i-PRO SmartHD

HD PTZ Dome Network Camera

WV-SC386

Weather Resistant HD PTZ Dome Network Camera

WV-SW396

Security & AV Systems Business Unit
Panasonic System Networks Co.,Ltd

Panasonic ideas for life

Preliminary ver.

Key Features

i-PRO SmartHD

ONVIF

WV-SC386

HD/720P, 30fps

Day and Night (IR)

36X (optical) 72X (at VGA)

Face Detection / Advanced Auto Tracking

eco ideas

Reduce 20% Power Consumption
Compared with NS954

WV-SW396

HD/720P, 30fps

Day and Night (IR)

36X (optical) 72X (at VGA)

Face Detection / Advanced Auto Tracking

eco ideas

Reduce 50% Power Consumption
Compared with NW964

■ **Key Features**

- ☐ Real time HD/720P video with H.264 High Profile format
- ☐ Progressive output with Mega Super Dynamic
- ☐ High sensitivity: 0.5 lux @ color mode
- ☐ 36x zoom lens & 72x (at VGA or 360p) Extra optical zoom
- ☐ 360 degree endless PAN
- ☐ IP66 –50 degree to 55 degree (24V AC) * WV-SW396 only
- ☐ Advanced Auto tracking/Face detection

Preliminary ver.

Panasonic Technology

i-PRO SmartHD

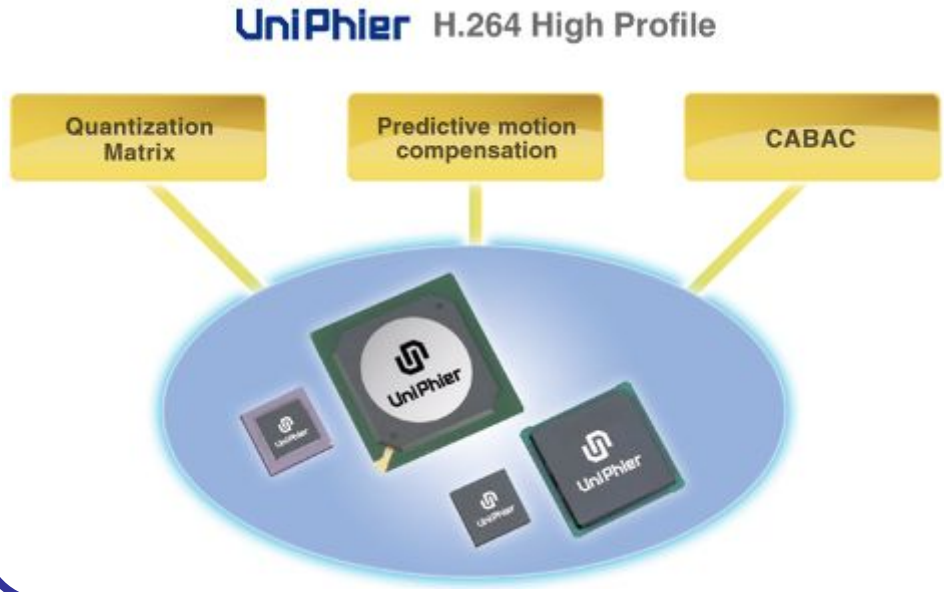
UniPhier (Original System LSI)

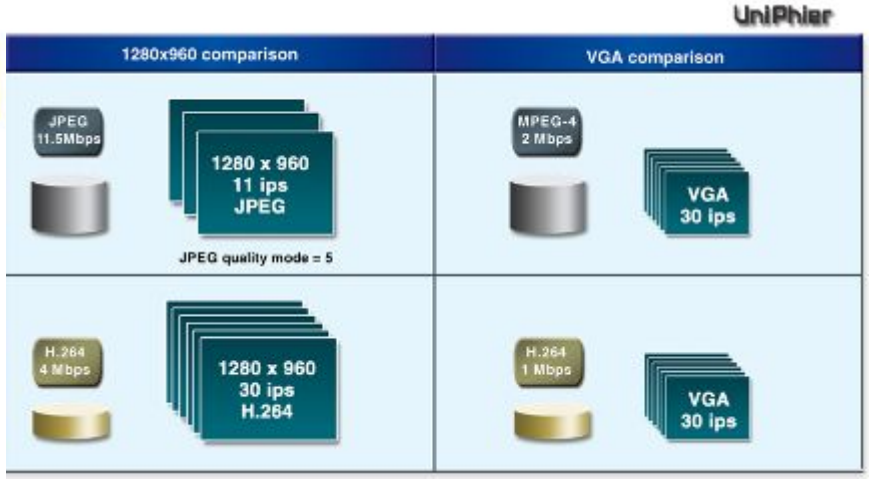
- Multiple H.264 High Profile Streams
- Real Time HD Video Processing
- On-device Intelligence Support

H.264 High Profile

H.264 High Profile encoding with Panasonic Uniphier LSI enables

1280 x 960 high quality real time video with smaller data size.



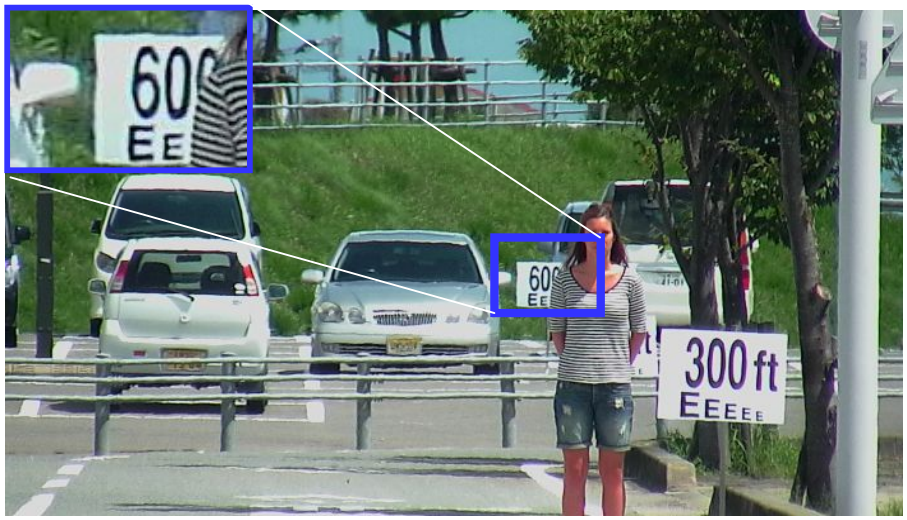


* Superior image and high frame rate with smaller data size.

Resolution Comparison (Tele)

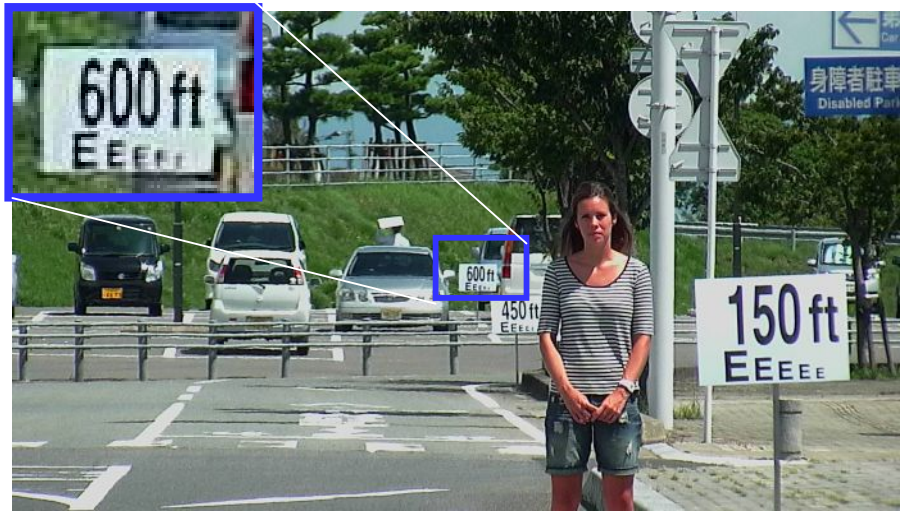
i-PRO SmartHD

36 X WV-SW396 at 720P

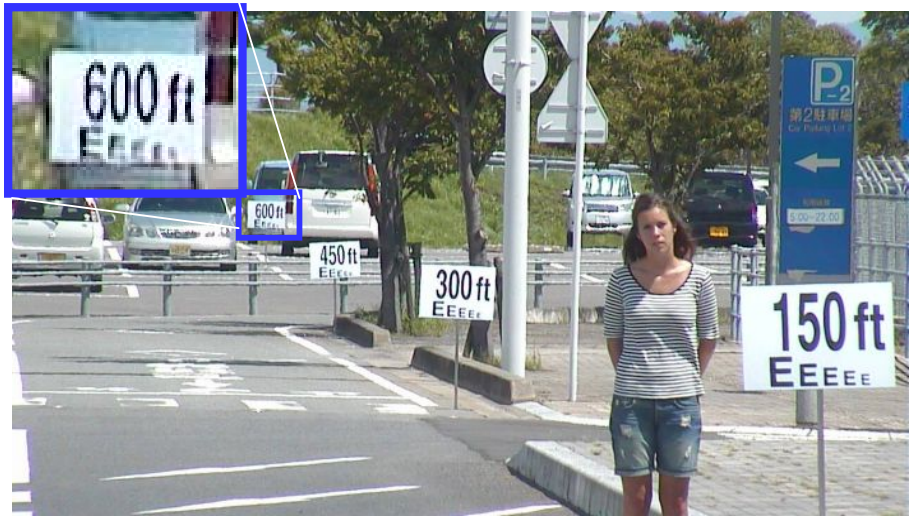


36 X Conventional at 720P

18 x



18 x



WV-SW396 can provide the clear image at Tele condition than conventional camera

Panasonic ideas for life

Preliminary ver.

72x Extra Optical Zoom

i-PRO SmartHD

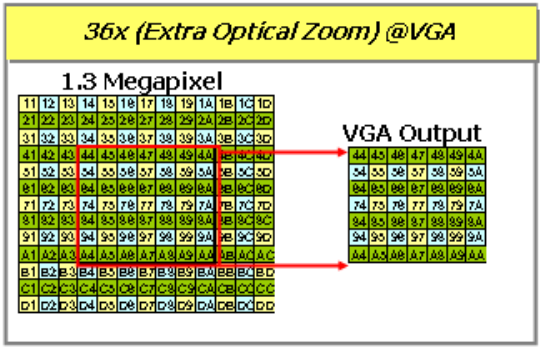
The 36x optical zoom lens can zoom up to 72x without image degradation by using the VGA part of the 1.3 Megapixel MOS sensor.

36x zoom lens and 72x (at VGA or 360p) extra optical zoom

36 Optical zoom

Cutting Out
(No Deterioration)

72X Extra zoom



36 Optical zoom

72X Extra zoom

Panasonic ideas for life

Preliminary ver.

Angle of view Comparison (Wide)

i-PRO SmartHD

WV-SW396

Horizontal degree : 60.2

WV-SW395

Horizontal degree : 55.2

Conventional A(X18)

Horizontal degree : 55.2

SW396 is wider picture frame than others at Wide.

Preliminary ver.

Comparison with some items

i-PRO SmartHD

Model		Panasonic(x36) SW396	Conventional A (x18)	Conventional B (x35)
Max Image size		1.3Mega pixel Better	0.92 Mega pixel	VGA
Upper limit viewing angle		18.3 degree	-	25.4 degree Specification is better but the picture quality is not practical.
Resolution	Center	H： 700 TV line V： 600 TV line Better	H：550 TV line V：600 TV line	H：300 TV line V：300 TV line
	Edge	H： 600 TV line V： 600 TV line Better	H： 550 TV line V： 550 TV line	H,V：Can not count (blurred around the edges)

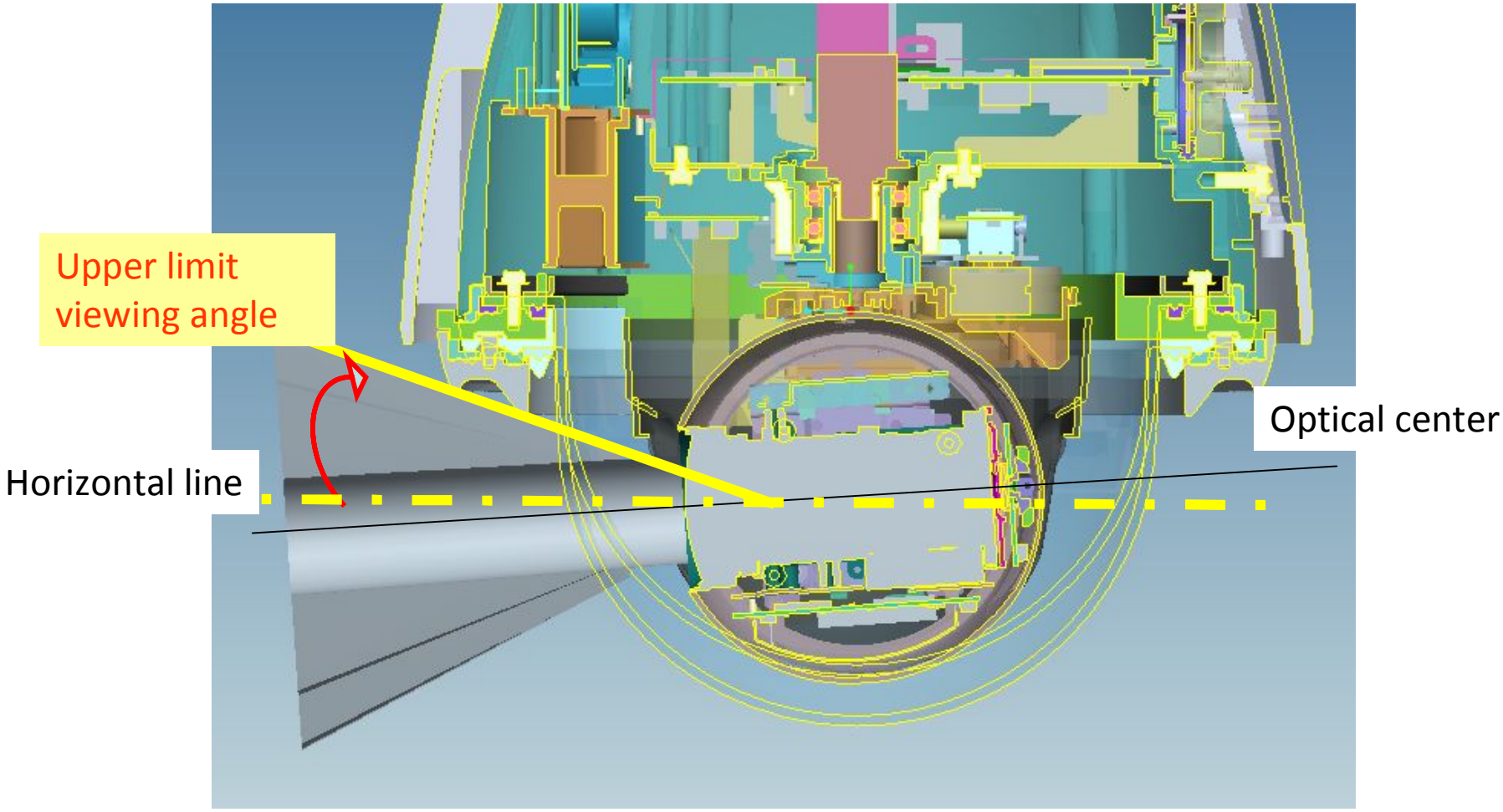
Preliminary ver.

