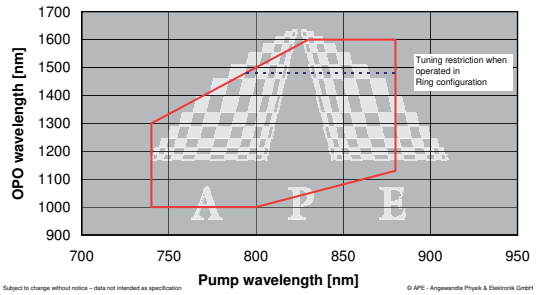
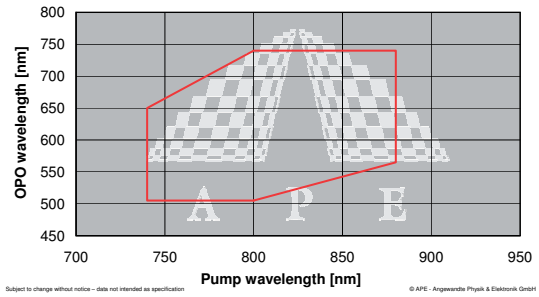
opo

PP Auto FAN

OPO PP Auto FAN IR tuning
(Linear configuration)



OPO PP Auto FAN VIS tuning
(intra cavity SHG - Ring configuration)



The **OPO PP Auto FAN** is a synchronously pumped optical parametric oscillator (OPO) designed to be pumped by a mode-locked ps- or fs-Ti:Sapphire laser. The OPO crystal is based on a periodically poled (PP) crystal with a FAN structure, which enables a high conversion efficiency as well as a large tuning range from a single crystal.

Because of the FAN structure the Signal wavelength can be tuned independently of the pump wavelength in the range of the pump wavelength from 740 … 880 nm. This enables a maximum flexibility of simultaneous available wavelengths for the experiment as well as no change of crystals to access the full tuning range from 1000 … 1600 nm. Optionally, an Idler beam exit is available covering the wavelengths from 1750 … 4000 nm.

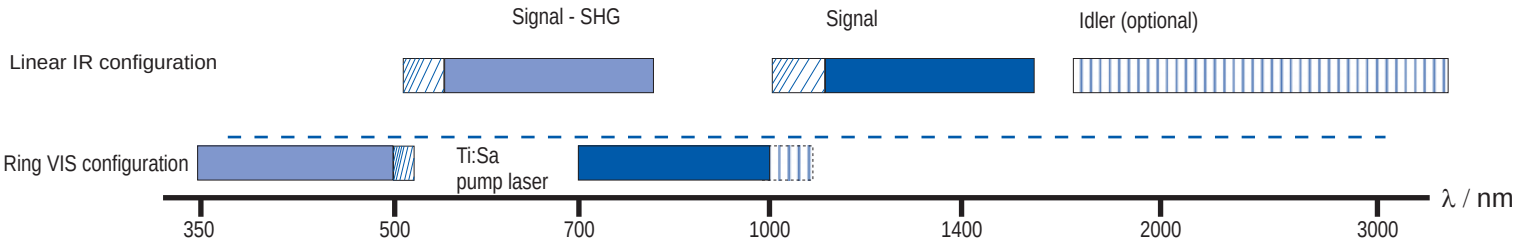
The OPO is equipped with an internal spectrometer for active control and stabilization of the wavelength with the control unit, also sensors for humidity and relative power are integrated. Optionally, an autocorrelator with its electronics integrated into the OPO control unit is available.

- Independent pump- and Signal wavelengths
- Access of the compelete tuning range without exchange of the crystal
- Integrated spectrometer
- Computer controlled tuning
- fs- and ps-operation
- Low pump threshold
- High conversion efficiency
- Wavelength independent pulse width
- Jitterfree generation of pulses
- Easy alignment

