



HD PTZ Dome Network Camera

WV-SC385



**Weather Resistant
HD PTZ Dome Network Camera**

WV-SW395

Security & AV Systems Business Unit
Panasonic System Networks Company

Key Features

i-PRD
SmartHD

WV-SC385



HD/720P, 30fps

True D/N

36x (Under VGA)

Face Detection

WV-SW395



HD/720P, 30fps

True D/N

36x (Under VGA)

Face Detection

■ 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
- ❑ 18x zoom lens & 36x (under VGA) extra optional zoom

Mega Super Dynamic delivers 1280 x 960 image with superior dynamic range by fusion of 1.3 Megapixel RGB MOS Sensor and Mega Super Dynamic.

1.3 Megapixel RGB MOS Sensor

- Double Speed High sensitivity (Min. illumination: 0.5lux)
- Superior Color Reproduction by Primary (RGB) Color Filter

i-PRD
MEGA Super Dynamic

Mega Super Dynamic

- 1.3M 30fps Super Dynamic Signal Processing

Sensitivity (0.5lx)



Color Reproduction



**Frame Rate 30fps
(SD ON/OFF)**

JPEG	1280 x 960 30 fps	VGA 30 fps	QVGA 30 fps
H.264	1280 x 960 30 fps	VGA 30 fps	QVGA 30 fps
MPEG-4		VGA 30 fps	QVGA 30 fps

Panasonic ideas for life

UniPhier (Original System LSI)

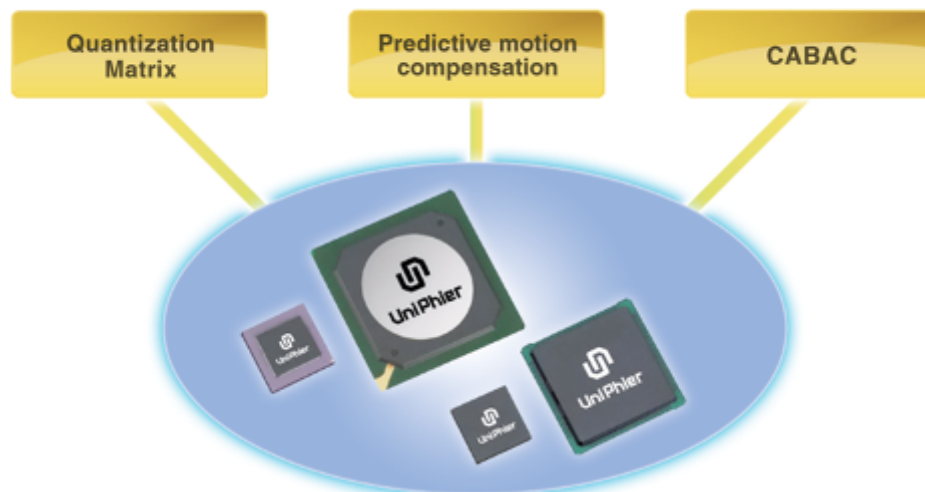
- Multiple H.264 High Profile Streams
- Real Time HD Video Processing
- On-device Intelligence Support



H.264 profiles

H.264 High Profile encoding with Panasonic Uniphier LSI enables
1280 x 960 high quality real time video with smaller data size.

UniPhier H.264 High Profile



1280x960 comparison		VGA comparison	
JPEG 11.5Mbps	1280 x 960 11 ips JPEG	MPEG-4 2 Mbps	VGA 30 ips
JPEG quality mode = 5			
H.264 4 Mbps	1280 x 960 30 ips H.264	H.264 1 Mbps	VGA 30 ips

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

High Definition

i-PRO
SmartHD



Analog Camera

i-Pro SmartHD Camera



SC385 SW395

Panasonic ideas for life

Progressive Scan

i-PRD
SmartHD

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

Interlace scan



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

Progressive scan



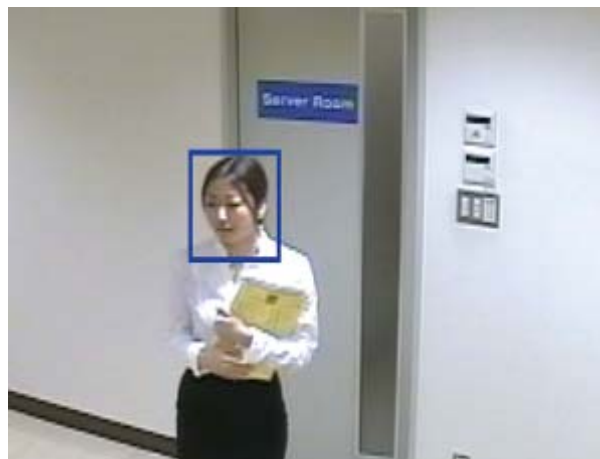
There is no tearing even when the subject is moving.

