4.0um High-Power Benchtop Mid-Infrared FP-QCL Quantum Cascade Laser

MIR-QCL-W4000 (Benchtop Light Source)

Product Description

The 4.0um high-power desktop FP-QCL quantum cascade laser is developed by Idealphotonics as a continuous-wave laser with relatively high output power. It provides several hundred milliwatts of collimated output power, making it suitable for mid-infrared testing light source requirements. Additionally, the desktop FP-QCL laser module integrates a drive and temperature control module, and it can also be controlled via software to

adjust the temperature and operating current of the laser. This ensures stable operation of the laser, maintaining the accuracy of the measurement results

• Product features

Low power consumption, high power、 High side-mode suppression ratio、 Software intelligent control、 Compact structure and size

• Part Number

MP-QCL-4000-FP-250-B

• Application area

Mid-infrared testing light source 、 Mid-infrared device analysis 、 Mid-infrared system light source

• Core parameters

Wavelength	Output Power	Spectral Width
4.0um	250mW	8nm

• General Parameters

Tuning characteristics

Parameters	Unit	Technical Specification

		Min.	Typ.	Max.
Laser collimated output power	mW		250	280
Peak operating wavelength	um	4	4.05	4.1
Spectral width (FWHM)	nm		8	
Output side mode suppression ratio (SMSR)	dB	30		
Output isolation	dB		30	
Wavelength temperature coefficient	nm/°C		0.6	
Wavelength current coefficient	nm/mA		0.2	
Output power stability (8 hours)	%		±1	±4
Output power adjustable range	%	0		100
TEC (Thermoelectric cooler) operating range	°C	0		50
Operating voltage	VAC	100	220	240
Operating temperature	°C	0		55
Storage temperature	°C	-20		65
Dimensions	mm	343(L)×193(W)×180(H) Benchtop		

Technical Specification Explanation:

1. Output power is optional.

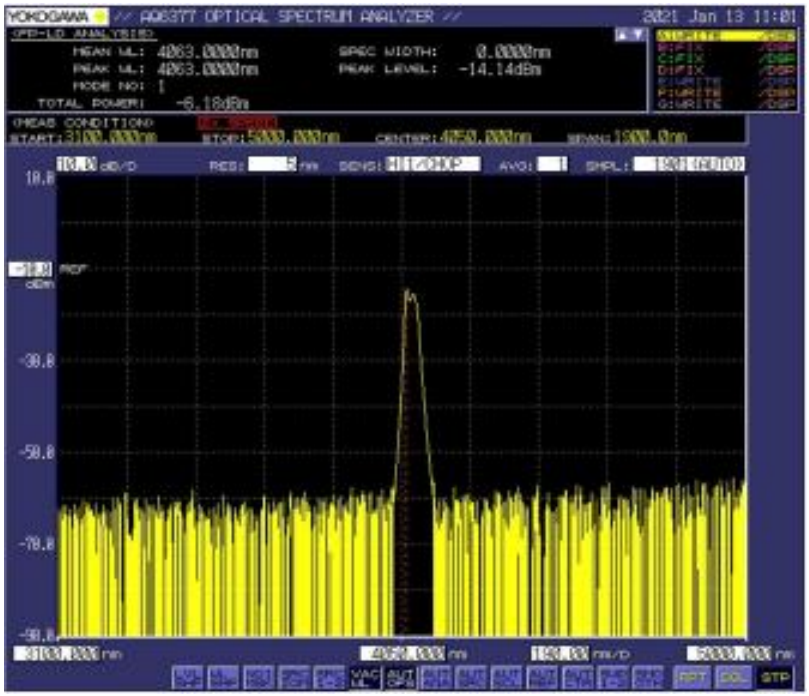
2. Peak operating wavelength is optional.

