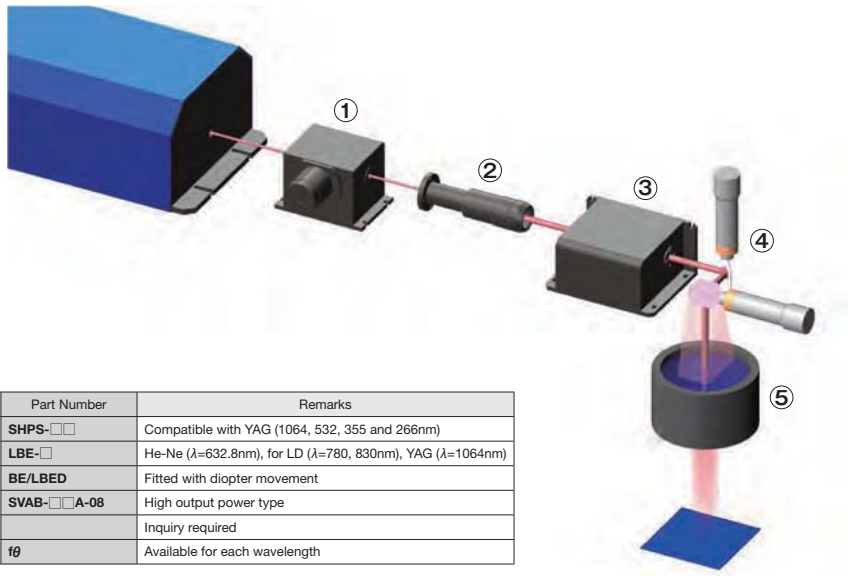
Laser Processing Systems

Scan Optical System and Focusing Optical System

For the maskless processing, it can do direct drawing processing on the basis of the data like CAD. It is usually classified as scan optical system and focusing optical system. (There is also a hybrid scanning that combines both).

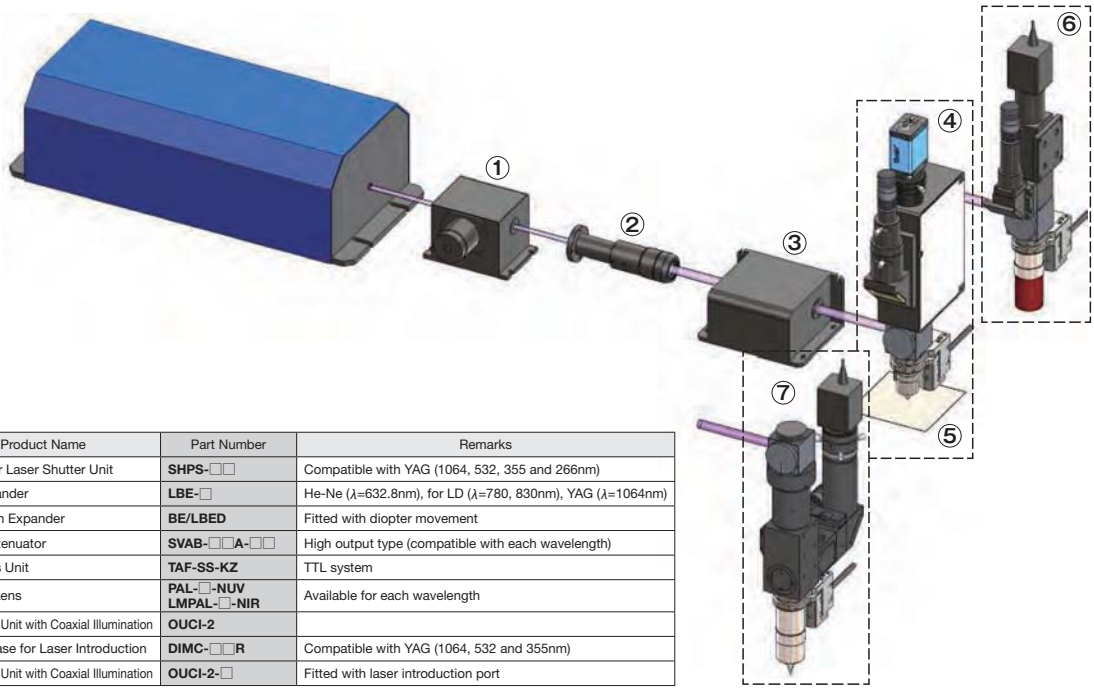
	Scan optical system	Focusing optical system
Scanning method	Galvano scan	Stage scan
Scanning speed	high	low
Scanning area	narrow	wide
Focusing method	fθ Lens	Objective Lens
Focusing spot diameter	few 10μ – few 100μ	submicron – few 10μ
Death of focus	deep	shallow

[Scan Type]



