



**HD Network Camera**  
**WV-SP105**



**Network Camera**  
**WV-SP102**

Security & AV Systems Business Unit  
Panasonic System Networks Company

WV-SP105



HD /720P, 30fps

Simple D/N

WV-SP102



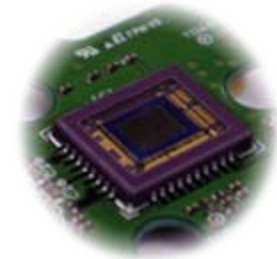
VGA, 30fps

Simple D/N

## ■ Key Features

- ❑ High sensitivity produced by Panasonic's new MOS sensor
- ❑ Full frame rate (Up to 30 fps) transmission at 1.3 Megapixel
- ❑ Dual H.264( High profile) streams and JPEG streams
- ❑ Extra Optical Zoom function
- ❑ Correction of Distortion
- ❑ ABS (Adaptive Black Stretch ) technology
- ❑ Adaptive DNR (Digital Noise Reduction)
- ❑ Progressive scan

## 1.3 Megapixel, high sensitivity MOS sensor newly developed by Panasonic



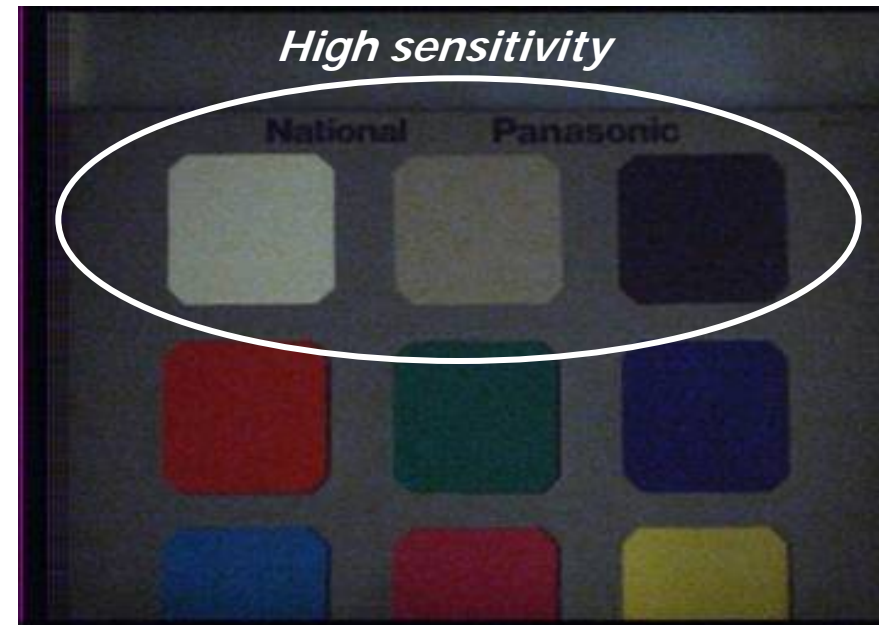
- High sensitivity (Min. illumination: 0.8 lux @ F2.2 )
- Low Power Consumption (Reduce 50% Power Consumption)
- Superior Color Reproduction by Primary (RGB) Color Filter

### *Image comparison at lower light condition*



Conventional MOS sensor

SP102 **SP105**



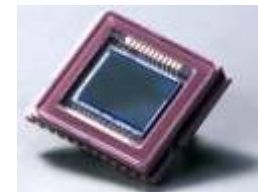
New MOS sensor

## i-Pro 2<sup>nd</sup> Generation

| Sensor                   | CCD                | Conventional CMOS |
|--------------------------|--------------------|-------------------|
| Sensitivity              | Better             | Less              |
| Fix Pattern Noise        | Lower              | Visible           |
| Moving Object Distortion | No                 | Visible           |
| Smear                    | Less (in case FIT) | No                |
| Power Consumption        | Higher             | Lower             |
| Cost                     | Higher             | Lower             |

CCD would be better **choice for Security surveillance application**

**Adapt & Implement CCD Sensor  
in Panasonic Camera**



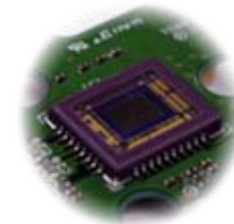
CCD Sensor

## i-PRO 3<sup>rd</sup> Generation

| Sensor                   | New MOS     | Conventional CMOS |
|--------------------------|-------------|-------------------|
| Sensitivity              | Much Better | Less              |
| Fix Pattern Noise        | Much Lower  | Visible           |
| Moving Object Distortion | Lower       | Visible           |
| Smear                    | No          | No                |
| Power Consumption        | Lower       | Lower             |
| Cost                     | Lower       | Lower             |

Panasonic develops **new MOS sensor** which improves sensitivity & noise by original amplifier technology.

**Adapt & Implement New MOS Sensor  
in Panasonic Camera**



**New  
MOS Sensor**

## UniPhier (Original System LSI)

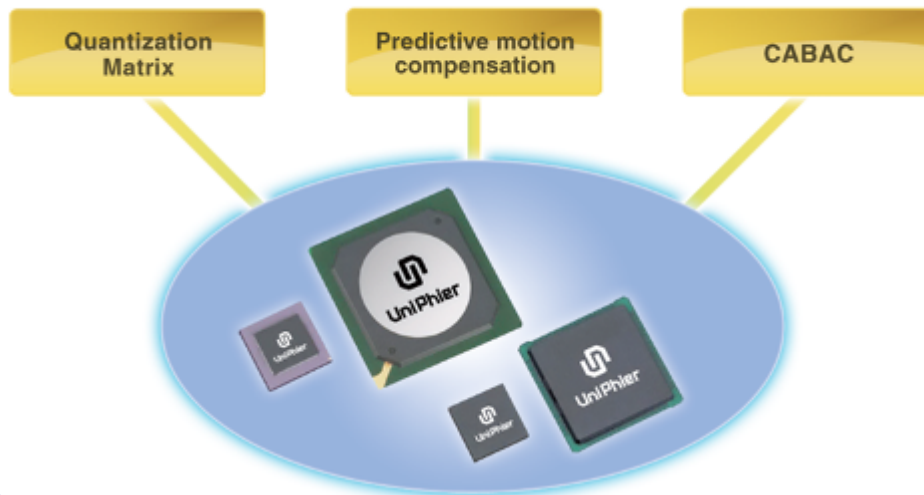
- Multiple H.264 High Profile Streams
- Real Time HD Video Processing
- On-device Intelligence Support



