

Kokyo

# Beam Profiler

SELECTION  
GUIDE

# Key Elements for Right Selection

The Largest Measurable Beam Size in The Industry <sup>*1</sup>	Kokyo's Laser Beam Profiler Covers 2 $\mu\text{m}$ to 800 mm
Wavelength	Kokyo's Laser Beam Profilers cover the industry-widest bandwidth 190 nm - 16 $\mu\text{m}$ Please select a right model for your applicaiton
The Largest Beam Power Allowance in the Industry <sup>*1</sup>	Kokyo's Laser Beam Profilers allow the industry-widest power range 0.001 W/cm <sup>2</sup> through 100 kW/cm <sup>2</sup> <sup>*1</sup>
CW or Pulse Laser Beam	Pulse repetition frequency and width information are needed to specify one of our products for a pulse laser application

Note \*1) According to our survey

## LaseView

Kokyo Laser Beam Profiling Analytical Softwear "LaseView"

- Multiple Camera Connection
- M<sup>2</sup>(M Square) Beam Quality Measurement
- Beam Spot Position Movement Measurement
- Beam Spot Diffusion Angle (Divergence) Measurement
- Timelapse Function
- Majority of Generic Cameras in the Market can be used



## LHB Series with LaseView

Screen Integrated Beam Profiler for Immediate Measurement "LHB series with LaseView"

- Measure large beam spot from 25 mm to 800 mm (31.5" dia)
- Measures high power beam spot up to 100 kW/cm<sup>2</sup>
- Ignores stray light with a specific model (for LiDAR inspection)



Screen size: 25 × 25 mm、 50 × 50 mm、 100 × 100 mm、 200 × 200 mm  
Large beam diameter can be covered with single screen and it does not require. multiple measurement of divided beam images. <sup>\*2</sup> <sup>\*3</sup>

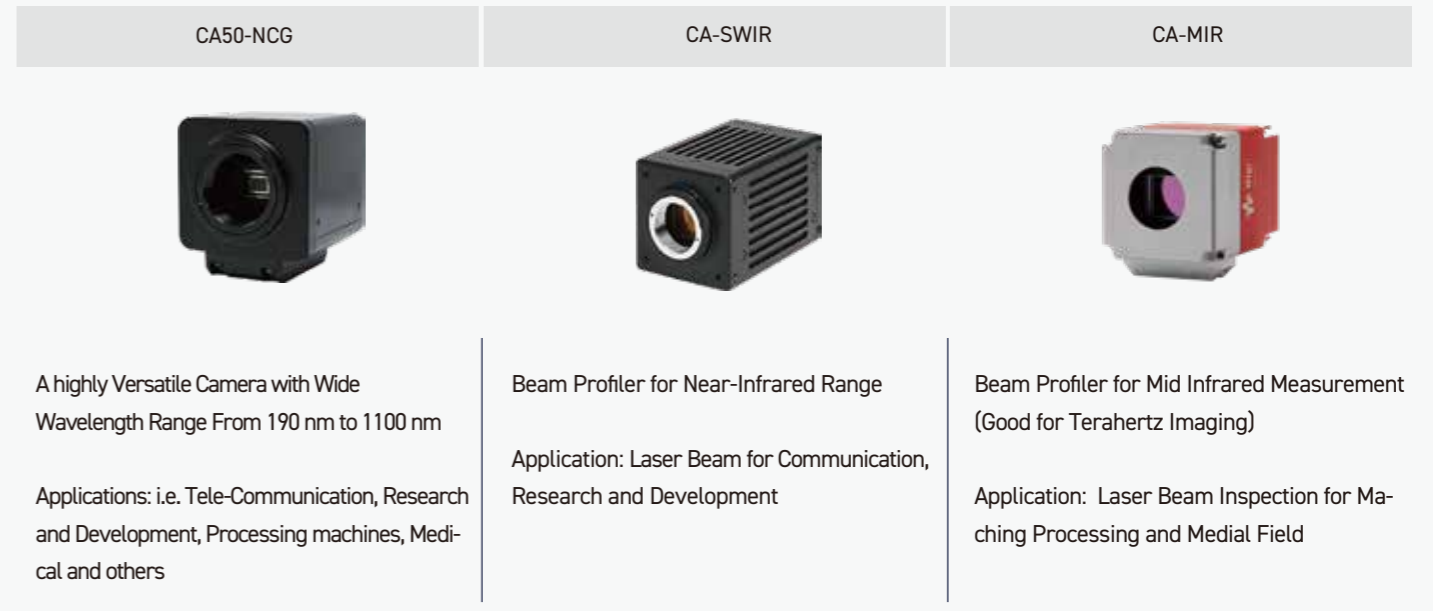
Note

- <sup>\*2</sup> ) Maximum power per square millimeter varies by product in LHB series.
- <sup>\*3</sup> ) 10 W cannot be exceed for continuous operation.

