



\*i-VMD Type3 : Intruder detection / Object detection / Cross line detection / Loitering detection / Scene change detection / Heat-map / People Counting / MOR(Moving Object Remover)

## High resolution, sensitivity, and built-in intelligent features

### Key Features

- 360° monitoring with a wide variety of transmission modes : Panorama, Double Panorama, Quad PTZ, Single PTZ, and Quad streams (H.264)
- **9 Megapixel** images up to 15 fps.
- **VIQS** (Variable Image Quality on Specified area) technology allows the designated eight areas to retain higher image quality while the excluded area will have a decreased image quality, which enables to use lower image file size and bit rate. Only for fisheye image.
- Multiple H.264 (High profile) streams and JPEG streams ensure simultaneous real time monitoring and high resolution recording by new **4K ULTRA HD engine**.
- Smooth PTZ operation without mechanical action
- Built-in distortion correction function
- A fisheye lens control function realizes intelligible screen operation intuitively.
- Smartphone monitoring : Direct camera control from smartphone
- **Wide dynamic range** and **ABS** (Adaptive Black Stretch) technologies deliver wider dynamic range.
- **Smart coding Technology : Group of Pictures (GOP) control** function removes unnecessary information from the frame for realizing efficient encoding. **Auto VIQS** (Variable Image Quality on Specified area) function recognizes the no movement area in a video automatically and lowering the resolution of it to reduce the data size. **GOP control** and **Auto VIQS** can save the network bandwidth and the disk space of recorder effectively.
- High sensitivity with **Day/Night (ICR\*)** function : 0.3 lx (Color), 0.04 lx (B/W) at F1.9  
\* ICR: IR Cut filter Removal
- **Built-in ABF** enables automatic focus adjustment for sharp image both in color and B/W modes, and corrects the focus shift that caused by temperature difference.  
You can install the camera even in the environment having drastic changes in temperature without focal blur.
- Digital Noise Reduction: 3D-DNR ensures noise reduction in various conditions.
- Progressive scan ensures clear images with less motion blur and no tearing even when the subject is moving.
- Superior color reproduction by primary (RGB) color filter.
- Electronic sensitivity enhancement : Auto (Up to 16x) / OFF
- Selectable light control modes :  
Indoor scene (50 Hz) / Indoor scene (60 Hz) / ELC (maximum exposure time)  
Indoor scene (50 Hz / 60 Hz) : Flicker caused by fluorescent lightning will be automatically compensated.  
ELC (maximum exposure time) : The lightning control will be automatically performed by adjusting shutter speed in the range of ELC.
- **VMD** (Video Motion Detector) with 4 programmable detection areas, 15 steps sensitivity level and 10 steps detection size
- Privacy Zone can mask up to 8 private areas, such as house windows and entrances/exits. Configurable only on the fisheye image.
- Camera title display : Up to 20 alphanumeric characters on the browser
- Alarm sources including 3 terminal input, VMD and Panasonic alarm command can trigger actions such as SDXC/ SDHC/SD memory recording, FTP image transfer, E-mail notification, Indication on browser, Alarm terminal output, HTTP notification, and Panasonic protocol output.
- Full duplex bi-directional audio allows interactive communication between camera site and monitoring site.
- Prioritized stream control : One of the video streams can be prioritized when multiple recorders or client PCs are accessing the camera so that the recorder or the client PC can maintain the frame rate.
- SDXC/SDHC/SD Memory card slot for manual recording (H.264 / JPEG), alarm recording (H.264 / JPEG) and backup upon network failure (JPEG)
- Can be added new intelligent extension software (Extension software) in addition to built- in VMD (Video Motion Detection), alarm function.
- **Intelligent function** (Extension software) such as Intruder / Loitering / Scene change / Object / Cross line detection, People Counting (Cross line), MOR(Moving Object Remover) Function, Heat-map (High Traffic Zone / Long-stay Zone)
- Super Chroma Compensation function realizes a better color
- H.264 max. bit rate/client and Total bit rate control allows flexible network traffic management. Frame rate priority mode controls bit rate and compression ratio to provide the specified frame rate.
- Internet mode : H.264 images can be transmitted over HTTP protocol.
- Multi-language : English / Italian / French / German / Spanish / Portuguese / Russian / Chinese / Japanese
- IPv4/IPv6 protocol supported
- Supports SSL, DDNS (viewnetcam, RFC2136)
- Still images (JPEG) can be viewed on mobile phones via Internet.
- IP66 rated water and dust resistant.  
Compatible with IEC60529 measurement standard, Type 4X(UL50), NEMA 4X compliant.
- Dehumidification device for use in various weather conditions
- Operating temperature -40 °C to +50 °C (-40 °F to 122 °F)
- Vandal resistant mechanism for high reliability
- "Railway applications – Electronics equipment used on rolling stock" compatible with EN50155-T3, EN50121, DIN5510
- Low profile design for discrete installation
- ONVIF compliant model

