

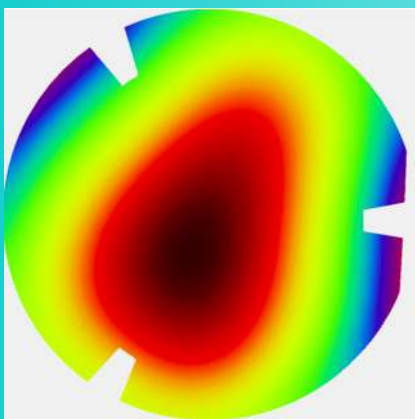
Lasy 633

Lasy 633*

Stabilized & Tunable Diode Laser

- Plug and play helium-neon laser replacement
- Iodine-referenced absolute frequency stabilization
- Arbitrary, hysteresis-free tuning due to interferometric reference
- Large tuning range $> 300 \text{ GHz}$ ($\triangleq 0.4 \text{ nm}$)
- High coherence length
- Fiber coupling with active stabilization
- USB remote control

Application example



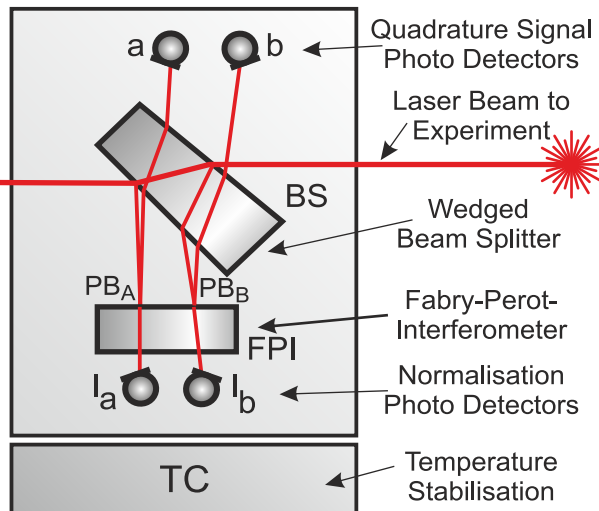
Phase Shifting Interferometry

*Lasy 633** easily replaces conventional He-Ne lasers, e.g. in phase shifting interferometers. In contrast to the gas laser, which required the reference surface to be moved in $\lambda/8$ steps for the phase extraction, *Lasy 633* can substitute this mechanical motion for an adequate shift of the laser wavelength. This makes *Lasy 633* a superior light source for interferometry.

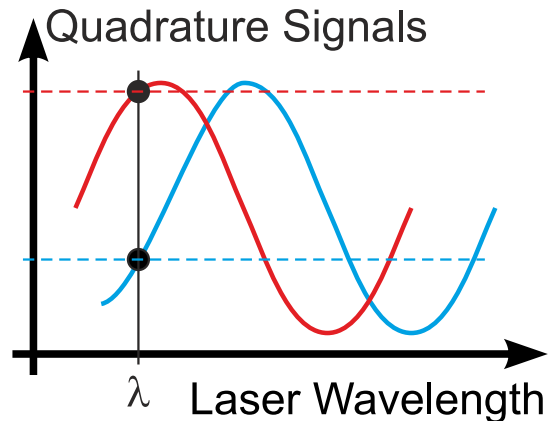
* "633" stands for 633 nm - other wavelengths on request

Optical synthesizer

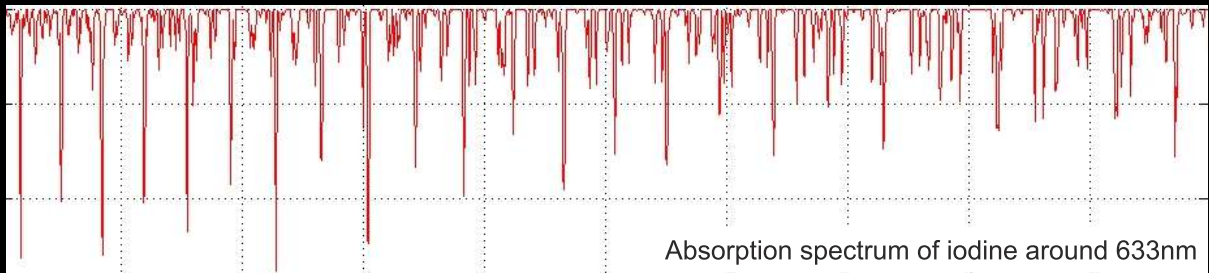
Lasy comprises a two-channel marker etalon that serves as a frequency reference during the tuning process. The etalon is completely solid-state and contains no moving elements. *Lasy* reads out the signals and converts them into a frequency scale. Thus, tuning is exactly linear. *Lasy* can stop tuning at any point and immediately lock to any phase of the marker etalon fringes.