Face Detection

i-PRG
SmartHD

SC385/ SW395 has Face Detection feature and automatically detects up to 8 human faces.

Automatic Face Detection



* Face detection is not handled as an alarm source.

Panasonic ideas for life

SC385 SW395

Face Detection with Mega SD

i-PRG
SmartHD

Face Detection works in conjunction with Mega Super Dynamic to adjust brightness of face for better identification in backlight condition.

Super Dynamic OFF



Super Dynamic ON



Face Detection with
Super Dynamic ON



Face Detection with Mega SD

i-PRD
SmartHD

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

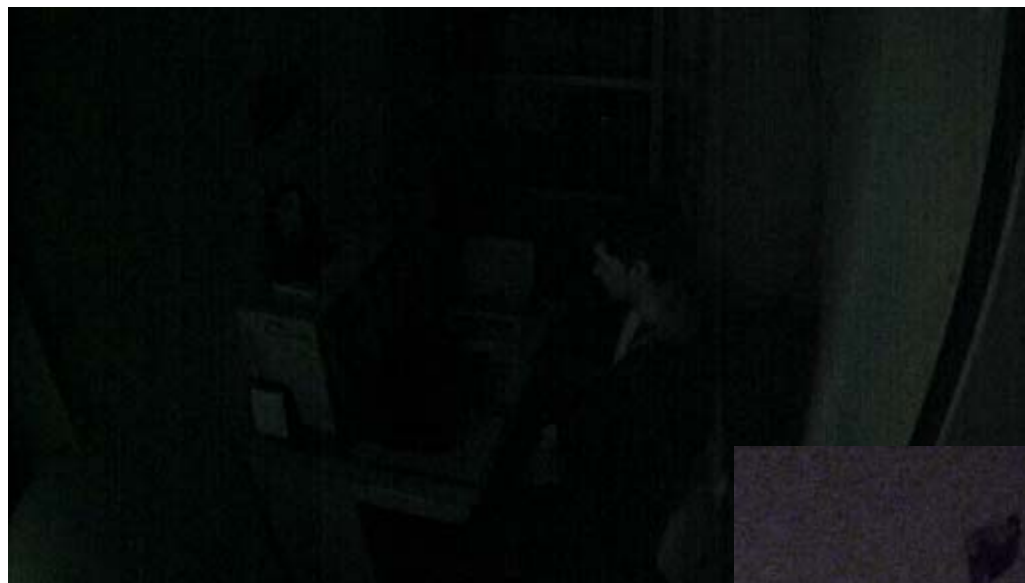
Mega SD Setting	Super Dynamic : OFF Face WDR : OFF	Super Dynamic : ON Face WDR : OFF	Super Dynamic : ON Face WDR : ON
With Human Face			
Without Human Face		 Without human face, face wide dynamic range is not operated.	

Panasonic ideas for life

High Sensitivity

i-PRO
SmartHD

It improves low illumination performance even in darker condition.



Conventional HD Camera



i-Pro SmartHD Camera

Panasonic ideas for life

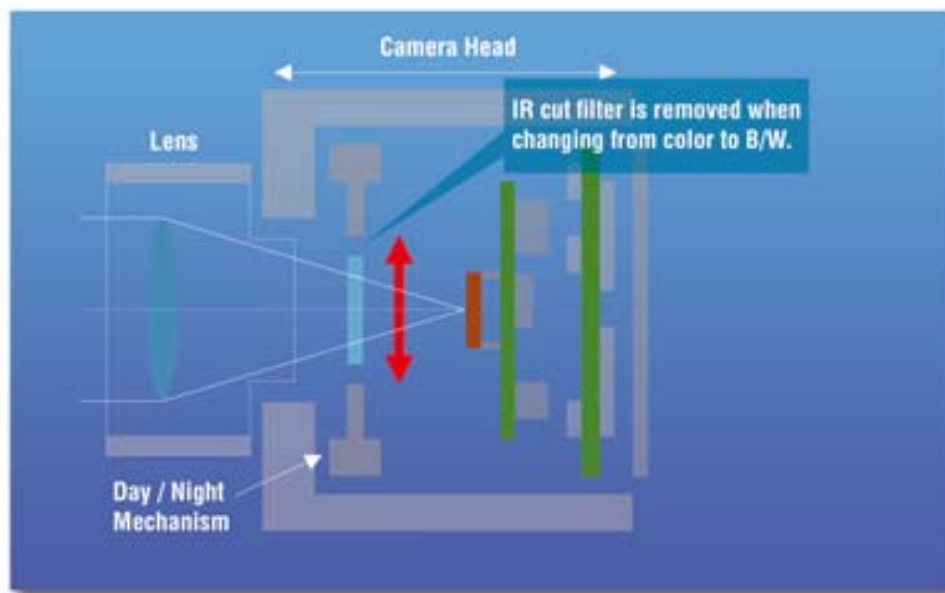
SC385 SW395

Day-Night function

i-PRD
SmartHD

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

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



Panasonic ideas for life

Adaptive DNR (Digital Noise Reduction)

