

High Power Sources

Alpes Lasers introduces its new high power sources. These Quantum Cascade Lasers have a minimum average power of 1W and more than 9W of peak power. Available in a collimated HHL package with a dedicated driver, these lasers can be used for free-space optical communications, energy deposition, illumination and IR countermeasures.

Electro-optical Characteristics

QUANTITY	ACRONYM	MIN	TYP.	MAX	UNIT	NOTE
Min. average power	MAP	1.0	1.2	1.5	W	1
Peak power	PP	1	3.0	9.0	W	2
Output spectrum	-	-	MM	-	-	3
Spectral width	SW	50	100	150	cm ⁻¹	
Duty cycle	DC	0	30	100	%	4
Central wavelength	CWL	2300	1030 2040 2150 2200 2530	1500	cm ⁻¹	5
Wall-plug efficiency	WPE	10	-	-	%	6
Beam quality	M ²	1.5	2.0	3.0	-	7
Divergence	MD	-	-	6	mrad	8
Pointing error	MPE	-	-	6	mrad	8
Pulse width	PW	20	200	CW	ns	9
Beam diameter	BD	-	4	-	mm	10
Rise/fall time requirements	RFT	-	10	15	ns	11
	<i>Packaging</i>	<i>HHL</i>	-	-	-	12
Package size LxWxH		33x45x19			mm ³	12
TEC current	TECI	1.5	2.0	3.0	A	13
TEC voltage	TECV	9.0	12.0	18.0	V	13
Heatsink cooling capacity	-	25	35	65	W	
	<i>Driver</i>	-	5-2	-	-	14
Pulse width	PW	30	200	CW	ns	15
Rise/fall time	RFT	5	6	8	ns	16
Package & driver size LxWxH		135x45x22			mm ³	17

Key features

- High power
- Collimated source
- High beam quality
- Multi-mode spectrum
- Swiss made

Key benefits

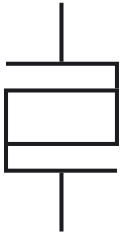
- Free-space optical communication
- Energy deposition
- Illumination
- IR countermeasures



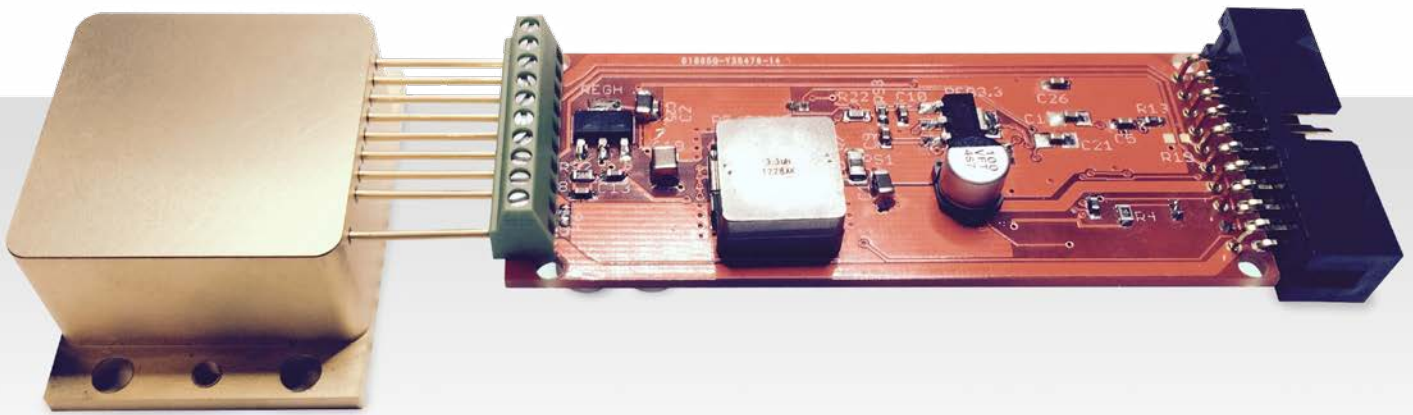
CLASS 4 LASER PRODUCT

The typical data are taken with 2040 cm⁻¹ laser with typical Peltier current (TECI) cooling with 20 °C water cooled heatsink. These specifications may be changed without further notice.

- This power is attained in pulsed mode with about 30% DC. Lower and higher DC operation of the device may exhibit slightly less average power. In addition, for the wavelengths of 4.55 microns and 4.65 microns only we can guarantee a minimum average power of 1.5W when required.
- The typical PP is obtained in the max power conditions i.e. 30% DC. The PP reaches its lowest value for CW operation and is maximum at lower DC but does not reach higher than max value even for extremely low DC. It is to be noted that this is also the case for very short pulses, the absolute max ratings for the laser current given in the device datasheet may not be exceeded even for short period of time.
- The output spectrum is Multi Mode (MM). This comes from the existence of several modes in the longitudinal direction, however there is only one mode in the lateral direction.
- The device may operate up to Continuous Wave condition (CW) but its maximum average power output is attained around the typical DC conditions.
- The presently available devices are centered around 3.95 μm, 4.55 μm, 4.65 μm, 4.9 μm and 9.7 μm, devices ranging from min to max indicated value may be ordered with up to 26 weeks lead-time, please enquire.
- This value is obtained at max power conditions.
- Standard value, this specification may be tightened on request.
- Is defined as the FWHM along the fast axis.
- 200 ns is optimum as it provides a good compromise between the time taken to start and stop laser operation where heat is dissipated mostly uselessly and the heating occurring during laser operation. Deviations to this pulse length will thus reduce overall emission performances.
- Measured at the window of the HHL.
- Using longer rise or fall time may impair the performances of the laser by overheating the device in conditions where it cannot emit light thus losing efficiency and output power.
- Overall dimensions, excluding 20 mm pins. Other configurations may be adapted, please inquire.
- The typical values are obtained in nominal conditions, deviations to these conditions towards cooler environment will reduce the cooling requirement and increase them for higher temperature conditions. A heat dissipation capacity of 10 W/K is recommended to ensure the heatsink temperature does not degrade significantly the cooling capacity.
- This device is available as a benchtop module or in OEM format.
- Values at 80% of the amplitude. The device is capable of addressing arbitrary modulation patterns required by your applications. The patterns may be programmed in the driver or supplied from a logic control.
- Values for 20% to 80% of the amplitude. The RFT cannot be set but the shorter being the better, it suits well the laser needs.
- The driver must be screwed directly to the HHL pins to reduce the pulse transmission length. The performances are not guaranteed if the driver is not attached directly to the HHL.
- Leadtime for other Central Wavelength than those listed up to 26 weeks, please enquire



High Power Sources



Currently available
at 3.95 μm , 4.55
 μm , 4.65 μm , 4.9
 μm and 9.7 μm !

Power up to
1.5W at selected
wavelengths.

Pulse sequence can be
programmed internally
or externally controlled
through TTL signals.

Overcurrent and overheating protection included.
Temperature controller not included.