TeraXion

An indie Semiconductor Company

PowerSpectrum™

TPSR-Xtended Tunable Pulse Stretcher for Ultrafast Lasers

The PowerSpectrum™ TPSR-Xtended tunable pulse stretcher is a compact, robust and cost-effective solution to control pulse durations in chirped-pulse amplification (CPA) systems that use a diffraction grating (Treacy) or volume Bragg gratings (VBG) compressors. The TPSR-Xtended is specially designed for high-energy lasers which require more stretching of the pulse before the amplification chain. The tuning feature allows the user to counteract temporal defects from misalignment within the compressor hardware and offset amplifier-induced nonlinear effects. Tunability also reduces the product development cycle times and compensates for manufacturing variations.

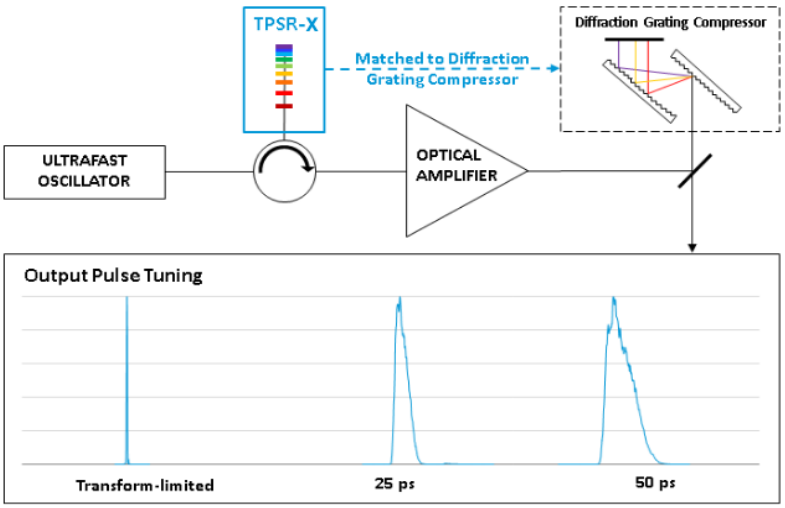
The all-fiber construction creates a compact and environmentally stable package suitable for a variety of demanding applications. The result is a customizable pulse stretcher that enables ultrafast laser systems that are powerful, low-maintenance, and cost-effective.

Early on, TeraXion recognized the emerging importance of ultrafast fiber lasers for industrial and medical applications. The TPSR-Xtended is specifically designed to generate ultrafast pulses below 150 fs that are pedestal-free with high energy, high average power, and low cost while remaining environmentally stable.

Top 5 Features

- **High-Accuracy:** The TPSR-Xtended will accurately fine tune the phase, thus allowing for a dynamic pulse control to reach the highest peak-power.
- **Versatile:** The latest tunable pulse stretcher maximizes performance at any energy regime and for every laser produced.
- **Low Cost:** The ingenious, all-fiber design of the TPSR-Xtended is the most cost-effective way to temporally shape the pulse in comparison to electro-optic or MEMS-based pulse shapers.
- **Reliable:** The TPSR-Xtended is based on the technology of our Telcordia-qualified telecom products which are still operating after decades of use.
- **Customizable:** Compatible with almost any laser architecture comprising different types of amplifiers and compressors.

Chirped-Pulse Amplification



General Specifications

Parameters		Units
Center wavelength band [1]	1 1.5 2	µm
Minimum input pulse duration	≥100	fs
FBG spectral shape [2]	Customizable	
Total stretching window		
Single Configuration	1 200	ps
Double Configuration	2 400	ps
Compressor matching	Complete GD function matching	
Pulse tuning	From transform-limited up to 50	ps
Dispersion tuning	β_2, β_3, β_4 and β_5	
Fiber type	PM	
Module dimensions	200 x 22 x 16	mm
Control	USB/I²C	
RoHS compliant	Yes	

(1) Other wavelengths available upon request
(2) Amplifier gain bandwidth enhancement available upon request

Ordering information

For orders, questions, specific requirements or to learn more about TeraXion's products, contact us at **info@teraxion.com**

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