



The Perfect Experience

Video Surveillance Products

2009–2010



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Color Camera

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Color Camera

1/3" High Resolution Camera

TK-C9300U



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1/3" High Resolution Camera

TK-C9200U



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1/3" High Resolution Camera

TK-C920BU



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(Vandal Resistant)

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TK-C215V12U(A)



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(Vandal Proof)

TK-C215VP4U



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Network Camera

1/4" Network Camera

VN-V25U



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1/3" Fixed Megapixel Network Dome Camera (Vandal Proof)

VN-X235VPU



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27x PTZ Network Dome Camera

VN-V685U



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36x PTZ Network Dome Camera

VN-V686BU



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36x Outdoor PTZ Network Dome Camera

VN-V686WPBU



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Recorder

Network Video Recorder (Hybrid Network and Analog Cameras)

VR-N900U

System Information



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Network Video Recorder

VR-N1600U

System Information



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Software

Video Management Software (Light Edition) for Network Cameras/Encoder

VN-RS800U

System Information



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1/3" High Resolution Camera

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TK-C9300U Available in October 2009

580 TVL

ExDR

IR on/off

3D Noise
ReductionFocus
AdjustmentPrivacy
MaskDisplay
Mode

Lens not included



TK-C9300U rear

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Newly developed 12-bit DSP
- ▶ Day/Night surveillance with auto IR cut filter on/off (Color/B&W shooting)
- ▶ 580 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)
- ▶ 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)
- ▶ Low power consumption
- ▶ 24 VAC/12 VDC power supply

1/3" High Resolution Camera

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TK-C9200U Available in October 2009

580 TVL

Easy D/N

3D Noise
ReductionFocus
AdjustmentPrivacy
MaskDisplay
Mode

Lens not included



TK-C9200U rear

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Newly developed 12-bit DSP
- ▶ 580 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)
- ▶ 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)
- ▶ Low power consumption
- ▶ 24 VAC/12 VDC power supply

1/3" High Resolution Camera

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TK-C920BU

550 TVL

Ready Pak

Easy D/N

Focus
AdjustmentDisplay
Mode

Lens not included

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ 550 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Super LoLux™ sensitivity: 0.35 lx F1.2 (color mode), 0.25 lx F1.2 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ Automatic electronic shutter (AES) on/off
- ▶ Automatic gain control (AGC) on/off, max. 26 dB (color mode)
- ▶ Auto tracking white balance (ATW) and manual: 2,300 K to 10,000 K
- ▶ Backlight compensation (BLC) on/off
- ▶ Sync systems INT/Line lock
- ▶ Support video/DC iris lens control
- ▶ C/CS lens compatible
- ▶ Built-in display mode (CRT or LCD selectable)
- ▶ 24 VAC/12 VDC power supply



TK-C920BU rear

1/3" STD Resolution Camera

Refer to P.39

TK-C750U(A)

Ready Pak



Lens not included

- ▶ 1/3" IT CCD with 250,000 effective pixels
- ▶ 330 TV lines of horizontal resolution
- ▶ Minimum illumination: 0.28 lx F1.2
- ▶ Auto tracking white balance (ATW) and One-touch auto white balance (AWB)
- ▶ Auto white balance adjustment range: 2,300 K to 10,000 K
- ▶ Automatic gain control (AGC) on/off, max. 26 dB
- ▶ S/N ratio 50 dB (AGC off)
- ▶ Backlight compensation (BLC) on/off
- ▶ Automatic electronic shutter (AES) on/off
- ▶ DC iris lens control
- ▶ Sync systems INT/Line lock
- ▶ C/CS lens compatible
- ▶ 24 VAC/12 VDC power supply



TK-C750U(A) rear

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1/3" Day/Night Camera

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TK-C925U

540 TVL

IR on/off

Focus Adjustment

Display Mode



Lens not included



TK-C925U rear

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Day/Night surveillance with auto IR cut filter on/off (Color/B&W shooting)
- ▶ 540 TV lines of horizontal resolution
- ▶ Super LoLux™ sensitivity: 0.4 lx F1.2 (color mode), 0.05 lx F1.2 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ Built-in menu
- ▶ Automatic electronic shutter (AES) on/off
- ▶ Automatic gain control (AGC) off/on (high/super)
- ▶ Auto tracking white balance (ATW) wide, narrow, AWC and Manual Paint
- ▶ Backlight compensation (BLC) on/off
- ▶ Sync systems INT/Line lock
- ▶ Support video/DC iris lens control
- ▶ C/CS lens compatible
- ▶ Built-in display mode (CRT or LCD selectable)
- ▶ 24 VAC/12 VDC power supply

1/3" Day/Night Camera

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TK-C1530U

540 TVL

IR on/off

Focus Adjustment

Privacy Mask

Display Mode



Lens not included



TK-C1530U rear

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Day/Night surveillance with auto IR cut filter on/off (Color/B&W shooting)
- ▶ 540 TV lines of horizontal resolution
- ▶ Super LoLux™ sensitivity: 0.4 lx F1.2 (color mode), 0.05 lx F1.2 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ Scene file function for customer's parameter setting
- ▶ RS-422A/RS-485 remote control capability for camera setting
- ▶ Smart edge control mode (S.E.C.)
- ▶ Built-in menu
- ▶ Automatic electronic shutter (AES) on/off
- ▶ Automatic gain control (AGC) off/on (high/super)
- ▶ Auto tracking white balance (ATW) wide, narrow, AWC and Manual Paint
- ▶ Backlight compensation (BLC) on/off
- ▶ Sync systems INT/Line lock
- ▶ Support video/DC iris lens control
- ▶ 4 areas private mask
- ▶ C/CS lens compatible
- ▶ Built-in display mode (CRT or LCD selectable)
- ▶ 24 VAC/12 VDC power supply

1/3" WDR Camera

Refer to P.42 Refer to P.43

TK-WD310U(B)**WDR****Easy D/N**

Lens not included

- ▶ 1/3" digital image device with wide dynamic range (WDR)
- ▶ Innovative 14-bit DSP
- ▶ High-speed, automatic 5 levels exposure control for each pixel
- ▶ 480 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Programmable camera menu system
- ▶ Auto tracking white balance (ATW), single-push and manual
- ▶ Automatic gain control (AGC) on/off, max. 34 dB
- ▶ 24 characters camera title
- ▶ Support video/DC iris lens control
- ▶ Ultra compact body
- ▶ 24 VAC/12 VDC power supply

**TK-WD310U(B) rear****Notes:**

1. The WDR function will not operate with AGC or slow shutter mode engaged.
2. In very dark conditions the image quality may suffer slight deterioration.
3. Under fluorescent lighting, the color balance may vary slightly.
4. All manufacturer utilizing this technology will experience similar phenomenon.

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1/3" Fixed Dome Camera (Vandal Resistant)

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TK-C2201U

Available in October 2009

580 TVL

Easy D/N

3D Noise Reduction

Privacy Mask

Focus Adjustment

Display Mode

Vandal Resistant



Inside cover

- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Newly developed 12-bit DSP
- ▶ 580 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)
- ▶ 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
- ▶ Low power consumption
- ▶ 24 VAC/12 VDC power supply

1/3" Fixed Dome Camera (Vandal Proof)

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TK-C2201WPU

Available in October 2009

580 TVL

Easy D/N

3D Noise Reduction

Focus Adjustment

Privacy Mask

Display Mode

Vandal Proof

IP66



- ▶ 1/3" high resolution IT CCD with 380,000 effective pixels
- ▶ Newly developed 12-bit DSP
- ▶ Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ▶ Triple axis rotation system for wide lens angle adjustment
- ▶ 580 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)
- ▶ 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
- ▶ Low power consumption
- ▶ 24 VAC/12 VDC power supply
- ▶ Optional heater unit: **KA-ZH215U** to meet -22°F (-30°C) operation

Optional heater unit



KA-ZH215U

1/4" Fixed Dome Camera

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TK-C215V4U(A)

540 TVL

Easy D/N

Focus
Adjustment3 Way
Mount

Inside cover

- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ 540 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Super LoLux™ sensitivity: 0.75 lx F1.3 (color mode), 0.4 lx F1.3 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ Built-in 3.6x variable focal length auto iris lens (f = 2.8 mm to 10.0 mm)
- ▶ Focus adjustment function
- ▶ Triple axis rotation system for wide lens angle adjustment
- ▶ Monitor video output (RCA) for easy camera setup
- ▶ Automatic gain control (AGC) on/off, max. 26 dB
- ▶ Auto tracking white balance (ATW) and manual: 2,300 K to 10,000 K
- ▶ Backlight compensation (BLC) on/off
- ▶ Sync systems INT/Line lock
- ▶ Easy flush mountable without optional bracket
- ▶ Compatible with US 6" electrical box
- ▶ 24 VAC/12 VDC power supply



with electrical box

1/4" Fixed Dome Camera

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TK-C215V12U(A)

540 TVL

Easy D/N

Focus
AdjustmentAlarm
Zoom3 Way
Mount

Inside cover

- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ 540 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Super LoLux™ sensitivity: 1.0 lx F1.6 (color mode), 0.6 lx F1.6 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ Built-in 12x variable focal length auto iris lens (f = 3.8 mm to 45.6 mm)
- ▶ Alarm zoom function
- ▶ Focus adjustment function
- ▶ Triple axis rotation system for wide lens angle adjustment
- ▶ Monitor video output (RCA) for easy camera setup
- ▶ Automatic gain control (AGC) on/off, max. 26 dB
- ▶ Auto tracking white balance (ATW) and manual: 2,300 K to 10,000 K
- ▶ Backlight compensation (BLC) on/off
- ▶ Sync systems INT/Line lock
- ▶ Easy flush mountable without optional bracket
- ▶ Compatible with US 6" electrical box
- ▶ 24 VAC/12 VDC power supply



with electrical box

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1/4" Fixed Dome Camera (Vandal Proof)

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TK-C215VP4U

540 TVL

Easy D/N

Focus
AdjustmentVandal
Proof

IP66



Inside cover

- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ Outdoor-ready vandal resistant structure (complies with IP66)
- ▶ Easy to install with built-in ceiling mechanism
- ▶ Triple axis rotation system for wide lens angle adjustment
- ▶ 540 TV lines of horizontal resolution
- ▶ Easy day/night function
- ▶ Super LoLux™ sensitivity: 0.8 lx F1.3 (color mode), 0.4 lx F1.3 (B&W mode)
- ▶ S/N ratio 50 dB (AGC off)
- ▶ 10-bit DSP integrated
- ▶ All normal adjustments accessible on face of camera with front cover removed
- ▶ Built-in 3.6x variable focal length auto iris lens (f = 2.8 mm to 10 mm)
- ▶ Focus adjustment function
- ▶ Monitor video output (RCA) for easy camera setup
- ▶ Automatic gain control (AGC) on/off, max. 26 dB
- ▶ Auto tracking white balance (ATW) and manual: 2,300 K to 10,000 K
- ▶ Backlight compensation on/off
- ▶ Sync systems INT/Line lock
- ▶ 24 VAC/12 VDC power supply
- ▶ New inner cover to mask the direction of the camera
- ▶ Optional heater unit: **KA-ZH215U** to meet
-22°F (-30°C) operation

Optional heater unit



KA-ZH215U

	TK-C9300U	TK-C9200U
Camera		
Image device	1/3" IT CCD	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)
Sync system	Internal	Internal
Scanning system	2:1 interlace, 525 lines	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—	—
Video S/N ratio	52 dB (AGC off)	52 dB (AGC off)
Horizontal resolution	580 TV lines	580 TV lines
Minimum illumination (typical)	0.05 lx (50%, F1.2, AGC on) 0.025 lx (25%, F1.2, AGC on)	0.05 lx (50%, F1.2, AGC on) 0.025 lx (25%, F1.2, AGC on)
< B&W mode >	{ 0.006 lx (50%, F1.2, AGC on) 0.003 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	DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual Paint < 2,300 K to 10,000 K >	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	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)	on/off (areas are selectable)
AES	—	on/off (1/60 s to 1/100,000 s)
Lens		
Lens mount	CS	CS
Focal length < angle of vision >	—	—
Max. aperture ratio	—	—
Angle adjustment range	—	—
General		
Power supply	24 VAC (60 Hz) /12 VDC, UL listed	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.5 W	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) >	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 × 5 inches (55 mm × 61 mm × 126 mm)
Weight (approx.)	0.6 lbs. (270 g)	0.6 lbs. (270 g)
Accessories	—	—

	TK-C920BU	TK-C750U(A)
Camera		
Image device	1/3" IT CCD	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	250,000 (510 H × 492 V)
Sync system	Internal, Line lock	Internal, Line lock
Scanning system	2:1 interlace, 525 lines	2:1 Interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—	—
Video S/N ratio	50 dB (AGC off)	50 dB (AGC off)
Horizontal resolution	550 TV lines	330 TV lines
Minimum illumination (typical)	0.7 lx (50%, F1.2, AGC on) 0.35 lx (25%, F1.2, AGC on)	0.55 lx (50%, F1.2, AGC on) 0.28 lx (25%, F1.2, AGC on)
< B&W mode >	0.5 lx (50%, F1.2, AGC on) 0.24 lx (25%, F1.2, AGC on)	
Communication	—	—
Iris control	Video iris/DC iris	DC iris
White balance < ATW color temp. range >	ATW/Manual < 2,300 K to 10,000 K >	ATW/Manual (one-push adjustable) < 2,300 K to 10,000 K >
Wide dynamic range function	—	—
Display mode	CRT or LCD selectable	—
Backlight compensation	on/off	on/off
AES	on/off (1/60 s to 1/100,000 s)	on/off (1/60 s to 1/100,000 s)
Lens		
Lens mount	C/CS	C/CS
Focal length < angle of vision >	—	—
Max. aperture ratio	—	—
Angle adjustment range	—	—
General		
Power supply	24 VAC (60 Hz)/12 VDC, UL listed	24 VAC (60 Hz)/12 VDC, UL listed
Power consumption	3.5 W	3.3 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) >	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 inches × 2-5/16 inches × 5 inches (50 mm × 57.5 mm × 126 mm)	2 inches × 2-5/16 inches × 5 inches (50 mm × 57.5 mm × 126 mm)
Weight (approx.)	0.75 lbs. (340 g)	0.75 lbs. (340 g)
Accessories	—	—