### 9 Megapixel Fisheye mode

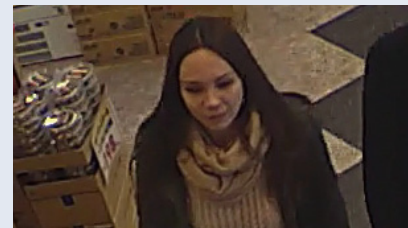


9M (3K × 3K) high-resolution performance enables sharp rendering of objects and people's faces at the edge sections of the fisheye image.

8 m



4 m



\*Sample screen from 9 Megapixel Fisheye mode

### Double Panorama mode



### Panorama mode



### Quad PTZ mode



### Single PTZ mode



# Specifications

<b>Camera</b>	Image Sensor	1/2 type MOS image sensor, Built-in primary color filter	
	Scanning Mode	Progressive	
	Scanning Area	5.54 mm(H) × 5.54mm (V) (7/32 inches (H) × 7/32 inches (V))	
	Minimum Illumination	Color : 0.3 lx (F1.9, Maximum shutter : Off (1/30 s), AGC : High) Color : 0.02 lx (F1.9, Maximum shutter : max. 16/30 s, AGC : High) <sup>1</sup> BW : 0.04 lx (F1.9, Maximum shutter : Off (1/30 s), AGC : High) BW : 0.003 lx(F1.9, Maximum shutter : max. 16/30 s, AGC : High) <sup>1</sup>	
	White Balance	AWC (2,000 - 10,000 K), ATW1 (2,700 - 6,000 K), ATW2 (2,000 - 6,000 K)	
	Light Control Mode	Indoor scene (50 Hz / 60 Hz) / ELC	
	Maximum shutter	max. 1/10000 s, max. 1/4000 s, max. 1/2000 s, max. 1/1000 s, max. 1/500 s, max. 1/250 s, max. 1/120 s, max. 1/100 s, max. 2/120 s, max. 2/100 s, max. 3/120 s, max. 3/100 s, max. 1/30 s, max. 2/30 s, max. 4/30 s, max. 6/30 s, max. 10/30 s, max. 16/30 s	
	Wide dynamic range	On / Off	
	Adaptive Black Stretch	On / Off (only when Wide Dynamic range : Off)	
	AGC	On(High) / On(Mid) / On(Low) / Off	
	Day/Night (ICR)	Off / On / Auto1(Normal) / Auto2(IR Light) / Auto3(SCC)	
	Digital Noise Reduction	High / Low	
	Video Motion Detection	On / Off, 4 areas available	
	Number of the preset positions	16 Preset can only be used when the image type is Quad PTZ or Single PTZ.	
	Auto mode	Auto pan/ Preset sequence Auto mode can only be used when the image type is Quad PTZ or Single PTZ.	
	Self return	10 s / 20 s / 30 s / 1 min / 2 min / 3 min / 5 min / 10 min / 20 min / 30 min / 60 min Self return can only be used when the image type is Quad PTZ or Single PTZ.	
	Privacy Zone	On / Off (up to 8 zones available)	
	VIQS	On / Off (up to 8 zones) Only for fisheye image.	
	Camera Title (OSD)	On / Off Up to 20 characters (alphanumeric characters, marks) * You can specify characters to be displayed on each of the four screens when "Quad streams" is selected.	
	Back focus	Auto back focus / Focus / Adjusting method (Auto/ Preset/ Fix)	
	Video analytics	Optional Alarm : Intruder detection, Object detection, Cross line detection, Loitering detection, Scene change detection Others: Heat-map, People Counting, MOR(Moving Object Remover) * Alarm and others don't work as the same time.	
	Rotation	mechanical : -45° to 45° electrical : Panorama/Double Panorama : 90°, 180°, 270°, Fisheye : N/A	
	<b>Lens</b>	Focal Length	1.38 mm (1/16 inches)
		Angular Field of View	Horizontal : 180° Vertical : 180°
		Maximum Aperture Ratio	1 : 1.9
<b>Browser GUI</b>	Adjusting angle	±45°	
	Image rotation	Mechanical Image rotation, about every 3.3°	
	Camera Control	Brightness, AUX On / Off	
	Display Mode	Spot, Quad : Image from 16 cameras can be displayed in 4 different Quad screens or 16 split screen (JPEG only), 20 characters camera title available.	
	Zoom	electronic zoom	
	Camera Title	Up to 20 alphanumeric characters	
	Clock Display	Time : 12H/24H, Date: 5 formats on the browser, Summer time (Manual)	
