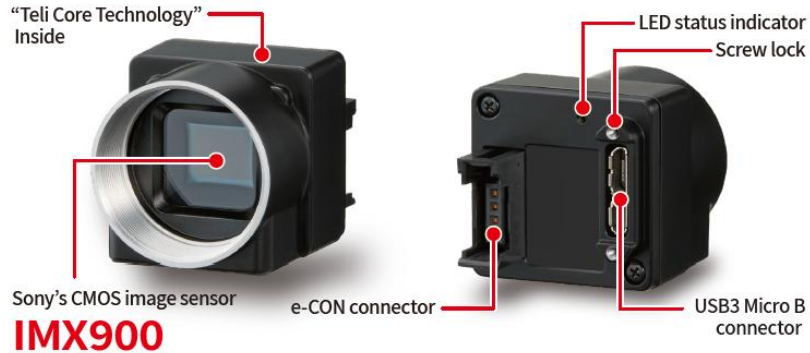


Premiere release! Latest Pregius S equipped cameras

Back-illuminated GS-CMOS camera

Available

BU300M Series 3.1 MP 64 fps **USB VISION**



Overview

∴ Sony Global Shutter CMOS image sensor **Pregius S**
Advanced Pregius S “IMX900”

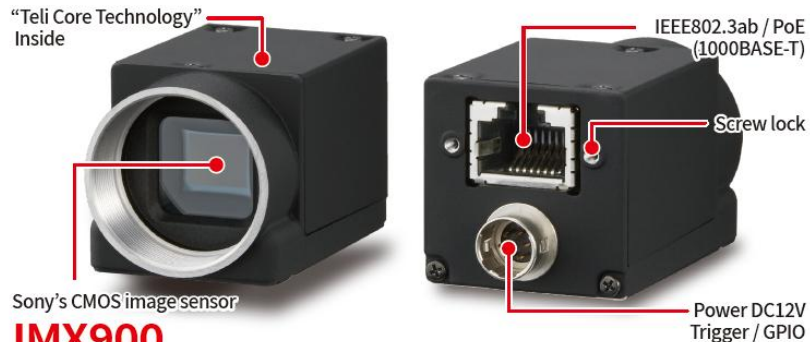
Features

- 1: Adopts back-illuminated technology to achieve high sensitivity even with fine pixels
- 2: High speed response with “Teli Core Technology” (no CPU) system

Main Specifications

NEW

BG300M Series 3.1 MP 36 fps **GigE VISION**



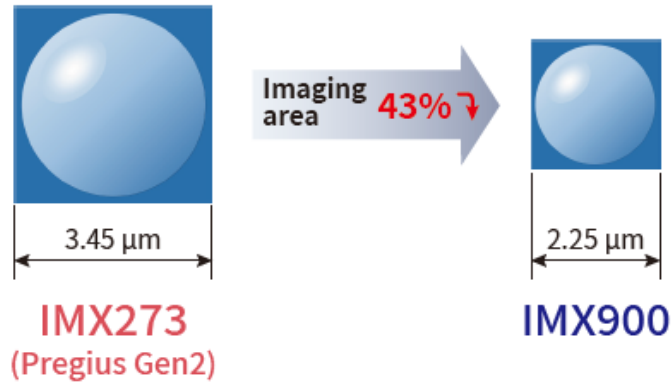
Model	B/W BU300MG Available Color BU300MCF	B/W BG300MG NEW Color BG300MCF
Imager	Sony’s IMX900	
Resolution	3.1MP (2,048 x 1,536 pix.)	
Pixel size	2.25 μm x 2.25 μm	
Image size	1/3.1 type	
Frame rate	64 fps	36 fps
Interface	USB 5Gbps	Gigabit Ethernet
External Dimension <small>(Not including protruding parts)</small>	29(W)×29(H)×16(D) mm	29(W)×29(H)×40(D) mm

Planning to offer the BU/BG cameras with HDR mode.

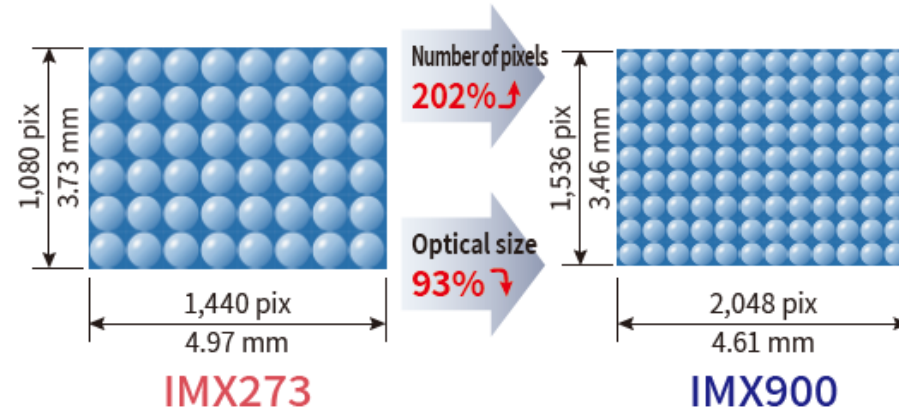
* Pregius S or Pregius S logo are trademarks of Sony Corporation.
* USB3 Vision logo and GigE Vision logo are trademarks or registered trademarks of A3 (Association for Advancing Automation) in each country.

