AURORA

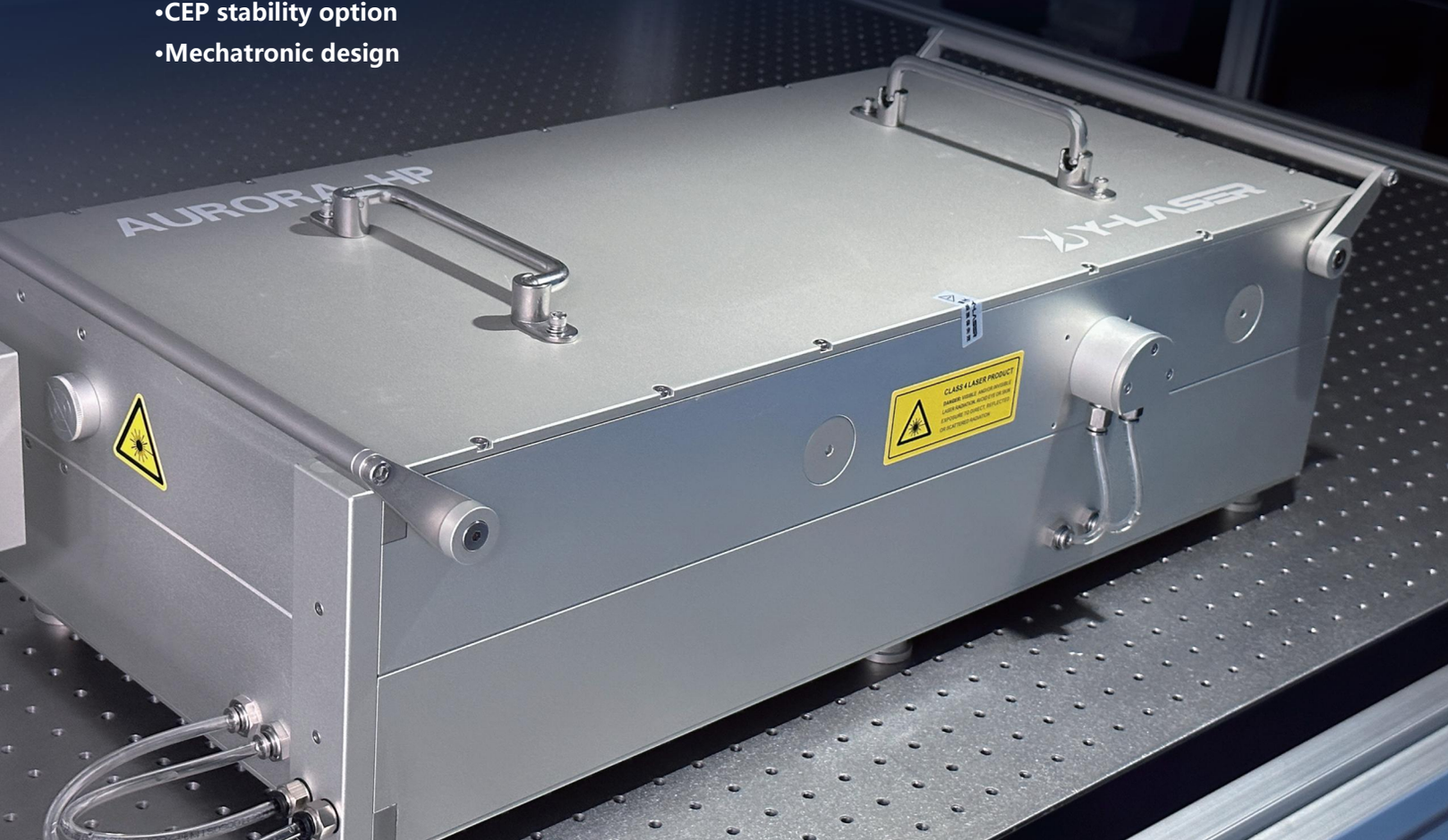
Continuously Tunable Femtosecond Optical Parametric Amplifier

The AURORA femtosecond optical parametric amplifier is based on a stable optical and mechanical design, enabling flexible tunable femtosecond laser pulse output. The wavelength range covers ultraviolet (as short as 210nm) to mid-infrared (up to 16μm).