## CA Series with LaseView

Kokyo Selected Camera Set Series with "LaseView"

- Suitable for measuring small beam diameters, from 2  $\mu\text{m}$  to 5 mm
- Compact size and easy installation (inside of a processing machine)
  - We have a lineup of cameras with high sensitivity ranging from UV to near MIR with several model.



A highly Versatile Camera with Wide Wavelength Range From 190 nm to 1100 nm

Applications: i.e. Tele-Communication, Research and Development, Processing machines, Medical and others

Beam Profiler for Near-Infrared Range

Application: Laser Beam for Communication, Research and Development

Beam Profiler for Mid Infrared Measurement (Good for Terahertz Imaging)

Application: Laser Beam Inspection for Matching Processing and Medial Field

### - Line Profile

Plays line profiles in the crosshairs. FWHM of the beam profile can be determined, fitting with Gauss, Lorentz and Sech<sup>2</sup> functions, crosshairs can be rotated.

### - Integral Profile

Displays horizontally and vertically averaged profiles. The same analysis functions as for line profiles can be used.

### - Maximum Projection Value Profile

Displays only the profile of the positive projection (maximum value) in the horizontal/vertical direction.

The same analysis functions as for line profiles are available.

### - Distance measurement between two points

Measure the distance between any two points on the screen.

### - Peak integration

Analysis of the integral values within a circle with the outside of the circle as background.

Beam Diameter: 30  $\mu\text{m}$  to 5 mm <sup>\*4</sup>

Note

- <sup>\*4</sup> ) Optional optical system lens allows to measure down to 2  $\mu\text{m}$  diameter.  
Measurable wavelength: 190 nm to 1100 nm

Beam Diameter: 120  $\mu\text{m}$  to 5 mm <sup>\*5</sup> <sup>\*6</sup>

Note

- <sup>\*5</sup> ) Optional optical system lens allows to measure down to 2  $\mu\text{m}$  diameter.  
Measurement wavelength: 900 to 1700 nm
- <sup>\*6</sup> ) The power needs to stay 10  $\mu\text{W}/\text{cm}^2$  or lower by using ND filter and so on for the high sensitivity sensor with this model.

Beam Diameter: 150  $\mu\text{m}$  to 16 mm <sup>\*7</sup> <sup>\*8</sup>  
Measurement Wavelength: 2  $\mu\text{m}$  to 16  $\mu\text{m}$

Note





- <sup>\*7</sup> ) Measure Wavelength 1000  $\mu\text{m}$  (0.3 THz)
- <sup>\*8</sup> ) NIR (2 to 3  $\mu\text{m}$ ) type with Sapphire Material Screen Window and MIR (4 to 16  $\mu\text{m}$ ) type with Ge Material one are available.

