Levante Emerald

Tunable OPO For Green Picosecond Lasers

- Levante Emerald is a widely tunable and fully automated NIR-OPO. The output wavelength ranges from 640 nm to 2300 nm.

- The OPO is adaptable to work with a green pump laser with pulse widths between 2 ... 20 ps and pump powers from 2 ... 20 W.

- The pulses are close to the transformation limit and are of high beam quality. The Levante Emerald has a robust mechanical design that offers stable long-term operation and excellent beam stability.

- Fully automated tuning
- 2 ps or 6 ps or 15 ps Version
- Wavelength tuning from 640 ... 2300 nm
- Control Software: Simply enter the desired wavelength
- Two tunable output beams with different colors (Signal and Idler)
- Signal and Idler beams overlapped in space and time | Beam separator included
- Ideal 2 ps pulse width for Coherent Raman imaging
- Remote access available for customer support and error diagnosis

Automated Version

- The Levante Emerald offers full automation including software controlled tuning. This is made possible by state-of-the-art control electronics, internal diagnostic systems and an intuitive software interface. The PC control software is equipped with an additional command interface (via TCP/IP). This allows the OPO to be easily integrated into larger test setups and software-controlled environments.

Wavelength Tuning

- The wavelength tuning is done by simply entering the desired wavelength into the Levante OPO control software. The actual wavelength and bandwidth of the OPO Signal is measured with an internal high-resolution real-time spectrometer and the power is checked with calibrated photodiodes.

Tuning - Sweep Mode

- A sweep function is provided for fast tuning over a specific wavelength range. This enables automatic tuning from a set initial wavelength to a set final wavelength in a very short time. Predefined hold times for the spectral steps can be defined.

Multi-color Experiments & Multi-photon Microscopy

- Signal and Idler are available simultaneously. Since they are collinearly radiated from the OPO, the Signal and Idler pulses show an intrinsically perfect spatial and temporal overlap at the output of the system. The photon energy difference between signal and Idler is continuously tunable, making the Levante Emerald an ideal system for multi-color excitation experiments such as SRS (Stimulated Raman Scattering) or CARS (Coherent Anti-Stokes Raman Scattering).

Levante Emerald Specifications

Specifications Depending on Pump Laser

	Levante Emerald 2 ps	Levante Emerald 6 ps	Levante Emerald HP
Pump Laser (not included)	516 nm, e.g. Emerald Engine from APE	532 nm with 6 ps	532 nm with 15 ps, e.g. Coherent PALADIN Advanced 532-20000
Pump Laser Parameters	516 nm 3 W ~ 2 ps	532 nm 4 W ~ 6 ps	532 nm > 20 W ~ 15 ps
Tuning Range Automated	660 … 960 nm	720 … 990 nm	720 … 990 nm
Tuning Range Manual	640 … 960 nm 1120 … 2300 nm	690 … 990 nm 1150 … 2300 nm	690 … 990 nm 1150 … 2300 nm
Output Power	> 0.7 W at 800 nm	> 0.9 W	> 6 W at 800 nm
	> 0.4 W at 1250 nm	> 0.6 W	> 3.5 W at 1250 nm
Pulse Width	~ 2 ps	~ 5 … 6 ps	~ 12 … 15 ps
Spectral Bandwidth (Signal)	< 1 nm (10 cm^{-1})	0.3 … 0.4 nm	< 0.1 nm
Δv Signal - Idler	1440 … 9000 cm^{-1}	1400 … 10000 cm^{-1}	1400 … 10000 cm^{-1}
Δv Signal - Laser Fundamental	720 … 4500 cm^{-1}	700 … 5000 cm^{-1}	-
	(when 1032 nm beam available from pump laser)	(when 1064 nm beam available from pump laser)	

