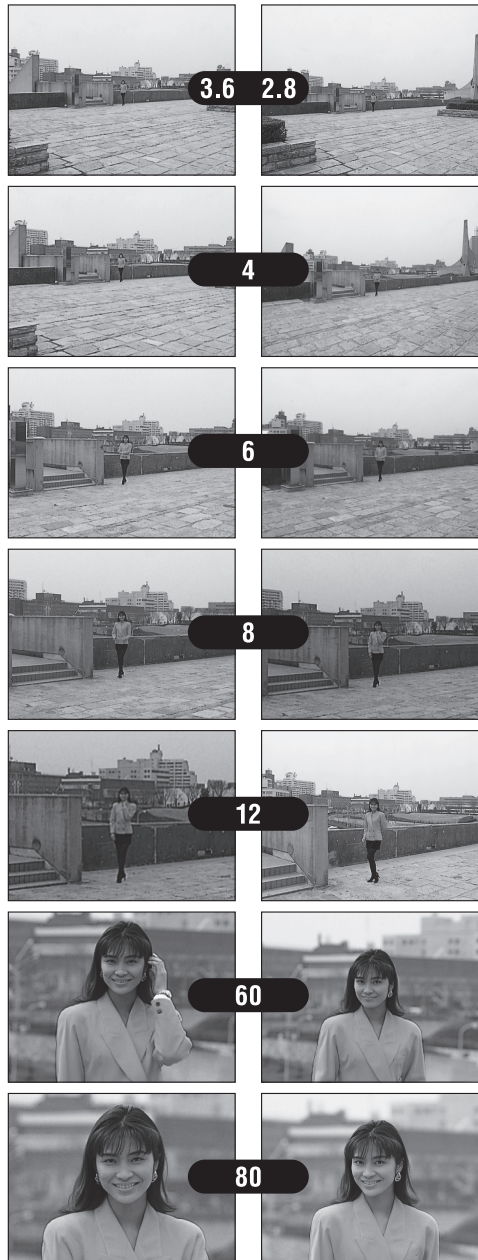
Simplified chart

Lens focal length (mm)	Horizontal angle of video (degree)	Vertical angle of video (degree)
2.8	81°	66°
4	62°	48°
4.8	53°	41°
6	44°	33°
8	33°	25°
12	23°	17°
16	17°	13°
48	6°	5°
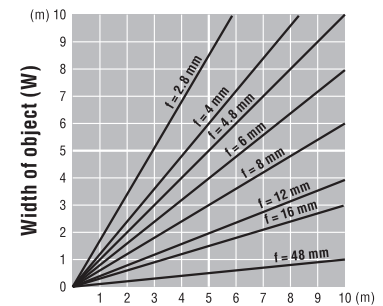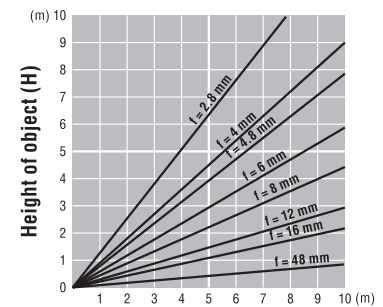
3.6   2.8

4

6

8

12

60

80

Width of object (W) vs Distance between object and camera (L) — 1/4"

f = 1.8 mm, f = 2.6 mm, f = 3 mm, f = 3.8 mm, f = 4 mm, f = 6 mm, f = 8 mm, f = 12 mm, f = 48 mm

Height of object (H) vs Distance between object and camera (L) — 1/4"

f = 1.8 mm, f = 2.6 mm, f = 3 mm, f = 3.8 mm, f = 6 mm, f = 8 mm, f = 12 mm, f = 48 mm

Width of object (W) vs Distance between object and camera (L) — 1/3"

f = 2.8 mm, f = 4 mm, f = 4.8 mm, f = 6 mm, f = 8 mm, f = 12 mm, f = 16 mm, f = 48 mm

Height of object (H) vs Distance between object and camera (L) — 1/3"

f = 2.8 mm, f = 4 mm, f = 4.8 mm, f = 6 mm, f = 8 mm, f = 12 mm, f = 16 mm, f = 48 mm

• This shooting is an image that was taken with a distance of 10 meters between object and camera.