i-PRG
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.



AGC OFF: Image is too dark

AGC ON: Image is too noisy.

Conventional DNR:
Motion blur on moving subject.

Motion adaptive DNR:
Clear image without motion blur.

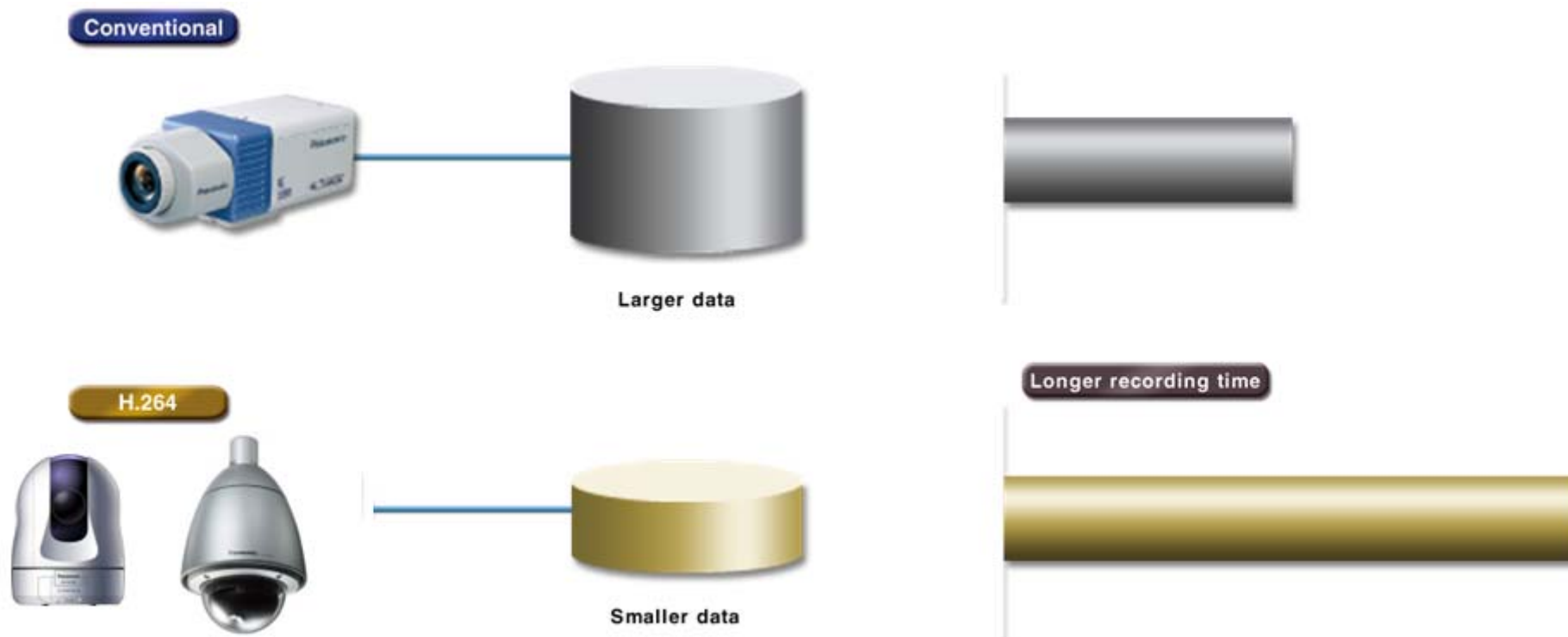
Panasonic ideas for life

SC385 **SW395**

H.264 Latest Encoding

i-PRG
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.

Panasonic ideas for life

SC385 **SW395**

Frame Rate Priority Mode

i-PRD
SmartHD

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

Subject



When a large motion exists in the image...

Constant bit rate mode

Frame rate:

Bit rate:



Frame rate:

Bit rate:

Bit rate is constant but frame rate may drop.