### 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

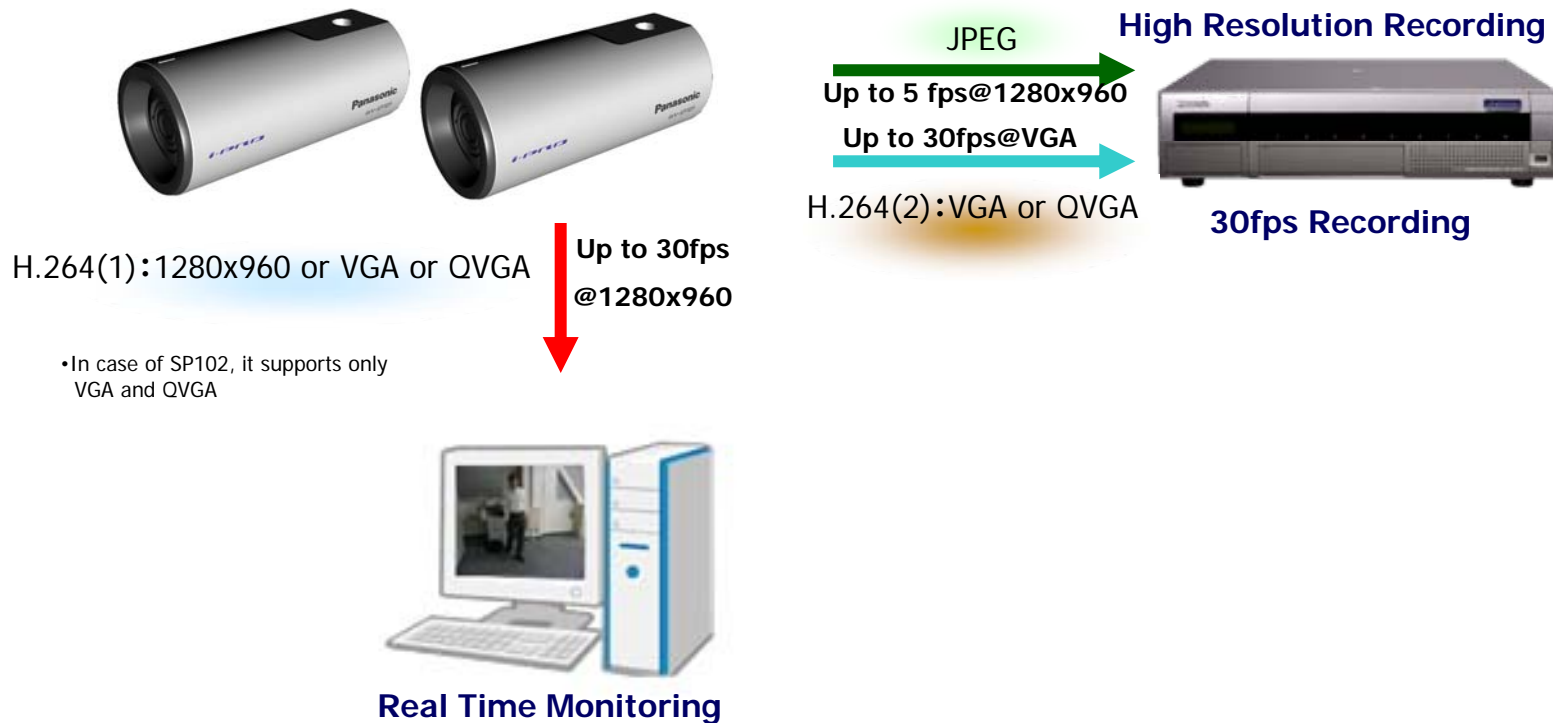


| 1280x960 comparison   |                               | VGA comparison   |               |
|-----------------------|-------------------------------|------------------|---------------|
| JPEG<br>11.5Mbps      | 1280 x 960<br>11 ips<br>JPEG  | MPEG-4<br>2 Mbps | VGA<br>30 ips |
| JPEG quality mode =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

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

# Multiple Streaming – 4:3 ratio

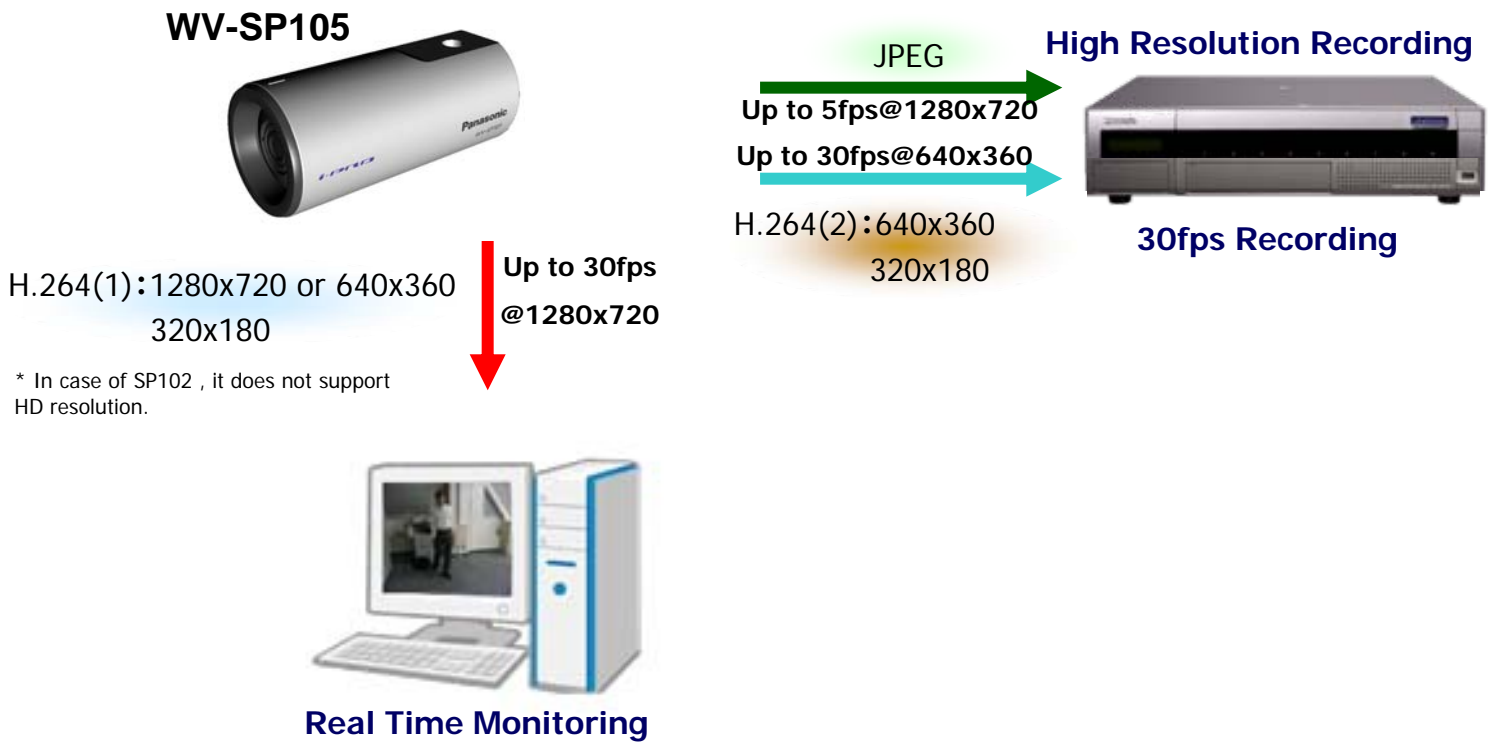
Triple streams(4:3 aspect ratio) including JPEG and H.264(2ch) can be transmitted simultaneously, enabling both real time monitoring and high quality recording.



\* Total bit rate must be less than camera's max performance(16Mbps). Detail of the streaming combination is under study.

# Multiple Streaming – 16:9 ratio

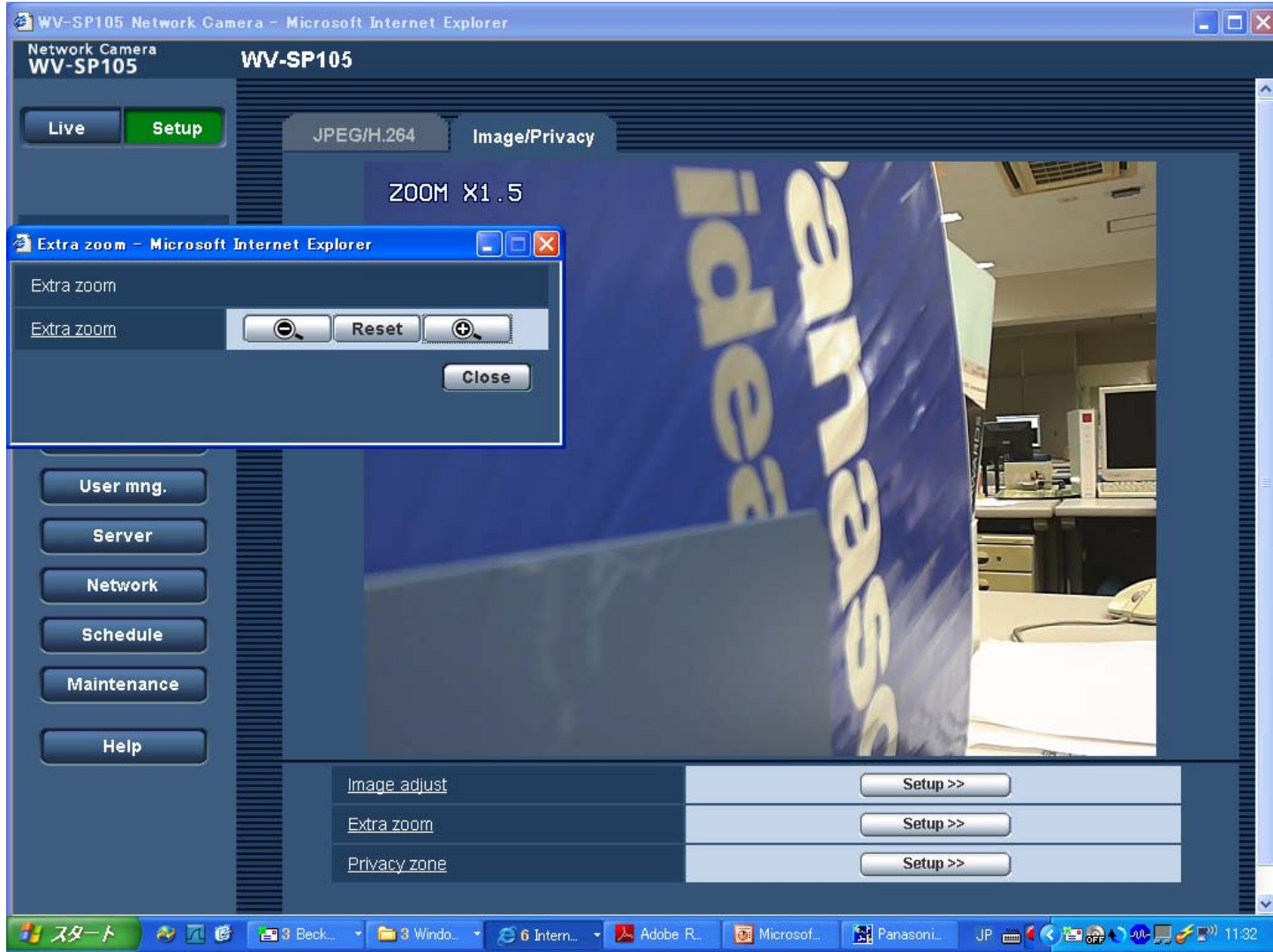
Triple streams(16:9 aspect ratio) including JPEG and H.264(2ch) can be transmitted simultaneously, enabling both real time monitoring and high quality recording.