opo

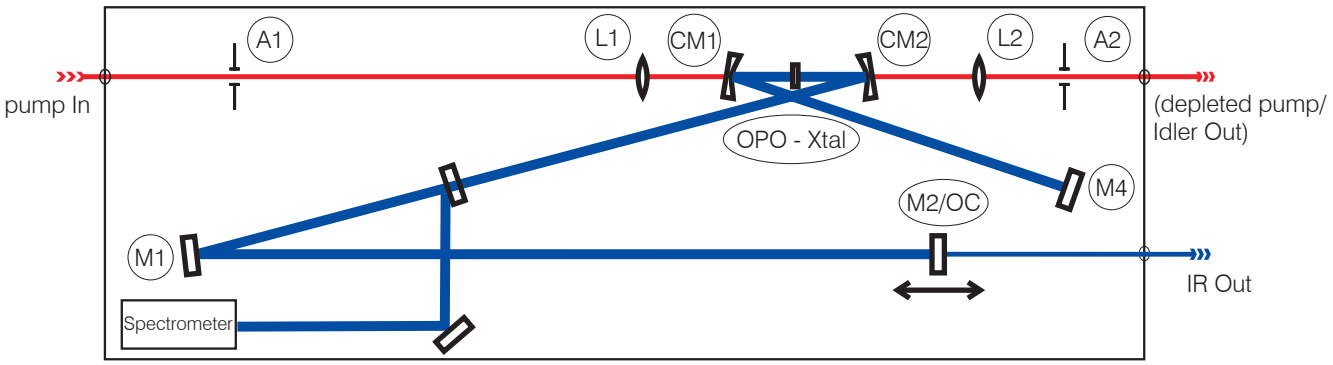
SYNCHRONOUSLY PUMPED OPTICAL PARAMETRIC OSCILLATOR

The APE **OPO** covers a wide wavelength range and allows further wavelength extension using frequency mixing schemes.

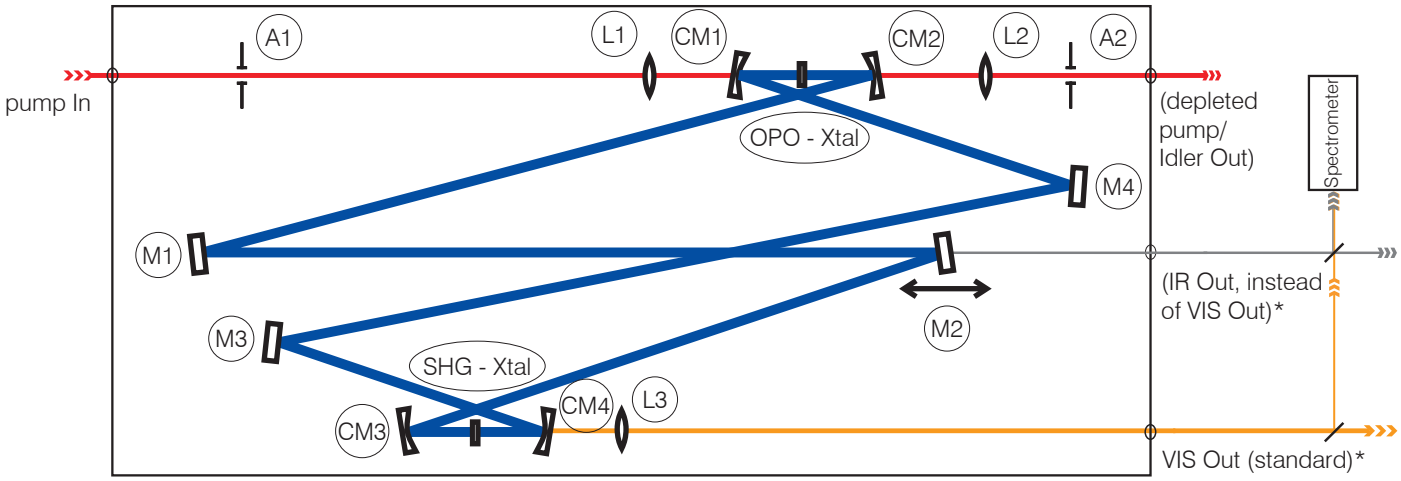


CAVITY CONFIGURATIONS

The Linear IR configuration is a singly Signal resonant IR OPO with a 5-mirror standing wave cavity. It is used for highly efficient IR-generation using a PP FAN crystal covering the 1.0…1.6 μm wavelength range and up to 4 μm with the non-resonant Idler branch (optional).



The Ring VIS configuration is a singly Signal resonant IR/VIS **OPO** version employing an additional intracavity SHG module in an 8-mirror Ring cavity. The SHG module is based on temperature tuned non-critically phasematched SHG for highly efficient visible output generation. It covers the 505 ... 740 nm wavelength range which fills the gap between the Ti:Sapphire fundamental beam and its frequency doubled Signal (SHG). All Ring VIS systems include the linear IR operation, which can be reconfigured by the customer.