Frame Rate Priority mode

Frame rate:

Bit rate:



Frame rate:

Bit rate:

Bit rate can increase up to 150% to keep the frame rate.

* This mode does not always guarantee the frame rate.

Panasonic ideas for life

Multiple Streaming – 4:3 ratio

i-PRG
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.



* 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.

Panasonic ideas for life

SC385 SW395

Multiple Streaming – 16:9 ratio

i-PRG
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.

Panasonic ideas for life

SC385 SW395

SD Memory Recording

i-PRD
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



Panasonic ideas for life

SD Memory installation

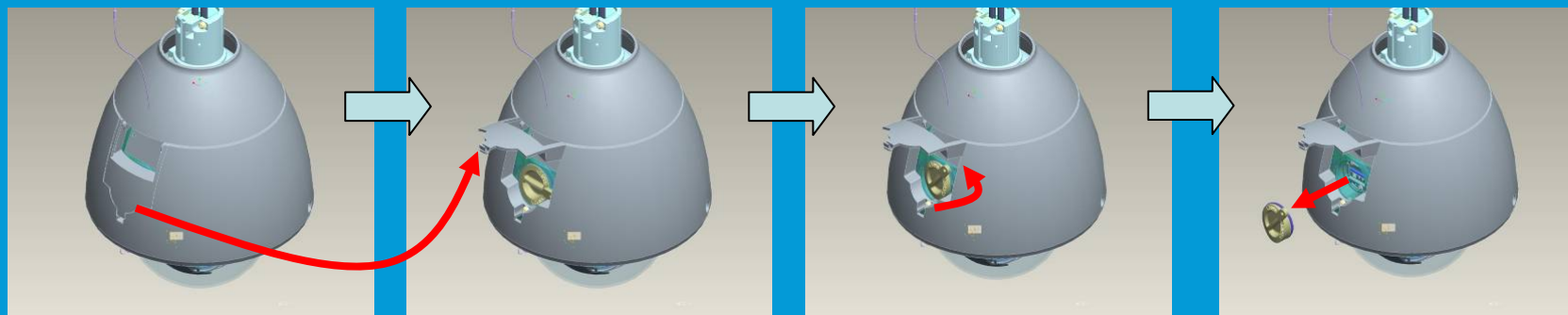
i-PRD
SmartHD

New

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 ideas for life

Video Motion Detection

i-PRG
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

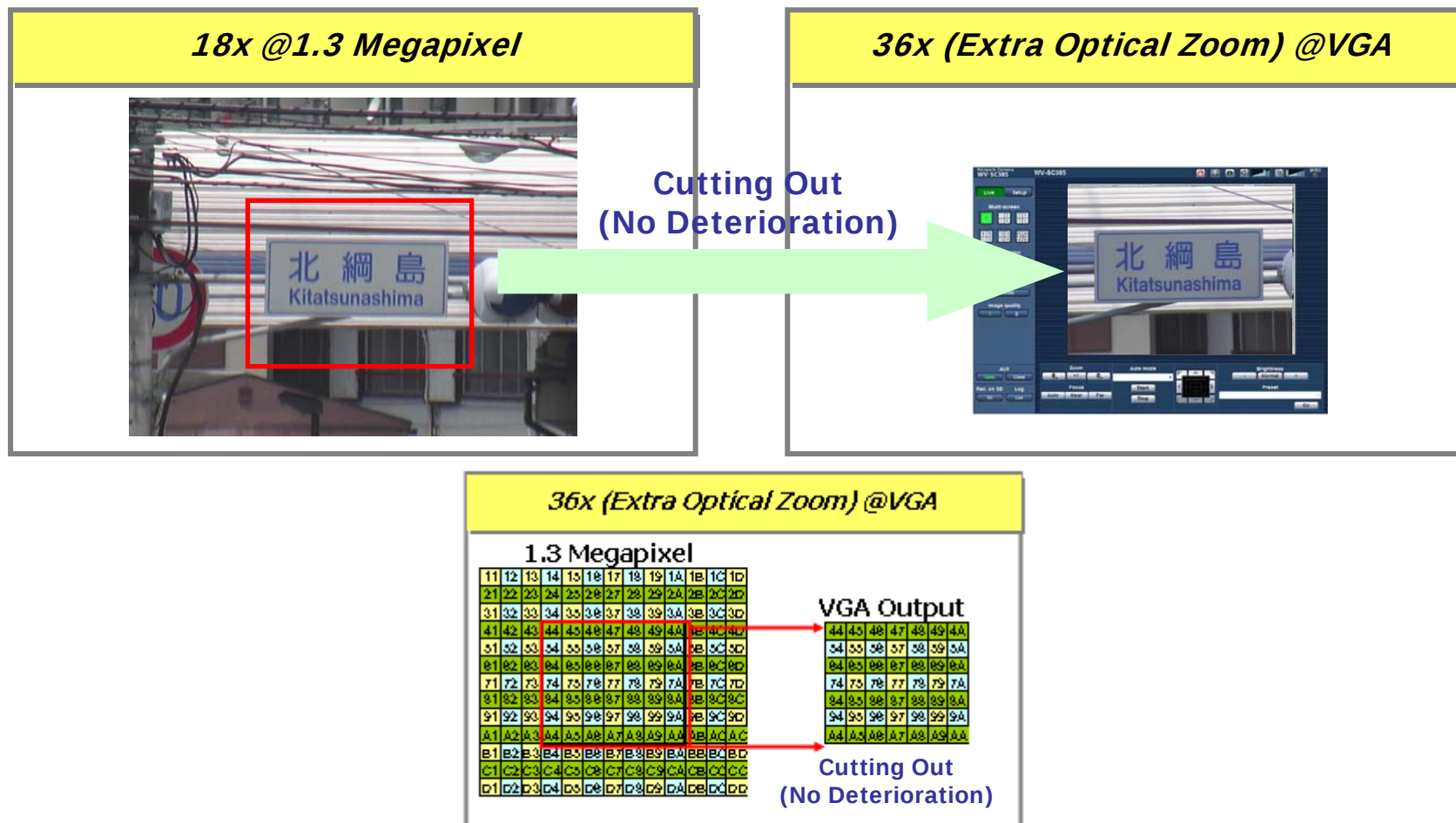
Panasonic ideas for life

36x Extra Optical Zoom

i-PRIMO
SmartHD

