7.4um low power benchtop DFB-QCL mid-infrared quantum cascade laser 5mW (TDLAS integrated control module)

Product Description

QCL7400 - 7.4um low-power benchtop DFB-QCL mid-infrared quantum cascade laser is a domestically advanced ultra-low-power QCL DFB laser developed by Idealphotonics in the first half of 2018. The tunable range exceeds 100nm, and the output power is greater than 20mw to meet the industrial needs of customers testing gas sensors. Our laser collimated output has stable output power and high temperature and wavelength stability, which is several orders of magnitude higher than the stability of traditional high-power quantum cascade lasers. It provides an excellent test light source for our mid-infrared test customers.

Part Number

TDLAS-MIR-QCL-W7400-1-DFB-005

Product features

Low power consumption, high power、 High side mode suppression ratio、

Intelligent software control、 Small structure

Application area

TDLAS CO high-precision trace analysis、 Mid-infrared test light source

Parameters

Parameters

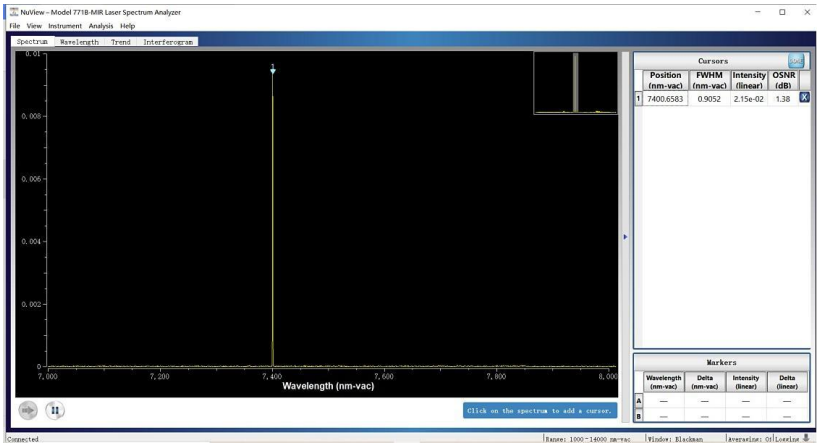
Parameter	Unit	Indicators		
		Min.	Typical value	Max.
PN#			7.4umDFB-QCL	
Output power 1	mW		5	
Peak operating wavelength 2	um		7.4	
Spectral width (FWHM)	MHZ		1	
Output side mode suppression ratio (SMSR)	dB	20		
Output isolation 3			30	
Wavelength temperature coefficient	Mrad		0.6	
Wavelength current coefficient	mm		0.2	
Output power stability (8 hours) 4	nm/A		±1	±4
Output power adjustable range	%	0		100
TEC operating range	℃	0		50
Operating voltage	VAC	100	220	240
Operating temperature	℃	0	-	55
Storage temperature	℃	-20	-	65

Specifications and dimensions	mm	290(L)×108(W)×68(H) mm

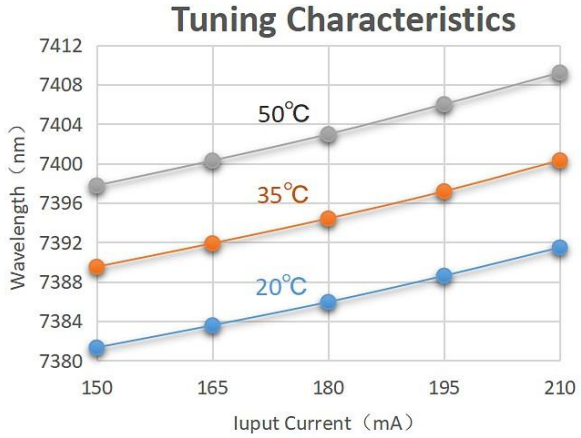
Technical Specifications

1. Output power is optional;
2. Peak operating wavelength can be specified;
3. Output power stability test condition is 25 degrees, after 30 minutes of preheating;
4. Maximum power consumption refers to the overall power consumption under extreme working conditions;.

