02/2021

PulsedAmp 2xHRR

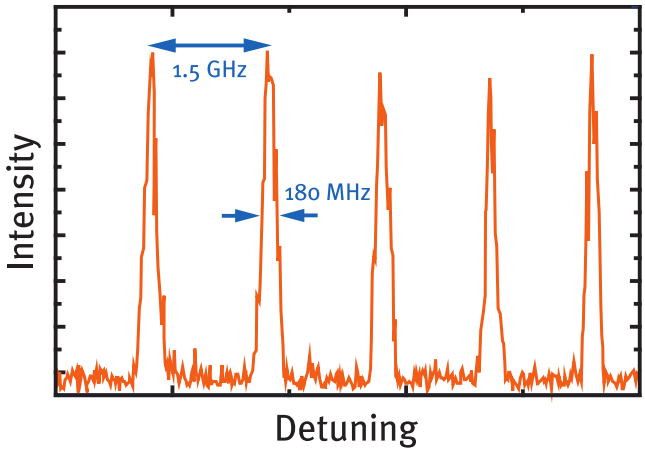
Pulsed Amplification of Continuous Wave Radiation for High Repetition Rates

- Ideal source for single frequency laser pulses
- Either Ti:Sa or dye based cw systems can be used as seed for large wavelength ranges
- Also possible: To employ diode lasers with high isolation for smaller wavelength ranges
- Seed input power: 50 - 300 mW single frequency
- High peak powers while low amplified spontaneous emission (ASE)
- Consists of two amplification stages
- Two circulator systems with dye cells integrated in single housing
- Optional SHG/THG frequency conversion or other nonlinear conversion processes can be used
- Additional amplifier for high-energy systems available

Performance

Using 300 mW of seed radiation and 80 W of pump laser energy it is possible to generate 8 W pulses at 730 nm (Pyridine 2).
However, results depend of wavelength, seed laser and pump laser details.

The graph shows the spectral profile of the pulses. The linewidth is determined by the pulse duration and shape (Fourier-limit) of the pump laser, in this case a non-seeded YAG laser.



General Characteristics

Repetition Rate	1kHz - >10 kHz
Wavelength Range	545 - 900 nm (pumped with 532 nm)
	374 - 560 nm (pumped with 355 nm)
Linewidth	180 MHz
Conversion Efficiency	up to < 5%
ASE	< 5%
Divergence	0.5 mrad
Beam Size	approx. 1 mm (typical)
Pump Energy	< 10 mJ, 4 - 35 ns, max. 80 W

Requirements

Seed Laser	50 - 300 mW, linear polarization
Ambient Conditions	constant temperature in the 20-30 °C range, 80% max. rel. humidity, non condensing
Optical Isolation	> 30 dB
Cooling	required for dye solution (600 Watt)
Laboratory	vibrational isolated optical table, dust-free air (flow box)
Voltage	110 - 220 V, single phase, 50/60 Hz

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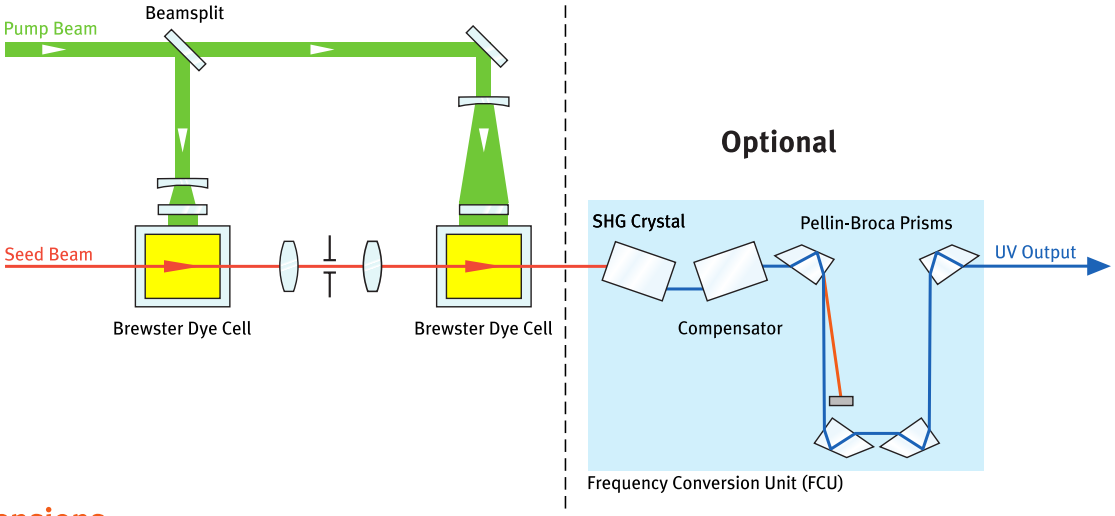
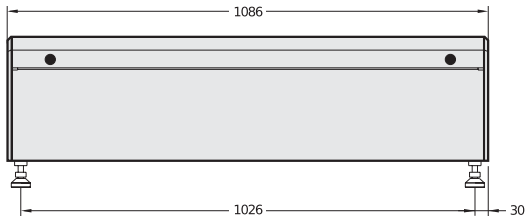
Optical Layout

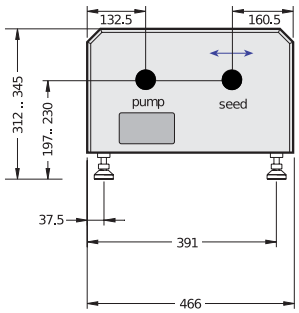


Frequency Conversion Unit (FCU)

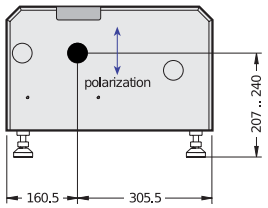
Dimensions



Pulsed Amplifier (side view)



Pulsed Amplifier (seed & pump laser input end)



Pulsed Amplifier (pulse output end)

All Dimensions in mm
Specifications are subject to change without notice

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