

ModBox-PP-NIR

Near Infra-Red Pulse Picker

ModBox



FEATURES

- Very high Extinction Ratio (35 dB, 55 dB)
- Fast rise & fall times
- Optical square waveform
- Low jitter
- Proven solution
- For any wavelength from the NIR band

OPTIONS

- Very High extinction ratio > 55 dB
- Electrical Pulse Penerator (EPG)
- Electrical Pre-Scaler (EPS)

The ModBox Pulse Picker allows to pick and pulse shape any pulse or pulse sequence in an incoming pulse train. It acts as a fast gate with low insertion loss and high extinction, and is available in a wide range of wavelengths.

The Modbox-PP-NIR is a high extinction ratio optical Pulse Generator operating in the Near Infra-Red band. It allows dynamic extinction ratio from 30 dB to above 55 dB with high stability over time, and with user adjustable optical pulse duration and optical pulse train repetition rate (when pre-scaler option is embedded).

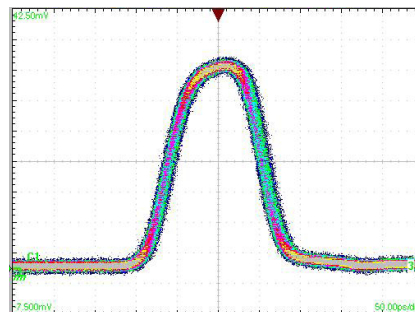
iXBlue Photonics has accumulated a strong experience in such systems and successfully installed them in many laboratories over the world.

The ModBox-Pulse provides R&D and production engineers with state of the art performance and the peace of mind of a turn-key instrument. It can be used as a reference transmitter in laboratories and production for a broad variety of applications : components and material characterization, seeder for high energy lasers, lidars...

Performance Highlights

Parameter	Min	Typ	Max
Operating wavelength	1030 nm, 1053 nm, 1060 nm, 1064 nm, 1080 nm		
Pulse contrast @1550nm	> 30 dB, or > 50 dB		
Pulse waveform	Rectangular		
Pulse width	100 ps - 10 ns		
Rise / Fall times	50 ps		
Jitter	< 10 ps		

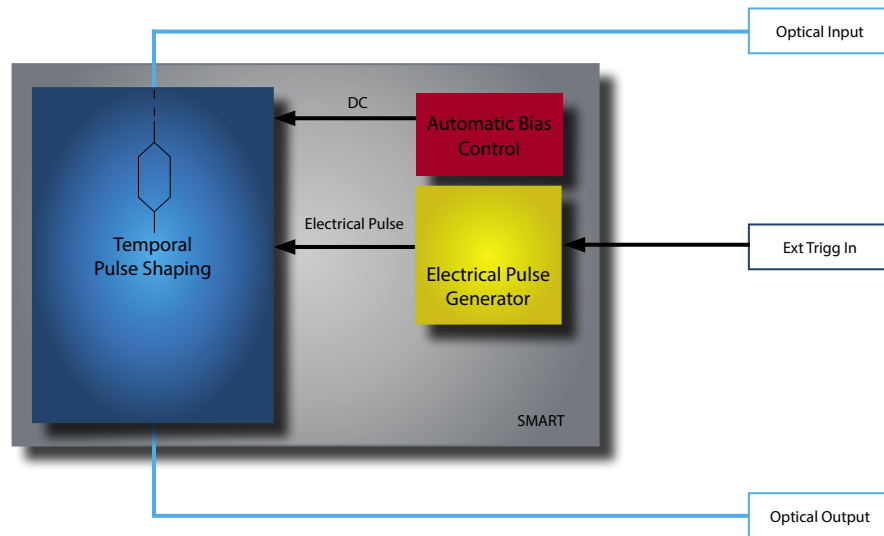
Optical Pulse Diagrams



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Functional Block Diagram



The ModBox Pulse picker integrates the new Photline Smart Interface which allows control for the full system:

- a temporal pulse block based on a modulators set to ensure a very high optical pulse extinction ratio (40 dB, or 55 dB) over a large optical bandwidth,
- an automatic modulator bias control circuitry to guarantee high extinction ratio stability over long periods of time,
- the Electrical Pulse Generator with a flexible Frequency Repetition rate and Pulse Width tunability. A pre-scaler is proposed as an option on customer demand.

