

## ■ Different Performances of Zoom Functions

This article describes how the below 3 zoom functions work when zooming and shows sample charts of relationship between image capture size and zoom ratio.

### Optical zoom

Enlarges and reduces a subject image by zooming the lens in and out while shooting.  
Image degradation does not occur.  
Fixed lens models do not have optical zoom function.

### Digital Zoom

Zooms in by enlarging the cropped image by way of software.  
Image degradation occurs due to the loss of image resolution.

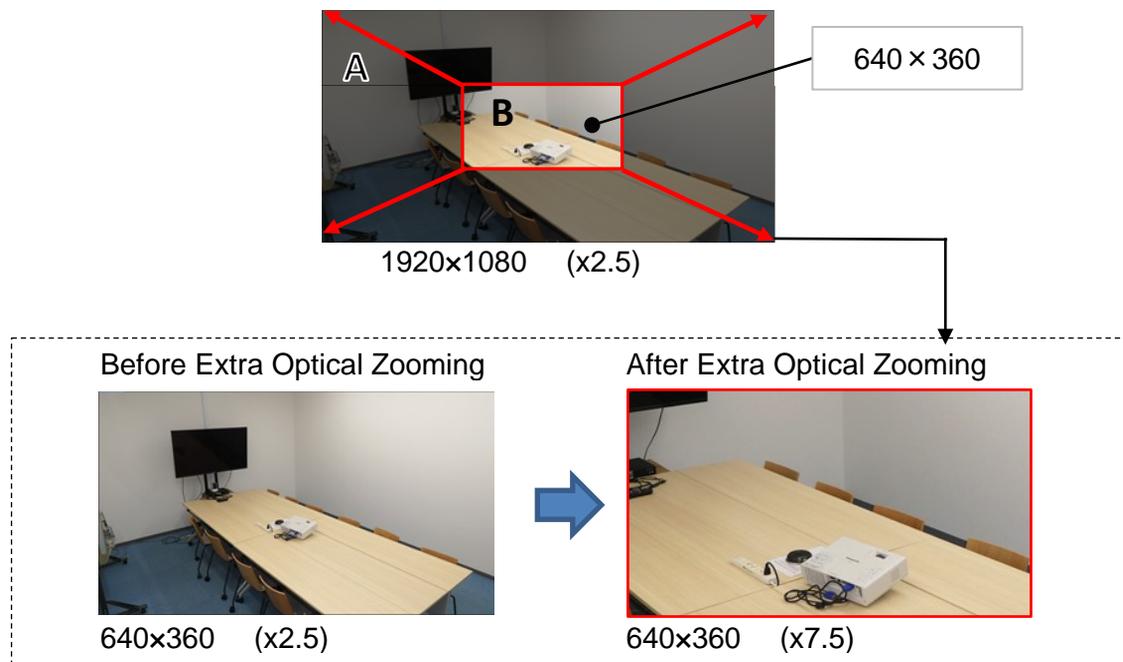
### Extra optical zoom

Shows the image cropped from the highest resolution image when "Image capture size" is set to lower than the model's highest resolution. An image without degradation can be displayed.  
Extra optical zoom is not available with the maximum resolutions.

The zoom ratio that works with extra optical zoom without switching to digital zoom varies depending on the "Image capture size" setting.

#### <Sample of FHD Model with Optical Zoom(x2.5)>

When "Image capture size" is set to 640x360, an enlarged image without degradation can be displayed with its zoom ratio value from x2.5 up to x7.5 as the 640x360 image([B] in the below) cropped from the largest size of 1920x1080 image ([A] in the below) is displayed as a zoomed in image. (Below are sample images of WV-U-1132)



## ■ Specifications of Varifocal Models on Zooming

The below charts show the zoom ratio of 4MP models (WV-U1142, WV-U1542L, WV-U2142L, WV-U2542L) and FHD models (WV-U1132, WV-U1532L, WV-U2132L, WV-U2532L) as examples.  
Specific value of extra optical zoom ratio for each model can be calculated with the formula on the bottom of this page.

	Optical Zoom
	Extra Optical Zoom
	Digital Zoom

### 4MP Models

Image capture mode	Image capture size (Image resolution)	Zoom Ratio
<b>16 : 9</b>	2560x1440 (Highest-resolution)	
	1920x1080	
	640x360	
	320x180	

### FHD Models

Image capture mode	Image capture size (Image resolution)	Zoom Ratio
<b>16 : 9</b>	1920x1080	
	1280x720	
	640x360	
	320x180	
<b>4 : 3</b>	1600x1200 (Highest-resolution)	
	1280x960	
	640x480	
	320x240	

Note:

- As optical zoom ratio and selectable image capture size vary depending on the model, refer to the manuals or setting screen of the model in use.

- As for the maximum zoom ratio for extra optical zoom, you can calculate with the below calculation formula.

$$\text{Maximum zoom ratio for extra optical zoom} = \text{Optical zoom ratio} \times \sqrt{\left(\frac{\text{Maximum image capture size}}{\text{Selected image capture size} * 1}\right)}$$

\*1 The image capture size selected for the stream in camera setting

[Sample calculation]

The maximum zoom ratio for extra optical zoom when "Image capture mode=16:9" and "Image capture size=1280x720" in the above chart can be calculated as below.

$$2.5 \times \sqrt{\left(\frac{1920 \times 1080}{1280 \times 720}\right)} = \mathbf{x3.75}$$

## ■ Specifications of Fixed Lens Models on Zooming

The below charts show the zoom ratio of 4MP models (WV-U2140L, WV-U2540L) and FHD models (WV-U1130, WV-U2130L, WV-U2530L) as examples.

Specific value of extra optical zoom ratio for each model can be calculated with the formula on the bottom of this page.

	Extra Optical Zoom
	Digital Zoom

### 4MP Models

Image capture mode	Image capture size (Image resolution)	Zoom Ratio
<b>16 : 9</b>	2560x1440 (Highest-resolution)	
	1920x1080	
	640x360	
	320x180	

### FHD Models

Image capture mode	Image capture size (Image resolution)	Zoom Ratio
<b>16 : 9</b>	1920x1080 (Highest-resolution)	
	1280x720	
	640x360	
	320x180	
<b>4 : 3</b>	1600x1200 (Highest-resolution)	
	1280x960	
	640x480	
	320x240	

#### Note:

- As optical zoom ratio and selectable image capture size vary depending on the model, refer to the manuals or setting screen of the model in use.

- As for the maximum zoom ratio for extra optical zoom, you can calculate with the below calculation formula.

$$\text{Maximum zoom ratio for extra optical zoom} = \sqrt{\left(\frac{\text{Maximum image capture size}}{\text{Selected image capture size} * 1}\right)}$$

\*1 The image capture size selected for the stream in camera setting

[Sample calculation]

The maximum zoom ratio for extra optical zoom when "aspect ratio=16:9" and "Image capture size=1280x720" can be calculated as below.

$$\sqrt{\left(\frac{1920 \times 1080}{1280 \times 720}\right)} = x1.5$$