

3.2 Frequency doubling and frequency mixing

These units are usable for frequency doubling (SHG), frequency mixing like tripling (THG) or difference frequency mixing (DFM)

Frequency conversion unit

It consists of mechanical equipment and electronical control for a synchronized turning of crystal and compensator. Max. rotation angle 20°, stepper motor drive and driver (standard software control), UG5 filter;

Crystal and compensator required
(holder *Lambda Physik* compatible)



- Frequency conversion unit -

Wave length separator

Pellin-Broca Prism in self-compensating fixed arrangement to separate the harmonic of the groundwave

(holder *Lambda Physik* compatible)

Frequency doubling crystal 400-260 nm,

KDP crystal, in hermetically closed housing with AR coated windows

Frequency doubling crystal 320-220 nm,

BBO I crystal, in hermetically closed housing with AR coated windows

Frequency doubling crystal 220-205 nm,

BBO II crystal, in hermetically closed housing with AR coated windows

Beam walk-off compensator

for BBO and KDP crystals

Temperature stabilization for the crystals

Autotracking-frequency conversion unit SCANTRACK

- suitable for pulsed lasers
- all common crystals (BBO, KDP, etc.) can be used
- The autotracking unit is offered alternatively as “stand alone” device in a separate housing or a NarrowScan build-in set.

- The whole system consists of the following separate units:
 - mechanical unit
 - electronic unit (stepper motor control, integrators and photodiode)
 - diverse optical components (filter UG5, beam splitter and folding mirror)
 - analogue/digital transformation
 - housing or built-in frame

Additional options

When designing this new series of NarrowScan dye lasers we paid utmost attention to a flexible layout, meeting a variety of applications with a dye laser. The following options can be easily integrated into the housing of the NarrowScan laser to guarantee a rigid and compact structure.

Frequency doubling and -tripling, difference frequency mixing

The excellent spectral and spatial quality of the NarrowScan-series predestinate this laser for the use in nonlinear processes. By means of our very precise positioning tables, all common crystals for frequency doubling and difference frequency mixing can be installed the housing of the NarrowScan-laser. By installing this positioning stage directly inside the laser housing, a high stability and reproducibility is achieved. For difference frequency mixing (up to 4,5 μm) the dye laser wavelength is mixed with one of the harmonics of the Nd:YAG-laser. The necessary opto-mechanical components for the pump laser beam are also located inside the laser housing. **(see NarrowScan options)**