\* Total bit rate must be less than camera's max performance(16Mbps). Detail of the streaming combination is under study.

# Extra Optical Zoom

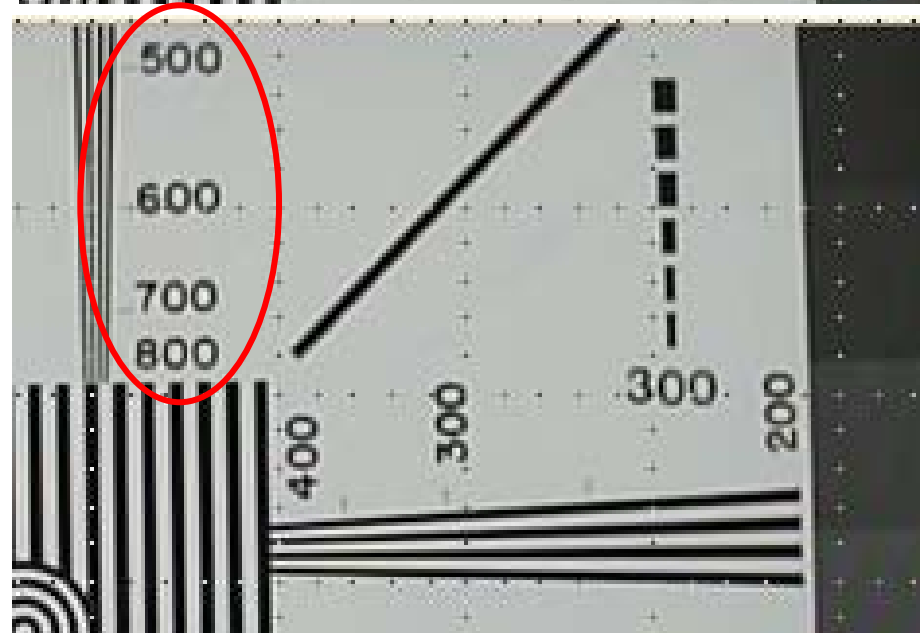
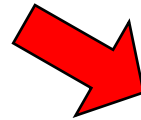
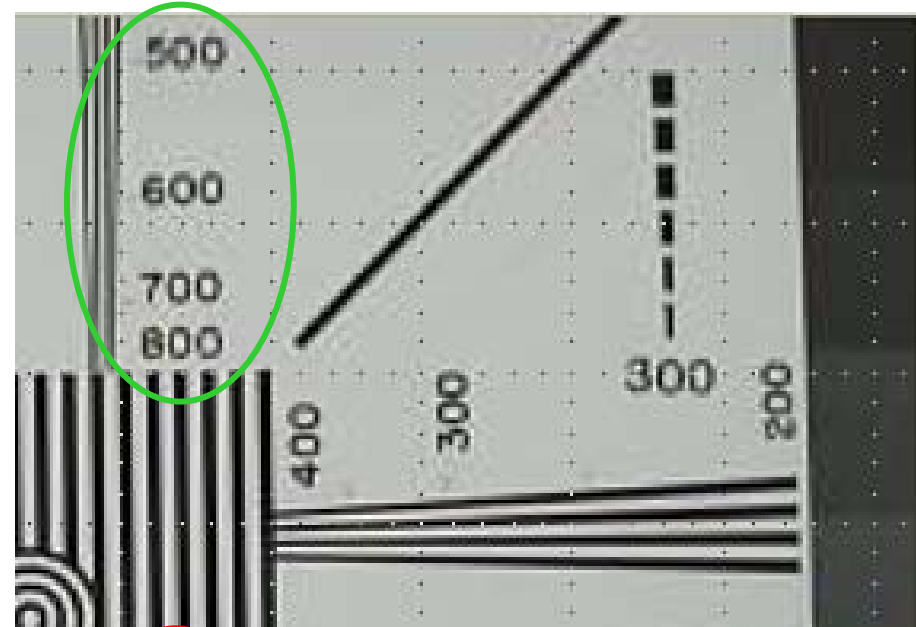
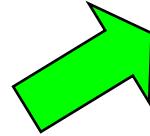
Extra zoom setting (SP105 only) \*New feature