	Alarm Control	Reset	
	One Shot Capture	A still picture will be displayed on a newly opened window.	
	Audio	Mic (Line) Input : On / Off Volume adjustment : Low / Middle / High Audio Output : On / Off Volume adjustment : Low / Middle / High	
	SD Memory Data Download	Still or motion Images recorded in the SDXC/SDHC/SD memory card can be downloaded.	
	GUI/Setup Menu Language	English, Italian, French, German, Spanish, Portuguese, Russian, Chinese, Japanese	
	System Log	Up to 100 (Internal), Up to 4,000 (SDXC/SDHC/SD memory when the recording format is set to JPEG), error logs	
	Supported OS <sup>12</sup>	Microsoft® Windows® 8.1 Microsoft® Windows® 8 Microsoft® Windows® 7 Microsoft® Windows Vista®	
	Supported Browser	Windows® Internet Explorer® 11 (32 bit) Windows® Internet Explorer® 10 (32 bit) Windows® Internet Explorer® 9 (32 bit) Windows® Internet Explorer® 8 (32 bit) Windows® Internet Explorer® 7 (32 bit)	
<b>Network</b>	Network IF	10Base-T / 100Base-TX, RJ45 connector	
	<Ceiling> <Wall>	• <b>9M Fisheye mode</b> (Factory default mode) max.15 fps 2992×2992 / 1280×1280 / 640×640 / 320×320 • <b>4M Fisheye mode</b> max.30 fps 2048×2048 / 1280×1280 / 640×640 / 320×320	
		• <b>Double Panorama mode</b> max.15 fps 2560×1440 / 1920×1080 / 1280×720 / 640×360 / 320×180 • <b>Quad PTZ / Single PTZ mode</b> max.15 fps 2560×1920 / 2048×1536 / 1600×1200 / 1280×960 / 800×600 / 640×480 / 320×240 • <b>8M Fisheye + Double Panorama mode</b> max.7.5 fps (Fisheye) 2816×2816 / 1280×1280 / 640×640 / 320×320 (Double Panorama)1280×720 / 640×360 • <b>4M Fisheye + Double Panorama mode</b> max.15 fps (Fisheye) 2048×2048 / 1280×1280 / 640×640 / 320×320 (Double Panorama)1280×720 / 640×360 • <b>8M Fisheye + Quad PTZ mode</b> max.7.5 fps (Fisheye) 2816×2816 / 1280×1280 / 640×640 / 320×320 (Quad PTZ) 1280×960 / 800×600 / 640×480 • <b>4M Fisheye + Quad PTZ mode</b> max.15 fps (Fisheye)2816×2816 / 1280×1280 / 640×640 / 320×320 (Quad PTZ) 1280×960 / 800×600 / 640×480 • <b>Quad streams mode</b> (H.264 only) (Ch1 - Ch4) 1280×960 / 800×600 / 640×480 / 320×240 max.15 fps (Quad PTZ) 2560×1920 / 2048×1536 / 1280×960 / 800×600 / 640×480 / 320×240 max.5 fps	
	<Ceiling>	• <b>Double Panorama mode</b> max.15 fps 2560×1440 / 1920×1080 / 1280×720 / 640×360 / 320×180 • <b>Quad PTZ / Single PTZ mode</b> max.15 fps 2560×1920 / 2048×1536 / 1600×1200 / 1280×960 / 800×600 / 640×480 / 320×240 • <b>8M Fisheye + Double Panorama mode</b> max.7.5 fps (Fisheye) 2816×2816 / 1280×1280 / 640×640 / 320×320 (Panorama) 1280×720 / 640×360 • <b>4M Fisheye + Double Panorama mode</b> max.15 fps (Fisheye) 2048×2048 / 1280×1280 / 640×640 / 320×320 (Panorama) 1280×720 / 640×360 • <b>8M Fisheye + Quad PTZ mode</b> max.7.5 fps (Fisheye) 2816×2816 / 1280×1280 / 640×640 / 320×320 (Quad PTZ) 2560×1920 / 2048×1536 / 1280×960 / 800×600 / 640×480 / 320×240 max.5 fps	
	<Wall>	• <b>Panorama mode</b> max.15 fps 2560×1440 / 1920×1080 / 1280×720 / 640×360 / 320×180 • <b>Quad PTZ / Single PTZ mode</b> max.15 fps 2560×1920 / 2048×1536 / 1600×1200 / 1280×960 / 800×600 / 640×480 / 320×240 • <b>8M Fisheye + Panorama mode</b> max.7.5 fps (Fisheye) 2816×2816 / 1280×1280 / 640×640 / 320×320 (Panorama) 1280×720 / 640×360 • <b>4M Fisheye + Panorama mode</b> max.15 fps (Fisheye) 2048×2048 / 1280×1280 / 640×640 / 320×320 (Panorama) 1280×720 / 640×360	
	Resolution: H.264 JPEG (MJPEG)		

