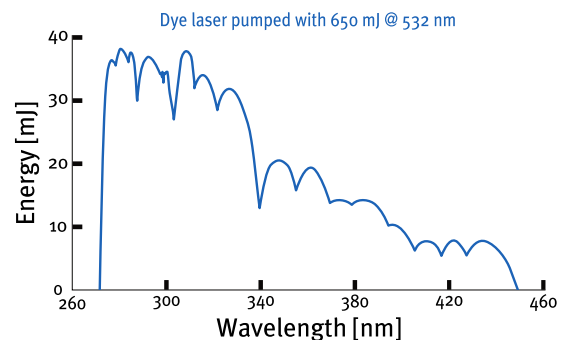
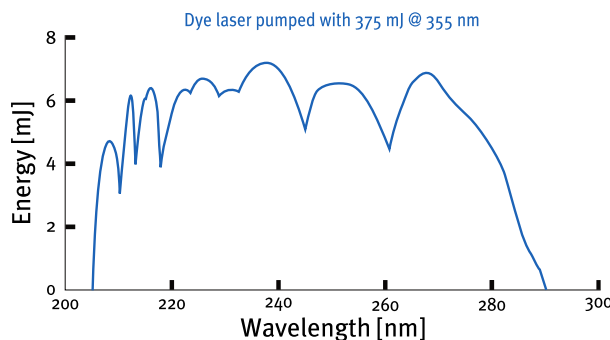


Second Harmonic Generation

The Sirah Frequency Conversion Unit (FCU) is designed to frequency double a dye laser beam. Typically, the dye laser is operated in the visible spectral range. This frequency is doubled by a BBO crystal followed by a compensator. The crystal's angle is tuned to maintain phase matching inside of the crystal. This can be done by Look-Up-Table or autotracker. Both tracking methods are included. The autotracker is using a pyroelectric detector,

which is only sensitive to pulsed light. An arrangement of 2 or 4 Pellin-Broca prisms (WS-2 or WS-Auto, please order separately) separates the UV from the fundamental beam. The FCU may be integrated into the laser housing (not possible for the Cobra model) or attached externally to the laser (add FC-EXH housing). All crystals, compensators and Pellin-Broca prisms are fully adjustable, making the unit easy to use.

Tuning Range



Tuning curves for the frequency doubled dye laser. At a given wavelength full energy is only obtained if resonator configuration is suited.

Energy Output

UV Wavelength	Pump Laser	Output Energy
353 nm	650 mJ @ 532 nm	14.6 mJ
308 nm	650 mJ @ 532 nm	39.0 mJ
283 nm	650 mJ @ 532 nm	39.0 mJ
226 nm ¹⁾	375 mJ @ 355 nm	6.75 mJ
214 nm ¹⁾	375 mJ @ 355 nm	6.75 mJ

Wavelength Range

Crystal	Material	Separation	Tuning Range ²⁾
SHG-280	BBO	WS-2 / WS-Auto	280 - 450 nm
SHG-250	BBO	WS-2 / WS-Auto	250 - 380 nm
SHG-215	BBO	WS-2 / WS-Auto	215 - 280 nm
SHG-XXL	BBO	WS-2 / WS-Auto	220 - 300 nm
SHG-206	BBO	WS-2 ³⁾	~ 206 - 220 nm

General Characteristics

Repetition Rate	10 - 50 Hz recommended, contact Sirah for specifications at higher rates
Crystal Tuning Mode	Look-Up-Table and Autotracking
Temperature Stabilization	crystal temperature stabilization is recommended for systems with repetition rate above 20 Hz, or pump energies > 500 mJ @ 532 nm / 250 mJ @ 355 nm
Compensators	C-BBOL for all BBO crystals
UV Beam Polarization	horizontal, > 98 %
UV Beam Diameter	3 - 6 mm (typical), depending on amplifier cell type
UV Beam Divergence	< 0.5 mrad
Linewidth	< 1.5 x dye laser linewidth / cm ⁻¹