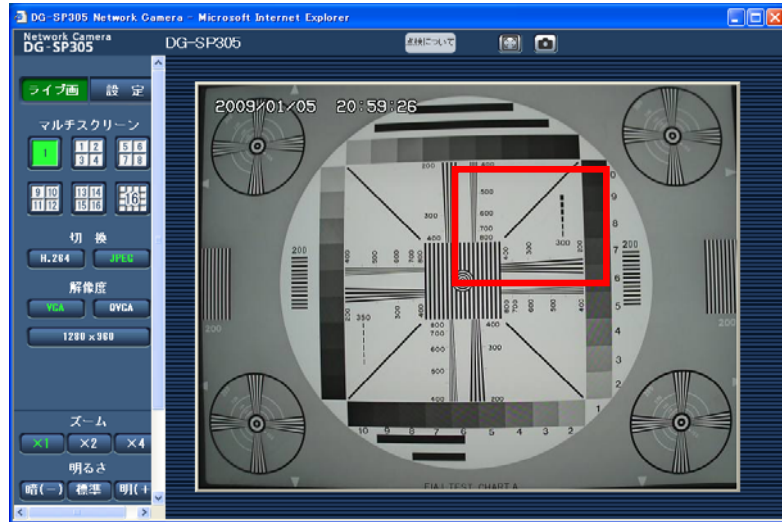
# Extra Optical Zoom

## Extra Optical Zoom for SP105

Digital Zoom



2x Extra Optical Zoom

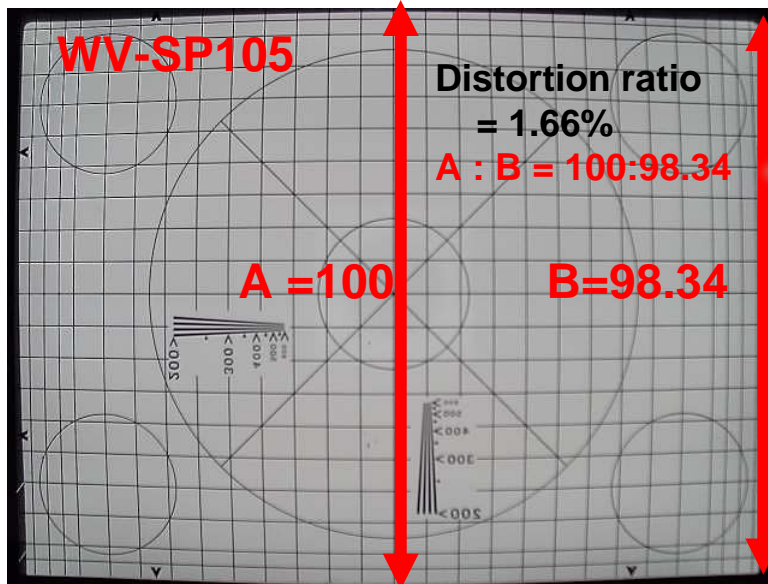


# Correction of Distortion

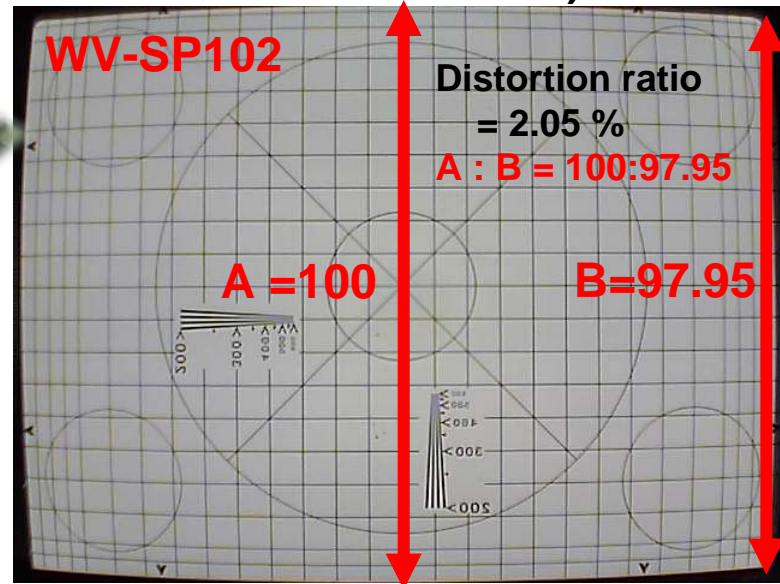
Default ON, change to OFF by CGI

## Correction of Distortion

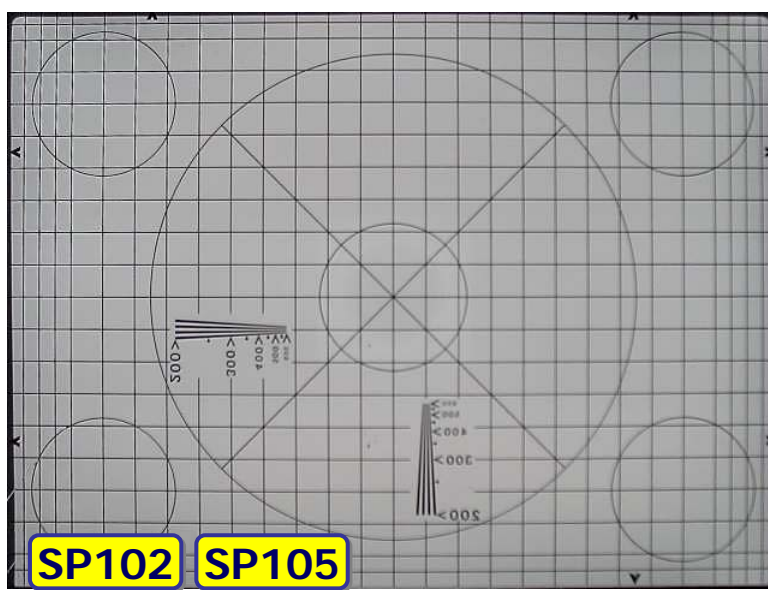
The distortion ratio for conventional => 4% (\*WV-SP105=>1.66%, WV-SP102=>2.05% )



**OFF**  
**Condition**



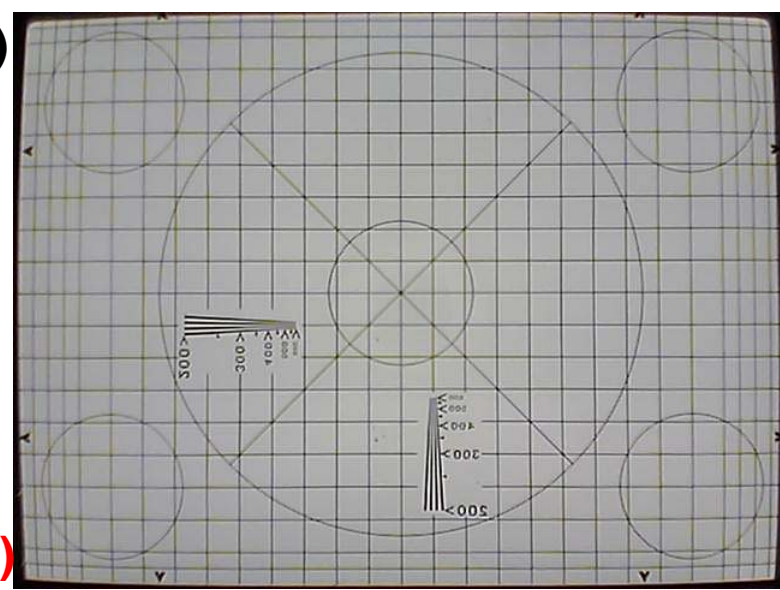
Distortion ratio  
1.66% 2.05%



(SP105) (SP102)

**Improvement**

**ON**  
**Condition**



Distortion ratio  
0.32% 1.15%  
(SP105) (SP102)

## Adaptive DNR (Digital Noise Reduction)

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.

## Progressive Scan

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



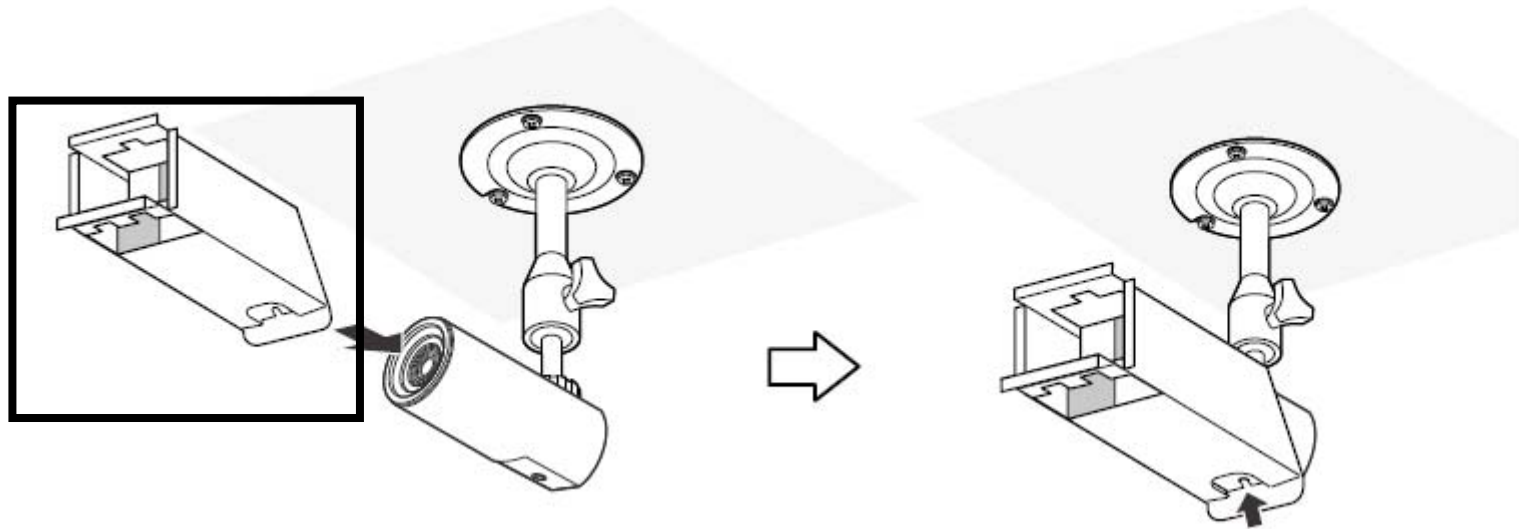
Image appears with tearing when the subject is moving due to temporal difference between odd/even field.