* for simultaneous IR / VIS output, please ask

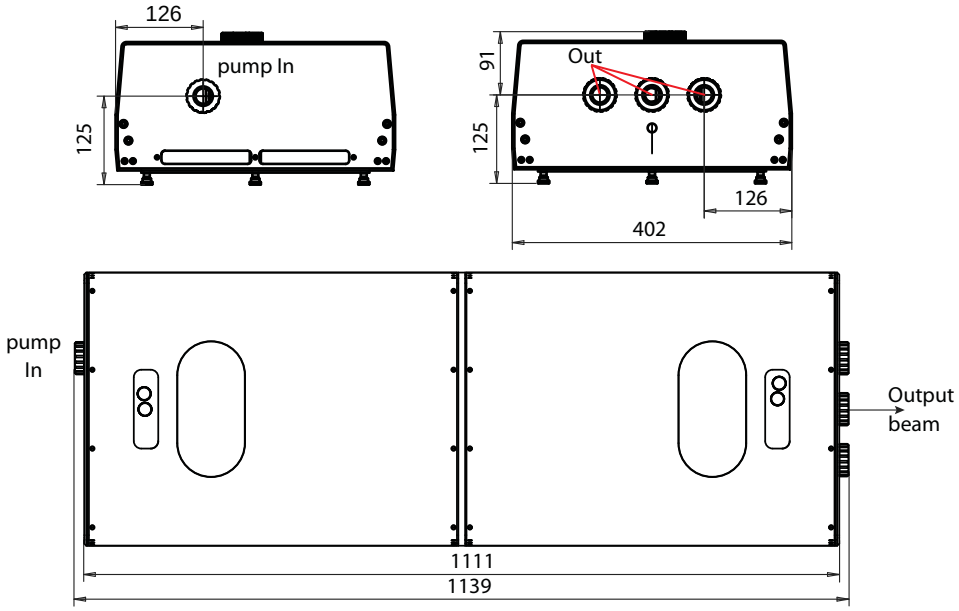
PULSE DURATION

All versions of the **OPO** system can be operated in both femto- and picosecond mode depending on pump pulse duration.

COMPONENTS AND DIMENSIONS

Control electronics:

Optical unit (Dimensions in mm):



Dimensions (W x H x L in mm)	Optical unit	402 x 200 x 1139
	Control electronics	267 x180 x 312

OPTIONS AND MODIFICATIONS

The APE **OPO** can be provided with several options and modifications*:

- Autocorrelator
- Output of Idler beam (in addition to output of Signal scan)
- Depleted pump output
- Customized wavelength ranges
- Adaptation to various pump laser cavity lengths and pump pulse durations
- Synchronization of different output beams (internal delay line) for use in frequency mixing devices and multicolor applications
- Frequency mixing devices (SumFrequencyMixing for extension to blue range, DifferencyFrequencyGeneration for Mid-IR generation)

* not included in standard model

SPECIFICATIONS

	fs-version	ps-version
OPO Signal	1000 ... 1600 nm[1)]	
Output power @ 1100 nm, pumped @ 800 nm		
Chameleon Ultra II / Mira HP	> 650 mW @3.5 W pump	> 520 mW @2.8 W pump
Mira V10	> 250 mW @1.3 W pump	> 250 mW @1.3 W pump
Mira V5	> 75 mW @0.65 W pump	> 75 mW @0.65 W pump
OPO Signal VIS (VIS Ring version)	505 ... 740 nm[1)]	
Output power @ 600 nm, pumped @ 800 nm		
Chameleon Ultra II / Mira HP	> 500 mW @3.5 W pump	> 400 mW @2.8 W pump
Mira V10	> 150 mW @1.3 W pump	> 150 mW @1.3 W pump
Mira V5	> 40 mW @0.65 W pump	> 40 mW @0.65 W pump
OPO Idler (optional)	1750 ... 4000 nm[1)]	
Pulse width	typ. 200 fs @ 130 fs pump pulse width	typ. 1.6 ps @ 1.4 ps pump pulse width
Time bandwidth product	typ. 0.6	
Polarization Signal / Idler	Linear / horizontal	
Polarization Signal SHG (VIS)	Linear / vertical	
Beam quality M^2	< 1.2	
Spectrometer range		
IR version	680 ... 1640 nm	
VIS version	480 ... 1640 nm	
Repetition rate	appr. 80 MHz (according to the repetiton rate of the pump laser)	
Noise	< 0.5% RMS[2)]	

1) Depending on actual pump wavelength
2) RMS noise measured in a bandwidth from 10 Hz ... 1 MHz

Distributors
see APE website www.ape-berlin.com

APE GmbH Plauener Straße 163-165 Haus N / 13053 Berlin Germany
Phone +49.30.986.01130 Fax +49.30.986.011333 / Web www.ape-berlin.com Email ape@ape-berlin.de