Formula

$$W = \frac{X}{f} \times L$$

$$H = \frac{Y}{f} \times L$$

$$\left(H = \frac{3}{4} \times W\right)$$

Parameter chart

CCD size	1/2"	1/3"	1/4"
X	6.4	4.8	3.6
Y	4.8	3.6	2.7

W = Width of video (m)
H = Height of video (m)
f = Focal length of lens being used (mm)
L = Distance between object and camera (m)
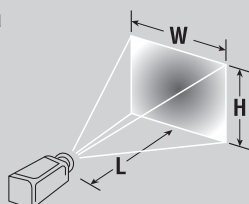
• Image range of monitor (width, height and angle) is 10 % less than that of actual data.
• Due to distortion that occurs with a wide-angle lens, actual angle of taken image will be wider than calculated value.

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24 Network specific information

IP adress

What is a private (local) IP address ?
Private IP address is an IP address that can be used freely as a LAN network address without being connected to the Internet.

What is a global IP address ?
Global IP address is an IP address that is assigned to a device connected to the Internet. This address is indispensable for carrying out transmissions via the Internet. "192.168.0.2" is the IP address set in the initial settings for JVC IP products.

Example:
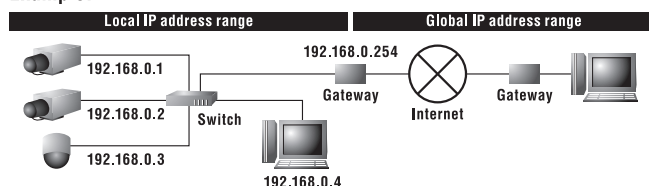
Simultaneous access by multiple users

The frame rate (or bit rate), which refers to the number of images that can be transmitted by JVC IP products within a second, is decided according to the specifications of JVC IP products. Within the range of specification approximately 10 users can simultaneously access JVC IP products. However, when a large number of users simultaneously access JVC IP products, there may be a decline in the frame rate or image quality.

Unicast and Multicast

Unicast transmission
Since unicast involves one-to-one transmission between two terminals (e.g. between a camera and a monitoring PC), it is necessary for the bandwidths to be equivalent to the number of terminals when identical information is to be acquired by several terminals.
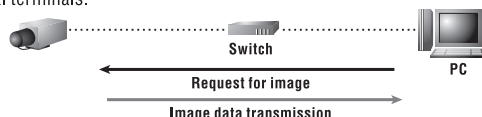
Multicast transmission
Since multicast is used to transmit a single packet to multiple terminals, the data transmission volume decreases regardless of the number of terminals. Multicast requires a compatible network device.
* Remote surveillance via the Internet cannot be carried out with a multicast system.
* Multicast systems require an optimum network design.
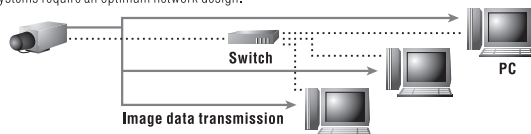
PoE (Power over Ethernet) `PoE`

PoE supplies the electric power to the network camera by using LAN cable (Cat 5). Easy installation like JVC analog cameras is available with single cable. It doesn't require data cable and AC power cable separately.
PoE compliant network switch or power injector is required for PoE installation.
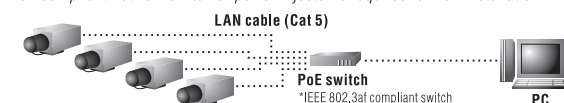
Alarms

JVC IP cameras have two inputs and two outputs alarm terminals. Either a less voltage a-contact or c-contact output-type alarm input sensor should be employed. Since alarm output is NPN open collector output, NPN open collector output must be converted to less-voltage a-contact output when using a general sequencer. In addition, it is important to note that the GND must be connected to a control device. In the event that the control device has no GND, the JVC IP camera's GND should be connected to the COM terminal. When distributing an alarm to several multi-viewers or recorders with a single camera, it is possible to make actions depend on the function of devices.