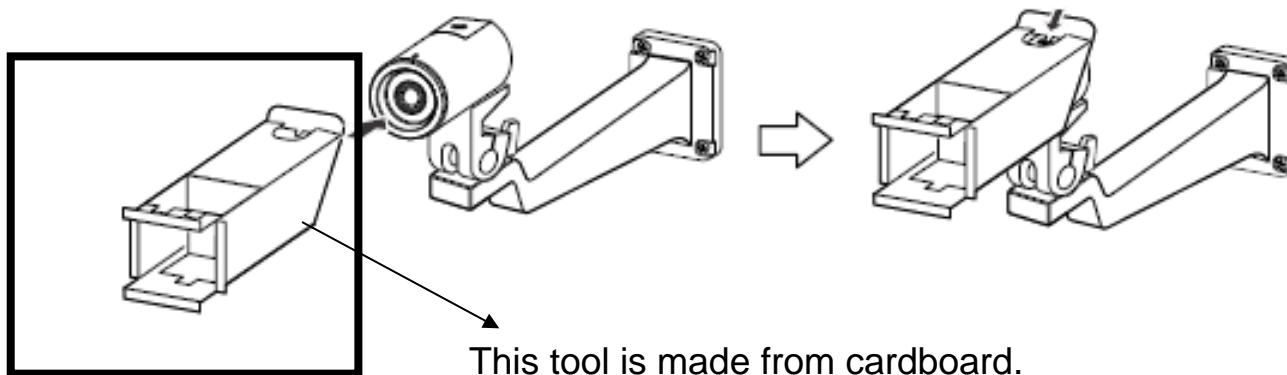
There is no tearing even when the subject is moving.

## Easy View angle checker

In case of ceiling mount



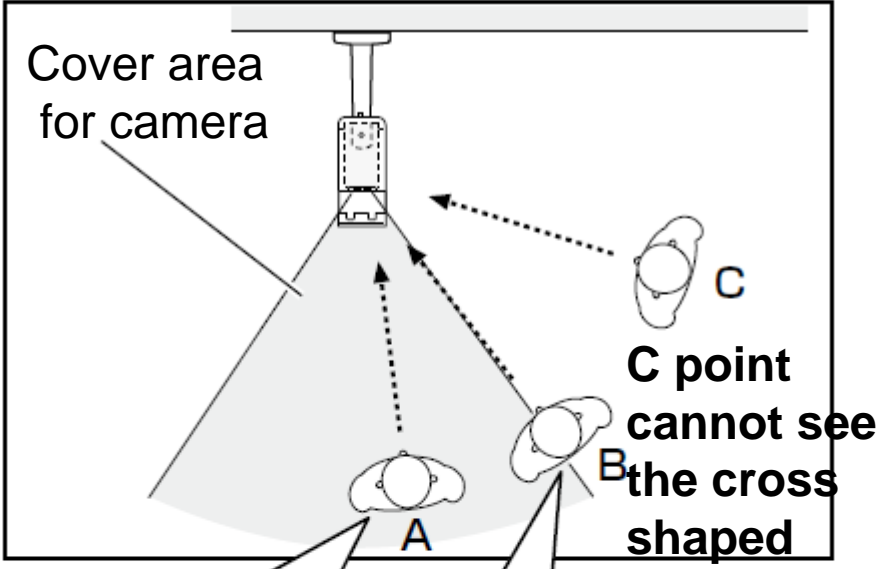
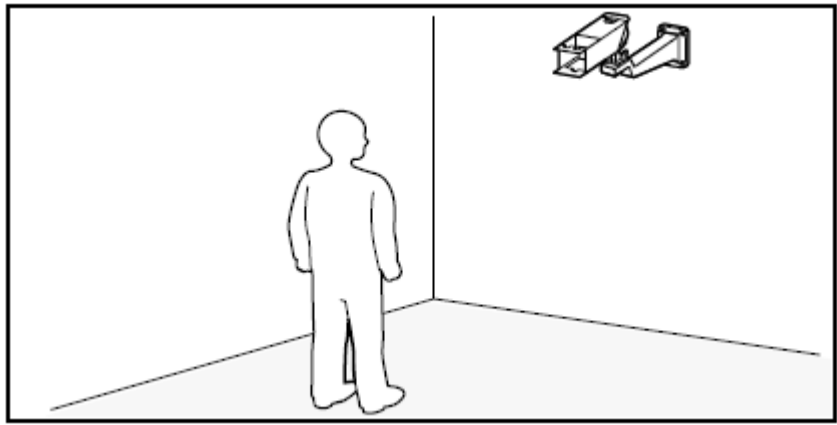
In case of wall mount



This tool is made from cardboard.

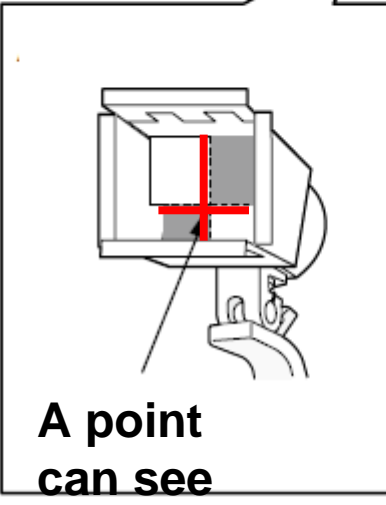
# Easy View Angle checker

## How to adjust by view angle checker

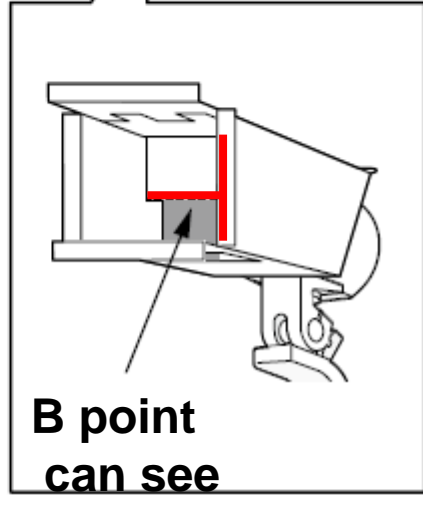


Camera cover area:

The cover area is seen the cross-shaped from outside.







A point can see cross-shaped



B point can see a part of cross-shaped

# Specification

|                         | Panasonic   |   |  |  |
|-------------------------|---|---|--|--|
|                         | WV-SP102  | WV-SP105  | DG-SP305   | DG-NP502   |
| Appearance              |  w/ lens |  w/ lens |  w/o lens |  w/o lens |
| Dimension(WxHxD)        | 55x55x122   | 55x55x122   | 75x65x132.5  | 75x65x132.5  |
| Image sensor            | 1/5 MOS   | 1/3 MOS   | 1/3 MOS  | 1/3 CCD  |
| Video compression       | H.264<br>JPEG   | H.264<br>JPEG   | H.264/<br>MPEG-4/JPEG  | H.264/<br>MPEG-4/JPEG  |
| resolution              | VGA   | 1.3M  | 1.3M   | 3M(JPEG)/1.3M  |
| Minimum illumination    | 2.0 lx  | 0.8 lx  | 0.3lx@F1.4   | Color 1 lx@F1.4<br>B/W 0.08 lx@F1.4  |
| Frame rate              | 30fps(VGA)  | 30fps (SXVGA)   | 30fps (SXVGA)  | 30fps (SXVGA)<br>15fps(1920×1080p)   |
| Extra zoom              | N/A   | yes   | no   | no   |
| Optical lens            | Fixed focal length<br>(F2.0)  | Fixed focal length<br>(F2.2)  | Not included   | Not included   |
| CS mount                | no  | no  | yes  | yes  |
| Operating temp.         | 0~40°C  | 0~40°C  | -10~50°C   | -10~50°C   |
| Back light compensation | ABS   | ABS   | ABS  | Super Dynamic  |
| Day/Night               | yes(Simple)   | yes(Simple)   | yes(Simple)  | yes(IR filter)   |
| Auto Back Focus         | no  | no  | Focus assist   | yes  |
| Intelligent function    | no  | no  | Face detection<br>+ AE   | Face detection<br>+ BLC  |
| VMD                     | yes   | yes   | yes  | yes  |
| External I/O            | no  | no  | yes  | yes  |
| Audio Input/Output      | no  | no  | yes  | yes  |
| SD Card Slot            | no  | no  | Yes (H.264 recording)  | Yes (H.264 recording)  |
| Power Source            | PoE/DC12V   | PoE/DC12V   | PoE/DC12V  | PoE/DC12V  |
| Power consumption       | 2.0W (PoE)  | 2.8W (PoE)  | 3.4W (PoE)   | 7.6W (PoE)   |

