



## FEATURES

- Very high Extinction Ratio (30 dB, 55 dB)
- Fast rise & fall times
- Optical arbitrary waveform
- Low jitter
- Proven solution
- For any wavelength from the NIR band

## OPTIONS

- Very High extinction ratio > 55 dB
- Other Electrical Pulse Generator (AWG)
- Delay Generator (DG)

The ModBox-PS-NIR-250ps is an Optical Modulation Unit to generate short shaped pulses with high extinction ratio in the C-Band. It allows dynamic extinction ratio up to 35 dB or above 60 dB with high stability over time, and with user adjustable optical pulse duration from 250 ps and optical pulse train repetition rate.

One benefit of the Photline Modbox-PS is to pre-compensate the pulse distortion that occurs in the amplifiers chains that operate in (a highly) saturated regime.

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	Near Infra Red Window		
Pulse contrast @1030 nm, 1053 nm, 1064 nm	35 dB, 60 dB		
Pulse waveform	Arbitrary		
Pulse width	250 ps - 100 ns		
Frequency Repetition Rate	< 2 MHz		

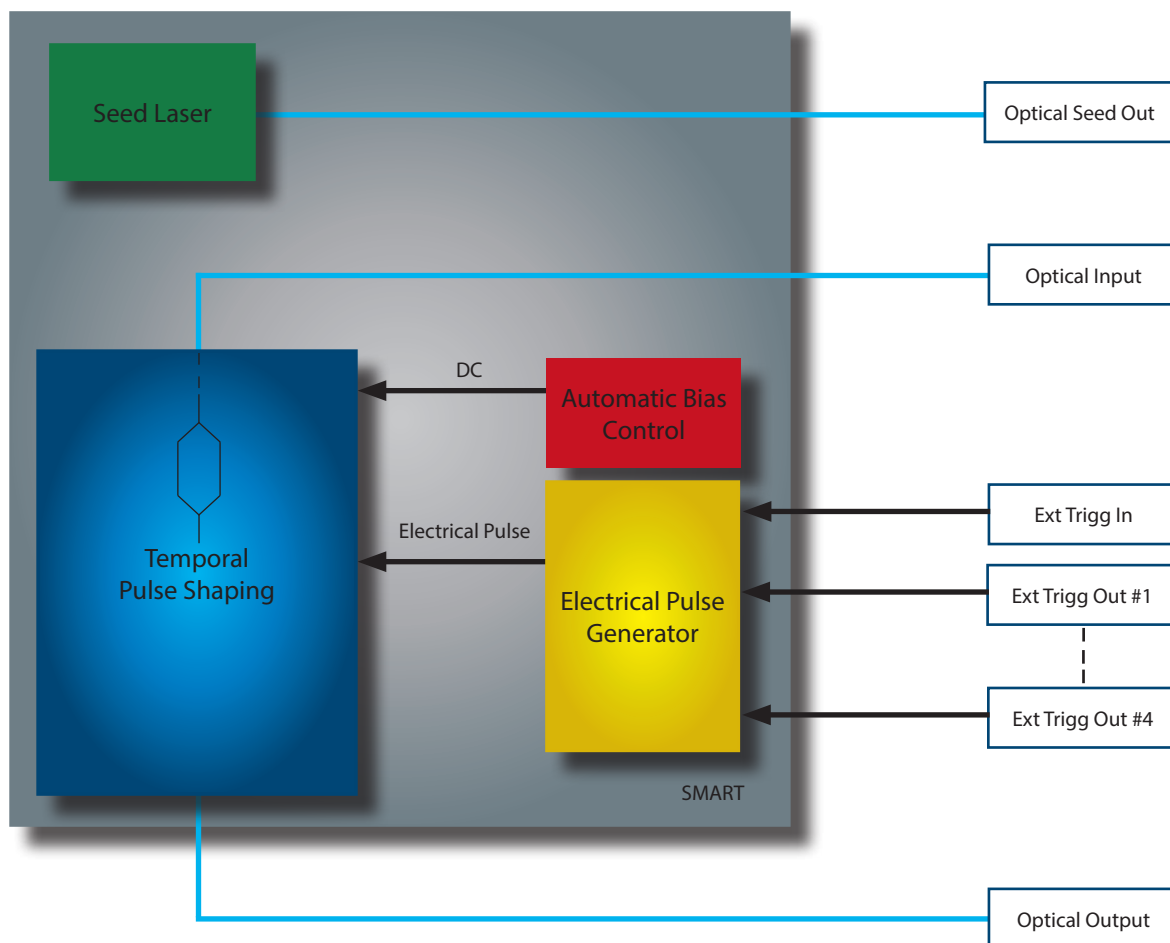
### Ordering Information:



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Email orders to: [sales@xsoptix.com](mailto:sales@xsoptix.com)  
Fax orders to: 800-878-7282

## Functional Block Diagram



The ModBox Pulse Shaper 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 (30 dB, or 50 dB) over a large optical bandwidth,
- an automatic modulator bias control circuitry to guarantee high extinction ratio stability over long periods of time,
- an Electrical Pulse Generator (EPG) composed of one Arbitrary Waveform Generator and Delay Generator. The EPG comes with a flexible Frequency Repetition rate and Pulse Width tunability. It is GUI programmable and can perform tasks like loading waveforms from a file to generate sine / square / and triangle waves..., changing clockrates, triggering etc.