CMOS sensor Characteristic

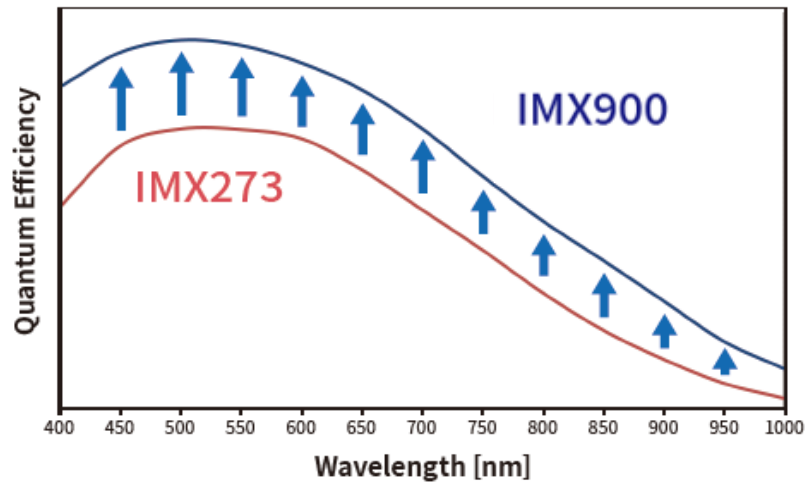
Miniaturization of pixel size



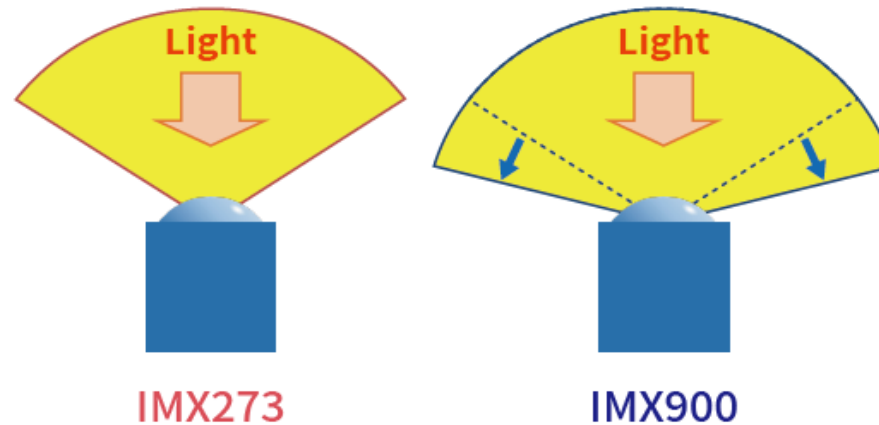
Higher number of pixels per imaging area



Improving quantum efficiency

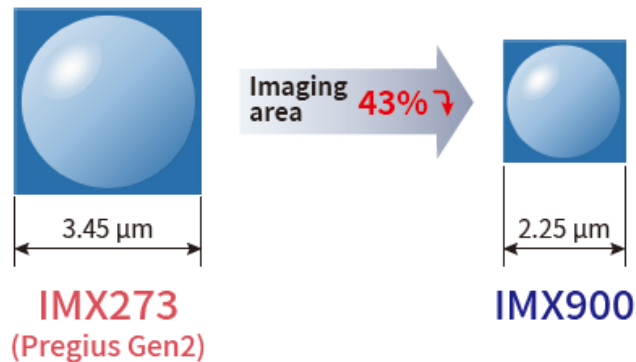


Improvement of incident angle characteristics

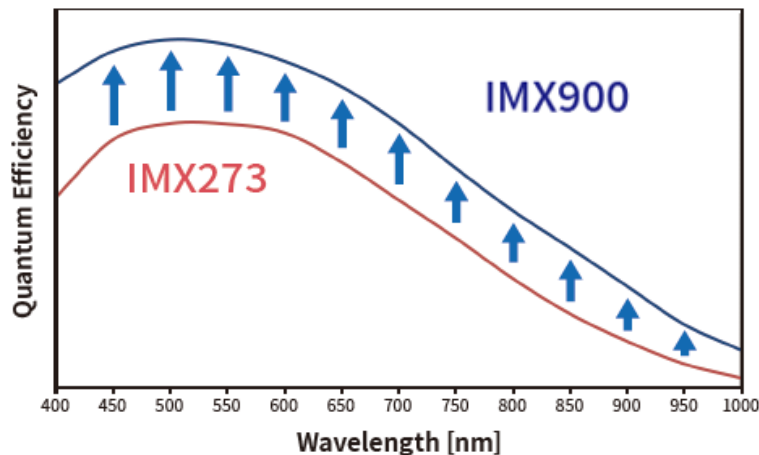


Sensitivity Comparison

Miniaturization of pixel size



Improving quantum efficiency



- Sensitivity comparison (Specification Comparison of Key Models)

Model	Sensitivity (lx)	Measurement conditions
BG160M	1,700	Aperture F 5.6, exposure time 1/77 s
BG300MG	2,010	Aperture F 5.6, exposure time 1/83.3 s



- Sensitivity comparison (Calculated value, Normalized to Common Conditions)