	TK-C925U	TK-C1530U	TK-WD310U(B)
Camera			
Image device	1/3" IT CCD	1/3" IT CCD	1/3" WDR digital image device
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)	380,000 (720 H × 540 V)
Sync system	Internal, Line lock	Internal, Line lock	Internal, Line lock
Scanning system	2:1 Interlace, 525 lines	2:1 Interlace, 525 lines	2:1 Interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—	—	—
Video S/N ratio	50 dB (AGC off)	50 dB (AGC off)	50 dB (AGC off)
Horizontal resolution	540 TV lines	540 TV lines	480 TV lines
Minimum illumination (typical)	1.5 lx (50%, F1.2, AGC high) 0.4 lx (25%, F1.2, AGC super)	1.5 lx (50%, F1.2, AGC high) 0.4 lx (25%, F1.2, AGC super)	1.9 lx (50%, F1.2, AGC High) 0.9 lx (25%, F1.2, AGC High)
< B&W mode >	< 0.05 lx (25%, F1.2, AGC super) >	< 0.05 lx (25%, F1.2, AGC super) >	< 0.5 lx (50%, F1.2, AGC on, Easy D/N) < 0.25 lx (25%, F1.2, AGC on, Easy D/N) >
Communication	—	RS-422A or RS-485, 9,600 bps	—
Iris control	Video iris/DC iris	Video iris/DC iris	Video iris/DC iris
White balance < ATW color temp. range >	ATW (wide/narrow)/AWC/Manual < 2,300 K to 10,000 K >	ATW (wide/narrow)/AWC/Manual < 2,300 K to 10,000 K >	ATW/AWB/Manual < 2,300 K to 10,000 K >
Wide dynamic range function	—	—	WDR (by multi sampling)
Display mode	CRT or LCD selectable	CRT or LCD selectable	—
Backlight compensation	on/off	on/off	—
AES	on/off (1/60 s to 1/100,000 s)	on/off (1/60 s to 1/100,000 s)	—
Lens			
Lens mount	C/CS	C/CS	CS
Focal length < angle of vision >	—	—	—
Max. aperture ratio	—	—	—
Angle adjustment range	—	—	—
General			
Power supply	24 VAC (60 Hz)/12 VDC, UL listed	24 VAC (60 Hz)/12 VDC, UL listed	24 VAC (60 Hz)/12 VDC, UL listed
Power consumption	4.8 W	5.0 W	5.7 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) >	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 95 °F (0 °C to 35 °C) >
Dust and water protection	—	—	—
Dimensions (W × H × D)	2-1/2 inches × 2-3/16 inches × 5 inches (65 mm × 55 mm × 126 mm)	2-1/2 inches × 2-3/16 inches × 5 inches (65 mm × 55 mm × 126 mm)	2 inches × 2-5/16 inches × 4-1/4 inches (50 mm × 57.5 mm × 107 mm)
Weight (approx.)	0.88 lbs. (480 g)	0.88 lbs. (480 g)	0.73 lbs. (330 g)
Accessories	—	—	Ferrite core × 1

TK-C2201U

TK-C2201WPU

Camera

Image device	1/3" IT CCD	1/3" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)
Sync system	Internal	Internal
Scanning system	2:1 interlace, 525 lines	2:1 interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—	—
Video S/N ratio	52 dB (AGC off)	52 dB (AGC off)
Horizontal resolution	580 TV lines	580 TV lines
Minimum illumination (typical)	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH)	0.05 lx (50%, F1.2, AGC HIGH) 0.025 lx (25%, F1.2, AGC HIGH)
< B&W mode >	{ 0.03 lx (50%, F1.2, AGC HIGH) 0.015 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	DC iris
White balance	ATW (wide/narrow)/AWC/Manual Paint	ATW (wide/narrow)/AWC/Manual Paint
< ATW color temp. range >	< 2,300 K to 10,000 K >	< 2,300 K to 10,000 K >
Wide dynamic range function	—	—
Display mode	CRT/LCD1/LCD2	CRT/LCD1/LCD2
Backlight compensation	on/off (areas are selectable)	on/off (areas are selectable)
AES	—	—

Lens

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

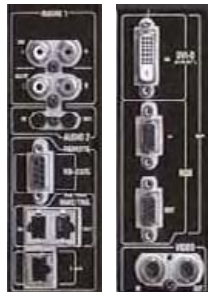
General

Power supply	24 VAC (60 Hz) /12 VDC, UL listed	24 VAC (60 Hz) /12 VDC, UL listed
Power consumption	2.3 W	2.3 W *without optional heater
Operating temperature range	14 °F to 122 °F (−10 °C to 50 °C)	14 °F to 122 °F (−10 °C to 50 °C)
< recommended >	< 32 °F to 104 °F (0 °C to 40 °C) >	< 32 °F to 104 °F (0 °C to 40 °C) >
Dust and water protection	—	IP66
Dimensions	ø 3-3/8 inches × 3-7/8 inches (H) (ø 110 mm × 97 mm (H))	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	0.73 lbs. (330 g)	2.9 lbs. (1.3 kg)
Accessories	—	Wrench × 1 Silica gel × 1

	TK-C215V4U(A)	TK-C215V12U(A)	TK-C215VP4U
Camera			
Image device	1/4" IT CCD	1/4" IT CCD	1/4" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)
Sync system	Internal, Line lock	Internal, Line lock	Internal, Line lock
Scanning system	2:1 Interlace, 525 lines	2:1 Interlace, 525 lines	2:1 Interlace, 525 lines
Scanning frequency	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)	15.734 kHz (H), 59.94 Hz (V)
Video output	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)	Composite video signal : 1.0 V (p-p), 75 ohms (BNC)
Y/C output	—	—	—
Video S/N ratio	50 dB (AGC off)	50 dB (AGC off)	50 dB (AGC off)
Horizontal resolution	540 TV lines	540 TV lines	540 TV lines
Minimum illumination (typical)	0.75 lx (25%, F1.3, AGC on)	1.0 lx (25%, F1.6, AGC on)	0.8 lx (25%, F1.3, AGC on)
< B&W mode >	< 0.4 lx (25%, F1.3, AGC on, Easy D/N) >	< 0.6 lx (25%, F1.6, AGC on, Easy D/N) >	< 0.4 lx (25%, F1.3, AGC on, Easy D/N) >
Communication	—	—	—
Iris control	DC iris	DC iris	DC iris
White balance < ATW color temp. range >	ATW/Manual < 2,300 K to 10,000 K >	ATW/Manual < 2,300 K to 10,000 K >	ATW/Manual < 2,300 K to 10,000 K >
Wide dynamic range function	—	—	—
Display mode	—	—	—
Backlight compensation	on/off	on/off	on/off
AES	—	—	—
Lens			
Lens mount	—	—	—
Focal length < angle of vision >	2.8 mm to 10 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >	3.8 mm to 45.6 mm < 52° (H) × 39° (V) to 4.5° (H) × 3.4° (V) >	2.8 mm to 10 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >
Max. aperture ratio	F1.3	F1.6	F1.3
Angle adjustment range	Horizontal: 350°, Vertical: ±80°, Rotation: ±175°	Horizontal: 350°, Vertical: ±80°, Rotation: ±175°	Horizontal: 350°, Vertical: ±70°, Rotation: ±175°
General			
Power supply	24 VAC (50/60 Hz)/12 VDC, UL listed	24 VAC (50/60 Hz)/12 VDC, UL listed	24 VAC (50/60 Hz)/12 VDC, UL listed
Power consumption	4.2 W	6.6 W	4.2 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) >	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	ø 6-1/8 inches × 4-7/8 inches (H) (ø 156 mm × 123 mm (H))	ø 6-1/8 inches × 4-7/8 inches (H) (ø 156 mm × 123 mm (H))	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 123 mm (H))
Weight (approx.)	1.43 lbs. (650 g)	1.54 lbs. (700 g)	2.64 lbs. (1.2 kg)
Accessories	—	—	Wrench × 1 Silica gel × 1

42"/47"/52" LCD Monitor

GM-F420S/GM-F470S/GM-F520S 42" 47" 52"



GM-F420S/470S/520S rear

- ▶ Landscape and portrait full HD LCD monitor
- ▶ Native full HD 1,920 × 1,080 pixels resolution
- ▶ Bright picture of 700 cd/m²
- ▶ 1.07 billion colors (GM-F420S/GM-F470S), 16.7 million colors (GM-F520S)
- ▶ Wide viewing angle up to 178 degrees (vertical/horizontal)
- ▶ Ultra-slim bezel of 15 mm depth (GM-F420S/GM-F470S), 17 mm depth (GM-F520S)
- ▶ Full metal cabinet using light-weight aluminum
- ▶ "LAN Remote" allows off-site control & monitoring via network
- ▶ Professional connectivity; RS-232C, MAKE/TRIGGER, RS-485
- ▶ Originally developed "Motion sensor" for person and object detection
- ▶ Multi-screen, Video Wall use (1 × 2 to 5, 2 to 5 × 1, 2 × 2, upto 5 × 5 Tile Matrix capable)
- ▶ VESA wall mount compatible

17"/19" LCD Monitor

LM-H171/LM-H191 17" 19"



- ▶ Professional monitor design with robust metal rear cabinet
- ▶ Selectable MAKE, Trigger remote
- ▶ Direct key selectable scan size: over and narrow
- ▶ Direct key on the front cabinet for input selection and picture settings
- ▶ 16:9/4:3 selectable aspect ratio
- ▶ S-XGA resolution
- ▶ Bright picture of 300 cd/m²
- ▶ 16.7 million colors
- ▶ Two composite video inputs, bridged out possible, auto termination
- ▶ Two PC inputs (DVI-D and analog RGB)
- ▶ NTSC/PAL compatibility
- ▶ Direct VESA standard 100 mm mounting
- ▶ Tilt stand unit included

42" LCD Monitor

GD-42X1 42"



- ▶ Various picture pre-setting mode
- ▶ Monitor calibration (gamma and white balance) software available
- ▶ Native HD 1920 × 1080 pixels resolution
- ▶ 4000:1 high contrast ratio
- ▶ Wide color spaces; sRGB 100% / Adobe RGB 96% coverage
- ▶ 12-bit per color processor: x RGB=36-bit
- ▶ Individual gamma curve adjustment prior to shipping
- ▶ HDMI (V.1.3, with Deep Color, with x.v.Color)
- ▶ 3 HDMI, analog RGB D-sub 15 pin, Component, L/R (mini jack)
- ▶ RS-232C control
- ▶ Slim depth: 42.5 mm, Light weight: 12 kg (without speaker and stand)
- ▶ Swiveling stand with 3-step height adjustment
- ▶ VESA mounting holes
- ▶ Removable speaker

20"v Flat CRT Monitor

TM-21A2

20"v



- ▶ 20"v full-square CRT
- ▶ On screen menu adjustment
- ▶ NTSC/PAL/SECAM compatibility
- ▶ White Balance (COOL/NORMAL/WARM)
- ▶ Auto VNR (Video Noise Reduction)
- ▶ Front Panel Control Lock
- ▶ Remote Control Unit

14"v CRT Monitor

TM-H150CG

14"v



TM-H150CG rear

- ▶ More than 750 TV lines of horizontal resolution
- ▶ Ultra compact cabinet (height 7U)
- ▶ Input slot for optional component/SDI card (IF-C01COMG/IF-C01SDG/IF-C51SDG/IF-C21SDG/IF-C21SD1G/IF-C51SD1G)
- ▶ NTSC/PAL multi-standard compatibility
- ▶ 120 VAC/220 VAC to 240 VAC universal power supply
- ▶ Underscan, color off, blue check functions
- ▶ Wired remote control (D-sub 15 pin)

13"v CRT Monitor

TM-A130SU

13"v



TM-A130SU rear

- ▶ 320 TV lines of horizontal resolution
- ▶ Two composite video inputs
- ▶ One Y/C input
- ▶ Two audio inputs
- ▶ NTSC/PAL multi-standard compatibility
- ▶ Tough metal cabinet
- ▶ Built-in speaker

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13"v CRT Monitor

TM-A13SU

13"v



TM-A13SU rear

- ▶ 320 TV lines of horizontal resolution
- ▶ Two composite video inputs
- ▶ One Y/C input
- ▶ Two audio inputs
- ▶ NTSC/PAL multi-standard compatibility
- ▶ Built-in speaker

9"v CRT Monitor

TM-A101G

9"v



TM-A101G rear

- ▶ 9"v full-square CRT with more than 300 TV lines of horizontal resolution
- ▶ 16:9/4:3 selectable aspect ratio
- ▶ Space-saving cabinet design minimizes depth and height
- ▶ On screen menu adjustment
- ▶ NTSC/PAL multi-standard compatibility
- ▶ 120 VAC/230 VAC universal power supply
- ▶ Side-by-side 19" EIA rack mounting (height 5U)
- ▶ Built-in speaker
- ▶ Remote aspect ratio select
- ▶ Remote input select

	GM-F420S	GM-F470S
Screen size (W x H)	36-7/8 inches x 20-3/4 inches (933.6 mm x 526.6 mm)	41-1/4 inches x 23-1/4 inches (1,045.2 mm x 590.4 mm)
Aspect ratio	16:9	16:9
Number of pixels	1,920 (H) x 1,080 (V)	1,920 (H) x 1,080 (V)
Input	Composite video x 1, PC (RGB) x 1, DVI-D x 1, Audio (L/R) x 1, Audio (Stereo mini jack) x 1	Composite video x 1, PC (RGB) x 1, DVI-D x 1, Audio (L/R) x 1, Audio (Stereo mini jack) x 1
Speaker output < internal >	2.3 W + 2.3 W < 1.7 W + 1.7 W >	2.3 W + 2.3 W < 1.7 W + 1.7 W >
Power supply	120 VAC, 220 VAC – 240 VAC(50 Hz/60 Hz)	120 VAC, 220 VAC – 240 VAC(50 Hz/60 Hz)
Dimensions (W x H x D)	38 inches x 22 inches x 6 inches (963.6 mm x 556.6 mm x 151.2 mm)	42-3/8 inches x 24-1/2 inches x 6 inches (1,075 mm x 620.4 mm x 151.2 mm)
Weight (approx.)	54.8 lbs. (24.9 kg)	65.6 lbs. (29.8 kg)

	GM-F520S	GD-42X1
Screen size (W x H)	45-7/8 inches x 26-1/8 inches (1,165.2 mm x 661.2 mm)	36-3/4 inches x 20-11/16 inches (932 mm x 525 mm)
Aspect ratio	16:9	16:9
Number of pixels	1,920 (H) x 1,080 (V)	1920 (H) x 1080 (V)
Input	Composite video x 1, PC (RGB) x 1, DVI-D x 1, Audio (L/R) x 1, Audio (Stereo mini jack) x 1	HDMI x 3, PC / Component / Composite (by D-sub 15 x 1 shared), Audio (stereo mini jack) x 1
Speaker output < internal >	2.3 W + 2.3 W < 1.7 W + 1.7 W >	10 W + 10 W (Detachable speakers)
Power supply	120 VAC, 220 VAC – 240 VAC(50 Hz/60 Hz)	100 VAC – 240 VAC (50 Hz/60 Hz)
Dimensions (W x H x D)	47-1/4 inches x 27-3/8 inches x 6-1/4 inches (1,199.2 mm x 695.2 mm x 161.5 mm)	39 inches x 23-5/8 inches x 1-3/4 inches (990 mm x 599.8 mm x 42.5 mm) *without speaker and stand 39 inches x 28-1/4 inches x 6-3/4 inches (990 mm x 716.8 mm x 170 mm) *with speaker and stand
Weight (approx.)	88 lbs. (40 kg)	26.4 lbs. (12 kg) *without speaker and stand 39.2 lbs. (17.8 kg) *with speaker and stand

	LM-H171	LM-H191
Screen size (W x H)	13-7/16 inches x 10-3/4 inches (337.9 mm x 270.3 mm)	14-13/16 inches x 11-13/16 inches (376.3 mm x 301.1 mm)
Aspect ratio	5:4	5:4
Number of pixels	1,280 (H) x 1,024 (V)	1,280 (H) x 1,024 (V)
Input	Composite video x 1, Y/C x 1, Component (Y/B-Y/R-Y) x 1, PC (analog RGB) x 1, Audio (2-ch) x 1, Audio (stereo) x 1	Composite video x 1, Y/C x 1, Component (Y/B-Y/R-Y) x 1, PC (analog RGB) x 1, Audio (2-ch) x 1, Audio (stereo) x 1
Speaker output < internal >	Built-in stereo speakers (2 W + 2 W)	Built-in stereo speakers (2 W + 2 W)
Power supply	100 VAC – 240 VAC (50 Hz/60 Hz)	100 VAC – 240 VAC (50 Hz/60 Hz)
Dimensions (W x H x D)	14-3/4 inches x 13-1/4 inches x 3 inches (374 mm x 334 mm x 74 mm) *without stand 14-3/4 inches x 14-7/8 inches x 7-7/8 inches (374 mm x 374.8 mm x 199 mm) *with stand	16-3/8 inches x 14-3/8 inches x 3 inches (413 mm x 364 mm x 74 mm) *without stand 16-3/8 inches x 16 inches x 7-7/8 inches (413 mm x 404.8 mm x 199 mm) *with stand
Weight (approx.)	12.8 lbs. (5.8 kg) *without stand 16.5 lbs. (7.5 kg) *with stand	14.1 lbs. (6.4 kg) *without stand 18 lbs. (8.2 kg) *with stand