SW396 Dome picture quality study

i-PRO SmartHD

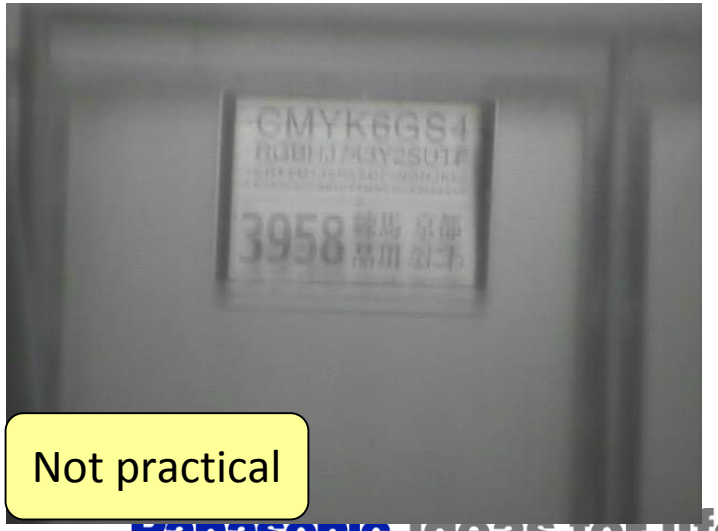
Definition of Upper limit viewing angle

Upper limit viewing Angle means that is viewing angle at Wide position



Resolution Comparison (Tele)

i-PRO SmartHD

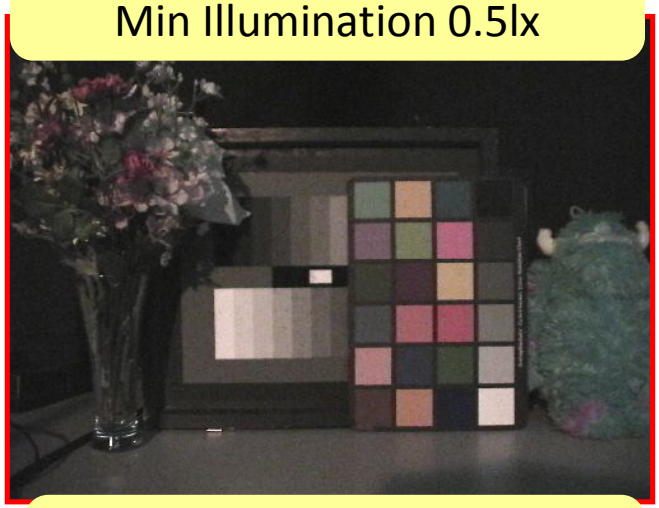
Tilt angle	SW396	Conventional A (Upper limitation angle 25.4 degree)
-14deg	 Better	 Not practical
-5deg	 BEST	 Not practical

Preliminary ver.

Sensitivity Comparison

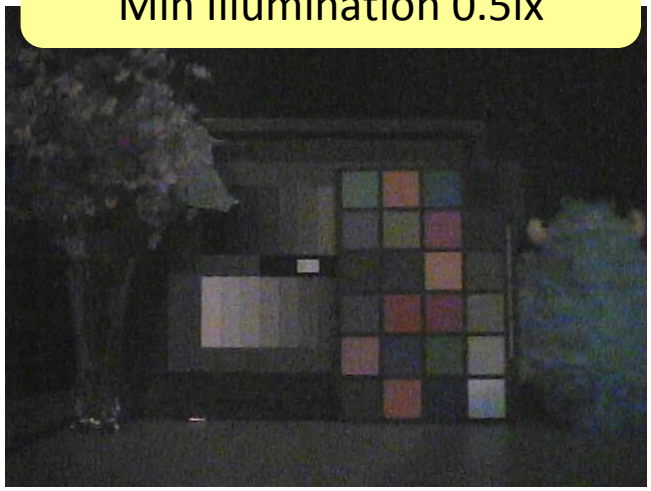
i-PRO SmartHD

WV-SW396/SC386
Min Illumination 0.5lx

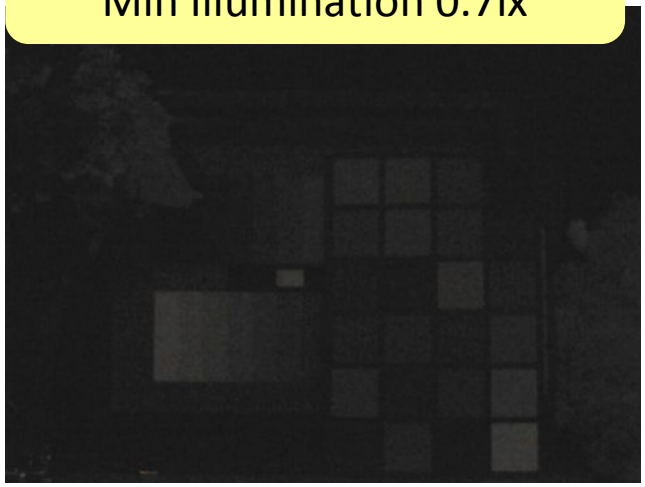


WV-SW395
Min Illumination 0.5lx

Conventional A
Min Illumination 0.5lx



Conventional B
Min Illumination 0.7lx



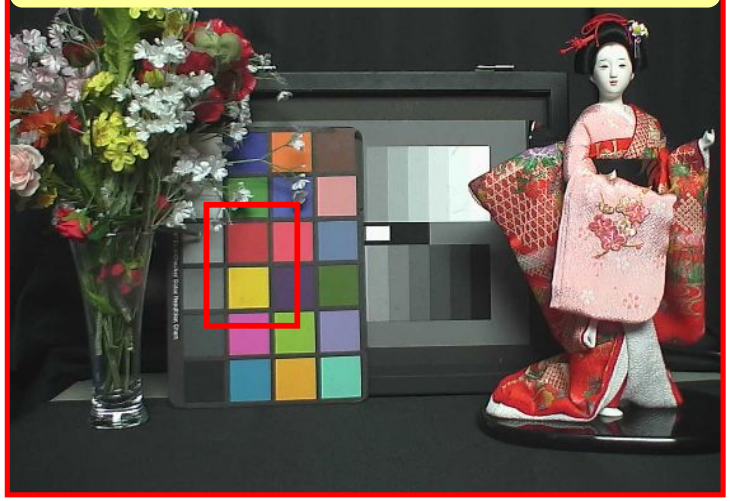
SW396/SC386 looks like high sensitivity in the dark condition. (*SW396 F1.4, SW395F1.6)

Preliminary ver.

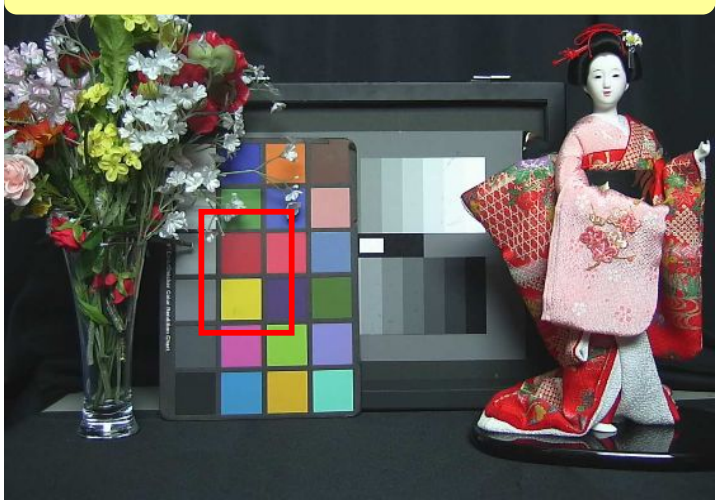
Color Reproduction Comparison

i-PRO SmartHD

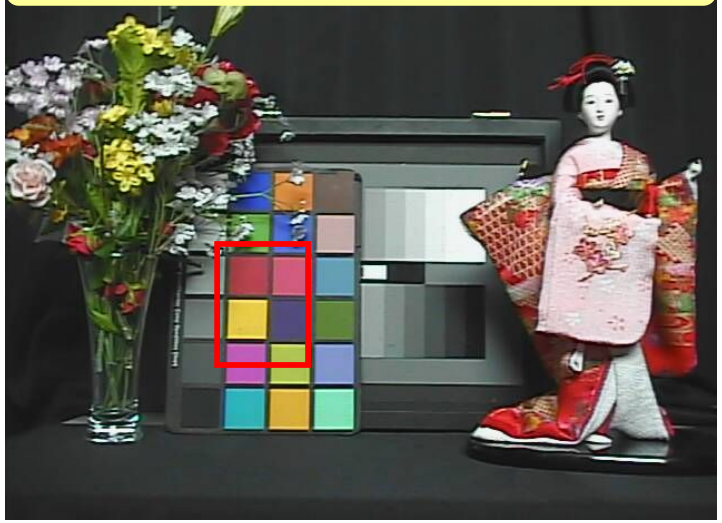
WV-SW396/SC386



WV-SW395



Competitor A(X35)



Competitor A(X18)

*Red and Yellow part of SW396/SC386 is more natural color than the other model.

Preliminary ver.

IP66 Weather Resistant

SW396 (for outdoor) is IEC60529 IP66 rated Water and Dust Resistant.
Moreover it can provide working in wider range temperature(**-50 degree to 55 degree**) at 24V AC

Advanced Auto Tracking

i-PRO SmartHD

Compared with SW396/SC386 and conventional camera

	SW396/SC386	NW964
Smoother auto tracking	Better	Normal
Target Speed of limitation	Average 4 - 7 km/h	Less than 4 - 7km/h
Command linkage	OK	None

* Target Speed is depended on the angle or zoom of view

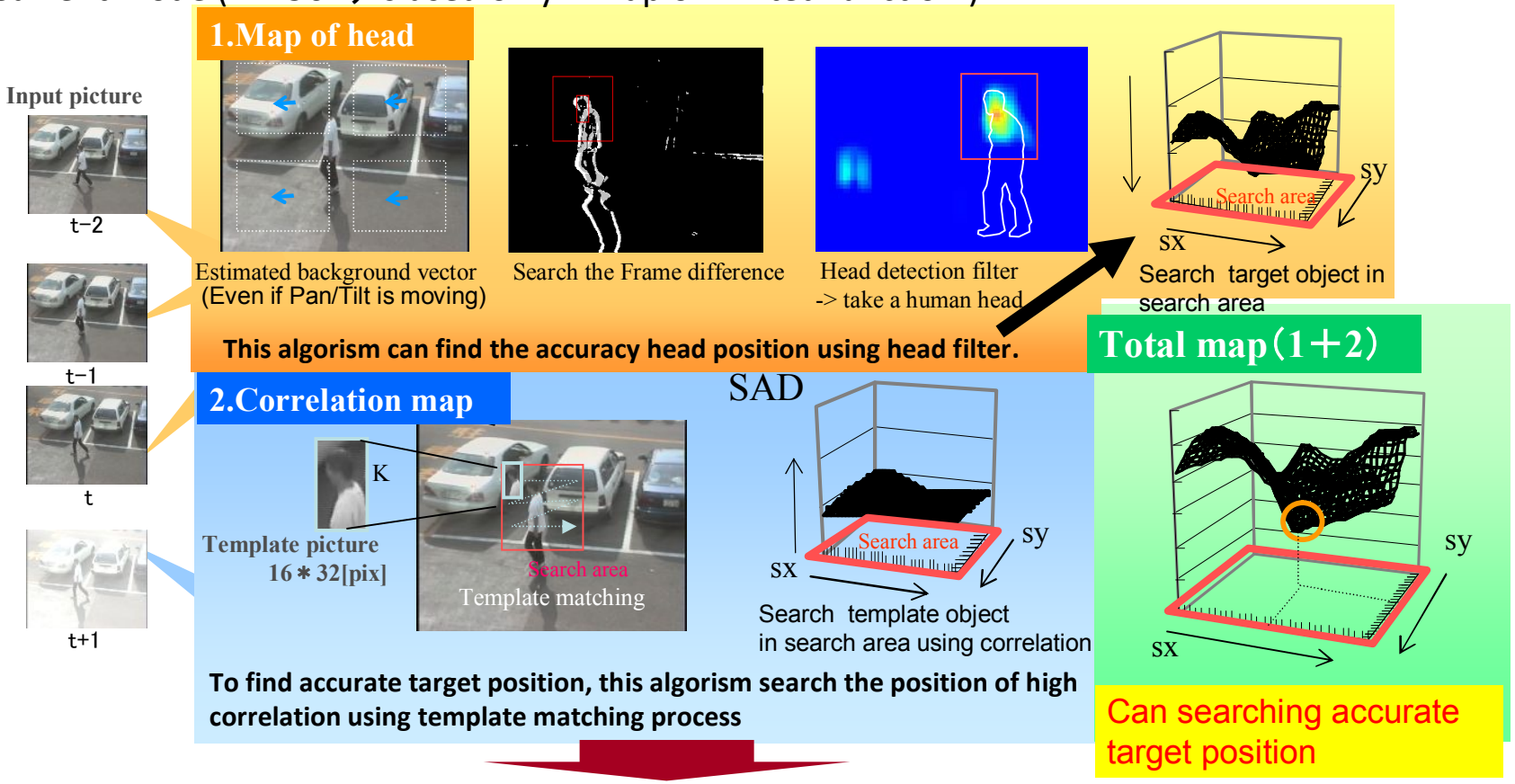
Preliminary ver.

Advanced Auto Tracking

i-PRO SmartHD

This function can provide more accuracy and smoother auto tracking compared with current model.

Because SW396/SC386 are used 2 types map to secure an accuracy target position as below.
(* Current model(NW964) is used only 1 map of limited function.)



This method can realizing as following things.

1. Smoother auto tracking , 2. Reduce to be mistake the target object

Why Smoother auto tracking and Reduce to be mistake the target ?

	Current model (NW964)	SW396
Correlation map: Template matching *	No	Yes To the search area, It can calculate the position of high correlation using template picture in exact detail. The calculated position is moved to the center of picture frame in real time.
Head of map: The estimation of Back ground when PTZ work.	No Current model has judged PTZ working as movement, therefore, this model cannot detecting in PTZ working. So this model can not do the smoother tracking due to the estimation of the object movement after stop PTZ working.	Yes This method is possible to catch the target object properly even if the PTZ work. Because this method can ignoring the PTZ working to estimate the back ground vector by PTZ working.