The 18x optical zoom lens can zoom up to 36x without image degradation by using the VGA part of the 1.3 Megapixel MOS sensor.

18x zoom lens and 36x (under VGA) extra optical zoom



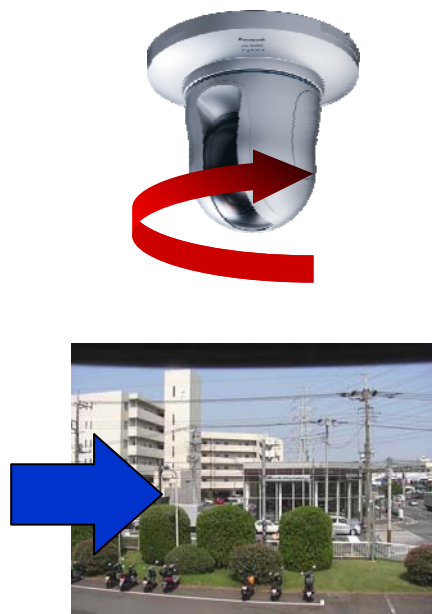
Panasonic ideas for life

360° Pan-Flip

i-PRD
SmartHD

When the camera reaches the panning end during manual operation, a still image is displayed on the screen and the camera pans at high speed to the reverse direction. In this way, it is possible to achieve camera controllability that is equal to 360 degrees endless cameras.

Reach Panning End



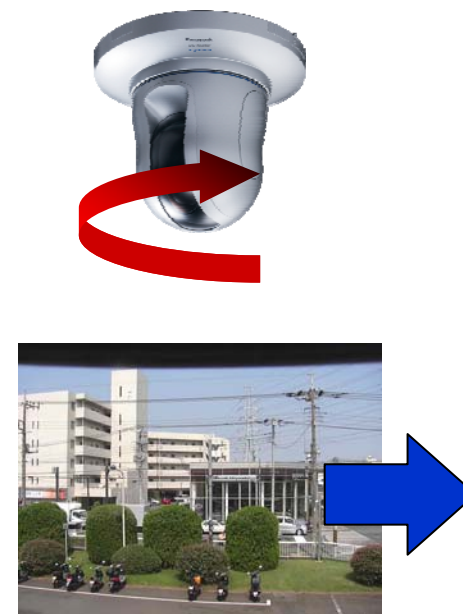
Display panning image to panning end

Reverse Direction



Display still image at panning end position

Reach Panning End



Restart to display panning image

Swallow turn (from 1Q/FY2011)

i-PRD
SmartHD

preliminary

New

When the camera reaches the tilting end during manual operation, the camera makes 180-degree turns (upside down) and resume tilting movement. In this way, it is possible to keep tilting manual operation from 0 deg to 180 deg.