The AURORA femtosecond optical parametric amplifier is compatible with market-standard fiber and solid-state Yb ultrafast lasers, with a pump energy reception range of 10μJ to 2mJ and a pulse width compatibility range from 100fs to 1.5ps. Customers can achieve precise tuning of the desired center wavelength with a single click, without the need for complex manual adjustments. Comprehensive custom solutions can be provided according to customer requirements.

Product Features:

- **Tuning range from 210nm to 16μm**
- **Compatible with up to 2mJ pump energy**
- **Conversion efficiency up to >9%**
- **High output stability**
- **CEP stability option**
- **Mechatronic design**



Yb-Doped Laser Pumped Femtosecond Optical Parametric Amplifier

Application Areas

- Transient Absorption Spectroscopy
- Two-Dimensional Infrared Spectroscopy
- Fluorescence Spectroscopy
- Sum-Frequency Spectroscopy
- Nonlinear Optics
- Stimulated Raman Scattering
- High-Harmonic Generation and X-ray Sources
- Attosecond Science

Parameter Specifications

Parameter	AURORA-HP	AURORA-HE
Tuning range	630 – 1030nm (Signal) 1030 – 2600nm (Idler)	
Maximum pump power	80W	
Pump pulse energy	10 - 200uJ	200 - 2000uJ
Peak conversion efficiency	> 7% (Signal)	> 7% (Signal)
	> 3.5% (Idler)	> 3.5% (Idler)
Pulse duration	＜190fs	
Spectral bandwidth	100cm^{-1} - 150cm^{-1}	
Long-term power stability	< 2% RMS@ 750 nm	
Pulse-to-pulse energy stability	< 2% RMS@ 750 nm	
Polarization	Linear polarization	
Dimensions (L×W×H)	797 x 394 x 251mm (LxWxH)	
Weight (kg)	47kg	

Expansion Options

	Wavelength tuning range	Peak conversion efficiency
Second harmonic generation module	315 - 630nm	≥2.4%
Third harmonic generation module	210 - 315nm	≥0.8%
Mid-infrared extension module	2500 - 10000nm	>3%@3000nm
Remaining weight (kg)	24kg (Water-cooled machine) +17kg (frequency doubling)	
Power supply requirements	AC 220V/10A; 24V DC power supply, motor drive power supply, total power ≤ 150	
Power supply requirements for the water-cooled machine	CWUP-10AI; operating voltage 220V; operating current 0.6-5.6A; rated power 1.02kW; cooling capacity 0.75kW	