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	TM-21A2	TM-H150CG
CRT	20"v —	14"v Trio-dot pitch of 0.27 mm
Horizontal resolution	—	More than 750 TV lines
Input	Composite video × 2 (Bridged-out possible, Auto termination), Audio (1-ch) × 2 (Bridged-out possible)	Composite video × 2 (Bridged-out possible, Auto termination), Y/C × 1 (Bridged-out possible), Audio (1-ch) × 2 (Bridged-out possible), 1 card slot for component or SDI card
Audio speaker	50 × 90 cm, 3 W output	8 cm round, 1 W output
Power supply	120 VAC, UL Listed	120 VAC, UL listed 220 VAC – 240 VAC, CE declaration
Dimensions (W × H × D)	19-7/8 inches × 19 inches × 18-5/8 inches (502 mm × 479.7 mm × 471.6 mm)	14-3/16 inches × 12-1/4 inches × 15-1/2 inches (360 mm × 310 mm × 418 mm)
Weight (approx.)	48.4 lbs. (22 kg)	35.2 lbs. (16.0 kg)

	TM-A130SU
CRT	13"v Stripe pitch of 0.65 mm
Horizontal resolution	More than 320 TV lines
Input	Composite video × 2 (Bridged-out possible, Auto termination), Y/C × 1, Audio (1-ch) × 2 (Bridged-out possible)
Audio speaker	8 cm round, 1 W output
Power supply	120 VAC, UL listed
Dimensions (W × H × D)	13-5/8 inches × 12-1/4 inches × 14-5/8 inches (346 mm × 310 mm × 368.5 mm)
Weight (approx.)	26.9 lbs. (12.2 kg)

	TM-A13SU	TM-A101G
CRT	13"v Stripe pitch of 0.64 mm	9"v Stripe pitch of 0.50 mm (P-22 phosphor)
Horizontal resolution	More than 320 TV lines	More than 300 TV lines
Input	Composite video × 2 (Bridged-out possible, Auto termination), Y/C × 1, Audio (1-ch) × 2 (Bridged-out possible)	Composite video × 2 (Bridged-out possible, Auto termination), Audio (1-ch) × 2 (Bridged-out possible)
Audio speaker	8 cm round, 1 W output	8 cm round, 1 W output
Power supply	120 VAC, UL listed	120 VAC, UL listed 230 VAC, CE declaration
Dimensions (W × H × D)	14-1/2 inches × 12-1/4 inches × 14-11/16 inches (368 mm × 310 mm × 371.5 mm)	8-3/4 inches × 8-3/4 inches × 12-1/2 inches (222 mm × 220 mm × 316.3 mm)
Weight (approx.)	21.0 lbs. (9.6 kg)	15.0 lbs. (6.8 kg)

1/4" Network Camera

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VN-V25U

Ready Pak Easy D/N Privacy Mask Display Mode PoE Dual Stream

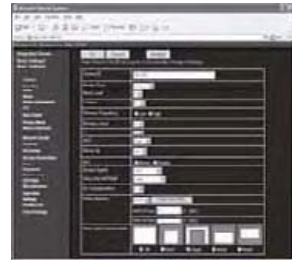


Lens not included

- ▶ 1/4" progressive scan CCD with 330,000 effective pixels
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Day/Night surveillance with Easy day/night function
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup



VN-V25U rear



Built-in setup tool and viewer

1/4" Network Camera

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VN-V26U

Ready Pak IR on/off Privacy Mask Display Mode Bi-directional Audio PoE Dual Stream



Lens not included

- ▶ 1/4" progressive scan CCD with 330,000 effective pixels
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup



VN-V26U rear



VN-V26U side

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1/3" Megapixel Network Camera

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VN-X35U

Easy D/N

Privacy Mask

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PoE

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Lens not included

MEGAPIXEL



VN-X35U rear

- ▶ 1/3" progressive scan CCD with 1,250,000 effective pixels
- ▶ 1.3 megapixel Quad-VGA Motion JPEG and VGA MPEG-4 (15 fps each) dual stream
- ▶ Day/Night surveillance with Easy day/night function
- ▶ Partial resizing and digital PTZ function
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Trigger input by built-in motion detection and external alarm input/output
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Focus assistance function for easy setup
- ▶ Monitor output for setup



Built-in setup tool and viewer

* It is recommended to use the specific lens JVC recommends for VN-X35U. Please contact JVC Professional Products Company for more details.

1/4" Fixed Network Dome Camera

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VN-C215V4U(A)

Easy D/N Focus Adjust 3 Way Mount PoE



- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ Progressive output (JVC IP conversion)
- ▶ Up to 30 fps Motion JPEG in VGA mode (640 × 480)
- ▶ Built-in variable focal length auto iris lens (f = 2.8 mm to 10 mm)
- ▶ Triple axis rotation mechanism
- ▶ Easy day/night function
- ▶ Focus adjustment function
- ▶ Built-in 10 BASE-T/100 BASE-TX interface
- ▶ Support Power over Ethernet (PoE)
- ▶ Built-in web server
- ▶ Pre/Post alarm buffer
- ▶ Access protection
- ▶ Alarm I/O (2-in/2-out)
- ▶ FTP client function
- ▶ Multicast
- ▶ Motion detection function



Viewing image

1/4" Fixed Network Dome Camera (Vandal Proof)

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VN-C215VP4U(A)

Easy D/N Focus Adjust Vandal Proof IP66 PoE



- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ Progressive output (JVC IP conversion)
- ▶ Up to 30 fps Motion JPEG in VGA mode (640 × 480)
- ▶ Built-in variable focal length auto iris lens (f = 2.8 mm to 10 mm)
- ▶ Triple axis rotation mechanism
- ▶ Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ▶ Easy day/night function
- ▶ Focus adjustment function
- ▶ Built-in 10 BASE-T/100 BASE-TX interface
- ▶ Support Power over Ethernet (PoE)
*without optional heater
- ▶ Built-in web server
- ▶ Pre/Post alarm buffer
- ▶ Access protection
- ▶ Alarm I/O (2-in/2-out)
- ▶ FTP client function
- ▶ Multicast
- ▶ Motion detection function
- ▶ Optional heater unit: **KA-ZH215U** to meet
-22°F (-30°C) operation



Viewing image



KA-ZH215U

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VN-V225U

IR on/off Privacy Mask Display Mode Bi-directional Audio Vandal Resistant 3 Way Mount PoE Dual Stream



- ▶ 1/4" progressive scan CCD with 330,000 effective pixels
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Built-in 3.8x variable focal length auto iris lens (f=2.8mm to 10.5mm)
- ▶ Fine focus adjust mechanism
- ▶ Triple axis rotation mechanism
- ▶ Vandal resistant dome cover
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Support Power over Ethernet (PoE)
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup



Built-in setup tool and viewer

1/4" Fixed Network Dome Camera (Vandal Proof)

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VN-V225VPU

IR on/off Privacy Mask Display Mode Bi-directional Audio Vandal Proof IP66 PoE Dual Stream



- ▶ 1/4" progressive scan CCD with 330,000 effective pixels
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Built-in 3.8x variable focal length auto iris lens (f=2.8mm to 10.5mm)
- ▶ Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ▶ Fine focus adjust mechanism
- ▶ Triple axis rotation mechanism
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Support Power over Ethernet (PoE) *without optional heater
- ▶ Pre/Post alarm buffer of 8MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup
- ▶ Optional heater unit: **KA-ZH215U** to meet -22°F (-30°C) operation



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1/3" Fixed Megapixel Network Dome Camera (Vandal Resistant)

VN-X235U

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IR on/off Privacy Mask Display Mode Megapixel Bi-directional Audio Vandal Resistant 3 Way Mount PoE Dual Stream



MEGAPIXEL



Flush mount

Without optional bracket

- ▶ 1/3" progressive scan CCD with 1,250,000 effective pixels
- ▶ 1.3 megapixel Quad-VGA Motion JPEG and VGA MPEG-4 (15 fps each) dual stream
- ▶ Built-in 3.0x variable focal length auto iris lens (f=3.0mm to 9.0mm)
- ▶ Fine focus adjust mechanism
- ▶ Triple axis rotation mechanism
- ▶ Vandal resistant dome cover
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Support Power over Ethernet (PoE)
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup



Built-in setup tool and viewer

1/3" Fixed Megapixel Network Dome Camera (Vandal Proof)

VN-X235VPU

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IR on/off Privacy Mask Display Mode Megapixel Bi-directional Audio Vandal Proof IP66 PoE Dual Stream



MEGAPIXEL

- ▶ 1/3" progressive scan CCD with 1,250,000 effective pixels
- ▶ 1.3 megapixel Quad-VGA Motion JPEG and VGA MPEG-4 (15 fps each) dual stream
- ▶ Built-in 3.0x variable focal length auto iris lens (f=3.0mm to 9.0mm)
- ▶ Outdoor-ready vandal and tamper proof structure (complies with IP66)
- ▶ Fine focus adjust mechanism
- ▶ Triple axis rotation mechanism
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ Variable gamma function (Easy wide-D) for backlight compensation
- ▶ Free shape and unlimited number of positions for privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool
- ▶ Password protection and IP address filtering
- ▶ Bi-directional audio communication
- ▶ Support Power over Ethernet (PoE) *without optional heater
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ Monitor output for setup
- ▶ Optional heater unit: **KA-ZH215U** to meet -22°F (-30°C) operation



KA-ZH215U

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	VN-V25U	VN-V26U
Camera		
Image device	1/4" progressive scan CCD	1/4" progressive scan CCD
Number of effective pixels	330,000 (659 H × 494 V)	330,000 (659 H × 494 V)
Minimum illumination (typical)	1.0 lx (50%, F1.2, AGC on) 0.5 lx (25%, F1.2, AGC on)	0.6 lx (50%, F1.2, AGC on) 0.3 lx (25%, F1.2, AGC on)
< B&W mode >	0.8 lx (50%, F1.2, AGC on) 0.4 lx (25%, F1.2, AGC on)	0.06 lx (50%, F1.2, AGC on) 0.03 lx (25%, F1.2, AGC on)
Iris control	DC iris	DC iris
White balance	ATW/AWC	ATW/AWC
Wide dynamic range function	Variable gamma (Easy wide-D)	Variable gamma (Easy wide-D)
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	C/CS	C/CS
Focal length	—	—
Max. aperture ratio	—	—
Angle adjustment range	—	—
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)
Audio communication	—	Internal microphone/Line out (mini jack ø 3.5 mm)
Power supply	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)
Power consumption	0.35 A (24 VAC) /5.5 W (PoE)	0.35 A (24 VAC) /5.5 W (PoE)
Operating temperature range	14 °F to 122 °F (–10 °C to 50 °C)	14 °F to 122 °F (–10 °C to 50 °C)
< recommended >	< 32 °F to 104 °F (0 °C to 40 °C) >	< 32 °F to 104 °F (0 °C to 40 °C) >
Dust and water protection	—	—
Dimensions (W × H × D)	2-9/16 inches × 2-1/2 inches × 5 inches (65 mm × 63 mm × 126 mm)	2-9/16 inches × 2-1/2 inches × 5 inches (65 mm × 63 mm × 126 mm)
Weight (approx.)	1.06 lbs. (480 g)	1.17 lbs. (530 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, VSIP	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture	Resolution (pixel) 320 × 240, 640 × 480	320 × 240, 640 × 480
	Compression Motion JPEG, MPEG-4	Motion JPEG, MPEG-4
Frame rate	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)
Audio compression	—	μ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	8 MB (RAM)	8 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 (SP1), Windows XP pro (SP2) /home (SP2)	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (1.5 GHz)	Pentium 4 (1.5 GHz)
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)

VN-X35U

Camera

Image device	1/3" progressive scan CCD
Number of effective pixels	1,250,000 (1,296 H × 966 V)
Minimum illumination (typical) < B&W mode >	0.6 lx (50%, F1.0, AGC SUPER) 0.3 lx (25%, F1.0, AGC SUPER) > 0.4 lx (50%, F1.0, AGC SUPER) < < 0.2 lx (25%, F1.0, AGC SUPER) >
Iris control	DC iris
White balance	ATW/AWC
Wide dynamic range function	Variable gamma (Easy wide-D)
Backlight compensation	Yes (4 patterns)

Lens

Lens mount	CS
Focal length	—
Max. aperture ratio	—
Angle adjustment range	—

General

Alarm I/O	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)
Audio communication	Line in/Line out (mini jack ø 3.5 mm)
Power supply	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)
Power consumption	0.35 A (24 VAC) /6.5 W (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)	2-9/16 inches × 2-1/2 inches × 5 inches (65 mm × 63 mm × 126 mm)
Weight (approx.)	1.13 lbs. (510 g)

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
Picture	Resolution (pixel) 320 × 240, 640 × 480, 1,280 × 960 (Motion JPEG only)
	Compression Motion JPEG, MPEG-4
Frame rate	15 fps (max.) per each stream of Motion JPEG and MPEG-4 in all compression format (dual stream)
Audio compression	μ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	8 MB (RAM)
Access protection	3 levels password, IP address filtering
Motion detection	Yes
Web server	Yes
Data transmission	Unicast/Multicast

System requirement (recommended)

OS	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (2 GHz)
Memory	More than 1 GB
HDD space	More than 512 MB
Display/Video card	1,600 × 1,200 pixels, true color (24-bit or 32-bit), VRAM 256MB recommended

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	VN-C215V4U(A)	VN-C215VP4U(A)
Camera		
Image device	1/4" IT CCD	1/4" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)
Minimum illumination (typical)	0.75 lx (25%, F1.3, AGC on)	0.75 lx (25%, F1.3, AGC on)
< B&W mode >	< 0.4 lx (25%, F1.3, AGC on, Easy D/N) >	< 0.4 lx (25%, F1.3, AGC on, Easy D/N) >
Iris control	—	—
White balance	Auto/Manual	Auto/Manual
Wide dynamic range function	—	—
Backlight compensation	on/off	on/off
Lens		
Lens mount	—	—
Focal length < angle of vision >	2.8 mm to 10 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >	2.8 mm to 10 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >
Max. aperture ratio	F1.3	F1.3
Angle adjustment range	Horizontal: 350°, Vertical: ±70°, Rotation: ±175°	Horizontal: 350°, Vertical: ±70°, Rotation: ±175°
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), NTSC (RCA)	Composite video signal: 1.0 V (p-p), NTSC (RCA)
Audio communication	—	—
Power supply	12 VDC/PoE	12 VDC/PoE *without optional heater
Power consumption	0.5 A (max.)	0.5 A (max.)
Operating temperature range < recommended >	14 °F to 122 °F (−10 °C to 50 °C)	14 °F to 122 °F (−10 °C to 50 °C), −22 °F to 122 °F (−30 °C to 50 °C) *with heater
Dust and water protection	—	IP66
Dimensions	ø 5-3/4 inches × 5-1/4 inches (H) (ø 145 mm × 133 mm (H))	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	1.65 lbs. (750 g)	2.87 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, HTTP, FTP, DHCP, ARP, ICMP, SNMP, SMTP, DSCP, DNS, TTL, IGMP	TCP/IP, UDP/IP, HTTP, FTP, DHCP, ARP, ICMP, SNMP, SMTP, DSCP, DNS, TTL, IGMP
Picture	Resolution (pixel)	320 × 240, 640 × 480
	Compression	Motion JPEG
Frame rate	30 fps (max.) in 640 × 480	30 fps (max.) in 640 × 480
Audio compression	—	—
Internal storage capacity	8 MB (RAM)	8 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 XP pro/home (SP2)	Windows XP pro/home (SP2)
CPU	Pentium 4, 1.5 GHz or higher	Pentium 4, 1.5 GHz or higher
Memory	More than 1 GB	More than 1 GB
HDD space	More than 20 MB	More than 20 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)

