# Kokyo's original product Beam profiler



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# Beam profiler

A beam profiler is a device that measures the beam diameter and spatial intensity distribution of a laser.

#### Hardware



LaseView-LHB series Beam profiler for large diameter and high-power

### Software



**LaseView** Beam profiler with M2 platform software



LaseView-SRC series Beam profiler with converter

#### Set software and optimal camera



LaseView camera set Use a commercially available camera as a beam profiler

## Lineup



# Beam profiler for large diameter and high-power

### Features of LaseView-LHB

### For large diameter

Until now, Beam profiling measurement with large diameter has required measuring by dividing it in several parts by making manual movement on the conventional profiler. It takes time and energy and also, divided measurement makes laser relative intensity unclear. LaseView-LHB solves such problems and it becomes possible to make large beam profiling at one time.



#### For high power

Conventional Beam profiling measurement with high power laser needed damping system because CCD camera may be easily destroyed. LaseView-LHB can measure as much as maximum 100 W/cm2 laser beam without additional attenuation system by using a newly designed optical system. It simplifies optical system and prevents introducing distortion on laser beam.



# Example of using LaseView-LHB



#### Software: LaseView



### Laser analysis of LiDAR using multiple LHBs

How to choose LaseView-LHB



Put 12 sets of LHB into 30° angles away from each other.



Put 4 sets of LHB into two units each, horizontally and vertically



Put 4 sets of LHB around the circle with 90° angles away from each other.



Pile up 4 sets of LHB vertically.

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Measurement wavelength range	400 - 1100 nm USB3.0 (miniB) GigE (RJ-45)		950 - 1700 nm	400 - 1700 nm	
Interface			GigE (RJ-45)		
Photosensitive area	LaseView-	LaseView-	LaseView-	LaseView-	LaseView-LHB-
50 × 50 (mm)	LHB	LHB-UHP	LHB-GigE	LHB-NIR-GigE	VISNIR-GigE
Photosensitive area	LaseView-			LaseView-	LaseView-LHB-100-
100 × 100 (mm)	LHB-100			LHB-100-NIR-GigE	VISNIR-GigE
Photosensitive area	LaseView-		LaseView-	LaseView-	LaseView-LHB-200-
200 × 200 (mm)	LHB-200		LHB-200-GigE	LHB-200-NIR-GigE	VISNIR-GigE

# LaseView-LHB series specifications

LaseView-LHB

LaseView-LHB-100





Model	LHB / LHB-GigE	LHB-UHP	LHB-NIR-GigE	LHB- VISNIR-GigE
Photosensitive area (mm)	50 × 50	50 × 50	50 × 50	50 × 50
Optical resolution	Around 100 $\mu$ m	Around 100 $\mu$ m	Around 400 $\mu$ m	Around 150 $\mu$ m
Total incident power	Maximum 10W	Maximum 10W	Maximum 10W	Maximum 10W
Allowed incident light angle	±15°	±15°	±15°	±15°
Measurement wavelength range	400 - 1100 nm	400 - 1100 nm	950 - 1700 nm	400 - 1700 nm
Image sensor pixel(mm)	1280 × 960	1440 × 1080	320 × 256	1280 × 1024
Acquisition image pixel	1250 × 1250	1250 × 1250	$400 \times 400$	1250 × 1250
A/D Conversion resolution	8 / 12 bit	8 / 12 bit	8/10/12/14 bit	8 /10/12 bit
Frame rate	30 fps	228 fps	160 fps	160 fps
Exposure time	0.1 ms - 250 ms	1 µs - 30 s	0.001 ms - 10 ms	—
Interface	USB3.0 / GigE	USB3.0 (miniB)	GigE(RJ-45)	GigE(RJ-45)
External trigger	Yes (3.3 - 24 V/3.5 mA)	Yes (3.3 - 12 V/850 Ω)	_	_
Price(without Tax)	US\$ 16,280 / US\$ 16,302	Please contact us	US\$ 33,000	Please contact us
Lead time	Around 1-1.5 month	Please contact us	Around 1-1.5 mont	h Please contact us
Model	LHB-100/ LHB-100-GigE	LHB-100-NIR-GigE	LHB-100- VISNIR-GigE	LHB-200 / LHB-200-GigE
Photosensitive area (mm)	100 × 100	100 × 100	100 × 100	200 × 200

	LHD-100-GIGE	LHD-100-MIK-GIGE	VISIVIR-GIGE	LHD-200-GIGE
Photosensitive area (mm)	100 × 100	100 × 100	100 × 100	200 × 200
Optical resolution	Around 200 $\mu$ m	Around 800 $\mu$ m	Around 300 $\mu$ m	Around 400 $\mu$ m
Total incident power	Maximum 10W	Maximum 10W	Maximum 10W	Maximum 10W
Allowed incident light angle	ved incident ±15° ±15		±15°	±15°
Measurement wavelength range	urement ength range 400 - 1100 nm		400 - 1700 nm	400 - 1100 nm
Image sensor pixel(mm)	sor pixel(mm) 1600 × 1200 320 ×		1280 × 1024	2048 × 1536
Acquisition image pixel	1600 × 1600	$400 \times 400$	1250 × 1250	2000 × 2000
A/D Conversion resolution	8 / 12 bit	8 / 12 bit	8/10/12/14 bit	8/10/12 bit
Frame rate	20 fps	228 fps	130 fps	60 fps / 30 fps
Exposure time	0.1 ms - 30 s	0.001 ms - 10 ms	—	25 μs -4 s/20 μs -30 s
Interface	USB3.0 / GigE	GigE(RJ-45)	GigE(RJ-45)	USB3.0 / GigE
External trigger	ger Yes – – –		_	Yes (3.3 - 12 V/850 Ω)
Price	US\$ 21,780/ US\$2,343,000	US\$ 38,500	Please contact us	Please contact us
Lead time	Around 1-1.5 month	Around 1-1.5 month	Please contact us Please contact	

# Beam profiler with converter

# Beam profiler with UV converter

Since UV light is converted to visible light and detected, high-sensitivity measurement is possible for light of 400 nm or less, which is less sensitive with ordinary cameras. The profile is about 510 mm.