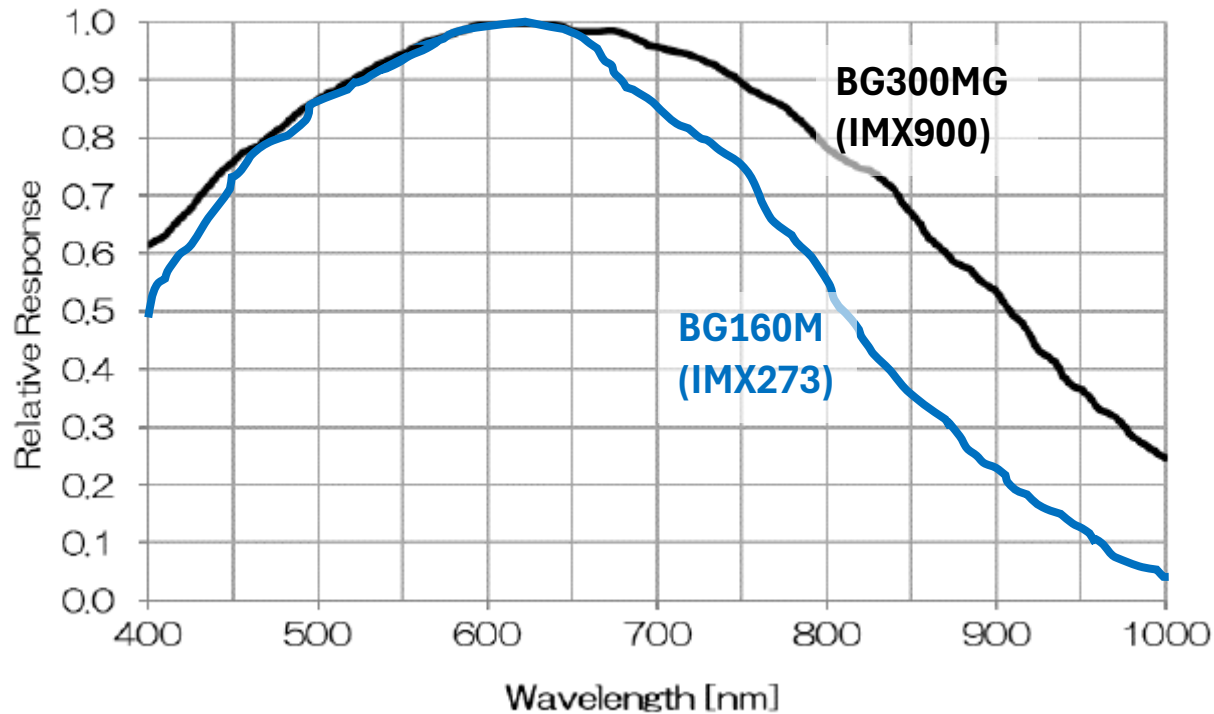
Model	Sensitivity (lx)	Measurement conditions
BG160M	1,325	Aperture F 5.6, exposure time 1/60 s
BG300MG	1,448	

Sensitivity (lx) refers to a specific lighting condition with a defined brightness level used to evaluate camera performance. The lighting has a 3000K color temperature, 400–700nm wavelength range, and a peak at 660nm.

★ The BG300M achieves sensitivity equivalent to that of the previous model, despite having only 43% of the pixel area.

Sensitivity Comparison in the near-infrared range

< BG300MG >

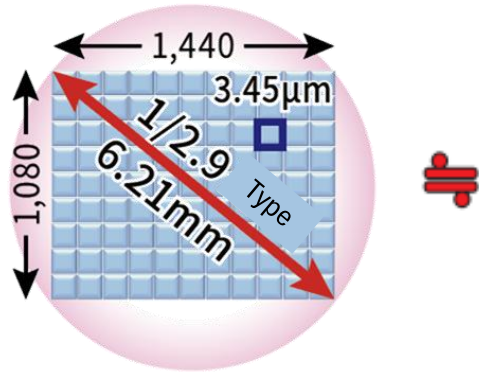


Thanks to a newly developed pixel structure, sensitivity at 850 nm is approximately twice that of the IMX296.
(Source: Sony promotional materials)

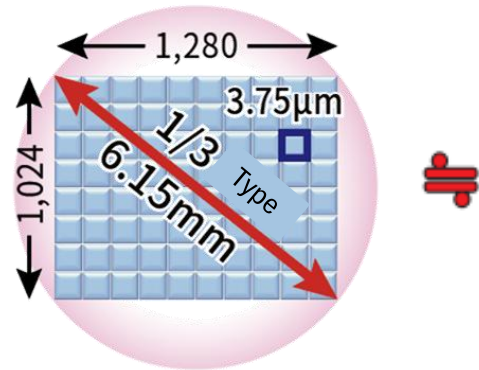
★ The photoelectric conversion rate in the near-infrared range has significantly improved, according to Sony's datasheet comparison (left figure)

Key Proposal Points for BU/BG300M series : a

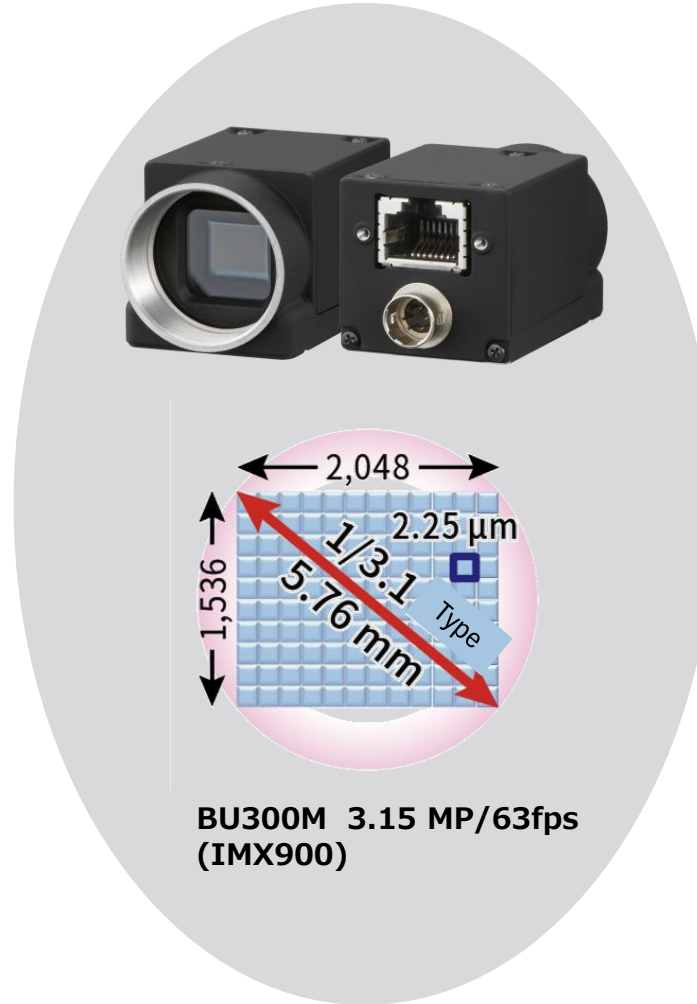
a. Achieves higher resolution with the same field of view