<b>Network Image compression method</b>	H.264 <sup>3</sup>	Transmission Mode	Constant bit rate / VBR / Frame rate / Best effort / Advanced VBR
	Frame Rate	Frame Rate	<When VBR / Frame rate / Advanced VBR is selected> 1 fps/ 3 fps/ 5 fps/ 7.5 fps/ 10 fps/ 12 fps/ 15 fps/ 20 fps/ 30 fps* * "Frame rate" is limited to "Bit rate". When a value with an asterisk (*) on the right of it is selected, the actual frame rate may be lower than the value selected.
		Max Bit Rate/ Client	64 kbps / 128 kbps / 256 kbps / 384 kbps / 512 kbps / 768 kbps / 1024 kbps / 1536 kbps / 2048 kbps / 3072 kbps / 4096 kbps / 6144 kbps / 8192 kbps / 10240 kbps / 12288 kbps / 14336 kbps / 16384 kbps / 20480 kbps / 24576 kbps / 30720 kbps * The available range of the H.264 bit rate varies depending on the setting selected for "Image capture size".
		Image Quality	<When Constant bit rate/ Best effort is selected> Low/ Normal/ Fine <When VBR is selected> 0 SUPER FINE / 1 FINE / 2 / 3 / 4 / 5 NORMAL / 6 / 7 / 8 / 9 LOW
	Smart Coding mode	Smart Coding mode	On (Low / Mid / High) / Off (Only when "Variable bit rate" is selected)
		Transmission Type	Unicast / Multicast
	JPEG (MJPEG)	Image Quality	0 SUPER FINE / 1 FINE / 2 / 3 / 4 / 5 NORMAL / 6 / 7 / 8 / 9 LOW (10 steps: 0-9)
		Transmission Type	Pull / Push
	Transmission interval	Transmission interval	0.1 fps - 30 fps (JPEG frame rate will be restricted when displaying both JPEG and H.264 images.)
<b>Network</b>	Audio Compression	G.726 (ADPCM) 32 kbps/16 kbps, G.711 64 kbps / AAC-LC <sup>4</sup> 64kbps / 96kbps / 128kbps	
	Total Bit Rate	Unlimited / 64 / 128 / 256 / 384 / 512 / 768 / 1,024 / 2,048 / 4,096 / 8,192 kbps	
	Supported Protocol	IPv6 : TCP/IP, UDP/IP, HTTP, HTTPS, RTP, FTP, SMTP, DNS, NTP, SNMP, DHCPv6, MLD, ICMP, ARP IPv4 : TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, SMTP, DHCP, DNS, DDNS, NTP, SNMP, UPnP, IGMP, ICMP, ARP	
	FTP Client	Alarm image transmission, FTP periodic transmission (When the FTP transmission is failed, backup on an optional SD memory card is available.)	
	No. of Simultaneous Users	Up to 14 users (Depends on network conditions)	
	SDXC/SDHC/SD Memory Card (Option)	SD (SDHC/SDXC) card: Panasonic 2 GB, 4 GB*, 8 GB*, 16 GB*, 32 GB*, 64 GB** model *SDHC card, ** SDXC card (except miniSD card and microSD card)	
	Cellular Phone Compatibility	iPad, iPhone, iPod touch (iOS 4.2.1 or later) Android™ mobile terminals	
