



SIFIR-50

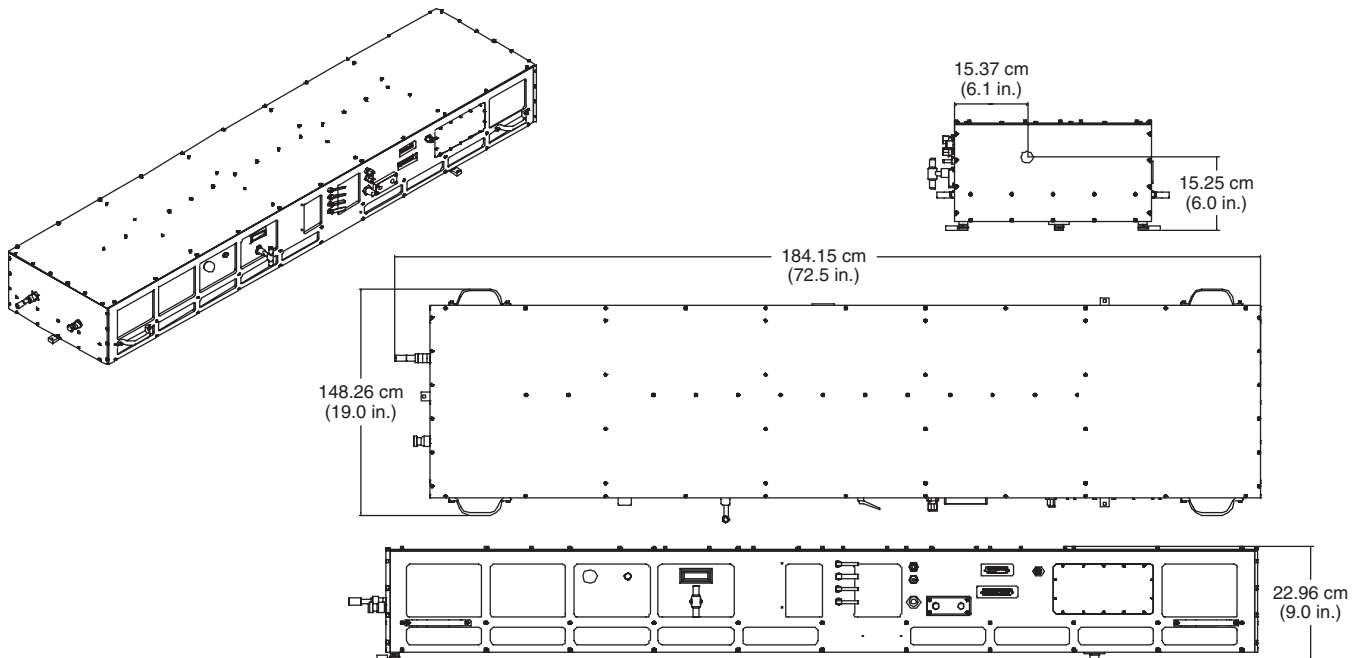
Stabilized Integrated FIR (THz) Laser System

Features

- **High Power & Stability**
 - Greater than 150 mW
 - Internal pump-frequency-lock reference
 - Thermally-compensated opto-mechanical design
 - Sealed-off operation: eliminates vacuum noise
 - 50W pump laser
- **Broad Tunability**
 - Wide output range (40 to 1020 μm ; 7 to 0.3 THz)
 - Two onboard gas sources and equipped for external sources
- **Reliable, Low Maintenance & Easy to Use**
 - Excellent spatial mode
 - Sealed-off operation: no flowing gasses required
 - Eliminates contamination of the optics and extends their lifetime
 - Internal power, pressure and frequency sensors



Mechanical Specifications



Superior Reliability & Performance

SIFIR-50

Stabilized Integrated FIR (THz) Laser System

System Specifications*

Output Frequency Range (μm)	
Long-Wave Option	40 to 1020 (7 to 0.3 THz)
Standard-Wave Option	40 to 350 (7 to 0.8 THz)
Output Power (mW)	>50 on many lines
Power Stability ¹ (after 1 hr. warm-up)	
Long-Term	< $\pm 5\%$ /hr.
Short-Term	< $\pm 0.5\%$ /min.
Single-Frequency Spectral Purity ¹	(>-50 dBc)