IMX273 1.56 MP/240fps
IMX296 1.56 MP/60fps
Sony



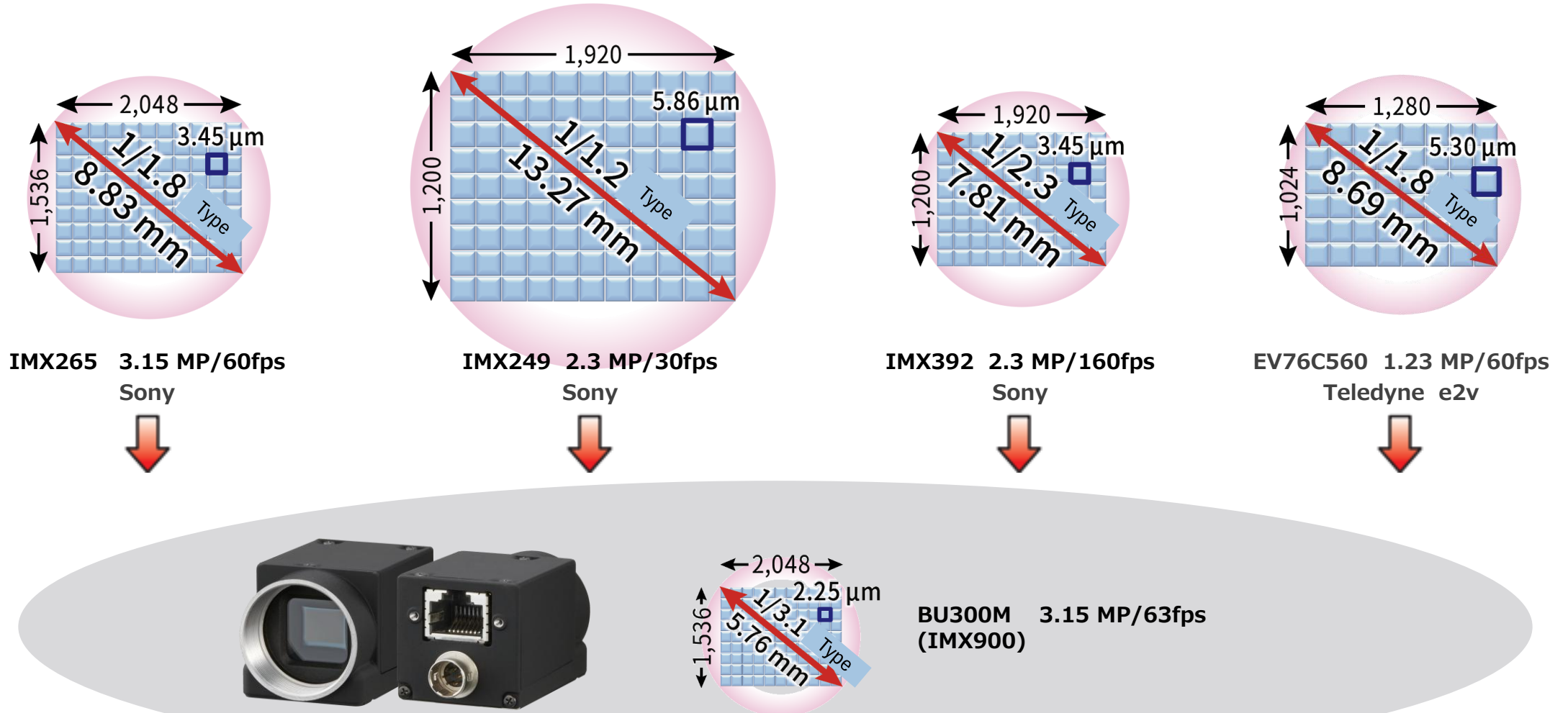
AR0135AT 1.23 MP/60fps
onsemi



BU300M 3.15 MP/63fps
(IMX900)

Key Proposal Points for BU/BG300M series : b

b. Maintains resolution with reduced cost



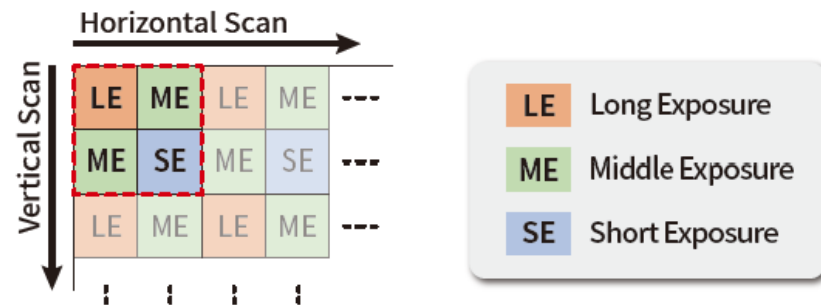
Unique Function of IMX900 camera

Under Development

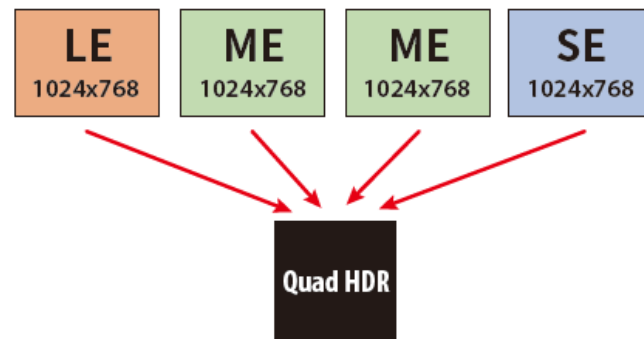
Quad HDR

- Quad HDR controls the exposure time and timing of quad pixels (2 pixels each horizontally and vertically).
- Quad HDR in monochrome camera is useful for generating HDR images.

