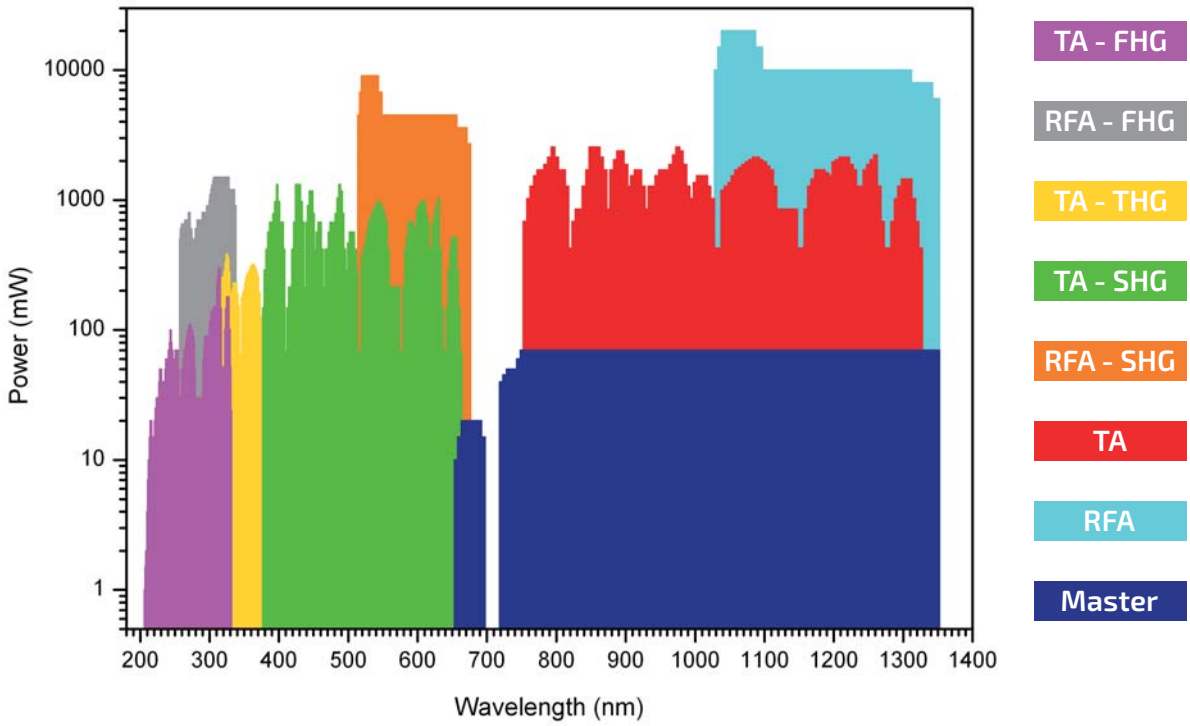
Single-frequency lasers



- **Master lasers:**
  - interference filter cavity design in cat's-eye configuration;
  - modulation locking bandwidth larger than 50 kHz;
  - current modulation bandwidth larger than 10 MHz;
  - wavelength from 640nm to 1630nm;
  - narrow linewidth with various options down to 100 Hz.

- **Ultra-stable mirror-less aligned Master Oscillator Power Amplifiers:**
  - power up to 3 W with semiconductor tapered amplifiers;
  - power up to 50 W with fibre amplifiers.

- **Frequency converted lasers:**
  - second, third and fourth harmonic generation;
  - wavelength coverage from 206nm to 700nm, down to 180 nm by further frequency conversion;
  - 60 kHz locking bandwidth;
  - up to 60% optical-to-optical conversion efficiency;
  - monolithic and airtight auto-aligning resonant cavity.

