“i-PRO SmartHD solutions”
Smart investment with more than just video surveillance…..

Better identification with more evidence

Smart investments to lower your TCO

More than just video surveillance

Distinctive and versatile industry product solutions

i-PRO SmartHD Solutions for
Transportation
What are the current problems?

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

- Capture the desired images clearly and without fail
- Intelligent cameras quickly detect and notify you of abnormal situations
- Environment resistance and a wide product lineup for use in various environments and scenarios
- One-stop provision of management software, controllers, and recorders, etc., in addition to cameras
- Migrate to advanced IP systems while utilizing existing analog systems and cables, etc.
Solutions we offer you and their benefits

Compact size Dome & Rugged mobile Network Camera
- WV-SFV130M / WV-SFV130
- WV-SFV110M / WV-SFV110
- WV-SBV131M/111M

Control Room
- Network Video Recorder
  - WJ-ND400, WJ-NV300
- i-PRO Management Software
  - WV-ASM200, WV-ASC970/ASM970
- Face Recognition System
  - WV-ASF900

Vandal resistant Dome Network Camera
- WV-SFV781L
- WV-SFV631L
- WV-SFV611L

PTZ Indoor Dome Network Camera
- WV-SC588A

Weather Resistant Network Camera
- WV-SVF781L
- WV-SFW631L

PTZ Weather resistant Network Camera
- WV-SUD638
- WV-SW598A
- WV-SW397B

360-degree Dome Network Camera
- WV-SFV481
- WV-SW458/458MA

Indoor Box type Network Camera
- WV-SPN311A (For Facial Recognition)
- WV-SUD638
- WV-SW598A
- WV-SW397B

360-degree Dome Network Camera (4K Engine)
- WV-SFV481, WV-SFN480

Weather Resistant
Network Camera
- WV-SVF781L
- WV-SFW631L

Station / Station Square
- High image quality and high resolution exceeding 4K provides smooth video
- High visibility in environments with low illumination and capturing of indoor and outdoor locations at the same time
- Realize monitoring systems without blind spots using wide angle cameras and the preset functions
- Construct systems that effectively utilize existing analog equipment

Track and Railway
- Cameras use image recognition technology to detect intruders and immediately notify a control center
- Realtime removal of factors that hinder sight, such as mist, heavy rain, and snow
- Rain wash coating (clear sight coating) for maintenance-free operation
- Varied range of products and the durability required to handle various environments
- IR LEDs enable the detection of intruders even in pitch black environments

Control Room
- Cameras dynamically notify you of changes without human monitoring
- Enable post analysis by using visibility enhancement technology for recorded data
- Search for and detect suspicious persons with registered face information, even across multiple cameras
- Timeline view for immediate searching of required images
- Monitor from tablets and smartphones with an optimal sized image

Train / Bus
- Wide-angle and low-distortion cameras
- Vandal resistant mechanisms and intelligent functions such as scene change detection
- Support for outside installation without any housing or shrouds to protect from car wash equipment and tree branches
- Compatible with EN50155-T3, EN50121, ECE-R10, EN45545, EN50498 "Railway applications" and EN45545 "Fire safety on rolling stock"
High Image Quality

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 4,200 x 3,000 pixels (WV-SFV715 / WV-SFV716). A frame rate of 60fps at 2,048 x 1,336 pixels can be captured to support locations where fast cars and trains pass by. JPEG/H.264 multiple streaming transmission is also supported.

High-Precision and Wide Range Monitoring

A single 4K-resolution camera covers a wide area. High-quality images enable far-away objects to be checked.

Super Dynamic Technology

In stations and on railway tracks, subjects can become basked or partially hidden in shadow due to the direction of sunlight changing according to the season and time of the day, which can cause images to become hard to see. In images with a large difference in illumination, bright areas become too white and dark areas become hard to see. However, Super Dynamic technology adjusts the dark areas and bright areas to enable monitoring with natural images. This can be particularly useful for identifying individuals by brightening human faces in environments where light is shining from behind the subject.

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 camera can be infinitely rotated 360 degrees at a high speed of 300 degrees/sec, you will not miss the subjects you want to monitor.

- 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 270-degree vertical rotation, and situations can be monitored in detail with a maximum of 90x zoom (3x optical zoom and 3x extra zoom). Even if another person passes by the person who is being tracked, tracking can continue.

Day / Night Function

The day/night function automatically switches the camera from color to B/W and vice versa depending on the illumination, which is ideal for 24-hour surveillance. With moving IR cut filter and AIB (Auto Back Focus), both high sensitivity and accurate focus are ensured.

Network

Smart Coding

Smart Coding reduces the size of file while maintaining smooth and high quality videos. As a result, the load on the network is reduced, and the recording time on a video recorder is expanded.