Model LaseView-SRC-DUV				
Beam profiler with UV converter				
Around 18.4 $\times$ 13.8mm(Horizontal $\times$ Vertical)				
11.42 μm/pixel				
0.35 times				
Less than 50 $\mu$ m				
CCD image sensor				
200 - 390 nm				
$1360 \times 1024$ (Horizontal × Vertical)				
8 bit / 10 bit				
12 fps (Maximum)				
17 µs - 80 ms				
USB2.0				
US\$ 4,400(without Tax) (without Software)				
Around 1 month after receiving P/O				

# Beam profiler with reduction converter

Dedicated to incoherent light. If the spread angle is large like an LED, the profile will be about 5 - 10 mm. Observation is difficult in this area with a camera set or LHB. In such cases, use a beam profiler with a reduction converter. The light receiving area is  $18 \times 13.5$  mm and the optical resolution is about  $30 \mu$ m.



### Model LaseView-SRC-LED

Product name	Beam profiler with reduction converter		
Light receiving area	$18 \times 13.5$ mm or more(Horizontal × Vertical)		
Pixel resolution	11.42 μm/pixel		
Magnifying optical system magnification	3.31 times		
Optical resolution	Approx. 30 µm		
Image sensor	CMOS image sensor		
Measurement wavelength range	800 - 1000 nm		
Number of image sensor pixels	$2048 \times 1536$ (Horizontal × Vertical)		
Gain	0 dB - 48 dB		
A/D conversion resolution	8 bit / 12 bit		
Frame rate	60 fps (Maximum)		
Exposure time	25 μs - 4 s		
Interface	USB3.0		
Price	US\$ 3,850(without Tax) (without Software)		
Lead time	Around 1 - 1.5 month		

# Beam profiler with M2 platform software

### LaseView

"Beam Profiler with M2 Platform Software LaseView" is a highly functional and versatile laser beam profiler software that can use a commercially available CCD camera as a beam profiler.

By using a commercially available CCDcamera or CMOS camera, an extremely low-cost and practical beam measurement system can be easily constructed.



# Features of LaseView

- ① M2 beam quality measurement function.
- 2 Temporal beam pointing changes analysis function.
- **③** Beam divergence measurement function.
- ④ Images can be saved at set time intervals. (image logging function)
- **6** Multiple cameras can be connected to one software.
- ⑦ Beam measuring system can be structured by using commercially sold CCD or CMOS camera.



# Example of Using LaseView

### Optical microscope system



By simply attaching the optical tube to a CCD camera, the beam profiler can be used as a microscope. It is possible to observe various objects such as fiber end faces.

### Optical fiber measurement system



- Damage inspection
- $\cdot$  the mode field diameter of the optical fiber is known.
- the intensity distribution is Gaussian.
- the connector is diagonally polished.

# Structure of beam monitoring system

Laser beam position monitoring system for laser processing

Laser beam monitoring system for laser processing (damage) testing



# LaseView camera set series

LaseView comes with a set of cameras that are ideal for various conditions such as laser wavelength band and diameter and pulse / CW.



### Camera set

Model number LaseView-CA50-NCG			Model number LaseView-CA-	SWIR	
Measurement wavelength		190 - 1100 nm	Measurement wavelength 900 - 1700 nm		900 - 1700 nm
Beam diamete	r	30 µm - 5 mm	Beam diameter		120 μm - 5 mm
	Pixel	1360 × 1024	– InGaAs Camera	Pixel	320 × 256
	CCD size	1/2"		CCD size	6.4 × 5.12 mm
CCD Camera	Pixel size	4.65 μm × 4.65 μm		Pixel size	20 $\mu$ m $ imes$ 20 $\mu$ m
	interface	USB 2.0		interface	GigE
Price(without Tax) %1		US\$ 4,741	Price(without Tax) %1 US\$ 22,00		US\$ 22,000
Lead time		Around 4 - 6 weeks	Lead time Around 4 - 6		Around 4 - 6 weeks

%1 If you already have LaseView software, please subtract US\$ 3,300

# Camera set + Micro beam diametermeasurement optical system

Model number		LaseView- CA-SWIR-BE	LaseView- CA50-NCG-BE	LaseView- CA-DUV-BE
Measurement wavelength		900 - 1700 nm	400 - 1100 nm	190 - 400 nm
Beam diameter		4 μm - 150 μm	2 μm - 100 μm	2 μm - 100 μm
	magnification	About 30 times	About 37 times@808 nm	About 30 times
Micro beam diameter measurement optical system	NA	0.4	0.4	0.5
	Optical resolution	< 4 μm	< 2 µm	< 1 µm
	Working distance	About 1.7 mm	About 1.5 mm	About 1 mm
	length	176 mm	121 mm	194 mm
Price (without Tax) ※1		US\$ 22,891	US\$ 5,632	US\$ 10,901
Lead time		Around 4 - 6 weeks	Around 4 weeks	Around 4 weeks

%1 If you already have LaseView software, please subtract US\$ 3,300