ALPES LASERS

Boston Electronics

Pioneering Photonics

GLIDER

Alpes Lasers introduces the GLIDER widely tunable mid-IR light source. Based on an external cavity design, the Glider is a monolithic light source that requires no assembly or external drivers. Its optical output is a single-beam of light whose wavelength can be selected within a range of up to ~850 cm–1. It features a synchronous measurement systems making it an all in one product simplifying spectroscopy applications.



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

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- Material science
- Spectrometry
- System development
- Process control
- Hyperspectral imaging
- Pollutant monitoring
- Biomarker analysis



Alpes Lasers' GLIDER is a widely tunable QCL source combining one or multiple gain chips, a grating-tuned external cavity, integrated driver electronics, control software, and synchronized analog measurement.

This turnkey architecture simplifies complex, timing-critical setups by providing precise synchronization and straightforward operation.

GLIDER is available as a single-module system or with up to four modules for extended spectral coverage. All functions can be controlled locally or remotely through a web-based graphical interface, with an API available for system integrators.

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.

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Specifications

PARAMETER NAME	MINIMUM VALUE	TYPICAL VALUE	MAXIMUM VALUE	UNIT	NOTE
Spectral Linewidth		1	2	cm^{-1}	
Gapless tuning range per module	50	200	300	cm^{-1}	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^{-1} step time	-	70	-	ms	Time required to move the wavelength by xx cm-1 and attain stability criteria of +/-0.5 cm-1. Optical output can be present or not during this time.
10 cm^{-1} step time	-	40	-	ms	
1 cm^{-1} step time	-	30	-	ms	
Sweep rate	3400	-	4500	cm^{-1}/s	The values for a specific configuration will depend on wavelength and grating selected. Sweep rate can be reached for large sweeps covering the entire range of the module. Small sweeps will not reach the max sweep rate. Simultaneous ADCs acquisition is currently not possible while sweeping between points.
Spectral absolute accuracy	0.2	0.25	0.8	cm^{-1}	Absolute accuracy of the system between initializations.
Spectral Repeatability	0.015	0.03	0.06	cm^{-1}	Bidirectional repeatability after initialization.
Maximum peak power	5		1000	mW	Tuning range, peak power and average power are dependent on the selected gain chip, the values given here are typical for most chips. Refer to website for typical performances
Power stability	-	-	5	%	
Pulse width	200	300	500	ns	Some gain material are capable of CW operation, contact us for more details. Pulse length is set at factory and is not user-selectable.
Max Pulse repetition frequency	0.066	0.166	1	MHz	Value is set at factory and is not user-selectable. Default value is will vary from one chip to another.
Duty cycle	0.1	5	100	%	Not all chips are capable of CW operation. 5 % is the typical duty cycle.
Beam quality (M^2)	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 & weight		-			Contact us to get the drawings

Available BG chips

Laser Chip Name	Minimum Tuning Range	Laser Chip Name	Minimum Tuning Range
BG-3.2-3.6	2820-3070 cm^{-1}	BG-7-8.8	1160-1395 cm^{-1}
BG-4.4-5.2	1970-2230 cm^{-1}	BG-7.4-9.7	1060-1320 cm^{-1}
BG-5.1-6.1	1660-1930 cm^{-1}	BG-7.3-10.2	1025-1310 cm^{-1}
BG-5.5-6.2	1635-1780 cm^{-1}	BG-9.6-12.5	830-1015 cm^{-1}
BG-6.1-7.4	1375-1615 cm^{-1}	BG-9.7-13.1	795-1000 cm^{-1}
BG-6.2-7.4	1380-1595 cm^{-1}	BG-10.8-13.7	760-900 cm^{-1}

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.

The information in this fact sheet is the best of our knowledge, accurate as of the date of issue. Alpes Laser SA reserves the right to change this information without notice. Nothing herein shall be deemed to create any warranty, expressed, or implied.



GLIDER back side showing controls and connectors