3. Output power stability test condition is 25°C, after 30 minutes of warm-up time post power-on.

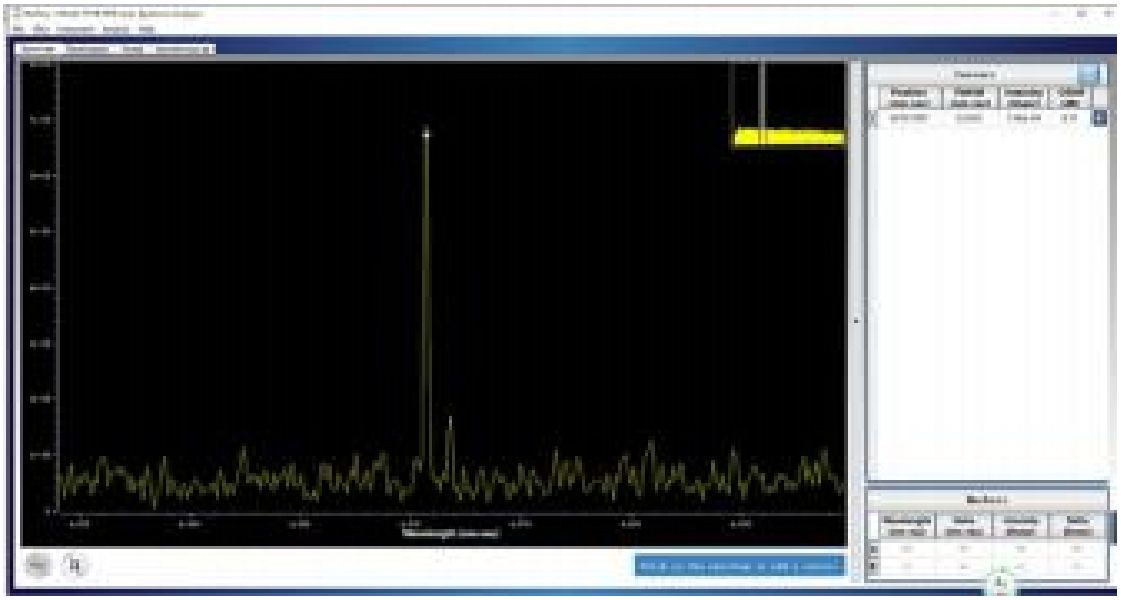
4. Maximum power consumption refers to the overall power consumption under extreme operating conditions.

5. I = 0.80 A, V = 8.7 V, T = 15°C, measured at $1/e^2$.

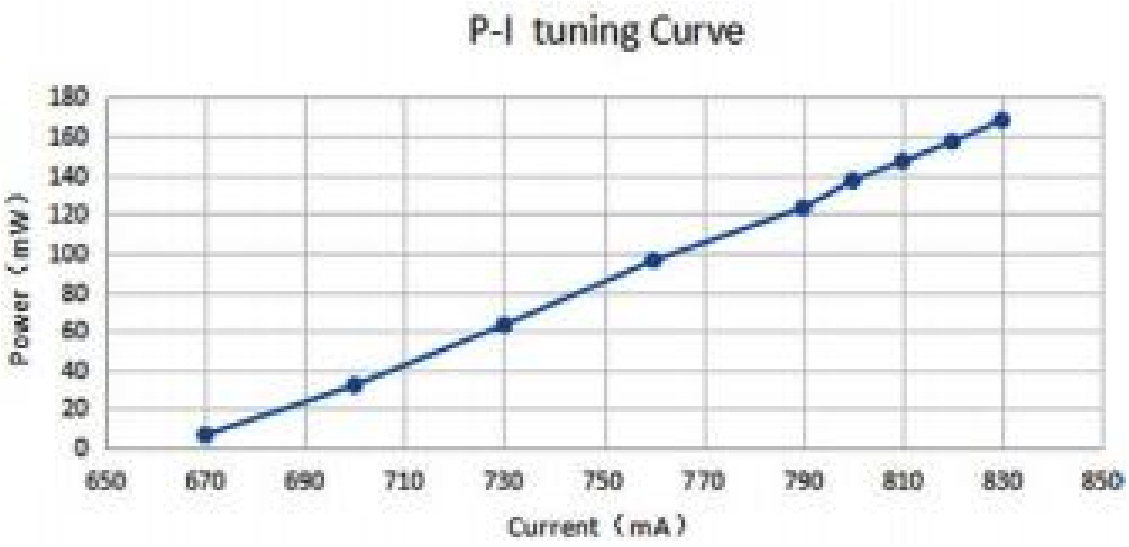
4.0um FP-QCL Laser Wavelength Spectrum Chart