Measured spectrum



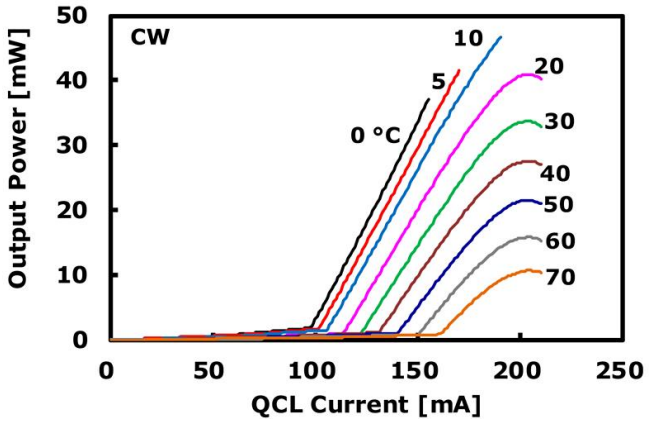
Wavelength temperature tuning curve



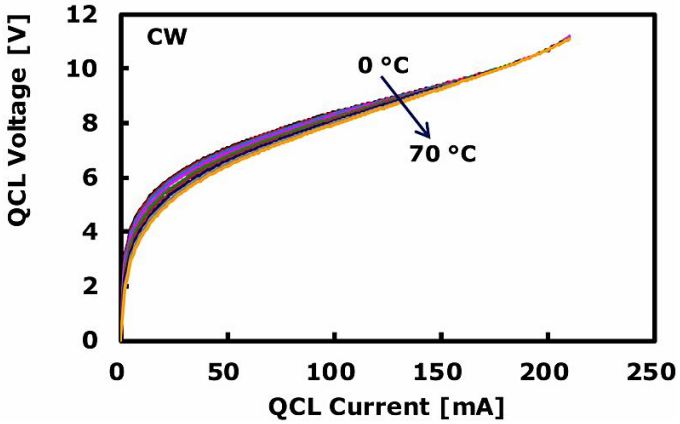
Power stability

QCL laser characteristic curve (taking 7.4um typical wavelength as an example)

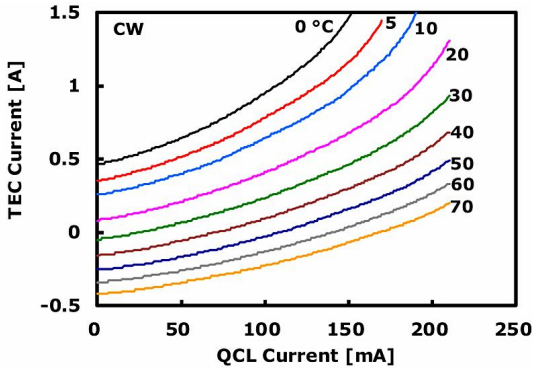
Output power characteristic curve:



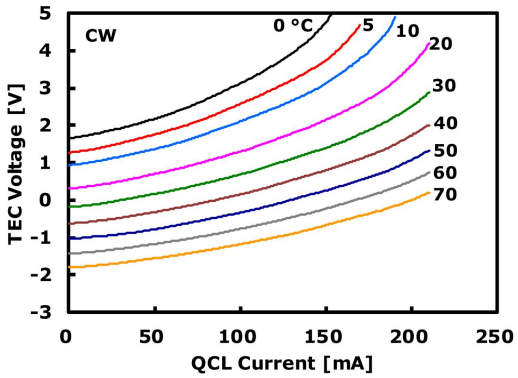
Voltage characteristic curve



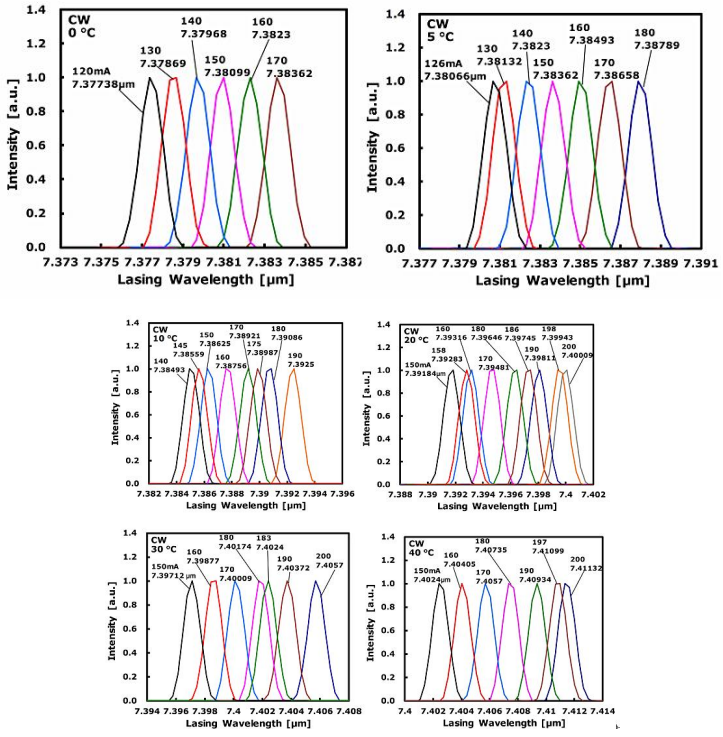
TEC current characteristic curve

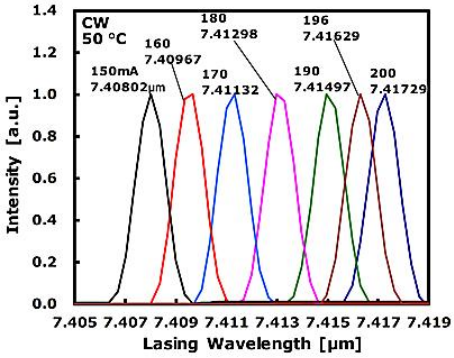


TEC voltage characteristic curve

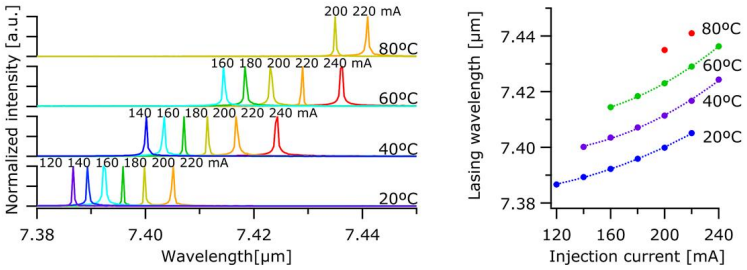


Laser spectrum (CW)

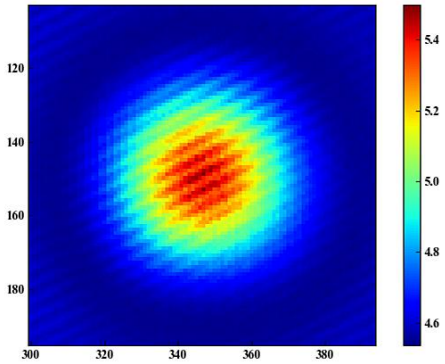


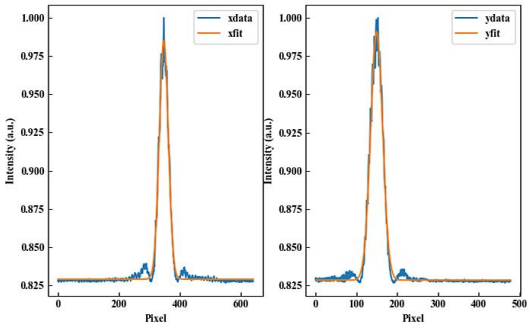


Wavelength temperature current tuning curve



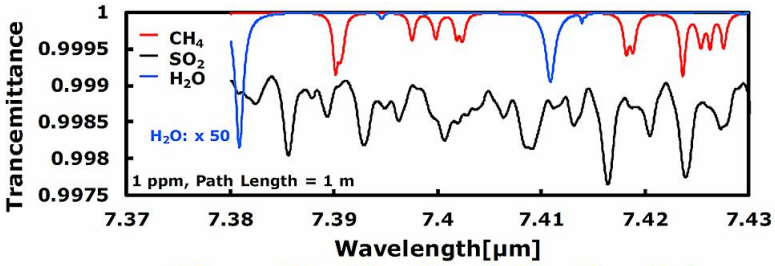
Quantum cascade laser output spot





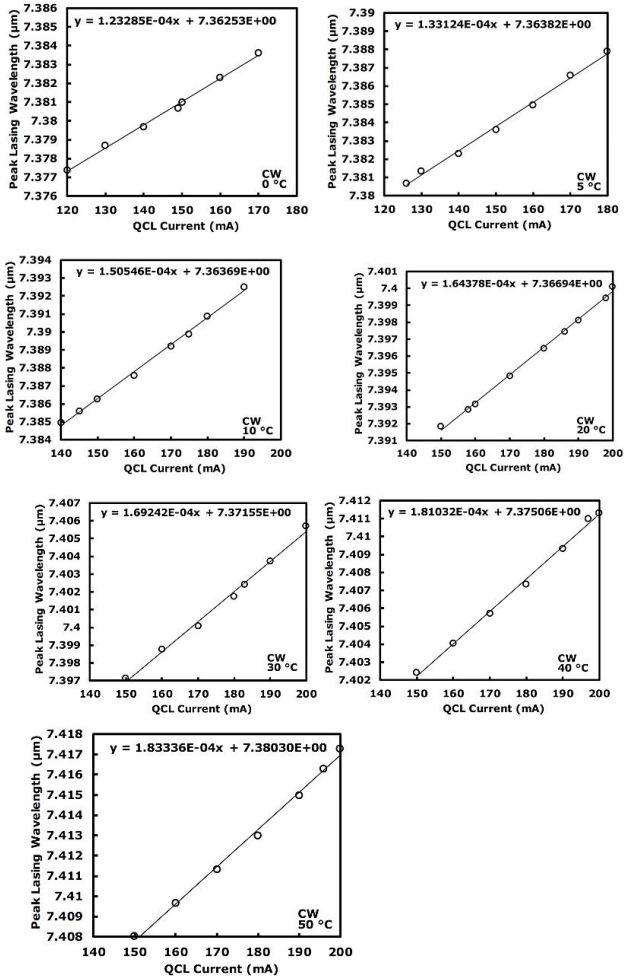
The pixel size of the test camera is 5 μm, and the Gaussian fitting spot diameter is 320 μm.

