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

Key Features

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

Options

> Dazzler for pulse compression optimization loop

FASTLITE by Amplitude

Specifications

Model	400	800	USP	USP4	1030	2000*
Spectral detection band edges (nm)	380-400	550-1050	550-1050	360-1100	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

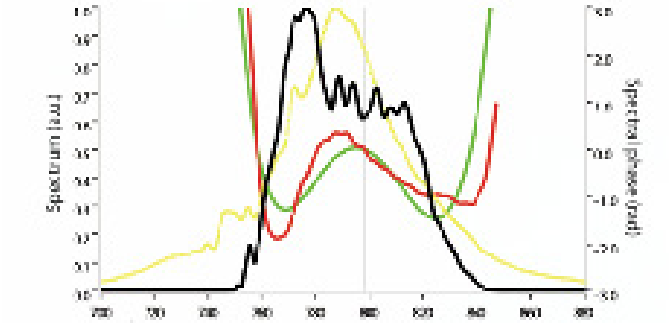
** With Mozza MIR spectrometer*

Dimensions

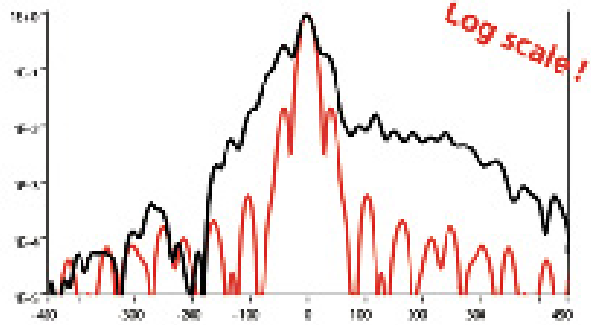
257 x 109 mm2
Adjustable height down to 35 mm

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)