

## “i-PRO SmartHD solutions”

Smart investment with more than just video surveillance.....

Better identification with more evidence

Smart investments lower your TCO

More than just video surveillance

Distinctive and versatile industry product solutions

**i-PRO**  
SmartHD Solutions

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Printed in Japan (5A-004A)



i-PRO SmartHD Solutions for  
**Logistics**

**i-PRO**  
SmartHD Solutions

# What are the current problems?

## Goods-related

- » Loss of goods (goods not where they should be)
- » Damage to goods (stacked goods collapsing, falling, colliding with forklifts, etc.)
- » Goods placed in prohibited areas such as passages or emergency exits



## Accidents and problems

- » Collisions between forklifts and other forklifts, people or goods
- » Damage to equipment
- » Problems and stops in logistics sorting line



## System management

- » Management of each distribution site is handled separately and not centralized
- » High-resolution data is stored, enlarging data size and shortening data retention period
- » Takes time to find video of problems that occurred



## Others

- » Cannot monitor warehouse or detect changes when lights are turned off at night
- » Difficult to balance monitoring/management of employees and suppliers while considering their privacy
- » Cannot assign a person to constantly monitor video
- » Even if a problem occurs, it takes a long time to be discovered



## Existing analog equipment

- » Poor camera quality, meaning the situation cannot be accurately determined
- » Narrow angle of view, and many blind spots even when a large number of cameras are installed
- » Information other than images cannot be obtained
- » Problems cannot be detected unless the video is constantly watched
- » Takes time to find video at the time of trouble



## Solutions

Panasonic systems solve all of these problems and provide you with solutions to suit your needs

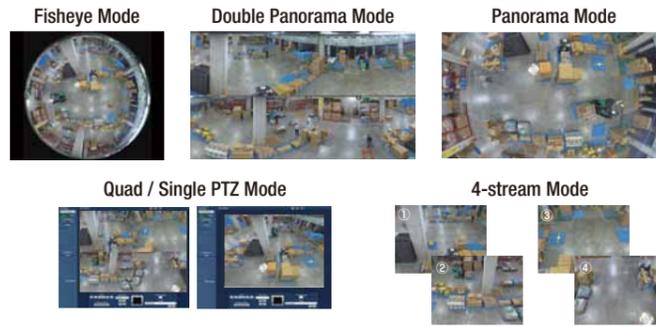
- » High resolution data to perform detailed checks for detecting problems
- » Monitor without blind spots and record problems that occur
- » Manage people entering and exiting warehouse by video (in addition to entry and exit system that uses cards)
- » Monitor in low-light environments such as when lights are turned off at night
- » Multi-site monitoring with a network
- » Product lineup for both indoor and outdoor installation
- » Camera recognizes occurrence of problems and notifies the administrator
- » One-stop solutions including cameras, recorders, and management software
- » Provide people/forklifts flow line and heat map information to assist in making efficient placement decisions

# Warehouse

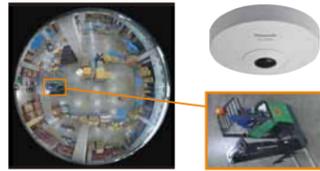


## 360-degree Monitoring without Blind Spots

The 360-degree Network Camera can capture images in all directions. Available modes include Fisheye, Double Panorama, Panorama, Quad PTZ, and 4-stream, and the camera can output video images based on the selected video mode for reduced loads on the viewing system.



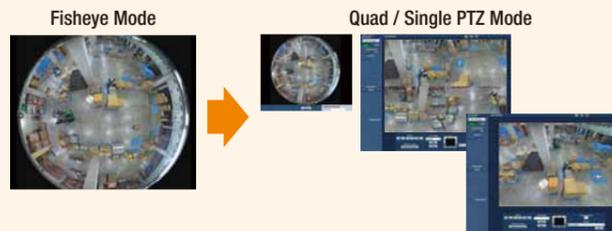
A high resolution of up to 9 megapixels (2,992 x 2,992)



This is the **Panasonic** difference!

### De-warping

The 360-degree Network Camera can generate and output video images for each mode within the camera unit. Also, the Network Disk Recorder (WJ-NV300) or i-PRO Management Software (WV-ASM200) can be used on 360-degree omnidirectional images captured by Fisheye Mode to convert to a format that is easier to view, such as Quad PTZ. Because the 360-degree omnidirectional video image is stored in the recorder, nothing is missed within the viewing area.