Template matching:

SW396/SC386 can memorizing the target object as template.
This camera try to decide the next tracking location that is high correlation using template in search area

Advanced Auto Tracking

i-PRO SmartHD

Manual tracking

Lock the target
in the center position

☐ Auto tracking start

Auto tracking at Home position

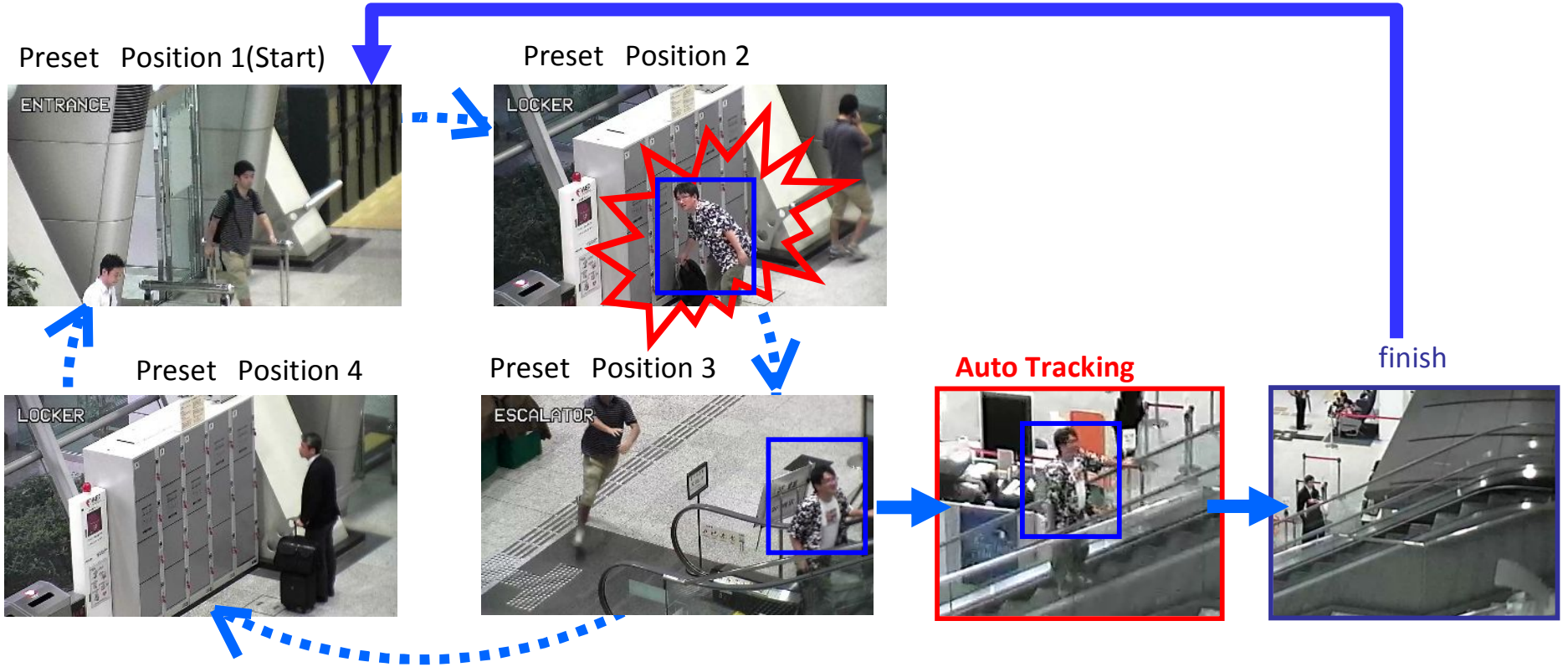
☐ Monitoring in home position
☐ When the camera find the motion, auto tracking is started

☐ If lost the target 、the camera return to home position via self return time, research or stop the camera position.

Advanced Auto Tracking

i-PRO SmartHD

Preset Sequence and Auto Tracking



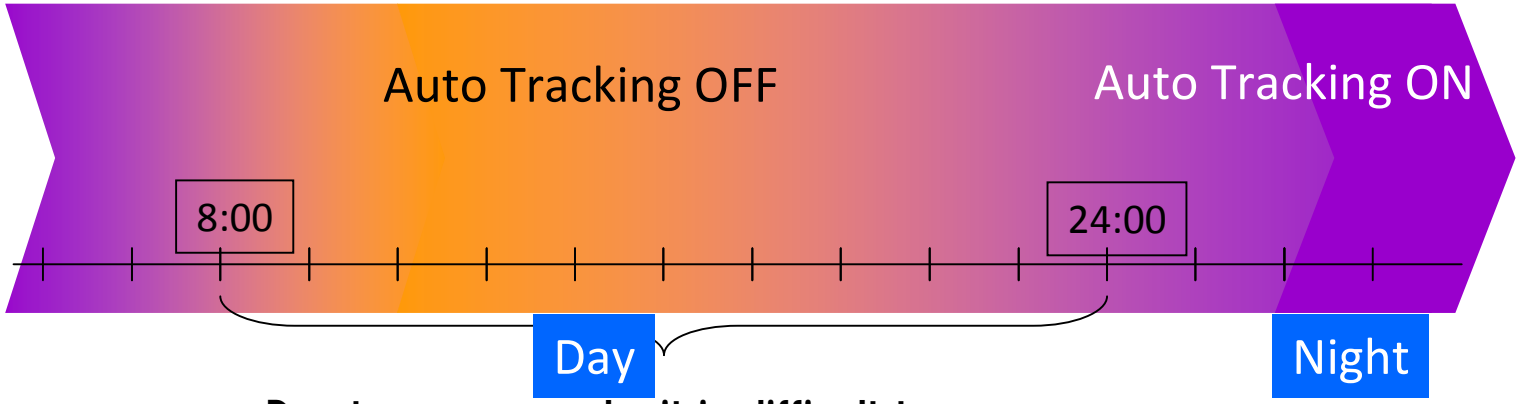
If the camera find the target in “Preset position2” like above during preset sequence, the camera will do the auto tracking until finish the target. And then, the camera will return the “Preset position1” that is start position for preset sequence.

Advanced Auto Tracking

i-PRO SmartHD

Schedule Setting

This camera can provide the schedule setting for auto tracking.



Due to many people, it is difficult to secure the target

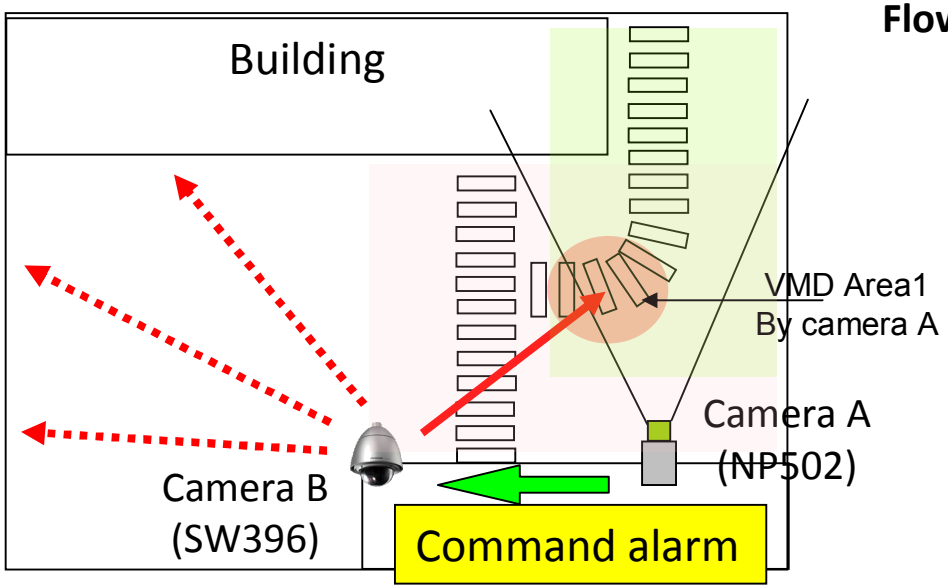
There are a few people

The merit of schedule setting
Auto tracking ON in the night.
1.During day except night, the camera can use sequence surveillance or home position
2.In Night, if the camera find the movement, it starts auto tracking.

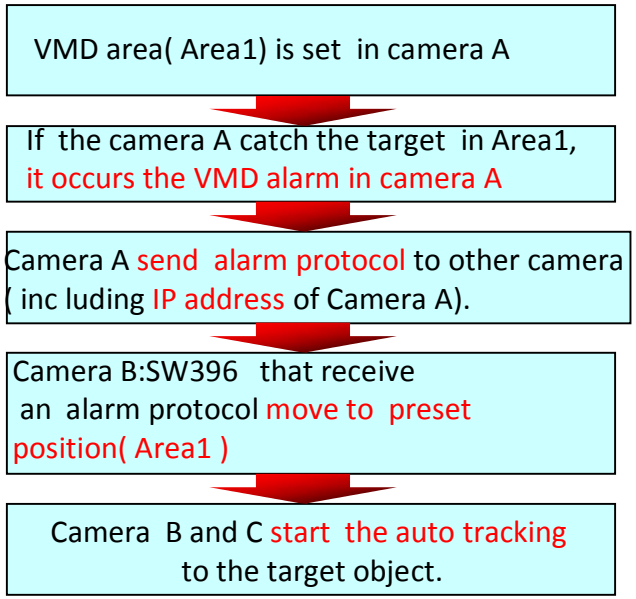
Advanced Auto Tracking

i-PRO SmartHD

Command alarm linkage



Flow chart for auto tracking by command alarm



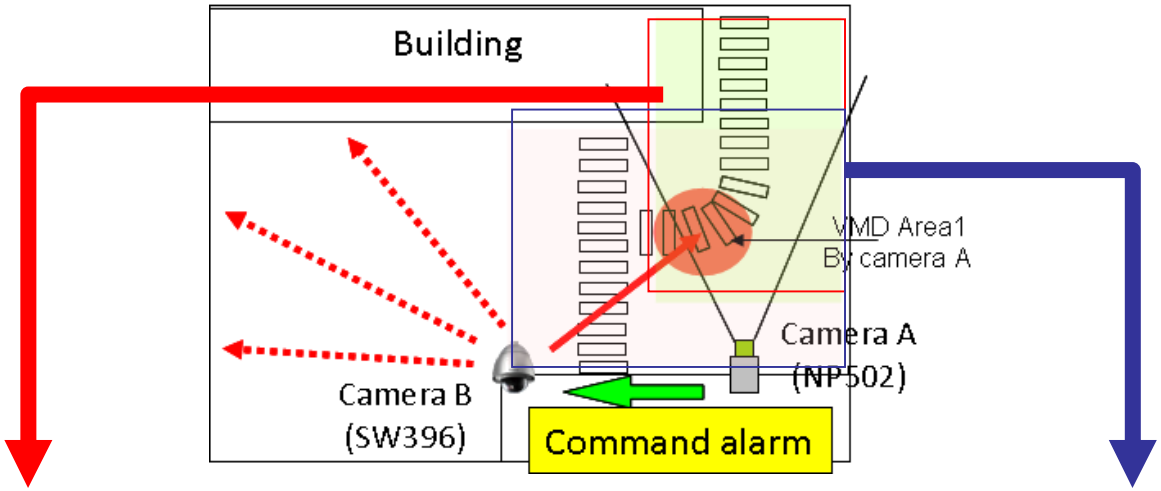
■When the target person that is pursued by camera A breaks in Area1, the camera A sends the command alarm to the camera B. The camera B starts auto tracking after move to preset position that has already been set.

Auto tracking linkage is up to 4 area and up to 8 address (recorder and camera totally)

Advanced Auto Tracking

i-PRO SmartHD

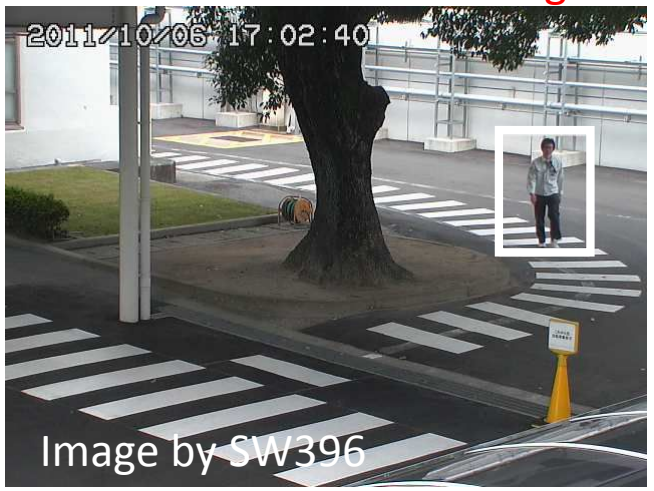
Command alarm linkage



1) Set the VMD area using NP502

2)SW396 is moved to preset position and start auto tracking

Command alarm



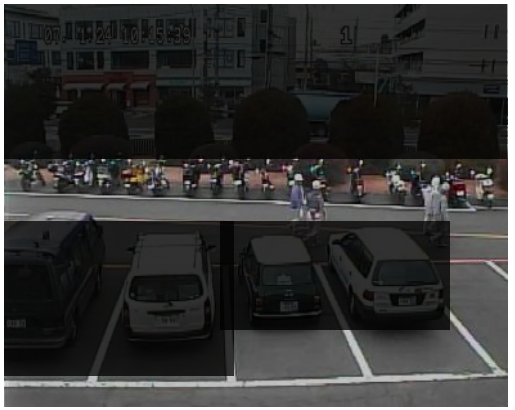
Preliminary ver.

Advanced Auto Tracking

i-PRO SmartHD

Masking to increase the auto tracking accuracy

Mask of the cars pass through



This function can masking the back ground to cut across auto tracking .
Masked part will be not trigger to start auto tracking.
*It is possible to reduce the wrong detection using the mask setting.

Occur the wrong detection

Set the Mask area

Reduce the wrong detection

Preliminary ver.

Advanced Auto Tracking

Auto track setting

Camera height

Select the height that the camera is installed to from the following.

2.5 m(8.5ft) ~ 30.0(102ft) m

Default: 2.5m(8.5ft)

Auto track data in video stream

Select "Off / On / On with track video display"

Off: There is no flame to the target .

On: Camera can send the information for target position

On with track video display:

There is a flame to the target.

Default: Off

* Please change the advanced setting when the auto track function accuracy is not good with the default setting.
It is recommended to use the auto track function with the default setting.

Advanced Auto Tracking

When the changing Advanced setting

Auto zoom setting

Select the tracking zoom control

Off / On

Default: On

Object size

Select an object display size from the following.

Small(1/4 of the image) /

Middle(1/2 of the image) /

Large(3/4 of the image)

Default: Small

Sensitivity

Select the tracking sensitivity from the following.