	Mobile Terminal Compatibility	iPad, iPhone, iPod touch (iOS 4.2.1 or later) Android™ mobile terminals	
	Alarm Source	3 terminals input, VMD, Command alarm	
	Alarm Actions	SDXC/SDHC/SD memory recording, E-mail notification, HTTP alarm notification Indication on browser, FTP image transfer, Panasonic protocol output	
Alarm Log	Alarm Log	With SDXC/SDHC/SD memory card : Up to 50,000 logs for each SD memory card	
	Schedule	Alarm / VMD / Access permission / H.264 recording / Scene file	
<b>Input/ Output</b>	Monitor output <sup>5</sup>	VBS : 1.0 V (p-p)/75 Ω, composite, ø3.5 mm mini jack (monaural) An NTSC or PAL monitor can be connected to the camera (the monitor type can be changed by the software). Audio out or monitor out can be selected for the audio/monitor output plug	
	Microphone/Line Input	For microphone input	ø3.5 mm stereo mini jack, Input impedance : Approx. 2 kΩ Recommended applicable microphone : Plug-in power type Supply voltage : 2.5 V ±0.5 V Recommended sensitivity of microphone : -48 dB ±3 dB (0 dB=1 V/Pa, 1 kHz)
		For line input	Input level : Approx. -10 dBV
	Audio Output	ø3.5 mm stereo mini jack Output impedance : Approx. 600 Ω (unbalanced) Output level : -20 dBV	
External I/O Terminals	ALARM IN1 (DAY/NIGHT IN), ALARM IN2 (ALARM OUT), ALARM IN3 (AUX OUT)		
<b>General</b>	Mounting method	Ceiling / Wall	
	Safety	UL (UL60950-1), C-UL (CAN/CSA C22.2 No.60950-1), CE, IEC60950-1	
	EMS	FCC (Part15 ClassA), ICES003 ClassA, EN55022 ClassB, EN55024	
	Power Source and Power Consumption	DC 12 V, PoE (IEEE802.3af compliant) / DC12 V : 910 mA / Approx. 10.9 W PoE DC 48 V : 200 mA / Approx. 9.6 W (Class 0 device)	
	Ambient Operating Temperature	-40 °C to +50 °C (-40 °F to 122 °F)	
	Ambient Operating Humidity	10% to 90 % (no condensation)	
	Water and Dust Resistance <sup>6</sup>	IP66, IEC60529 measuring standard compatible, Type 4X(UL50), NEMA 4X compliant	
	Shock Resistance	Compliant with 50J (IEC 60068-2-75 / IK10 (IEC 62262)	
	Railway Application	EN50155-T3, EN50121, DIN55110	
	Dimensions	When using the attachment plate : ø154 mm × 60.5 mm (H) (ø6-1/16 inches × 2-3/8 inches (H)) Dome radius 35 mm (1-3/8 inches) When using the base bracket: ø164 mm × 96.5 mm (H) {ø6-15/32 inches × 3-13/16 inches (H)} Dome radius 35 mm (1-3/8 inches)	
Mass (approx.)	When using the attachment plate : Approx. 860 g (1.90 lbs) When using the base bracket : Approx. 1.3 kg (2.87 lbs)		
Finish	Main body : Aluminum die cast, light gray Dome section : Clear polycarbonate resin		