In addition, the area that you want to view can be selected using a controller or mouse to allow you to automatically move the viewing spot for patrolling the area. Even during patrolling, areas not visible on the screen are all stored in the recorder in Fisheye Mode so that nothing is left unseen. The Pan-Tilt of the 360-degree Network Camera does not use mechanical components, and so provides a smooth movement without the mechanized wear that could adversely affect camera longevity.

## Providing Smooth Images with High Image Quality Exceeding 4K

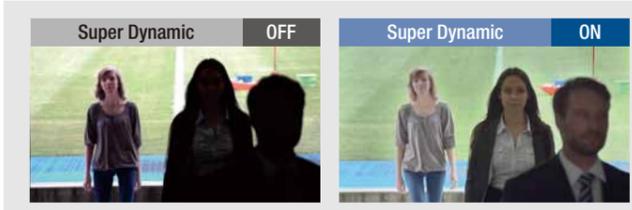
Panasonic network cameras use the newly developed LSI platform and highly sensitive MOS sensors to provide video with high image quality and smooth and natural color tones. Clear and easy to view images of the location you want to monitor can be provided in various locations, both indoors and outdoors. The maximum resolution is 4,000 x 3,000 pixels (WV-SFV781L / WV-SPV781L). The Maximum frame rate of 60 fps at 2,048 x 1,536 pixels can be captured to support locations where fast cars and trains pass by. JPEG/H.264 multiple streaming transmission is also supported.



## Clearly Capturing Images in Locations with a Large Difference in Illumination



In installation environments with differences in brightness, the Super Dynamic (SD) function brightens dim areas with low visibility and reduces the brightness of areas where blown-out highlights can occur due to over-brightness, providing a natural image that is easy to view. In warehouse entrances, this enables the capturing of sharp images of people's faces as they enter from the outside when exposed to direct sunlight. With the Super Dynamic (SD) function, the camera can be installed without worrying about lighting conditions that vary based on the time of day and season.



## Strong Low Light Performance in Color

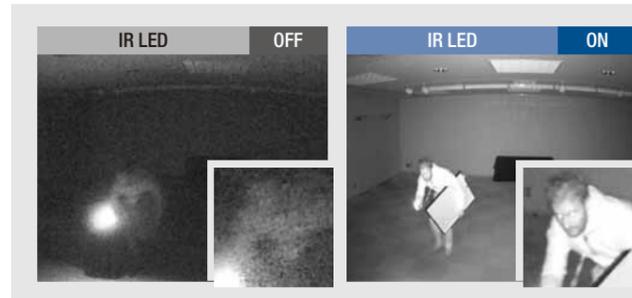
Even in dark locations, color images with low noise can be reproduced to clearly view the movement of people. This is effective for not only parts of the warehouse that are constantly dim, but also normal locations after the lights are turned off.



## 0 lux Pitch Dark Locations



Cameras with an IR LED can be used to monitor environments that are completely dark. This enables areas without the level of illumination required to be monitored to detect intruders. The IR LED can illuminate a wide area so that monitoring is not limited to a specific part of the image. The built-in IR LED can capture subjects up to 30 meters away. The lens design also has a wide angle of view to allow monitoring over a wide area.



## Day / Night Automatic Mode Switching

In locations where it is bright during the day but dark at night, the camera can automatically determine the brightness of the area and record video under the optimum conditions. During nighttime hours, the camera automatically switches to black-and-white video for providing footage with high visibility.

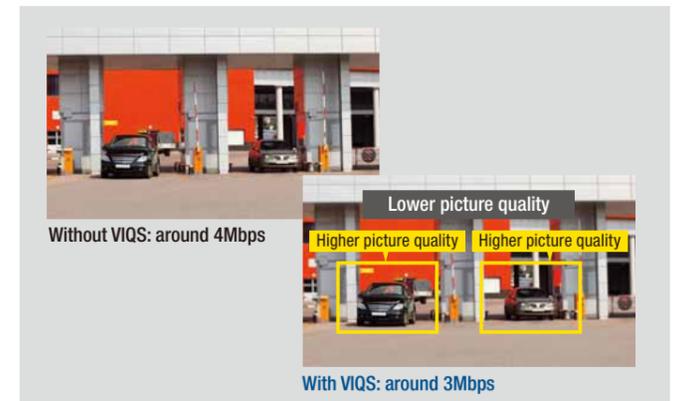


## VIQS (Variable Image Quality on Specified Area)



Moving areas that must be monitored are captured at high resolution, and areas where the video remains unchanged are captured at low resolution for reducing the total amount of image data.