Reach tilting End

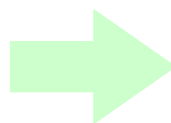


Tilt from 0 deg to 90 deg



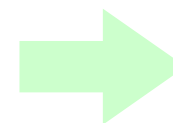
Display tilting image to 90 deg

180-degree turns



Display image turns upside down
(180-deg turns)

Resume tilt operation



Tilt from 90 deg to 180 deg



Display tilting image to 180 deg

Flexible alarm handling

i-PRG
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.



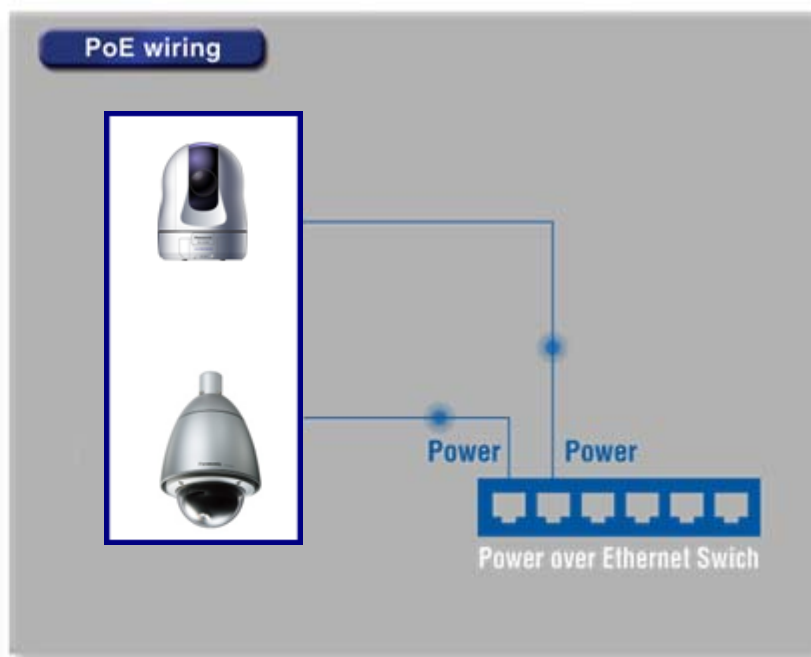
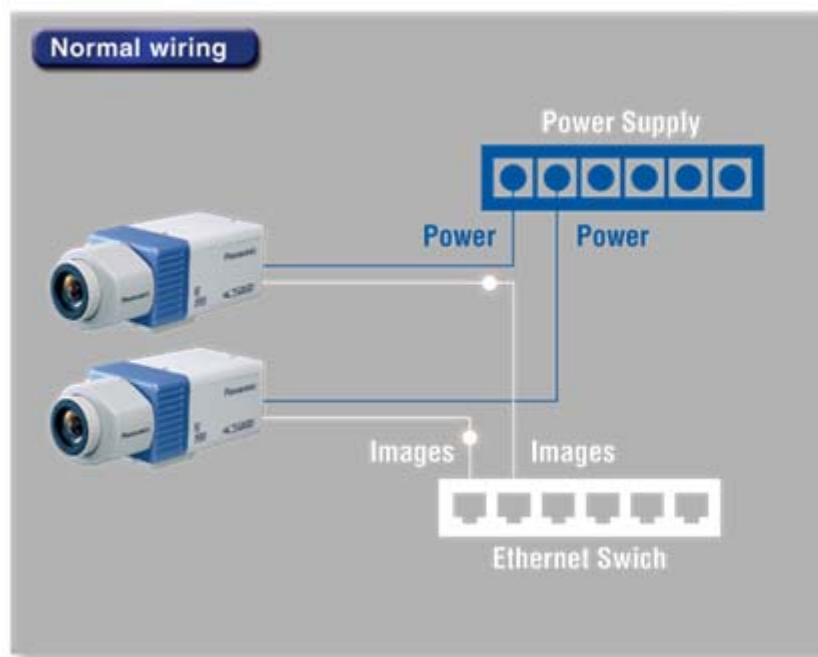
Panasonic ideas for life

PoE (Power over Ethernet)

i-PRD
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.



