

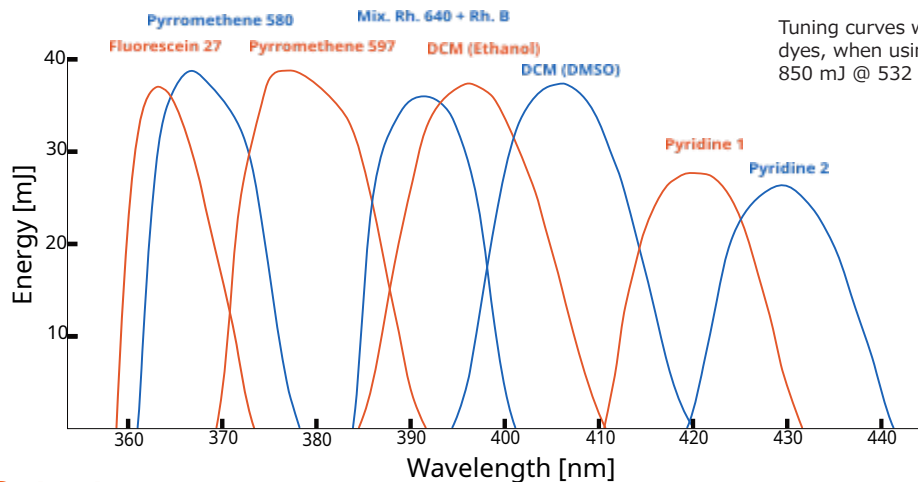
SFM 1064

Sum Frequency Mixing with 1064 nm

The SFM-1064 mixing unit is designed to generate laser radiation in the UV wavelength range from 360 nm to 440 nm. It is operated together with a Cobra-Stretch or PrecisionScan dye laser, ideally pumped by an injection seeded frequency doubled Nd:YAG laser. Generation of wavelengths around 400 nm by mixing is an alternative to the use of blue dyes pumped by the frequency tripled YAG. The advantage of this approach is the superior lifetime of the used dyes and

the smaller spectral bandwidth of the generated UV radiation, in case a seeded Nd:YAG laser is used. Although the SFM set-up is more complex, the versatile design permits standard SHG if required. The dye laser is operated in the red spectral range, from 542 nm to 780 nm. Its output beam is sum frequency mixed with the fundamental Nd:YAG radiation at 1064 nm. Four Pellin-Broca prisms separate the generated UV beam from the dye and Nd:YAG beams.

Tuning Range



Energy Output

Pump Laser Specified Pulse Energy	Dye Laser	Output Energy
850 mJ @ 532 nm	PrecisionScan-D-24	38 mJ @ 376 nm
680 mJ @ 532 nm	PrecisionScan-D-24	28 mJ @ 376 nm
550 mJ @ 532 nm	CobraStretch-D-24	23 mJ @ 376 nm
425 mJ @ 532 nm	CobraStretch-D-24	18 mJ @ 376 nm

General Characteristics

Wavelength Range	360-442 nm (with 2400 lines/mm, single grating) 360-422 nm (with 2400 lines/mm, double grating) 373-450 nm (with 1800 lines/mm, single grating)
Maximum Pump Energy	1000 mJ @ 532 nm ¹⁾
SFM Radiation Bandwidth	with seeded Nd:YAG approx. dye laser bandwidth: 0.032 cm ⁻¹ (dual 2400 lines/mm) without seeder approx. Nd:YAG bandwidth: 1 cm ⁻¹
Dye Laser Resonator	2400 lines/mm gratings recommended, 1800 and 3000 lines/mm gratings poss.
Dye Laser Amplifier	enhanced beam profile cell recommended
Repetition Rate	10 Hz recommended
Crystal	BBO, type I, SHG-280-T, temperature stabilization included
Crystal Tuning Mode	Look-up table (autotracking optional)
UV Linewidth	< 1.1x dye laser linewidth
UV Beam Polarization	horizontal, > 98 %
UV Beam Diameter	3-6 mm (typical), depending on amplifier cell type
UV Beam Divergence	< 0.5 mrad
SHG Operation Mode	see SHG datasheet for specifications (and contact Sirah)

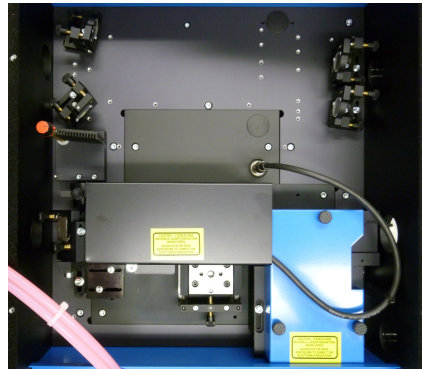
¹⁾ with secondary main amplifier, only possible with PrecisionScan dye laser

