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**High Q Laser presents the new *picoTRAIN*<sup>™</sup> platform,** high-power picosecond oscillators with wavelengths in UV, Green and IR delivering output powers of up to 50 W

**Picosecond mode-locked lasers with direct diode pumping have been proving their application in scientific and industrial markets in recent years. Especially the use in industrial environments increased the need of picosecond lasers showing high stability and reliability. An answer to these demands are High Q Laser's picosecond oscillators – the *picoTRAIN*<sup>™</sup> platform - delivering a wide range of specifications based on a unique modular setup.**

Depending on the customers needs, the *picoTRAIN*<sup>™</sup> can be individually configured by choosing performance modules where all configuration possibilities begin using a basic oscillator, the *picoTRAIN*<sup>™</sup> IC-10000. The *picoTRAIN*<sup>™</sup> IC-10000 is delivering pulse trains of 7.5 ps length and 10 W output power at a wavelength of 1064 nm. Starting with the basic oscillator the laser sources can be extended or field-upgraded with four different external modules, which can be attached to the basic oscillator giving the complete *picoTRAIN*<sup>™</sup> platform:

- The power of the *picoTRAIN*<sup>™</sup> can be increased up to **50 W @ 1064 nm** by applying the **power amplifier module**. The external power amplifier module is simply attached to the laser exit of the basic oscillator.
- Combined with the **pulse picker module** the 50 W ps-laser now delivers pulses with an energy of up to **10 µJ**, controllable by an external TTL signal enabling **single pulses** or **pulse bursts** up to a maximum repetition rate of **80 MHz**.
- The **Green module** is offering visible ps laser radiation with **20 W @ 532 nm**.
- The **harmonics module** offers an additional wavelength in the UV at **355 nm** with an output power of up to **10 W**. The power distribution of all wavelengths is controlled continuously by an internal remote controlled motorized variable beam splitter.

The *picoTRAIN*<sup>™</sup> platform is based on High Q Lasers Industrial Compatible housings and features a very compact design and small footprint. The housing is machined from a massive piece of aluminium and is forming a heavy Monolithic Aluminium case leading to low vibration coupling. The laser resonator comprises industrial mirror mounts, which are optimized by finite element methods and show no degrees of freedom. A recirculation cooling circuit through the massive ground plate is giving thermal stabilization of the housing. The lasers are completely manufactured in clean room environment and are sealed off. All those techniques result in an exceptional spatial and temporal stability of the laser output beam.

High Q Laser utilizes the URDM (User Replaceable Diode Module) technology for direct diode pumping. The diodes are operating with “de-rated” nominal pump current for longest MTBF. The semiconductor saturable Bragg reflector assures passive and self-starting mode locking for high temporal stability.

Customer Benefits:

The modular setup of the picoTRAIN™ enables a fast service in the field and gives the customer the opportunity of an easy upgrade of an existing system.

Furthermore the customer benefits from the user friendliness and the true turnkey behaviour of the picoTRAIN™. The system is including a recirculation chiller. All functions and relevant parameters of the laser system are USB remote controlled which is important for commercial system integrators.

### **picoTRAIN™ platform**

Output power: up to 50 W

Wavelengths: 1064 nm, 532 nm, 355 nm

Pulse duration: 7.5 ps

Repetition rate: single pulses, bursts, up to 80 MHz, TTL trig.



Image: picoTRAIN™ IC-10000 with dual wavelength exit

For more information on HIGH Q LASER call +43 (0)5522 82646 111 or e-mail

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High Q Laser's headquarter is located at

Feldgut 9, 6830 Rankweil, Austria.

For more than 10 years HIGH Q LASER has been a leading supplier of diode pumped pico- and femtosecond all-solid-state oscillators and amplifiers based on Direct Diode Pumping and Semiconductor Saturable Absorber Mode Locking.

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