Up to eight locations can be specified as high-resolution monitoring areas.



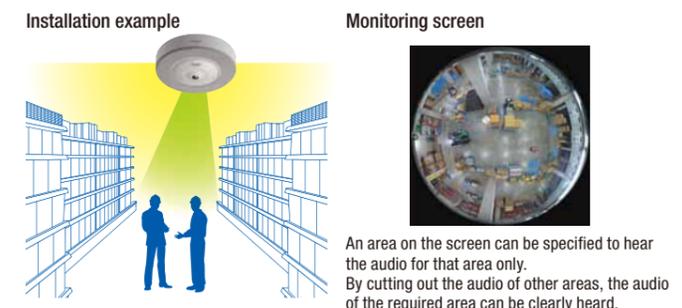
## Mobile Monitoring

Locations such as loading sites and sorting lines can be checked in real time even when moving to the warehouse from the office by using a tablet PC or smartphone. Also, you can check video data stored on the recorder or an SD memory card installed in the camera. If problems occur, you can look at the video and check on the situation even when away from the actual location.



## Monitoring a Wide Area and Playing Back Audio for a Specific Area

With a combination of a 360-degree Network Microphone and a 360-degree Network Camera, the audio of a specific location in the video can be heard by itself. For example, a single 360-degree Network Microphone with 360-degree Network Camera can be installed on the ceiling, enabling the separate conversations at each area to be heard in detail. This enables the cause to be immediately identified when a problem occurs.



# Outside



## High Resolution/Wide Range 4K Camera

A single 4K camera can capture video of a wide area such as a parking lot. A part of the image can be zoomed in as necessary to check an area in detail. A 4K camera has 27 times the resolution of an analog (VGA) camera, 9 times that of an HD (1,280 x 720) camera, and 4 times that of a Full HD (1,920 x 1,080) camera.

### Cropping function

Specific areas can be selected from the entire image to cut out. This enables monitoring to be focused on a specific area such as the entrance or corridor of a parking lot, while viewing the entire image.



## PTZ Camera for Wide Range Monitoring and a High Zoom Ratio

Normal fixed lens cameras can only monitor a certain direction, but the lens of a PTZ camera can be operated remotely to switch to the direction you want to view. Detailed areas can also be zoomed in to a maximum of 90x. Since the cameras can be infinitely rotated 360-degree at a high speed of 300 degrees/sec, you will not miss the subjects you want to monitor.

### Preset Sequences

If the locations you want to monitor are fixed, you can register them in advance to move to them with a single touch or automatically patrol the registered locations. Data can be saved to a recorder by automatically patrolling the registered locations, without intervention by an operator. Ranges that cannot be covered with a single fixed lens camera can be covered by patrolling.



## Advanced Auto Tracking

When suspicious movements are discovered in the video, the camera can lock on to that person to perform automatic tracking using the pan, tilt, and zoom functions. A wide range can be covered by endless 360 degree horizontal rotation and 210 degree vertical rotation, and situations can be monitored in detail with a maximum of 90x zoom (30x optical zoom and 3x extra zoom). Even if another person passes by the person who is being tracked, tracking can continue.



## Rain Wash Coating

Water droplets from rain can adhere to the dome cover of the camera and hinder the shooting of clear images. In our Rain-wash coated models, a special coating is applied so that water droplets are repelled allowing clear images to be recorded even during rainfall. This coating is also effective at repelling dirt so that cleaning of the dome cover is required less frequently. \* WV-SFV781L / WV-SPV781L / WV-SW598A



## Fog and Smoke Reduction

Video can be corrected to provide clearer images by removing elements that obstruct the camera's field of vision, such as fog or sandstorms.



