Interferometric Autocorrelator

Features

- Ultrafast Autocorrelation Measurements for 650 - 1100 nm
- For Pulses from 40 fs to 1 ps or Pulses Down to 15 fs with Precompensation
- Integrated Alignment Target and Iris for Easy Setup
- Selectable Gain up to 70 dB to Accommodate Large Range of Input Powers

The FSAC Interferometric Autocorrelator provides approximate measurements of ultrafast pulse widths. It is based on a modified Michelson interferometer with a nonlinear detector at its output.

This autocorrelator is designed for pulse durations ranging from 15 fs to 1 ps (with precompensation), and the scan range can be adjusted from ±25 fs to ±5 ps. A BNC output connector provides the autocorrelation trace, which can be viewed on any oscilloscope with >1.5 MHz bandwidth. A photodiode amplifier with selectable gain up to 70 dB allows the user to adjust the unit for a large range of input powers.

Intuitive, easy-to-reach controls on the outside of the enclosure, shown in the photo to the right, allow the user to optimize the interferogram. A MATLAB® or Python® script is available for converting interferometric autocorrelation data to an intensity correlation trace; this is ideal for cases where bandwidth is insufficient or the pulse is excessively chirped.


FSAC
Front View

FSAC
Back View

Specifications

Item #	FSAC
Input Wavelength Range	650 - 1100 nm
Input Pulse Duration (FWHM)	40 fs - 1 ps (Without Precompensation) 15 fs - 1 ps (With Precompensation)
Full Scan Range	50 fs - 10 ps (±25 fs to ±5 ps)
Input Repetition Rate	>300 kHz
Noise-Equivalent Sensitivity[a]	0.1 W^2 at 800 nm for Ø1 mm Beam ($1/e^2$)
Input Polarization	Horizontal
Input Beam Diameter	<Ø4 mm ($1/e^2$)
Scan Rate	5 Hz
Internal Dispersion (Nominal)	230 fs^2 at 800 nm (GDD) 345 fs^3 at 800 nm (TOD)

a. Peak Power x Average Power of Input Laser
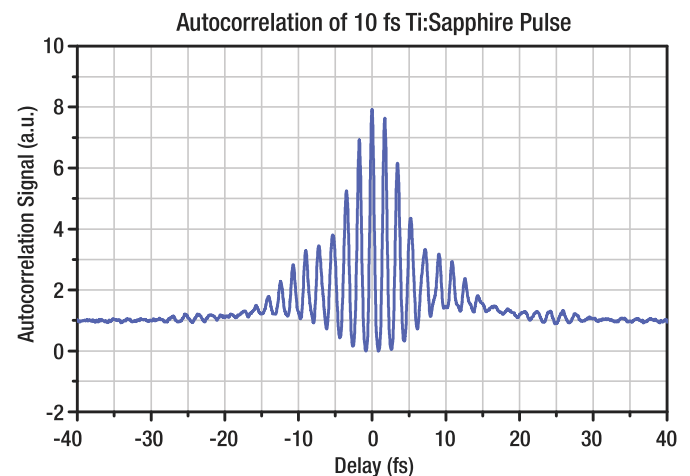
This interferometric autocorrelation was obtained using the OCTAVIUS-85M-HP. Precompensating mirrors were used to chirp the beam prior to the autocorrelator.