Low / Middle / High

Default: Middle

Advanced Auto Tracking

When the changing Advanced setting

Auto Track duration time

Select the time that tracking will be forced to stop from after it started from the following.

Off(Unlimited)/10s/20s/30s/40s/50s/1m/2m/3m/5m/10m

Default: Off (Unlimited)

Lost object search

Select the operations to be performed when the tracking loses the target from the following.

Off / On(W/o zoom-out) / On(W/zoom-out)

Default: On(W/zoom-out)

Off: Tracking stops at the position that it lost the target.

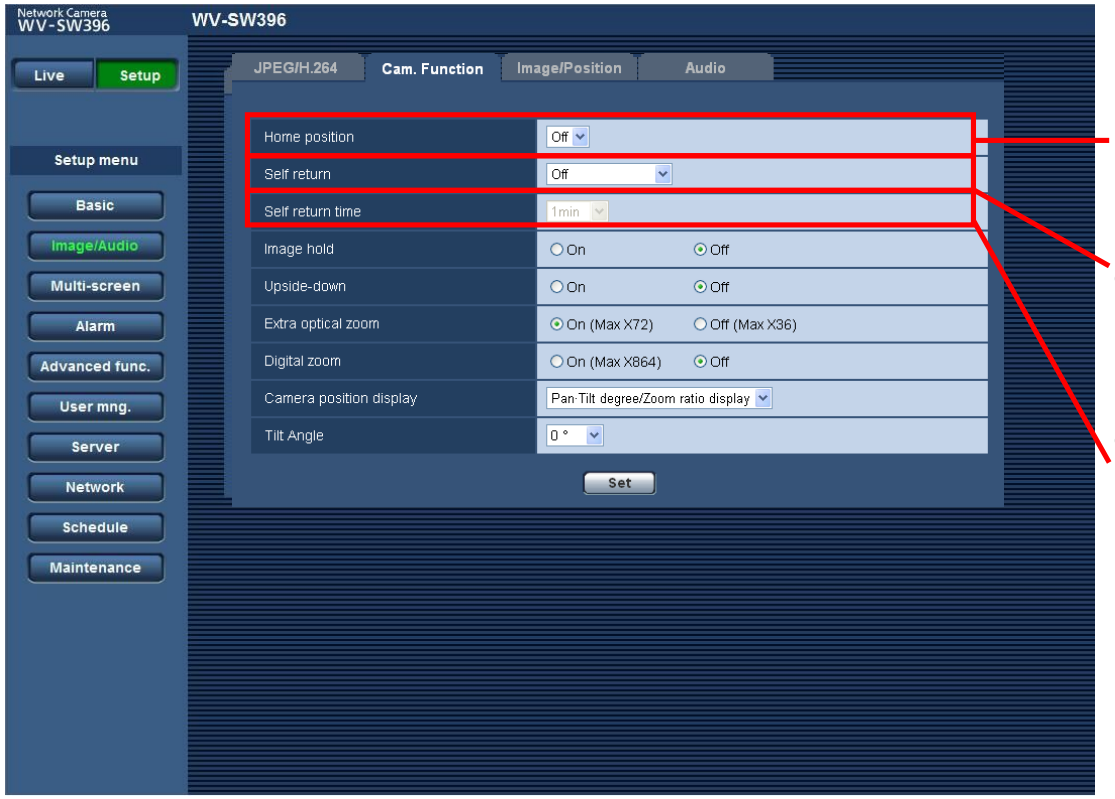
On(w/o zoom-out): If the target is lost, tracking starts looking for new movement and if it finds movement it continues auto tracking.

On(w/zoom-out): If the target is lost, the camera zooms out and tracking starts looking for new movement, if it finds movement it continues auto tracking.

Default: On(w/zoom-out)

Advanced Auto Tracking

The way of setting action of
"Moving to the home position and starting the auto track function".



Home position:
Please register the home position.
***Off, 1 – 256 (preset number)**

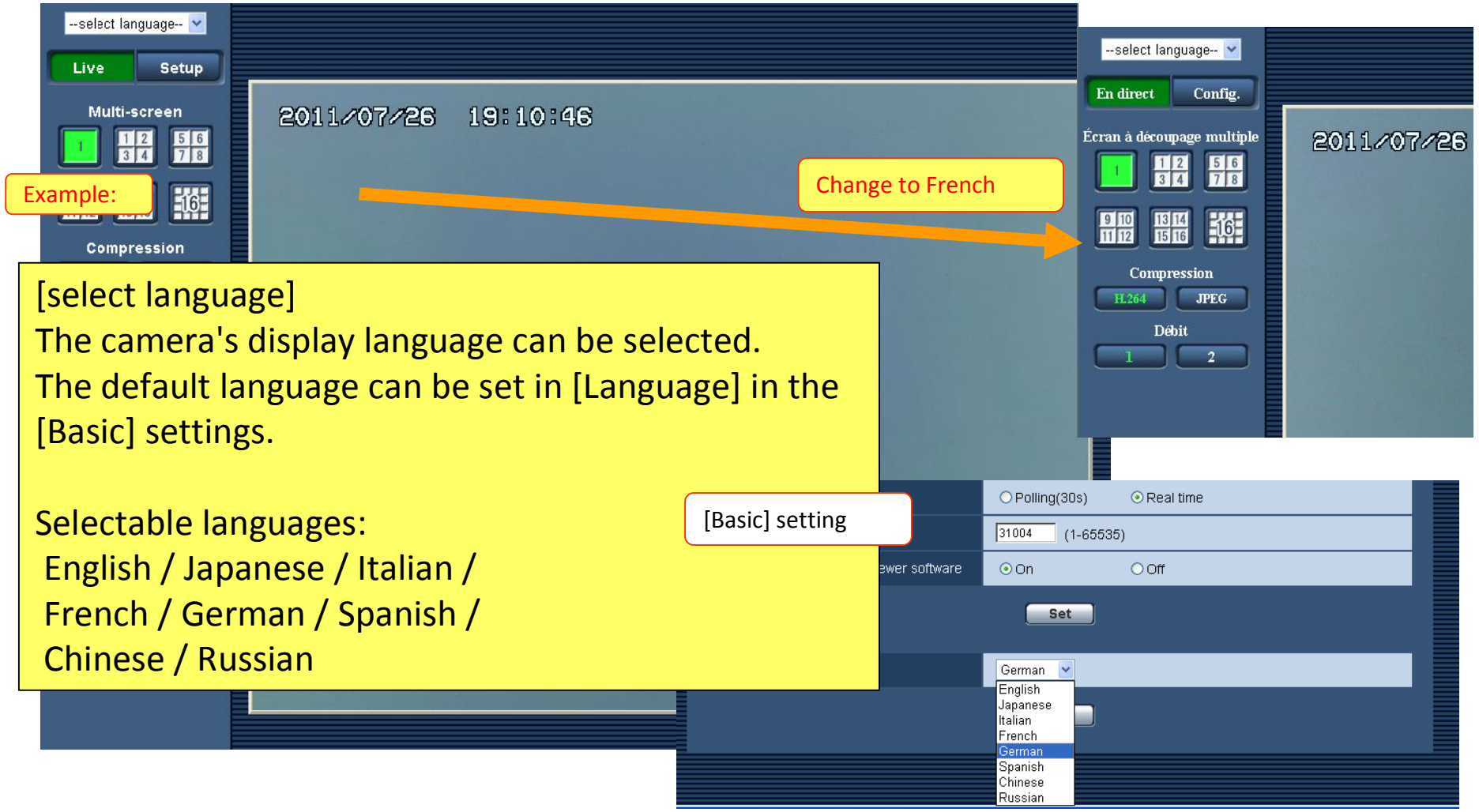
Self return:
Please select "Auto track".

Self return time:
Select a waiting time from the following.
10s - 60min
*This is a time that is from stop auto tracking to start returning to home position.

Other Features

i-PRO SmartHD

Language setting easily



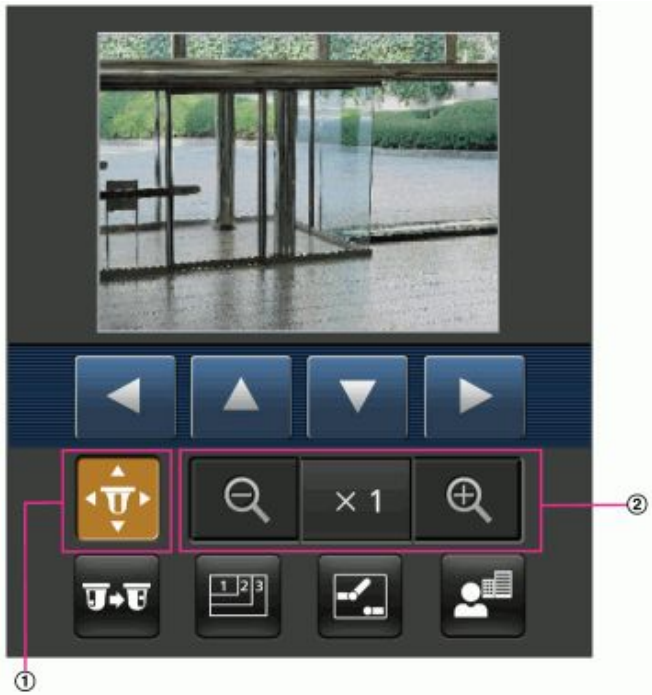
Other Features

i-PRO SmartHD

Compatible with mobile terminal

It is possible to connect to the camera using a mobile terminal and monitor images (MJPEG only) from the camera can be displayed on the mobile terminal.
Operations such as pan/tilt/zoom can also be performed.

http://camera's wan address/**cam**



The compatible mobile terminals:
iPad
iPhone
iPod touch
*As of August, 2011

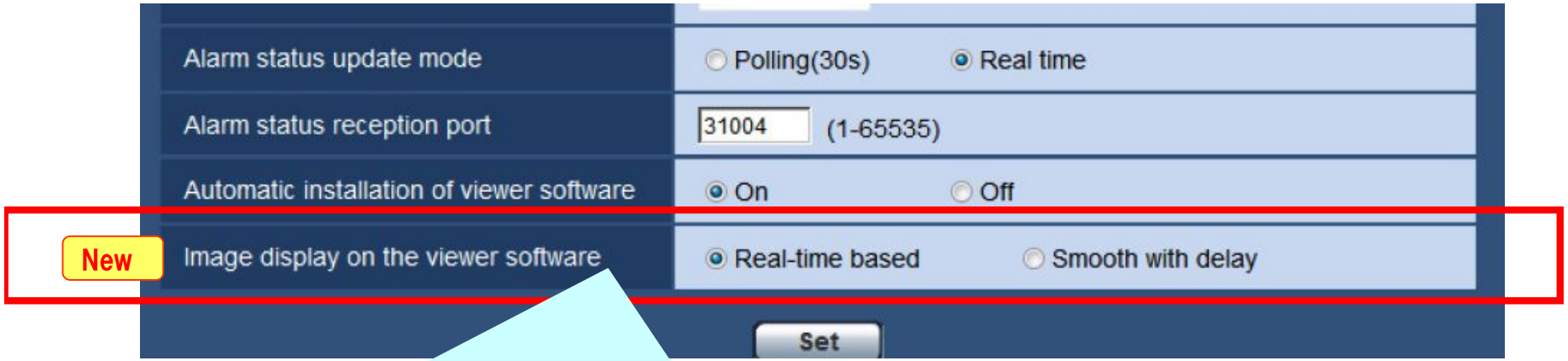
*[existing feature : Monitor images on a cellular phone]
It is possible to connect to the camera using a cellular phone via the Internet and monitor images (JPEG only) from the camera on the screen of the cellular phone.
http://camera's wan address/mobile/

Other Features

i-PRO SmartHD

Display facilitation support by ActiveX

Add settings in the JPEG/H.264 (JPEG/MPEG4) tab



Add mode which allows to display the image more smoothly.
To smooth the live screen display of H.264/MPEG-4 by buffering on PC.
Especially, it can reduce jerkiness image that occurs when subjects move largely.

*On: Images are temporarily stored on the computer and are displayed smoother.
*Off: Images are displayed in real-time and are not stored on the computer.
Default is “Off”

ONVIF 1.02 support

i-PRO SmartHD

All models support ONVIF NVT Core Spec ver2.0 and test spec ver1.02
*same as SW15x series and SF13x series

Onvif
http://www.onvif.org/Default.aspx

Onvif Panasonic Conformant Products
http://www.onvif.org/Default.aspx?TabID=98&CompanyID=12851

【Additional features in ONVIF 1.02】

- WSDL1.02 support (PTZ, Imaging, IF change)
- RTSP range field support
- H.264 Baseline support (used for cell phone monitoring)
- Change access authorization table (new regulations in ONVIF)
- Digest certification (include RTSP/HTTP,CGI)
- Host certification to ONVIF command(unity other i-PRO and CGI)
- AudioBackChannel(include overRTSP)
- Play audio only by RTSP(Profile exclude video)
- PTZ 360° spatial coordinate system•infinite PAN support
- Change acquisition options value for PTZ
- Ex/digital Zoom support

ONVIF

http://www.onvif.org/
info@onvif.org

Annex A
Declaration of Conformance – NVT

This Declaration of Conformity is issued by the indicated Member which is solely responsible for declared conformance. Conformity is valid ONLY for the NVT identified when used in a manner consistent with the intent of the referenced documents.

Responsible Member:

Member name:	Panasonic System Networks Co., Ltd.
Member address:	4-1-62 Minoshima, Hakata-ku, Fukuoka City, 812-8531, Japan

Identified NVT:

Product name:	WV-SC385 Series
Product hardware version:	N/A
Product firmware version:	Ver 1.4
Product software version:	(if applicable)

The NVT identified above conforms to the following specifications:

ONVIF Core Specification, version:	Ver 2.0
ONVIF Test Specification, version:	Ver 1.02.4
ONVIF Test Tool, version:	Ver 1.02.4.3

Signature of Authorized Representative:

Signature:	Shinji Nakamura
Name:	Shinji Nakamura
Title and department:	General Manager, SSRII Software Engineering Group
Date:	Oct. 31, 2011

This Declaration of Conformance MUST be accompanied by the result report of [ONVIF Tool].

ONVIF Conformance Process Specification
Copyright © ONVIF 2009. All rights reserved.

May, 2009
Page 1

Panasonic ideas for life

Preliminary ver.