¹⁾ using WS-2, see tuning curves for energies at other wavelengths

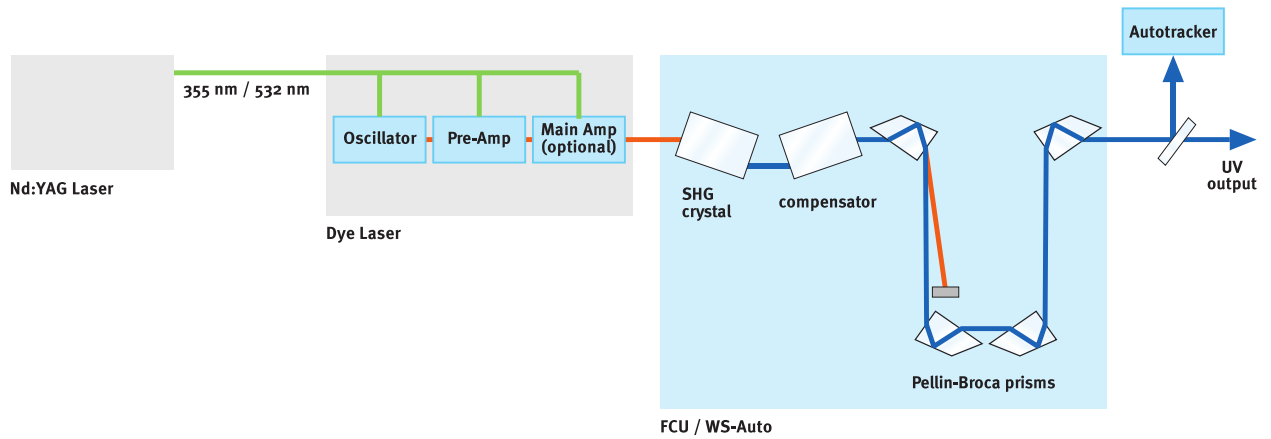
²⁾ tuning range of crystal, further limitation due to resonator configuration is possible

³⁾ absorption losses of UV energies are lower for WS-2 (2 Pellin-Broca prisms), WS-Auto may be converted to WS-2 by removing 2 prisms

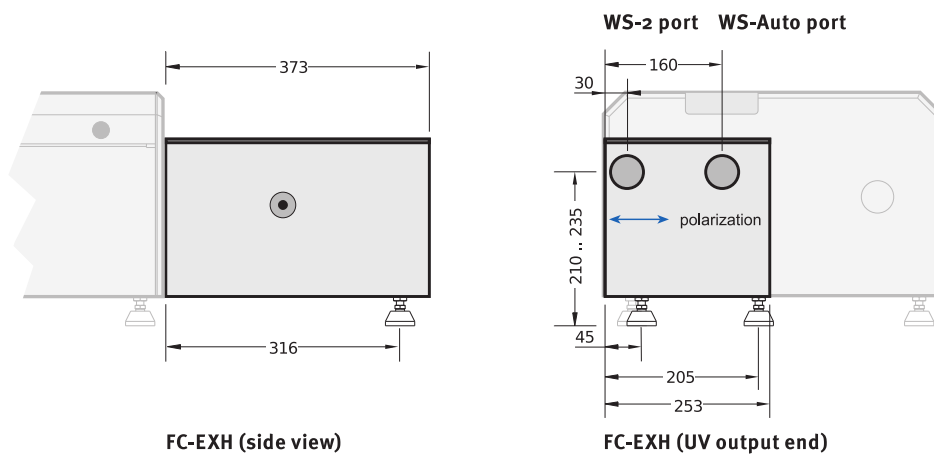
Second Harmonic Generation



Optical Layout



Dimensions External Housing (FC-EXH)



All Dimensions in mm
Specifications are subject to change without notice



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