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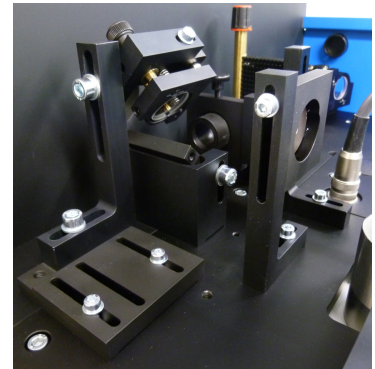
SFM 1064 Housing



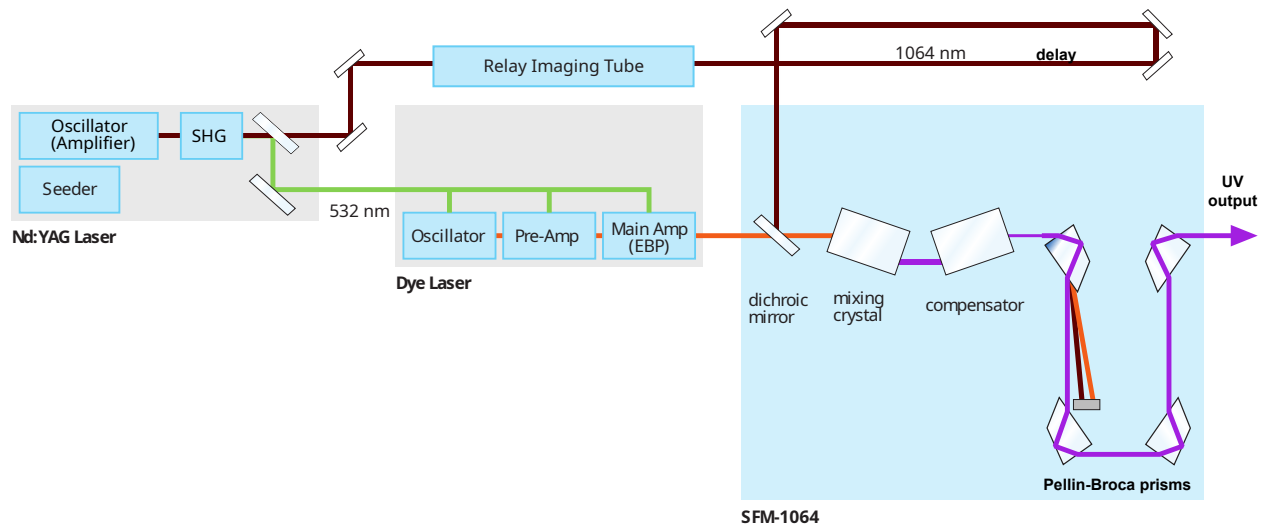
SFM 1064 Setup



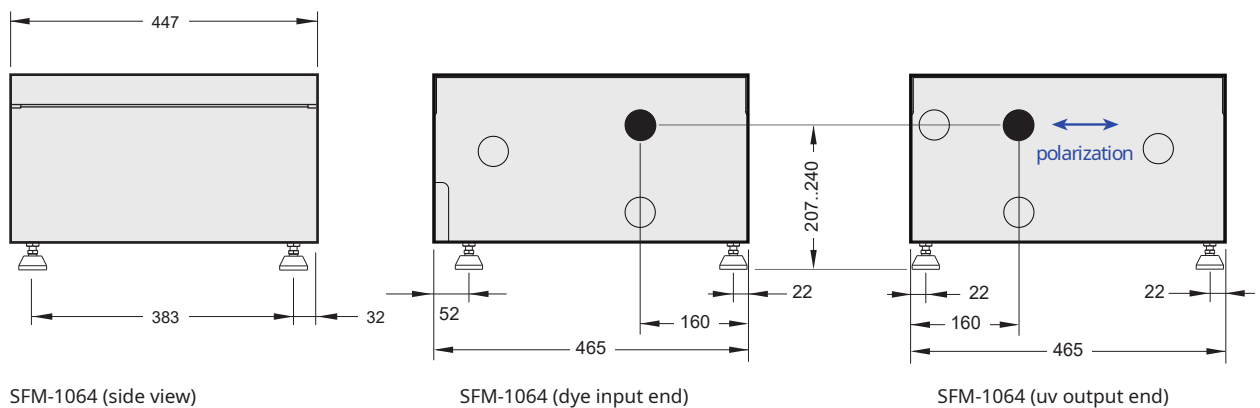
Beam Combining



Optical Layout



Dimensions



All Dimensions in mm
Specifications are subject to change without notice



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