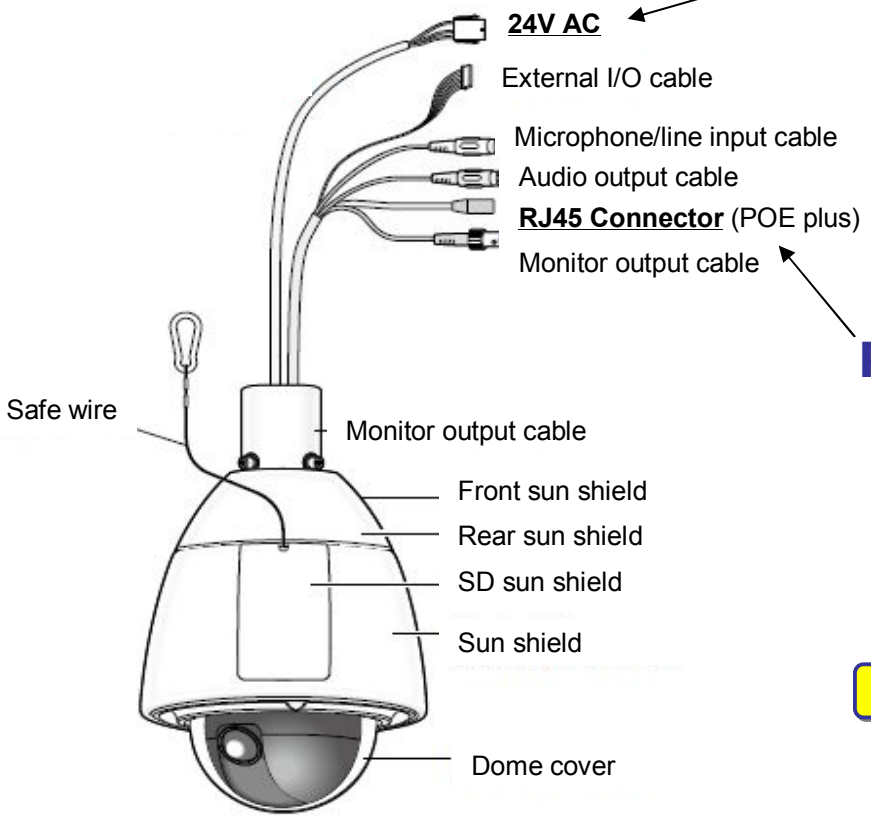
Power Source for SW396

i-PRO SmartHD

New

24V AC or Power over Ethernet Plus (IEEE802.3at) are selectable as a power source of SW395.

The length of 24V AC cable is 3m



Power over Ethernet plus (IEEE802.3at)

Dimension is same as SW395

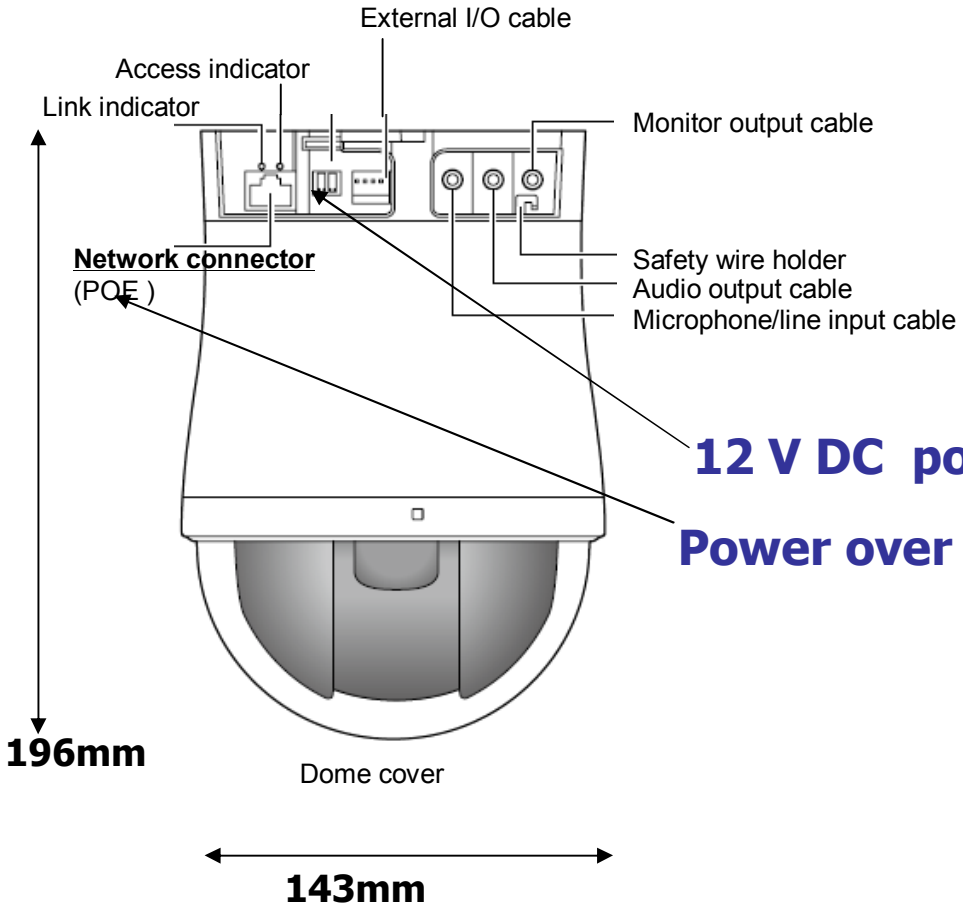
<Note>
The difference of Ambient temperature

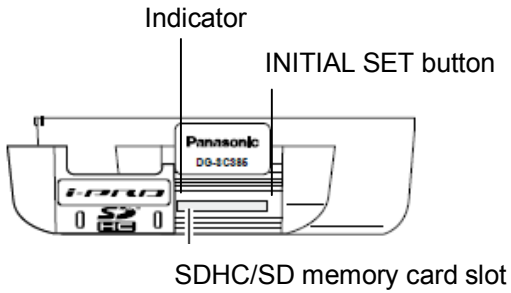
New

-50 Deg C to +55Deg C (24V AC)
-30 Deg C to +55Deg C (POE plus)

*If use PoE+, it is required more than -3o degree.

Power Source for SC386





12 V DC power supply terminal

Power over Ethernet (IEEE802.3af)

<Note>
Ambient temperature
-10 Deg C to +50eg C

Specification comparison chart

i-PRO SmartHD

Most of specifications installed on WV-SC386 and WV-SW396 are the same.
Below shown are the difference of specifications between them.

Specifications		WV-SC386	WV-SW396
Basic	Power source	12 V DC, PoE (IEEE802.3af compliant)	24V AC, PoE+ (IEEE802.3at compliant)
	Power consumption	12 V DC*: Approx. 1 A, PoE: Approx. 12 W (Class 0 device) * FOR UL LISTED MODEL(S), ONLY CONNECT 12 V DC CLASS 2 POWER SUPPLY	24V AC : 50 Hz / 60 Hz: 43 W, PoE+: Approx.24 W (Class 4 device)
	Ambient operating temperature	–10 to +50 deg C {14 to 122 deg F}	–50 to +55deg C {–104 to 122 deg F} (24V AC)*1 –30 to +55 deg C {–22 to +122 deg F} (PoE+)
	Monitor output (for adjustment)	VBS: 1.0 V [P-P]/75 ohm, composite (BNC), ø3.5 mm mini jack (monaural)	VBS 1.0 V[P-P]/75 ohm, composite (BNC)

*1 When using this product without turning the power off. (However, the temperature inside the camera shall be –10 deg C {14 deg F} or higher.) Perform settings or startup operations when the ambient temperature is –30 deg C {–22 deg F} or higher.

Flexible alarm handling

i-PRO SmartHD

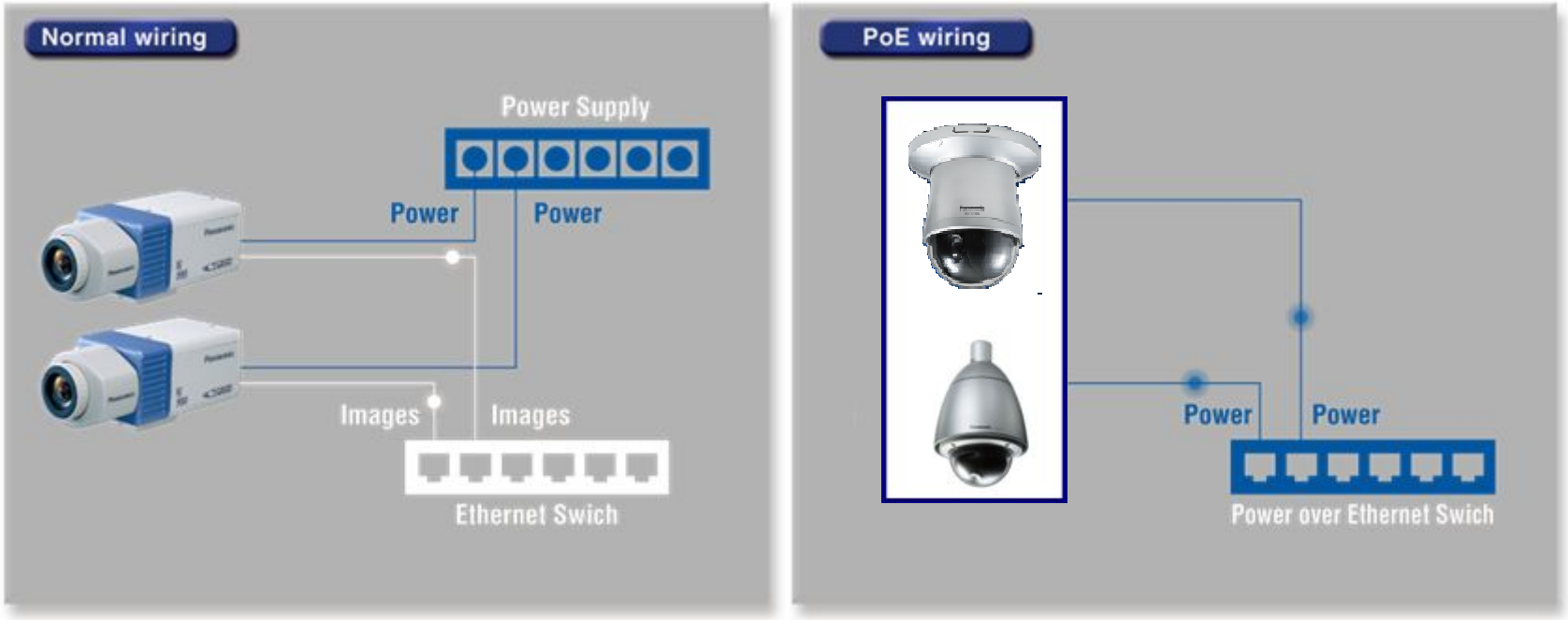
Alarm sources including Terminal input, VMD and Panasonic alarm command can trigger actions such as SD memory recording, FTP image transfer, E-mail notification, Indication on browser, Alarm terminal output, and Panasonic protocol output.

PoE (Power over Ethernet)

i-PRO SmartHD

Both power and image data can be transmitted through a signal Ethernet cable.

By eliminating the need for power cables and supplies when installing cameras or changing layouts, installation and maintenance costs are reduced.



* SW395 supports Power over Ethernet Plus (IEEE802.3at).
24V AC,POE plus(IEEE802.3at)
24V AC:50Hz/60Hz:43W, POE plus :24W
-40 Deg C to +50Deg C(24V AC)
-30 Deg C to +50Deg C(POE plus)

What is PoE+（Power over Ethernet plus）?

i-PRO SmartHD

	PoE+ (Power over Ethernet plus)	PoE (Power over Ethernet)
PoE standard	IEEE802.3at™-2009 *This is official version, not draft3.0	IEEE 802.3af
Support products	IP cameras, wireless LAN, IP telephones The Power of PD is more than 12.95W	IP cameras, wireless LAN, IP telephones The Power of PD is less than 12.95W
Power standard	PSE（Power Supply Equipment）: 30W PD（Power device）: 25.5W	PSE（Power Supply Equipment）: 15.4W PD（Power device）: 12.95W
Detection System	(1) 2 events detection : hardware detection **PSE send the pulse signal at the time of startup and detect the difference of power current. For safety, the regular power is provided after 2 times detection.** **In the case of no detection,** **1) Non PoE product** **The regular power is NOT provided.** **2) PoE product** **The regular power of PoE (not PoE plus) standard is provided.** ***Many kinds of products, NWSW and Midspan etc, support this detection system.** (2) LLDP（Link Layer Discovery Protocol）: hardware & software detection **PSE send the pulse signal after hardware detection and send the packet signal qualified LLDP. In the case of PD is recognized as the products qualified LLDP, the regular power is provided.** ***Mainly NWSW manufacturer like CISCO support this detection system.**	(1) 1 events detection : hardware detection **PSE send the pulse signal at the time of startup and detect the difference of power current. Then the regular power is provided.** **In the case of no detection,** **1) Non PoE product** **The regular power is NOT provided.**

1. PD can be regarded as a product compatible of "***IEEE802.3atTM-2009***" by supporting both "(1) 2 events detection" and "(2) LLDP".
   *The product compatible of "***IEEE802.3at draft3.0***" means supporting "(2) LLDP" only.
2. PSE can be regarded as a product compatible of "***IEEE802.3atTM-2009***" by supporting at least each "(1) 2 events detection" or "(2) LLDP"

for life

ver.

Verified PoE plus（IEEE802.3at） NW Switch

i-PRO SmartHD

Current verified PoE plus NW switches (As of Jan. 2011)

GbE : Gigabit Ethernet

■ **HP**

Camera Qtys	model	Layer	Ports		Required Features			
			Regular	Uplink	PoE plus		IGMP Querier	Multicast Filtering
					Ports	Max		
24 port	HP ProCurve Switch 2910al-24G-PoE+	**2**	**GbE × 20 GbE/mini GBIC x 4**	**10GbE × 4**	**24 Up to 30W**	**382W** *1)	**Yes**	**Yes**
48 port	HP ProCurve Switch 2910al-48G-PoE+	**2**	**GbE × 44 GbE/mini GBIC x 4**	**10GbE × 4**	**48 Up to 30W**	**382W** *1)	**Yes**	**Yes**

*1) Max 764W by adding on an external power supplyl, HP ProCurve 630 RPS/EPS.

■ **CISCO**

Camera Qtys	model	Layer	Ports		Required Features			
			Regular	Uplink	PoE plus		IGMP Querier	Multicast Filtering
					Ports	Max		
24 port	WS-C2960S-24PS-L *2) *3)	**2**	**GbE × 24**	**GbE/SFP × 4**	**12 Up to 30W**	**370W**	**Yes**	**Yes**

*2) Need to enable **"LLDP"** setting when the power for SW396 is supplied by **PoE plus**.

*3) Need to disable **"Poe/Poe plus power supply"** setting by power inline command when the power for SW396 is supplied by **AC24V**.

