

DFG 9800/9850

Difference-Frequency Generators



Features

- Tunable solid-state source for mid-IR operation
- Compatible with Coherent's Optical Parametric Amplifiers: OPA 9800 and OPA 9850
- Repetition rates up to 250 kHz
- Ultrabroad bandwidth

Mechanical Specifications

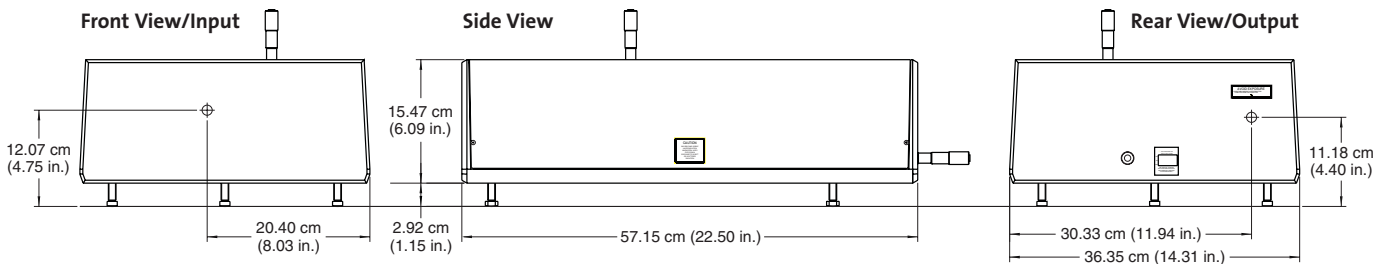
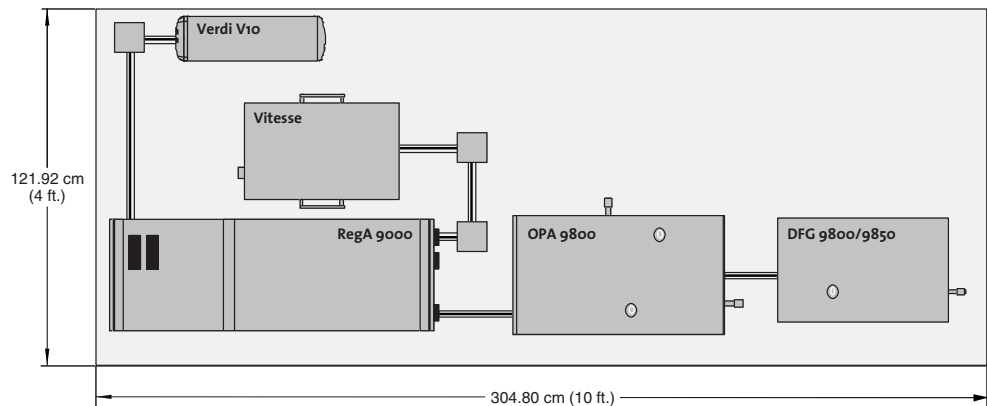


Table Layout



Superior Reliability & Performance

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System Specifications

	DFG 9800	DFG 9850
Pump Power	12W Verdi (split off from V-18)	10W Verdi
DFG Conversion Efficiency at 4 μm^1	>2%, 250 kHz	>1.5%, 100 kHz
DFG Unit (L x W x H)	58.4 x 35.6 x 18.4 cm (23 x 14 x 7.25 in.)	
Input Beam Height	12 cm (4.75 in.) above table	
Output Beam Height	11.2 cm (4.40 in.) above table	

¹ Conversion efficiency from signal beam @ 1330 nm based on 10W or 12W pump into RegA 9000 with either Mira Optima 900, Vitesse 800, or Micra seeding. Output power specified at 4 μm only.

Difference-Frequency Generation of Ultrabroad, Ultrafast Pulses in the Mid-IR Range

The DFG 9800/9850 is an accessory for Coherent's Optical Parametric Amplifiers—the OPA 9800 and OPA 9850. Both DFG units extend the tuning of Coherent's OPAs into the mid-IR range. When combined as part of a Coherent all-solid-state ultrafast system, consisting of the Verdi™, Mira™ 900, RegA™ 9000, and OPA 9800 or OPA 9850, the DFG 9800/9850 allows continuous tuning from 2.55 μm to >10 μm . This level of operation makes the DFG 9800/9850 the industry's only high repetition rate source for ultrafast spectroscopy in the mid-IR range.

Difference-Frequency Mixing

The DFG 9800/9850 uses difference-frequency mixing of the signal and idler outputs from Coherent Optical Parametric Amplifiers (OPA 9800 or OPA 9850) to generate tunable light in the mid-IR spectral region. The signal and idler from the OPA are focused into a non-linear AgGaS₂ crystal and phase-matched to produce light in the mid-IR range. When used with an OPA 9800, the typical pulsewidth is <200 fs; with the OPA 9850, the typical pulsewidth is <80 fs.

Ultrabroad Spectral Bandwidth

The DFG system can be used to perform both time-resolved and frequency-resolved studies. The unique possibility of time-resolved studies in the mid-IR spectral region allows real-time studies of the dynamics of vibrational spectra of molecules, as well as time-resolved studies of semiconductor responses. Moreover, with a spectral bandwidth of hundreds of nanometers, the DFG can be used in spectroscopic applications where the broad spectral bandwidth of the ultrafast pulse allows the simultaneous measurement of multiple frequencies—without the spectral scanning that is inherent in traditional single-line sources.

High Stability

Our all-solid-state, Verdi-pumped ultrafast system is extremely stable. In continuous operation for more than 48 hours, the DFG 9850 produced power fluctuations of less than $\pm 5\%$.

Ease of Use

Tuning the DFG is a relatively simple process. Typical tuning ranges, from 2.5 μm to beyond 10 μm , can be achieved by accessing external control knobs on the OPA and DFG units. No user-alignment of the DFG's optics is required.

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all DFG 9800/9850 systems. For full details of this warranty coverage, please refer to the Service section at www.Coherent.com or contact your local Sales or Service Representative.



www.Coherent.com

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