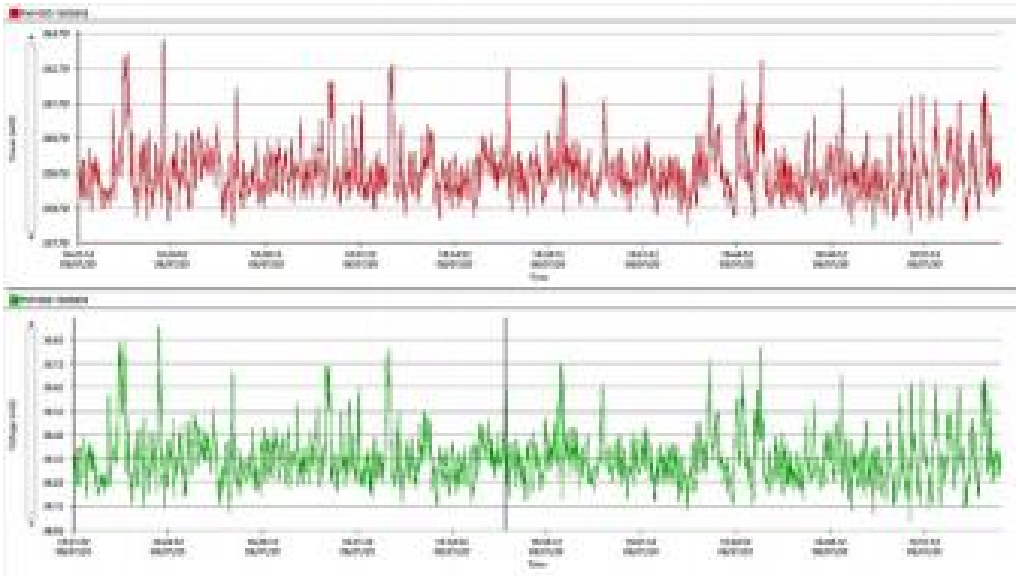
Laser Spectrum (Continuous)



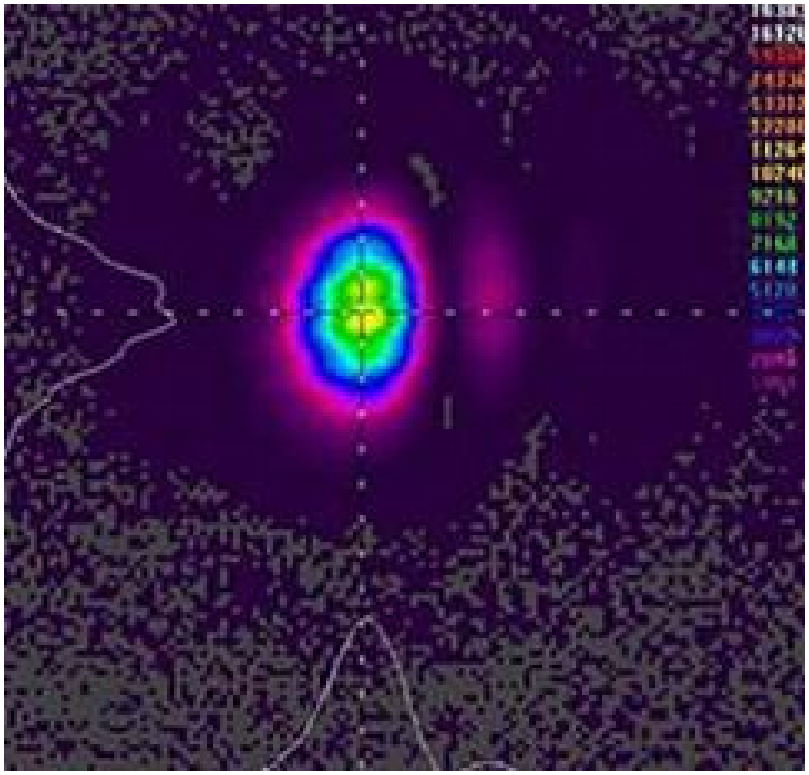
QCL Laser Characteristic Curve (Typical Wavelength 4.0um) Output Power Characteristic Curve