	VN-V225U	VN-V225VPU
Camera		
Image device	1/4" IT CCD	1/4" IT CCD
Number of effective pixels	330,000 (768 H × 494 V)	330,000 (768 H × 494 V)
Minimum illumination (typical) < B&W mode >	0.4 lx (50%, F1.2, AGC SUPER) 0.2 lx (25%, F1.2, AGC SUPER) < 0.03 lx (50%, F1.2, AGC SUPER) > < 0.02 lx (25%, F1.2, AGC SUPER) >	0.4 lx (50%, F1.2, AGC SUPER) 0.2 lx (25%, F1.2, AGC SUPER) < 0.03 lx (50%, F1.2, AGC SUPER) > < 0.02 lx (25%, F1.2, AGC SUPER) >
Iris control	—	—
White balance	Auto/Manual	Auto/Manual
Wide dynamic range function	Variable gamma (Easy Wide-D)	Variable gamma (Easy Wide-D)
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	—	—
Focal length < angle of vision >	f = 2.8 mm to 10.5 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >	f = 2.8 mm to 10.5 mm < 73° (H) × 54° (V) to 20° (H) × 15° (V) >
Max. aperture ratio	F1.3	F1.3
Angle adjustment range	Horizontal: 350°, Vertical: ±80°, Rotation: ±100°	Horizontal: 350°, Vertical: ±70°, Rotation: ±175°
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)
Audio communication	Mic in / Line out (wires)	Mic in / Line out (wires)
Power supply	24 VAC / PoE	24 VAC / PoE *without optional heater
Power consumption	7 W	7 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) >	14 °F to 122 °F (-10 °C to 50 °C), -22 °F to 122 °F (-30 °C to 50 °C) *with heater < 0 °C to 40 °C >
Dust and water protection	—	IP66
Dimensions	ø 5-3/4 inches × 4-3/4 inches (H) (ø 145 mm × 119 mm (H))	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	1.65 lbs. (750 g)	2.87 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, SNMP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNMP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture Resolution (pixel)	320 × 240, 640 × 480	320 × 240, 640 × 480
Compression	Motion JPEG, MPEG-4	Motion JPEG, MPEG-4
Frame rate	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)
Audio compression	μ-law 64 kbps mono AD/DA 16-bits	μ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	8 MB (RAM)	8 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 (SP1), Windows XP pro (SP2) /home (SP2)	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (1.5 GHz)	Pentium 4 (1.5 GHz)
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)

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	VN-X235U	VN-X235VPU
Camera		
Image device	1/3" IT CCD	1/3" IT CCD
Number of effective pixels	1,250,000 (1,296 H × 966 V)	1,250,000 (1,296 H × 966 V)
Minimum illumination (typical) < B&W mode >	0.8 lx (50%, F1.2, AGC SUPER) 0.4 lx (25%, F1.2, AGC SUPER) < 0.08 lx (50%, F1.2, AGC SUPER) > < 0.04 lx (25%, F1.2, AGC SUPER) >	0.8 lx (50%, F1.2, AGC SUPER) 0.4 lx (25%, F1.2, AGC SUPER) < 0.08 lx (50%, F1.2, AGC SUPER) > < 0.04 lx (25%, F1.2, AGC SUPER) >
Iris control	—	—
White balance	Auto/Manual	Auto/Manual
Wide dynamic range function	Variable gamma (Easy Wide-D)	Variable gamma (Easy Wide-D)
Backlight compensation	Yes (4 patterns)	Yes (4 patterns)
Lens		
Lens mount	—	—
Focal length < angle of vision >	f = 3.0 mm to 9.0 mm < 93° (H) × 68° (V) to 31° (H) × 23° (V) >	f = 3.0 mm to 9.0 mm < 93° (H) × 68° (V) to 31° (H) × 23° (V) >
Max. aperture ratio	F1.3	F1.3
Angle adjustment range	Horizontal: 350°, Vertical: ±80°, Rotation: ±100°	Horizontal: 350°, Vertical: ±70°, Rotation: ±175°
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Monitor output	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)	Composite video signal: 1.0 V (p-p), NTSC/PAL (RCA)
Audio communication	Mic in / Line out (wires)	Mic in / Line out (wires)
Power supply	24 VAC / PoE	24 VAC / PoE * without optional heater
Power consumption	7 W	7 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) >	14 °F to 122 °F (−10 °C to 50 °C), −22 °F to 122 °F (−30 °C to 50 °C) *with heater < 0 °C to 40 °C >
Dust and water protection	—	IP66
Dimensions	ø 5-3/4 inches × 4-3/4 inches (H) (ø 145 mm × 119 mm (H))	ø 6-1/4 inches × 4-7/8 inches (H) (ø 160 mm × 125 mm (H))
Weight (approx.)	1.65 lbs. (750g)	2.87 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, VSIP	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture Resolution (pixel)	320 × 240, 640 × 480, 1,280 × 960 (Motion JPEG only)	320 × 240, 640 × 480, 1,280 × 960 (Motion JPEG only)
Compression	Motion JPEG, MPEG-4	Motion JPEG, MPEG-4
Frame rate	15 fps (max.) per each stream of Motion JPEG and MPEG-4 in all compression format (dual stream)	15 fps (max.) per each stream of Motion JPEG and MPEG-4 in all compression format (dual stream)
Audio compression	μ-law 64 kbps mono AD/DA 16-bits	μ-law 64 kbps mono AD/DA 16-bits
Internal storage capacity	8 MB (RAM)	8 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 (SP1), Windows XP pro (SP2) /home (SP2)	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (2 GHz)	Pentium 4 (2 GHz)
Memory	More than 1 GB	More than 1 GB
HDD space	More than 512 MB	More than 512 MB
Display/Video card	1,600 × 1,200 pixels, true color (24-bit or 32-bit), VRAM 256MB recommended	1,600 × 1,200 pixels, true color (24-bit or 32-bit), VRAM 256MB recommended

27x PTZ Network Dome Camera

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VN-V685U

IR on/off 3D Noise Reduction Privacy Mask Display Mode Image Stabilizer Direct Drive One-Touch Lock PoE Dual Stream



- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ 27x optical zoom lens and 32x electronic zoom
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ 3D noise reduction (3DNR)
- ▶ Active gamma function (Easy wide-D) for backlight compensation
- ▶ Direct drive motor for pan/tilt mechanism
- ▶ Image stabilizer for reducing image blur
- ▶ Auto tracking function
- ▶ 8 areas privacy mask
- ▶ "One-touch lock" quick and easy installation
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool and access protection
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ 24 VAC/PoE
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ Alarm terminal (input × 2, output × 2)

36x PTZ Network Dome Camera

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VN-V686BU

IR on/off 3D Noise Reduction Privacy Mask Display Mode Image Stabilizer Direct Drive One-Touch Lock PoE Dual Stream



- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ 36x optical zoom lens and 32x electronic zoom
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ 3D noise reduction (3DNR)
- ▶ Active gamma function (Easy wide-D) for backlight compensation
- ▶ Direct drive motor for pan/tilt mechanism
- ▶ Image stabilizer for reducing image blur
- ▶ Auto tracking function
- ▶ 8 areas privacy mask
- ▶ "One-touch lock" quick and easy installation
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool and access protection
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ 24 VAC/PoE
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ Alarm terminal (input × 2, output × 2)

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36x Outdoor PTZ Network Dome Camera

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VN-V686WPBU

IR on/off

3D Noise
ReductionPrivacy
MaskDisplay
ModeImage
StabilizerDirect
Drive

IP66

PoE

Dual
Stream

- ▶ 1/4" high resolution IT CCD with 380,000 effective pixels
- ▶ Ready for outdoor installation with wall mount housing and IP66-compliant
- ▶ 36x optical zoom lens and 32x electronic zoom
- ▶ MPEG-4/Motion JPEG full frame (30 fps each) dual stream in VGA
- ▶ Day/Night surveillance with auto IR cut filter on/off
- ▶ 3D noise reduction (3DNR)
- ▶ Active gamma function (Easy wide-D) for backlight compensation
- ▶ Direct drive motor for pan/tilt mechanism
- ▶ Image stabilizer for reducing image blur
- ▶ Auto tracking function
- ▶ 8 areas privacy mask
- ▶ Built-in display mode (LCD1/LCD2/CRT/Custom selectable)
- ▶ Web based setup and viewing tool and access protection
- ▶ 20 simultaneous users, unlimited users by multicasting
- ▶ 24 VAC/PoE [^]without heater
- ▶ Trigger input by built-in motion detection and external alarm input
- ▶ Pre/Post alarm buffer of 8 MB
- ▶ Alarm terminal (input × 2, output × 2)
- ▶ Built-in heater allows to meet -40°F (-40°C) operation

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	VN-V685U	VN-V686BU
Camera		
Image device	1/4" IT CCD	1/4" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)	380,000 (768 H × 494 V)
Minimum illumination (typical)	1.0 lx (50%, F1.6, AGC super) 0.5 lx (25%, F1.6, AGC super) 0.08 lx (50%, F1.6, AGC super) 0.04 lx (25%, F1.6, AGC super)	1.0 lx (50%, F1.6, AGC super) 0.5 lx (25%, F1.6, AGC super) 0.08 lx (50%, F1.6, AGC super) 0.04 lx (25%, F1.6, AGC super)
< B&W mode >		
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	27x optical (3.4mm to 92.6mm) 32x electronic	36x optical (3.4 mm to 122 mm), 32x electronic
Max. aperture ratio	F1.6	F1.6
Auto focus	Easy AF/One push AF	Easy AF/One push AF
Mechanism		
Preset position	100 positions	100 positions
Panning	360° endless rotation	360° endless rotation
Panning speed	0.04 °/s to 400 °/s	0.04 °/s to 400 °/s
Tilting	-5° to 185°	-5° to 185°
Tilting speed	0.04 °/s to 400 °/s	0.04 °/s to 400 °/s
General		
Alarm I/O	Input × 2, Output × 2	Input × 2, Output × 2
Power supply	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)	24 VAC (50 Hz/60 Hz) /48 VDC (PoE)
Power consumption	1.2 A (24 VAC) /12.95 W (PoE)	1.2 A (24 VAC) /12.95 W (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 6-1/4 inches × 7-7/8 inches (ø 160 mm × 201 mm (H))	ø 6-1/4 inches × 7-7/8 inches (ø 160 mm × 201 mm (H))
Weight (approx.)	4.2 lbs. (1.9 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	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP	TCP/IP, UDP/IP, FTP, ICMP, ARP, DHCP, SNTP, HTTP, DSCP, SMTP, RTP, IGMP, IPv6, VSIP
Picture	Resolution (pixel)	320 × 240, 640 × 480
	Compression	Motion JPEG, MPEG-4
Frame rate	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)
Internal storage capacity	8 MB (RAM)	8 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 (SP1), Windows XP pro (SP2) /home (SP2)	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (1.5 GHz)	Pentium 4 (1.5 GHz)
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)

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VN-V686WPBU

Camera

Image device	1/4" IT CCD
Number of effective pixels	380,000 (768 H × 494 V)
Minimum illumination (typical)	1.0 lx (50%, F1.6, AGC super) 0.5 lx (25%, F1.6, AGC super) 0.08 lx (50%, F1.6, AGC super) < B & W mode > < 0.04 lx (25%, F1.6, AGC super) >
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	36x optical (3.4 mm to 122 mm), 32x electronic
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 (50 Hz/60 Hz) / 48 VDC (PoE) *without heater
Power consumption	1.2 A(24 VAC) / 12.95 W (PoE) *without 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) >
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)	320 × 240, 640 × 480
	Compression	Motion JPEG, MPEG-4
Frame rate	30 fps (max.) per each stream of Motion JPEG and MPEG-4 in 640 × 480 simultaneously (full frame dual stream)	
Internal storage capacity	8 MB (RAM)	
Access protection	3 levels password, IP address filtering	
Motion detection	Yes	
Web server	Yes	
Data transmission	Unicast/Multicast	

System requirement (recommended)

OS	Windows Vista Business (SP1), Windows XP pro (SP2) /home (SP2)
CPU	Pentium 4 (1.5 GHz)
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)

* incl. housing ** incl. blacket

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Network Video Recorder (Hybrid Network and Analog Cameras)

Refer to P.40–P.41

VR-N900U

System Information

Powered by Milestone



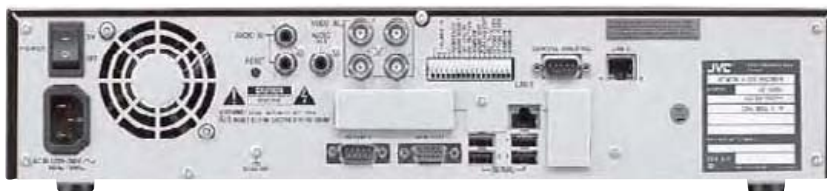
Viewer sample

Notes:

Milestone is a registered trade mark of Milestone Sy/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
- ▶ Hybrid recording solution with built-in 4-ch encoder
- ▶ Up to 9-ch recorder fully camera licensed
- ▶ Support Motion JPEG/MPEG-4 camera recording
- ▶ Built-in 250 GB HDD with an additional expansion slot
- ▶ Frame rate
 - Recording : up to 120 ips at VGA
 - Display : up to 60 ips at VGA
 - Distribution : up to 30 ips at VGA
- ▶ PTZ preset positions are saved inside camera without using camera setup tool
- ▶ External storage up to 4 TB using the optional 2 units of VR-DOU
- ▶ Available NAS archiving structure
- ▶ Available remote viewing and setup
- ▶ Open platform for systems enabling integration of third party devices



VR-N900U rear

Network Video Recorder

Refer to P.40–P.41

VR-N1600U

System Information

Powered by Milestone



Viewer sample

Notes:

Milestone is a registered trade mark of Milestone Sy/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
- ▶ Up to 16-ch recorder fully camera licensed
- ▶ Support Motion JPEG/MPEG-4 camera recording
- ▶ Built-in 500 GB HDD with an additional expansion slot
- ▶ Frame rate
 - Recording : up to 160 ips at VGA
 - Display : up to 80 ips at VGA
 - Distribution : up to 80 ips at VGA
- ▶ PTZ preset positions are saved inside camera without using camera setup tool
- ▶ External storage up to 4 TB using the optional 2 units of VR-DOU
- ▶ Available NAS archiving structure
- ▶ Available remote viewing and setup
- ▶ Open platform for systems enabling integration of third party devices



VR-N1600U rear

VR-N900U/VR-N1600U

Storage period

(Hour)