File size

JPEG recorded file size calculation for 1 camera
JPEG data size per image (approximate data)

Resolution	Compression rate (kB)						
	1	2	3	4	5	6	7
160 × 120	9	6	4	3	3	3	2
320 × 240	22	15	10	9	8	7	6
340 × 480	59	37	24	19	17	16	15
640 × 480 (fine mode)	65	41	27	21	19	18	17

Example:
Camera setting: Resolution 320 × 240, Compression rate 2, Frame rate 2 fps

Q: What is the file size for 1 day recording ?
A: 15(kB) × 2(fps) × 86,400(s) = 259,200(kB) = **2.59(GB)**

Q: How many days is the recording possible with 40 GB HDD ?
A: 40(GB) ÷ 2.59(GB) = 15.444 = **15(days)**

Bit rate of JPEG stream

JPEG traffic = Data size per image × Frame rate × 8 (bit/byte)
For example, when 10 fps is requested by two clients, and in addition, multicast is transmitted at a rate of 10 fps, the total frame rate will be:
10 + 10 + 10 = 30 fps
If the JPEG file size per frame is 30 KB, then the total bit rate will be:
30 KB × 30 fps = 900 KB/s = Approx. 7.2 Mbps

Bit rate of MPEG-4 stream

You can select either the Variable Bit Rate (VBR) or Constant Bit Rate (CBR) system for MPEG-4 stream. When the VBR system is selected, the bit rate varies according to the condition of the input video signals. The VBR system delivers a stable picture quality, but forecast of the bit rate is difficult. When the CBR system is selected, encoding is performed at a fixed bit rate regardless of the condition of the input video signals. The picture quality varies under the CBR system, but the bit rate can be easily forecast. You can specify an estimated bit rate for both VBR and CBR. (64 kbps – 8,000 kbps)

Bit rate of audio (In case of VN-V26U, VN-X35U, VN-V225U/VPU and VN-X235U/VPU)

Up to 2 audio data streams can be sent by VN-V26U and only 1 audio data stream can be received. Data volume for 1 audio stream is 64 kbps.
Audio data volume = 64 kbps × Number of streams

The number of streams is the total number of streams sent via TCP (number of clients), streams sent via multicast, and stream received by VN-V26U.
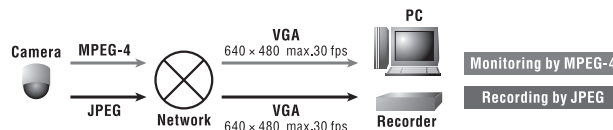For example, when VN-V26U sends out 2 audio streams and receives 1 audio stream, data volume will be as follows.
64 kbps × 3 streams = 192 kbps

Dual stream (MPEG-4 & JPEG) `Dual Stream`

As example, simultaneously able to use both monitoring by smooth MPEG-4 picture and recording by high quality JPEG.

API (Technical information for software developers)

API (Application program interface): UDP, HTTP data and other communicative specifications that include the structures of control data, JPEG/MPEG data and some examples of sequence until image data is acquired. API is available for integrating JVC IP products into customers own application software or system. In order to receive these JVC technical information, please contact local JVC sales office.

Local JVC sales office :
website address: http://pro.jvc.com | e-mail: proinfo@jvc.com

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A **Automatic gain control (AGC)**
Using a circuit built into the camera, gain control makes it possible to automatically maintain a constant output signal level even if there are changes in brightness. This makes it possible to obtain a picture with the same level of brightness regardless of whether it is taken in a dark or bright place. (Noise may slightly stand out.) When a strong signal exceeding the set level is input, signal saturation is prevented by controlling gain. In the event that a weak signal is input, the signal is raised to correspond with the set level and this fixed level is maintained.

Application program interface (API)
This refers to the instruction and function sets that can be utilized when developing software as well as the established rule set for the program procedures that are necessary for employing these instruction and function sets.

Automatic electronic shutter (AES)
This is a function that automatically controls the device output level according to the incident light amount by utilizing the electronic shutter function of a solid-state image device.

Auto negotiation
Auto negotiation is regulated by IEEE 802.3u. This function can be used to determine the appropriate transmission system for the corresponding device (Hub etc.) as well as select the optimum (highest possible speed) transmission method prior to transmission. When the corresponding device supports two or more of the transmission systems as well as the auto negotiation function, the high-priority items (fast transmission speed etc.) are given precedence. In the event that the corresponding device does not support the auto negotiation function, the transmission speed is automatically selected, but the automatic selection of full-duplex/half-duplex is not performed and half-duplex is always chosen.

Auto white balance (AWB)
When using CCD or film, pictures often come out reddish or greenish (orangish or bluish) in color when taken under incandescent or fluorescent light. AWB makes it possible to adjust white color balance under a wide variety of light sources. Automatic tracking (tracing) white balance (ATW), automatic white balance (AWB), automatic white balance control (AWC), manual mode and other features are available.