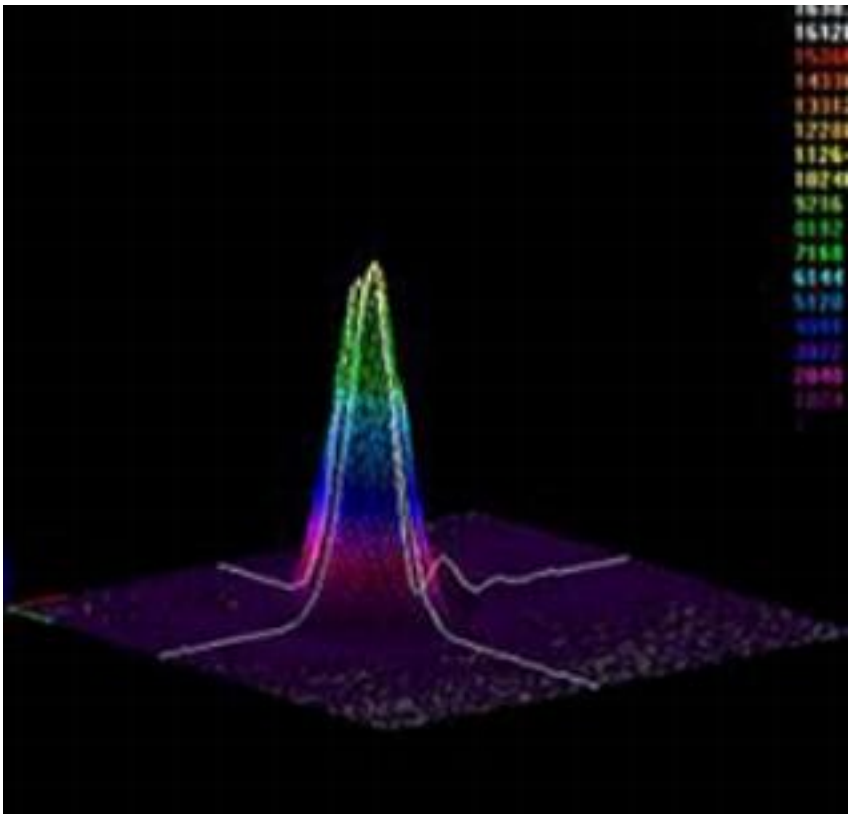
Power Stability of 4.0um FP-QCL Laser



Spot analysis

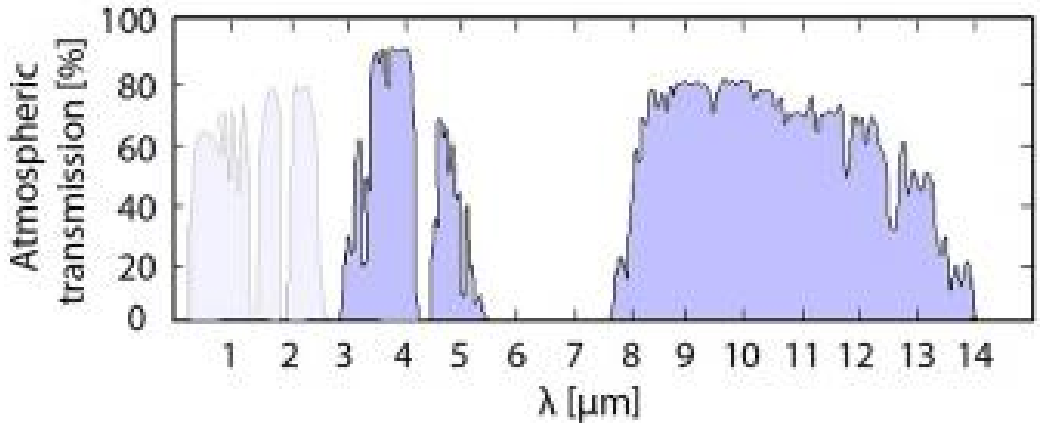


2-D Beam Profile at 1524.0 mm (60.0 in)



3-D Beam Profile at 1524.0 mm (60.0 in)

Mid-infrared atmospheric window



PN#/Ordering info

MP-QCL- W□□□□ -☆-△-XX

W□□□□： Wavelength

4000:4000nm

4600:4600nm

9000:9000nm

☆： Collimated output

1: With

0: Without

△： Laser type

FP:QCL-FP

DFB:QCL-DFB

XX: Output power

001=1mw

010=10mw

250=250mw

400=400mw

1000=1000mw

CW Distributed Feedback (DFB) Quantum Cascade Laser

*** Center wavelength measured at T = 15℃ under continuous wave**

* Center wavelength tuning range: +/- 0.03 um

* Other center wavelengths are listed in the table +/- 100 nm We can provide screening services

* Other center wavelengths can be customized, minimum order quantity: 5 pieces

The wavelengths we can currently provide are as follows*

Wavelength(μm)	Wave number (cm^{-1})	Output power (mW)	Wavelength(μm)	Wave number (cm^{-1})	Output power (mW)	Wavelength(μm)	Wave number (cm^{-1})	Output power (mW)
4.22	2370	> 50	6.25	1600	> 100	9.38	1066	> 100
4.28	2336	> 50	7.15	1399	> 100	9.47	1056	> 150
4.32	2315	> 50	7.26	1377	> 100	9.49	1054	> 150
4.34	2304	> 50	7.32	1366	> 100	9.52	1050	> 200
4.45	2247	> 80	7.37	1357	> 100	9.56	1046	> 200
4.48	2232	> 80	7.43	1346	> 150	9.63	1038	> 150
4.53	2208	> 150	7.57	1321	> 150	9.66	1035	> 100
4.56	2193	> 150	7.61	1314	> 150	9.68	1033	> 100
4.59	2179	> 150	7.75	1290	> 300	9.72	1029	> 100
4.61	2169	> 100	7.78	1285	> 300	9.95	1005	> 100
4.72	2119	> 100	7.80	1282	> 300	10.24	977	> 150
5.18	1931	> 150	7.82	1279	> 300	10.26	975	> 150