VR-N900U		• 9-ch recording without audio recording at 250 GB pre-installed HDD						• 9-ch recording without audio recording at 4.5 TB with optional HDD added maximally					
Image size	Data/Image (kB)	Frame rate per second (each camera)						Frame rate per second (each camera)					
		10	5	3	1	0.5	0.2	10	5	3	1	0.5	0.2
Quad VGA 1,280×960	180	—	—	2	12	48	155	—	—	237	718	1,461	3,687
	140	—	—	5	22	68	206	—	—	308	930	1,885	4,748
	100	—	—	12	41	105	299	—	—	435	1,312	2,648	6,657
	60	—	—	26	84	191	514	—	—	732	2,203	4,430	11,110
VGA 640×480	32	17	34	57	178	380	985	415	829	1,382	4,151	8,327	20,853
	24	24	48	80	245	514	1,321	554	1,107	1,846	5,543	11,110	27,812
	16	37	75	125	380	783	1,994	832	1,664	2,774	8,327	16,677	41,730
	10	62	123	205	622	1,267	3,204	1,333	2,666	4,444	13,337	26,698	66,782
QVGA 320×240	27	21	42	70	215	454	1,172	492	984	1,640	4,925	9,873	24,719
	15	40	80	133	406	837	2,128	888	1,775	2,959	8,883	17,791	44,513
	8	78	155	259	783	1,590	4,011	1,667	3,334	5,557	16,677	33,379	83,483
	5	126	252	420	1,267	2,559	6,432	2,669	5,338	8,897	26,698	53,421	133,588
VR-N1600U		• 16-ch recording without audio recording at 500 GB pre-installed HDD						• 16-ch recording without audio recording at 5 TB with optional HDD added maximally					
Image size	Data/Image (kB)	Frame rate per second (each camera)						Frame rate per second (each camera)					
		10	5	3	1	0.5	0.2	10	5	3	1	0.5	0.2
Quad VGA 1,280×960	180	—	—	—	20	64	196	—	—	—	440	906	2,300
	140	—	—	—	32	89	258	—	—	—	574	1,711	2,964
	100	—	—	—	55	134	371	—	—	—	813	1,649	4,159
	60	—	—	—	108	240	635	—	—	—	1,370	2,765	6,948
VGA 640×480	32	22	43	72	223	470	1,211	259	517	862	2,591	5,205	13,049
	24	30	60	100	305	635	1,623	346	691	1,152	3,462	6,948	17,407
	16	37	73	122	371	767	1,953	425	830	1,384	4,159	8,343	20,893
	10	46	93	155	470	964	2,447	520	1,040	1,733	5,205	10,435	26,123
QVGA 320×240	27	26	53	88	269	562	1,440	307	614	1,023	3,075	6,174	15,470
	15	50	99	166	503	1,030	2,612	555	1,110	1,849	5,554	11,132	27,866
	8	96	192	319	964	1,953	4,918	1,043	2,086	3,476	10,435	20,893	52,269
	5	155	310	517	1,557	3,139	7,883	1,670	3,341	5,568	16,710	33,444	83,645

Viewing and recording by Quad-VGA size of VN-X35U need approximately four times larger network bandwidth and storage space per one channel than the viewing and recording by VGA size. 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 to the recording time.

■ 2 weeks ■ 1 month ■ 3 months +

Supported devices

Product	Supported firmware
JVC	
VN-C20U	ver. 1.0+
VN-V25U	ver. 1.0+
VN-V26U	ver. 1.0+
VN-X35U	ver. 1.0+
VN-C215V4U	ver. 1.0+
VN-C215VP4U	ver. 1.0+
VN-V225U	ver. 1.0+
VN-V225VPU	ver. 1.0+
VN-V235U	ver. 1.0+
VN-V235VPU	ver. 1.0+
VN-C625U	ver. 2.06+
VN-C655U(B)	ver. 2.07+
VN-V685U	ver. 1.0+
VN-V686BU	ver. 1.02+
VN-V686WBP	ver. 1.02+
VN-E4U	ver. 1.2+
VERINT	
S1700	ver. 4.22b build 28+
S1704	ver. 4.22b build 28+
S1708_SSL	ver. 4.22b build 28+
S1900	ver. 4.4j build 100+
S2700e	ver. 4.4h build 600+
S2700e/VR	ver. 4.4h build 600+
AXIS	
206	ver. 4.21
207	ver. 4.22
211/211A	ver. 4.3
216FD	ver. 4.34
225FD	ver. 4.31
207W	ver. 4.40
212	ver. 4.35
213	ver. 4.30
214	ver. 4.33

Over 500 products can be connected by installing the device driver provided by Milestone. Auto detect function and guarantee of proper operation with VR-N900U/VR-N1600U apply to the products on this list only.

HDD External Unit (option)

VR-D0U



- ▶ HDD case to be connected with **VR-N900U, VR-N1600U**
- ▶ 4 HDD can be installed in this case, by 250 GB or 500 GB
- ▶ Up to 2 units of VR-D0U (max. 4 TB in total) can be connected to VR-N900U/VR-N1600U

	VR-N900U	VR-N1600U
Recording format	JPEG/MPEG-4	
Camera channel	9	16
Analog video input	4	—
Frame rate (VGA)	Recording/Display/Distribution: 120/60/30	Recording/Display/Distribution: 160/80/80
Recording frame rate for analog input	20	—
CPU and memory	CPU: Pentium 4 RAM: 512 MB	Core 2 Duo E4300 (1.80 GHz) RAM: 512 MB
HDD capacity	250 GB	500 GB
Additional HDD	250 GB (internal), max. 4 TB (USB external)	500 GB (internal), max. 4 TB (USB external)
NAS	Yes	
Mirroring	—	Internal HDD
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	
Search function	Time/Date search, Alarm search, Motion detection on playback images	
Security	Protected by user name and password	
Language support	Main menu: English Application: English, German, French, Italian, Spanish	
Supported protocol	HTTP, SMTP (client), TCP, DHCP (client/IP lease), ARP, DNS (client), NTP	
Minimum requirements for remote PC	OS	Windows 2000 Professional, Windows 2000 Server and Advanced Server, Windows XP Professional (32-bit or 64-bit), Windows Server 2003 (32-bit or 64-bit)
	CPU	Pentium 4 2.4 GHz or higher (Xeon recommended)
	RAM	512 MB (1 GB recommended)
	Network	At least 10/100 Ethernet NIC
	Graphic card	AGP or PCI-Express, 1,024 × 768 (1,280 × 1,024 recommended), more than 16-bit color
	HDD capacity for installation	50 MB
	Software	.NET Framework 2.0, and DirectX 9.0 or later, Microsoft Internet Explorer 6.0
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	100 BASE-TX, 10 BASE-T
	Serial	USB 2.0 × 5
	Display output	D-sub 15 pin 1,600 × 1,200 1,280 × 1,024 1,024 × 768
	Camera control	D-sub RS-485 (for analog PTZ control)
	Audio in	analog RCA × 2
	Audio out	analog RCA × 1
	Alarm terminal	Alarm in × 4 Emergency, Alarm reset in, EXT REC in, OPE on/off, Alarm out, Warning out, REC tally, Option out × 2, Common × 3
Power supply	120 VAC – 240 VAC	
Power consumption	Max. 1.7 A (120 VAC – 240 VAC)	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 inches × 3-1/2 inches × 14-5/8 inches (420 mm × 88 mm × 350 mm)	
Weight (approx.)	17 lbs. (7.7 kg) excluding power supply	
Accessories	Startup guide, CD-ROM (Instruction), Power cord, Rack mount brackets, HDD brackets	

Video Management Software (Light Edition) for Network Cameras/Encoder

Refer to P.39

VN-RS800U

System Information





- ▶ **Basic function**
 - Support up to 32 cameras
 - Display frame rate: Up to 16 fps (VGA)
 - Recording frame rate: Up to total approx. 280 fps (VGA/REC only) or approx. 190 fps (VGA/REC and Display), in case of Core 2 Duo 2.4 GHz CPU
 - * Actual frame rates depend on system hardware
- ▶ **Live Display**
 - Split mode (1/4/5/9/12/16) and automatic sequence
 - Camera control: VN-C30U, VN-C625U, VN-C655U(B), VN-V685U, VN-V686BU, VN-V686WPBU
- ▶ **Recording function**
 - Always REC / Manual REC
 - Alarm REC / Timer REC
- ▶ **Playback function**
 - Search: Time & Date/Event
 - Snap shot: JPEG
 - Video file export & saving (AVI file)
- ▶ **Alarm function**
 - Alarm detect by camera (terminal/motion detect)
 - Automatic alarm recording with alarm message display
 - Warning detect (Camera error, HDD error)
- ▶ **Audio communication**
 - (VN-E4U, VN-V26U, VN-X35U, VN-V225U, VN-V225VPU, VN-X235U, VN-X235VPU)
 - Live monitoring and sound transmission from the PC
 - Recording both sound of input and output with image file
 - Export the image by AVI format with audio

Specifications

VN-RS800U																																					
Supported models	<table border="0"> <tr> <td>VN-C10U (JPEG)</td> <td>ver. 2.9+</td> <td>VN-C215V4U/VP4U</td> <td>ver. 1.0+</td> </tr> <tr> <td>VN-C11U (JPEG)</td> <td>ver. 2.9+</td> <td>VN-V225U/VPU (JPEG)</td> <td>ver. 1.0+</td> </tr> <tr> <td>VN-C30U (JPEG)</td> <td>ver. 4.8+</td> <td>VN-X235U/VPU (JPEG)</td> <td>ver. 1.0+</td> </tr> <tr> <td>VN-A1U</td> <td>ver. 3.3+</td> <td>VN-C625U</td> <td>ver. 2.6+</td> </tr> <tr> <td>VN-C20U</td> <td>ver. 1.1+</td> <td>VN-C655U(B)</td> <td>ver. 2.7+</td> </tr> <tr> <td>VN-C205U</td> <td>ver. 1.3+</td> <td>VN-V685U (JPEG)</td> <td>ver. 1.0+</td> </tr> <tr> <td>VN-V25U (JPEG)</td> <td>ver. 1.0+</td> <td>VN-V686BU/WPBU (JPEG)</td> <td>ver. 1.02+</td> </tr> <tr> <td>VN-V26U (JPEG)</td> <td>ver. 1.0+</td> <td>VN-E4U</td> <td>ver. 1.2.0+</td> </tr> <tr> <td>VN-X35U (JPEG)</td> <td>ver. 1.0+</td> <td></td> <td></td> </tr> </table>	VN-C10U (JPEG)	ver. 2.9+	VN-C215V4U/VP4U	ver. 1.0+	VN-C11U (JPEG)	ver. 2.9+	VN-V225U/VPU (JPEG)	ver. 1.0+	VN-C30U (JPEG)	ver. 4.8+	VN-X235U/VPU (JPEG)	ver. 1.0+	VN-A1U	ver. 3.3+	VN-C625U	ver. 2.6+	VN-C20U	ver. 1.1+	VN-C655U(B)	ver. 2.7+	VN-C205U	ver. 1.3+	VN-V685U (JPEG)	ver. 1.0+	VN-V25U (JPEG)	ver. 1.0+	VN-V686BU/WPBU (JPEG)	ver. 1.02+	VN-V26U (JPEG)	ver. 1.0+	VN-E4U	ver. 1.2.0+	VN-X35U (JPEG)	ver. 1.0+		
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VN-X35U (JPEG)	ver. 1.0+																																				
OS	Windows Server 2003, Standard Edition R2 Windows XP Professional (SP2) Windows Vista Business (SP1)																																				
CPU	Intel Pentium 4 (HT on)/D/ Xeon 2.8 GHz or higher Intel Core 2 Duo 2.4 GHz or higher																																				
Memory	1 GByte or more																																				
HDD	About 200 MB for installation Recording file folder internal disk drive recommended Image record volume the NTFS format, the internal disk drive, and RAID 1/5 recommended																																				
Graphic board	16 MB VRAM or more (unshared with the main memory) 1,024 × 768, true color (32-bit) recommended																																				
Sound	Complied with AD97 (SoundMax recommended)																																				
LAN card	100 BASE-T, 1000 BASE-TX (recommended)																																				

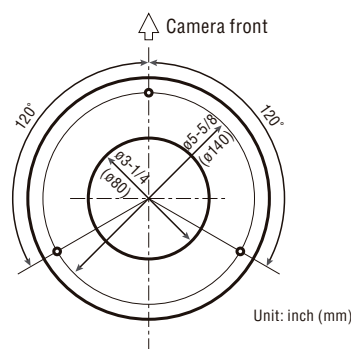
- Line-up Chart
- Color Camera
- Monitor
- Network Camera
- Recorder
- Software
- System Information
- Technical Information
- Glossary
- Index

Combination of brackets and cameras for VN-V685U/VN-V686U/VN-V686WPBU

Camera \ Bracket		VN-V685U VN-V686BU	VN-V686WPBU
			
Pendant mount	WB-S681U	Yes	No
Wall mount	WB-S682U	Yes	No
Flush mount	RCVN686	Yes	No
Outdoor pendant mount	WB-S684U	No	Yes
Corner mount	JCA2	No	Yes
Pole mount	JPM3	No	Yes

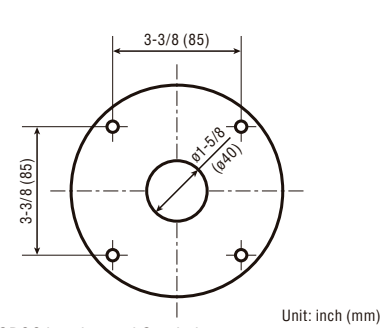
Mounting drawings and specifications For inquiries regarding Ready Pak, please contact: JVC U.S.A. 1700 Valley Road Wayne, NJ 07470, U.S.A. TEL: (973) 317-5000

Direct mount
VN-V686U



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

WB-S681U
Pendant mount



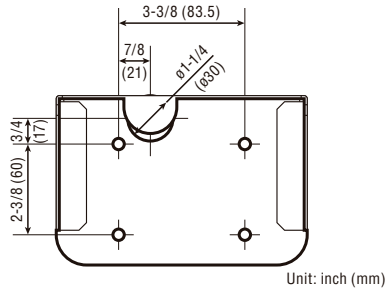
- Materials: ABS resin cover, SPCC bracket and Steel pipe
- Weight: Approx. 3.8 lbs. (1.7 kg)
- Mansell number: Approx. 0.9PB8.5/0.4

Mounting drawings and specifications

For inquiries regarding Ready Pak, please contact: JVC U.S.A.
1700 Valley Road Wayne, NJ 07470, U.S.A. TEL: (973) 317-5000

WB-S682U

Wall mount

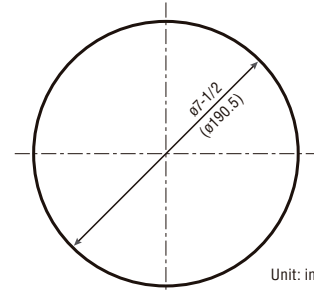


Unit: inch (mm)

- Materials: SPCC
- Weight: Approx. 2 lbs. (0.9 kg)
- Mansell number: Approx. 0.9PB8.5/0.4

RCVN686

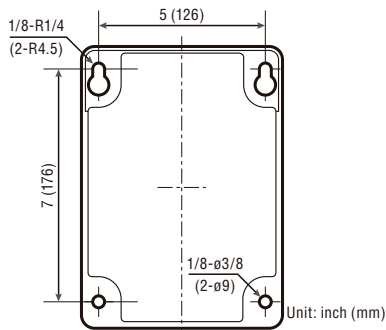
Flush mount



Unit: inch (mm)

Mount hole

**Outdoor wall mount
VN-V686WPU**

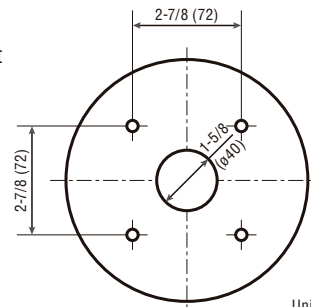


Unit: inch (mm)