B **Backlight compensation (BLC)**
With backlight scene, the auto iris function responds to the bright portion of the screen, thus causing the iris to narrow and resulting in the "darkening of the subject" phenomenon. Backlight compensation is a function that can be utilized to correct this phenomenon.

C **Category 5 (Cat 5), Category 6 (Cat 6)**
This refers to the quality assurance of connection parts such as unshielded twisted pair (UTP) cables and connectors. For 100 BASE-TX, category 5 and above are used, category 5e and above are required for 1,000 BASE-T, and category 6 are used for 1,000 BASE-TX.

Charge coupled device (CCD)
A charge coupled device is a semiconductor device that converts images to electrical signals.

Closed circuit television (CCTV)
Refers to a system of cameras and video accessory devices over a internal cabling path. Differs from broadcast video.

CSMA/CD
This is an access control method utilized for ethernet transmissions. When collisions occur due to multiple terminals attempting to simultaneously make transmissions, the transmissions are stopped and then resumed after an appropriate amount of time has passed.

D **Dynamic host configuration protocol (DHCP)**
This protocol is employed to automatically allocate IP addresses to clients when they turn on their PCs and then retrieve these addresses from them when they switch off their computers. On the server side, it is only necessary to collectively prepare several DHCP-client-use IP

addresses. It is also possible to simultaneously provide clients with information such as gateway addresses, domain names and subnet masks.

Domain name system (DNS)
This system is used to replace IP addresses, which are expressed on the Internet with numerals (e.g. 255.254.253.0), with domain names that are easy to remember. On the internet, there are servers referred to as DNS servers that have IP address and domain name tables. By connecting to DNS servers, users can access the server that possesses the IP address via the domain name.

Digital signal processor (DSP)
This processor converts the input analog signal to a digital signal and then performs a variety of signal processing tasks. Thus, unlike analog processing, it is possible to produce stable and clear images without signal degradation within the circuit.

Dynamic range
This refers to the range within which the reproduction of images can be performed without adversely affecting gradation. The amount of light necessary for the luminance signal to reach the white peak at 100 IRE (100 % video level) is defined as 1, and this is the ratio of the amount of light with which it is possible to perform the reproduction of images without clipping even when more light comes in than the amount stated above. In general, this is expressed in dB, % and times.

E **Electronic sensitivity up**
This is a function used to increase sensitivity by lengthening image device storage time beyond the norm or adding image signals to image memory via frames or field units.

Electronic zoom
This is a function that employs the scanning variable of an image device or image memory rather than an optic lens to electronically enlarge or shrink the image on the screen.

Ethernet
This is the LAN standard devised by Xerox Corporation, DEC. Corporation (currently a branch of Compaq Computer Corporation) and Intel Corporation, and has been standardized by the IEEE 802.3. CSMA/CD has been adopted for data transmission over networks.

F **Firewall**
This is a software system that is used to prevent unauthorized entry into an organization's computer network from the outside. It also refers to computers with built-in firewall systems.

Frame rate
This rate is established by JVC IP Products and refers to the number of frames transmitted per second for JPEG and MPEG-4 images. The maximum frame rate is fixed for each image size depending on the specifications of the respective JVC IP Products models.

File transfer protocol (FTP)
This is one of the communications protocols used when exchanging files over the Internet. FTP is employed as the standard Internet file transfer method. Selecting FTP can often save time when downloading.

FTP client function
This function makes it possible to periodically upload images from the camera (JPEG still images only) to any FTP server.

Full duplex
This is a transmission method by which it is possible to send and receive data simultaneously.

F number
This is a number that represents lens brightness; the smaller number, the brighter lens. The relationship between brightness (F number), focal length (fl) and effective diameter (D) is described by the following equation: $F = fl/D$.

G **Genlock**
This is a type of external sync system with a function that synchronizes external sync signals with frequency and phase. There are three types of genlock input signals: composite sync signals (composite SYNC), composite video signals (VBS or VS) and black burst signals (BBS).

H **H.264**
One of the latest video compression scheme in the MPEG-4 format. H.264 is sometimes referred to as "MPEG-4 Part 10" or as "AVC". It is becoming the digital video standard for consumer electronics and personal computers thanks to the better compression efficiency than precious compression schemes.

