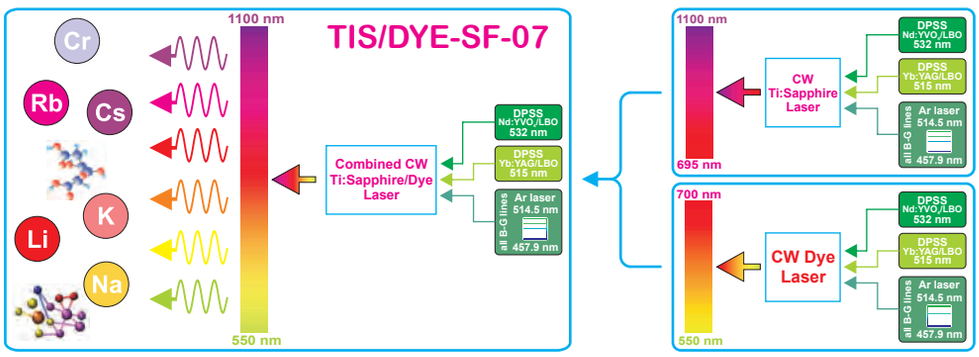
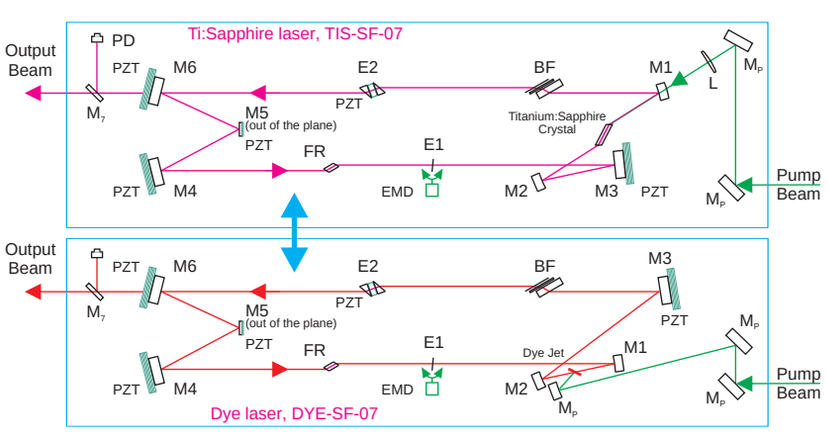
CW single-frequency hybrid solid-state/dye laser system



The single-frequency CW ring laser TIS/DYE-SF-07 is an original embodiment of new ideas on **optimal combination of Ti:Sapphire and Dye lasers in one single unit**. Switching of TIS/DYE-SF-07 from the Ti:Sapphire to the Dye laser operation and vice versa is performed by exchange of some cavity elements in which the majority of alignment controls, part of optical elements, and the electronic control unit remain the same for both lasers. In model TIS/DYE-SF-07 such double optical set-up has been for the first time implemented on the basis of a ring cavity with horizontal orientation.

The model TIS/DYE-SF-07 is a passively stabilised laser, its output linewidth in the Ti:Sapphire configuration being about 3 MHz and in the Dye one, 10 MHz. Active frequency stabilisation performed through an external thermo-stabilised cavity is available in model TIS/DYE-SF-077; it provides short-time linewidth less than 50/100 kHz rms.

The standard spectral range of the laser system of 550-1100 nm can be extended into the 275-550-nm range by using the Tekhnoscan's efficient resonant external frequency doubler FD-SF-07.



- *Economical solution for tuneable single-frequency laser system for operation in a wide spectral range*
- *Possibility of alternate operation of single-frequency ring Ti:Sa and Dye laser in a single device*
- *Horizontal orientation of the ring cavity plane providing improved stability of optical element alignment*
- *Improved vibo-isolation of the rigid laser base on three Invar rods*
- *High compatibility of mechanical, optical, and electronic elements for the Ti:Sa and the Dye lasers*
- *Easy straightforward procedure of switching from the Ti:Sa to the dye configuration and vice versa*
- *Quick tuning of the laser to a given wavelength and simple mirror change procedure when switching spectral ranges*
- *Simplified alignment system of the ring cavity with the possibility to utilise a linear cavity configuration for preliminary optimisation of element alignment*
- *Extra-fine controls for alignment of the pumping beam*

