

The Modbox-PG-CBand-50ps is a high extinction ratio optical Pulse Generator operating in the C and L Bands. It allows an extremely high dynamic extinction ratio with high stability over time, with user adjustable optical pulse train repetition rate of 50 ps pulse duration.

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

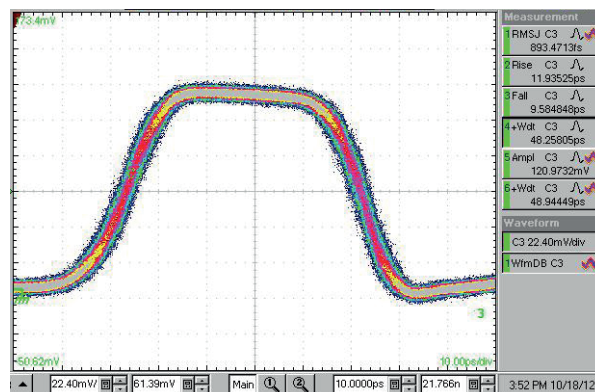
- Very high Extinction Ratio
- Fast rise & fall times
- Super-Gaussian optical pulses shape
- Proven solution

OPTIONS

- Higher extinction ratio
- Electrical Pulse Penerator (EPG)
- Narrow line-width laser
- C-Band, L-Band tunable laser
- Higher Polarisation Extinction ratio

Performance Highlights

Parameter	Min	Typ	Max
Operating wavelength	C & L Bands		
Pulse contrast @1550nm	> 40 dB, > 60 dB		
Pulse waveform	Super-Gaussian optical pulses		
Pulse width	50 ps		
Rise / Fall times	15 ps		



50 ps - 1550 nm - optical pulse

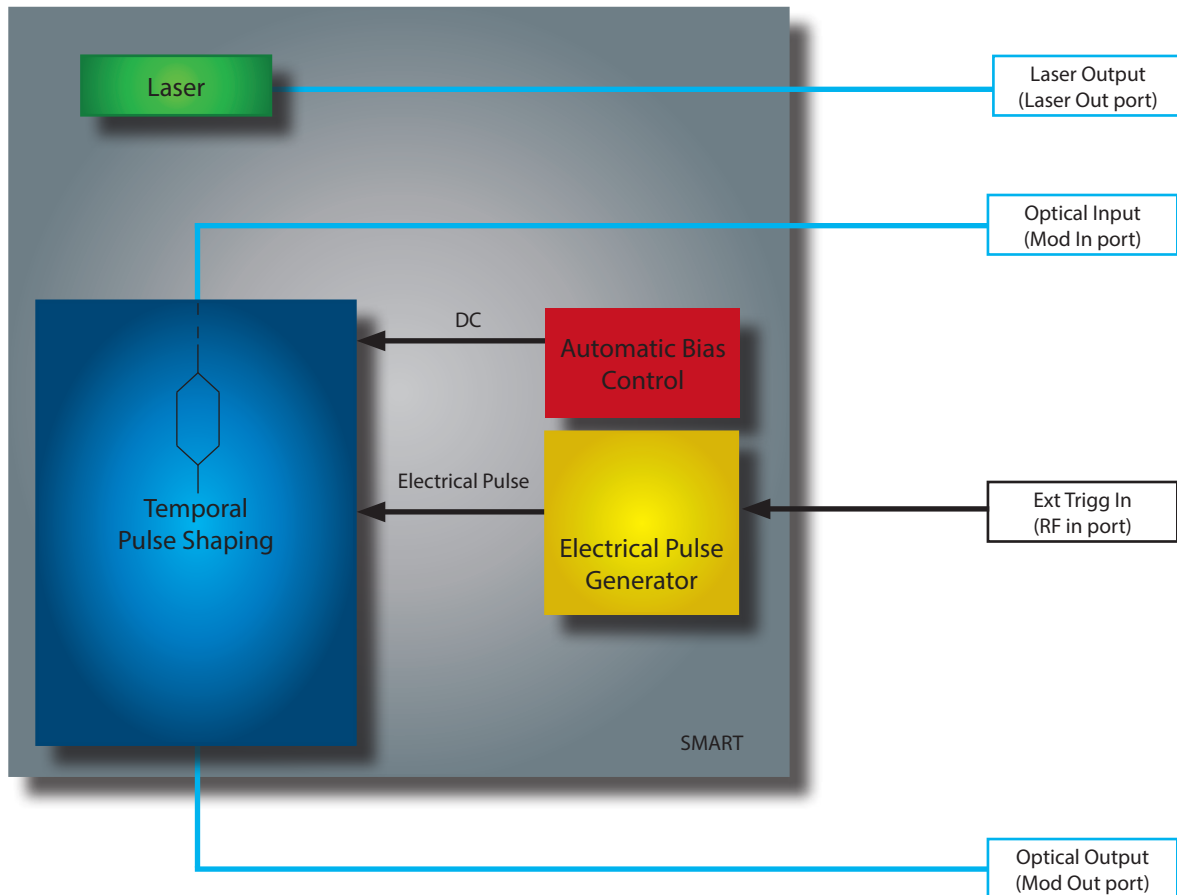
Ordering Information:



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

Functional Block Diagram



The ModBox Pulse integrates the new 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 > 60 dB @1550nm) 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 tunability,
- the seed laser (C-Band tunable laser and narrow line-width laser choice).

