Tunable Pulse Stretcher for Ultrafast Lasers

TPSR

Applications

- Material Processing
- Laser Surgery
- Spectroscopy
- THz Generation
- High Energy Ultrafast Research
- Multiphoton Microscopy

Features

- Effective
- Versatile
- Low Cost
- Reliable
- Integrated

The TPSR 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 grating compressor. The tuning feature allows the user to counteract temporal defects from misalignment within the compressor 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, indie recognized the emerging importance of ultrafast fiber lasers for industrial and medical applications. The TPSR is specifically designed to generate ultrafast pulses below 150 fs that are pedestal-free with high energy, average power, and low cost while remaining environmentally stable.

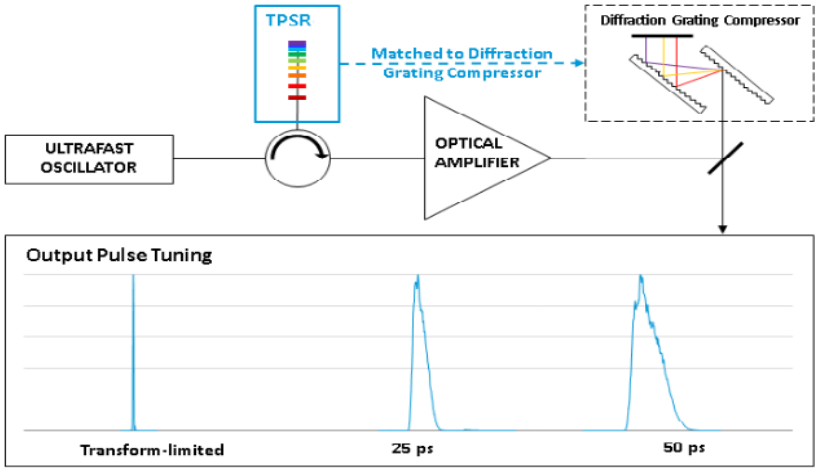
Features Details

- **Effective:** The TPSR can compensate amplifier-induced nonlinear effects for optimal performance at all energy regimes.
- **Versatile:** Pulse-duration tuning enables a single laser to operate in both the picosecond and femtosecond regimes.
- **Low Cost:** The ingenious, all-fiber design of the TPSR reduces overall system cost, minimizes maintenance and alignment, and increases productivity.
- **Reliable:** The TPSR is based on the technology of our Telcordia-qualified telecom products which are still operating after decades of use.
- **Integrated:** Software integration between the TPSR and the laser system enables dynamic and precise pulse control that maintains optimum peak power.

Tunable Pulse Stretcher for

TPSR

Chirped-Pulse Amplification with a Diffraction Grating Compressor



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	800	ps
Double Configuration	1 600	ps
Compressor matching	Complete GD function matching	
Pulse tuning	From transform-limited up to 50	ps
Dispersion tuning	β_2, β_3 and β_4	
Fiber type	PM	
Module dimensions	14 x 22 x 130	mm
Control	USB/I²C	
RoHS Compliant	Yes	

[1] Other wavelengths available upon request
[2] Amplifier gain bandwidth enhancement available upon request