Simulation results of absorption spectral lines near 7.4umTest result

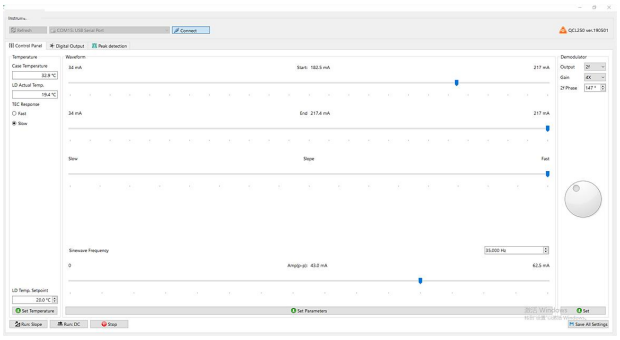


[Absorption Line Simulation Results]

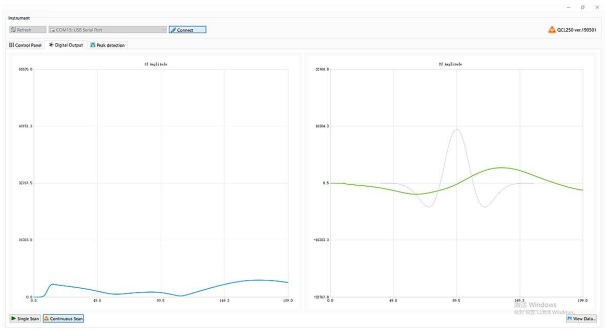
The relationship curve between peak wavelength and current



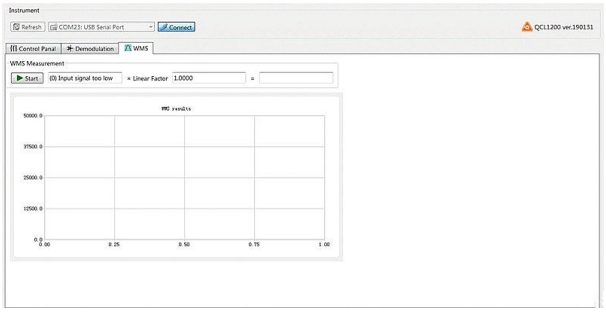
Control software



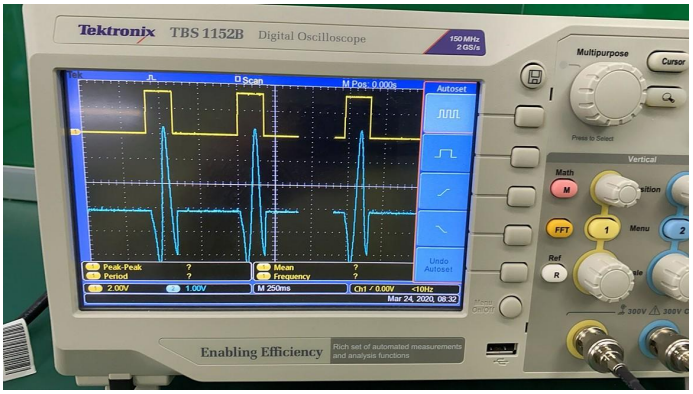
2F signal acquisition interface:



Algorithm calibration interface:



Modulation signal linearity test (oscilloscope voltage signal effect diagram):



Ordering Information

MIR-QCL- W □-☆-△-XX

W□□□□: Wavelength

7400: 7400nm
10530: 10530nm

☆: collimator

1: with
0: without

△: laser type

FP: QCL-FP
DFB: QCL-DFB
XX: output power
005=5mw
010=10mw
100=100mw