Pixel Readout Example

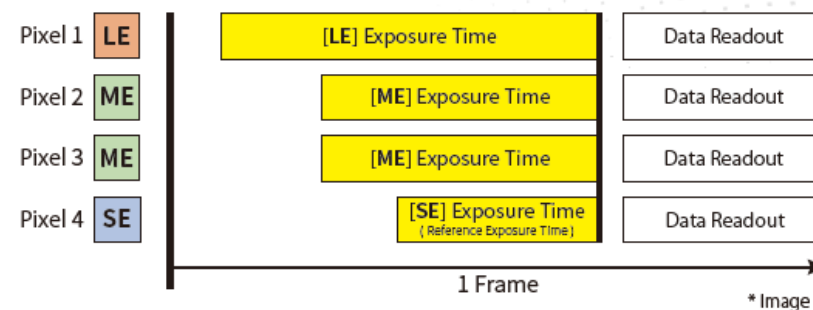


● IMX900 camera output image*



* After generating pixels on PC

Timing Chart - Ratio mode -



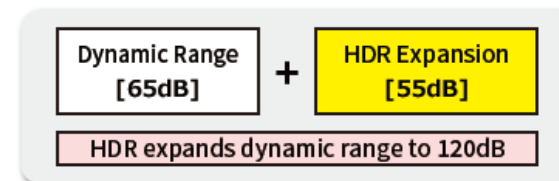
Ratio settings of exposure time

- Ratio setting of ME to SE (x1 to Max. x64)
- Ratio setting of LE to ME (x1 to Max. x64)

Example of HDR setting that expands dynamic range to 120dB

Exposure Ratio Settings = "576 : 24 : 1"

SE = 5 μ s
 ME = 120 μ s (SE x 24)
 LE = 2,880 μ s (SE x 24 x 24)

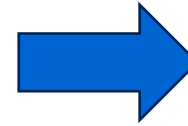


BU300MG-HDR, BG300MG-HDR (tentative, only B/W)



- A image data** Long exposure
- B image data** Middle exposure
- C image data** Middle exposure
- D image data** Short exposure

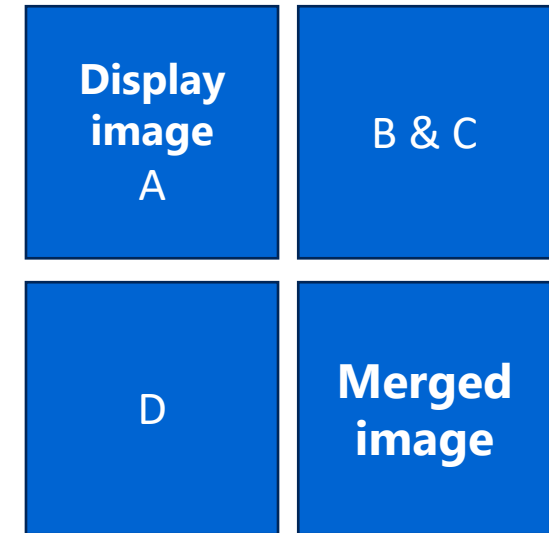
Quad HDR



1 frame

Note) : The resolution will be $\frac{1}{4}$ per image.
: Maximum Exposure time is 3 msec with the HDR mode.

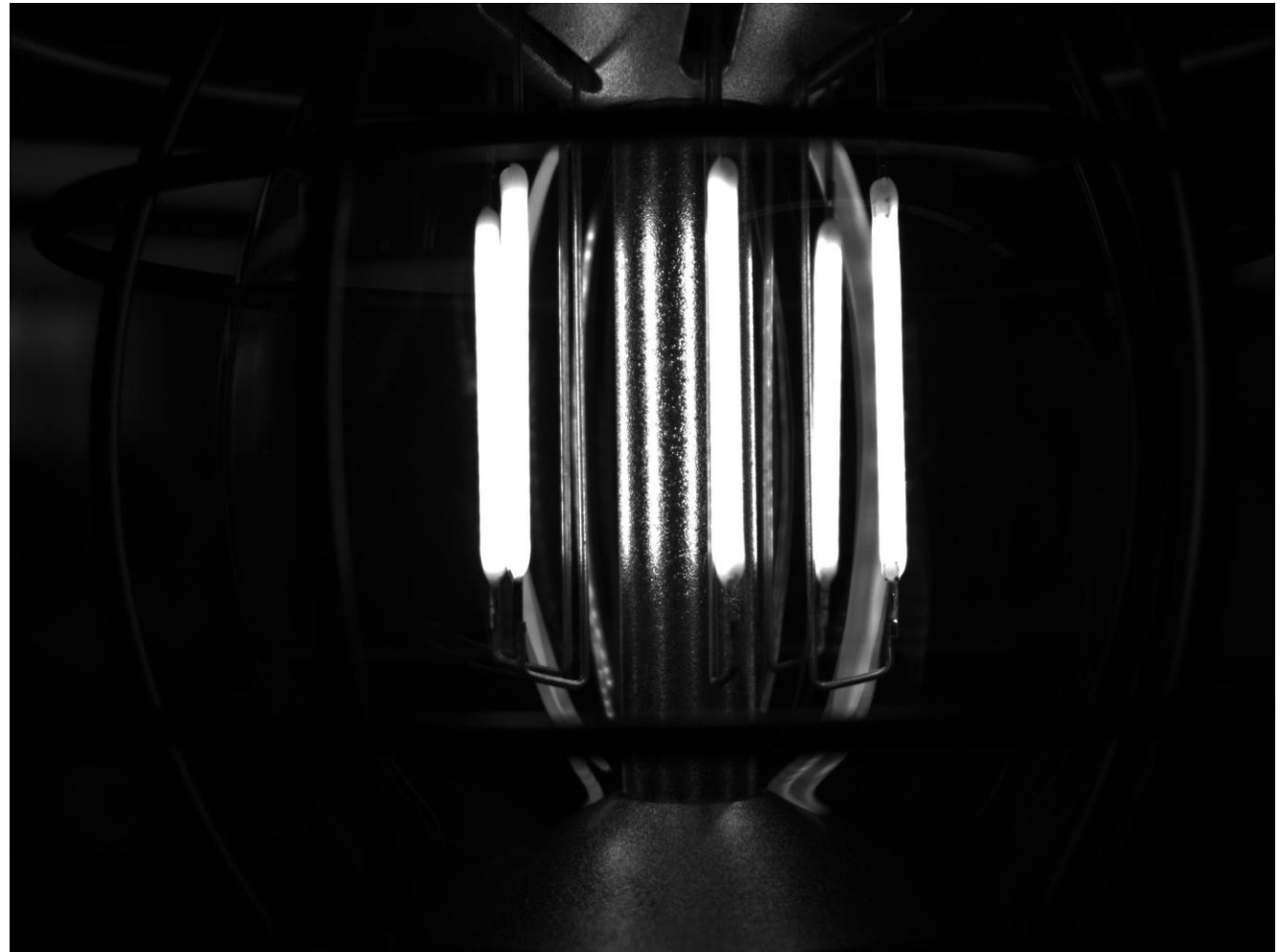
Software



Filament for lamps



Non-HDR image with BU300MG (Dynamic Range: 65dB)



