

## Glider

Alpes Lasers introduces the GLIDER widely tunable mid-IR light source. Based on an external cavity design, the Glider is a monolithic all-in-one light source that requires no assembly or external drivers. The optical output is a single-beam of light whose wavelength can be selected within a range of up to  $\sim 850 \text{ cm}^{-1}$ .



### Key Features

- Large scanning range
- Pulsed operation (CW in some cases)
- Modular
- Graphical interface
- Optional Fibered output
- Full beam steering control capabilities
- Standardized opto-mechanical interfaces
- Integrated acquisition system
- Gaseous purge available

### Key Applications

- Material science
- Spectrometry
- System development



Alpes Laser's GLIDER is designed for single-mode operation with wide spectral tunability. The Glider consists of single or multiple quantum cascade laser (QCL) gain chip, a grating-tuned extended optical cavity in Littrow configuration, driver electronics and control software. The system is delivered fully assembled in a closed housing and requires no alignment.

The Glider is available in either a single module configuration or in a multi-module configuration. The multi-module configuration can accommodate up to 4 different modules for larger coverage.

The system comes with a controller providing a Web based graphical user interface allowing access to all the functionalities of the system.

OEM version of the modules can be offered on demand for integration.

### Additional Features

- Gaseous purge of the entire systems possible with downstream purge chain connection
- Dual 16 bits channel analog acquisition systems capable of synchronous acquisitions with laser pulses and wavelength
- Real time wavelength 12 bits analog output
- Integrated low level microprocessor providing real time versatile input/output functionality and high customization capabilities.
- Integrated controller running Linux based operating systems with embedded graphical interface and automated scripting measurement capability accessible locally by screen/keyboard/mouse or remotely by RJ45 connection
- Optional fibered output (multimode) with possible switching between free space and fibered output.

## Specifications

PARAMETER NAME	MINIMUM VALUE	TYPICAL VALUE	MAXIMUM VALUE	UNIT	NOTE
Spectral Linewidth		1	2	cm <sup>-1</sup>	
Gapless tuning range per module	50	200	300	cm <sup>-1</sup>	These values may not be achieved by all gain media, the actual values for tuning range, peak power and average power are dependent on the selected gain medium.
Grating period	100		450	gr/mm	The optimal grating for the selected chip(s) will be included in the product. Informative.
300 cm <sup>-1</sup> step time	-	70	-	ms	Time required to move the wavelength by xx cm <sup>-1</sup> and attain stability criteria of +/- 0.5 cm <sup>-1</sup> . Optical output will not stop during this time.
10 cm <sup>-1</sup> step time	-	40	-	ms	
1 cm <sup>-1</sup> step time	-	30	-	ms	
Sweep rate	3400	-	4500	cm <sup>-1</sup> /s	The values for a specific configuration will depend on wavelength and grating selected.
Spectral absolute accuracy	0.2	0.25	0.8	cm <sup>-1</sup>	Absolute accuracy of the system between initializations.
Spectral Repeatability	0.015	0.03	0.06	cm <sup>-1</sup>	Bidirectional repeatability after initialization.
Maximum peak power	40	100	400	mW	Tuning range, peak power and average power are dependent on the selected gain chip, the values given here are typical for most chips.
Average power	1	5	20	mW	Tuning range, peak power and average power are dependent on the selected gain chip, the values given here are typical for most chips.
Power stability	-	-	5	%	
Pulse width	200	300	CW	ns	Not all chips are capable of CW operation. 300 ns is the typical pulse length used.
Max Pulse repetition frequency	0.066	0.166	1	MHz	Laser chip dependent
Duty cycle	0.1	5	100	%	Not all chips are capable of CW operation. 5% is the typical duty cycle.
Beam quality (M <sup>2</sup> )	1	2			
Beam diameter at device output	3	4-5	8	mm	
Beam divergence	-	-	6	mrad	
Pointing stability	-	-	6	mrad	
Laser Operation temperature	0	18	30	°C	Defined by manufacturer, typically 18°C. Other set points on request. Temperatures below atmospheric dew point require a purging of the product.
Cooling	Passive	Water	-		Performances are guaranteed with water cooling. In some particular cases, passive cooling can be enough.
Laser Class	-	-	3B		Exact classification provided individually for each device
Dimensions		528 × 360 × 165		mm	Full system, excluding feet
Weight	-	-	23	Kg	4 chips version
Delivery time	-	-	20	weeks	

## Available BG chips

Laser Chip Name	Minimum Tuning Range	Laser Chip Name	Minimum Tuning Range
BG-3.2-3.6	2820-3070 cm <sup>-1</sup>	BG-7-8.8	1160-1395 cm <sup>-1</sup>
BG-4.4-5.2	1970-2230 cm <sup>-1</sup>	BG-7.4-9.7	1060-1320 cm <sup>-1</sup>
BG-5.1-6.1	1660-1930 cm <sup>-1</sup>	BG-7.3-10.2	1010-1345 cm <sup>-1</sup>
BG-5.5-6.2	1635-1780 cm <sup>-1</sup>	BG-9.6-12.5	830-1015 cm <sup>-1</sup>
BG-6.1-7.4	1375-1615 cm <sup>-1</sup>	BG-9.7-13.1	795-1000 cm <sup>-1</sup>
BG-6.2-7.4	1380-1595 cm <sup>-1</sup>	BG-10.8-13.7	760-900 cm <sup>-1</sup>

Partial list of available Broad Gain laser chips that can be integrated into the GLIDER. A more complete list can be found on our website, including narrower gain options and more recently developed options.



GLIDER back side showing controls and connectors