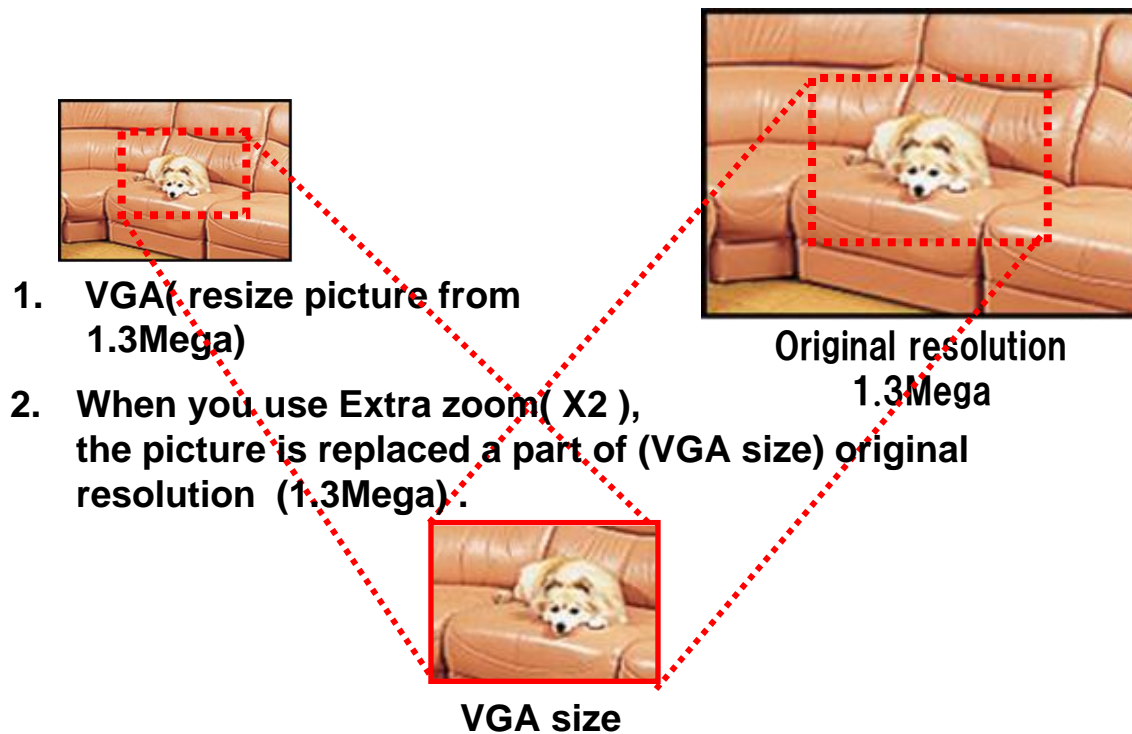
**Panasonic**  
**ideas for life**

# Appendix

# How does Extra Optical Zoom work?

## ■ Extra zoom function (VGA mode of WV-SP105 only)

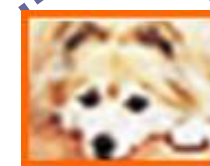
Extra zoom function is not same as digital zoom so that the image is keeping good.



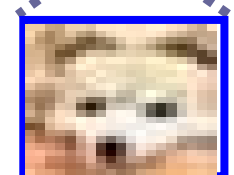
### Flow chart for Extra zoom

1. When you use VGA mode,  
The VGA mode is resized from 1.3Mega to VGA automatically.
2. When the Extra zoom(X2) is used,  
the picture is replaced from regular frame size(1/2 VGA size) in resize picture (VGA size) to regular frame size in 1.3Mega.

EX zoom



Digital zoom

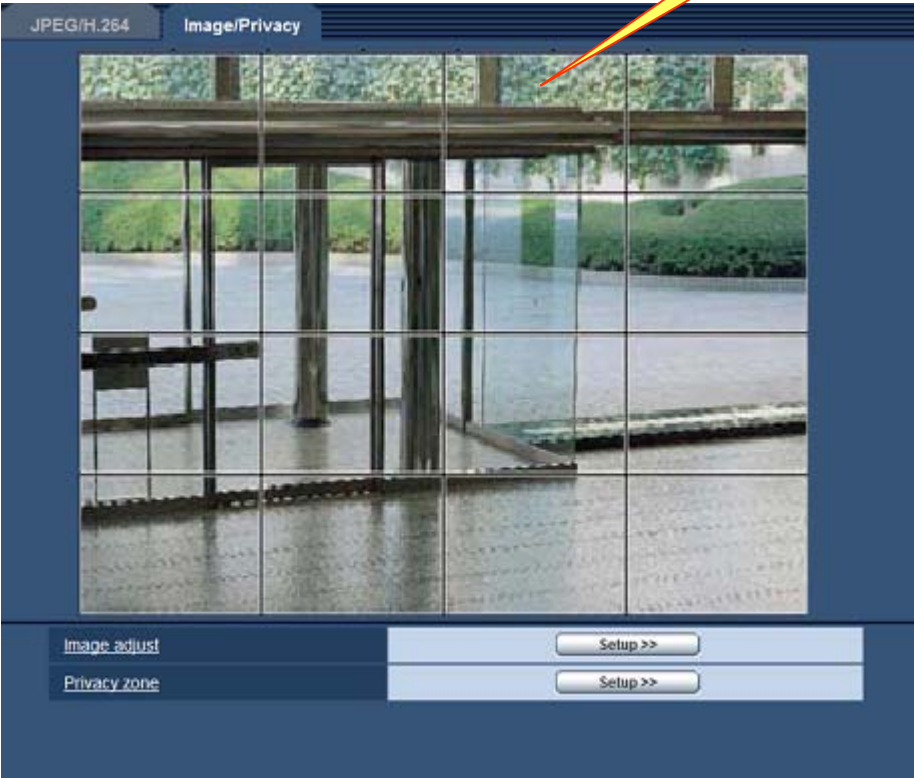


\*Regarding the resize of picture, it is implemented by the camera DSP.  
Also the bandwidth is depended on the bit rate in VGA size.  
Therefore, the bandwidth is not changed by extra zoom.

