



The Modbox-PG-795nm-30ps is a very high extinction ratio optical Pulse Generator operating in the 800nm-Band and firstly optimized at 795 nm. The ModBox-PG-795nm allows very high dynamic extinction ratio from 30 dB, or up to 50 dB at 795 nm, with high stability over time. The ModBox generates a 30 ps optical pulse, the optical pulse train repetition rate is externally triggered to the GHz.

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

The ModBox-PG 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...

FEATURES

- Optimization for 795 nm operation
- Very high extinction ratio
- Fast rise & fall times
- Optical square waveform
- Low jitter
- Proven solution

APPLICATIONS

- Transmission system test
- Components characterization
- Production test
- R&D laboratories

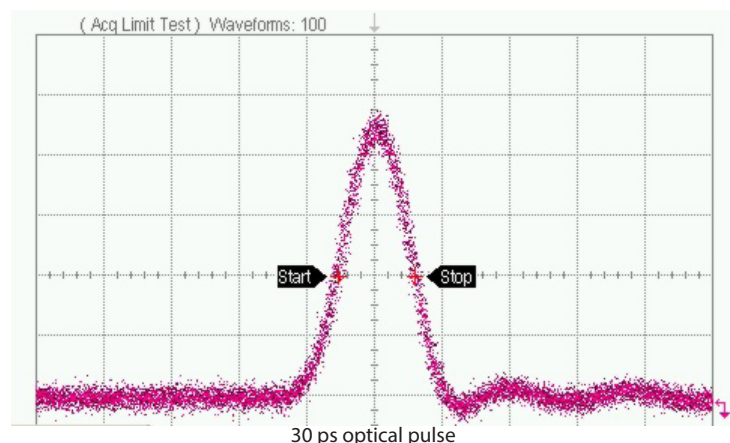
OPTIONS

- Higher extinction ratio value
- Other PW and FRR choices
- 780 nm, 950 nm, 1030 nm, 1064 nm...