Noise Reduction

FDF (Frequency Divided Filter)

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

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

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

Support for Various Installation Environments

Waterproof and Dustproof

WV-SW508A

Dehumidifier

Dehumidifier

Heat-map

Complete with powerful intelligent functions (WV-SFV481/WV-SPN480 Only: Optional)

Intelligent VMD

Intelligent functions to make your security system operations easier and more secure

3G / 3G-SDI Full HD

Intruder Detection

Loitering Detection

Scene Change Detection

Intruder Detection

Loitering Detection

Scene Change Detection

Object Detection

Cross Line Detection

Object Detection

Detects objects moving in a specified direction. Up to 8 objects can be detected simultaneously.

Cross Line Detection

Detects lines that objects have crossed. Useful for security and traffic monitoring.

People Counting

Complete with powerful intelligent functions (WV-SFV481/WV-SPN480 Only: Optional)

This counts the number of people passing through a selected preset area.

Number Counting function can provide statistics on the number of people entering and leaving a specific zone and other useful data.
**Control Room**

**Management Software**
Software for performing batch management can also be selected according to the scale of the system. This software can be used to efficiently and effectively operate systems using the minimum required resources, reducing TCO.

**Face Recognition System**
Face Recognition System realizes following function

**Face matching**
By registering specific faces in advance, the camera can automatically detect when those faces appear in the image, and sound alarms. This function can be used to detect faces of suspects, and suspicious people, and sound alarms when those faces appear in station or railway facilities.

**Face search**
Images of faces can be used to search for movements of that person. Multiple cameras can also be used to search when and where that person was on a timeline. When suspicious people are detected, you can check their movements at specific times, including whether they have been, and what route they took.

**People Counting, Age and Gender Statistics**
The number of people that pass by a camera can be counted, and their age and gender determined for output in statistic data. This enables you to output statistics to check how many people pass through each area, whether there are more males or females, and the age group of the people. This data can be used for effectively constructing traffic rules inside and around stations, and as a marketing tool such as when shops display products inside stations.

**Visibility Enhancement**
Even in situations where bad weather such as snow or heavy rain means that the video cannot be seen well, i-PRO Management Software (WV-ASMD500/WV-AE250 or WV-ASMD520/WV-AE500) can be used to correct live images and images that have been recorded. It is also possible to brighten dark subjects to make areas that are hard to see more visible.

**Mobile Monitoring**
Even when you are in a continuos, you can access a camera from a smartphone or tablet to check the status. If you access the recorder, you can playback recorded data in addition to viewing live images. Panasonic provides iOS and Android apps free of charge.

**Environment**
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* to 55 °C. Stable camera operation is supported.

Extremely shock-proof – it will not break even under strong impact. Vandalism-proof cameras can be used without concern, even when they may be exposed to strong impact. Vandalism-proof cameras can be used without concern, even when they may be exposed to strong impact. Vandalism-proof cameras can be used without concern, even when they may be exposed to strong impact. Vandalism-proof cameras can be used without concern, even when they may be exposed to strong impact.

Compliant with SD (60068-2-75) / IK10 (IEC 62262)

* Supported functions and specifications differ according to the model. See the specifications for each model.
Our NEW i-PRO Transit solution equips transit agencies with the tools to provide a safer environment for bus passengers and drivers while protecting the vehicles from theft and vandalism and reducing expensive manpower requirements to manually upload video data. The system provides complete video surveillance of the inside and outside of the bus—improving response times to incidents as well as increasing the chances of arrest and conviction should a crime occur, helping reduce time spent in litigation.

### Recommended Mobile Recorder for Bus (VTC7110)*

- Bring unrivaled computing power and exceptional video graphics handling onto the bus with this rugged, mobile-ready recorder.
- With its ability to record and wirelessly transmit HD video from up to four IP cameras (up to 16 with an optional expansion switch), transit control rooms can be given complete situational awareness of the vehicle in real time.

### Recommended Mobile Recorders for Train (Wireless Camera Recording Unit WCRU-III)*

- **Rugged IP64 grading**
- **Support up to 8 Cameras**
- **Support fast seamless roaming**
- **Built-in accelerometer**

*This is a product from NEXCOM International Co., Ltd. Contact a sales representative to purchase it.

### 360-degree Dome Network Camera

**WF-SFV481**
- 360° monitoring with a wide variety of transmission modes: Panorama, Double Panorama, Quad PTZ, Single PTZ, and Quad streams (H.264/V4L)
- 9 mega (2,992x2,992) pixel images up to 15 fps by new 4K ULTRA HD engine.
- Compatible with EN50155 "Railway applications" and EN45545 "Fire safety on rolling stock".*
- Electronic equipment used on rolling stock EN50155: "Railway applications".
- Preventive fire protection in railway vehicles - Fire behavior and fire side effects of materials and parts.