- **Cold atom sources and spectroscopy cells.**

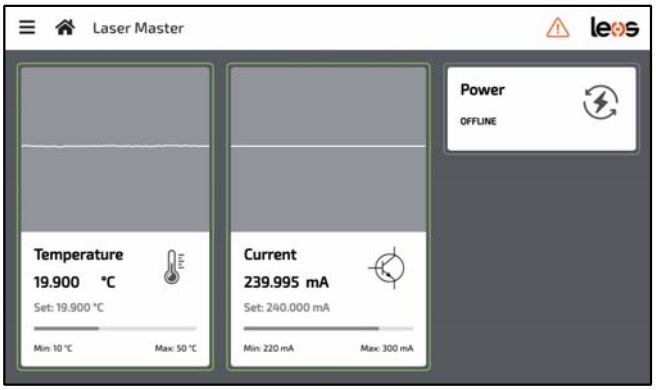
Master Lasers

- Based on the interference filter cavity design which provides superior long term stability thanks to the cat's-eye configuration. Additionally, the amplified spontaneous emission (ASE) level is suppressed by tens of dB as compared to grating-stabilized diode lasers;
- wavelength from 640nm to 1630nm;
- output beam direction and position highly insensitive to wavelength tuning;
- PZT modulation locking bandwidth larger than 50 kHz;
- current modulation bandwidth larger than 10 MHz;
- narrow linewidth: we provide various options down to 100 Hz.

Master Oscillator Power Amplifier - MOPA

- Ultra-stable mirror-less alignment of the seed laser into the optical amplifier insuring industrial-grade output power stability. As compared to the traditional mirror-based methods, this scheme greatly simplifies the optimization of the injection of the seed into the amplifier when changing the seed laser wavelength;
- simple wavelength tuning;
- monolithic assembly;
- power up to 3 W with semiconductor tapered amplifiers;
- power up to 50 W with fibre amplifiers.

Graphical User Interface



LEOS' systems ship with dedicated digital controllers, including a touch display for easy interfacing.
The same interface is accessible as a web-app from any connected device - **remote control made easy**.
The modular Graphical User Interface is designed with an eye on beauty and practicality.
The entire digital ecosystem runs on an embedded **Linux PC** - not a single BSoD from our side.

Resonant Frequency Converters

- **Second**, **third** and **fourth harmonic resonant frequency converters**.
  THG allows to access spectral regions otherwise inaccessible by SHG or FHG.
  THG is obtained by starting from a single fundamental laser;

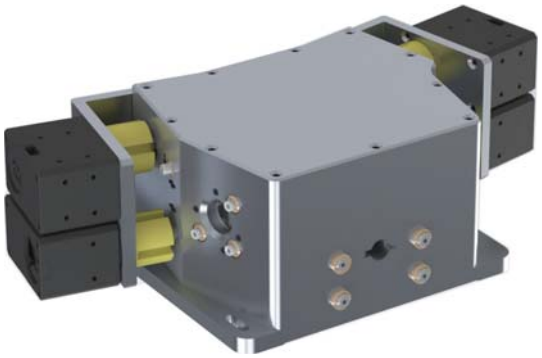
- up to 60% optical-to-optical conversion efficiency;

- Full spectrum coverage from 206 nm to 700 nm. Upon specific request, emission can be extended **down to 180 nm** by successive frequency conversion;

- double stage PZT cavity locking providing **locking bandwidth larger than 60 kHz** and wide mode-hop-free frequency tuning;

- LEOS' frequency converters exploit the **Hänsch–Couillaud** locking method, hence preserving the spectral purity without introducing any modulation;

- **automatic alignment** is performed by a set of servo controllers directly mounted on the frame of the resonant cavity to steer the two folding mirrors.
  The result is a compact, reliable and easy to operate system, yet providing the necessary resolution to align the cavity;



- **monolithic and airtight** cavity machined from a single piece of metal.
  Sealed by using entrance and exit windows to avoid dust and moisture contamination of the optics, hence assuring stable operation in the long term.