Facility Requirements

Input Power (VAC)	200 to 240, 50 or 60 Hz, <12 amps
Cooling	
Heat Load (W)	1300 (max.)
Flow Rate (gpm)	>1.5
Temperature ($^{\circ}\text{C}$)	18 to 22
Coolant Water	+25% Dow Frost or equivalent ²
Environmental ³	
Temperature ($^{\circ}\text{C}$)	10 to 30
dT/dt	<3 $^{\circ}\text{C}$ /hr.
Humidity	Non-condensing

¹ Dependent upon particular emission line and operating parameters.

² Dow Frost is a trademark of Dow Chemical Company.

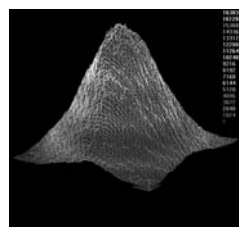
³ Coolant set point 18 to 22 $^{\circ}\text{C}$, 0.1 $^{\circ}\text{C}$ stability.

* Output limited by window: Special window available to increase output at shorter wavelengths. Data shown represent typical performance, and will vary from laser to laser, as well as being dependent on the particular operating and environmental parameters.

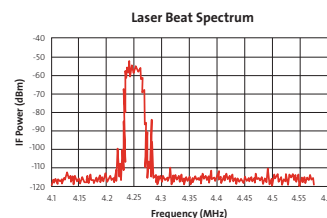
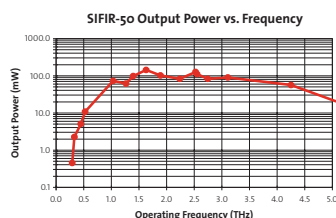
SIFIR-50 with Standard FIR Laser

Bold data taken with custom output coupler.

Wavelength (μm)	Frequency (THz)	FIR Laser Gas	Optimal Pressure (mTorr indicated)	Output Power (mW)	Output Power w/Sample Detector Assembly Removed (mW)
42.16*	7.09	CH ₃ OH	760	1.5	2.9
70.51	4.25	CH ₃ OH	275	16.8	33.7
96.52	3.11	CH ₃ OH	660	30.6	52.7
109.30	2.74	CH ₂ F ₂	520	44.6	70.8
117.73	2.55	CH ₂ F ₂	620	75.0	82.4
118.83	2.52	CH ₃ OH	380	87.5	96.2
118.83	2.52	CH₃OH	380	143.8	158.0
134.00	2.24	CH ₂ F ₂	580	70.1	74.6
158.51	1.89	CH ₂ F ₂	265	49.3	64.9
184.31	1.63	CH ₂ F ₂	240	147.7	155.5
214.58	1.40	CH ₂ F ₂	105	47.4	49.9
236.59	1.27	CH ₂ F ₂	65	3.7	4.4
287.67	1.04	CH ₂ F ₂	240	23.5	25.9
334	0.90	CH ₃ Cl	205	4.0	4.0
349.3	0.86	CH ₃ Cl	200	7.1	7.5



Spatial Mode



15-Second Integrated Linewidth
(Heterodyne beat between two free-running SIFIR-50 Laser Systems integrated for 15 seconds)

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

Coherent offers a limited warranty for all SIFIR-50 laser 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

Coherent, Inc.
5100 Patrick Henry Drive
Santa Clara, CA 95054
phone (800) 527-3786
(408) 764-4983
fax (800) 362-1170
(408) 988-6838
e-mail tech.sales@Coherent.com

Benelux +31 (30) 280 6060
China +86 (10) 6280 0209
France +33 (0)1 6985 5145
Germany +49 (6071) 9680
Italy +39 (02) 34 530 214
Japan +81 (3) 5635 8700
Korea +82 (2) 460 7900
UK +44 (1353) 658 833