	Product Name	Part Number	Remarks
①	High Power Laser Shutter Unit	**SHPS-□□**	Compatible with YAG (1064, 532, 355 and 266nm)
②	Beam Expander	**LBE-□**	He-Ne (λ=632.8nm), for LD (λ=780, 830nm), YAG (λ=1064nm)
	Laser Beam Expander	**BE/LBED**	Fitted with diopter movement
③	Variable Attenuator	**SVAB-□□A-08**	High output power type
④	Laser Scanning system		Inquiry required
⑤	fθ Lens	**fθ**	Available for each wavelength

[Focusing System (with Observation System)]



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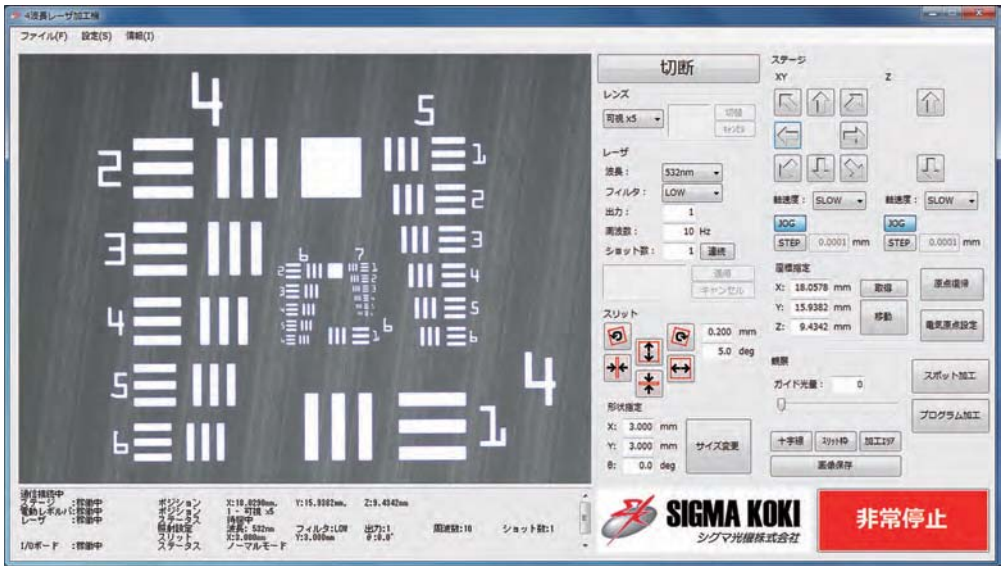
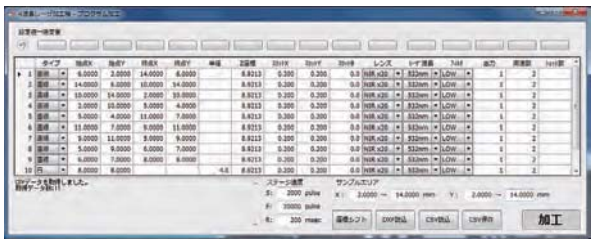
	Laser Beam Expander	**BE/LBED**	Fitted with diopter movement
③	Variable Attenuator	**SVAB-□□A-□□**	High output type (compatible with each wavelength)
④	Auto Focus Unit	**TAF-SS-KZ**	TTL system
⑤	Objective Lens	**PAL-□-NUV LMPAL-□-NIR**	Available for each wavelength
⑥	Observation Unit with Coaxial Illumination	**OUCI-2**	
	Dichroic Case for Laser Introduction	**DIMC-□□R**	Compatible with YAG (1064, 532 and 355nm)
⑦	Observation Unit with Coaxial Illumination	**OUCI-2-□**	Fitted with laser introduction port

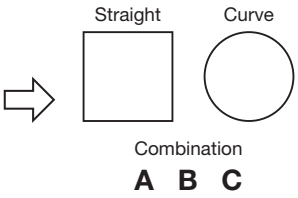
Processing Software

It is a software that can set processing pattern and area on the screen while observing the position of processing by camera.
It integrates the set of wavelength switching and irradiation condition of multiple laser, switching of the objective lens, and control of the stage.
It corresponds to drawing CAD data like DXF and to mass production line from prototype applications.