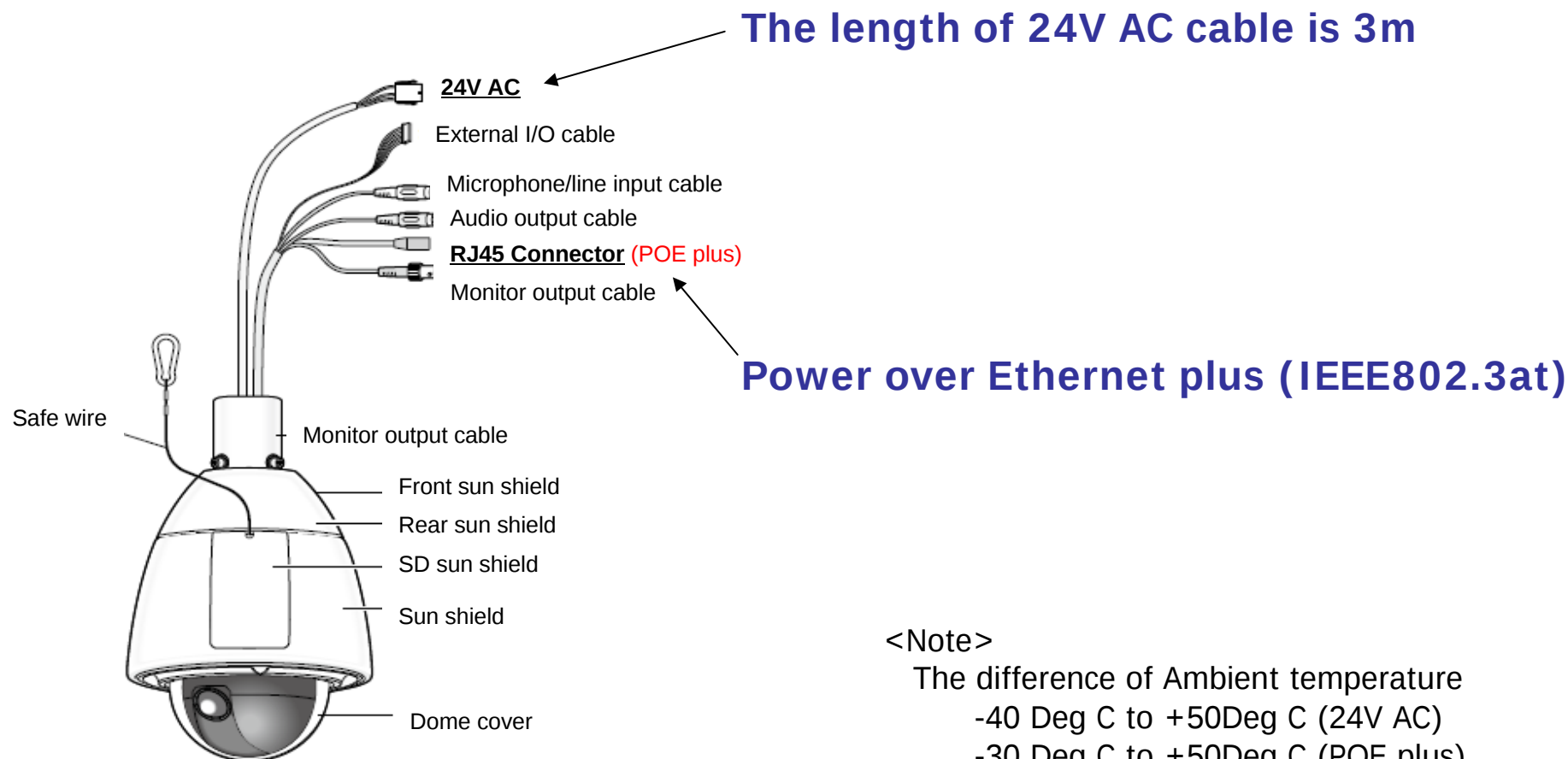
* SW395 supports Power over Ethernet Plus (IEEE802.3at).
24V AC, POE plus(IEEE802.3at)
24V AC:50Hz/60Hz:43W, POE plus :24W
-40 Deg C to +50Deg C(24V AC)
-30 Deg C to +50Deg C(POE plus)

Power Source for SW395

i-PRG
SmartHD

New

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



<Note>

The difference of Ambient temperature
-40 Deg C to +50Deg C (24V AC)
-30 Deg C to +50Deg C (POE plus)

What is PoE+ (Power over Ethernet plus)?



	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	<u>(1) 2 events detection</u> : 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. <u>(2) LLDP (Link Layer Discovery Protocol)</u> : 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.	<u>(1) 1 events detection</u> : 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 “**IEEE802.3at™-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 “**IEEE802.3at™-2009**” by supporting at least each “(1) 2 events detection” or “(2) LLDP”

Verified PoE plus(IEEE802.3at) NW Switch

i-PRD
SmartHD

New

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 supply, 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 SW395 is supplied by PoE plus.

*3) Need to disable “Poe/Poe plus power supply” setting by power inline command when the power for SW395 is supplied by AC24V.