## Wide Ambient Operation Temperature

Installation in various places is possible since a wide ambient temperature is supported. The integrated structure of the camera includes a sun shield and a heater for cold weather regions, allowing it to be used in a variety of locations where the ambient temperature ranges from -50 °C<sup>-1</sup> to 55 °C. Stable camera operation is possible even in extreme environments. \*1 When using a PoE Injector



## Vandal Resistant

When installed in locations that are prone to vandalism and tampering, measures are required for preventing damage to the camera. Models featuring the Vandal Resistant mechanism are ideal for installation in these types of locations.



This is the Panasonic difference !

### Vandal resistant mechanism

Models featuring the Vandal Resistant mechanism include a shock absorber around the internal lens. Even if the dome cover is subjected to a potentially damaging impact, the shock absorber will absorb this impact to protect the internal structure from damage.



## High Light Compensation

If a bright light source such as car headlights points in the direction of a camera, the area around the light source becomes white and cannot be seen. Panasonic cameras correct for strong lights and their surroundings to provide clear images of areas that could not be seen with other cameras.



## PoE (Power over Ethernet)

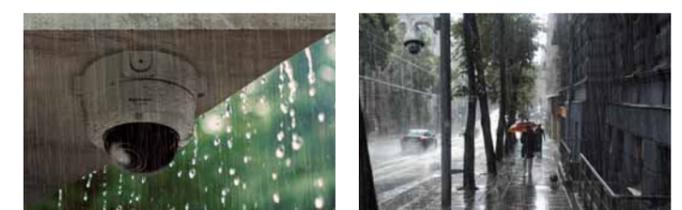
The power is supplied through the Ethernet cable, so the network camera can be used in places that would ordinarily be difficult to install it in, like on the ceiling where there is no power outlet.

## Waterproof and Dustproof

Waterproofing and dustproofing function compliant with IP66. Can be installed outside in an area that receives direct wind and rain without special housing. Compliant with IP66 (IEC60529)

## Coaxial-LAN Converter

A coaxial LAN converter (WJ-PC200, WJ-PR201/WJ-PR204) can be used to extend the network to a maximum of 2 km away, using only a coaxial cable. This enables cameras to be installed in locations that were previously not possible.



### Features

- Cameras supporting PoE can be supplied with both power and network access up to 500 meters away, using only a coaxial cable.
- Cameras can be connected up to 2 km away if a power supply is not required.

# Intelligent function



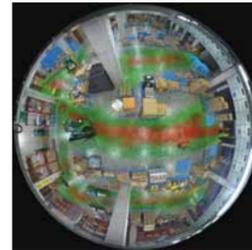
## Privacy Protection for the Employees

The MOR (Moving Object Removal)<sup>\*1</sup> function masks moving objects, and lets you black out areas that you definitely want to conceal. In contrast, you can remove the MOR function for areas you want to monitor with high precision. In addition, you can protect privacy in scenes that you want to monitor, allowing the monitored area to be captured while protecting the privacy of employees.



## Heat-map<sup>\*1</sup>

This provides visualization of the traffic patterns by people and how long they stay in one place. For example, you can analyze the movements of employees and forklifts and consider repositioning objects and passages to make it easier to perform work.



## Smart Coding

### GoP (Group of Pictures) control

H.264 codec is comprised of I-Frame, which records all video information, and other frames that depict the difference. Although information encoded at regular intervals with I-Frame is necessary, collecting all the data will increase the size of the data file. While maintaining smooth, high quality video, Smart Coding reduces the size of the file by cropping the motionless I-frame scenes. Reducing the size of the data file extends the recording duration and reduces the load on the network.

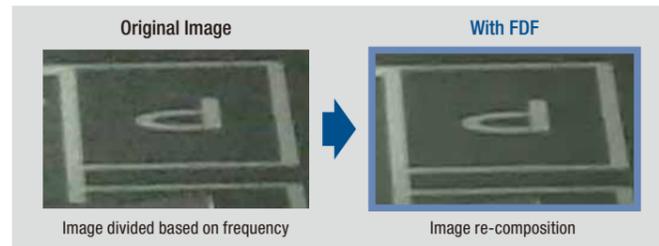
When people are walking, I-frame is inserted at regular intervals as usual.

When there is no person walking, I-frames are thinned down to reduce the amount of data.

## Noise Reduction

### FDI (Frequency Divided Filter)

Removing fine noise generated under low illumination to achieve a low bit rate.