Parts that cannot be recognized/identified :
• Frame of the lamp
• light bulbs

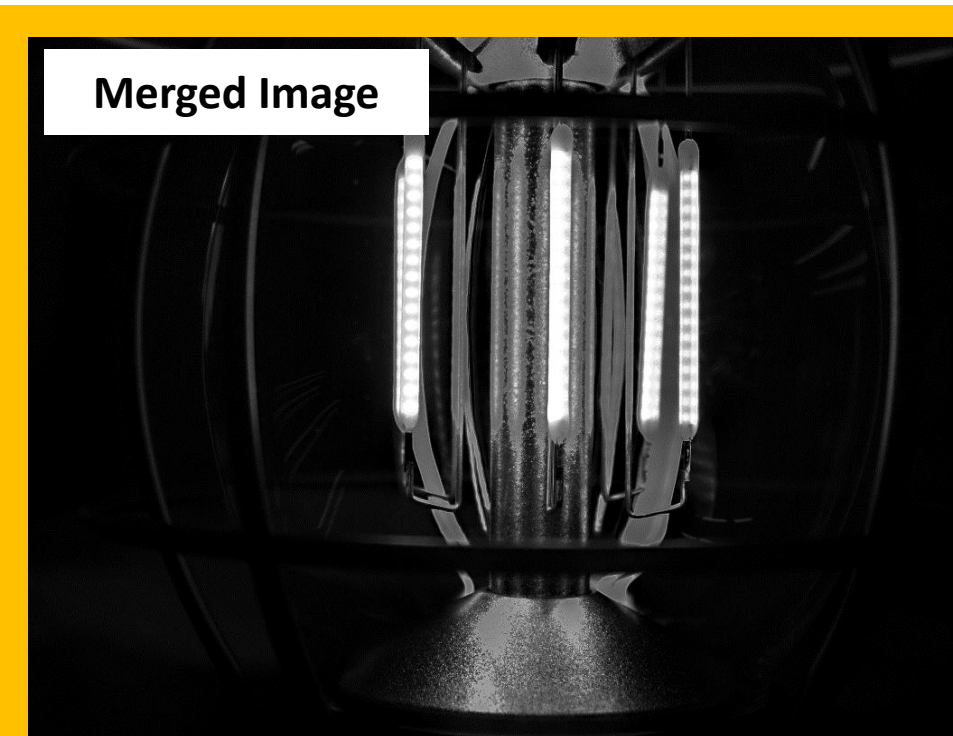
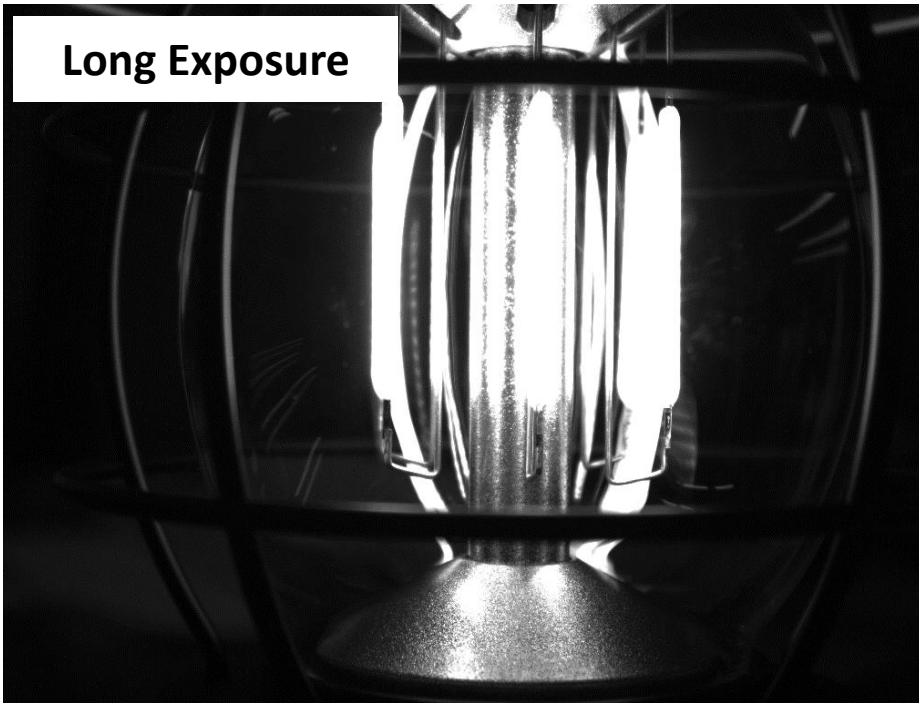
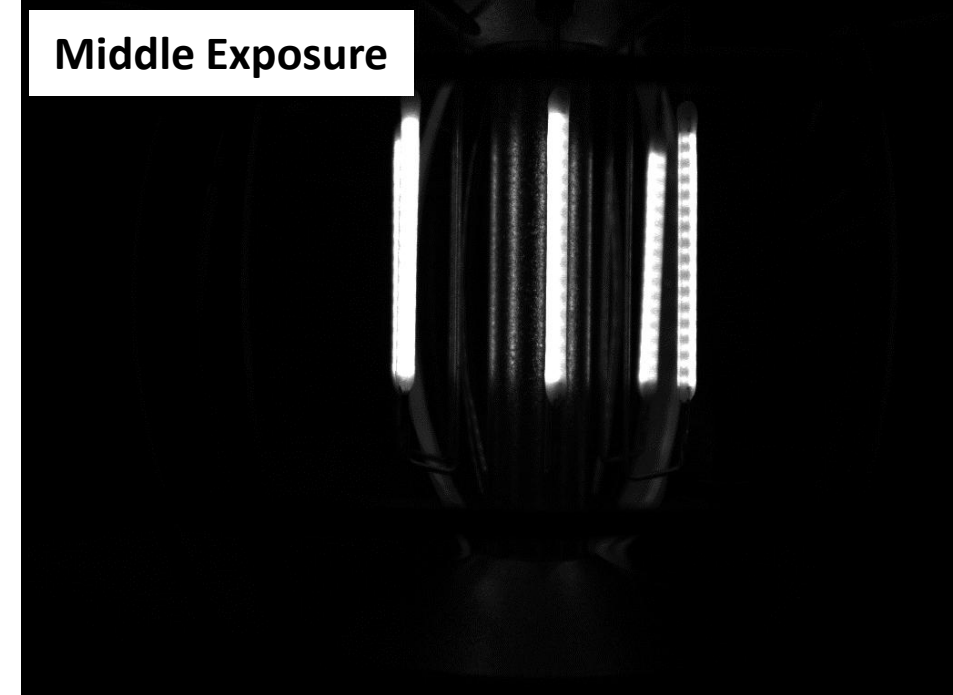
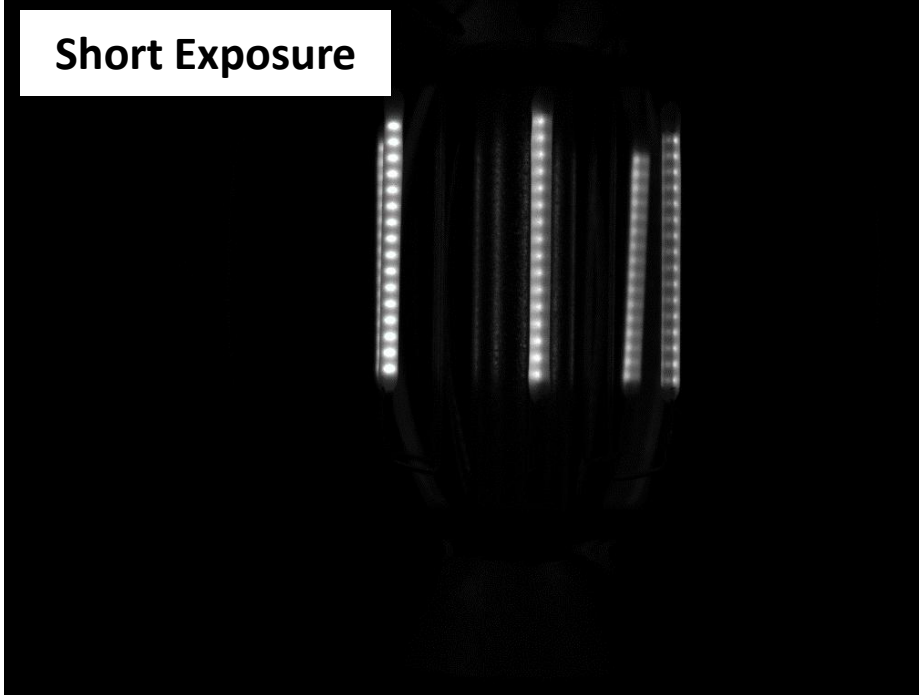
Filament for lamps

HDR image
with BU/BG300MG-
HDR

Exposure time:

- Short: 3 usec
- Middle: 12 usec (4×3)
- Long: 288 usec (24×12)

Dynamic Range:
65dB + 55dB -> 120dB



Bottle Inspection

Non-HDR image with BU300MG (Dynamic Range: 65dB)



Parts that cannot be recognized/identified :
• Rim of the bottle
• Inside of the bottle