Panasonic ideas for life

SC385

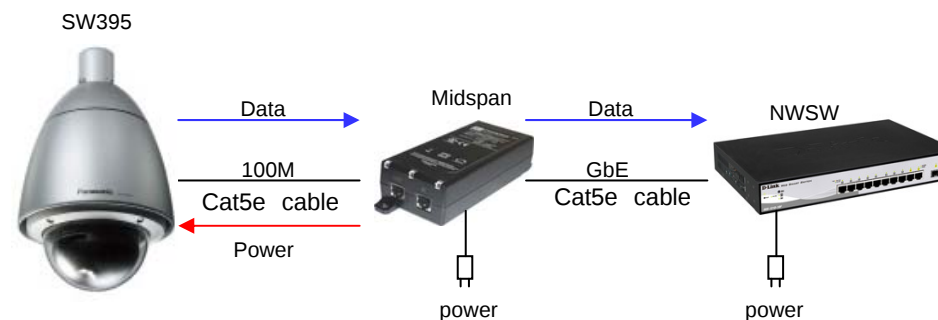
SW395

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	-	-

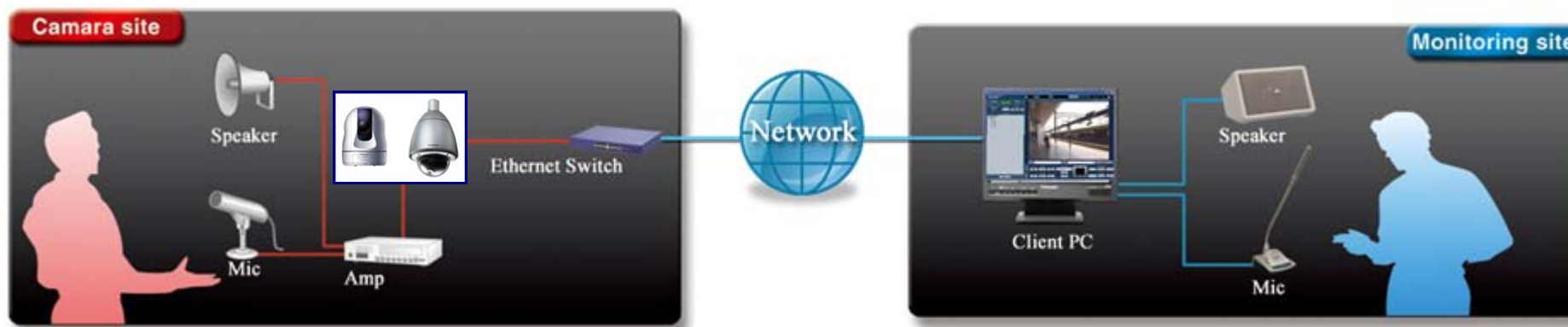


Midspan is installed between SW395 and NWSW for power supply to SW395 through Cat5e cable.

Bi-directional Audio

i-PRG
SmartHD

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



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

IP66 Water and Dust Resistance

i-PRD
SmartHD

SW395 (for outdoor) is IP66 rated Water and Dust Resistant.
We have testing measure equivalent to IEC60529.



Cellular Phone Support

i-PRG
SmartHD



Pan/tilt
Zooming control
Refresh
Resolution control
Image quality control
Home position
Preset
AUX control

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".
Image capture size control	Changes the image capture size by pressing the dial key "0".
	* Image in the aspect ratio of "4:3(VGA)" Changes the image capture size between 320x240 (default) and 640x480.
	* Image in the aspect ratio of "4:3(800x600)" Changes the image capture size between 320x240 (default) and 640x480.
	* Image in the aspect ratio of "16:9" Changes the image capture size between 320x180 (default) and 640x360.
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.
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 "Terminal 3" is selected for "AUX output" on the setup menu.

Panasonic ideas for life

SC385 **SW395**

Onvif System Up



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
	JPEGOVER RTP	-	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

Panasonic ideas for life

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



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

Panasonic ideas for life

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).

Panasonic ideas for life

H.264 Frame Rate



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.

Panasonic ideas for life

JPEG Frame Rate



<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 be changed by the contrast or the motion in picture.

Panasonic ideas for life

SC385 **SW395**

Specification comparison chart

i-PRP
SmartHD

New

Most of specifications installed on WV-SC385 and WV-SW395 are the same.
Below shown are the difference of specifications between them.

Specifications		WV-SC385	WV-SW395
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}	−40 to +50 deg C {−104 to 122 deg F} (24V AC)*1 −30 to +50 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)
Camera	Upside-down	On (desktop)/Off (ceiling)	N/A

*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.

Panasonic ideas for life

SC385 **SW395**