Verified IEEE802.3at Midspan

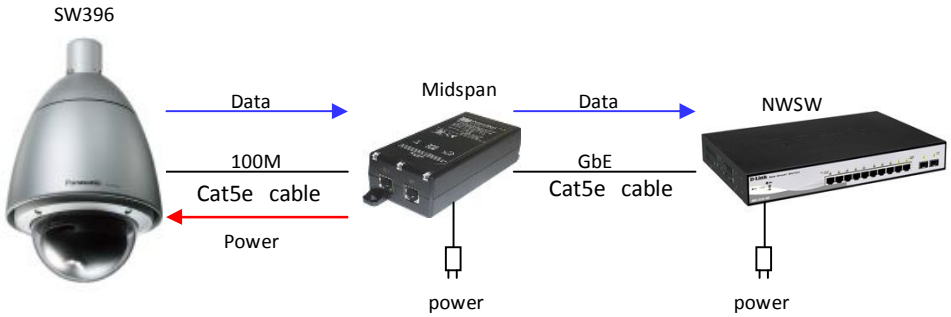
i-PRO SmartHD

Current verified Single-Port IEEE 802.3at Gigabit PoE+ Midspan Solution

■ **3COM**

GbE : Gigabit Ethernet

Camera Qtys	model	Layer	Ports		Required Features			
			Regular	Uplink	PoE plus		IGMP Querier	Multicast Filtering
					Ports	Max		
1 port	3CNJ1000PSE	**-**	**GbE × 1 (RJ-45)**	**-**	**1**	**30W**	**-**	**-**



Midspan is installed between SW396 and NWSW for power supply to SW396 through Cat5e cable.

Image capture size, max frame rate

<Image size and max frame rate>

Image Format		Image Capture Size			
		4:3	max fps	16:9	max fps
JPEG		(1)1,280x960 (2)800x600 (3)VGA (640x480) (4)QVGA (320x240)	30	(1)1,280x720 (2)640x360 (3)320x180	30
Stream1 (*)	H.264	(1)1,280x960 (2)800x600 (3)VGA (640x480) (4)QVGA (320x240)	30	(1)1,280x720 (2)640x360 (3)320x180	30
	MPEG-4	(1)VGA (640x480) (2)QVGA (320x240)	30	-	-
Stream2 (*)	H.264	(1)800x600 (2)VGA (640x480) (3)QVGA (320x240)	30	(1)640x360 (2)320x180	30
	MPEG-4	(1)VGA (640x480) (2)QVGA (320x240)	30	-	-

* When motion stream 1 is H.264 or MPEG-4, motion stream 2 must be H.264 or MPEG-4 (same compression type).

H.264 Frame Rate

i-PRO SmartHD

Transmission Priority is “Frame rate” (Frame Rate priority mode)
Image Quality is “Normal”

4:3 Frame rate priority mode (1User , Audio=OFF, Refresh-Interval=1sec)

Frame rate(fps)		1fps	3fps	5fps	7.5fps	10fps	15fps	20fps	30fps
bitrate (kbps)	SXVGA	768	1024	1024	1024	1536	1536	1536	2048
	SVGA (800x600)	512	768	768	1024	1024	1024	1536	2048
	VGA	256	384	384	512	512	512	768	768
	QVGA	128	256	256	256	384	384	512	512

16:9 Frame rate priority mode (1User , Audio=OFF, Refresh-Interval=1sec)

Frame rate(fps)		1fps	3fps	5fps	7.5fps	10fps	15fps	20fps	30fps
bitrate (kbps)	1280x720	768	1024	1024	1024	1536	1536	1536	2048
	640x360	256	512	512	768	768	768	1024	1024
	320x180	128	256	256	256	384	384	512	512

***The bit rate values may change up to object conditions and required image quality.**

JPEG Frame Rate

i-PRO SmartHD

<JPEG Frame Rate (H.264/MPEG-4 OFF) >

4:3

Picture quality mode		0 (Super fine)	1 (Fine)	2	3	4	5 (Normal)	6	7	8	9 (Low)
1280 x 960	Frame rate	5	6	7	8	10	13	17	21	26	30
	File size (kbyte)	288	256	224	192	160	128	96	80	64	48
	Bit rate (kbps)	13,248	14,131	14,426	14,131	14,720	15,309	15,014	15,456	15,309	13,248
VGA	Frame rate	13	17	21	26	30	30	30	30	30	30
	File size (kbyte)	128	96	80	64	56	48	40	32	28	24
	Bit rate (kbps)	15,309	15,014	15,456	15,309	15,456	13,248	11,040	8,832	7,728	6,624
QVGA	Frame rate	30	30	30	30	30	30	30	30	30	30
	File size (kbyte)	44	40	36	32	28	24	20	16	14	12
	Bit rate (kbps)	12,144	11,040	9,936	8,832	7,728	6,624	5,520	4,416	3,864	3,312

16:9

Picture quality mode		0 (Super fine)	1 (Fine)	2	3	4	5 (Normal)	6	7	8	9 (Low)
1280 x 720	Frame rate	7	8	10	12	14	18	24	28	30	30
	File size (kbyte)	216	192	166	144	120	96	72	60	48	36
	Bit rate (kbps)	13,910	14,131	15,272	15,898	15,456	15,898	15,898	15,456	13,248	9,936
640 x 360	Frame rate	18	24	28	30	30	30	30	30	30	30
	File size (kbyte)	96	72	60	48	42	36	30	24	20	18
	Bit rate (kbps)	15,898	15,898	15,456	13,248	11,592	9,936	8,280	6,624	5,520	4,968
320 x 180	Frame rate	30	30	30	30	30	30	30	30	30	30
	File size (kbyte)	33	30	27	24	21	18	15	12	10	8
	Bit rate (kbps)	9,108	8,280	7,452	6,624	5,796	4,968	4,140	3,312	2,760	2,208

These charts are target performance. Performance would b e changed by the contrast or the motion in picture.

High Definition

i-PRO SmartHD

Analog Camera

i-Pro SmartHD Camera

Progressive Scan

i-PRO SmartHD

Progressive video output ensures clear images with less motion blur and no tearing even when the subject is moving.

Image appears with tearing when the subject is moving due to temporal difference between odd/even field.

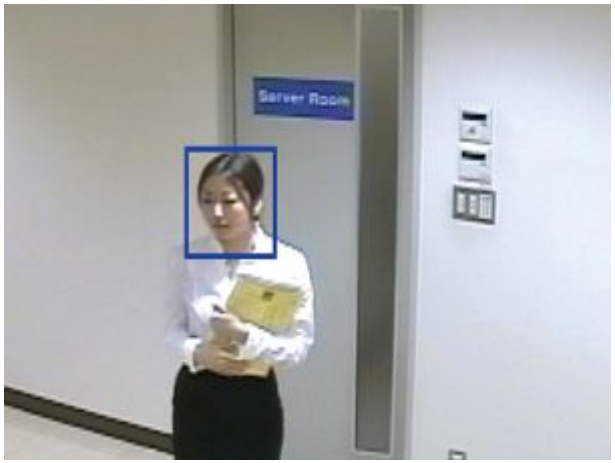
There is no tearing even when the subject is moving.

Face Detection

i-PRO SmartHD

SC386/ SW396 has Face Detection feature and automatically detects up to 8 human faces.

Automatic Face Detection

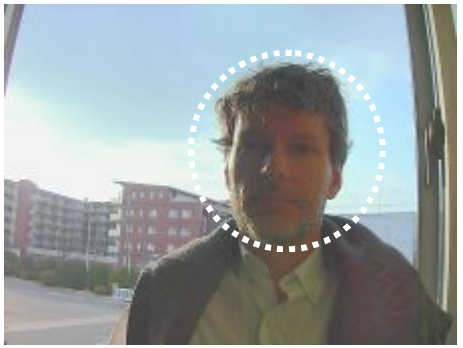


* Face detection is not handled as an alarm source.

Face Detection with Mega SD

i-PRO SmartHD

Camera automatically turn ON or OFF face super dynamic function by detecting whether there are human faces or not.

Mega SD Setting	Super Dynamic : OFF Face WDR : OFF	Super Dynamic : ON Face WDR : OFF	Super Dynamic : ON Face WDR : ON
With Human Face			
Without Human Face		 Without human face, face wide dynamic range is not operated.	

Panasonic ideas for life

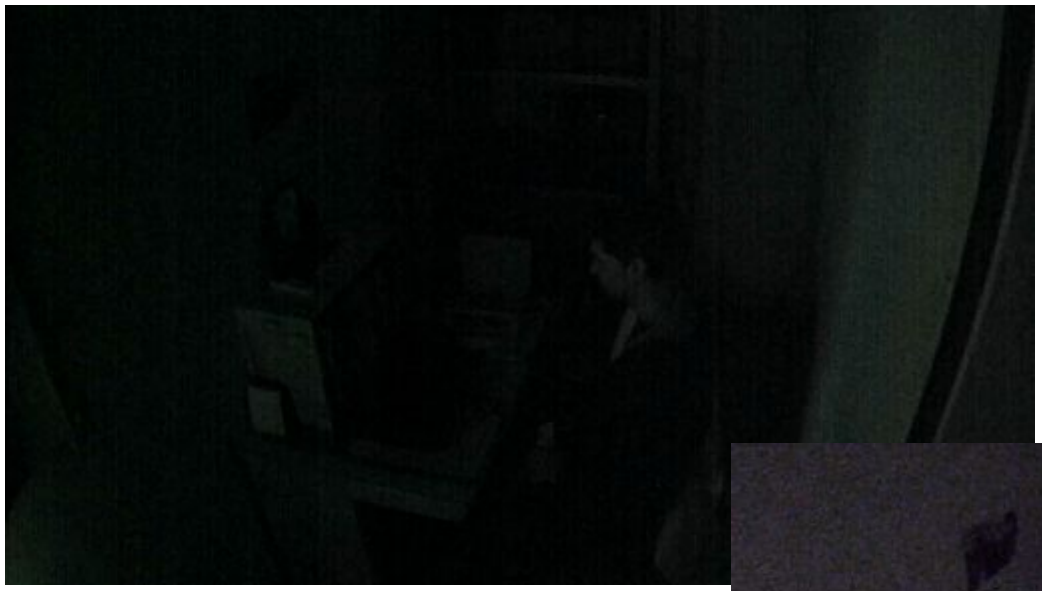
Preliminary ver.

SC386 SW396

High Sensitivity

i-PRO SmartHD

It improves low illumination performance even in darker condition.



Conventional HD Camera

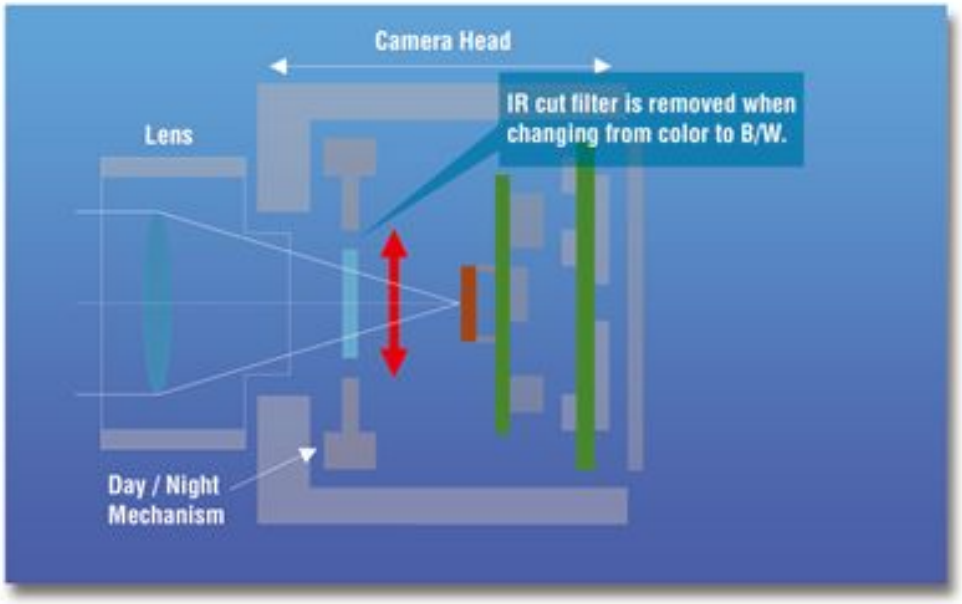
i-Pro SmartHD Camera

Day-Night function

i-PRO SmartHD

Day-Night function automatically switches camera from color to B/W and vise versa depending on the illumination, an ideal solution for 24-hour surveillance.

With moving IR cut filter and ABF, both high sensitivity and accurate focus are ensured.



Adaptive DNR (Digital Noise Reduction)

i-PRO SmartHD

2D-DNR for motion area and 3D-DNR for static area are effectively combined, realizing a clear low noise image with less motion blur and resolution deterioration.

Video Motion Detection

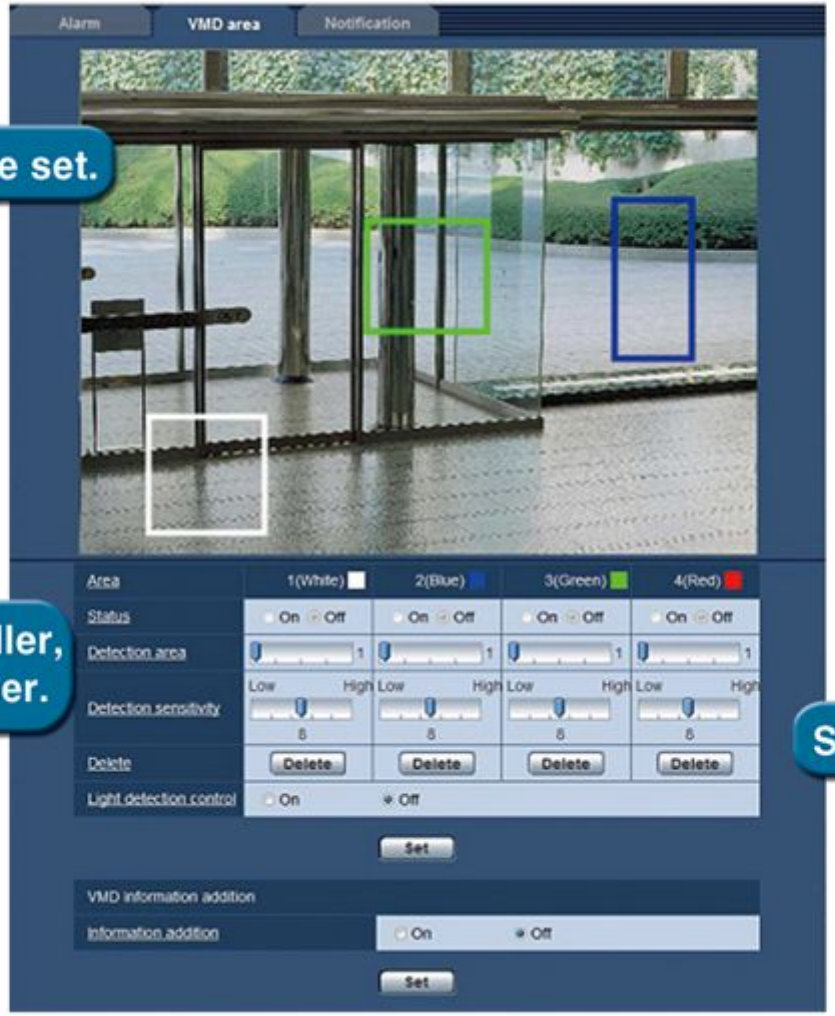
i-PRO SmartHD

The motions in the specified areas can be detected, triggering an alarm.

