

ORIA™ IR OPO

Automated Infrared Wavelength Extension for Femtosecond Ti:sapphire Lasers



Key Features

- Wide tuning across 990 – 1550 nm and 1696 – 4090 nm without any change of optics
- Guaranteed highest output power, >1Watt at peak of pump and OPO signal tuning range
- Hands-free operation with fully-automated computer-controlled wavelength tuning
- Sealed and virtually maintenance-free
- Simultaneous pump and signal and idler beams available through 3 separate output ports
- Independent pump and signal and idler tuning
- Pump bypass with 100% of the pump (with no signal and idler power), a percentage of the pump (simultaneously with partial signal and idler power) or 0% of the pump (with full signal and idler power)
- Excellent beam pointing stability with TEM₀₀ spatial quality
- Short pulse duration across the tuning range
- Integrated spectrometer
- Compatible with standard MHz femtosecond Ti:sapphire lasers

Applications

- Multi-photon excitation (MPE) microscopy
- Coherent anti-stokes Raman spectroscopy (CARS)
- Time-resolved spectroscopy
- Vibrational overtone spectroscopy
- Semiconductor research and spectroscopy
- Multiple wavelength pump-probe experiments
- Fiber optics and optical communications

Sealed fully-automated femtosecond optical parametric oscillator (OPO) offering broad wavelength coverage with highest average power in the IR. The Oria™ IR is compatible with standard femtosecond Ti:sapphire oscillators at MHz repetition rate. Designed for pick-and-place installation, it ensures virtually maintenance-free operation and highest usability since it does not require manual alignment of the cavity, being exclusively controlled by a PC.

The Oria™ IR XT includes three output ports which deliver 1) the signal (across 990 and 1550 nm), 2) the pump (typically across 690 and 1040 nm), and 3) the idler (across 1696 and 4090 nm). An important feature of the Oria™ IR XT is the incorporated Ti:sapphire pump bypass which enables the selection of 100% of the pump (with no signal and idler power), a percentage of the pump (simultaneously with partial signal and idler power) or 0% of the pump (with full signal and idler power). Moreover, the Oria™ IR provides independent tuning of the pump and OPO wavelengths, which is achieved easily using the Oria™ IR advanced control software.

To ensure shortest pulse durations across the spectral range, a dynamic dispersion compensation module is incorporated within the Oria™ IR which enables independent control of the dispersion for every wavelength.

High peak-to-peak power stability and excellent beam pointing across the complete spectral range make the Oria™ IR an ideal tool for nonlinear microscopy applications such as multi-photon microscopy and coherent anti-stokes Raman spectroscopy (CARS).

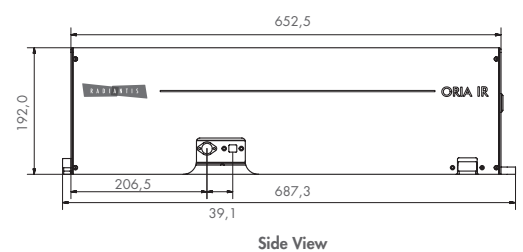
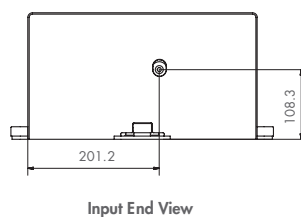
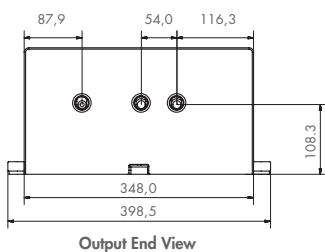
Specifications⁽¹⁾

Pumped by mode-locked Ti:sapphire laser, at 2.8 Watts, 80 MHz, 90 fs

Output Characteristics	Oria™ IR	Oria™ IR XT
Signal tuning range ⁽²⁾	990 – 1550 nm	990 – 1550 nm
Idler tuning range ⁽²⁾	n/a	1696 – 4090 nm
Pump tuning range ⁽²⁾⁽³⁾	710 – 820 nm	710 – 820 nm
Signal output power ⁽⁴⁾	> 1 W	> 1 W
Idler output power ⁽⁴⁾	n/a	> 350 mW
Signal pulse width ⁽⁵⁾	< 200 fs	< 200 fs
Idler pulse width ⁽⁵⁾	n/a	< 120 fs across 1696 – 2000 nm
Beam diameter @ 1300 nm	1.4 mm +/- 10%	1.4 mm +/- 10%
Beam divergence	< 1 mrad	< 1 mrad
Signal beam displacement with wavelength	< 600 microns / 540 nm at < 40cm from output	< 600 microns / 540 nm at < 40cm from output
Signal beam pointing with wavelength	< 300 microrad / 540 nm	< 300 microrad / 540 nm
Spatial mode	TEM ₀₀ M ² ≤ 1.2	TEM ₀₀ M ² ≤ 1.2 (signal) TEM ₀₀ M ² ≤ 1.3 (idler)
Signal noise at 1300 nm	< 1% rms	< 1% rms
Output ports	1) 100% signal and idler with no pump bypass. 2) Partial signal and idler with 20% pump bypass. 3) 100% pump bypass.	
Power stability	5%	5%
Polarization	Horizontal (>100:1)	Horizontal (>100:1)
Repetition rate	80 MHz	80 MHz
Size (W x L x H)	395 x 703 x 192 mm (15.5 x 27.6 x 7.5 inch)	

Notes: (1) Specifications are subject to change without notice. (2) Extended range available upon request. (3) Pump tuning range simultaneous with signal and idler tuning range. (4) At peak of pump and OPO signal tuning range. (5) Pulse width can be reduced upon request.

Dimensions



Notes: Dimensions in cm

Oria™ IR Typical Tuning Curves