*This is a product from RFNet Technologies Pte Ltd. Contact a sales representative to purchase it.

### Wide Coverage without Blind Spots

The application of rain-wash coating to the dome cover provides clearer visibility, allowing good security to be maintained even when the camera is installed in an environment subject to rain or water splashing. In addition, the coating resists attachment of dirt to the dome cover, and also allows dirt to be washed off easily during rainfall or other exposure to water.

**Compatible with EN50155 "Railway applications" and EN45545 "Fire safety on rolling stock"***

### Recommended Mobile Recorders for Train (Wireless Camera Recording Unit WCRU-III)*

- **WF-SFV130M / WF-SFV110M**
  - 1080p Full HD images (WF-SFV130M) , 720p HD images (WF-SFV110M) up to 30 fps
  - Compatible with EN50155 "Railway applications" and EN45545 "Fire safety on rolling stock".
  - Low profile design for discrete installation
  - Vandal resistant mechanism for high reliability
  - IP66 rated water and dust resistant. Compatible with IEC60529 measurement standard, Type 4X(LUL0), NEMA 4X compliant.

### Compact Size Dome Network Camera

**WF-SBV131M / WF-SBV111M**
- 1080p Full HD images (WF-SBV131M), 720p HD images (WF-SBV111M) up to 30 fps
- The camera conforms to the IP66, Type 4X (UL50) and IP6K9K, is compliant with NEMA 4X ratings, and provides high dust resistance and waterproof performance.
- Achieves high-level vibration resistance with EN50155 and MIL-STD-810G compliance
- Adoption of a scratch resistant dome cover with a compact and sleek design is optimal for cameras installed on the outside of a vehicle.
- Vandal resistant mechanism for high reliability

*Supported functions and specifications differ according to the model. See the specifications for each model.
Panasonic Security Product Lineup for Ensuring Safety

PTZ Network Cameras (Outdoor model)
- WV-SUD638
- WV-SW598A
- WV-SW598AW
- WV-SW598AV
- WV-SW598AWV
- WV-SW458M
- WV-SW458MA

PTZ Network Camera (Indoor model)
- WV-SC588A

Dome Network Cameras
- WV-SFV781L
- WV-SFV631L
- WV-SFV611L

Box type Fixed Network Camera
- WV-SPV781L
- WV-SPW631L

Indoor Box type Network Cameras
- WV-SPN311A (for face server)

360-degree Dome Network Cameras (4K Engine)
- WV-SFV481
- WV-SFV480

360-degree Dome Network Cameras
- WV-SW458 / WV-SW458MA
- WV-SW458V / WV-SW458MA

Compact size Dome Network Cameras
- WV-SFV130 / WV-SFV130M
- WV-SFV110 / WV-SFV110M

Rugged Mobile Network Camera
- WV-SBV131M / WV-SBV111M

Network Video Recorders
- WJ-ND400
- WJ-NV300

Coaxial-LAN Converter
- Center adaptor
- Camera adaptor

Recommended Mobile Recorders
- For Train
- For Bus

Table of supported functions

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

* The above models are only part of the lineup. See the following URL for the entire lineup.
**One-stop System Construction Including Cameras, Recorders, and Integrated Management Software**

### WV-ASF900 Series
- **Add-on face matching function.** Simply add the necessary devices and software to enable a face matching function.
- **Can be connected up to 20 cameras on a server.**
- **Face Search**
  - Face images that the camera has detected are stored and can be searched later.
  - By searching the face database, you can display the result of each camera in chronological order and find the movement locus of persons.
  - Specify a camera or date for detected face images and display the results in the list in similarity order.
- **People Counting, Age and Gender Statistics**
  - Count detected people and evaluate their age and gender
  - Display the results on the screen with a statistical graph
- **The statistical data can be saved as a CSV file for analytical use.**
- **Display the results on the screen with a statistical graph**
- **Count detected people and evaluate their age and gender**
- **By searching the face database, you can display the result of each camera in chronological order and find the movement locus of persons.**
- **Specify a camera or date for detected face images and display the results in the list in similarity order.**

### WV-ASM200 Series
- **i-PRO management software for multi-recorder multi-site systems**
- **Integrated control of multi-recorders, multi-sites.**
- **Ideal solution for a wide range of applications to maximize the advantage of an i-PRO SmartHD Network Surveillance System.**

**Extension Software**
- WV-ASE201: Supports multi-monitor displays, Ethernet system controller (WV-CU950)
- WV-ASE202: Max. 4 split-screen display
- WV-ASE203: Displays the number of recording that can be connected
- WV-ASE204: Displays the number of events that can be connected
- WV-ASE205: Validity enhancement
- WV-ASE901: Unit for an alert monitoring server (WV-AS900)

**Ethernet System Controller**
- WV-CU950: WV-ASE201 is necessary.

**IP Matrix Server Software**
- **Flexible system design:** Analog, IP, and hybrid analog/IP
- **Multi-monitor option enables simultaneous use of operation screen and monitor screen (1/4/7/9 /10/15/16 split) on a dedicated monitor.** Two-monitor operation is also available. Support 100 maps.

