

Ideas taking shape – worldwide.



Flexibility – With Precision C-WAVE advanced

Features

C-WAVE *advanced* has been developed as a precision source for demanding applications as in atomic physics or quantum optics: single frequency operation, narrow spectral line-width and options for frequency stabilization are combined with an unprecedented spectral coverage. Whether you need to work across a wide spectral range or just want some special wavelengths, C-WAVE *advanced* can deliver that light – with precision.

Depending on the required output power level, C-WAVE *advanced* is either pumped by an external single-frequency laser or comes with an integrated laser, making operation and application even easier for you.

You need some special wavelengths for a particular application? Please inquire us for your individual solution!

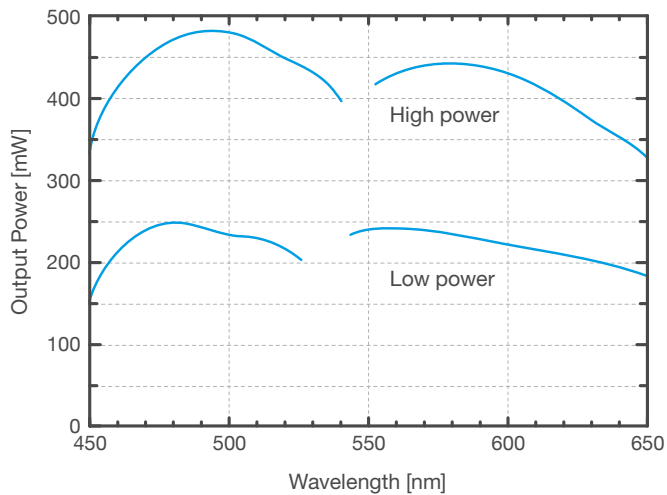
Applications

- Cold atom / ion experiments
- Atomic physics
- Quantum optics
- Metrology
- Spectroscopy

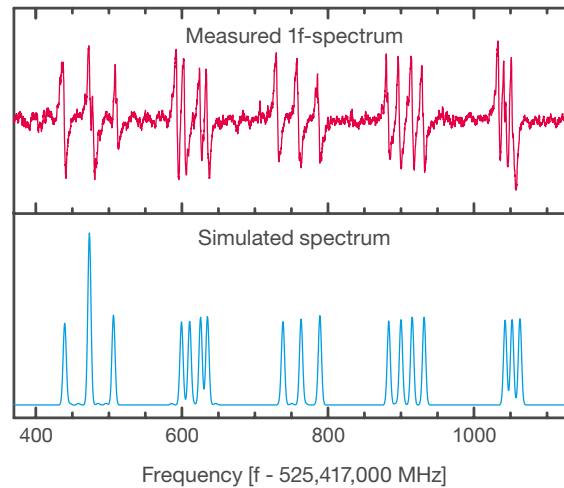
Specifications

	visible ^{a)}	IR ^{b)}
Wavelength range	450 – 650 nm ^{a)} ± 1 nm	900 – 1300 nm ^{b)} ± 2 nm
Wavelength selection	computer controlled	
Accuracy of wavelength setting		
• internal	± 1 nm	± 2 nm
• with external wavelength measurement	< 1 MHz ^{c)}	
Power		
• with 1.5 W pump laser	> 80 mW	> 200 mW
• with 5 W pump laser	> 200 mW	> 400 mW
Amplitude noise	< 5 % ^{c)}	< 1 % ^{c)}
Beam polarization	> 1000:1	
Beam profile	TEM ₀₀ , M ² < 1.2 ^{d)}	
Beam radius (1/e ²)	0.5 mm ^{c)}	0.2 mm ^{c)}
Divergence	0.5 mrad ^{c)}	2 mrad ^{c)}
Linewidth	< 1 MHz ^{e)}	
Mode-hop-free tuning	> 20 GHz ^{e)}	> 10 GHz ^{e)}

- ^{a)} not specified at 525 - 540 (±2) nm; range depending on selected wavelength modules
^{b)} not specified at 1050 - 1080 (±4) nm; range depending on selected wavelength modules
^{c)} typical value
^{d)} not specified at 450 - 480 nm and 900 - 960 nm
^{e)} depending on the pump laser



Typical output power over the visible wavelength range with 5 W pump laser (high power) and 1.5 W pump laser (low power).



Sub-Doppler spectrum of hyperfine transitions in iodine vapor, measured with the C-WAVE.

Top: measured spectrum with frequency modulation and 1f-detection.
Bottom: simulated absorption spectrum

Technical Data

Computer interface	LAN
Power supply	110 V / 230 V
Power consumption	< 200 W
Cooling	Closed-loop chiller ^{a)}

^{a)} Please contact us for compatible chillers.

Pump Laser Options

- Integrated pump laser (1.5 W)^{b)}
- External pump laser (5 W)^{b)}

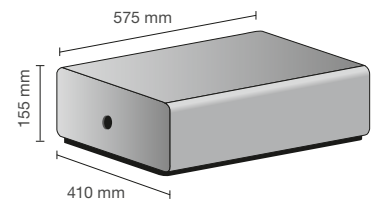
^{b)} Please contact us for compatible pump lasers.

Requirements

Operating temperature range	20–25 °C, constant
Max. relative humidity	10–85 %, non condensing
Mounting surface	vibration-isolated optical table
Air	free of dust

Dimensions

Length	575 mm
Width	410 mm
Height	155 mm
Weight	34 kg



Frequency Tuning

Absolute wavelength control better than 1 nm requires an external reference: Wavemeter or reference spectrum (user's choice). Control and fine tuning are achieved using intra-cavity elements and piezo-tuning of the cavity length.

- 1) Connected wavemeter: Suitable for automation. Available at different absolute accuracies.
- 2) Frequency lock using an external analog frequency reference (e.g. iodine spectrum): Feedback via C-WAVE interface or direct access to the PID control of the cavity length.



Designed according to UL standards.
Extended warranty available.



HÜBNER GmbH & Co. KG
Heinrich-Hertz-Straße 2
34123 Kassel, Germany

Tel. +49 561 998-1620
Fax +49 561 998-2025

photonics@hubner-germany.com



www.hubner-photonics.com

In cooperation with:

