

# Wizzler

## *Single-shot & high-contrast ultrafast pulse measurement*

Wizzler products provide high contrast and single shot spectral phase and intensity measurements of nearly compressed ultrafast laser pulses.

Wizzler products are based on a unique technique invented and patented by FASTLITE named Self-Referenced Spectral Interferometry (SRSI), in which a reference pulse with a flat spectral phase is collinearly generated from the input pulse via cross-polarized wave generation (XPW). The spectral interference pattern resulting from the combination of the input pulse and the reference pulse allows direct retrieval of the spectral phase and intensity.

With a design based on collinear geometry, with no beam splitter or delay line, Wizzler products are extremely easy to align, making the measurement fast and reproducible. SRSI technique is also user-calibration free, thus enabling user-independent measurements.

SRSI takes advantage of the temporal contrast enhancement inherent to the XPW process to provide more than 40dB of temporal dynamic range, using a standard spectrometer. Moreover, and unlike scanning measurement techniques, single-shot techniques do not suffer from artefacts coming from the laser stability. On the contrary, this true single-shot technique, thanks to a fast and non-blind, non-iterative processing, is ideal to quantify the pulse duration stability of a laser system. Since SRSI algorithm relies on direct phase retrieval, without any assumption or integration step, it can combine accuracy with fast phase processing. Data logging functionalities enable real-time pulse duration monitoring and pulse data collection up to 10Hz.

Thanks to these unique features, Wizzler products have become the reference tool for the high intensity lasers user community.



### Applications

#### Scientific:

- > High intensity lasers pulse duration and contrast measurement
- > Pulse compression optimization
- > Shot-to-shot spectral phase and pulse duration monitoring

### Options

- > Dazzler for pulse compression optimization loop

### Key Features

- > Highest dynamic range
- > True single-shot, single beam
- > Extreme ease of use
- > Direct retrieval algorithm
- > Data logging

## Specifications

Model	400	800	USP	USP4	1030	2000*
Spectral detection band edges (nm)	380-400	560-1060	560-1060	360-1060	930-1100	1200-3000
Pulse duration range (fs)	35 - 100	20 -100	8 - 100	4 -100	50 - 1000	15-100
Temporal measurement window (fs)	±400			±380	±2500 ±800 for pulses <100fs	±380
Temporal measurement dynamic (dB)	> 40					
Required pulse energy (μJ)	2 - 20		5 - 15		2 - 20	5-20

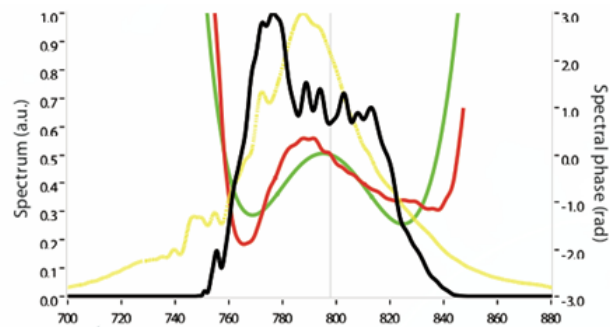
\* With Mozza MIR spectrometer

## Dimensions

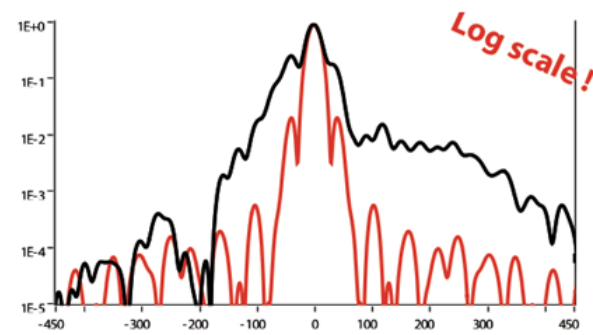
257 x 109 mm<sup>2</sup>  
Adjustable height down to 35 mm

## Requirements

- > Linear polarization
- > Max average power: 1 W
- > Beam diameter: 3mm, collimated
- > Pulse compression < 2 x FTL pulse duration
- > PC: Windows 10, 2 USB ports



Spectral domain



Temporal domain

Wizzler measurement of a Ti:Sa amplifier (1kHz, 1mj, 25fs FWHM)