### 3D-MNR (3D-Multi-process Noise Reduction)

Removing grain noise generated under low illumination to achieve a low bit rate.



## Intelligent Video Motion Detection (i-VMD)<sup>\*1</sup>



The camera itself features intelligent functionality for notifying the administrator about changes to situations or dangers using a variety of methods. This eliminates the need to constantly watch the screen in the control room for reducing the TCO.

### Intruder Detection



Crossing over the fence



Detects

- the motion of objects in the viewing or detection area.
- Frames and tracks are displayed around the detected moving object in the live image.
- Up to 8 objects can be detected simultaneously.

### Loitering Detection



Objects staying longer than a specified time



Detects

- objects loitering for longer than a specified time, from 10 sec to 5 min.

### Direction Detection



Objects moving in a specified direction



Detects

- objects moving in a specified direction. Up to 8 directions can be specified.

### Scene Change Detection



Interference such as blockage of the lens with a cloth or spray paint



Detects

- interference caused by tampering with the camera, such as a manual change in the camera direction or blockage of the lens with a cloth or spray paint.

### Cross Line Detection



A person who crosses the virtual line to the specified direction



Detects

- alerts the operator when people or objects cross the imaginary lines.

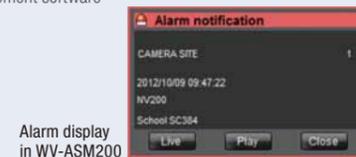
## Actions When an Alarm is Detected

### Monitoring

Notification sent to the monitoring screen



Alarm notification sent to the recorder and WV-ASM200 management software



### Notification sent to device connected to external output

Search lights or patrol lights connected to the external output of the camera are lit



### Recorded to the SD memory card installed in the camera



### Unique alarm notification

When a unique alarm (Panasonic alarm protocol) notification is received, the PTZ moves and zooms in on the detection area