<sup>1</sup> Converted value

<sup>2</sup> Refer to "Notes on Windows Vista® / Windows® 7 / Windows® 8 / Windows® 8.1" on the provided CD-ROM for further information about system requirements for a PC and precautions when using Microsoft® Windows® 8.1 or Microsoft® Windows® 8 or Microsoft® Windows® 7 or Microsoft® Windows Vista®.

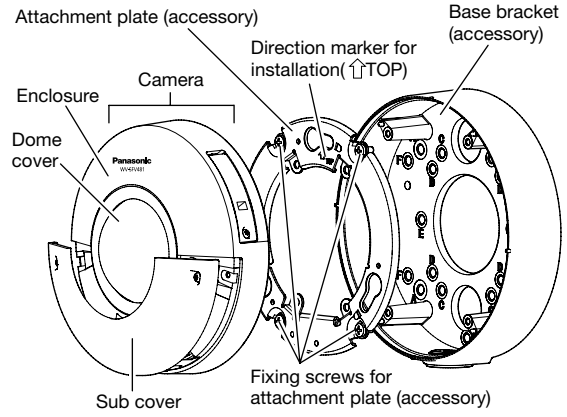
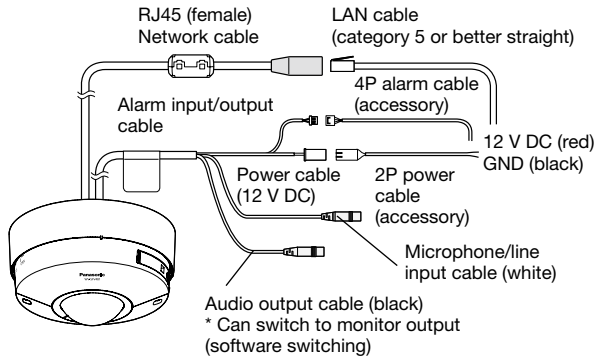
<sup>3</sup> Transmission for 2 streams can be individually set.

<sup>4</sup> When recording audio on an SD memory card, only AAC-LC (Advanced Audio Coding - Low Complexity) can be used.

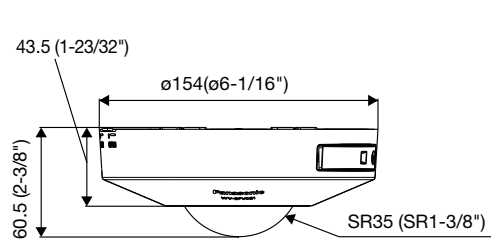
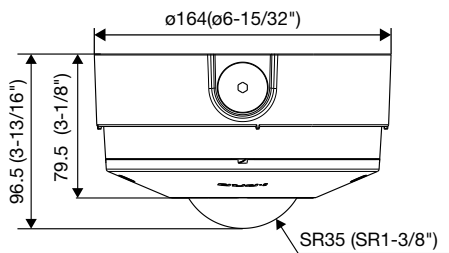
<sup>5</sup> In order to be able to switch the monitor output, "9M Fisheye" or "4M Fisheye" must be selected for "Image capture mode". For information about usage limitations, refer to "10.1 Configure the basic settings [Basic]" of the Operating Instructions.

<sup>6</sup> Only when installation work is properly performed according to the instructions in this book and appropriate waterproof treatment is performed.

## Part Names and Functions



## Appearance



Unit : mm (inches)

## Optional Accessories

### Ceiling Mount Bracket WV-Q121B



(Use with the WV-Q124 (suspension mount bracket) to be able to install on a ceiling.)

### Wall Mount Bracket WV-Q122A



(Use with the WV-Q124 (suspension mount bracket) to be able to install on a wall.)

### Mount Bracket WV-Q124



(Use when installing the WV-SFV481 using the WV-Q122A.)

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### Important


- Safety Precaution: Carefully read the Important Information, Installation Guide and operating instructions before using this product.
- Panasonic cannot be responsible for the performance of the network and/or other manufacturers' products used on the network.

- All product pictures are NTSC models.
- Masses and dimensions are approximate.
- Specifications are subject to change without notice.

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