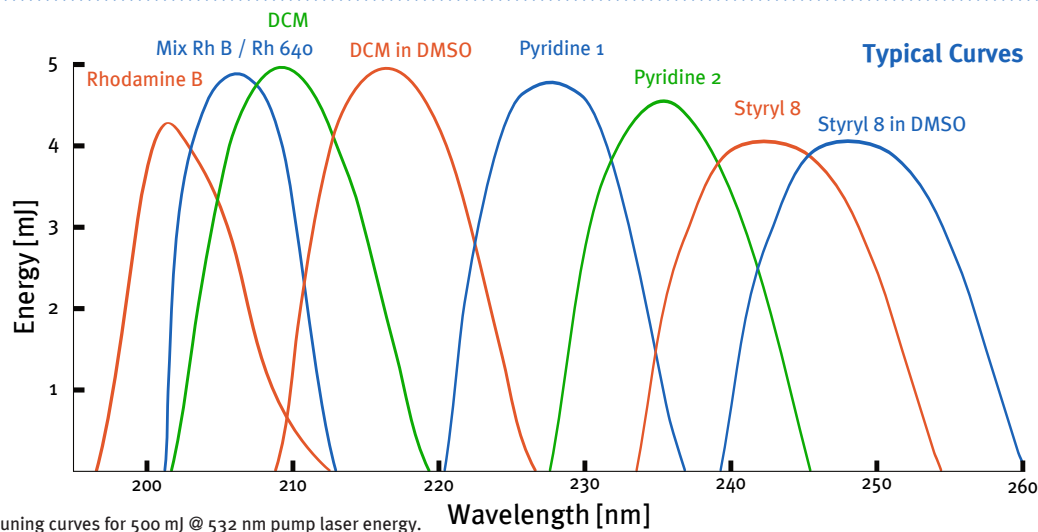


## Third Harmonic Generation

The THU 205 (third harmonic unit) is designed to generate laser radiation in the UV wavelength range, from 197 nm to 260 nm, by third harmonic generation (THG). It is operated together with a Cobra-Stretch or PrecisionScan dye laser, ideally pumped by an injection seeded frequency doubled Nd:YAG laser. The dye laser is operated in the red spectral range from 591 nm to 780 nm. Its output beam is first frequency doubled by a temperature stabilized BBO crystal.

A set of 4 dichroic mirrors separates the generated UV beam from the two incoming. Due to the short wavelength, different dichroic sets are necessary to cover the wavelength range of the THU 205. Alternatively a wavelength separation with four Pellin-Broca prisms made of very high quality CaF<sub>2</sub> can be used. The unit is mounted vertically behind the THU 205 (+ 171 mm in length). It can be mounted also horizontally behind the doubling unit for separation of the second harmonic generation (SHG).

## Tuning Range



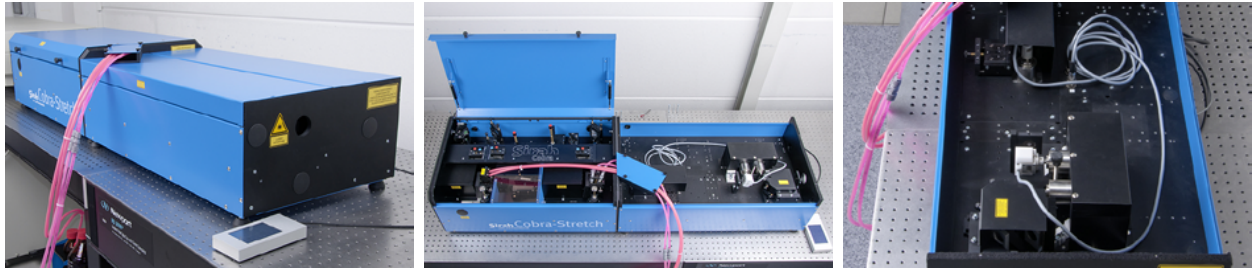
|                               |            |
|-------------------------------|------------|
| WS-THU 4x Pellin-Broca prisms | 190-450 nm |
| With DC-195 dichroics set     | 190-200 nm |
| With DC-205 dichroics set     | 200-210 nm |
| With DC-215 dichroics set     | 210-220 nm |