Data saved to FTP server



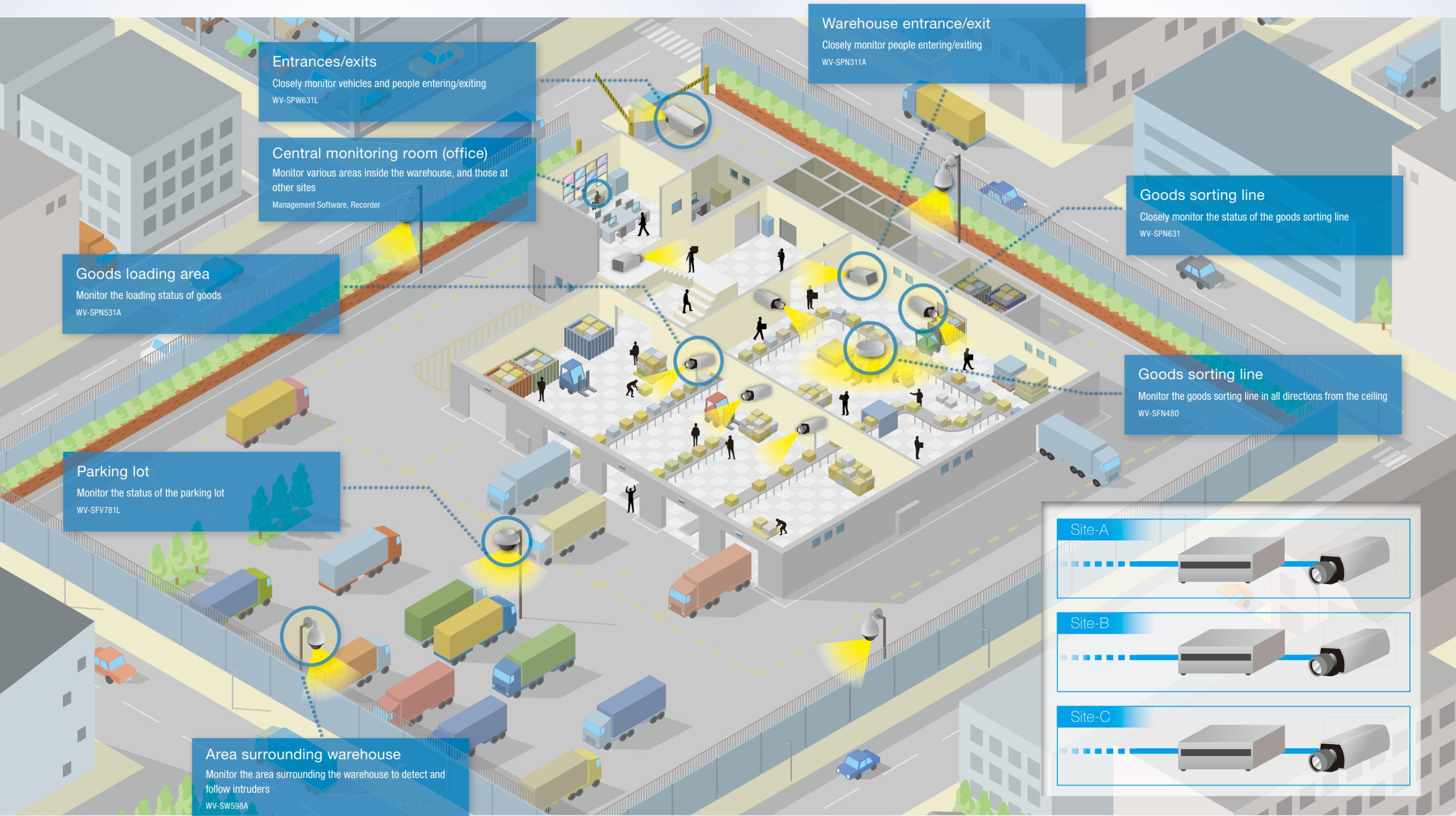
Email notification of alarm



\*1 Extension software (optional) is required.

\* Supported functions and specifications differ according to the model. See the specifications for each model.

# Usage Examples



# Lineup

## Network Cameras

### For warehouse ceilings

Omnidirectional 9 megapixel camera captures a detailed wide range without blind spots

#### 360-degree Indoor Dome 9 Megapixel Network Camera

WV-SFN480



WV-SFV481



### For warehouse entrances/exits

Clearly captures the faces and clothing of people entering and exiting

#### Super Dynamic HD Network Camera

WV-SPN311A



Lens : optional



### For checking the status of sorting lines

Clearly captures the movement of workers and goods on the line

#### Super Dynamic Full HD Network Camera

WV-SPN631



Lens : optional



### For loading sites

Captures goods being loaded onto the beds of trucks

#### Super Dynamic Full HD Network Camera

WV-SPN531A



Lens : optional



### For shooting at night or in dim areas

High resolution Full HD dome camera with IR LED

#### Super Dynamic Full HD Dome Network Camera

WV-SFN631L



### For passages/hallways of warehouses/offices

Compact size Full HD wide range dome camera

#### Super Dynamic Full HD Dome Network Camera

WV-SFN130



### For gates/passages that trucks/people enter and exit

Full HD resolution camera for outdoor installation with IR LED

#### Super Dynamic Full HD Network Camera

WV-SPW631L



### For parking lots

High-quality 4K camera covers a wide range

#### 4K Fixed Dome Network Camera

WV-SFV781L



#### 4K Vandal Resistant Weatherproof Network Camera

WV-SPV781L



### For monitoring outer periphery

Full HD PTZ camera can be installed outdoors such as at the outer periphery of a site, and 30x zoom enables shooting in detail from a distance