Half duplex
This is a transmission method by which data cannot be sent and received simultaneously, but rather can only be transmitted in one direction at a time.

Hyper text transfer protocol (HTTP)
This is a protocol used by World wide web (www) servers and web browsers for sending and receiving information such as files.

I **The institute of electrical and electronics engineers 1394 (IEEE 1394)**
This is a next-generation, high-speed SCSI standard used to connect computers with peripherals and other devices. Both daisy-chain connections of up to 63 devices and tree connections are made possible by this protocol. The transfer speeds of 100 Mbps, 200 Mbps and 400 Mbps have been standardized.

Internet Group Management Protocol (IGMP)
This is a protocol provides a way for an Internet computer to report its multicast group membership to adjacent routers. Multicasting allows one computer on the Internet to send content to multiple other computers that have identified themselves as interested in receiving the originating computer's content.

IPv6
IPv6 stands for Internet Protocol version 6. It is the second version of the Internet Protocol to be used generally across the virtual world. The first version was IPv4 and the main upgrades in IPv6 is in the number of addresses available for networked devices. This is mainly due to the number of bits in each protocol. IPv4 addresses have 32 bits in them and so allow a maximum of four billion addresses. IPv6 addresses have 128 bits. However, IPv4 is still the protocol of choice for most of the Internet currently.

Iris
The iris controls the amount of light taken in by the lens when changes in illumination occur. A manual iris lens is used when luminance is fixed, and an auto iris lens is used in cases when luminance changes according to the time of day.

J **Joint photographic coding experts group (JPEG)**
This is a standard established by ITU-TS (International Telecommunication Union: formerly known as CCITT) and ISO (International Organization for Standardization) that decides the compression and expansion of color still images. This technology makes it possible to compress still images from a scale of 1/10 to 1/100. Although one of the disadvantages of this is that both compression and distribution are time consuming, compressibility can be modified; this means that by altering the degree of deterioration in image quality during compression it becomes possible to choose from among image quality, file size and processing time.

L **Local area network (LAN)**
This refers to the connection of multiple computers or peripherals over a network within a confined area such as the same building, site or organization. Correspondingly, a computer network that goes beyond buildings or sites to connect LAN between remote locations is referred to as a wide area network (WAN).

Lens mount
Cameras have different types of lens sockets including C mount, CS mount and bayonet mount. C and CS mounts are screw-type mounts; C mounts have a flange focal length of 17.526 mm and CS mounts have a flange focal length of 12.5 mm. Bayonet mounts are often employed in three-chip cameras and this type of mount conforms to the standard for studio-use cameras.

Line lock
This is a function that synchronizes the camera's vertical synchronizing signal with the frequency of the commercial power supply. The function can be used to reduce hum noise induction to the video signal and illumination flicker. If the image output of several cameras is switched, vertical synchronization disturbance, which occurs on the screen, can be prevented.

M **Media access control (MAC) address**
This refers to the unique address allotted to all devices connected to LAN, and is represented as a 16 base, 12 digit, 48-bit (6 byte) address. The high 3 bytes are assigned by the device's vendor ID and the low 3 bytes are assigned by a unique number from the vendor.

Minimum illumination
The minimum level of object illumination required for security cameras is referred to as "minimum illumination". The lower this value is, the higher the sensitivity of the camera. This value also serves as an indication of how dark of a place shooting can be carried out in. It should be duly noted that minimum illumination changes depending on both the F number of the lens being used and the reflectance of the object. If a security camera is used at a level close to the minimum illumination, the image may become blurred. Since this is undesirable, we recommend that sufficient illumination be used.

Motion detection
This is a function that alerts you with an alarm when there is motion in the image.

Motion JPEG
This is a technology that makes it possible to decompress still JPEG images at a high speed as well as make them appear as if they are moving by showing them in succession. This can also refer to the moving image data or the codec that performs compression/decompression. Unlike MPEG data, which only records differential information between the frames of a moving image, Motion JPEG makes it possible to edit any portion of a moving image because each frame is saved as a still image.

Moving picture coding experts group/ Moving picture experts group (MPEG)
There are numerous standards such as MPEG-1, MPEG-2 and MPEG-4 for technologies utilized to compress digital moving images. MPEG-1 takes into account storage/playback on storage media such as CD-ROM and has playback quality equivalent to that of VTR. MPEG-2 takes into consideration usage with broadcast media and has playback quality equivalent to that of HDTV. MPEG-4 is aimed at the distribution of low-quality images at a high compression rate through the use of a slow-speed network.