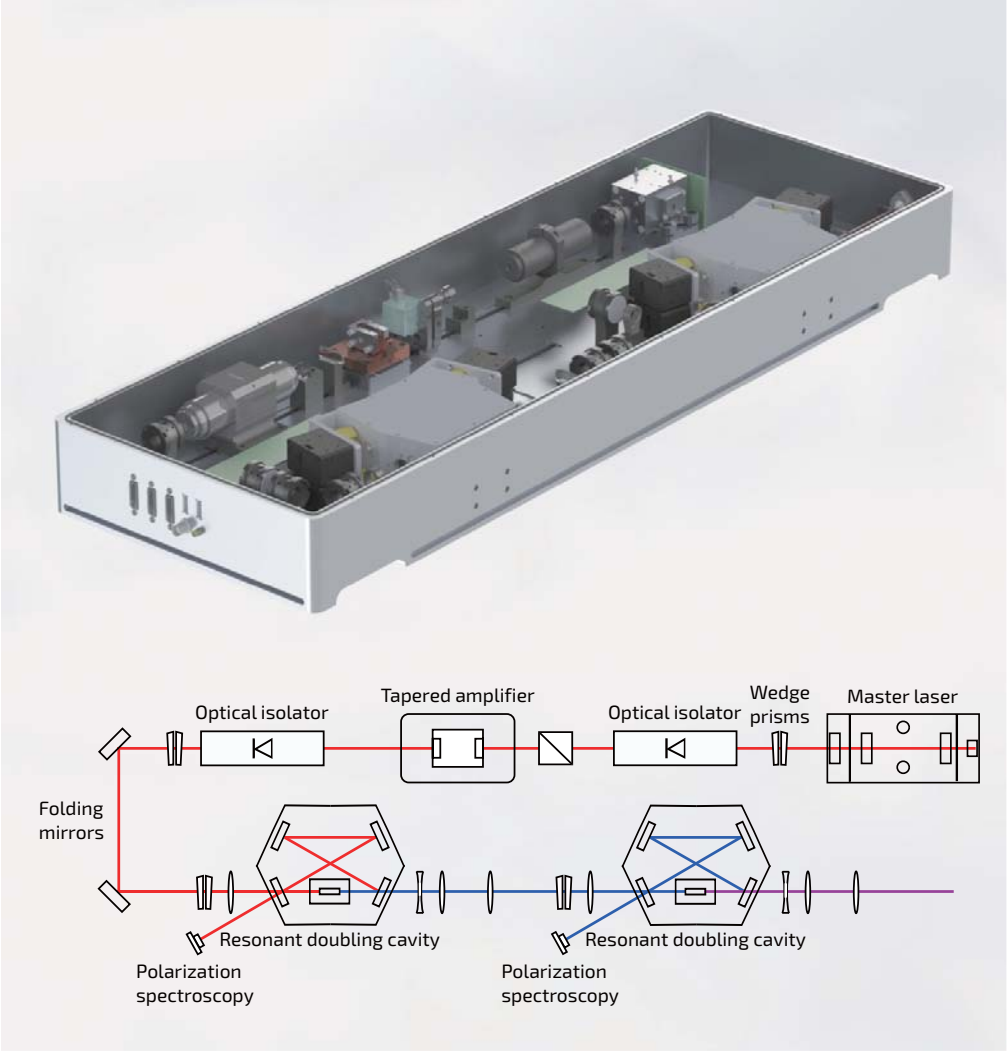
Specifications

Technology	Second, third and fourth harmonic generation
Wavelength [nm] (1)	206 - 700
Locking method	Hänsch–Couillaud
Locking bandwidth [kHz]	> 60
Output	Free-space or fibre-coupled
Dimensions [mm]	SHG: 600x260x90, THG-FHG: 880x290x90

(1) Extendable down to 180nm upon specific request.

Minimal in their design, brilliant in their implementation.
Our systems are carefully designed to maximize stability and reliability.
Not a single kinetic mirror is used to fold the system, and our compact implementation is obtained by using two fixed mirrors only.
The entire alignment is performed by using refractive optics - an inherently stable approach.

FHG system



For more information and custom designs, please contact us.

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