- Weight: Approx. 12.2 lbs. (5.5 kg)
- Mansell number: Approx. 0.9PB8.5/0.4

WB-S684U

Outdoor pendant mount

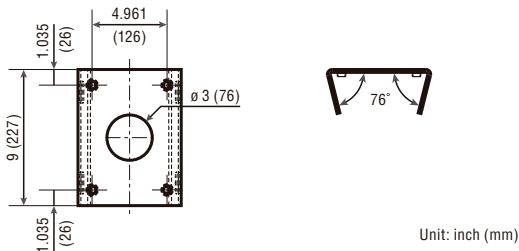


Unit: inch (mm)

- Materials: Aluminium base and Steel pipe
- Weight: Approx. 2.9 lbs. (1.3 kg)
- Mansell number: Approx. 0.9PB8.5/0.4

JCA2

Corner mount

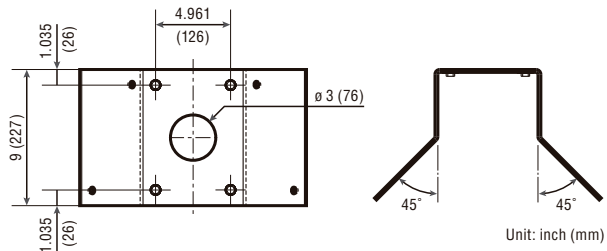


Unit: inch (mm)

- Materials: Aluminium

JPM3

Pole mount

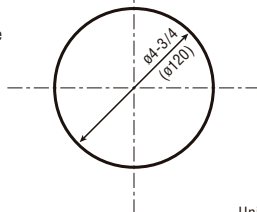


Unit: inch (mm)

- Materials: Aluminium

**Ceiling recessed mount
TK-C215V4U(A)/TK-C215V12U(A)/
VN-C215V4U(A)**

Mount hole
(Thickness of the ceiling material should be between 9.5 mm and 22 mm)

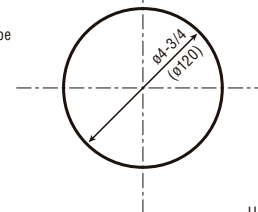


Unit: inch (mm)

- Weight: Approx. 1.1 lbs. (0.5 kg): TK-C215V4U(A)/12U(A)
1.5 lbs. (0.7 kg): VN-C215V4U(A)
- Mansell number: Approx. 4Y-8/0.9

**Ceiling recessed mount
VN-V225U/VN-X235U**

Mount hole
(Thickness of the ceiling material should be between 9.5 mm and 22 mm)



Unit: inch (mm)

- Weight: Approx. 1.5 lbs. (0.7 kg)
- Mansell number: Approx. 0.9PB8.5/0.4

Refer to P.46

Ready Pak For U.S. market only

IP66

Camera with outdoor housing, wall mount and lens professionally configured



JVC's Ready Pak cameras are a unique concept in the industry. This is a popular way for our integrators to get out in front of the jobs faster with a ready to go package that combines one of the leading housing manufacturer's housing with a choice of two different vari-focal lenses. These models will provide coverage for most security job requirements.

The JVC camera has the lens professionally installed and back focused them mounted inside the housing with all the wiring connected for power, network, heater and blower. All the integrator has to do is plug the camera into network and power; then it is on line providing immediate coverage. Not only do these Ready Paks save time for installations, but everything is professionally set and connected so you can be assured this product will last in the toughest installation environment.

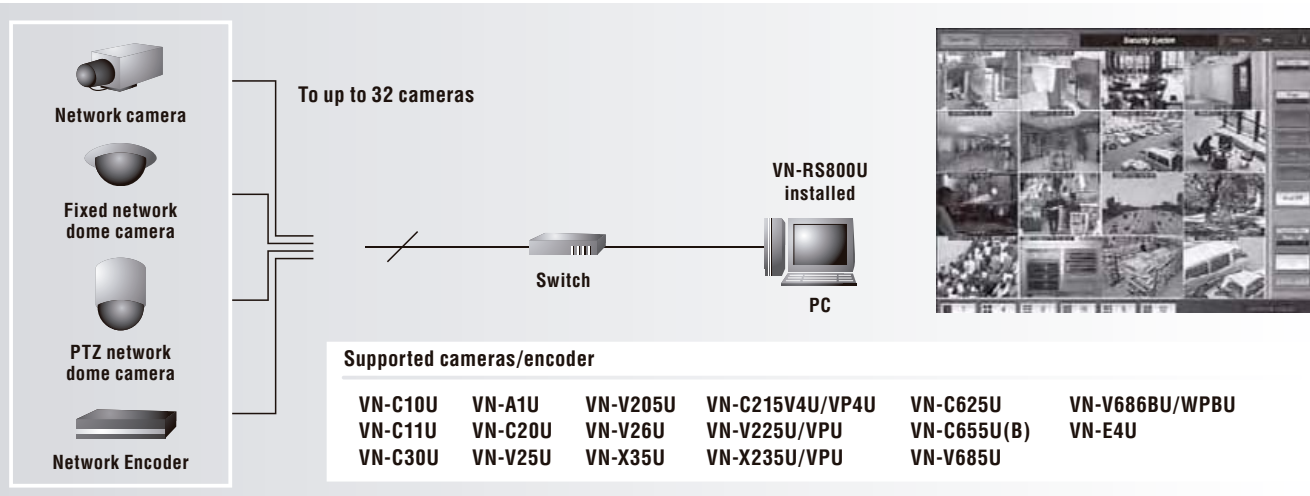
Selection guide

For inquiries regarding Ready Pak, please contact: JVC U.S.A.

1700 Valley Road Wayne, NJ 07470, U.S.A. TEL: (973) 317-5000

Ready Pak model number	JVC camera		Included lens
VNV25RP4X	VN-V25U	1/4" Network Camera	2.5 – 6 mm
VNV25RP10X			5.0 – 50 mm
VNV26RP4X	VN-V26U	1/4" Network Camera	2.7 – 13.5 mm
VNV26RP10X			5.0 – 50 mm
VNX35RP4X	VN-X35U	1/3" Megapixel Network Camera	2.8 – 8 mm
VNX35RP10X			3.3 – 15 mm
HMTKC750-212	TK-C750U	1/3" STD Resolution Camera	2.5 – 6 mm
HMTKC750-550			5.0 – 50 mm
HMTKC920-212	TK-C920BU	1/3" High Resolution Camera	2.5 – 6 mm
HMTKC920-550			5.0 – 50 mm
HMTKC925-212	TK-C925U	1/3" Day/Night Camera	2.7 – 13.5 mm
HMTKC925-550			5.0 – 50 mm
HMTKWD310-212	TK-WD310U	1/3" WDR Camera	2.5 – 6 mm
HMTKWD310-550			5.0 – 50 mm
HMTKC9200-212	TK-C9200U	1/3" High Resolution Camera	2.5 – 6 mm
HMTKC9200-550			5.0 – 50 mm
HMTKC9300-212	TK-C9300U	1/3" High Resolution Camera	2.7 – 13.5 mm
HMTKC9300-550			5.0 – 50 mm

VN-RS800U system configuration



Line-up Chart

Color Camera

Monitor

Network Camera

Recorder

Software

System Information

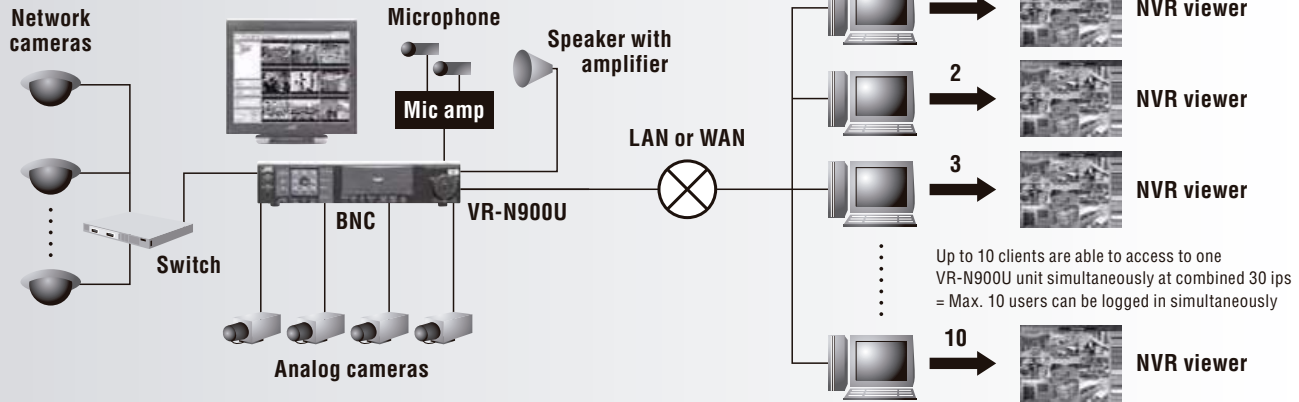
Technical Information

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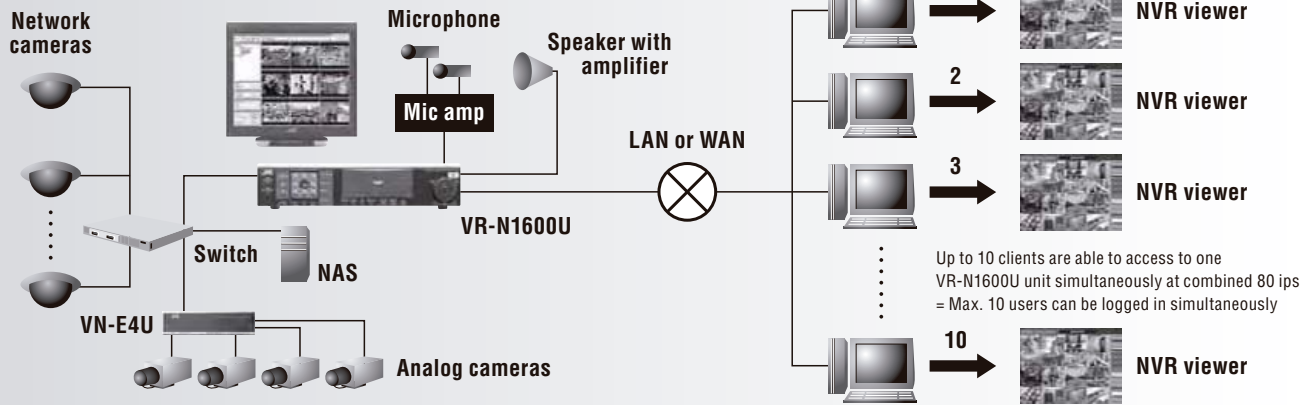
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VR-N900U/VR-N1600U system configuration

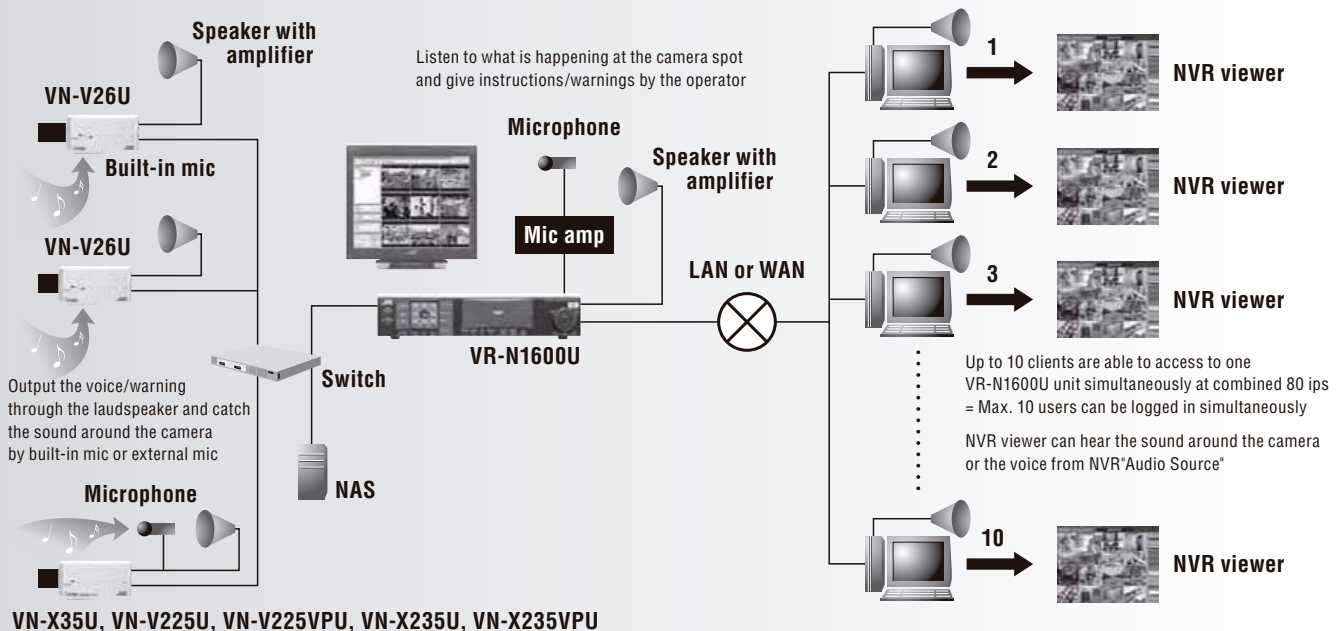
VR-N900U basic system configuration



VR-N1600U basic system configuration



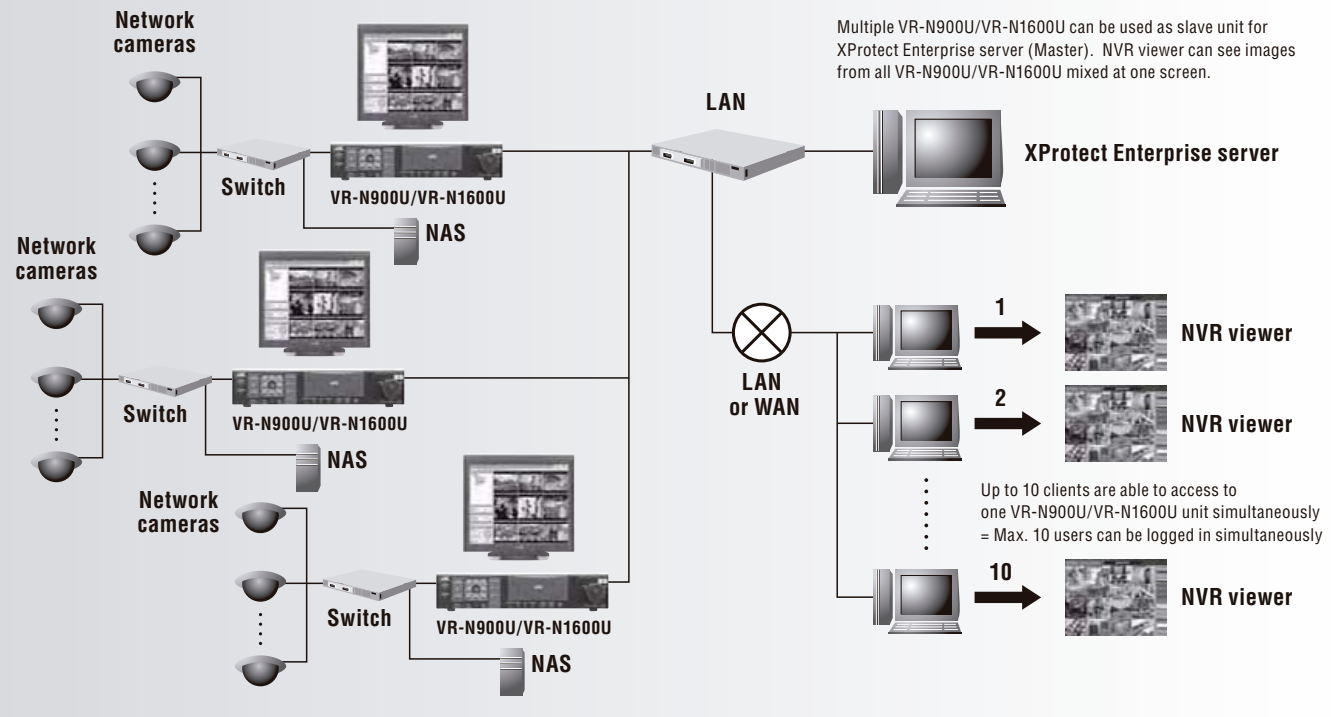
VR-N1600U system configuration with VN-V26U, VN-X35U, VN-V225U/VPU, VN-X235U/VPU audio function