Patents:
US 6,178,002
DE 197 43 493 A 1



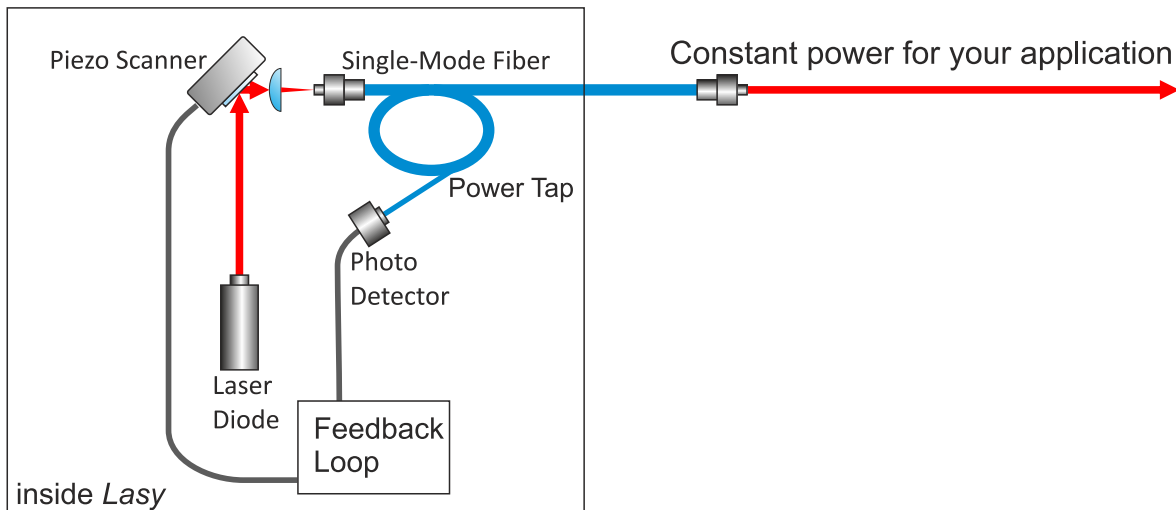
Absolute Iodine Reference



Absolute frequency stability is ensured by a built-in iodine absorption cell. *Lasy* either locks to a certain absorption line (fixed-frequency mode), or recalibrates the marker etalon from the iodine spectrum (tuning mode).

Key Features:

- Laser wavelength stabilization to **arbitrary** values within the tuning range of the laser diode
- Highly accurate stabilization of the laser frequency **while** tuning
→ Elimination of hysteresis, non-linearities, mechanical vibrations and drifts
- Extremely high absolute precision due to built-in iodine absorption cell
- Compact design



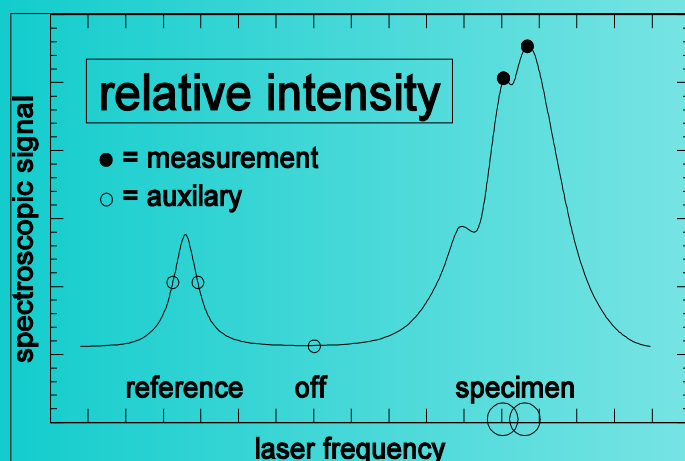
Lasy actively controls the fiber coupling: The built-in single-mode fiber includes a power tap, which continuously monitors the optical power guided in the fiber. An intelligent feedback loop steers the beam pointing in one of the following modes:

- Maximum power mode - most of the available power is coupled into the fiber.
- Constant power mode - a user-selectable power value is maintained.

Variants

Lasy is also available with further options:

- Other wavelengths
- Doppler-free absolute frequency stabilization (Rubidium, Cesium, Potassium)
- Mounted as a plug-in module for 19" rack cases
- Free-beam output



Application example

Spectroscopy

Lasy simplifies spectroscopic measurements: Rather than scanning slowly in a linear manner, *Lasy* can jump precisely between different frequencies/wavelengths (on/off line, different peaks, ...). This saves time and increases the signal-to-noise ratio in many applications, such as DIAL lidar.

Technical Data

Laser data:

Wavelength:	633 +/- 1nm (others on request)
Output power:	> 2 mW (fiber coupled) > 10 mW (free beam)
Tuning range:	typ. 300 GHz (\pm 0.4 nm)

Frequency stabilization:

Frequency stability	
when locked to iodine line:	better than 5 MHz per 10 min, 50 MHz absolute
when locked to interferometer:	better than 10 MHz per 10 min, 100 MHz per 8 h
Stepping resolution:	1 MHz
Coherence length:	> 50 m
Linewidth	< 5 MHz

Housing (L x W xH):	165 mm x 102 mm x 91 mm (desktop version) 170 mm x 100 mm x 91 mm (3 height units, 18 width units module for industrial 19" standard rack case)
Operation temperatur range:	10..50°C
Power supply:	5 V, typ. 1000 mA after warm-up, max. 2.5 A

Subject to change without notice

Development, Manufacturing and Distribution



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