The ModBox-DER is the first equipment specially designed to measure the Dynamic Extinction Ratio (DER) of high contrast ns optical pulses in the 1000 nm wavelength band. It measures Extinction Ratios up to more than 50 dB, for pulses as short as 5 ns, from single-shot operation to 10 kHz repetition frequency.

The ModBox-DER uses the French Nuclear Agency technology developed for the monitoring of the MegaJoule laser. It finds applications mostly in ultra-intense laser facilities.
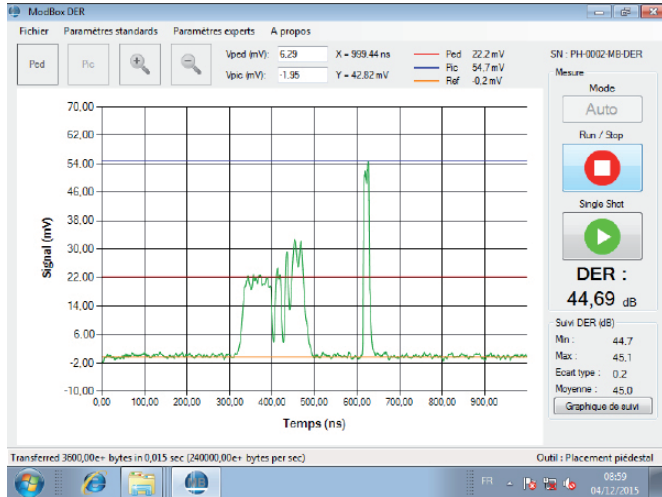
Principle

The high contrast pulse to be characterized is split in two parts: one part is strongly attenuated by a factor which is typically the expected value of the DER; for the second part, most of the pulse is retrieved using a high extinction modulator, leaving only the pedestal. The two parts are then measured with the same high bandwidth - high sensitivity photodetector for which only a few dB of dynamic range are required.

The main advantage of this measurement principle is the "self-calibration". Peak and noise powers of the optical pulse are measured by the same high bandwidth and high sensitivity photodetector.
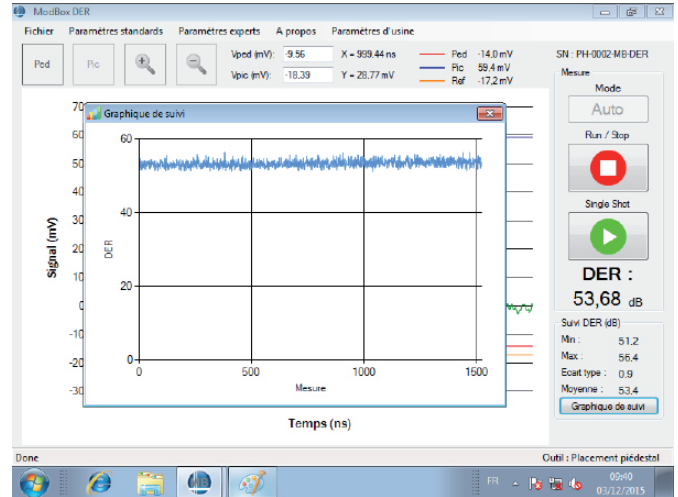
Performances

Parameter	Min	Typ	Max	Unit
Input Signal				
Wavelength	1030 nm, 1053 nm, 1064 nm			-
Signal type	Optical Pulse			-
Pulse Width	5	-	25	ns
Pulse Rate	Single shot	-	10	kHz
Pulse amplitude	70	-	450	mW
Optical Characteristics				
DER	Automatic measurement			-
	10	50	55	dB
DER monitoring	-	until 1 week	-	-
Resolution	-	0.6	-	ns
Measuring window	500 n	-	2 m	s
Pulse acquisition rate	-	0.5	-	Hz

FEATURES

- 1030 nm, 1053 nm, 1064 nm
- Dynamic Extinction Ratio up to 55 dB

APPLICATIONS

- Inertial confinement fusion
- Interaction of intense light with matter
- Laser Plasma interaction
- Laser implosion

OPTIONS

- Other maximum Extinction Ration value
- Wavelength

RELATED EQUIPMENTS

- ModBox-Pulse-Shaper
- Front-End System

Pulse and Pedastal Measurement

DER monitoring

Interfaces

Parameter	Symbol	Min	Max	Unit
Connectivity	Standard USB 2.0 Mouse / Keyboard / USB Key			
	Ethernet port (remote control)			
Operating System	Windows 7			
Display	8.1 inch touch display			

Ordering information

ModBox-DER-XXnm-YY-ZZ

DER = Dynamic Extinction Ratio

XXnm = 1030nm, 1053nm, 1064nm

YY = Optical Input Connector, FA : FC/APC - FC : FC/UPC - SC : SC/UPC

ZZ = Optical Diagnostic Connector, FA : FC/APC - FC : FC/UPC - 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$_3$) 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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