**Extension Software**
- WV-ASE201: Link to the alarm screen
- WV-ASE203: Link to a face searching server (WV-ASF900)
- WV-ASE205: Validity enhancement

**Ethernet System Controller**
- WV-CU950

### WV-ASC970/ASM970 Series
- **Flexible system design:** Analog, IP, and hybrid analog/IP
- **Multi-monitor option enables simultaneous use of operation screen and monitor screen (1/4/7/9 /10/15/16 split) on a dedicated monitor.** Two-monitor operation is also available. Support 100 maps.

**Extension Software**
- WV-ASE201: Link to the alarm screen
- WV-ASE203: Link to a face searching server (WV-ASF900)
- WV-ASE205: Validity enhancement

**Ethernet System Controller**
- WV-CU950

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**Panasonic Security Systems in Use Around the World**

### Case Study

#### Denver RTD Bus Transit System, USA

- **Background**
  - Seeking to improve safety and security, replace their aging analog-based system and reduce the manpower spent manually uploading video data, the Denver Regional Transportation District (RTD) Transit Police Division installed Panasonic’s new i-PRO Transit solution across its bus fleet. The solution includes suitable Full HD 1080p and HD 720p network cameras inside and outside of each bus, integrated with other hardware and software components for recording, file transfer, viewing, and management.

- **System Adoption Method and Effects**
  - The Panasonic i-PRO Transit solution significantly enhances the RTD’s investigative efficiency by automatically offloading video recordings and integrating them with various other video and audio sources to create a unified event timeline.
  - Panasonic’s market-leading i-PRO network camera forms the foundation of the solution. With HD 1080p (WV-SW657) and HD 720p (WV-SW165A) network cameras inside and outside of each bus, integrated with other hardware and software components for recording, file transfer, viewing, and management, the system delivers an end-to-end mobile security solution for the growing transportation agency. Delivering improved video quality and clarity as well as wider fields of view, the cameras are also designed for use in a transit environment, and are engineered to withstand shocks and impacts as well as being IP66-rated water and dust resistant. Additionally, the in-vehicle recorders are equipped with anti-vibration mounts to ensure long-term performance, and cameras on bus exteriors are secured in sturdy housings for added protection.

- **Customer Comment**
  - With our former analog-based system, RTD Security had to physically retrieve hard drives from buses to investigate incidents an average of 25-30 times per day – a significant waste of time and resources. Video quality was also poor and sometimes unavailable. Working with Panasonic, we developed a high-quality solution from the ground up to address these issues and more importantly, to ensure the security of our bus system for our 101 million passenger trips a year.

  Bob Grado
  Denver RTD Transit Police commander and manager of integrated security operations

#### Murcia Tram Security System, Spain

- **Background**
  - For reasons of information and security, Murcia Tram installed a Panasonic security solution across all their infrastructure including stations. The solution includes three i-PRO fixed and PTZ cameras plus an IP matrix system. The IP matrix is integrated in the security and information control center with the rest of the telecommunications systems including communications, timing, traveler information, intercoms, access control, ticketing, telephony, operations, and Tetra radio, allowing effective and easy management of live and recorded images.

- **System Adoption Method and Effects**
  - The Panasonic security system with the WV-ASM970 IP matrix ensures the comfort and safety of all Murcia Tram passengers.
  - Thanks to the i-PRO fixed and PTZ HD 720p cameras installed in different tram stations, images in HD quality can be viewed to aid and improve the station’s skills, to guarantee the safety of passengers and pedestrian and prevent incidents in railway structure and traffic light crossings.
  - From the control center and with the WV-ASM970 IP matrix management software, all images are viewed and recorded for prevention, and in case of an incident, the easy operation of the system optimizes the time and resources of the investigation.

- **Customer Comment**
  - The Panasonic security solution has been proven to be an efficient and reliable system for Murcia Tram and our monitoring staff emphasizes its friendly interface.

  Santiago Molina Onate
  Technical Director
  Sociedad Concesionaria Tranvía de Murcia