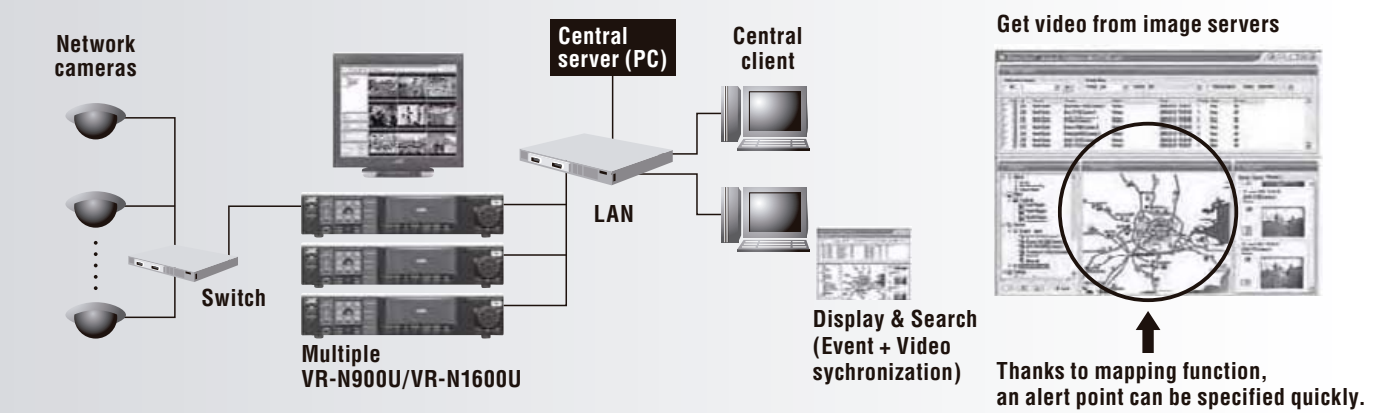
All GUI images are just sample.

VR-N900U/VR-N1600U system configuration

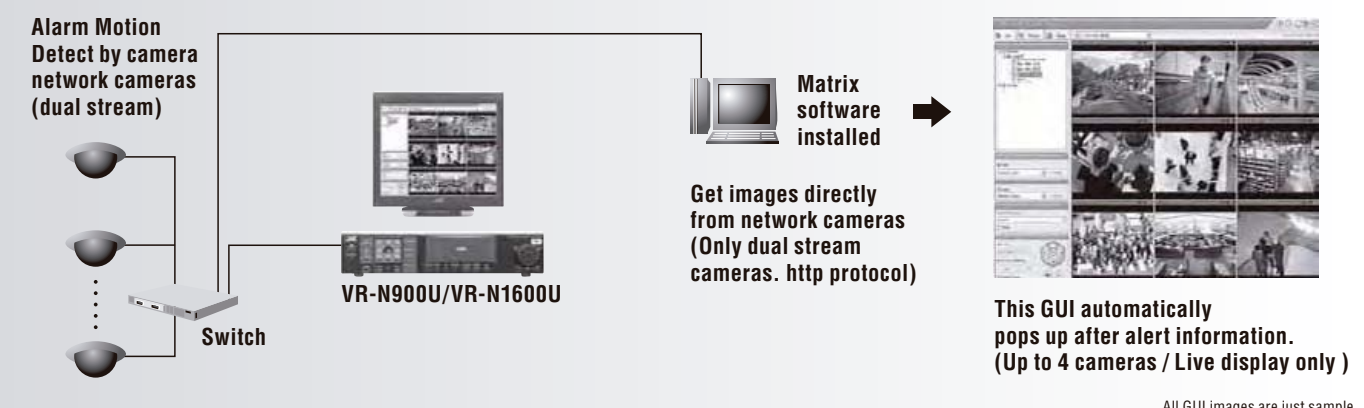
Expanded system with optional "Milestone XProtect Enterprise" server



Total surveillance application with optional "Milestone Central Client" software



Event monitoring application with optional "Milestone Matrix" software



All GUI images are just sample.

Line-up Chart

Color Camera

Monitor

Network Camera

Recorder

Software

System Information

Technical Information

Glossary

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Line-up Chart

Color Camera

Monitor

Network Camera

Recorder

Software

System Information

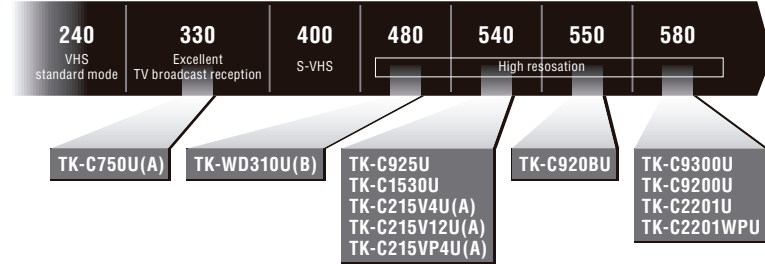
Technical Information

Glossary

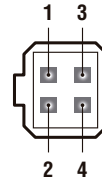
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1 Camera horizontal resolution chart

Horizontal resolution (TV line)



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

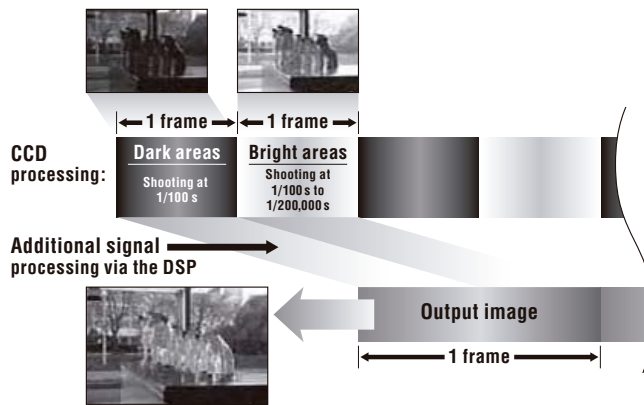
Object cameras: TK-C920BU [P.3], TK-C925U [P.4], TK-C1530U [P.4] and TK-WD310U(B) [P.6]

3 Wide dynamic range function

ExDR WDR

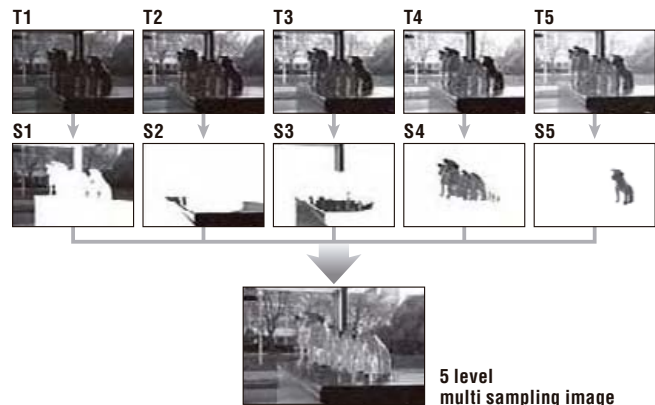
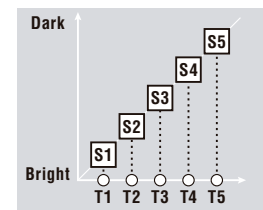
Extended dynamic range (ExDR)

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.



Wide dynamic range (WDR)

JVC's innovated technology featuring a wide dynamic range function performs by multi sampling method. TK-WD310U(B) automatically adjust luminance by pixel with 14-bit digital processing as well as implement 5 level multi sampling, in order to realize an accurate color reproduction.



Selection guide for JVC line-up

		Morning	Day light	High contrast	Evening	Night time	
Auto tracking white balance (ATW)							
ExDR	TK-C1480U	Auto iris normal mode		ExDR mode	AGC mode	AGC mode slow shutter (Intermittent picture)	Summary Ideal for: Morning, Day light, Evening Application example •Casinos •Traffic •Town center
ExDR (W/IR on/off)	TK-C9300U	Auto iris normal mode		ExDR mode	AGC mode	IR cut filter off B&W mode	Summary Ideal for: Morning, Day light, Evening, Night time Application example •Banks •Retail shops •Prison
WDR	TK-WD310U(B)	Auto iris normal mode		WDR mode real time response	AGC mode	Easy day/night B&W mode	Summary Ideal for: High contrast, Evening Application example •Bank ATM •Train (platform) •Entrance

4 IR cut filter on/off function IR on/off

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.

Object cameras: TK-C9300U [P.2], TK-C925U [P.4], TK-C1530U [P.4], VN-V26U [P.19], VN-V225U [P.22], VN-V225VPU [P.22], VN-X235U [P.23], VN-X235VPU [P.23], VN-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

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.)

Object cameras: TK-C9200U [P.2], TK-C920BU [P.3], TK-WD310U(B) [P.5], TK-C2201U [P.6], TK-C2201WPU [P.6], TK-C215V4U(A) [P.7], TK-C215V12U(A) [P.7], TK-C215VP4U [P.8], VN-V25U [P.19], VN-X35U [P.20], VN-C215V4U(A) [P.21] and VN-C215VP4U(A) [P.21]

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 shot in dark places. The noise data is detected by comparing some continuous frames and the noise data is blended over time.

Object cameras: TK-C9300U [P.2], TK-C9200U [P.2], TK-C2201U [P.6], TK-C2201WPU [P.6], VN-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

7 Focus adjustment function Focus Adjustment

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-C9300U [P.2], TK-C9200U [P.2], TK-C920BU [P.3], TK-C925U [P.4], TK-C1530U [P.4], TK-C2201U [P.6], TK-C2201WPU [P.6], TK-C215V4U(A) [P.7], TK-C215V12U(A) [P.7], TK-C215VP4U [P.8], VN-C215V4U(A) [P.21] and VN-C215VP4U(A) [P.21]

8 Privacy mask Privacy Mask

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

Object cameras: TK-C9300U [P.2], TK-C9200U [P.2], TK-C1530U [P.4], TK-C2201U [P.6], TK-C2201WPU [P.6], VN-V25U [P.19], VN-V26U [P.19], VN-X35U [P.20], VN-V225U [P.22], VN-V225VPU [P.22], VN-X235U [P.23], VN-X235VPU [P.23], VN-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

9 Alarm zoom function Alarm Zoom

TK-C215V12U(A) has "12x lens", "alarm input interface", and "memory for 2 different lens position". Thanks to this memory function, the camera lens unit can be set for 2 lens position and the zoom-up mechanism will move from "regular position" to "another position" when alarm signal comes, for instance.

Object camera: TK-C215V12U(A) [P.7]

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-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

Object cameras of variable gamma: VN-V25U [P.19], VN-V26U [P.19], VN-X35U [P.20], VN-V225U [P.22], VN-V225VPU [P.22], VN-X235U [P.23], and VN-X235VPU [P.23]

11 Display mode

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: 17 models having the [Display mode] icon on the introduction pages have this function.

13 Megapixel

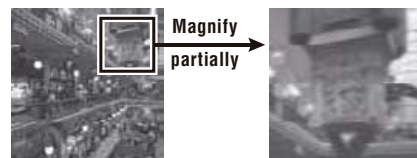
Megapixel

The camera which has one million pixels or more image resolution is called "Megapixel camera". The image resolution provided by a megapixel camera is more than 3 or 4 times higher 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.

Please be aware that higher resolution streams need much more bandwidth and storage space. The Quad-VGA stream needs approximately four times larger network bandwidth and storage space than VGA stream.

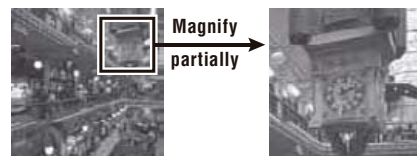


Shooting area by megapixel



Non-megapixel

Rough, difficult to read



Megapixel

Precise, identifiable

Object cameras: VN-X35U [P.20], VN-X235U [P.23] and VN-V235VPU [P.23]

12 Image stabilizer

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.

Visible angle on monitor

Camera shakes this direction



All pixels captured by CCD

Visible angle is compensated by cutting out to maintain the visible angle originally.



All pixels captured by CCD

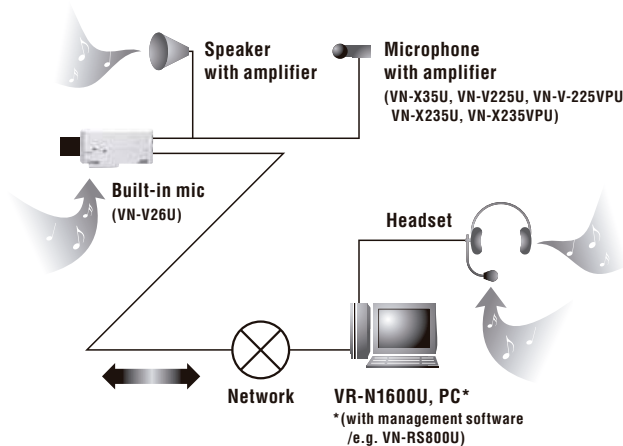
Object cameras: VN-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

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14 Bi-directional audio

Bi-directional Audio

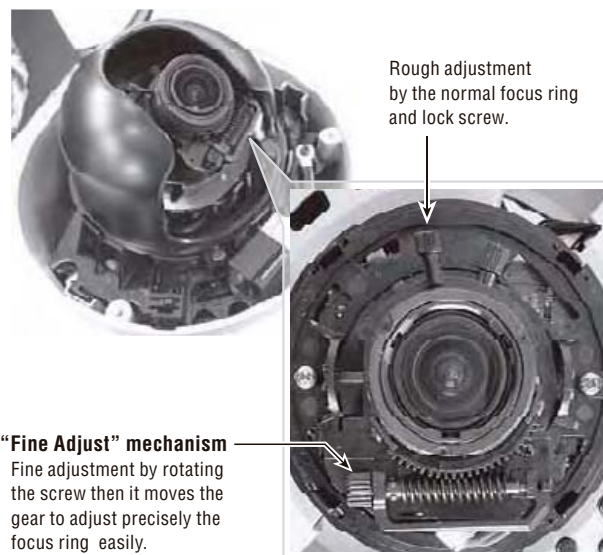
Bi-directional audio communication allows to listen to the sound or voice around the camera spot, and speak to or emit an alarm sound for the person near the camera at / from the monitoring room using the microphone and speaker attached at both side. This kind of function helps to make more advanced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



Object cameras: VN-V26U [P.19], VN-X35U [P.20], VN-V225U [P.22], VN-V225VPU [P.22], VN-X235U [P.23] and VN-X235VPU [P.23]

15 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).

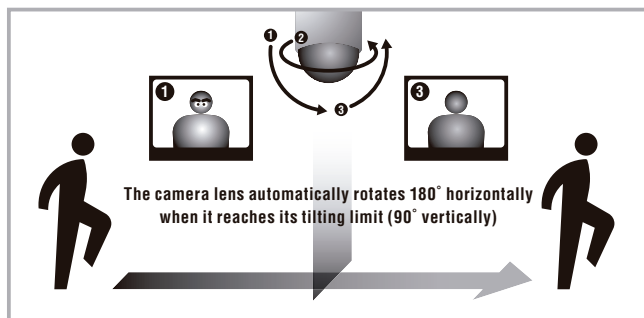


Object cameras: TK-C2201U [P.6], TK-C2201WPU [P.6], VN-V225U [P.22], VN-V225VPU [P.22], VN-X235U [P.23] and VN-X235VPU [P.23]

16 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.



