

PHOTONICS TECHNOLOGIES

Is your laser stable enough?

Photonics Technologies is proud to announce it is now representing TEM- Messtechnik, the market leaders in the field of laser beam stabilisation electronics.

LASER BEAM POSITION STABILISATION

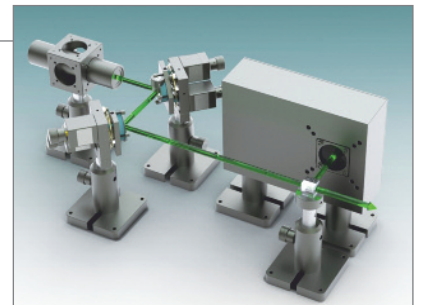
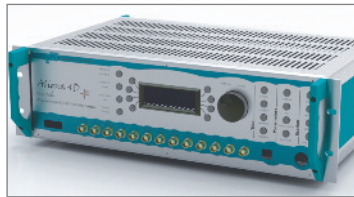
Laser beams, whether used in an experiment or in industrial applications, can move in space for many reasons:

- Thermal drifts inside the laser
- Thermal drifts of cooling system and mechanical laser mounts
- Drifts of alignment and folding mirror holders
- Air fluctuations and temperature gradients
- Thermal effects in optical elements and mirrors
- Movements of the experimental (optical) tables or vacuum chambers

ALIGNA

Automated Laser Beam Alignment and Stabilisation system

- Fully automated high precision beam alignment
- Self learning parameter setting
- Modular system, control of up to 4 beams, all wavelengths
- 2D and 4D scanning (position X,Y, angle X,Y)



FIBERLOCK

Automatic single-mode fiber coupling

- Single-mode fiber coupling set up within seconds
- Automatic multi-dimensional tracking
- Compensation of thermal and mechanical drifts
- Easy optimisation of coupling optics
- 3D visualisation of the coupling efficiency and intensity logging

APPLICATIONS

- High precision material processing
- Switching of one laser between several applications
- Complete auto-alignment after laser replacement
- Automatic coupling/ optimisation to single mode fibers

LASER FREQUENCY STABILISATION

ANALOGUE LASELOCK

Fully digital stand-alone laser stabilisation electronics

- Compact, stand-alone locking electronics for diode, dye, Ti:Sa lasers or optical resonators
- Side-of-fringe and top-of-fringe stabilisation
- Two independent PID regulators
- High voltage output
- Lock point validity detection and automatic 'search' function
- Multi-channel monitor for display of regulator signals



DIGITAL LASELOCK

Fully digital stand-alone laser stabilisation electronics

- Compact stand-alone digital locking electronics
- Side-of-fringe and top-of-fringe stabilisation
- Two independent PID regulators – over-all signal delay 400ns
- Lock in Amplifier section
- Scan Generator section
- User interface with touch screen and colour signal display
- PC control of all parameters and read-out of measurement data over USB, RS232, Ethernet, with control and visualisation software Kangoo
- Free LabView drivers
- Built-in oscilloscope functionality optional
- High Voltage or High Current PID output optional for e.g. piezo actuator or galvo scanner



APPLICATIONS

- Laser cooling and trapping of atoms and ions. The optical transitions used require the laser to stay resonant for a long time. For this purpose, lasers are directly locked to these transitions to eliminate drift.
- To lock enhancement cavities to diode lasers for second harmonic generation (SHG). SHG is done in nonlinear crystals, and the process is a lot more efficient with higher powers. Enhancement cavities can produce much higher intra-cavity powers, that lead to increased second harmonic output powers if the crystal is placed inside the cavity. The enhancement does only work however, if the cavity stays resonant with the laser. So the cavity length has to be stabilised.

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