Optical Input Specifications User supplied, not a ModBox specification

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating wavelength	λ	-	C&L Bands			
Line-width	$\Delta\lambda$	-	-	1	-	MHz
Optical input power	OP_{in}	-	10	-	60	mW

Laser Option Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
C-Band Tunable Laser Specifications						
Optical output power	P_{CW}	CW - 1527.60 nm up to 1565.50 nm	5	-	35	mW
Wavelength accuracy	$\delta\lambda_{acc}$	-	-1.5	-	1.5	GHz
Spectrum linewidth	$\Delta\lambda$	FWHM @-3 dB, instantaneous	-	-	100	kHz

Narrow Line-width Laser Specifications

Optical output power	P_{CW}	CW - 1550 nm (other λ on request)	-	20	-	mW
Wavelength tunability	$\delta\lambda$	By temperature	-	30	-	pm
Spectrum linewidth	$\Delta\lambda$	FWHM @-3 dB, instantaneous	-	-	15	kHz

Electrical Input Specifications - Clock Characteristics User supplied, not a ModBox specification

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Signal type	-	-	Square clock for enhanced jitter performance			
Input level	-	50 Ω	300	-	500	mVpp
Frequency range	-	-	10	-	500	MHz

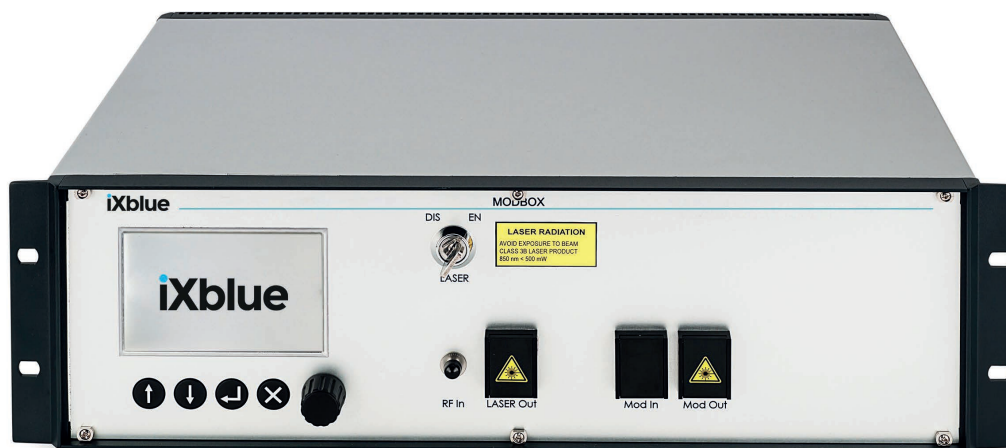
Optical Output Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Output pulse shapes	-	-	Super-Gaussian			
Pulse width	PW	Fixed	-	50	-	ps
Frequency repetition rate	FRR	Adjustable by the trigger frequency	10	-	500	MHz
Rise time / Fall time	t_r/t_f	20% - 80%	-	15	-	ps
Pulse extinction ratio	SER	@1550nm, ModBox ER > 40dB	40	43	-	dB
		@1550nm, ModBox ER > 60dB	60	70	-	dB
		@1550nm \pm 20nm, ModBox > 40dB	-	30 ⁽¹⁾	-	dB
		@1550nm \pm 20nm, ModBox > 60dB	-	40 ⁽¹⁾	-	dB
Extinction ratio stability	ΔSER	Over 12 hours	-	-	1	%rms
Polarisation extinction ratio	PER	-	15	20	-	dB
Insertion loss	IL	@1550nm, ModBox ER > 40dB	-	5	6	dB
		@1550nm, ModBox ER > 60dB	-	10	12	dB
Jitter RMS	J_{RMS}	-	-	1	2	ps
Optical return loss	ORL	-	40	-	-	dB

(1) : The highest Extinction ratio is given at 1550nm, and can be degraded of other wavelengths from the C-Band

Panels

Parameter	Condition	Min	Typ	Max	Unit
Front panel					
Interface	Pulse generator, MBC	LCD interface with keypad			
Optical ports	Laser Out & Modulators In & Out	FC/APC / Cable gland modulator output option			
Optical fiber	-	Polarization maintaining fiber, Corning PM 98-U25A			
Trigger input connector	-	BNC or SMA			



Non contractual picture - ModBox front panel with laser embedded.