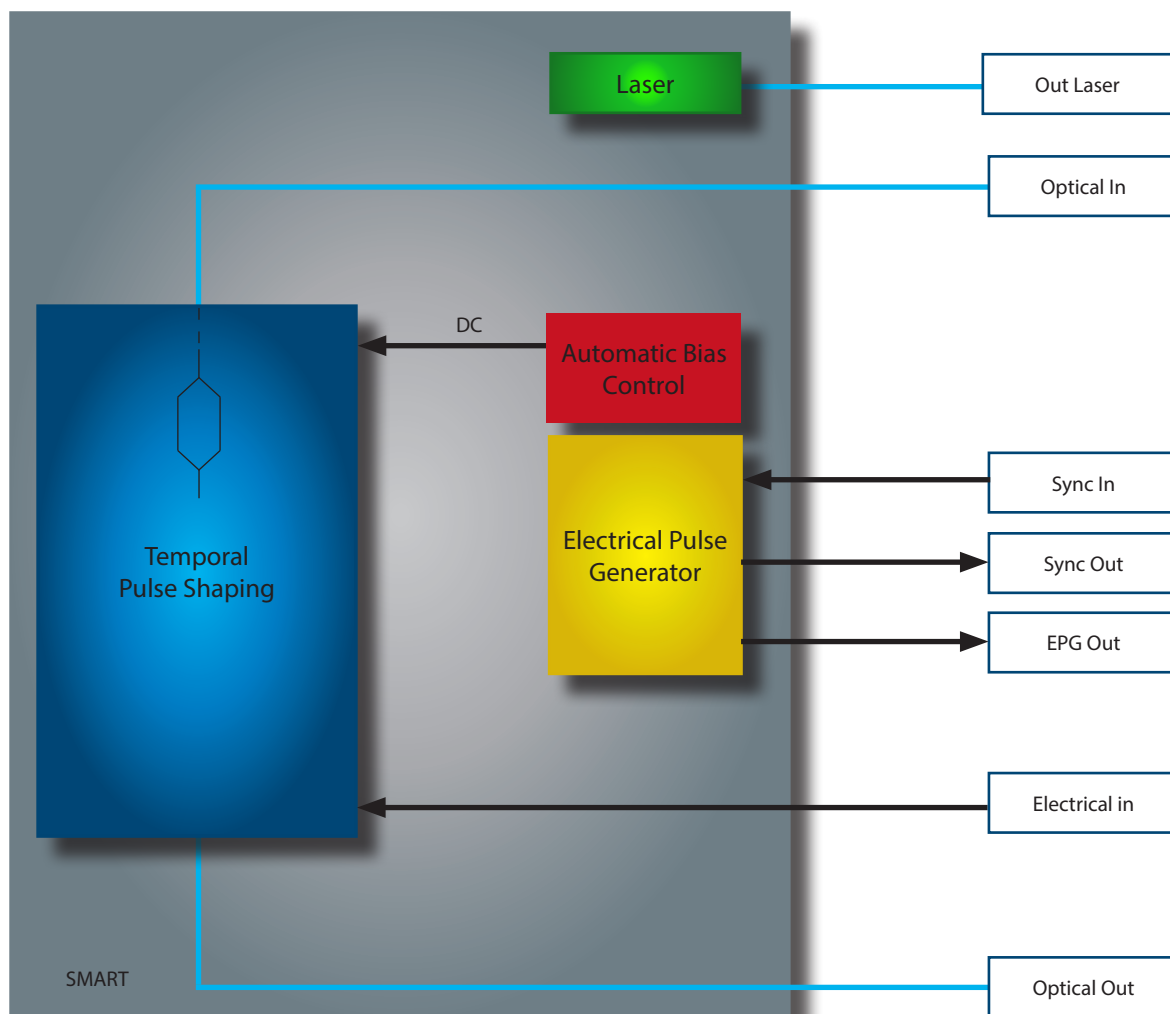
Performance Highlights

Parameter	Min	Typ	Max
Operating wavelength		795 nm	
Pulse contrast @795nm		30 dB or > 50 dB	
Pulse waveform		Gaussian	
Pulse width		30 ps	
Frequency Repetition Rate		250 kHz to 1 GHz	
Rise / Fall times		10 ps	

Optical Pulse Diagrams



Functional Block Diagram



The ModBox-PG integrates the new ixblue 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 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 fixed pulse width at 30 ps,
- an optional CW laser (specification to be defined with end-user).

Optical Input Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating wavelength	λ	-	800 nm band			
Line-width	$\Delta\lambda$	-	-	1	-	MHz
Optical input power	OP_{in}	-	10	-	50	mW

Electrical Input Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Embedded Electrical Pulse Generator - Synchronisation Input - $Sync_{IN}$						
Frequency	f	-	-	100	-	MHz
Power	EP_{OUT}	50 Ω	-	2.5	-	mW
Electrical Input port to the modulation block						
Type	-	Single ended - AC coupled	Pulse			-
Operating input voltage	V_{IN}	Single ended - AC coupled	-	500	-	mV _{pp}
Impedance matching	Z_{IN}	-	-	50	-	Ω
Pulse width	PW	-	30 p	-	100 ns	s
Frequency repetition rate	FRR	Still the Duty Cycle < 1 %	1	-	1 G	Hz

Electrical Output Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Embedded Electrical Pulse Generator - Synchronisation Output - $Sync_{OUT}$						
Frequency	f	-	-	100	-	MHz
Power	EP_{OUT}	50 Ω	-	2.5	-	mW
Embedded Electrical Pulse Generator - EPG Output						
Pulse width	PW	-	-	30	-	ps
Frequency repetition rate	FRR	Adjustable	250 k	-	1 G	Hz
Amplitude	EP_{OUT}	50 Ω	-	500	-	mV _{pp}

Optical Output Specifications

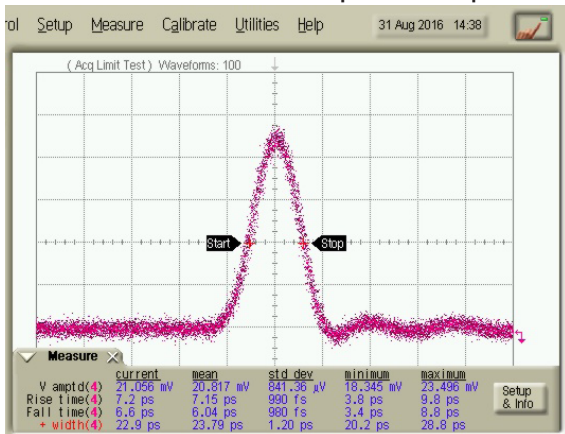
Parameter	Symbol	Condition	Min	Typ	Max	Unit
With embedded 30 ps Pulse generator						
Output pulse shapes	-	-	Gaussian			-
Pulse width	PW	Remotly adjustable	-	30	-	ps
Frequency repetition rate	FRR	Adjustable	250 k	-	1 G	Hz
Rise time / Fall time	t_r/t_f	20 % - 80 %	-	10	-	ps
Pulse extinction ratio @795 nm	SER	ModBox-PG-795nm-30ps-30dB	28	30	-	dB
		ModBox-PG-795nm-30ps-50dB	50	55	-	dB
Extinction ratio stability	Δ SER	Over 12 hours	-	-	1	%rms
Polarisation extinction ratio	PER	-	15	20	-	dB
Insertion loss	IL	ModBox-PG-795nm-30ps-30dB	-	5	7	dB
		ModBox-PG-795nm-30ps-50dB	-	10	14	dB

