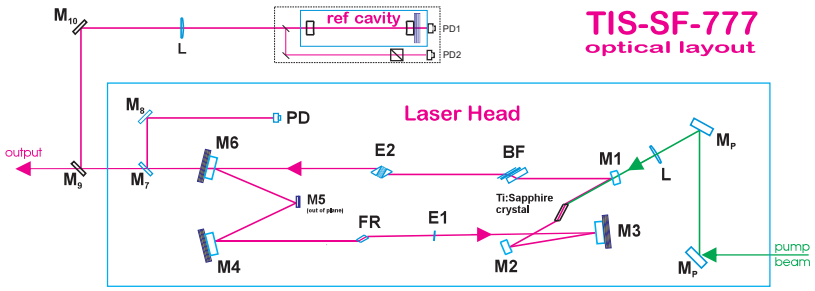
Flagship model of 5-kHz-linewidth CW Ti:Sapphire laser by Tekhnoscan

Flagship model TIS-SF-777 of Tekhnoscan's CW single-frequency titanium-sapphire laser series features exceptionally narrow radiation absolute line width that amounts to only about **2-3 kHz** (specification: < 5 kHz). The design of laser TIS-SF-777 and its electronic control system are especially tailored to make this super-high-precision laser very easy to set-up and to operate, and also to deliver **ultra-high stability of radiation frequency** even in the presence of high level of external perturbations. In combination with efficient resonant frequency doubler by Tekhnoscan, laser TIS-SF-777 will deliver the line width of about **5 kHz** in the UV and blue spectrum ranges. Laser TIS-SF-777 is started at the customer's site and the customer's personnel is trained directly by representatives of Tekhnoscan.



Frequency stabilisation of the laser output is done with a thermostated high-finesse reference cavity and special PZT actuators that have extended response bandwidth. **The super-fast PZT-controlled mirrors** allowed to avoid using an electro-optical modulator in the frequency stabilisation system, which would otherwise complicate the laser design and the electronic control boards as well as it would introduce certain additional radiation losses. Because of the foregoing laser TIS-SF-777 features relative simplicity and high reliability of design as well as **high output efficiency**: maximum output power of the laser exceeds 1.5 W with a 10-W DPSS laser pump (532/515 nm).

TekhnoScan LASER SYSTEMS

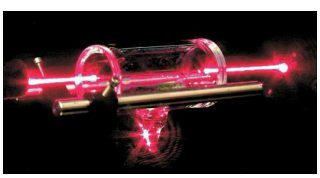
Advanced Realized Photonics Ideas

- New super-frequency-stable Ti:Sapphire laser TIS-SF-777 is primarily designed for **high-precision experiments and technologies** that make use of cooled atoms and molecules

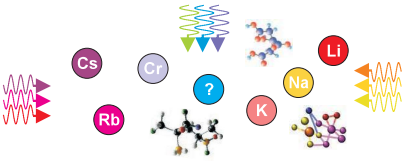
- Besides the uniquely narrow radiation line width, TIS-SF-777 laser also features a unique function **Smart Auto-Relock** that allows uninterrupted laser operation in the frequency stabilisation mode under arbitrary external perturbations (acoustic, mechanic, etc.).

- Because of advanced **Smart Auto-Relock** function laser TIS-SF-777 offers the user a new level of comfort when working with precisely stabilised single-frequency Ti:Sapphire laser

- On special order Tekhnoscan ships Ti:Sapphire laser TIS-SF-777 with additional system of l**ong-term radiation frequency stabilisation** that uses ultra-narrow absorption reso-nances and other optical references. This allows reduction of the long-term drift of the laser radiation line down to the level of 1 MHz/hour and even less.



ultra-narrow-linewidth and tunable radiation



TIS-SF-777

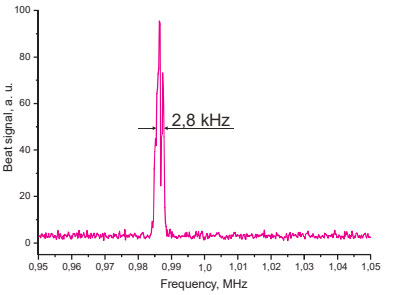
Frequency-stabilised CW single-frequency ring Ti:Sapphire laser

Specifications:

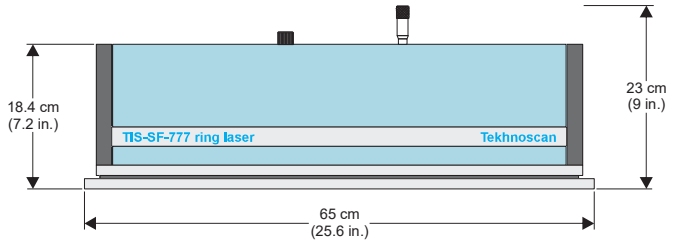
Wavelength range	750-850 nm 695-770, 850-950, 950-1050 nm[1]
Output[2]	> 1.9 W at 12 W pump > 1,5 W at 10 W pump > 1 W at 8 W pump > 450 mW at 5 W pump
Absolute Linewidth	< 5 kHz rms
Frequency drift	< 40/50 MHz/hour[3]
Smooth scanning	> 5 GHz
Spatial mode	TEM_{00}
Polarization	horizontal

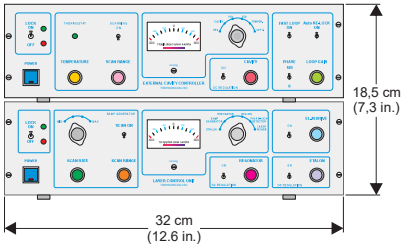
[1] *With high-power pump*
[2] *At the peak of the tuning curve*
[3] *Depending on smooth scanning range*

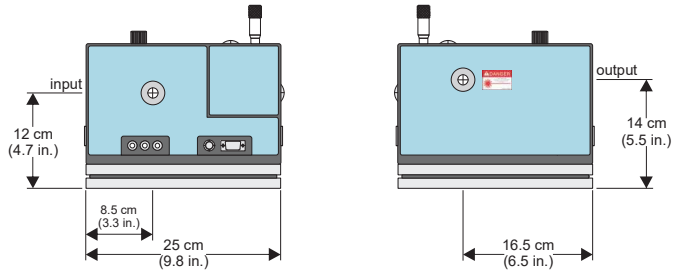
Options:
1. 18 / 25 GHz smooth scanning;
2. 350-525 nm wavelength range with Resonant Frequency Doubler “FD-SF-07”

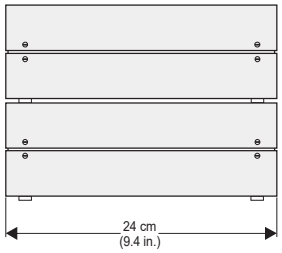


Beats between two identical TIS-SF-777 lasers detected by a avalanche photodiode and introduced into rf spectrum analyzer (1-s sweep time in the range of 100 kHz)









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