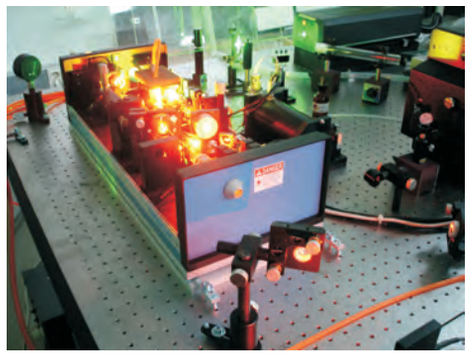
- *Ergonomical and reliable electronic control unit featuring a built-in generator for smooth scanning of the laser frequency*
- *Possibility of subsequent efficient output frequency stabilisation with the aid of a special small-mirror/fast-PZT assembly included into the cavity design*

TekhnoScan LASER SYSTEMS

Advanced Realized Photonics Ideas

TIS/DYE-SF-07

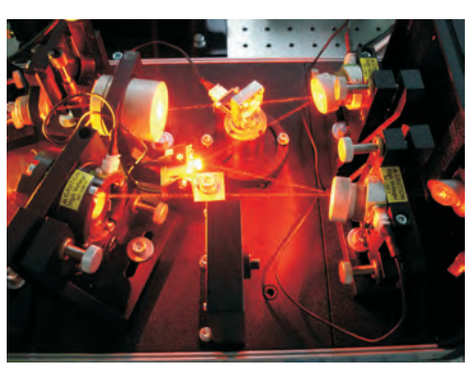
CW single-frequency ring hybrid laser



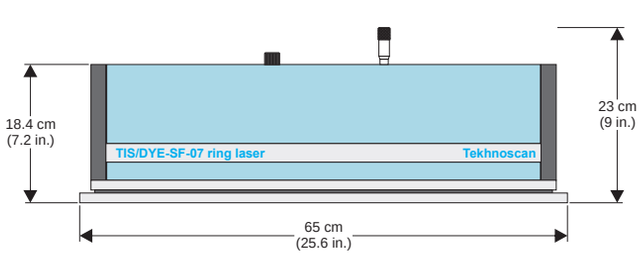
Specifications:

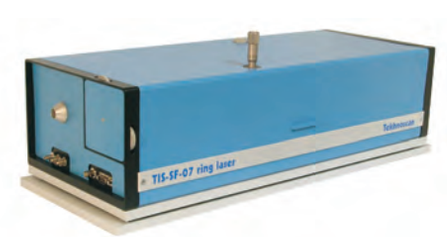
Wavelength range	750-850 nm
	695-770, 850-950, 950-1100 nm[1]
	570-620 nm
	550-600, 620-700 nm
Output[2]	> 1.9 W at 12 W pump
	> 1,5 W at 10 W pump
	> 1 W at 8 W pump
	> 450 mW at 5 W pump
Linewidth	< 5 MHz (695-1100 nm) / 10 MHz (550-700 nm) rms
Smooth scanning	> 5 GHz
Spatial mode	TEM_{00}
Polarization	horizontal

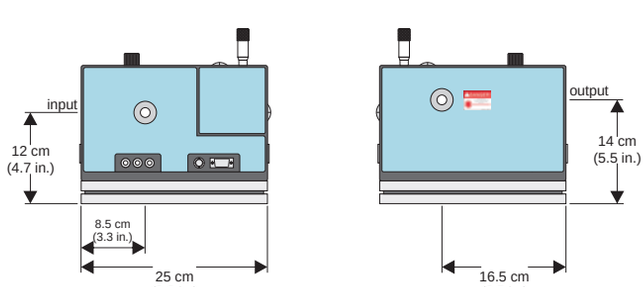
[1] *With high-power pump*
[2] *At the peak of the tuning curve*

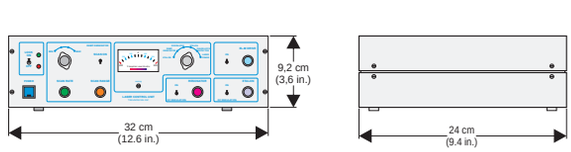


Options:
1. 35 / 45 GHz smooth scanning;
2. 275-550 nm wavelength range with Resonant Frequency Doubler “FD-SF-07”
3. Upgradable to Frequency-stabilised Laser with absolute linewidth of
<100 kHz (DYE-SF-077) or **< 50 kHz** (TIS-SF-077) or **< 5 kHz** (TIS-SF-777)









Information and specifications contained herein are deemed to be reliable and accurate as of the publication date. Tekhnoscan reserves the right to change these specifications at any time without notice.

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