5.26	1901	> 150	7.85	1274	> 300	10.28	973	> 150
5.66	1767	> 300	8.01	1248	> 100	10.32	969	> 150
5.73	1745	> 150	8.28	1208	> 200	10.36	965	> 150
6.13	1631	> 150	9.02	1109	> 100	10.54	949	> 100
6.15	1626	> 150	9.05	1105	> 100	10.60	943	> 80
6.18	1618	> 100	9.26	1080	> 100	10.63	941	> 80

Pulsed Distributed Feedback (DFB) Quantum cascade lasers

Wavelength(μm)	Wave number(cm^{-1})	Output power(mW)	Wavelength(μm)	Wave number(cm^{-1})	Output power(mW)	Wavelength(μm)	Wave number(cm^{-1})	Output power(mW)	Wavelength(μm)	Wave number(cm^{-1})	Output power(mW)
3.399	2942	4.453	2245	5.193	1925	6.135	1629	7.788	1284	9.489	1053
3.402	2939	4.457	2243	5.214	1917	6.143	1627	7.795	1282	9.509	1051
3.45	2898	4.461	2241	5.224	1914	6.153	1625	7.809	1280	9.529	1049

3.451	2897	4.465	2239	5.233	1910	6.156	1624	7.819	1278	9.544	1047
3.477	2876	4.471	2236	5.24	1908	6.17	1620	7.831	1276	9.586	1043
3.48	2873	4.475	2234	5.244	1906	6.177	1618	7.857	1272	9.598	1041
3.497	2859	4.479	2232	5.25	1904	6.214	1609	7.869	1270	9.623	1039
3.519	2841	4.483	2230	5.255	1902	6.225	1606	7.887	1267	9.634	1037
3.536	2828	4.485	2229	5.261	1900	6.228	1605	7.906	1264	9.655	1035
3.538	2826	4.489	2227	5.264	1899	6.242	1602	7.933	1260	9.672	1033
3.546	2820	4.492	2226	5.266	1898	6.243	1601	7.986	1252	9.692	1031
3.549	2817	4.498	2223	5.272	1896	6.258	1597	7.998	1250	9.72	1028
3.566	2804	4.501	2221	5.279	1894	6.262	1596	8.016	1247	9.744	1026
3.568	2802	4.506	2219	5.289	1890	7.148	1398	8.026	1245	9.903	1009

3.605	2773	4.509	2217	5.294	1888	7.164	1395	8.054	1241	9.921	1007
3.607	2772	4.513	2215	5.304	1885	7.176	1393	8.101	1234	9.943	1005
3.655	2735	4.517	2213	5.306	1884	7.185	1391	8.163	1225	9.964	1003
3.724	2685	4.521	2211	5.452	1834	7.195	1389	8.22	1216	9.983	1001
4.184	2390	4.525	2209	5.486	1822	7.205	1387	8.242	1213	10.001	999
4.185	2389	4.529	2207	5.523	1810	7.217	1385	8.252	1211	10.029	997
4.188	2387	4.534	2205	5.557	1799	7.229	1383	8.265	1209	10.042	995
4.194	2384	4.538	2203	5.592	1788	7.258	1377	8.282	1207	10.063	993
4.197	2382	4.543	2201	5.612	1781	7.268	1375	8.292	1205	10.19	981
4.2	2380	4.545	2200	5.626	1777	7.285	1372	8.301	1204	10.206	979
4.204	2378	4.55	2197	5.632	1775	7.289	1371	8.326	1201	10.238	976

4.207	2376	4.554	2195	5.639	1773	7.327	1364	8.335	1199	10.259	974
4.215	2372	4.56	2192	5.646	1771	7.337	1362	8.352	1197	10.289	971
4.219	2370	4.565	2190	5.651	1769	7.348	1360	8.386	1192	10.327	968
4.221	2369	4.569	2188	5.657	1767	7.354	1359	8.902	1123	10.342	966
4.226	2366	4.574	2186	5.665	1765	7.367	1357	8.948	1117	10.377	963
4.231	2363	4.577	2184	5.669	1763	7.373	1356	9.004	1110	10.396	961