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Optical Input Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating wavelength	λ	One wavelength among	1030 nm, 1053 nm, 1060 nm, 1064 nm, 1080 nm			
Line-width	$\Delta\lambda$	-	-	1	-	MHz
Optical input power	OP _{in}	Average input power, CW or pulse	10	-	60	mW

Electrical Input Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
External trigger input	-	50 Ω with positive slop	-2	-	2	V
	-	Frequency Repetition Rate	-	-	20	MHz
Prescaler	EPS	Optional feature	FRR input divided by 2, 4, 8			-

Optical Output Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Output pulse shapes	-	-	Rectangular			-
Pulse width	PW	Remotly adjustable	100 p	-	25 n	s
Frequency repetition rate	FRR	Adjustable by the trigger frequency	0	-	20	MHz
Rise time / Fall time	t _r /t _f	20 % - 80 %	-	50	60	ps
Pulse extinction ratio	SER	ModBox-PP-NIR-30dB, DC<1%	30	35	-	dB
		ModBox-PP-NIR-50dB, DC<1%	50	55	-	dB
Extinction ratio stability	Δ SER	Over 12 hours	-	-	1	%rms
RMS jitter	J _{RMS}	-	-	-	10	ps
Polarisation extinction ratio	PER	-	15	20	-	dB
Insertion loss	IL	ModBox-PP-NIR-30dB	-	6	8	dB
		ModBox-PP-NIR-50dB	-	8	12	dB
Optical return loss	ORL	-	40	-	-	dB

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Panels

Parameter	Condition	Min	Typ	Max	Unit
Front panel					
Interface	Pulse generator, MBC	LCD interface with keypad			
Optical ports	Main & Monitor	FC/APC			
Optical fiber	-	Polarization maintaining fiber, Corning PM 98-U25A			
Trigger input connector	-	BNC			



Parameter	Condition	Min	Typ	Max	Unit
Rear Panel					
Remote control connector	Smart (EPG, automatic bias controller, EPS)	USB			

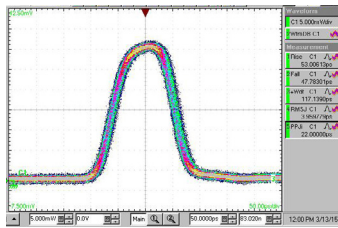
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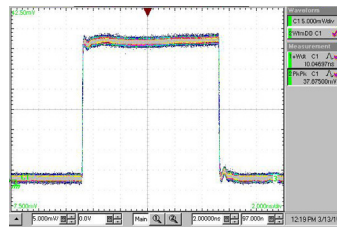
ModBox Optical Outputs

The following equipment was used to obtain below results :

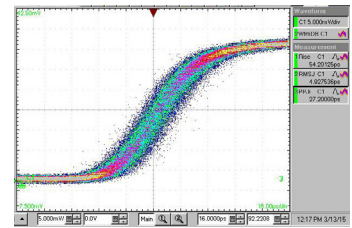
- ModBox-Pulse with built-in Pulse generator
- Oscilloscope Agilent 86100B
- Tektronix CSA 8000 oscilloscope



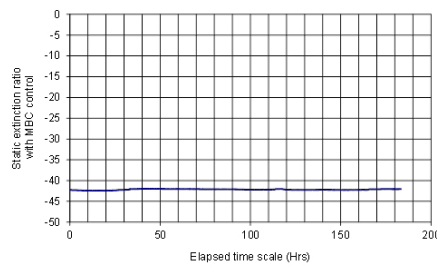
100 ps optical square pulse



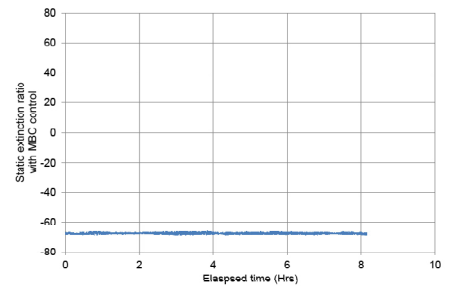
10 ns optical square pulse



Rise time



SER stability from ModBox-PP-NIR-30dB



SER stability from ModBox-PP-NIR-50dB

Ordering information

ModBox-PP-WL-ER-EPS

WL = Wavelength: 1030nm, 1053 nm, 1060 nm, 1064nm, 1080 nm

ER = Pulse Extinction Ratio: 30dB, 50dB

EPS = Electrical Pre-Scaler

Opt-YY

YY = Output connectors, FA : FC/APC - FC : FC/UPC - SA : SC/APC - SC : SC/UPC

About us

iXBlue Photonics includes iXBlue iXFiber brand that produces specialty optical fibers and Bragg gratings based fiber optics components and iXBlue Photline brand that provides optical modulation solutions based on the company lithium niobate (LiNbO₃) modulators and RF electronic modules.

iXBlue 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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