ModBox Electrical and Optical Outputs

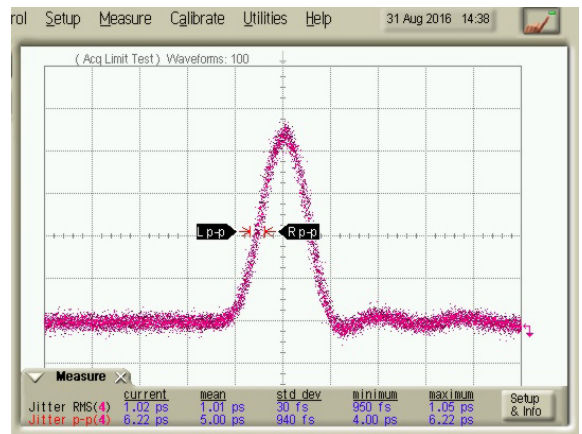
The following equipment was used to obtain below results :

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

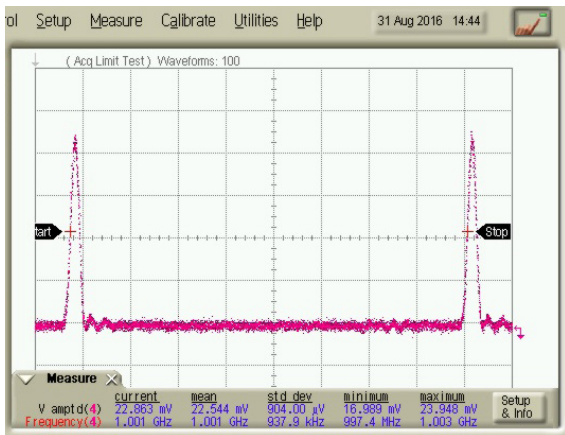
ModBox Electrical and Optical Outputs



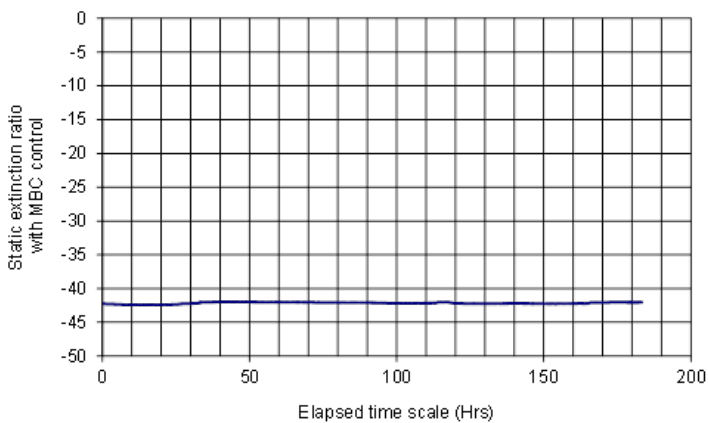
30 ps - Pulse Width / Rise Time



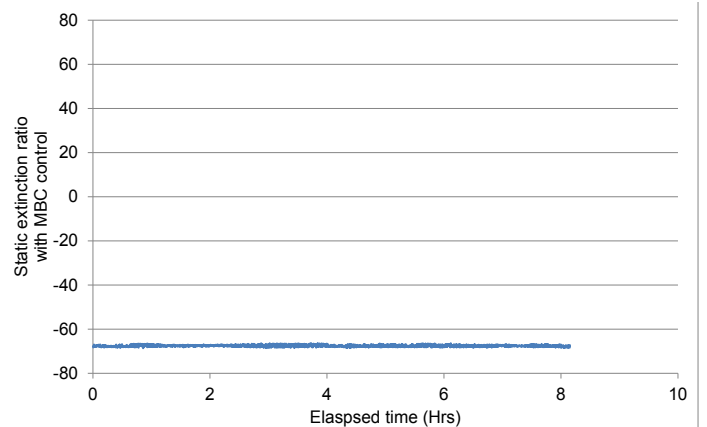
30 ps - Pulse Width / Jitter



30 ps - Pulse Width - FRR tunable



SER stability from ModBox-PG-795nm-30ps-30dB



SER stability from ModBox-PG-795nm-30ps-50dB

Interfaces, Dimensions

Parameter	Condition	Min	Typ	Max	Unit
Front panel					
Interface	-	LCD interface with keypad			
Optical ports	Main & Monitor	FC/APC			
Optical fiber	-	Polarization maintaining fiber			
Trigger input connector	-	BNC			
EPG RF output connector	-	SMA-female			
Modulator input connector	-	V-female			



Ordering information

ModBox-PG-795nm-30ps-xxdB

PG = Optical Pulse Generator, CW laser and Electrical pulse generator are embedded.
 795nm = Modulator selection for 795 nm operation (Low IL, high ER).
 30 ps = from 30 ps optical pulse width generation.
 xxdB = 30dB : SER > 28 dB @795 nm - 50dB : SER > 50 dB @795 nm

Opt-YY

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

About us

ixBlue Photonics produces specialty optical fibers and Bragg gratings based fiber optics components and 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.