## Mask area setting

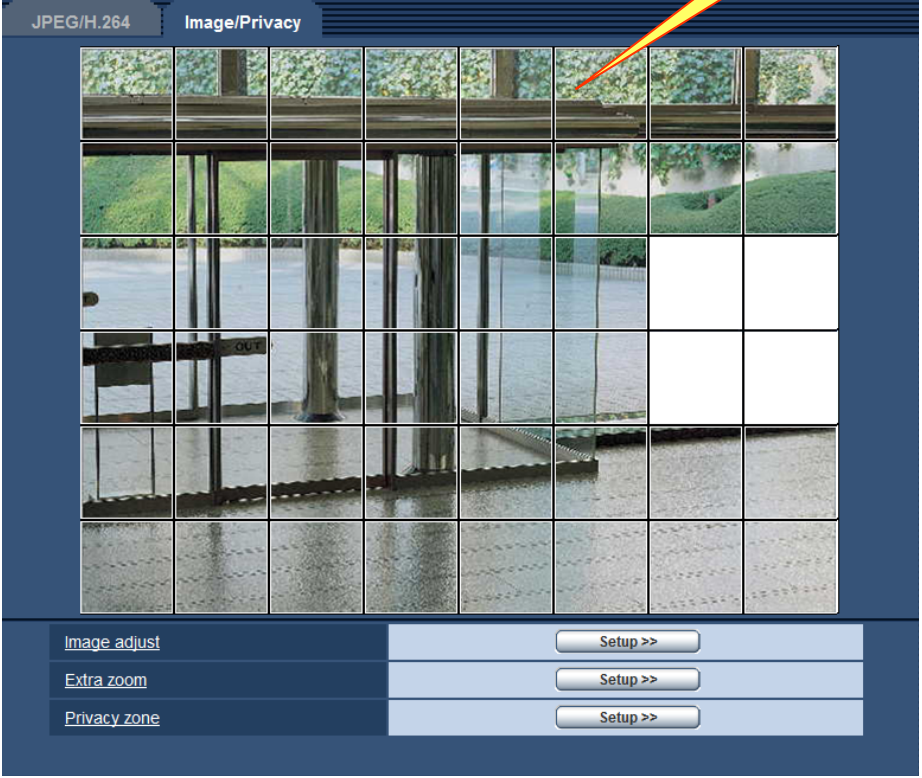
SP102

4 x 4



SP105/SP305

8 x 6



# Frame rate performance

## H.264 fixed bit rate mode (1 User, Audio=Off, Refresh-Interval=3s)

| Bit rate (kbps)     |      |            | 64     | 128 | 256 | 384 | 512 | 768 | 1,024 | 1,536 | 2,048 | 3,072 | 4,096 | 8,192 |    |   |
|---------------------|------|------------|--------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|----|---|
| Frame rate (target) | 4:3  | QVGA       | Fine   | 1   | 2   | 5   | 7.5 | 10  | 15    | 15    | 20    | 30    | 30    | 30    | /  |   |
|                     |      |            | Normal | 5   | 10  | 15  | 20  | 25  | 30    | 30    | 30    | 30    | 30    | 30    | 30 | / |
|                     |      |            | Low    | 10  | 15  | 25  | 30  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | 30 | / |
|                     |      | VGA        | Fine   | 1   | 1   | 2   | 3   | 5   | 7.5   | 10    | 15    | 15    | 20    | 22.5  | /  | / |
|                     |      |            | Normal | 2   | 5   | 7.5 | 10  | 15  | 20    | 22.5  | 30    | 30    | 30    | 30    | 30 | / |
|                     |      |            | Low    | 3   | 7.5 | 10  | 15  | 20  | 30    | 30    | 30    | 30    | 30    | 30    | 30 | / |
|                     |      | 4VGA       | Fine   | /   | /   | 1   | 1   | 2   | 3     | 5     | 7.5   | 10    | 15    | 20    | 30 | / |
|                     |      |            | Normal | /   | /   | 1   | 2   | 3   | 5     | 7.5   | 10    | 20    | 25    | 30    | 30 | / |
|                     |      |            | Low    | /   | /   | 3   | 5   | 7.5 | 10    | 15    | 20    | 30    | 30    | 30    | 30 | / |
|                     | 16:9 | 320 x 180  | Fine   | 1   | 2   | 5   | 7.5 | 10  | 15    | 15    | 20    | 30    | 30    | 30    | /  |   |
|                     |      |            | Normal | 5   | 10  | 15  | 20  | 25  | 30    | 30    | 30    | 30    | 30    | 30    | /  |   |
|                     |      |            | Low    | 10  | 15  | 25  | 30  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | /  |   |
|                     |      | 640 x 360  | Fine   | 1   | 1   | 2   | 3   | 5   | 7.5   | 10    | 15    | 15    | 20    | 22.5  | /  |   |
|                     |      |            | Normal | 2   | 5   | 7.5 | 10  | 15  | 20    | 22.5  | 30    | 30    | 30    | 30    | /  |   |
|                     |      |            | Low    | 3   | 7.5 | 10  | 15  | 20  | 30    | 30    | 30    | 30    | 30    | 30    | /  |   |
|                     |      | 1280 x 720 | Fine   | /   | /   | 1   | 1   | 2   | 3     | 5     | 7.5   | 10    | 15    | 20    | 30 | / |
| Normal              |      |            | /      | /   | 1   | 2   | 3   | 5   | 7.5   | 10    | 20    | 25    | 30    | 30    | /  |   |
| Low                 |      |            | /      | /   | 3   | 5   | 7.5 | 10  | 15    | 20    | 30    | 30    | 30    | 30    | /  |   |

## H.264 frame rate priority mode (1 User, Audio=Off, Refresh-Interval=3s)

| Bit rate (kbps)  |      |            | 64 | 128 | 256 | 384 | 512 | 768 | 1,024 | 1,536 | 2,048 | 3,072 | 4,096 | 8,192 | Unlimited |    |
|------------------|------|------------|----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-----------|----|
| Frame rate (Max) | 4:3  | QVGA       | 10 | 15  | 20  | 30  | 30  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | /         | 30 |
|                  |      | VGA        | 3  | 7.5 | 10  | 15  | 20  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | /         | 30 |
|                  |      | 4VGA       | /  | /   | 3   | 5   | 7.5 | 10  | 15    | 20    | 30    | 30    | 30    | 30    | 30        | 30 |
|                  | 16:9 | 320 x 180  | 10 | 15  | 25  | 30  | 30  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | /         | 30 |
|                  |      | 640 x 360  | 3  | 7.5 | 10  | 15  | 20  | 30  | 30    | 30    | 30    | 30    | 30    | 30    | /         | 30 |
|                  |      | 1280 x 720 | /  | /   | 3   | 5   | 7.5 | 10  | 15    | 20    | 30    | 30    | 30    | 30    | 30        | 30 |

Frame mode can be selected from the following. 1fps / 3fps / 5fps / 7.5fps / 10fps / (12fps) / 15fps / 20fps / 30fps

**Notice. These charts are target performance. Performance would be changed by the contrast or the motion in picture.**

# Frame rate performance

## ■ JPEG mode (H. 264 OFF)

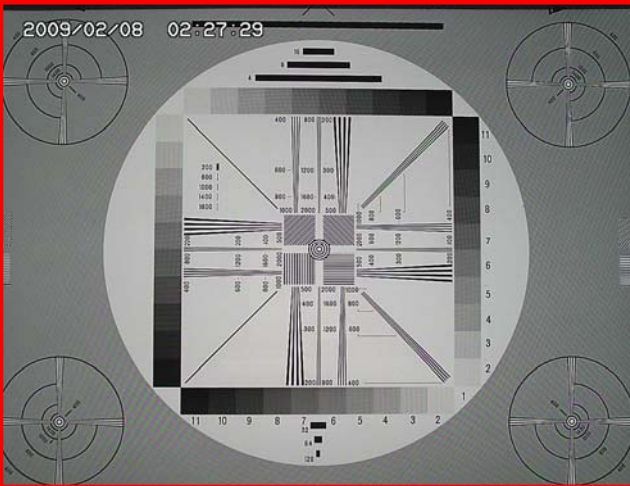
| Picture quality mode |                  | 0<br>(Super fine) | 1<br>(Fine) | 2      | 3      | 4      | 5<br>(Normal) | 6      | 7      | 8      | 9<br>(Low) |        |
|----------------------|------------------|-------------------|-------------|--------|--------|--------|---------------|--------|--------|--------|------------|--------|
| 4:3                  | 1280<br>x<br>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        | 14          | 19     | 23     | 29     | 30            | 30     | 30     | 30     | 30         | 30     |
|                      |                  | File size (kbyte) | 115         | 86     | 72     | 58     | 50            | 43     | 36     | 29     | 25         | 22     |
|                      |                  | Bit rate (kbps)   | 14,812      | 15,033 | 15,235 | 15,474 | 13,800        | 11,868 | 9,936  | 8,004  | 6,900      | 6,072  |
|                      | 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         | 8      |
|                      |                  | Bit rate (kbps)   | 12,144      | 11,040 | 9,936  | 8,832  | 7,728         | 6,624  | 5,520  | 4,416  | 3,864      | 2,208  |
| 16:9                 | 1280<br>x<br>720 | Frame rate        | 7           | 8      | 10     | 12     | 15            | 20     | 25     | 28     | 30         | 30     |
|                      |                  | File size (kbyte) | 216         | 192    | 160    | 144    | 120           | 88     | 72     | 56     | 48         | 32     |
|                      |                  | Bit rate (kbps)   | 12,096      | 12,288 | 12,800 | 13,824 | 14,400        | 14,080 | 14,400 | 12,544 | 11,520     | 7,680  |
|                      | 640<br>x<br>360  | Frame rate        | 22          | 27     | 30     | 30     | 30            | 30     | 30     | 30     | 30         | 30     |
|                      |                  | File size (kbyte) | 80          | 64     | 48     | 42     | 36            | 30     | 26     | 22     | 18         | 16     |
|                      |                  | Bit rate (kbps)   | 8,960       | 9,728  | 8,832  | 9,744  | 8,640         | 7,200  | 6,240  | 5,280  | 4,320      | 3,840  |
|                      | 320<br>x<br>180  | Frame rate        | 30          | 30     | 30     | 30     | 30            | 30     | 30     | 30     | 30         | 30     |
|                      |                  | File size (kbyte) | 33          | 30     | 27     | 24     | 21            | 18     | 15     | 12     | 9          | 6      |
|                      |                  | Bit rate (kbps)   | 7,920       | 7,200  | 6,480  | 5,760  | 5,040         | 4,320  | 3,600  | 2,880  | 2,160      | 1,440  |

Frame rate # is reference. File size and ips are influenced by complexity of surveillance objects movement