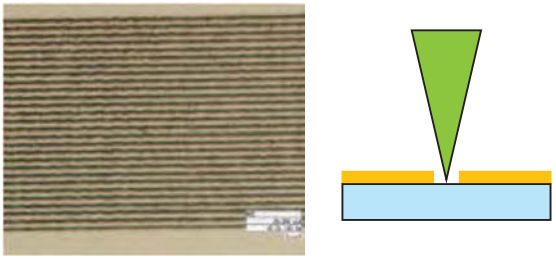


- **Program Operation**
  Stage operation by specifying coordinates
  On Off operation for the laser irradiation
  Easy processing by reading a CSV file
- **Software Joystick**
  Continuous movement
  Step movement

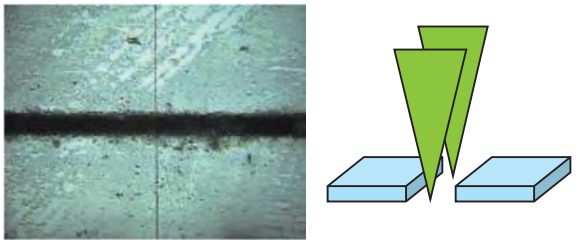


Applications

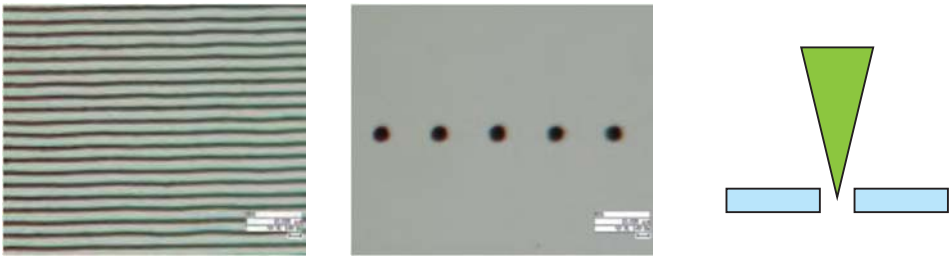
● Removing metal thin film of 10μm or less



● Cutting silicon wafer of about 100μm thickness



● Cutting metal and ceramic of 100 – 500μm thickness, drilling (ϕ100μm –)



Laser Processing Systems

Shutter for High Power Laser

Safely interrupt the optical path by the high-power laser mirror and beam.

Specifications	
Part Number	**SHPS-□□**
Wavelengths [nm]	266, 355, 532, 1064
Clear aperture [mm]	ϕ8
Corresponding Output	about 20W
Laser Damage Threshold	5J/cm^2 (@266nm) – 28J/cm^2 (@1064nm)
On-Off Speed	about 200ms

Variable Attenuator

Light quantity of the high-power laser can be continuously variable by PBS and wavelength plate

Specifications	
Part Number	**SVAB-□□A-OB**
Wavelengths [nm]	266, 355, 532, 1064
Clear aperture [mm]	ϕ4
Corresponding Output	20W
Laser Damage Threshold	1.0J/cm^2 (@266nm) – 5.1J/cm^2 (@1064nm)
Transmission Range	2 – 93% (@532nm)

Laser Beam Expander Unit

By lens configuration of the air gap, it is possible to correspond to high-power laser and be strict collimation adjustment in diopter correction mechanism.

Specifications	
Part Number	**BE/LBED series**
Wavelengths [nm]	266, 355, 400 – 700, 1064
Laser Damage Threshold	1.4J/cm^2 (@266nm) – 4J/cm^2 (@1064nm)
Magnification	×2 – ×21(@400 – 700nm)
Incident Clear Aperture[mm]	ϕ1.7

Auto Focus Unit

By built-in laser sensor, it enables high-speed tracking even for transparent object such as films or glasses.

Specifications	
Part Number	**TAF-SS-OBL-3**
Objective Lens	2× – 100×
Camera	C-mount CCD camera (element size 2/3″ or less)
Travel	3mm
Trace Range (Track Range)	2×, 5×, 10× : ±1.5mm 20× : ±500μm 50× : ±250μm 100× : ±100μm
Repeatability (Focus)	±6.0μm (5×), ±1.0μm (10×), ±0.5μm (20×, 50×, 100×)

Surface Accuracy Guarantee Mirror

Guaranteed surface accuracy in integrated holder, ideal for built-in locking mechanism

fθ Lens

Lineup in each wavelength, scanning area and focal length

Objective Lens

For from DUV to the near-infrared and for various processing laser

Barrel Unit + Laser Introduction Block

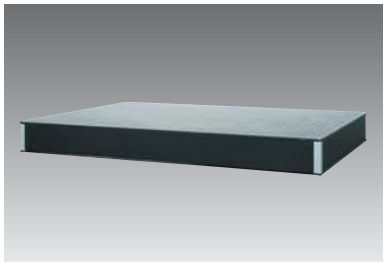
Observation barrel of optimal coaxial epi-illumination for the positioning of the micro-machining

Motorized Stage

Plentiful lineup from high precision type to high rigidity long stroke.

Base

High rigidity base series to support the stable performance



Galvano Unit

Drawing high speed laser of high quality reducing the jitter and wobble

* it is available to assembly for each company's galvanometer. Please contact to our international sales division.