



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.

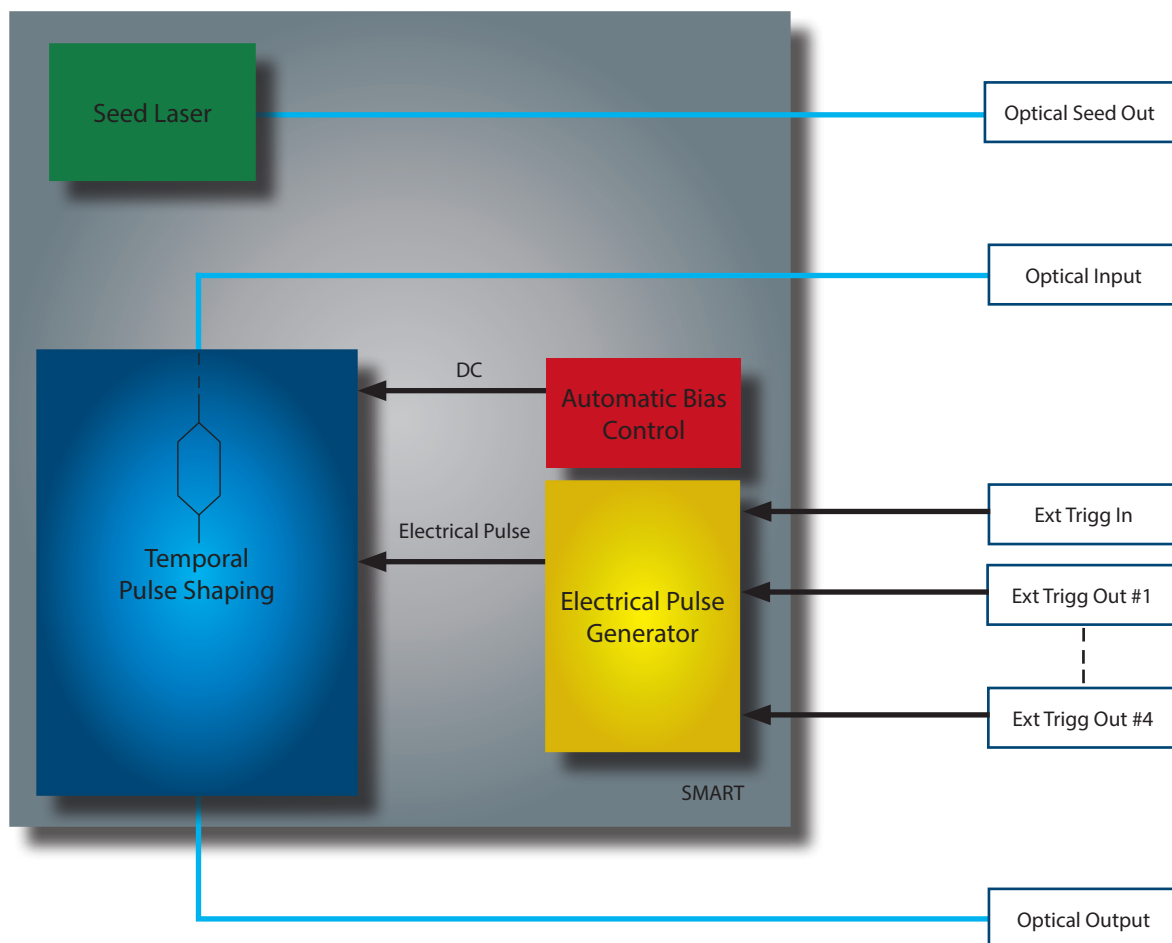
ixBlue Photonics has accumulated a strong experience in such systems and successfully installed them in many laboratories over the world.