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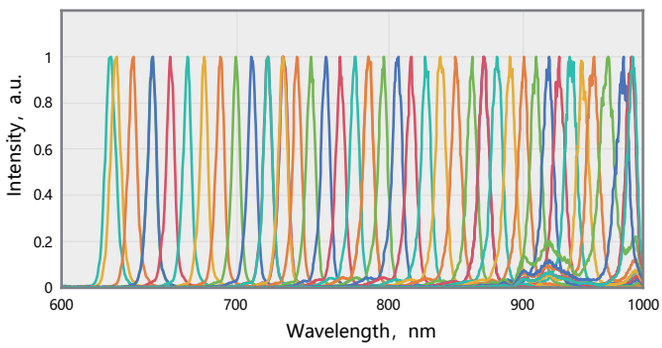
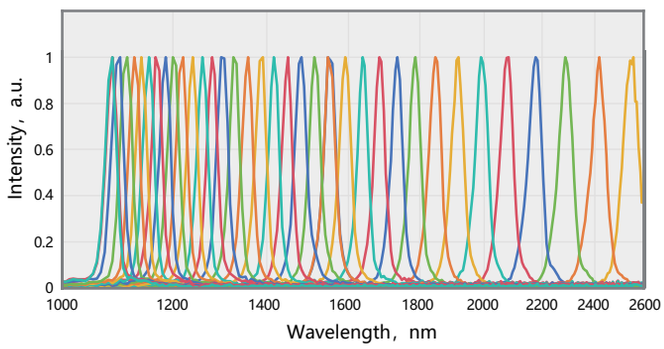
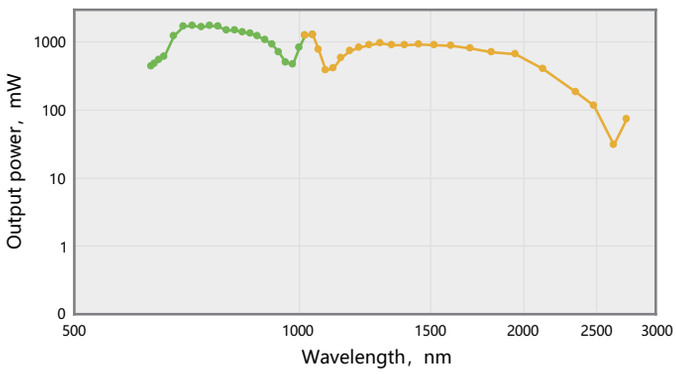


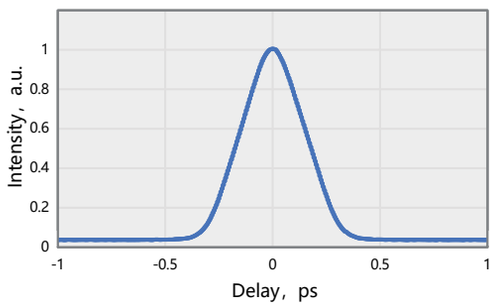
AURORA-HP signal light tuning spectrum(630nm-1030nm)



AURORA-HP idler light tuning spectrum(1030nm-2600nm)

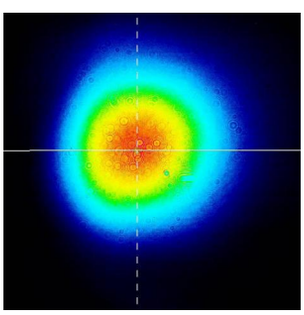


Typical AURORA-HP tuning curves
Pump:50kHz/400uJ/250fs@HELIOS-20W-HP

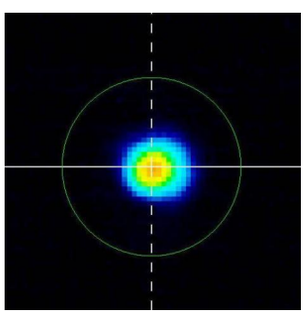


Typical pulse duration of AURORA-HP (211fs@800nm)

Beam Characteristics

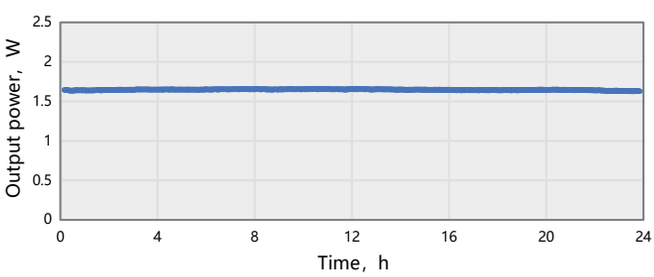


Typical near-field beam profile

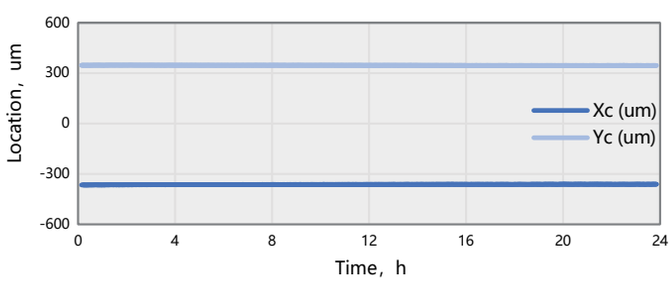


Typical far-field beam profile

Stability Measurement



24-hour beam pointing stability of AURORA-HP@850nm
Pump :50kHz/400uJ/250fs@HELIOS-20W-HP