Bottle Inspection

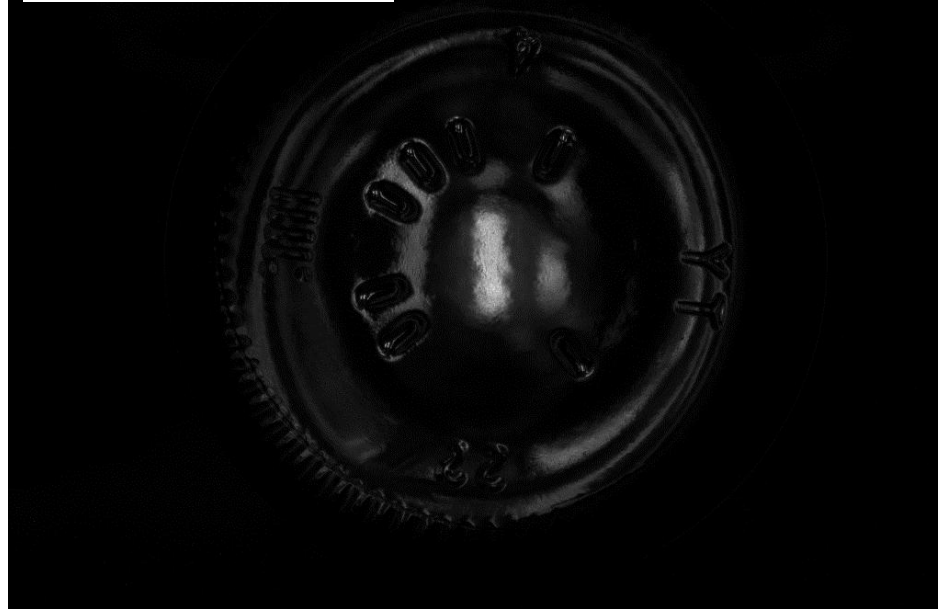
HDR image with
BU/BG300MG-HDR

Exposure time:

- Short: 2 usec
- Middle: 16 usec (2x8)
- Long: 256 usec
(16x16)

Dynamic Range:
65dB + 55dB -> 120dB

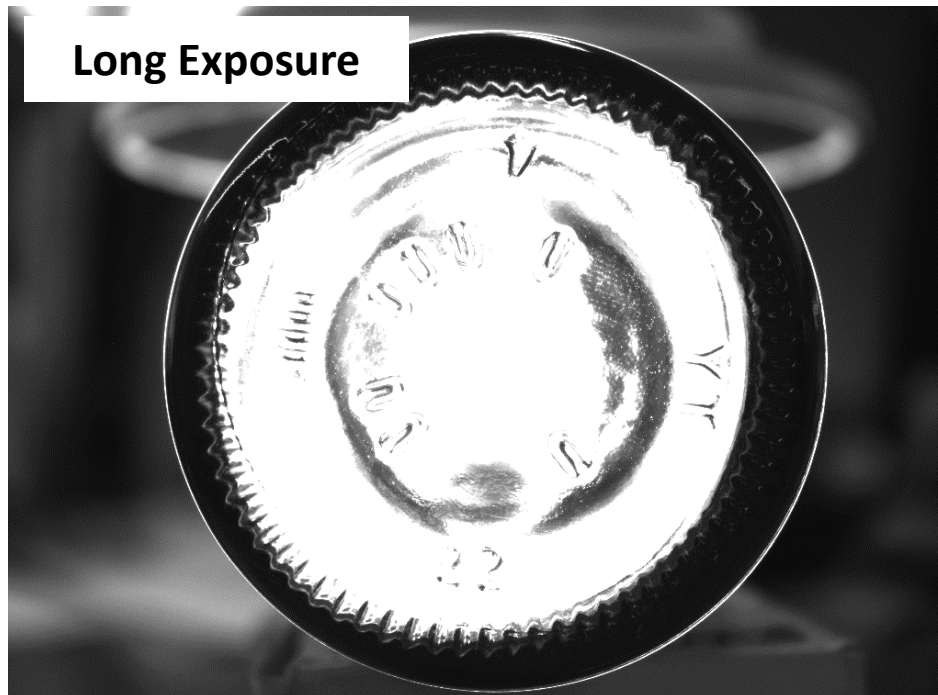
Short Exposure



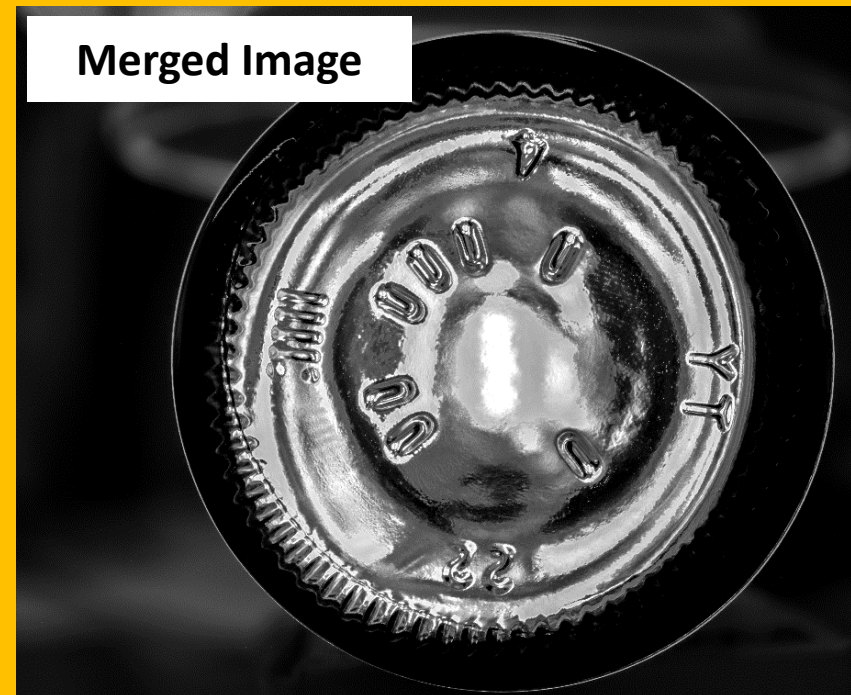
Middle Exposure



Long Exposure



Merged Image



TOSHIBA