

## 3.4.7 Imaging UV lasers

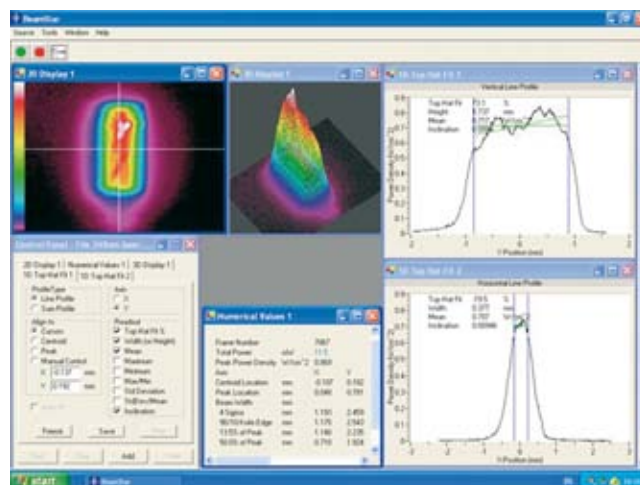
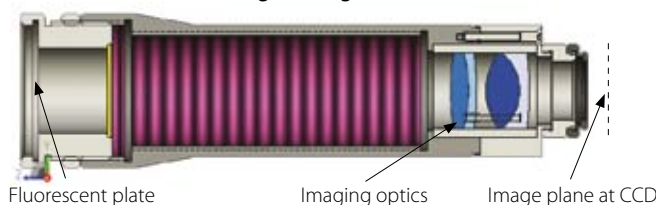
### Integral Reimaging UV Image Converters

The UV image converters are fluorescent plates that convert UV radiation that is poorly imaged by silicon cameras into visible light that is then imaged onto the CCD of the camera. These fluorescent plates are specially designed for UV conversion and have a high light output, wide linear dynamic range and high damage threshold. There are 3 versions available:

1. The 4X UV image converter for large beams converts to visible and then images onto the CCD while reducing the beam size 4X.
2. The 1:1 UV image converter converts to visible and images the beam onto the CCD without changing the size.
3. The 4X expander with UV converter converts to visible and images a beam enlarged 4X onto the CCD.

All of the above imagers allow a beam splitter to be mounted at 45 deg angle in front of the imager so as to allow imaging of higher power/energy beams.

#### Cross section of 4X reducing UV image Converter



Shown here is a profile of a 248mm Excimer laser beam

4X beam reducing UV Image Converter as mounted on camera

1X UV Image Converter with Optional Beam Splitter

4X beam expander with UV converter



Specifications	4X UV Image Reducing Converter	1X UV Image Converter	4X Beam Expander with UV converter
Beam Reduction	4X reduction $\pm 2\%$ with included correction factor	1:1 imaging $\pm 2\%$ with included correction factor	4X expansion $\pm 2\%$ with included correction factor
Resolution	50 $\mu\text{m}$ x 50 $\mu\text{m}$	20 $\mu\text{m}$ x 20 $\mu\text{m}$	15 $\mu\text{m}$ x 15 $\mu\text{m}$
Spectral range	193 to 360nm		
Minimum signal	$\sim 1\mu\text{J}/\text{cm}^2$ with blank filter	$\sim 50\mu\text{J}/\text{cm}^2$ with blank filter	$\sim 1\mu\text{J}/\text{cm}^2$ with blank filter
Saturation intensity	$\sim 30\text{mJ}/\text{cm}^2$ at 193nm, $\sim 15\text{mJ}/\text{cm}^2$ at 248nm with included filter 20 times above values with optional beam splitter	$\sim 15\text{mJ}/\text{cm}^2$ at 193nm, $\sim 20\text{mJ}/\text{cm}^2$ at 248nm with included filter 20 times above values with optional beam splitter	$\sim 30\text{mJ}/\text{cm}^2$ at 193nm, $\sim 15\text{mJ}/\text{cm}^2$ at 248nm 20 times above values with optional beam splitter
Effective Aperture	$\varnothing 30\text{mm}$ but effective beam size is limited to 4X CCD dimensions	$\varnothing 18\text{mm}$ but effective beam size is limited to CCD dimensions	1/4 the size of the CCD dimensions
Damage threshold	100W/cm <sup>2</sup> or 2J/cm <sup>2</sup> with beam splitter		
Dimensions	$\varnothing 50\text{mm}$ dia x 185mm length	$\varnothing 31\text{mm}$ dia x 120mm length	$\varnothing 29\text{mm}$ dia x 69mm length