24-hour beam pointing stability of AURORA-HP
RMS=0.36%@750nm

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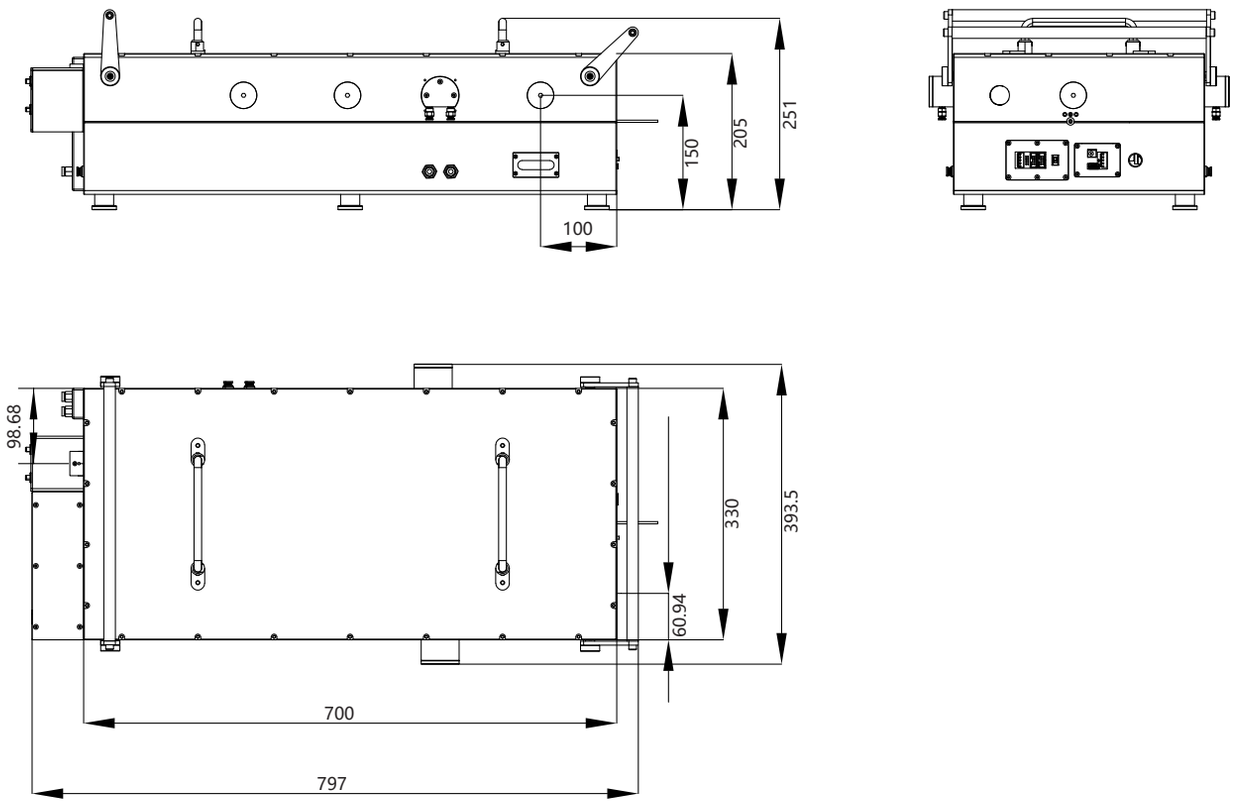
Drawings



AURORA outline drawing