

## SOPRANO-15

### Femtosecond Lasers for Materials Processing and more



This femtosecond laser by Cycle is an ideal light source for various tasks in micro-machining, materials analysis and processing, semiconductor testing and more. With a center wavelength of 1550 nm or 775 nm and pulse durations below 350 fs, many applications 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 scientific 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

- Average power up to 4.5W
- Pulse Energy up to 4.5  $\mu$ J at 1550nm
- Repetition rates 1 MHz to 30 MHz (fixed, factory adjustable)
- Pulse duration below 350 fs typical

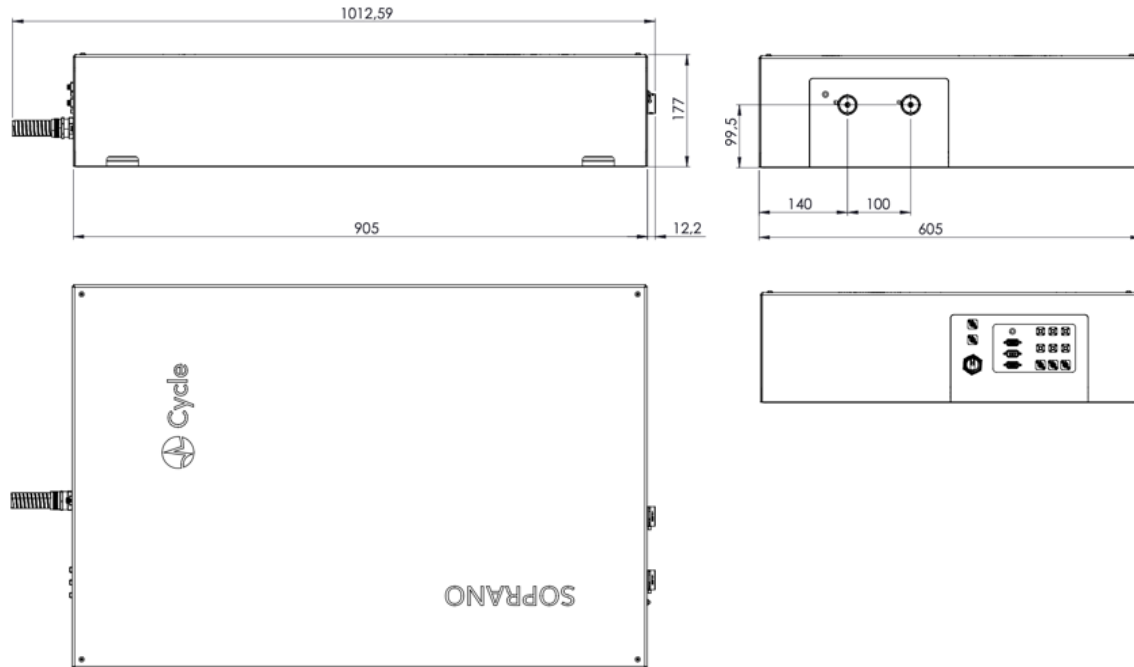
#### APPLICATIONS

- Material Processing e.g. Silica
- OPO/OPA Pumping
- Spectroscopy
- Semiconductor Testing (e. g. OBIC)
- Non-linear modalities
  - 2PEF/3PEF
  - SHG/THG

#### OPTIONS

- Additional output port at 775 nm (SHG module)
- Pulse Picker (down to 1 MHz)

Parameters	Laser	Comment
Center wavelength	1550 nm	1550 nm / 775 nm output optional
Pulse Duration	<350 fs	Typical, at 1550 nm
Avg. output power	4.5 W	at 1550 nm
Pulse energy	up to 4.5 $\mu$ J / 2 $\mu$ J	at 1550nm / 775nm Repetition rate dependent
Peak power	50 MW	at 1550nm at 1 MHz
Pulse repetition rate	30 MHz	down to 1 MHz optional higher rep rates possible
Spectral bandwidth	transform-limited	$\tau_p \cdot \Delta\nu_p \sim 0.35$
Beam quality	$M^2 < 1.5$ , TEM <sub>00</sub>	
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 <sup>3</sup>	
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