Parameter	Condition	Min	Typ	Max	Unit
Rear Panel					
Remote control connector	Smart (Automatic bias controller)	USB			

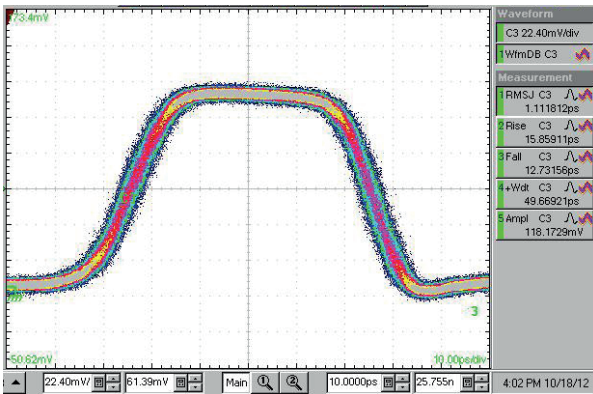
Dimensions - Compliance

Parameter	
Size	19 inches 3U
Weight	5 kg
Power supply	100 - 120 V / 220 - 240 V automatic switch, 50 - 60 Hz

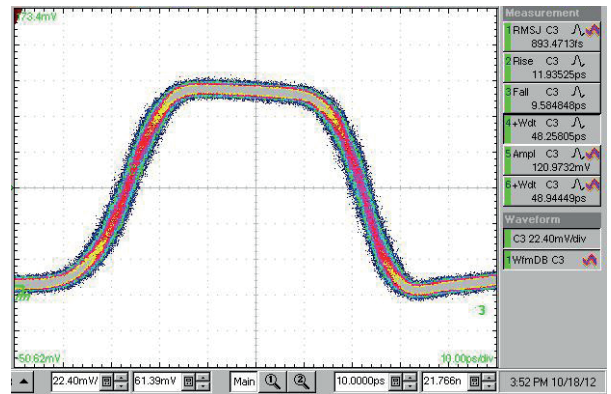
ModBox Electrical and Optical Outputs

The following equipment was used to obtain below results :

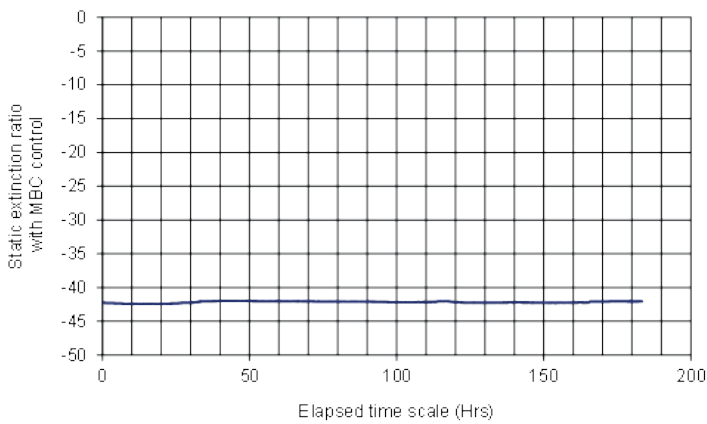
- ModBox-Pulse with built-in Pulse generator
- Oscilloscope Agilent 86100B
- Tektronix CSA 8000 oscilloscope



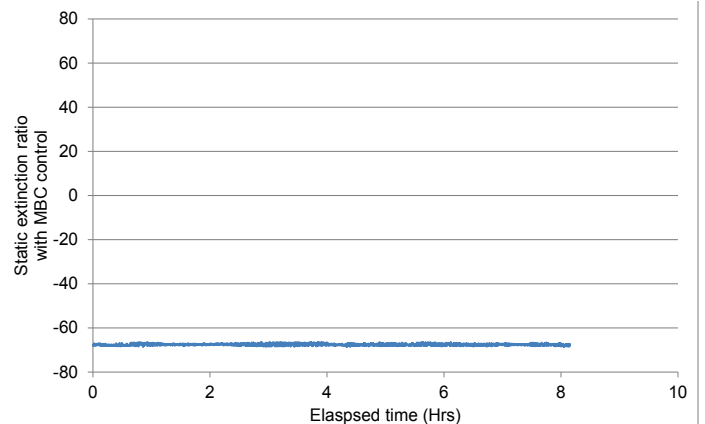
50 ps @ 100 MHz optical pulse



50 ps @ 500 MHz optical pulse



SER stability @ 1550 nm from ModBox-PG-CBand-50ps-40dB



SER stability @ 1550 nm from ModBox-PG-CBand-50ps-60dB