## Electrical Input Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
External trigger input	-	50 $\Omega$ with positive slop	-2	-	2	V
	-	Frequency Repetition Rate	-	-	20	MHz

## Optional Optical Seed Lasers Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
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### Narrow line-width seed laser - Option N°1

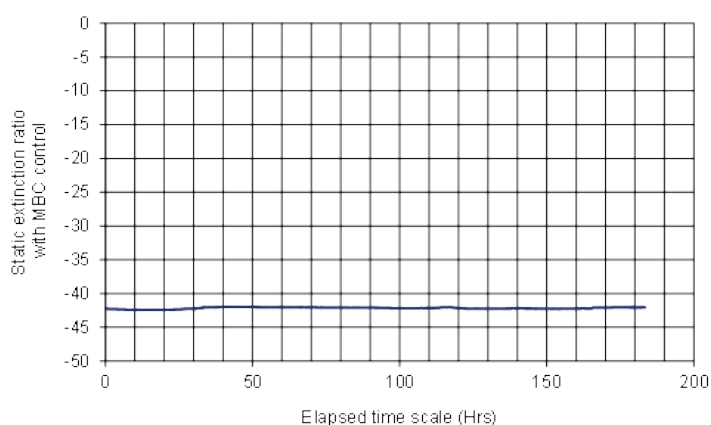
Operating wavelength	$\lambda$	-	1030 nm, 1053 nm, 1064 nm			
Wavelength tuning range	OP <sub>in</sub>	By SW, temperature tuning	-	0.7	-	nm
Line-width	$\Delta\lambda$	-	-	20	100	kHz
Output seed output power	-	CW signal, standard	-	10	-	mW
Oscillator stability	-	After a warm-up of 15 minutes	-	30	-	MHz
Return loss	ORL	-	40	-	-	dB
Polarization extinction ratio	PER	-	20	25	-	dB

### Seed laser option - Option N°2

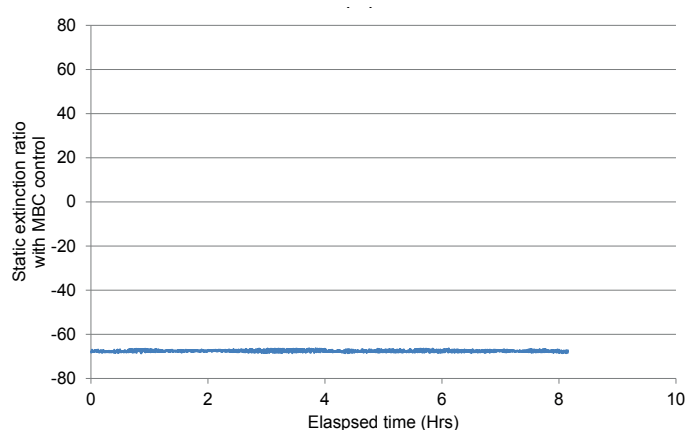
Operating wavelength	$\lambda$	-	1030 nm, 1053 nm, 1064 nm			
Wavelength tuning range	OP <sub>in</sub>	By SW, temperature tuning	-	1	-	nm
Line-width	$\Delta\lambda$	-	-	1	20	MHz
Output seed output power		CW signal, standard	100	-	-	mW
Return loss	ORL	-	40	-	-	dB
Polarization extinction ratio	PER	-	20	25	-	dB

## Optical Output Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating wavelength	$\lambda$	-	1 000	-	1080	nm
Output pulse shapes	-	-	Arbitrary, user adjustable			
Sample rate	-	GUI	25 M	-	4 G	sample/s
Number of samples	-	-	-	-	4	Msamples
Pulse width	PW	Remotly adjustable	250 p	-	100 n	s
Frequency repetition rate	FRR	Fixed by external trigger	1	-	2 M	Hz
Rise time / Fall time	$t_r/t_f$	20 % - 80 %	-	60	-	ps
Pulse extinction ratio	SER	ModBox-PS-250ps-30dB, Dc < 1 %	30	35	-	dB
		ModBox-PS-250ps-50dB, Dc < 1 %	50	60	-	dB
Extinction ratio stability	$\Delta$ SER	Over 12 hours	-	-	1	%rms
Polarisation extinction ratio	PER	-	15	20	-	dB
Optical return loss	ORL	-	40	-	-	dB
Insertion loss	IL	ModBox-PS-250ps-30dB, Dc < 1 %	-	5	7	dB
		ModBox-PS-250ps-60dB, Dc < 1 %	-	10	12	dB



SER stability from ModBox-PS-NIR-250ps-30dB



SER stability from ModBox-PS-NIR-250ps-60dB

## Interfaces, Dimensions

Interfaces	
Optical	Polarization maintaining fiber PM1550 - FC/APC (by default, other connectors type in option)
RF input	Single SMA female RF connector - 50 $\Omega$
Control	Smart Interface (front panel), GUI (USB typeB)
Power supply	100-120V/220-240 automatic switch 50-60Hz (Rear panel)
Dimensions / Weight	Rack 19" x 3U, Depth=375mm / 3 kg



## Ordering information

### ModBox-PS-WL-250ps-ER

PS = Optical Pulse Shaper, CW laser and Arbitrary Waveform Generator are embedded.  
 WL = Wavelength: 1030nm, 1053nm, 1064nm  
 250ps = from 250 ps optical pulse width generation.  
 ER = Extinction Ratio: 30dB, 60dB

### 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 (LiNbO<sub>3</sub>) 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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