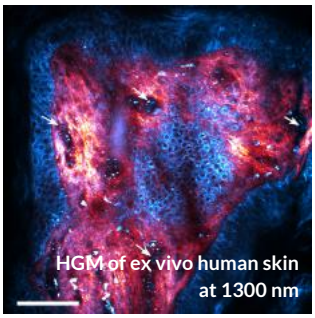
SOPRANO-13/17
Femtosecond Laser for Multiphoton Microscopy



This femtosecond laser by Cycle is the ideal light source for life sciences imaging. With two center wavelengths at 1350 nm / 1700 nm and pulse durations below 100 fs, it is particularly suitable for applications in multiphoton microscopy (MPM). Using only a single laser, researchers can perform deep-tissue 3-photon excitation fluorescence (3PEF) imaging of green/red fluorescent protein (GFP/RFP) within the biological transmission windows. In addition, also other applications and multi-modal imaging techniques can benefit from this state-of-the art ultrafast laser.

SOPRANO is designed to deliver reliable 24/7 operation in industrial as well as scientific environments. It was developed in close cooperation with biomedical experts to provide a unique light source with the best features of complex laser systems at an affordable price.

Please feel free to discuss also your other laser needs with us. Our team of experienced laser engineers will find a useful combination of parameters which will best fit your application. We love to design custom lasers, too.

KEY SPECIFICATIONS

- Tunable wavelength around 1300 nm and 1700 nm (user selectable)
- Average power 500 mW
- Repetition rates 1 MHz to 30 MHz fixed (factory adjustable)
- Pulse duration below 100 fs typical

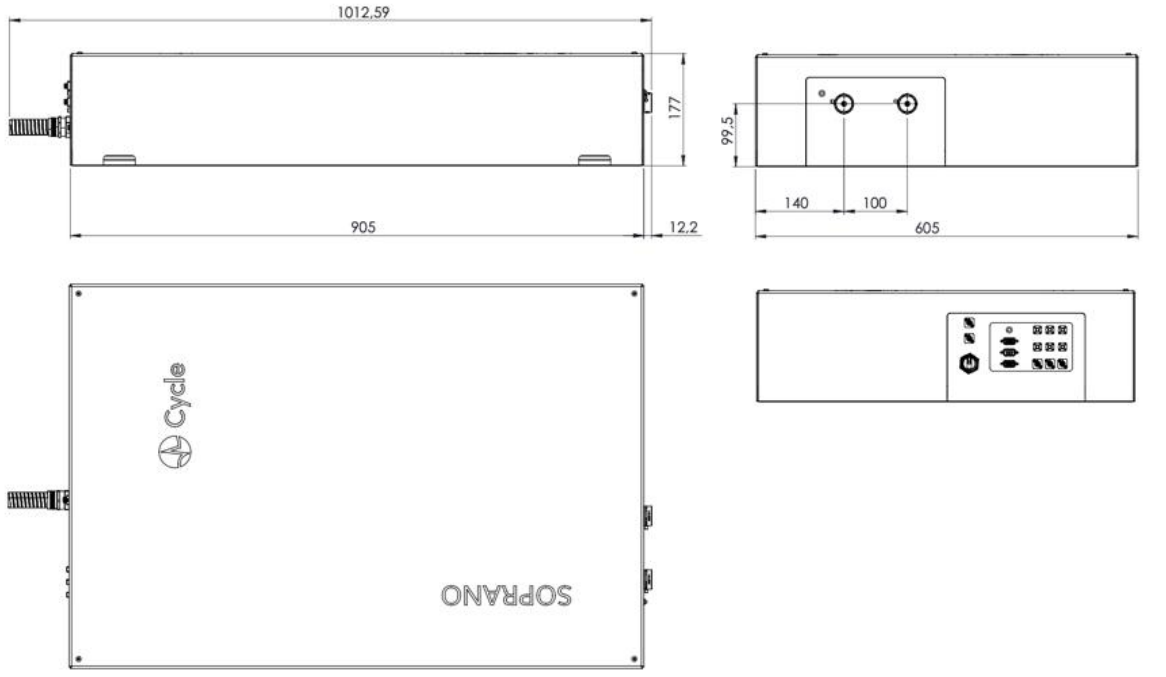
APPLICATION

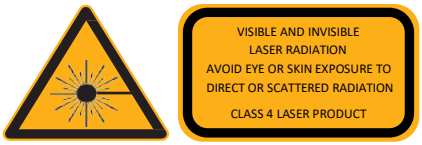
- Biomedical applications
  - Deep-tissue imaging
  - Neuroscience
  - Optical virtual skin biopsy
  - Histopathology, morphology
- MPM modalities
  - 2PEF/3PEF
  - SHG/THG
- Spectroscopy
- Semiconductor Testing (e. g. OBIC)

OPTIONS

- Additional output port at 1550 nm or 775 nm
- Pulse Picker (down to 1 MHz)

Parameters	Laser	Comment
Center wavelength	1350 nm & 1700 nm	1550 nm / 775 nm output optional
Wavelength tunability	TBD	down to 1250 nm optional
Pulse Duration	<100 fs typ at 1300 nm	wavelength dependent
Avg. output power	500 mW	at 1300 and 1700 nm
Pulse energy	16…500 nJ	Repetition rate dependent
Peak power	5 MW	at 1 MHz
Pulse repetition rate	30 MHz	down to 1 MHz optional
Spectral bandwidth	transform-limited	$\tau_p \cdot \Delta\nu_p \sim 0.35$
Beam quality	$M^2 < 1.5$, TEM_{00}	
PER	> 20 dB	
Laser output	collimated free space	Beam height 99.5 mm
Mechanical		
Size laser head (L x W x H)	905 x 605 x 177 mm^3	
Weight laser head	ca. 15 kg	
Size controller	19"/3HU rack mount	
Weight controller	ca. 10 kg	
Electrical		
Power supply	100 – 240 VAC, 50 – 60 Hz	
Power consumption	< 300 W	





Cycle SOPRANO is a Class 4 Laser Product