ALPES LASERS

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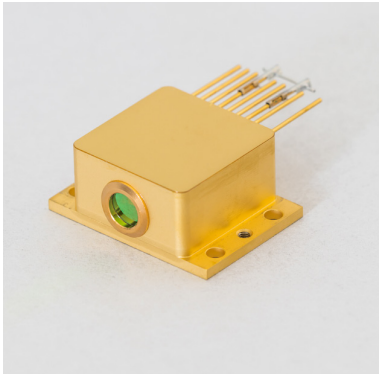
High Heat Load Housing



The HHL housing is a sealed collimated housing for CW or pulsed lasers. It is ideal for short-run integration and use in difficult environments. The HHL housing is much smaller than the LLH and is completely sealed. The HHL contains a Peltier junction and a NTC temperature sensor (model 10K4CG), which can be controlled by the TC3 or your own temperature control system. Heat dissipation is performed by thermal contact with its copper base; the heat dissipation capacity depends on the operation mode and environmental conditions.

There are three versions of the beam output:

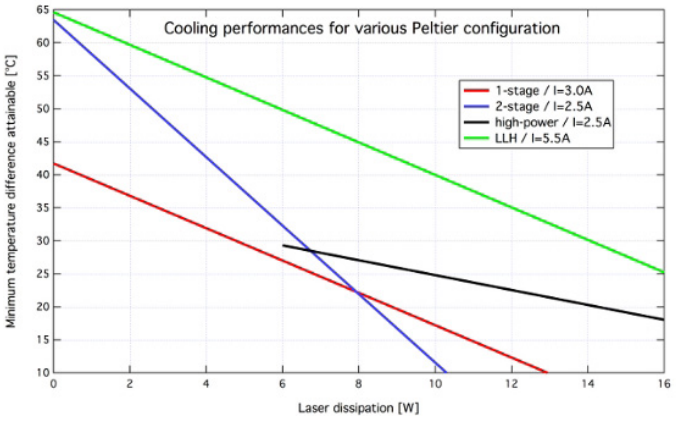
- In the standard version, the IR beam is collimated through a chalcogenide glass lens and goes through an AR-coated ZnSe window. The free-space beam has a divergence < 6 mrad.
- In the uncollimated version, the lens is absent and the laser source is placed as close as possible from the ZnSe window for a divergent output
- In the pigtailed version a fiber port is added to the HHL and is provided with a ~1-m length of single-mode mid-IR optical fiber.

Key Features

- Heat Dissipation up to 16W
- Cooling up to 60°C
- Collimated output
- Fiber Pigtail connector available

Key Applications

- Integration into industrial systems



The HHL can be equipped with either a single-stage, double-stage or high power TEC cooler. Their performance are shown here and compared to the much larger LLH for reference. The single-stage and double-stage are equivalent in price and the ideal one will be chosen to fit the laser expected usage; the high power TEC is more expensive.

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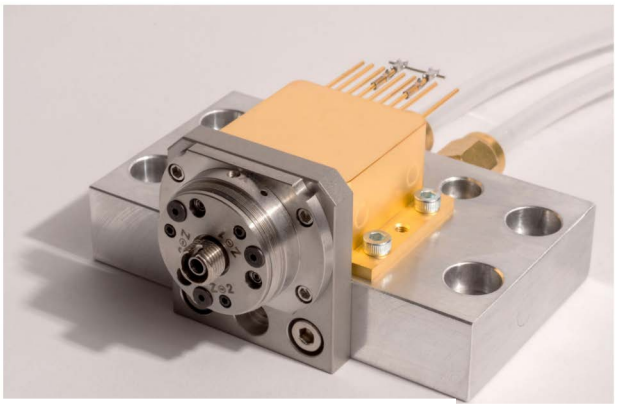
Picture of a HHL with collimated beam output. The lens is inside the housing, protected by a tilted window with AR coating.



Pigtailed HHLto be delivered with 1-m length of single-mode mid-IR optical fiber. The heatsink shown is also available with free-space beams for easy water cooling.

Specifications

QUANTITY	ACRONYM	MIN	TYP	MAX	UNIT	NOTE
Size			44.5 mm x 31.7 mm x 19 mm		mm^3	1
Max. Temperature Differential			30	60	°C	2
Max. Heat Load			6	16	W	3
Beam Divergence (free space)			5	6	mrad	4
Temperature Sensor			NTC			5
Fiber Connector			FC/PC			6
Fiber Coupling Efficiency		5	15	50	%	7
Coupling Repeatability			2.5		%	8
ZnSe Window Coating			2-12		µm	9
Fiber Numerical Aperture			0.3			10
Fiber Length		0.5	1		m	11
Single-mode fiber available				5	µm	12

1. This is the size of the free space HHL. The pigtailed HHL is installed on a fixed base which contains an additional fiber port.
2. Max. differential attainable at zero heat load. Will depend on cooler chosen.
3. Max heat load to keep chip at room temperature. Will depend on cooler chosen.
4. For standard collimated beam. Uncollimated or pigtailed options also available.
5. Standard is NTC of Type 10K4CG. pt100 sensor also available.
6. For pigtailed housing only
7. In the case of pigtailed housing the output of the housing will be lower than the output of the chip prior to encapsulation due to partial coupling to the chip mode. The coupling depends on details of the output facet and is not adjustable. The coupling will be optimized for the expected temperature of operation.
8. Repeatibility with repeated fiber plugging/unplugging
9. The ZnSe window is tilted to avoid back-reflections.
10. For 4.7 micron fiber - the value will vary if a different fiber is chosen.
11. Standard length - any commercially available length can be chosen, the price of the fiber will be added. Note that attenuation is typically larger for mid-IR than for telecommunication fibers.
12. Single-mode Indium Fluoride Glass is available for wavelengths shorter than 5 microns. Other types of fibers are possible, in this case the specifications may change,