#### Super Dynamic Weather Resistant Full HD PTZ Dome Network Camera

WV-SW598A



## Table of supported functions

	WV-SFV481	WV-SFN480	WV-SPN311A	WV-SPN631	WV-SPN531A	WV-SFN631L	WV-SFN130	WV-SPW631L	WV-SFV781L	WV-SPV781L	WV-SW598A
Outdoor / Indoor	Outdoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Outdoor	Outdoor	Outdoor	Outdoor
Super Dynamic	-	-	Enhanced SD	Enhanced SD	Enhanced SD	Enhanced SD	SD	Enhanced SD	-	-	SD
Day/Night Function	ICR <sup>1</sup>	Electrical	ICR <sup>1</sup>	ICR <sup>1</sup>	ICR <sup>1</sup>	ICR <sup>1</sup>	Electrical	ICR <sup>1</sup>	ICR <sup>1</sup>	ICR <sup>1</sup>	ICR <sup>1</sup>
IR LED	-	-	-	Optional	-	✓	-	✓	✓	✓	-
Pan	-	-	-	-	-	-	-	-	-	-	360° endless
Tilt	-	-	-	-	-	-	-	-	-	-	-15° to 195° (w/Tilt Flip)
Zoom	4x digital	4x digital	4x digital	4x digital	4x digital	3.6x optical 4x digital	4x digital	3.6x optical 4x digital	6x optical 4x digital	6x optical 4x digital	30x optical 12x digital
Preset Sequence	-	-	-	-	-	-	-	-	-	-	✓
Auto Tracking	-	-	-	-	-	-	-	-	-	-	Advanced Auto Tracking
Rain Wash Coating	-	-	-	-	-	-	-	-	✓	✓	✓
Fog and Smoke Reduction	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
High Light Compensation	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dehumidifier	✓	-	-	-	-	-	-	✓	✓	✓	✓
Operating Temperature	-40°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-30°C to +40°C	-40°C to +50°C	-45°C to +50°C	-45°C to +50°C	-50°C to +55°C <sup>2</sup> (24 V AC, PoE) -30°C to +55°C (PoE+)
Vandal Resistant	50J, IK10	-	-	-	-	-	-	-	20J, IK10	20J, IK10	20J, IK10
MOR	✓	✓	-	-	-	-	-	-	-	-	-
Heat-map	✓	✓	-	-	-	-	-	-	-	-	-
Smart Coding	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Intelligent VMD	✓ <sup>3</sup>	✓ <sup>3</sup>	✓	✓	✓	✓	✓	✓	-	-	-

\*1 ICR : Infrared cut filter equipped

\*2 With PoE Injector (60W)

\*3 Except for the direction detection

**ONVIF** All the above models support Onvif .

\* The above models are only part of the lineup. See the following URL for the entire lineup.  
<http://security.panasonic.com>

## Network Disk Recorder

Recorder that can be expanded to 6TB from simple configurations

Network Disk Recorder

WJ-NV300



High performance network disk recorder for i-PRO network cameras with 9 serial ATA HDD slots

Network Disk Recorder

WJ-ND400



## Coaxial-LAN Converter

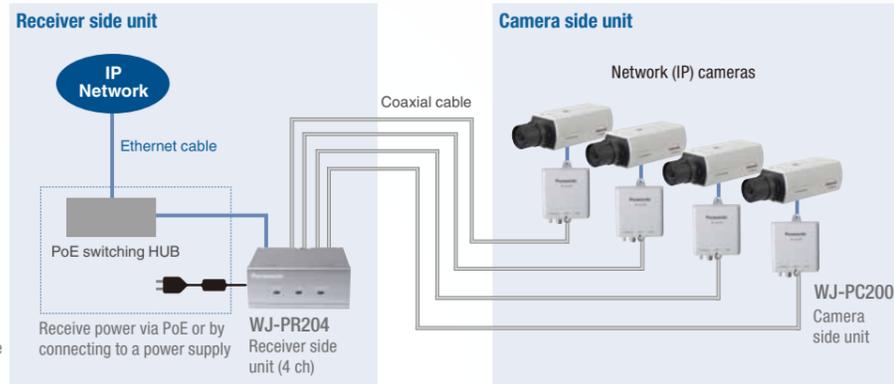
### Receiver side unit



### Camera side unit



Ethernet cable  
Coaxial cable



\* With PoE function: 500 m (1,640 feet 5 inches), PoE+ function: 300 m (984 feet 3 inches) / Without PoE function: 2 km (6,561 feet 8 inches)  
\* Launches in December 2015

## Software

Panasonic can provide a one-stop solution that includes management software in addition to cameras and recorders.

### i-PRO Management Software

WV-ASM200

### Extension Software

WV-ASE201 / ASE202 / ASE203 / ASE204 / ASE205 / ASE231 (for Face Recognition System)

- Supports 16:9 video stream and 16:9 HD monitor. Displays 16:9 and 4:3 videos from IP cameras on the same screen.
- H.264 recording data in the SD/SDHC/SDXC memory card can be downloaded.
- Convert file format from n3r (proprietary format) to MP4.
- Up to 100 recorders, 64 encoders and 256 directly connected cameras can be registered. Up to 6,400 cameras registered in the recorders and 256 cameras registered in the encoders are automatically registered in the WV-ASM200 (the number of the cameras depends on the recorder and encoder).