#### Ordering Information

Item	Description	P/N
1X UV image converter	Screw on imaging telescope that converts UV image to visible and images same size on CCD. For beam intensities from 50 $\mu\text{J}/\text{cm}^2$ to 15mJ/cm <sup>2</sup> . Fits 4.5mm recess and CS mount cameras.	SPZ17023
Beam splitter for above 4X reducing UV image converter	45 degree wedged beam splitter to reduce intensities on image converter by $\sim 20\times$ . For beam intensities of up to 300mJ/cm <sup>2</sup> at 193nm.	SPZ17015
Beam splitter for above UV converter assembly for 4X beam expander	45 degree wedged beam splitter to reduce intensities on by $\sim 20\times$ . For beam intensities of up to 300mJ/cm <sup>2</sup> at 193nm.	SPZ17007
20mm diameter UV imaging plate	$\varnothing 20\text{mm}$ diameter UV image conversion plate only. For customers that have own imaging system. Converts UV image to visible. For beam intensities 50 $\mu\text{J}/\text{cm}^2$ to 10 $\mu\text{J}/\text{cm}^2$ .	SPF01177
30mm diameter UV imaging plate	$\varnothing 30\text{mm}$ diameter UV image conversion plate only. For customers that have own imaging system. Converts UV image to visible. For beam intensities 50 $\mu\text{J}/\text{cm}^2$ to 10 $\mu\text{J}/\text{cm}^2$ .	SPF01150
50mm X 50mm UV imaging plate	50X50mm diameter UV image conversion plate only. For customers that have own imaging system. Converts UV image to visible. For beam intensities 1mJ/cm <sup>2</sup> to 20mJ/cm <sup>2</sup> . Not suitable for 193nm.	SP90082
100mm X 100mm UV imaging plate	100X100mm diameter UV image conversion plate only. For customers that have own imaging system. Converts UV image to visible. For beam intensities 1mJ/cm <sup>2</sup> to 20mJ/cm <sup>2</sup> . Not suitable for 193nm.	SP90083

## UView Ultraviolet Fixture for Camera Beam Profilers

The UView Ultraviolet Beam Profiling accessory incorporates a fluorescent glass plate that converts incident UV light into green light allowing for measurement using standard silicon camera profilers. The UView accessory attaches to the GRAS 20 camera.



UView Sideways



UView 3/4 View

### Specifications

#### Optical

Entrance Aperture	18 x 22 mm; larger apertures optional
Resolution	60µm; (larger for larger apertures)
Wavelength Response	157 - 390 nm
Converter Plate Spatial Uniformity	Better than 3%
System Spatial Uniformity	±3%
Damage Fluence	>100 mJ/cm <sup>2</sup> @ λ= 248 nm, 200 Hz repetition rate
System Saturation Exposure	~100 mJ/cm <sup>2</sup> @ λ= 337 nm (iris fully open)
Manual Iris	
Lens Magnification	0.253
Fluorescer Image size at array	4.55mm x 5.57mm

#### Mechanical

Dimensions L x W x H	4.54 in. (11.50 cm) x 2.13 in. (5.41 cm) x 2.00 in. (5.08 cm)
Mounting 3 orientations	Standard ¼-20 thread; Optional M6 adapter;
Temperature Range	-20 to 60° C (4 to 140° F), non-condensing

### Ordering Information

Item	Description	P/N
UView	Ultraviolet Fixture for Camera Profilers	PH00226