MPEG-4
One of the latest audio and video compression method standared by MPEG group. This format is designed specially for low-bandwidth, less than 1.5Mbps video/audio encoding purposes. MPEG-4 itself is not just one unified encoding mechanism, but rather a group name for several styles of video and audio encoding methods, referred as "profiles" or "layers".

Multicast
This is a method that makes it possible to simultaneously transmit the same data to several specified computers.

N **NAS**
Network Attached Storage (NAS) is a hard disk storage system which is designed to be attached to a computer network. NAS allows more hard disk storage space to be added to a network that already utilizes servers without shutting them down for maintenance and upgrades.

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Network address port translation (NAPT)
Network address port translation is the official name for IP masquerade. This technology is used to effectively utilize scarce IP address resources by converting IP addresses and TCP/IP port numbers between two networks (WAN/LAN).

Network address translation (NAT)
This technology makes it possible to mutually convert private and global IP addresses as well as transparently access these addresses. NAT functions are incorporated in a router.

Network time protocol (NTP)
NTP is a time information protocol that is used as a standard on the Internet. SNTP is a simplified version of NTP.

O OLE control extension (OCX)
OCX is a software component based on OLE2.0. Although the correct term is OLE control, the filename extension is "OCX", and therefore it is primarily referred to as OLE control extension. It is also called Active X.

OSI reference model
This model shows the protocol guidelines and its functions are separated into a total of seven layers. The upper layer of the model, which is closest to human interface, consists of three layers: the application layer, the presentation layer and the session layer. The lower layer, which is used for transmission purposes, consists of four layers: the transport layer, the network layer, the data link layer and the physical layer.

P Personal computer memory card international association (PCMCIA)
PCMCIA stands for personal computer memory card international association and regulates cards and slots related to PC cards.

Port address translation
This technology is used to convert IP addresses and TCP/UDP port numbers between two networks (WAN/LAN) and effectively utilize scarce IP address resources. This is also referred to as IP masquerade or NAPT.

Port number
This is the upper layer process of an IP that accepts information from the lower layer. TCP and UDP network protocols are identifiers used to differentiate between programs.

Protocol
This term refers to the rules of transmission. Protocol provides a definition of the procedures that should be followed when sending and receiving data.

R Redundant array of independent disks (RAID)
This is referred to as a RAID disk array and is a means by which multiple hard disks can be combined to be utilized like a single disk and reliability and processing speed can be increased. Although there are seven different types of RAID ranging from RAID 0 to RAID 6, only RAID 0, 1, 5 and combinations of these types are actually used.

Resolution
Resolution is the scale used to express the degree to which a screen is clear or blurred. Both horizontal resolution and vertical resolution are indicated using actual numbers and are also employed as scales for representing camera performance. In fact, horizontal resolution is generally utilized to compare performance. It can be said that the higher number, the better image quality.

Real-time transport protocol (RTP)
This is a transmission protocol used for streaming playback of sound or images. In UDP-type protocols, for which packet-loss countermeasures, transmission time guarantees, etc. are not implemented, effective bandwidth and delay time are usually sent to the server via RTCP. The server adjusts the quality of the data to be sent via RTP according to the transmission status information it has received and then sends the data.

Router
An electronic device that connects a local area network (LAN) to a wide area network (WAN) and handles the task of routing messages between the two networks.

S S/N ratio
In analog and digital communications, signal-to-noise ratio, often written S/N or SNR, is a measure of signal strength relative to background noise. The ratio is usually measured in decibels (dB). The higher the ratio, the less obtrusive the background noise is.

Smear
This is a phenomenon in which vertical streaks appear above and below brightly lit spot lights or objects in images with especially high luminance. When an excessive amount of light enters a solid-state image device, an unnecessary electric charge occurs in the vertical transfer section, thereby causing this phenomenon.

Simple network management protocol (SNMP)
This is a protocol used to form a network management system on a TCP/IP network. There is a manager and an agent; the manager inquires about network management information and the agent responds to these inquiries. The manager function is performed by an exclusive SNMP manager software program and the agent function is carried out by telecommunications equipment such as a router or Switching-Hub.