General Specifications

|	
Signal and Idler Output	Signal and Idler are available at the same time; Both are coupled out collinearly of the OPO, therefore the Signal and Idler pulses have an intrinsically perfect spatial and temporal overlap in the output beam of the system; a removable beam separator is included
Time Bandwidth Product	typ. 0.6
Repetition Rate	~ 80 MHz (depending on the repetition rate of the pump laser)
Beam Quality M²	< 1.2 (typ. 1.1)
Polarization	linear / horizontal
Wavelength Tuning	Fully automated for specified automated tuning range
Wavelength Tuning Feedback	Built-in diagnostics for wavelength (high-res spectrometer) and power (calibrated)
Sweep Function	Fast tuning over a certain wavelength range by sweep function; allows tuning from a set start wavelength to a set end wavelength either with a predefined hold at each spectral step, or with advance for each step on a software trigger.
Software	Included
Remote Control	TCP/IP

... Specifications

Typical Data

Typical Signal power data over wavelength, measured with Levante Emerald and Coherent PALADIN
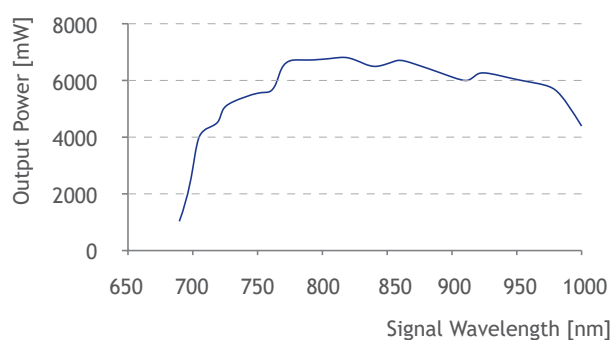
Typical Idler power data over wavelength, measured with Levante Emerald and Coherent PALADIN
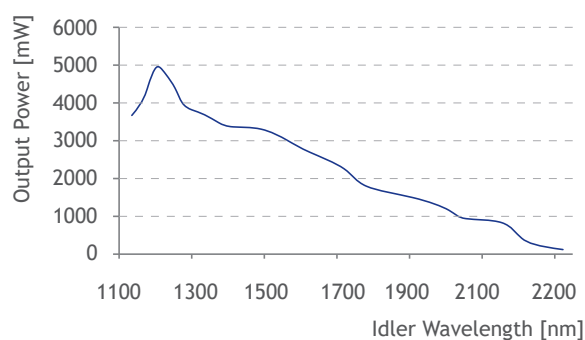
Options

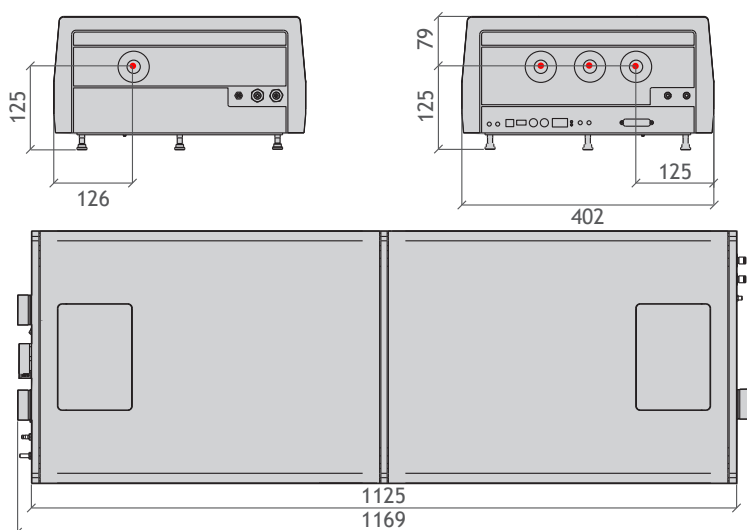| |
|---|
| Pump Laser APE Emerald Engine |
| Harmonic Generation SHG or THG |
| Harmonic Generation FHG for deep UV down to 190 nm |
| Difference Frequency Generation DFG |
| EOM - Modulator for SRS |
| Adaption to other pump parameters |

Dimensions

1169 mm x 204 mm x 402 mm

Drawings

See appendix for details

125
126

79
125
125
402

1125
1169

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