## General Characteristics

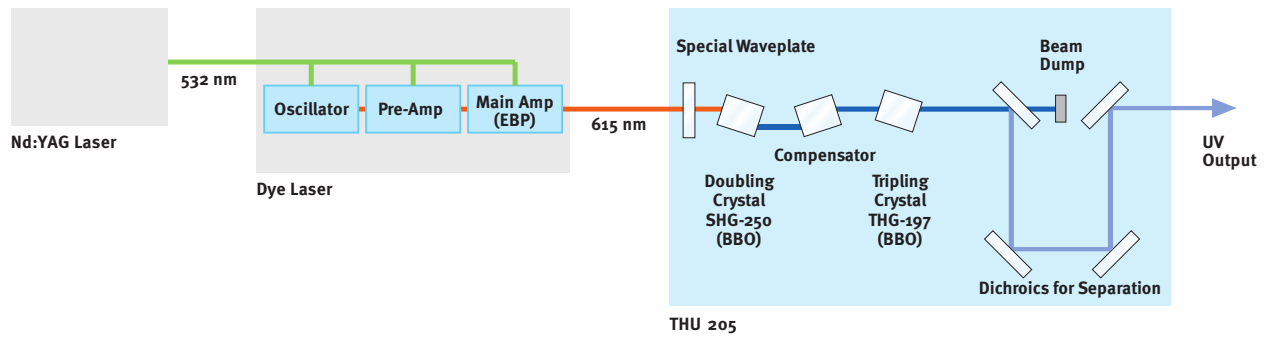
|   |  |
|---|--|
| Energy Output                           | 1% of pump laser energy  |
| Linewidth                               | approximately $\sqrt{3}$ x dye laser linewidth / cm <sup>-1</sup>  |
| Wavelength range with THG               | 197-220 nm with crystals included<br>220-260 nm (SHG-215-T and SHG-280-T, optional)  |
| Wavelength range with SHG <sup>1)</sup> | 206-220 nm (THG-197-T crystal, included)<br>215-280 nm (SHG-215-T crystal, optional)<br>250-380 nm (SHG-250-T crystal, included) |
| Maximum Pump Energy                     | 650 mJ with standard dye cell<br>800 mJ with enhanced beam profile cell<br>1400 mJ with second main amplifier                    |
| Dye Laser Resonator                     | 2400 lines/mm gratings recommended, 1800 and 3000 lines/mm gratings poss.  |
| Repetition Rate                         | 10 Hz recommended  |
| Crystal Tuning Mode                     | Look-up table (autotracking optional)  |
| UV Beam Polarization                    | vertical, > 98 %   |
| UV Beam Diameter                        | 3-6 mm (typical), depending on amplifier cell type   |
| UV Beam Divergence                      | < 0.5 mrad   |

<sup>1)</sup> with single crystal operation, requires WS-Auto or WS-THU Pellin-Broca unit horizontally mounted

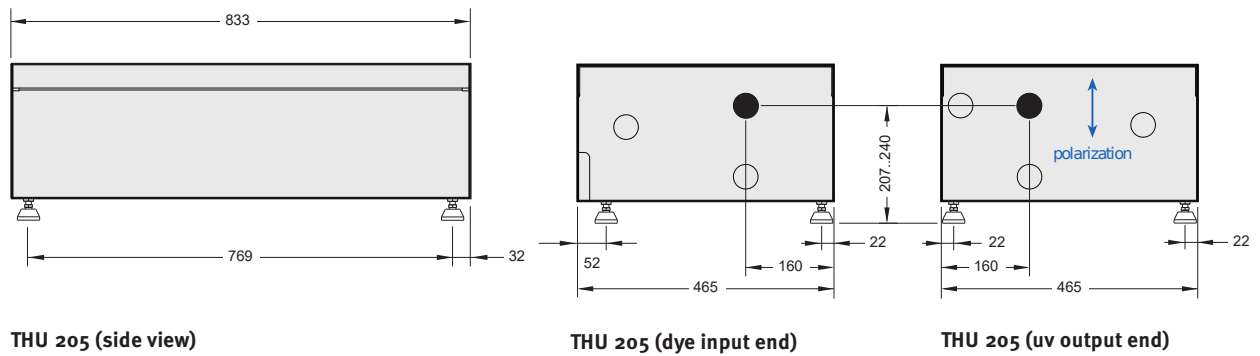
## THU 205



## Optical Layout



## Dimensions



All Dimensions in mm  
 Specifications are subject to change without notice



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