Subnetmask
A filter used to determine what subnet an IP address belongs to. An IP address has two components, the network address and the host address. For example, consider the IP address 150.215.017.009. Assuming this is part of a Class B network, the first two numbers (150.215) represent the Class B network address, and the second two numbers (017.009) identify a particular host on this network.

Switch
A small hardware device that joins multiple computers together within one local area network (LAN).

T Transmission control protocol (TCP)
This is an OSI reference model transport layer protocol that is utilized as a standard on the Internet. Although TCP is highly reliable due to the fact that it has a retransmission control mechanism, it has a low transmission speed.

Transmission control protocol/Internet protocol (TCP/IP)
This is a standard Internet protocol that is comprised of a protocol that specifies a communications software program (application) and then establishes a data transmission channel (TCP), and a protocol related to communication pathways (IP).

U User datagram protocol (UDP)
This is utilized as an OSI reference model transport layer protocol. Although UDP has low reliability due to the fact that it has no retransmission control mechanism, it has a high transmission speed.

Uninterruptible power supply (UPS)
This is a device that can be used to supply power for a fixed period of time in the event of an unexpected power outage so that PCs can be shut down safely.

V Voice over IP (VoIP)
This technology makes it possible to place telephone calls over an IP network. Although the internet can be used as a phone line, the call quality of internet phone is generally not very high because transmission speed and delay cannot be guaranteed.

W Wide dynamic range function
This refers to a function through which various processes are performed, thereby making it possible to capture clear images even when there is extreme backlighting.

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TK-C2201UA	1/3" Super LoLux Mini Dome Camera (Vandal Resistant)	P. 5	P.11
TK-C2201WPUA	1/3" Super LoLux Dome Camera (Vandal Proof)	P. 6	P.12
TK-C2301WPRU	1/3" Super LoLux Dome Camera with IR (Vandal Proof)	P. 7	P.13
TK-C8301RU	1/3" Super LoLux Camera with IR	P. 5	P.10
TK-C9200UA	1/3" Super LoLux Camera	P. 4	P. 9
TK-C9300UA	1/3" Super LoLux Camera	P. 4	P. 8
VN-H157WPU	Super LoLux HD Network Bullet Camera	P.16	P.22
VN-H137U	Super LoLux HD Network Camera	P.15	P.21
VN-H237U	Super LoLux HD Network Mini Dome Camera (Vandal Resistant)	P.18	P.24
VN-H237VPU	Super LoLux HD Network Dome Camera (Vandal Proof)	P.18	P.24
VN-H257U	Super LoLux HD Network Mini Dome Camera (Vandal Resistant)	P.19	P.25
VN-H257VPU	Super LoLux HD Network Dome Camera (Vandal Proof)	P.19	P.25
VN-H37U	Super LoLux HD Network Camera	P.15	P.21
VN-H57U	Super LoLux HD Network Camera	P.16	P.22
VN-H557U	10x PTZ Network Dome Camera	P.26	P.28
VN-H657U	18x PTZ Network Dome Camera	P.26	P.28
VN-H657WPU	18x Outdoor PTZ Network Dome Camera	P.27	P.29
VN-T16U	LoLux HD Network Camera	P.14	P.20
VN-T216U	LoLux HD Network Mini Dome Camera	P.17	P.23
VN-T216VPRU	LoLux HD Network Dome Camera with IR (Vandal Proof)	P.17	P.23
VR-D1004-500	Analog Digital Video Recorder	P. 2	P. 3
VR-D1008-1TB	Analog Digital Video Recorder	P. 2	P. 3
VR-D1016-1TB	Analog Digital Video Recorder	P. 2	P. 3
VR-X1600U	Multi Codec Network Video Recorder	P.30-P.31	P.32
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Color Camera

Network Camera

Recorder

System Information

Technical Information

Glossary

JVC Professional Products Company

1700 Valley Road, Wayne, NJ 07470, U.S.A.
TEL: (973) 317-5000   FAX: (973) 317-5030
Internet Web Site: http://pro.jvc.com
E-mail: proinfo@jvc.com

JVC Professional Products Canada Inc.

6070 Kestrel Rd., Mississauga, ON L5T 1S8
TEL: (905) 670-3381 ext 220   TEL: (866) 297-5427
Internet Web Site: http://pro.jvc.com
E-mail: proinfo@jvc.com

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