

A P E

Chameleon Compact OPO

The OPO for MPE Microscopy



The **Chameleon Compact OPO** (optical parametric oscillator) is the first completely hands-free, fully automated and computer controlled synchronously pumped OPO. One of its major features is the independent tuning of the pump as well as OPO output wavelengths.

When used with the Chameleon pump laser from Coherent, it is perfectly suited as a light source for MPE (Multi Photon Excitation) microscopy. The combination of the Chameleon and the **Chameleon Compact OPO** covers a wavelength range of 680 ... 1600 nm, with an optional, gap-free expansion to the UV (< 200 nm) through the use of a HarmoniXX SHG/THG/FHG (Second / Third / Forth Harmonics Generator) module pumped by the Chameleon.

Alternatively, the **Chameleon compact OPO VIS** includes an automated module for SHG of Ti:Sa and OPO Signal.

Significant advantages for MPE microscopy are:

Higher penetration depth and less photo damage of the sample due to excitation wavelengths $> 1 \mu\text{m}$

Simultaneous imaging of different fluorophores possible, for instance exciting GFP (green fluorescent protein) with the pump laser and RFP (red fluorescent protein) with the OPO

Multi-modality of the system, providing access also to alternative imaging methods, e.g. SHG / THG, coherent Raman scattering

Ultrafast Pulse Diagnostics

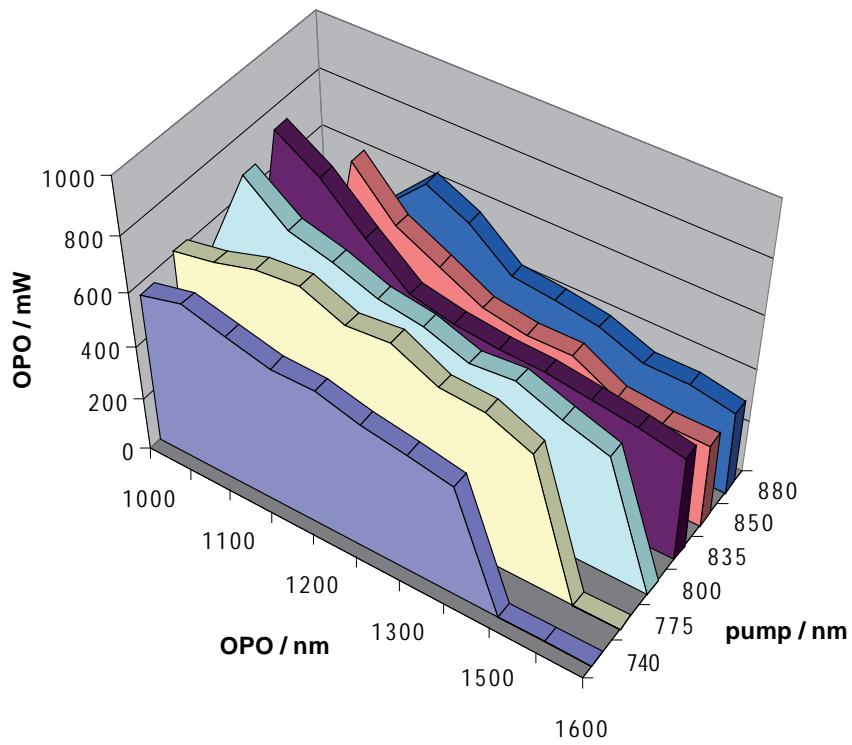
Wavelength Conversion

Pulse Management

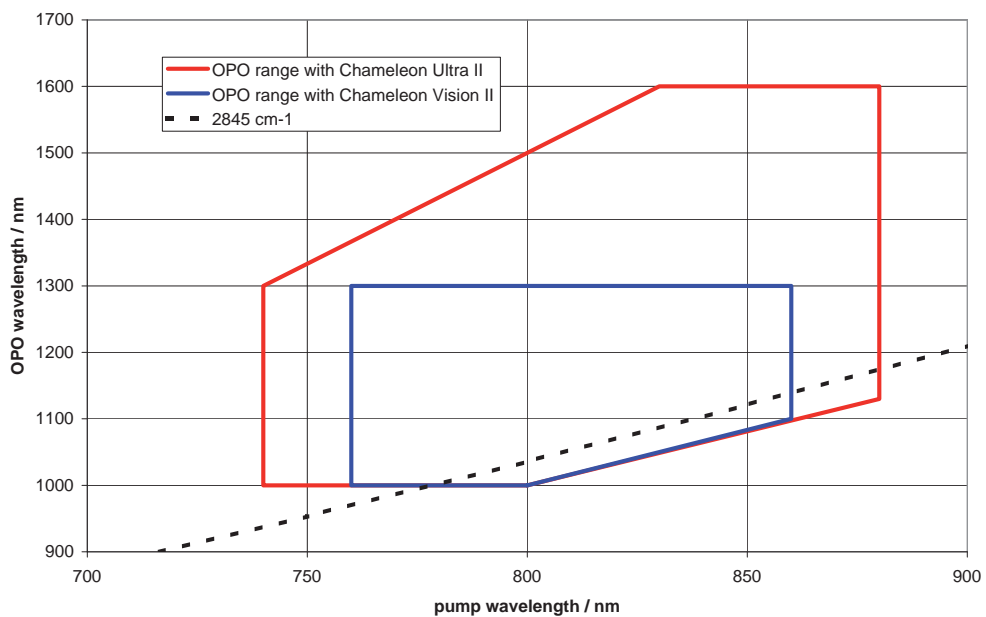
Acousto-optics

Your Partner in Ultrafast

POWER TUNING CURVES



TUNING RANGE

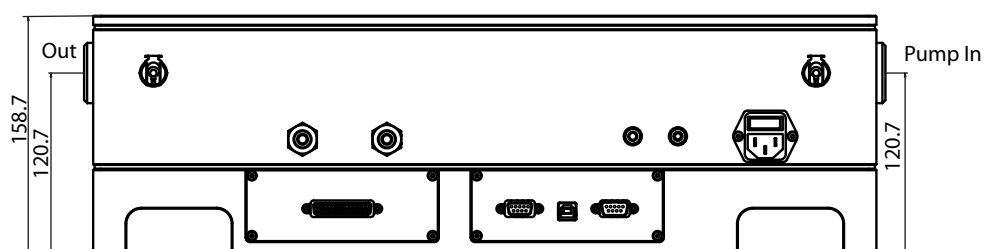
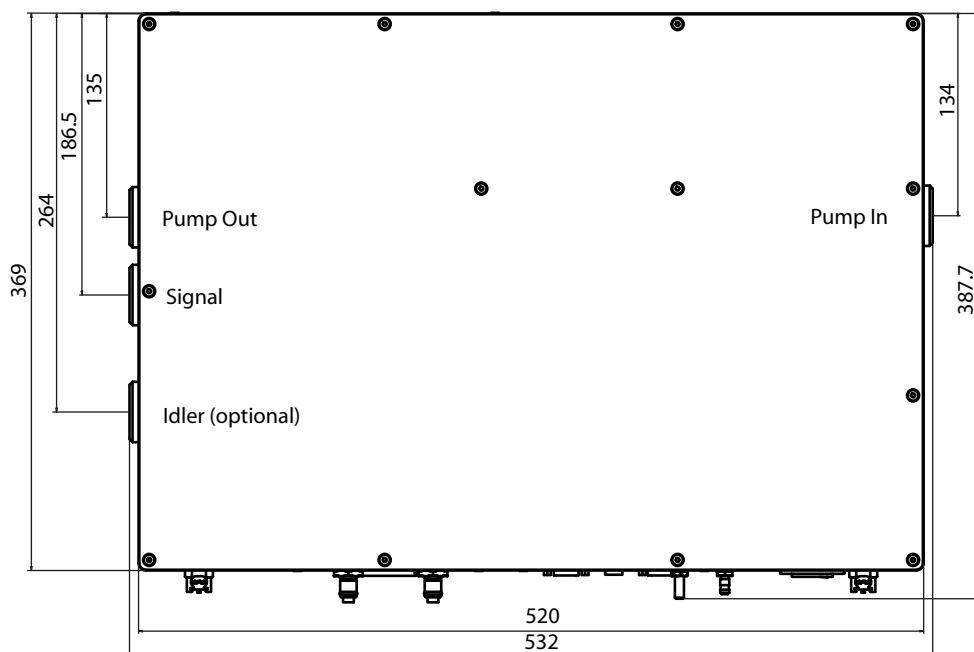


DIMENSIONS (W x H x D in mm)