(System Controller WV-CU950 and monitor displays are optional.)

### Optional Accessory

Ethernet System Controller with 3D-Joystick & Jog/Shuttle  
WV-CU950  
(WV-ASE201 is necessary.)



- Up to 16x 30 ips/camera images can be displayed in H.264 1.5Mbps mode (VGA: Normal quality mode) or MPEG-4 2 Mbps mode (VGA: Normal quality mode, QVGA: High quality mode, depending on the camera and camera setup).
- When used with WJ-ND400 series, WJ-HD716/616, WJ-NV200, VMD search can be operated.
- 1-screen/4-screen PTZ compensation function (hereinafter compensation function) from the fish-eye images of the Panasonic Fisheye network cameras (WV-SF438/WV-SF448/WV-SW458)
- Supports 360-degree Network Microphone (WV-SMR10)

### WV-ASE201

- Add Live window, Map window in addition to the Operation window (3 monitors)
- Control using the Ethernet System Controller WV-CU950
- Expand the maximum numbers of screens to 20.
- \* To use the multi-monitor function, it is necessary to install an additional video card on the PC in use.

### WV-ASE202

- Expand the maximum numbers of screens to 64.
- Up to 4 live windows.
- Multi-monitor function using up to 6 PC monitors.
- To display the operation window, the map window and the 4 map windows simultaneously.

### WV-ASE203

- Expand the maximum numbers of registered recorders, encoders and cameras to 100, 64 and 256 respectively.
- Up to 4 licenses for the WV-ASE203 can be added.

### WV-ASE204

- Decoder registration: Up to 10 decoders

### WV-ASE205

- Visibility Enhancement Function

Spatial Tonal Correction    Snowfall and Rainfall Noise Reduction    Multi-frame Synthesis Noise Reduction



Spatial Tonal Correction, Snowfall and Rainfall Noise Reduction

## Tosu Center, Kyusyu Branch, Nittsu Panasonic Logistics Co., Ltd. Delivery of whole warehouse facility



Deliver whole warehouse facility including i-PRO, entry/exit management system, hand-held terminals, wireless access points, speakers and everything



### System outline/features

Delivered whole warehouse facility including i-PRO, entry/exit management system, hand-held terminals, wireless access points, speakers and everything to Tosu Center of Kyusyu Branch, Nittsu Panasonic Logistics Co., Ltd. While Kyusyu Branch of Nittsu Panasonic logistics Co., Ltd. is being operated as the center of delivery and storage management of Panasonic products in whole Kyusyu area, Tosu Center is established in Tosu City of Saga Prefecture in February 2012 on integration of their bases. Panasonic System Solutions Japan has delivered logistics management system (LMS), surveillance cameras and hand-held terminals to the main bases in Japan including both East and West Global Center (Urayasu, Amagasaki) of Nittsu Panasonic Logistics Co., Ltd., and suggested to utilize their know-how to Tosu Center.



Camera installed on an outer wall



Camera installed on a wall of warehouse



Installed inside the office

For this introduction, the group who is in charge of system for logistics industry took charge of IT infrastructure system including surveillance camera, hand-held terminal, wireless access point and so on.

In addition, another group who has full knowledge about domestic security standard took charge of entry/exit management system, speakers and earthquake early warning terminal.

Normally, groups in charge of system construction, construction design and construction management are different depending on product, but they work together in order to reduce the entire construction cost by integrating plumbing, wiring and installation of devices and that also made possible to deliver visually integrated warehouse facility. Since different groups work together also for construction and maintenance service, this "Delivery of whole warehouse facility" became possible.

As for surveillance camera, a total of 69 cameras are installed in the warehouse and the office. IC card readers are installed in 4 places of the warehouse, office, entrance and server room.

As for broadcasting facility, 111 speakers are introduced in the large premises and also 150 hand-held terminals are newly equipped.



Camera installed on the roof of truck birth



Check surveillance cameras with PDP installed at the entrance



Speaker



Hand-held Terminal

### Introduced year and month

February, 2013

### Major delivered equipment

model	qty
i-PRO camera	69 pcs
Network disk recorder	2 pcs