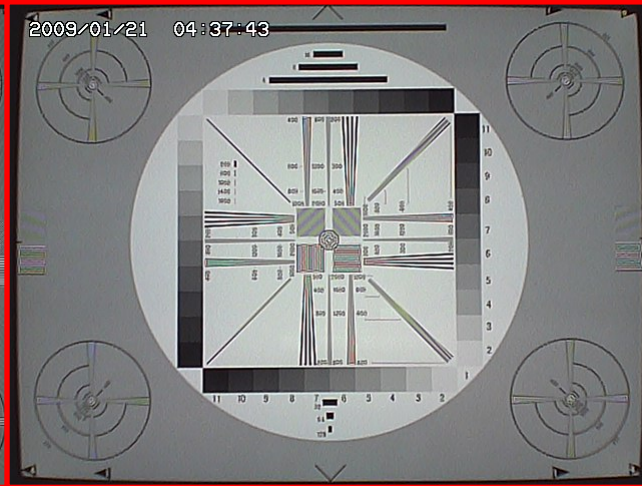
# Resolution

i-PRD  
SmartHD

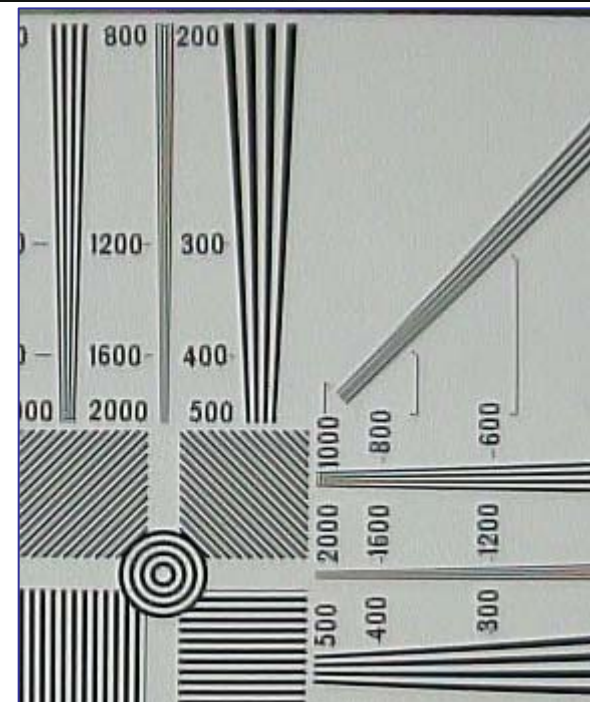
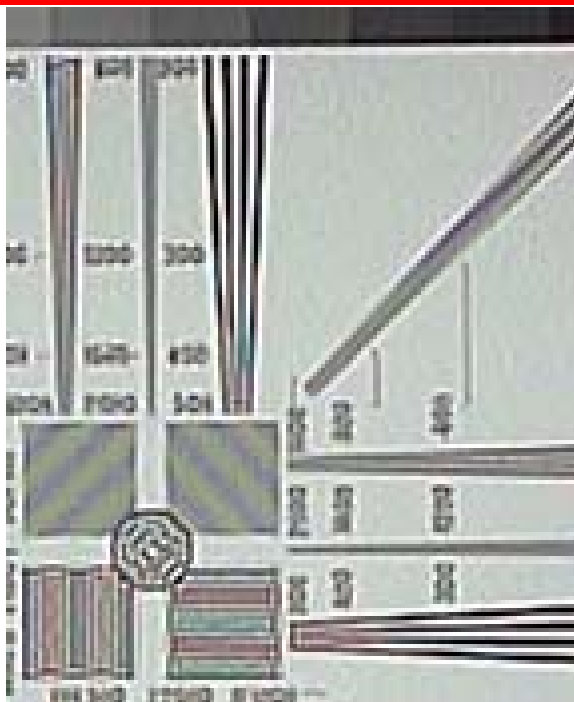
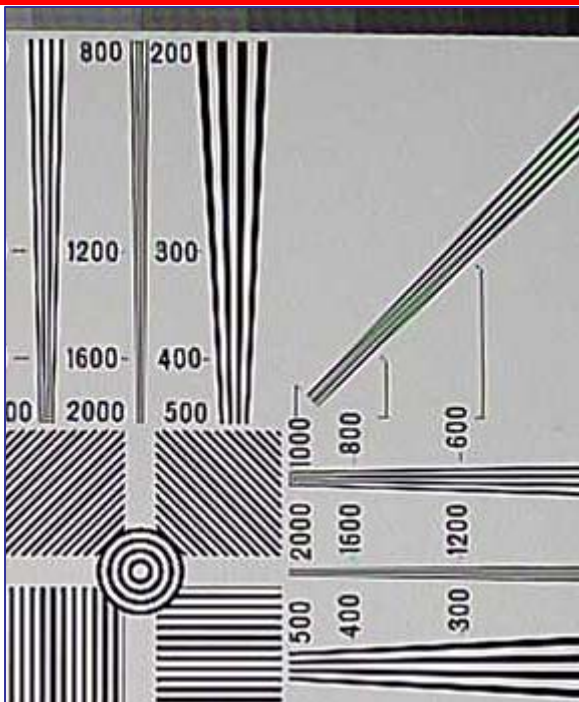
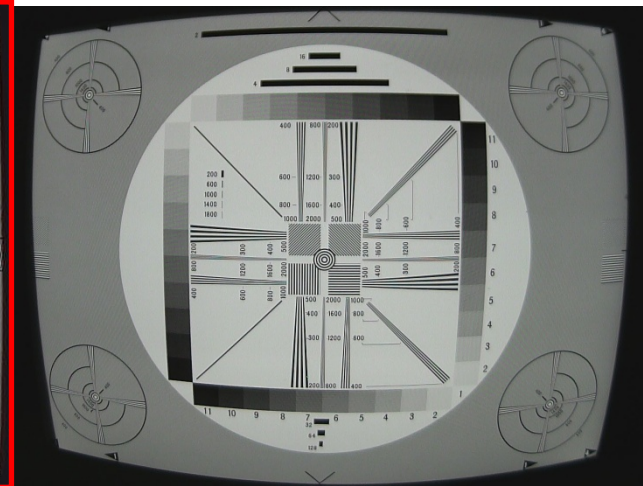
SP105



SP102



SP305



Resolution spec : SP105 => 800 TV lines    SP102 => 400 TV lines

# Software function comparison chart

|                  |                                   | WV-SP102                                  | WV-SP105                                  | WV-SP305   |
|------------------|-----------------------------------|---|---|--|
| Camera function  | Wide dynamic range (WDR)          | N/A                                       | N/A                                       | On/Off   |
|                  | Adaptive black stretch            | ->  | ->  | On/Off   |
|                  | Light control mode                | Indoor scene/ ELC (Maximum exposure time) | Indoor scene/ ELC (Maximum exposure time) | Outdoor scene/ Indoor scene/ ELC / Fix shutter   |
|                  | DNR                               | ->  | ->  | High/Low   |
|                  | Face detection                    | N/A                                       | N/A                                       | On/Off (XML notification) 、 Face WDR   |
|                  | Privacy zone                      | ->  | ->  | On/Off (2 areas, Gray only)  |
|                  | OSD display                       | ->  | ->  | Small size   |
|                  | VMD alarm                         | ->  | ->  | On/Off, 4 areas, individual sensitivity setting in each area                                 |
| Network function | Image format                      | H.264 x 2 & JPEG                          | H.264 x 2 & JPEG                          | H.264 (MPEG-4) x 2 & JPEG  |
|                  | Image capture size (4:3)          | 640x480/320x240                           | ->  | 1280x960/ 640x480/ 320x240   |
|                  | Image capture size (16:9)         | 640x360/320x180                           | ->  | 1280x720/ 640x360/ 320x180   |
|                  | Image transmission capability     | 30fps @ 640x480 (H.264)                   | ->  | 30fps @ 1280x960 (H.264)   |
|                  | Maximum number of user            | ->  | ->  | 14 (Includes priority stream function)   |
|                  | Bandwidth control setting         | ->  | ->  | 64kbps/128kbps/256kbps/384kbps/512kbps/768kbps/1024kbps/2048kbps/4096kbps/8192kbps/Unlimited |
|                  | Audio input (to PC)               | N/A                                       | N/A                                       | G.726(ADPCM) 32kbps/16kbps   |
|                  | Audio output (to Camera)          | N/A                                       | N/A                                       | G.726(ADPCM) 32kbps/16kbps   |
|                  | SD memory card                    | N/A                                       | N/A                                       | Yes  |
|                  | H.264 recording (SD memory card). | N/A                                       | N/A                                       | Yes  |
| I / O interface  | N/A                               | N/A                                       | Alarm in / Alarm out / Aux out            |  |