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-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

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 Intelligent auto tracking

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.

17 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
- **Slow movement**
0.04° per a second at slowest
- **Silent pan/tilt movement**



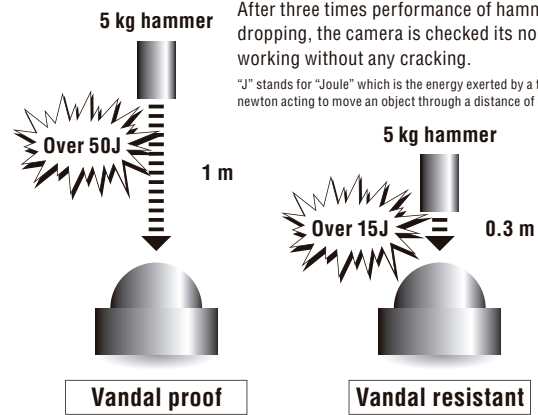
Pan motor (inside)
Tilt motor

Object cameras: VN-V685U [P.29], VN-V686BU [P.29] and VN-V686WPBU [P.30]

18 Vandal protection

Vandal Proof

Vandal Resistant



After three times performance of hammer dropping, the camera is checked its normal working without any cracking.

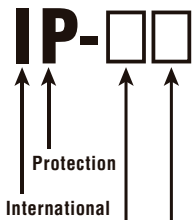
*"J" stands for "Joule" which is the energy exerted by a force of one newton acting to move an object through a distance of one metre.

Object cameras of **vandal proof**: TK-C2201WPU [P.6], TK-C215VP4U(A) [P.8], VN-C215VP4U(A) [P.21], VN-V225VPU [P.22] and VN-X235VPU [P.23]
Object cameras of **vandal resistant**: TK-C2201U [P.6], VN-V225U [P.22] and VN-X235U [P.23]

19 Dust and water protection (IP code)

Degrees of protection provided by electrical machinery and apparatus enclosures

IP66



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-C2201WPU [P.6], TK-C215VP4U(A) [P.8], VN-C215VP4U(A) [P.21], VN-V225VPU [P.22], VN-X235VPU [P.23] and VN-V686WPBU [P.30]

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20 3 way mount

3Way Mount

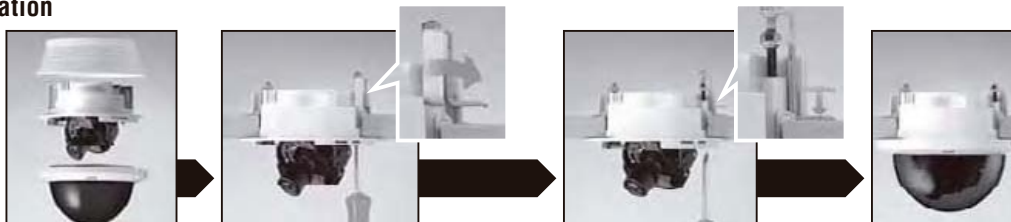
3 ways flexibility of installation

No additional mounting hardware is required for flush mounting on a ceiling. Wall mounting is even possible thanks to the camera triple axis rotation system. Furtherwre, use 6 inch electrical box, it's possible to directly install on ceiling.



Simple and flexible installation

Fixed dome camera uses an unprecedented flush mount installation method with which installation is as simple as ninety-degree rotation of the three L-shaped mounting brackets stored in the dome camera to secure it in place. No extra brackets are required. With this new method, installation can be completed in nearly one-fifth the time of our conventional surveillance cameras. Moreover, surface mounting is possible, too.

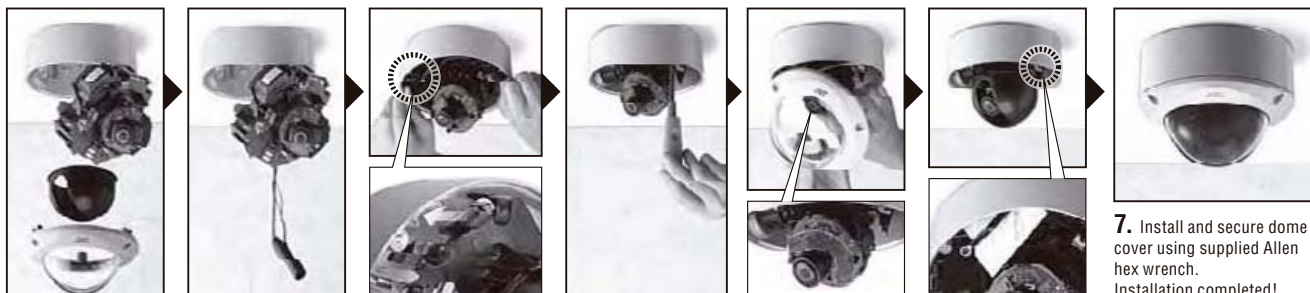


- 1.** Remove the camera's outer cover and ceiling panel.
- 2.** Once the camera has been inserted into the hole drilled in the ceiling, push in the screws and rotate them 90° clockwise in case of TK-C215 and VN-C215 cameras, or move the metal levers 90° clockwise in case of VN-V225U and VN-X235U.
- 3.** The springs attached to the screws will stretch and the camera can be firmly secured to the ceiling. **Note:** This must be carried out for all three screws.
- 4.** Mount the ceiling panel to complete installation.

Object cameras: TK-C215V4U(A) [P.7], TK-C215V12U(A) [P.7], VN-C215V4U(A) [P.21], VN-V225U [P.22] and VN-X235U [P.23]

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 resistant 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.

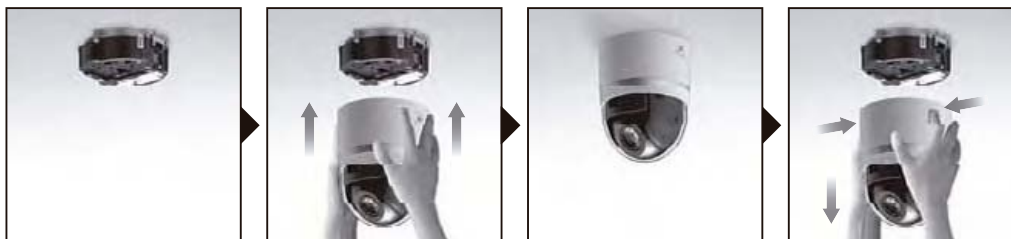
Object cameras: TK-C2201WPU [P.6], TK-C215VP4U [P.8], VN-C215VP4U(A) [P.30], VN-V225VPU [P.22] and VN-X235VPU [P.23]

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-V685U [P.29] and VN-V686BU [P.29]

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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"

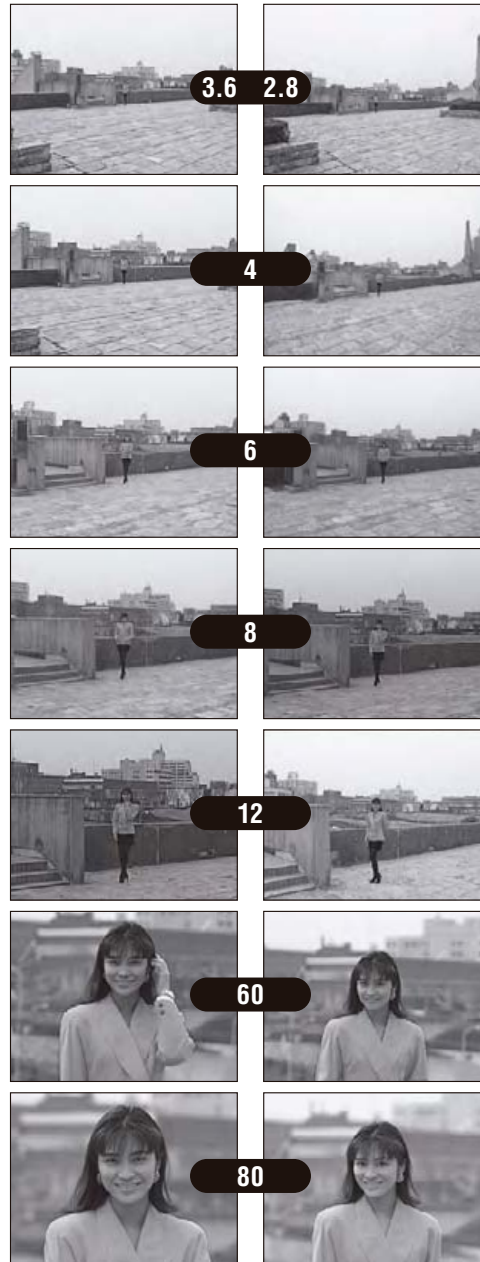
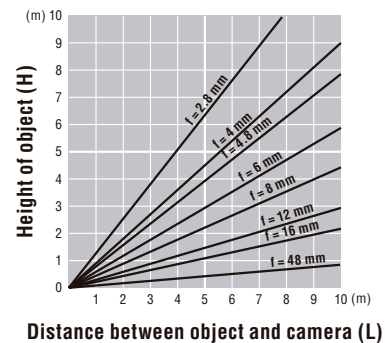
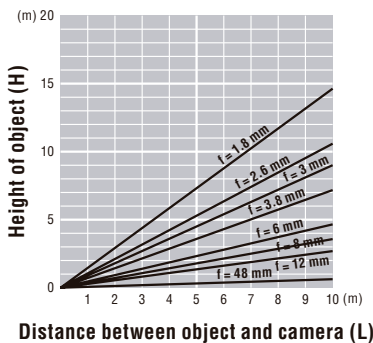
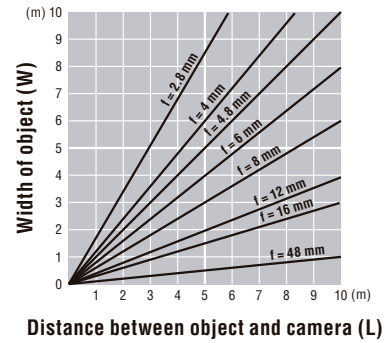
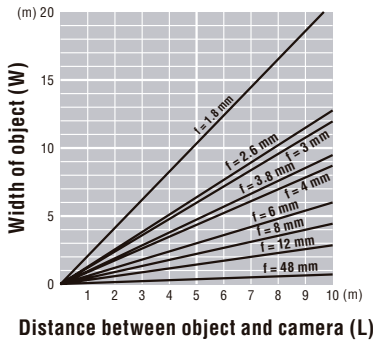
Lens focal length

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°

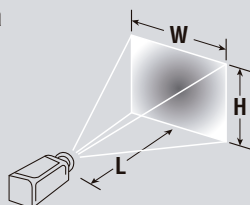
Simplified chart

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°



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

Formula



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

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

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

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.

24 Network specific information

IP address

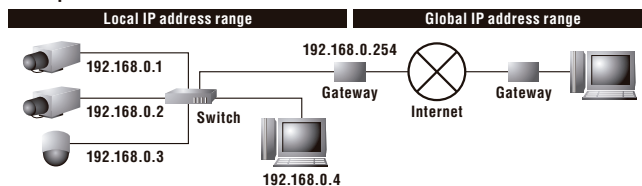
What is a private (local) IP address ?

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:



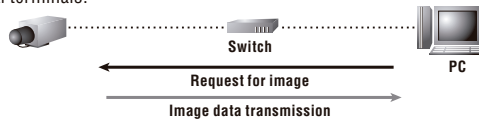
Simultaneous access by multiple users

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

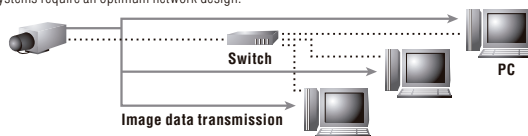
Since unicast involves one-to-one transmission between two terminals (e.g. between a camera and a monitoring PC), it is necessary for the bandwidths to be equivalent to the number of terminals when identical information is to be acquired by several terminals.



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.

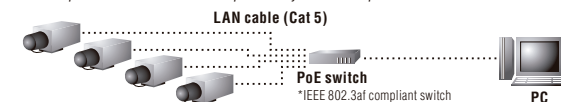


PoE (Power over Ethernet)

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.

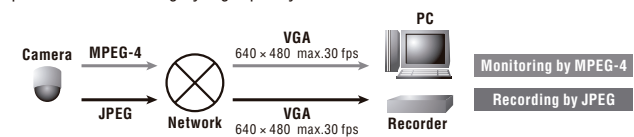
For example, when VN-V26U sends out 2 audio streams and receives 1 audio stream, data volume will be as follows.

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 :

http://www.jvc-victor.jp/english/worldmap_pro/index.html

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)

This refers to the quality assurance of connection parts such as unshielded twisted pair (UTP) cables and connectors. With LAN, category 3 is primarily utilized. For 100 BASE-TX, category 5 and above are used, and category 5e and above are required for 1,000 BASE-T.

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 an internal cabling path. Differs from broadcast video.

Compact flash (CF)

This is the standard for memory cards advocated by San Disk Corporation, and is utilized as a storage device for digital cameras etc. Compact flash combines flash memory that does not go off even when the power is turned off and an I/O controller circuit on just one card.

Common intermediate format (CIF)

This is the universal video signal format regulated by ITU-T H.261. CIF supports moving images with a data rate of up to 30 frames per second and a resolution of 352×288 pixels.

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 previous 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 **Java applet**

This is a small program that is distributed from a WWW server to a web browser (client) and then executed by the Web browser. It is used for the purpose of adding movement to the screen.

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 standardized 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.

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 NAT.

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.

Q **Quarter common intermediate format (QCIF)**

With QCIF, the resolution of CIF is reduced in similar proportion by half and the resolution becomes 176×144 pixels. The number of pixels is one-fourth that of CIF and this format supports moving images at a data rate of up to 30 frames per second.

Quality level

This is used for JVC IP Products' JPEG images to determine to what extent the original image should be compressed. There are settings for either seven levels or three levels (high, medium and low). Quality level is closely related to image quality and the lower the degree of compression, the higher the image quality; however, this also causes the volume of data in the image file to increase. The default setting is either "2" or "Medium".

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 performance of camera. Ordinarily, a televised TV broadcast with fairly good horizontal resolution has a resolution of around 330 TV lines.

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** **WDR** Refer to **P.42**

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.

Products		Features	Specification
GD-42X1	42" LCD Monitor	P. 14	P. 16
GM-F420S/GM-F470S/GM-F520S	42" /47" /52" LCD Monitor	P. 14	P. 16
LM-H171/LM-H191	17" /19" LCD Monitor	P. 14	P. 16
TK-C1530U	1/2" ExDR Day/Night Camera	P. 4	P. 11
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TK-C2201U	1/3" Fixed Dome Camera (Vandal Resistant)	P. 6	P. 12
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VN-C215VP4U(A)	1/4" Fixed Network Dome Camera (Vandal Proof)	P. 21	P. 26
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VN-X235U	1/3" Fixed Megapixel Network Dome Camera (Vandal Resistant)	P. 23	P. 28
VN-X235VPU	1/3" Fixed Megapixel Network Dome Camera (Vandal Proof)	P. 23	P. 28
VN-X35U	1/3" Megapixel Network Camera	P. 20	P. 25
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VR-N900U	Network Video Recorder (Hybrid Network and Analog Cameras)	P. 33 – P. 34	P. 35

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