Centrale-I

Turnkey laser diode with SOA modulation



AeroDIODE

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CENTRALE-I

Turnkey seeder with SOA modulation

Laser diode modulated with a SOA (Semiconductor Optical Amplifier).
Complete turnkey solution between 780 and 1600 nm.

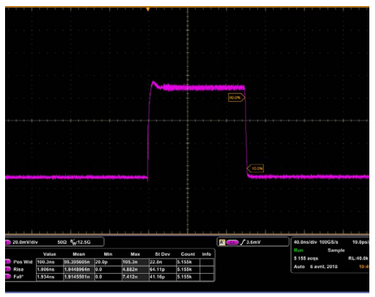


AeroDIODE Centrale-I Series include an efficient low noise laser diode and a Semiconductor Optical Amplifier (SOA) which modulates the light coming from the laser diode. The module offers either an «On/Off» pulse shaping, or a «user-designed» temporal pulse shaping with an on-board Arbitrary Waveform Generator (AWG).

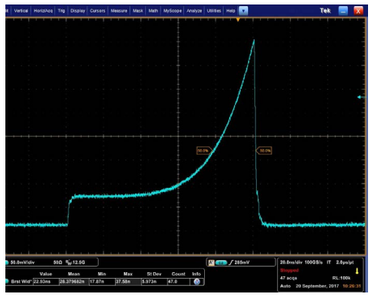
SOAs, when used with the proper electronics, are a lossless, low noise, high speed, high dynamic range, high extinction ratio and highly polarizing fiber modulation solution working from 780 to 1600 nm.

Key features:

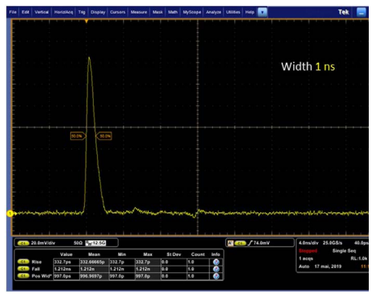
- More than 8 wavelengths available : 780 nm, 785 nm, 795 nm, 1030 nm, 1053 nm, 1064 nm, 1310 nm and 1550 nm. Contact AeroDIODE for other wavelengths
- The modulated output lights keeps the narrow spectal performance of the seeder laser diode in CW or pulse mode (down to few MHz linewidth)
- Max power up to 100 mW (200 mW peak in pulse mode)
- Output pulse repetition rate from single shot up to 200 MHz
- Down to 1 ns pulse width
- AWG resolution : 0.5 ns - max AWG pulse width : 32 µs
- AWG pulse dynamic range : 48 dB
- Extinction ratio up to 75 dB
- Laser diode monitor and optional output monitor photodiode
- The 1030, 1053 and 1064 nm wavelengths are optimized for, respectively, Yb-Glass; Nd-YLF and Nd-YAG/YVO4 amplification systems
- PM Fibers (key aligned to slow axis) - Compatible with SMF fiber systems
- No timing constraint on input pulse width for triggering down to 10 fs
- Adjustable voltage level threshold for input pulse triggering down to 5 mV - compatible with photodiode signals triggers
- All software integration libraries are available on demand : LabVIEW, Python (Linux compatible), DLLs, Hexa etc.
- External dimensions : 250*160*60 mm^3



Example of a 100 ns - 100 mW pulse at 1064 nm

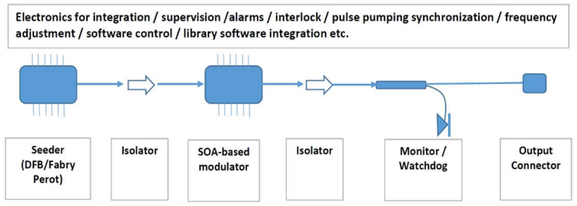


Example of an exponential pulse shape at 1030 nm to precompensate the distortion of amplifying stages after the product.

