OPP-LAB

OPP-LAB-CBand

Optical Pulse Picker LAB in the C-Band

The Exail OPP-LAB-CBand is a family of Optical Pulse Picker based on MXER $LiNbO_3$ Mach-Zehnder modulators and original bias controller. The module operates in the full C-Band, and the best extinction ratio is reached at a chosen (user supplied) wavelength from the ITU-Grid. It allows from a continuous laser source to generate an optical modulated signal, and from a pulse seeder source to pulse pick and reduce its repetition rate.

The short optical pulse generation or picking is based on a large bandwidth and high extinction ratio external $LiNbO_3$ modulator. For superior extinction ratio above 40 dB, the OPP-LAB embeds a cascaded modulators set-up.

An innovative automatic bias control circuitry (MBC) guarantees bias point stability over time whatever the power and the mode of the input optical signal, whether continuous or pulsed. This MBC is intended to operate at a chosen wavelength from the ITU-Grid to be specified.

FEATURES

- Turn-key optical pulse picker
- High optical stability over time
- Low rise & fall times
- Very high extinction ratio
- Proven solution

PERFORMANCE HIGHLIGHTS

Parameter	Nominal
Operating wavelengh	Full C-Band
Pulse contrast	40 dB / 80 dB
Insertion loss	6 dB / 12 dB

APPLICATIONS

- Pulse picking and optical modulation
- Laser operation

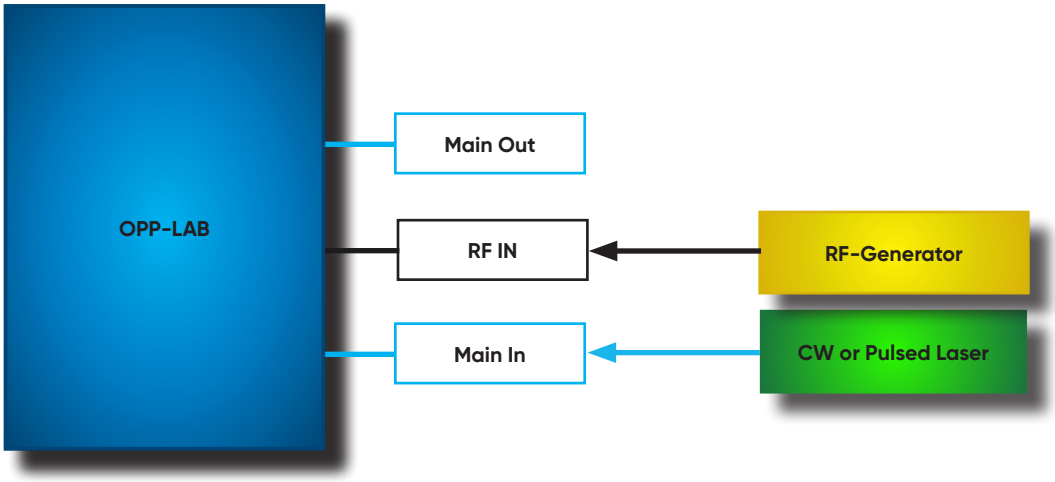
Ordering Information:

XSoptix

800 Village Walk #316
Guilford, CT 06437
Ph: 203-401-8093

Email orders to: sales@xsoptix.com
Fax orders to: 800-878-7282

FUNCTIONAL BLOCK DIAGRAM



The OPP-LAB integrates:

- a modulator set to ensure a very high optical pulse extinction ratio and flexible pulse shaping,
- an automatic Modulator Bias Control circuitry (MBC) to guarantee high extinction ratio stability over time.

The OPP-LAB is connected to an external optical laser source and an external electrical generator.

OPP-LAB-CBand

ELECTRICAL INPUT SPECIFICATIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
RF signal type	-	-	-	Pulse / Other		
RF impedance	-	-	-	50	-	Ω
RF amplitude [1]	-	-	-	5	-	V
RF duty cycle	-	For maximum pulse contrast	-	-	1	%
MBC trigger voltage	-	TTL	-	-	3.3	V
MBC trigger frequency	-	-	-	-	1	kHz
Power supply	DC	-	-	12	-	V

[1] Corresponding to the modulator Vπ RF value.

OPTICAL INPUT SPECIFICATIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Mode	-	-	Continuous or Pulse			
Wavelength	-	-	1530	1550	1560	nm
Side mode suppression ratio	SMSR	-	30	-	-	dB
Polarisation	-	-	Linear and controlled			
Input power	-	Continuous or average power	0	-	100	mW

OPP-LAB OPTICAL SPECIFICATIONS

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Electro-optics bandwidth	-	-	-	20	-	GHz
Rise/Fall time	-	Achieved with fast electrical pulse	-	20	-	ps
Static extinction ratio [1]	SER	OPP-LAB-CBand-40dB OPP-LAB-CBand-80dB	40 [2] 60 [2]	43 [2] 80 [2] [3]	- -	dB dB
Extinction ratio stability [4]	-	-	-	1	-	%/H
Insertion loss [5]	IL	OPP-LAB-CBand-40dB OPP-LAB-CBand-80dB	- -	6 12	- -	dB dB
Polarisation extenction ratio	PER	-	+20	-	-	dB
Contra-propagative signal [6]	-	-	-	-40	-	dBm
Optical return loss	ORL	-	-	-45	-40	dB
MBC dither frequency	Fdth	-	400	1000	1400	Hz

[1] Output static extinction ratio when duty-cycle < 1 % in the C-Band.
[2] Extinction ratio value for one wavelength selected from the ITU-Grid.
[3] The 80 dB is the theoritical value as an extinction ratio above 70 dB cannot be measured (photodiode
[4] Measured over 24 hours.
[5] When the modulator is set at its maximum transmission.
[6] From input port.

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INTERFACES AND DIMENSIONS

FRONT PANEL	
RF input connector	RF In - SMA Female - 50 Ω
Optical input connector	Main In - FC/APC - PM fiber
Optical output connector	Main Out - FC/APC - PM fiber
REAR PANEL	
Power supply (12V - 2A)	DC In - Jack male 2 mm
MBC dither disable	Trig In - BNC
USB	USB - B type
Dimensions	220 mm x 220 mm x 52 mm

ENVIRONMENT

Parameter	Min	Typ	Max	Unit
Operating temperature	+15	-	+35	°C
Storage temperature	-20	-	+50	°C

ABSOLUTE MAXIMUM RATINGS

Parameter	Min	Typ	Max	Unit
Optical input power	-	-	100	mW
Electrical input power	-	-	+28	dBm

ORDERING INFORMATION

Operating wavelength:
One wavelength from the ITU-Grid

Pulse contrast: **40** (40 dB), **80** (80 dB)

OPP-LAB-□nm-□dB

Exail Photonics produces specialty optical fibers and Bragg gratings based fiber optics components and provides optical modulation solutions based on the company lithium niobate ($LiNbO_3$) modulators and RF electronic modules.
Exail Photonics serves a wide range of industries: sensing and instruments, defense, telecommunications, space and fiber lasers as well as research laboratories all over the world.

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