# Laser Beam Profiler Selection Guide

**WA** WA Model to Ignore Stray Light  
**GigE** GigE Model for GigE Interface Connection

**UHP** UHP Models for High Power Laser Beam Inspection  
**NIR GigE** NIR GigE Models for Near Infrared Light

**VISNIR GigE** VISNIR-GigE Models Covering Visible Light through out Near Infrared Light

Product Name	LHB Series			
	LHB-25	LHB-50	LHB-100	LHB-200
				
Photosensitive Surface Dimensions	25 mm × 25 mm	50 mm × 50 mm	100 mm × 100 mm	200 mm × 200 mm
Measurable Wavelength Range	<span>WA</span> <span>UHP</span> <span>GigE</span> 400 ~ 1100 nm		<span>WA</span> <span>UHP</span> <span>GigE</span> 400 ~ 1100 nm	
	<span>NIR GigE</span> 950 ~ 1700 nm		<span>NIR GigE</span> 950 ~ 1700 nm	
	<span>VISNIR GigE</span> 400 ~ 1700 nm		<span>VISNIR GigE</span> 400 ~ 1700 nm	
Measurable Maximum Power per Square Millimeter	0.1 ~ 100 W/cm <sup>2</sup>			
	10 ~ 50 kW/cm <sup>2</sup>		<span>UHP</span> 10 ~ 50 kW/cm <sup>2</sup>	
Optical Resolution	about 50 μm	100 ~ 400 μm	200 ~ 800 μm	400 ~ 600 μm
Total Incident Power Density	Maximum 10 W/cm <sup>2</sup> <span>WA</span>			
Measurable Light Beam Angle	<span>UHP</span> <span>VISNIR GigE</span> <span>GigE</span> <span>NIR GigE</span> + - 15°			
	<span>UHP</span> <span>VISNIR GigE</span> <span>GigE</span> <span>NIR GigE</span> + - 70° <span>WA</span>			
CCD Effective Pixels	1440 × 1080	320 × 256 ~ 1440 × 1080	320 × 256 ~ 2048 × 1536	1280 × 1024 ~ 2448 × 2048
A / D Conversion Resolution	8 / 16 bit	8 ~ 16 bit	8 ~ 12 bit	8 ~ 12 bit
Frame Rate	238 fps (max)	130 fps to 238 fps (max)	36 to 130 fps (at 8 bit)	24 to up to 60 fps
Exposure Time	1 μs ~ 30 sec.	0.001 ms ~ 30 sec.	0.001 ms ~ 4 sec.	6 μs ~ 0 sec.
Interface	1 μs ~ 30 sec.	0.001 ms ~ 30 sec.	0.001 ms ~ 4 sec.	6 μs ~ 30 sec.
External Trigger Function	Available	Available	Available	Available
Power Supply (camera power supply)	Camera Power 5 V (Supplied via USB)	12 V, Approximately 400 mA (Supplied from the AC Adapter Included) 5 V, Approximately 660 mA (Supplied from USB)	Camera Power Supply 4.75 to 5.25V, Approximately 360 mA (Supplied via USB) 4.5 to 12 V 10W or less (Supplied from the included AC Adapter)	5V, Approximately 700 mA (Supplied from USB) 12 V, 400 mA to 7 W (Supplied from the AC Adapter Included)
Motor power	Motor Power 6 V (Supplied from the Included AC Adapter)			
External Dimensions	W 129 mm D 116 mm H 57.5 mm	W 154 ~ 195 mm D 130 ~ 196 mm H 82.5 ~ 83 mm	W 208 ~ 222 mm D 173 ~ 219 mm H 137 mm	W 389 mm D 268 mm H 258 mm
Weight	Approx. 1 kg	Approx. 2.5 kg	Approx. 2.5 kg	Approx. 8 kg

Product Name	CA Series				
	CA50-NCG	CA-SWIR	CA30-MIR	CA80-MIR	CA160-MIR
					
Measurement Wavelength range	190 nm ~ 1100 nm	900 nm ~ 1700 nm	NIR 1 ~ 3 μm / MIR 4 μm ~ 18 μm		
Beam Diameter	30 μm ~ 5 mm	120 μm ~ 5 mm	150 μm ~ 3 mm	100 μm ~ 8mm	90 μm ~ 16 mm
Beam Diameter when Optical System Attached (Optional)	—	4 μm ~ 150 μm	—	—	—
Image Sensor	CCD	InGaAs	FPA	FPA	FPA
Number of Pixels	Effective Pixels: 1360 μm (H) × 1024 μm (V) Pixel Size: 4.65 μm (H) × 4.65 μm (V)	Effective Pixels: 320 μm (H) × 256 μm (V) Pixel Size: 20 μm × 20 μm Imaging Effective Line Length: 6.40 mm x 5.12 mm Two-stage Electronic Cooling	160 × 120	640 × 480	1920 × 1080
Imaging Area	6.47 (H) mm × 4.83 (V) mm	—	—	—	—
Frame Rate	USB	228 FPS(Max) 12 fps at 1 μs Exposure Time	9 Hz	50 Hz	4 or 9 Hz
Shutter Method	Global Shutter (Electronic Shutter 1/58824 to 1/12.5s)	Global Shutter	None	Automatic Operation by Algorithm	
Lens Mount	—	C Mount 1 Inch	—	—	—
Interface	USB	Gigabit Ethernet (1000BASE-T)	USB	USB	GigE
Power Supply	DC5 V (Powered from USB Connector)	Input Voltage Range: DC+12 V + - 1 V Power Consumption: 7 W	USB Power Supply	DC Power Supply	USB Power Supply
Environment	Operating Temperature: 0 ~ 35 °C Humidity: 10 ~ 80 % (No Condensation Required)	Operating Temperature and Humidity 0 °C to +40 °C, 20 to 80 % (No Condensation Required) Storage Temperature Humidity 0 °C to +40 °C, 20 to 80 % (No Condensation Required) Peltier Setting Temperature 5 °C to +35 °C, 20 to 80 %	—	—	—
External Dimensions	W 50 mm D 49.7 mm H 47 mm	W 58 mm D 90 mm H 58 mm	W 32 mm D 40 mm H 32 mm	W 60 mm D 56 mm H 63 mm	W 66 mm D 79 mm H 81 mm
Weight	Approx. 120 g	Approx. 560 g	Approx. 70 g	Approx. 145 g	Approx. 400 g
Window Material	—	—	NIR Sapphire MIR Germanium	NIR Sapphire MIR Germanium	NIR Sapphire MIR Germanium



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