Up to 4 areas can be registered. Finer tuning is possible with area and sensitivity adjustment.

Up to 4 areas can be set.

Detection size; When smaller, sensitivity becomes higher.



Sensitivity: Low to High

Panasonic ideas for life

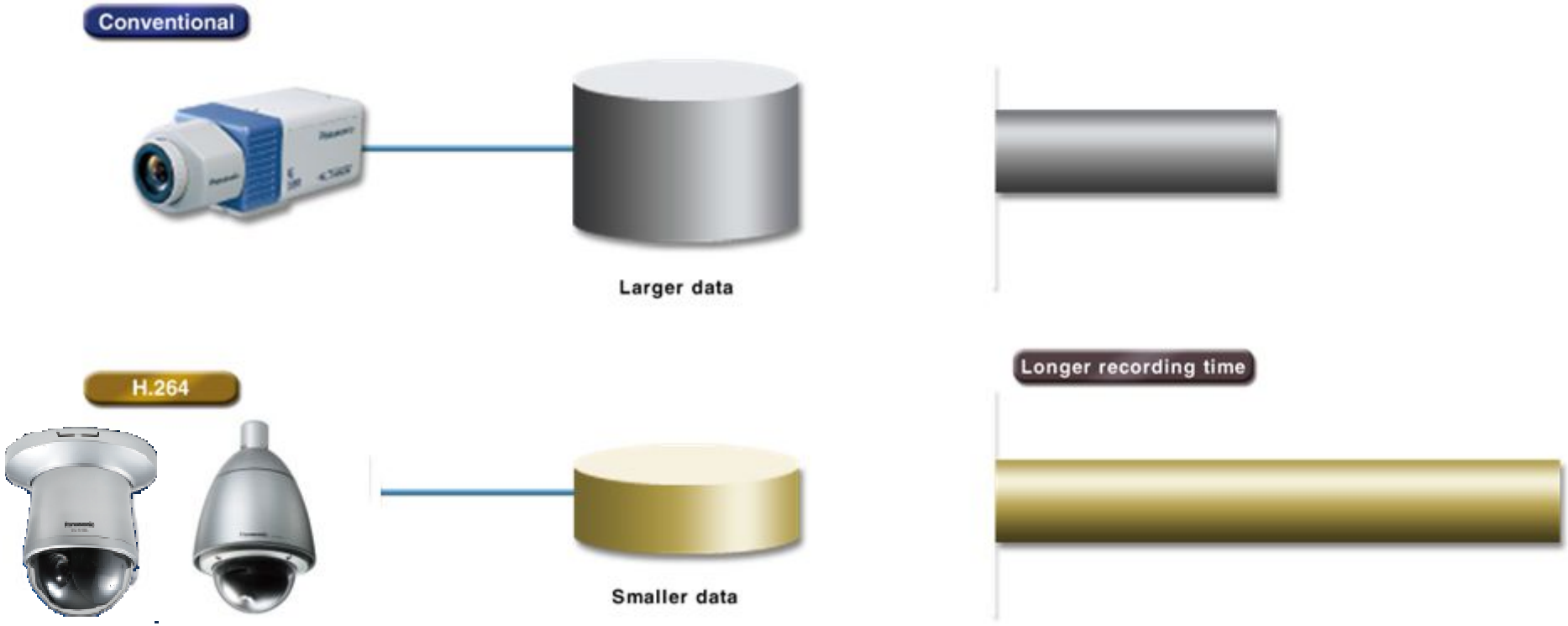
SC386 SW396

Preliminary ver.

H.264 Latest Encoding

i-PRO SmartHD

H.264 latest encoding technology with Panasonic Uniphier platform enables superior image of 1280 x 960 with smaller data.

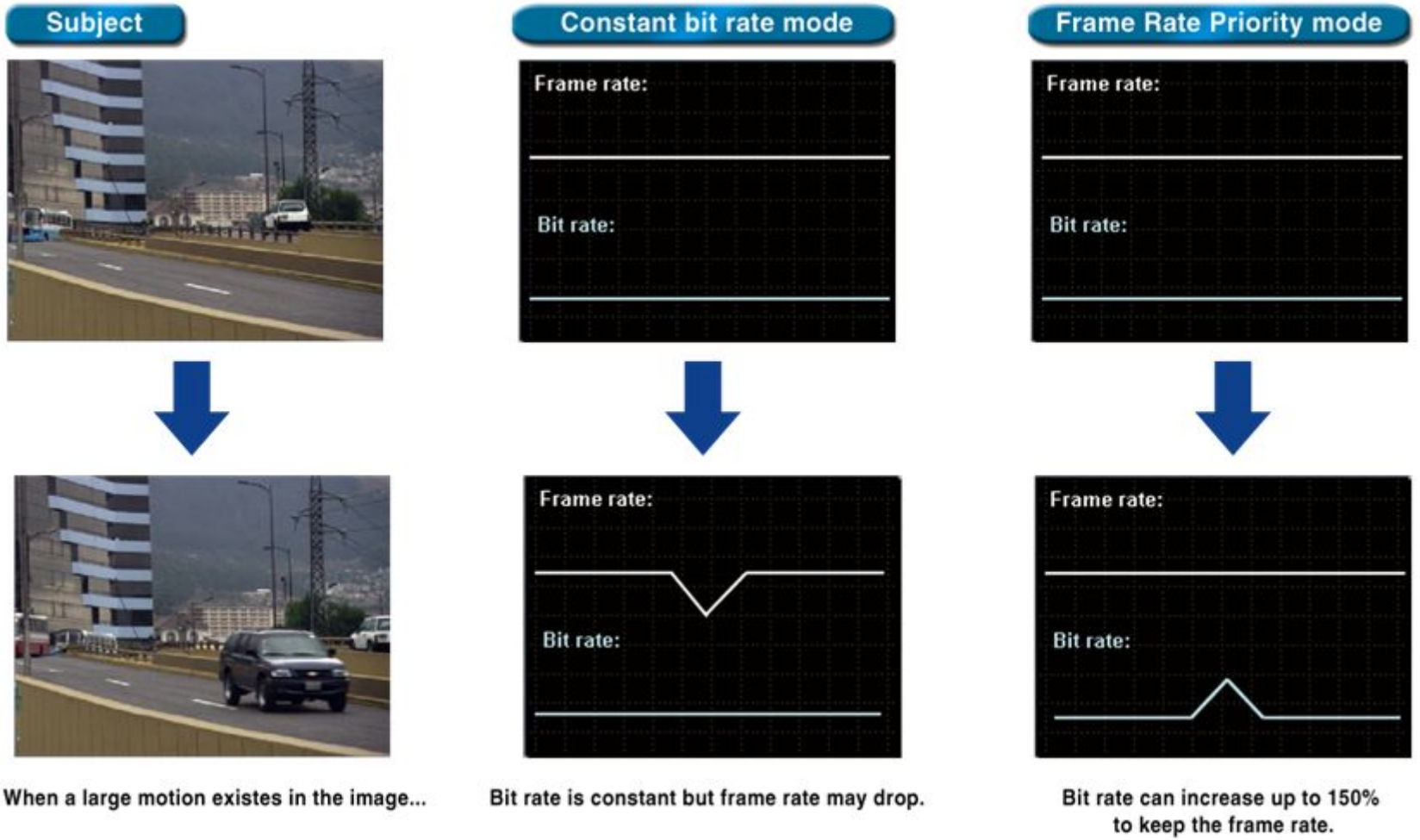


* This allows longer recording time within the limited disk capacity.

Frame Rate Priority Mode

i-PRO SmartHD

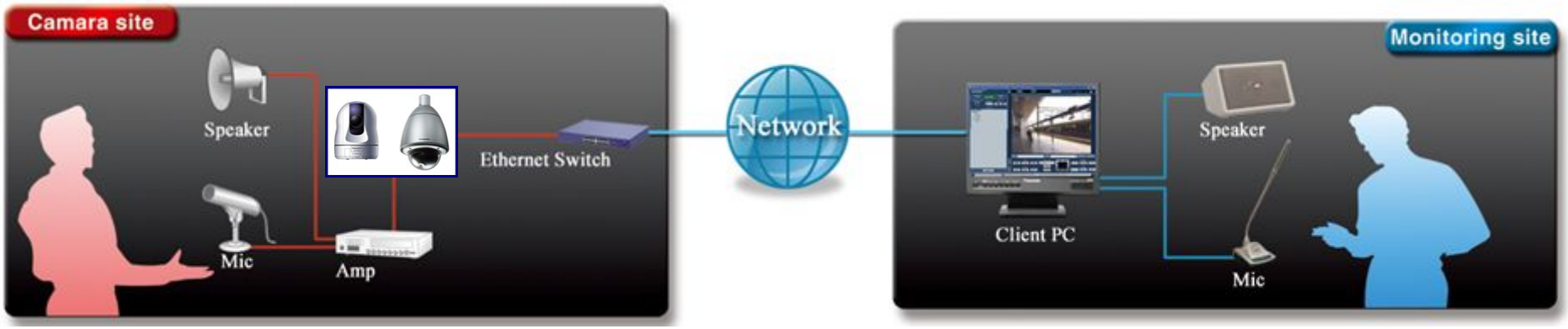
Frame rate priority mode dynamically controls bit rate depending on the subject to maintain the frame rate.



* This mode does not always guarantee the frame rate.

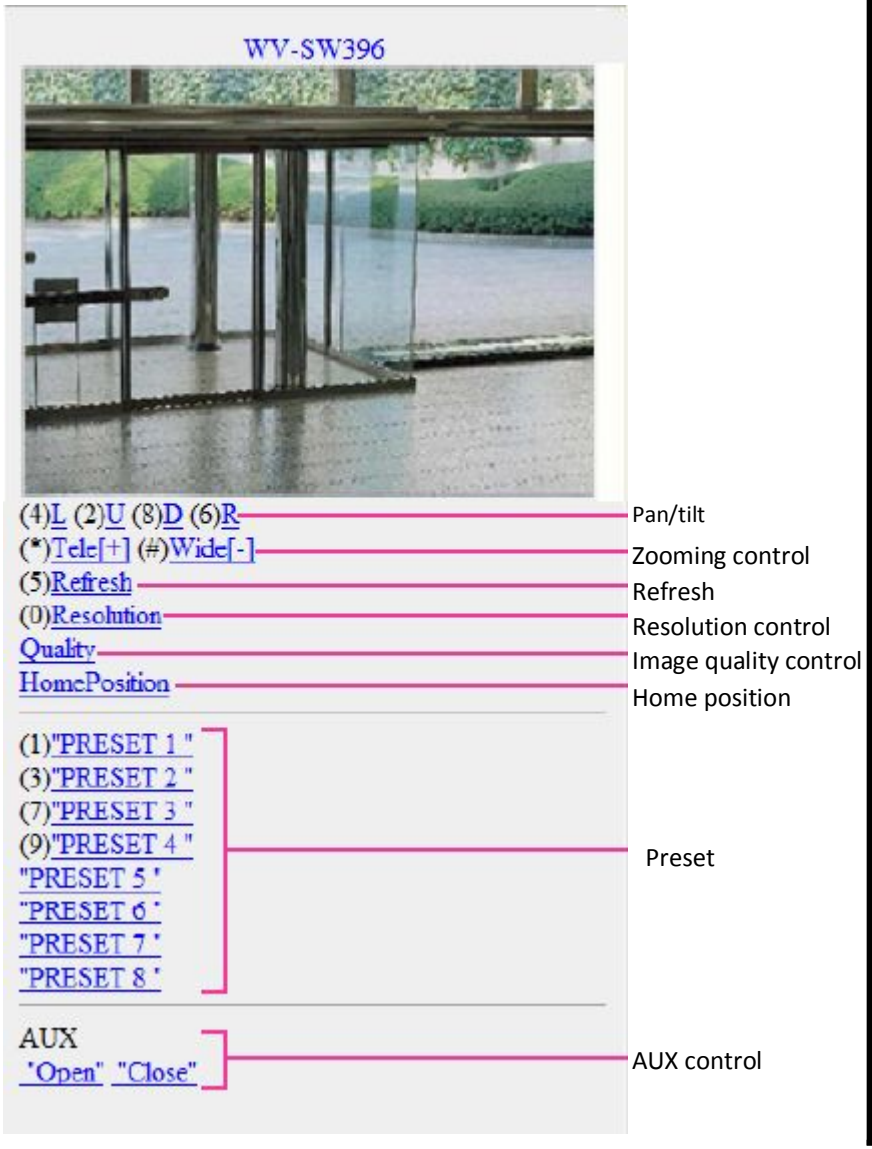
Bi-directional Audio

Full duplex bi-directional audio allows interactive communication between camera site and monitoring site.



* G.726 (ADPCM) 32 kbps & 16 kbps and G.711.

Cellular Phone Support



Functions	Outline of functions
Pan/tilt*	Controls the camera direction. The camera will pan or tilt to each direction by pressing the corresponding dial key.
Zooming control	It is possible to perform zooming operations of the camera by pressing "*"or "#".
Refresh	Refreshes the camera images by pressing the dial key "5".
Resolution control	Changes the image capture size by pressing the dial key "0". # Image in the aspect ratio of "4:3" # Image in the aspect ratio of "4:3 (VGA)" #Image in the aspect ratio of "4:3 (800x600)" # Image in the aspect ratio of "16:9" **Note** Some cellular phones cannot change the image capture size even when resolution is changed by resolution control.
Image quality control	It is possible to change the image quality between "Quality1" and "Quality2".
Home position	The camera will move to the home position. Home position will be displayed only when home position is set.
Preset	The camera will move to the designated preset position to display Images by pressing the dial key corresponding to the desired channel. (The dial key numbers are not displayed for Preset No 5 or greater. Only preset IDs will be displayed for them.)
AUX control	Controls the AUX terminal. These buttons will be displayed only when "AUX output" is selected for "Terminal 3" on the setup menu.

Onvif System Up

i-PRO SmartHD

Item		WS func	remarks	SC385
WS Lib	Device Discovery	6	WS base discovery	Yes
	Device Management	44	Camera control, network settings	Yes
	Security/TLS	8	Manage certificate	Yes
	DDNS	2	Set/Get DDNS	Yes
	Media configuration	46	Manage Profile, media setting	Yes
	PTZ	2	Add/Remove Configuration	Yes
	Metadata	7	Metadata Configuration	Yes
	Imaging configuration	3	Image configuration settings	Yes
	Event Handling	3	Set event	Yes
	PTZ control	18	PTZ Configuration	Yes
	Video analytics	0	Analytics Configuration	No
Media Stream	RTPoverRTSPoverHTTP	-	QuickTime defined specification	Yes
	JPEGoverRTP	-	JPEG over RTP with RTSP	Yes
	G.711	-	G.711 support	Yes
	Multicast AutoStart	-	RTP multicast	Yes
	Meta data	-	Metadata over RTP	Yes
Event	Event Handling	-	Notify, Pull Point (VMD, Notification of the remaining capacity of the SD card)	Yes
Network	DDNS	-	RFC2326 dynamic DNS update	Yes
	Security-TLS	-	Transport level security - TLS (1.1)	Yes
	CHCPv6	-		Yes

Best Effort Mode (H.264/MPEG-4)

i-PRO SmartHD

In accordance with the network bandwidth, images will be transmitted with the bit rate varying between the maximum and minimum bit rates.