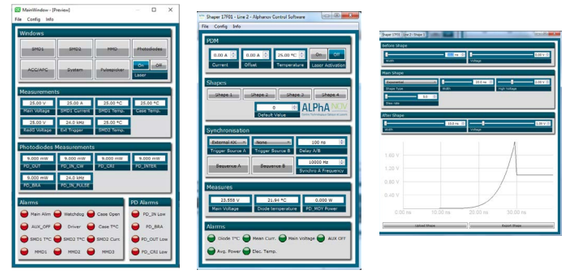


Example of a 1 ns short pulse width at 1064 nm obtained with a SOA modulation of a DFB single frequency laser diode.

Technical description and specifications



The product combines a fiber coupled laser diode and a special SOA with a dedicated electronics to drive both items. The table and configuration choice below is indicative - contact us to build your own Centrale-I turnkey SOA modulated seeder.



A dedicated GUI allows to control all pulse parameters

Centrale-I modules performances (examples*):

Nominal Wavelength**	780 nm, 785 nm or 795 nm		1030 nm		1053 nm		1064 nm		1310 nm		1550 nm	
Pulsing mode	On/Off only	Adjustable pulse shape	On/Off only	Adjustable pulse shape	On/Off only	Adjustable pulse shape	On/Off only	Adjustable pulse shape	On/Off only	Adjustable pulse shape	On/Off only	Adjustable pulse shape
Laser Diode seeder	DFB		DFB		DFB		DFB		DFB		DFB	
Typical laser diode emission linewidth**	< 500 kHz		< 1 MHz		< 1 MHz		< 1 MHz		< 500 kHz		< 500 kHz	
CW/Pulse modes	CW & Pulse	Pulse only	CW & Pulse	Pulse only	CW & Pulse	Pulse only	CW & Pulse	Pulse only	CW & Pulse	Pulse only	CW & Pulse	Pulse only
Output power (CW/Pulse)	65mW / 160mW	45 mW	100mW/ 200 mW	150 mW	100mW/ 200 mW	150 mW	100mW/ 200 mW	150 mW	200mW/ 500 mW	100 mW	50 mW / 100 mW	100 mW
Extinction ratio (typical value - up to...)	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB	75 dB	65 dB
Min pulse duration / Min rise/fall time	1-2 ns / 1-2 ns											
Typical Jitter (internal/external trigger)	<8 ps / <8 ps	<100 ps /2ns***	<8 ps / <8 ps	<100 ps/ 2ns***	<8 ps / <8 ps	<100 ps/ 2ns***	<8 ps / <8 ps	<100 ps /2ns***	<8 ps / <8 ps	<100 ps/ 2ns***	<8 ps / <8 ps	<100 ps /2ns***
Output Fiber : type / coating /connector**	PM780 / Metal protected >3 mm / FC-APC		PM980 / Metal protected >3 mm / FC-APC						PM1310 / Metal protected >3 mm / FC-APC		PM1550 / Metal protected >3 mm / FC-APC	

* The table above is indicative - scroll down the website dedicated page to see all standard configurations and prices or contact AeroDIODE to build your own Centrale-I version

** Other performance are available. Contact AeroDIODE for special needs.

*** Jitter linked with internal clock synchronization - possibility to reduce it to 8 ps rms with a 10 MHz external trigger reference clock

Classification:

Name	xxxxCENTRALEI
Laser diode seeder version :	780 ; 785 ; 795 ; 1030 ; 1053 ; 1064 ; 1310 ; 1550 ; other (contact us)
SOA Driver version	1 : On/Off Pulse and CW 2 : Pulse only with AWG (1 ns - 8µs)

Ordering information:

Centrale-I : 1064CENTRALEI - [2]

Nominal Wavelength :
780 ; 785 ; 795 ; 1030 ;
1053 ; 1064 ; 1310 ;
1550 ; Other...

Driver version
1 : TTL
2 : AWG-based user designed pulse shape



AeroDIODE

AeroDIODE Corporation (USA)
1820 West Lincoln Street, Suite 3
Bozeman, MT 59715 - USA
Ph. (1) 800-887-5065

AeroDIODE France
11 rue Ferdinand BUISSON
33130 Bègles - France
Ph. +33 (0)6 27 69 41 52

www.aerodiode.com