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 | | |

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

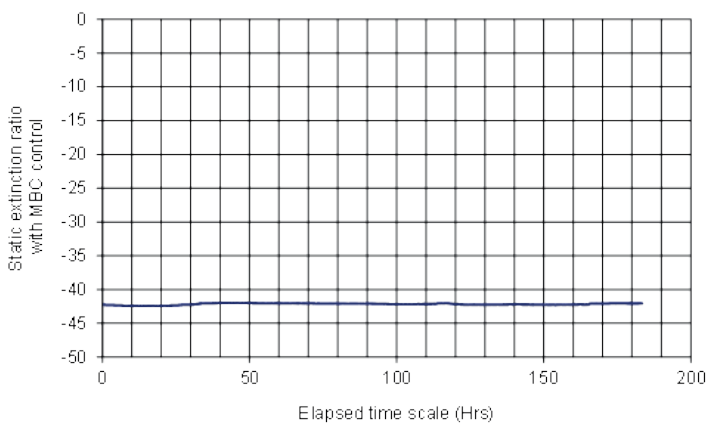
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|------------------------|--------|--------------------------------|-----|-----|-----|------|
| External trigger input | - | 50 Ω with positive slop | -2 | - | 2 | V |
| | - | Frequency Repetition Rate | - | - | 20 | MHz |

Optional Optical Seed Lasers Specifications

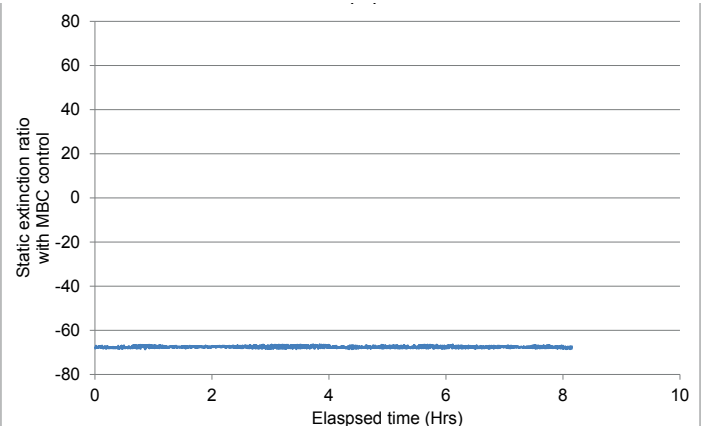
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|------------------|-------------------------------|---------------------------|-----|-----|------|
| Narrow line-width seed laser - Option N°1 | | | | | | |
| Operating wavelength | λ | - | 1030 nm, 1053 nm, 1064 nm | | | |
| Wavelength tuning range | OP _{in} | 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 | λ | - | 1030 nm, 1053 nm, 1064 nm | | | |
| Wavelength tuning range | OP _{in} | 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 | λ | - | 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 | Δ 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 |



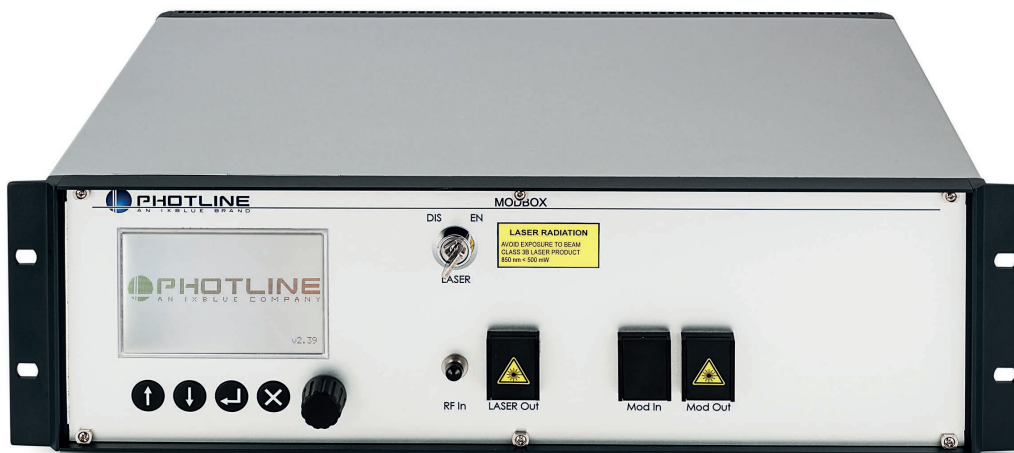
SER stability from ModBox-PS-NIR-250ps-30dB



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 Ω |
| 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 (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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