H.264(1)	
H.264 transmission	On / Off
Internet mode (over HTTP)	On / Off
Image capture size	1280x960
Transmission priority	Best effort
Frame rate *	30fps *
Max bit rate (per client) *	Max 4096kbps * - Min 2048kbps *
Image quality	Normal
Refresh interval	1s
Transmission type	Unicast port (AUTO)
Unicast port1(Image)	32004 (1024-50000)
Unicast port2(Audio)	33004 (1024-50000)
Multicast address	239.192.0.20
Multicast port	37004 (1024-50000)
Multicast TTL/HOPLimit	16 (1-254)

Multiple Streaming – 4:3 ratio

i-PRO SmartHD

Triple streams(4:3 aspect ratio) including JPEG and H.264(2ch) or MPEG4(2ch) can be transmitted simultaneously, enabling both real time monitoring and high quality recording.

JPEG

Up to 10fps@1280x960

Up to 30fps@VGA

High Resolution Recording

H.264(2)：VGA or QVGA

MPEG-4(2)：VGA or QVGA

30fps Recording

H.264(1)：1280x960 or VGA or QVGA

MPEG-4(1)：VGA or QVGA

Up to 30fps @1280x960

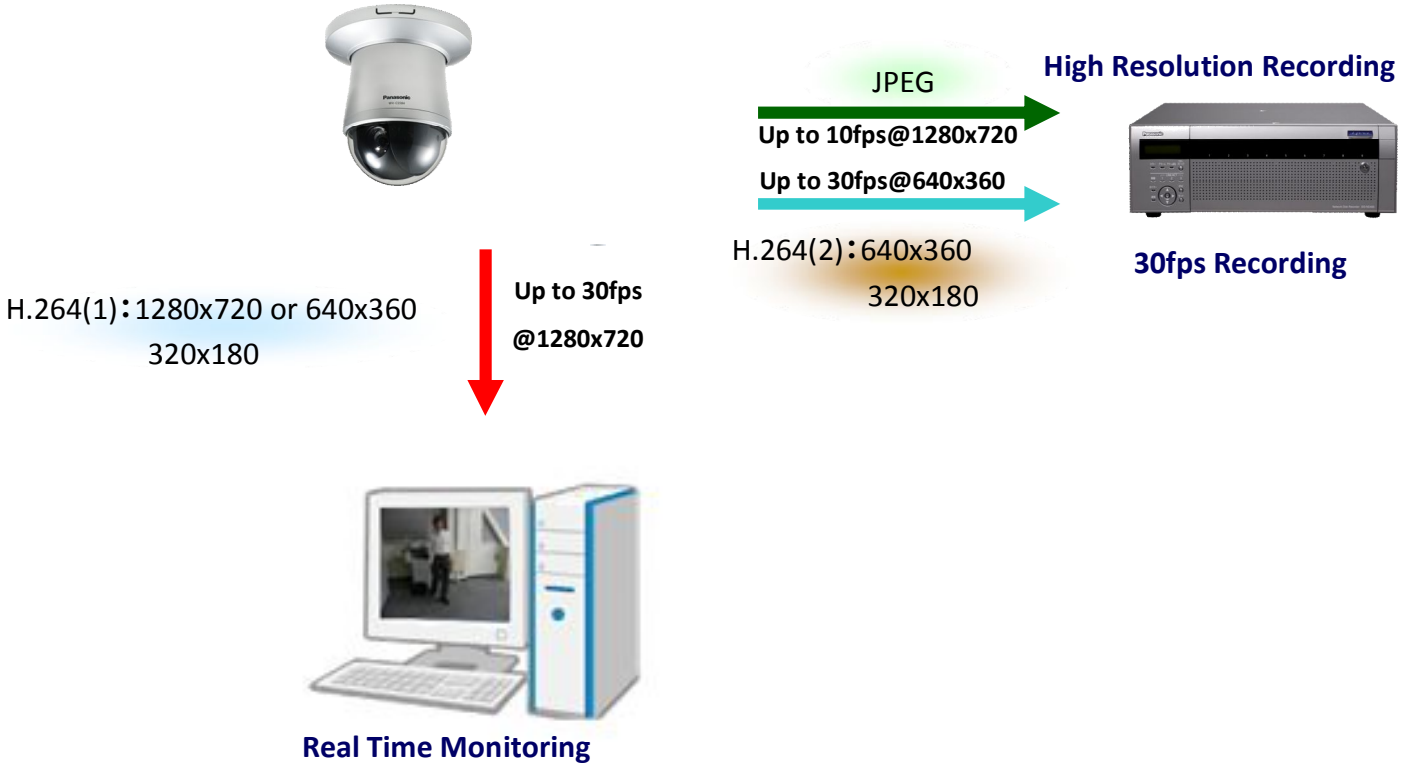
Real Time Monitoring

* When motion stream 1 is H.264 or MPEG-4, motion stream 2 must be H.264 or MPEG-4 (same compression type).
When “4:3 (800x600)” is selected, MPEG-4 transmission is unavailable.
Total bit rate must be less than camera’s max performance. Detail of the streaming combination is under study.

Multiple Streaming – 16:9 ratio

i-PRO SmartHD

Triple streams(16:9 aspect ratio) including JPEG and H.264(2ch) can be transmitted simultaneously, enabling both real time monitoring and high quality recording.



* Total bit rate must be less than camera's max performance. Detail of the streaming combination is under study.

SD card Memory Recording

i-PRO SmartHD

SD/SDHC Memory card slot for manual recording (H.264/JPEG), alarm recording (H.264/JPEG), schedule recording (H.264) and backup upon network failure (JPEG).

SD Memory Setting

1. Select image format
- **JPEG**
- **H.264**

*** In case of H.264, H.264 (2) streaming is used.**

2. Select recording mode
- **JPEG :Manual REC/Alarm REC (Post) /Backup upon network failure (FTP error)**
- **H.264 :Manual REC/Alarm REC (Pre/Post)/Schedule**

3. Select recording setting
- **Resolution :**
  - **4:3 mode :1280x960/VGA/QVGA**
  - **16:9 mode :1280x720/640x360/320x180**
- **Frame Rate/Bit Rate**

*** In case of H.264, follow H.264 (2) settings and up to VGA (4:3 mode) or 640x360 (16:9 mode).**

4. Select data size setting in pre/post alarm for H.264
- **Pre-Alarm :ON (data size: up to 1Mbps)/OFF**
- **Post-Alarm:10s – 300s**

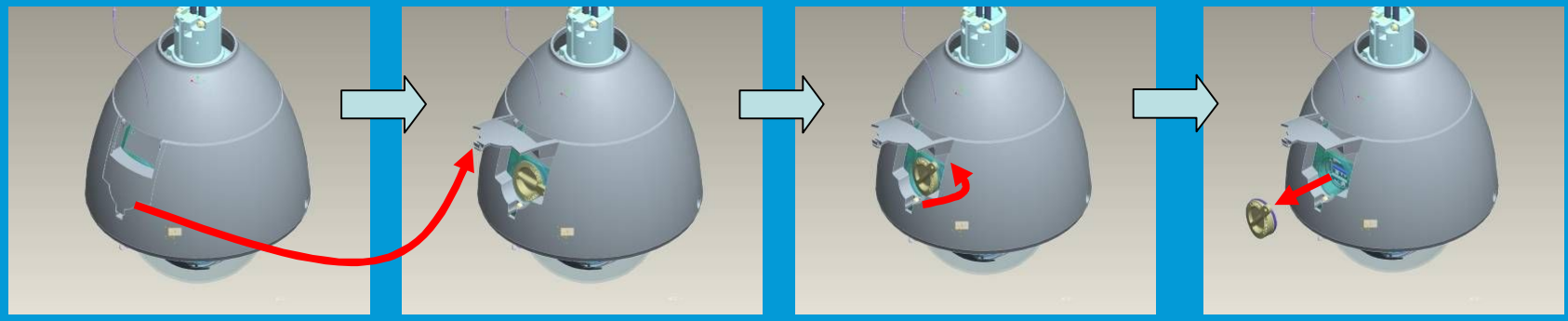
SD card Memory installation

i-PRO SmartHD

The improvement of SD/SDHC Memory card installation

•SD/SDHC Slot cover

Improved installation capability by New SD cover



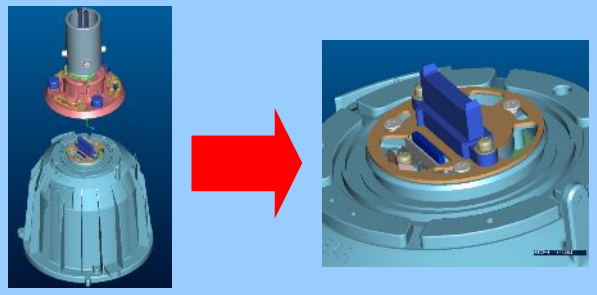
•Open SD sun shield

•Remove the fixing screw

•Rotate the SD cover

•Pull the SD cover

mini SD card installation of NW960 series



Panasonic PTZ Camera Comparison

	SW396	SC386	SW395	SC385	SC384	NW960	NS950	NS202A
								
Image sensor	1/4" 1.3M MOS Progressive	1/4" 1.3M MOS Progressive	1/3" 1.3M MOS Progressive	1/3" 1.3M MOS Progressive	1/3" 1.3M MOS Progressive	1/4" 768 CCD I-P Conversion	1/4" 768 CCD I-P Conversion	1/4" 768 CCD I-P Conversion
Min. lx C/L	0.5lx	0.5 lx	0.5lx	0.5 lx	0.6 lx	0.5lx	0.5lx	0.7 lx
Min. lx B/W	0.06lx	0.06lx	0.06lx	0.06lx	0.4lx	0.04lx	0.04lx	0.5lx
Dynamic range	SD 128x	SD 128x	SD 128x	SD 128x	WDR	SD 128x	SD 128x	SD 128x
Zoom ratio:	Optical 36 x	Optical 36 x	Optical 18 x	Optical 18 x	Optical 18 x	Optical 30 x	Optical 30 x	Optical 22 x
Angular field of view:	H:1.5 deg (T) – 60.2 deg (W) V:1.20 deg (T) – 46.3 deg(W)	H:1.5deg (T) – 60.2 deg (W V:1.20deg (T) – 46.3 deg (W	H:3.2deg(T) – 55.2deg (W) V:2.4deg(T) – 42.1deg (W)	H:3.2deg(T) – 55.2 deg (W) V:2.4deg(T) – 42.1 deg (W)	H:3.2deg(T) – 55.2deg (W) V:2.4deg (T) – 42.1deg (W)	H:1.9deg(T) – 52.0deg (W) V:1.4 deg (T) – 40.0deg (W)	H:1.9deg(T) – 52.0 deg (W) V:1.4deg(T) – 40.0 deg (W)	H:2.6 deg(T) – 51.7deg (W) V:2.0 deg(T) – 39.9deg (W)
Ex Optical Zoom	2x	2x	2x	2x	2x	N/A	N/A	N/A
Digital zoom	12x	12x	12x	12x	8x	10x	10x	10x
Day & Night	Yes(IR)	Yes(IR)	Yes(IR)	Yes(IR)	Yes(Electrical)	Yes(IR)	Yes(IR)	Yes(Electrical)
Network	H.264:30fps@1.3M MPEG-4 : 30fps @ VGA JPEG :10fps @ 1.3M	H.264:30fps @ 1.3M MPEG-4 : 30fps @ VGA JPEG :10fps @ 1.3M	H.264:30fps @ 1.3M MPEG-4 : 30fps @ VGA JPEG :10fps @ 1.3M	H.264:30fps @ 1.3M MPEG-4 : 30fps @ VGA JPEG :10fps @ 1.3M	H.264:30fps @ 1.3M MPEG-4 : 30fps @ VGA JPEG :10fps @ 1.3M	JPEG : 30fps @ VGA MPEG-4 : 30fps @ VGA	JPEG : 30fps @ VGA MPEG-4 : 30fps @ @VGA	JPEG : 30fps @ VGA MPEG-4 : 30fps @ VGA
Intelligent	VMD/Advanced Auto tracking	VMD/Advanced Auto tracking	VMD/Auto tracking	VMD/Auto tracking	VMD	VMD/Auto tracking	VMD/Auto tracking	VMD/Auto tracking
SD memory	SDHC/SD	SDHC/SD	SDHC/SD	SDHC/SD	SDHC/SD	SD	SD	SD
Power	AC24V/ PoE+ 43W(AC24V)	DC12V/ PoE 12W	AC24V/ PoE+ 43W(AC24V)	DC12V/PoE 12W	DC12V/PoE 12W	AC24,100,230V 85W	AC24,100,230V 15W	DC12V/PoE 12W
Audio	2-way	2-way	2-way	2-way	2-way	2-way	2-way	2-way
speed	PAN: 400 deg/Sec TILT: 400 deg Sec	PAN: 400 deg/Sec TILT: 400 deg/Sec	PAN:300 deg/Sec TILT:100 deg/sec	PAN:300 deg/Sec TILT:100 deg/sec	PAN:300 deg/Sec TILT:100 deg/sec	PAN:400 deg/Sec TILT:400 deg/sec	PAN:400 deg/Sec TILT:400 deg/sec	PAN:300 deg/Sec TILT:100 deg/sec
Endless PAN	Yes(endless)	Yes(endless)	Yes(360 pan-flip)	Yes(360 pan-flip)	Yes(360 pan-flip)	Yes(endless)	Yes(endless)	No
Tilting range	-15 deg – 185 deg*1	-15 deg – 185deg *1	-30 deg – 90 deg	-30 deg – 90 deg	-30 deg – 90 deg	-5 deg – 185 deg	-5 deg – 185 deg	-30 deg – 90 deg
preset positions	256	256	64	64	64	256	256	64
Upside-down	No	No	Yes	Yes	No	No	No	Yes
Patrol	Yes	Yes	No	No	No	Yes	Yes	No
Bearing display	Yes	Yes	No	No	No	No	No	No
operating temperature	-50～55 deg C	-10～50 deg C	-40～50 deg C	-10～50 deg C	-10～50 deg C	-40～50 deg C	-10～50 deg C	-10～50 deg C

[*1]-6° to -15° :with Pan/tilt-flip function

Panasonic ideas for life

Preliminary ver.