OPO optics unit	369 x 158 x 520
Chiller	200 x 380 x 270
MRU air recirculator	430 x 85 x 460
Panel PC	138 x 41 x 234

WEIGHT (in kg)

OPO optics unit	40
Chiller	11
MRU air recirculator	9
Panel PC	2



Chameleon Compact OPO

SPECIFICATIONS

Chameleon Ultra II pump

Pump wavelength range	740 ... 880 nm
OPO Signal wavelength range	1000 ... 1600 nm ¹⁾
Output power	> 550 mW @ 1100 nm with 800 nm, 3.5 W pump

Chameleon Vision II pump

Pump wavelength range	760 ... 860 nm
OPO Signal wavelength range	1000 ... 1300 nm ¹⁾
Output power	> 450 mW @ 1100 nm with 800 nm, 3.0 W pump ²⁾
Optimum GDD settings	-7500 fs ² @ 760 nm ... -4500 fs ² @ 860 nm

Time bandwidth product	typ. 0.6
Pulse width	typ. 200 fs
2 separate output ports	OPO Signal output and 20% Ti:Sapphire output (or 100% Ti:Sapphire output only, no OPO)
Pointing stability	< 400 μ rad for full pump / OPO wavelength range
Beam diameter	2.0 mm at OPO exit
Divergency	typical 0.5 mrad
M ²	typ. 1.1
Minimum energy difference between Pump and Signal	2500 cm ⁻¹
Computer interface	USB and RS232

UTILITY AND ENVIRONMENTAL REQUIREMENTS

Power supply	100 - 240 V AC, 50 - 60 Hz (auto ranging)
Power consumption (max)	635 W (chiller) + 180 W (MRU X1) + 100 W (user interface) + 100 W (OPO optics)
Operating temperature range	15 - 33° C

OPTIONS

Output of Idler beam	1750 ... 4000 nm
100% pump option (no Ti:Sapphire bypass available)	

1) depending on actual pump wavelength, accessible if associated Idler wavelength is between 1720 ... 4000 nm

2) @ optimum GDD settings

Distributors

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APE follows a policy of continued product improvement. Therefore, specifications are subject to change without notice.