Fast FROG

FROG stands for Frequency Resolved Optical Gating. Based on Second Harmonic Generation, Fast FROG is reliable and compact. Key design features, such as the wavefront division technique and the use of our mini imaging spectrometer MISS, make the Fast FROG very easy to use and versatile while leading to accurate measurements. Six models are available, covering different pulse duration ranges from sub-5 fs to 10 ps, over a broad spectral range. Two designs are available: one for long pulses mainly relying on transmission optics, and one for ultrashort pulses which is fully achromatic.

Key features

◆ Easy to use: no calibration and no tweaking necessary
◆ User-friendly and powerful software
◆ Can access Spatio-Temporal couplings (Spatial Chirp, Pulse Front Tilt)
◆ Versatile: *instant-swap* of spectrometer for different wavelength ranges
◆ Single-pulse extraction possible up to 125 kHz laser repetition rate (with Enhanced detection and Trigger options)
◆ Achromatic and non-dispersive (FC and FS models)
◆ Sub-5 fs can be measured

Options

- Additional MISS spectrometer
- Additional crystals
- Small beam
- Low energy
- Phase matching
- Trigger

- Phase loop
- Fiber input connector
- Pulse Front Tilt / Spatial Chirp measurement
- High dynamic range
- Enhanced detection

Specifications

Fast FROG Models		FC	FS10	FS20	PS1	PS3	PS5	PS10
Pulse duration range	min	4 fs	10 fs	20 fs	50 fs	70 fs	150 fs	200 fs
	max	150 fs	250 fs	500 fs	1 ps	3 ps	5 ps	10 ps
Accessible spectral range (nm)		480 - 2100[1]						800 - 2100[1]
Spectral Window Δλ (nm)		580 [1]	420 [1]		300 [1]			
Input pulse repetition rate		single-shot to GHz [2]						
Single-pulse measurement		up to 125 kHz laser repetition rate (with Trigger and Enhanced Detection options, or 18 kHz without)						
Min input pulse energy [3]	Single-shot	250 µJ	1 µJ		1 µJ			
	1 kHz	10 µJ	100 nJ		50 nJ			
	50 MHz	20 nJ	1 nJ		200 pJ			
	1 GHz	n/a	50 pJ		25 pJ			
Input polarization		linear vertical						
Detection		CMOS 12 Bits – 3 Mpx – 72 dB						
PC Interface		USB 3.1						
Beam height (mm)		69 - 148						
Dimensions (mm)		326 x 194 x 129						

[1] Effective spectral bandwidth to be defined within the accessible spectral range according to customer's requirements. Additional spectrometers can be provided to address different spectral windows

[2] The measurements are averaged over several pulses for lasers with repetition rate higher than 62.5 kHz (with Enhanced detection option).

[3] Those values give an order of magnitude, with "low energy" option when applicable. The exact sensitivity depends on many parameters (pulse duration, beam profile, wavelength...). Higher sensitivity can be achieved with multi-shot MS-FROG

STAR Software
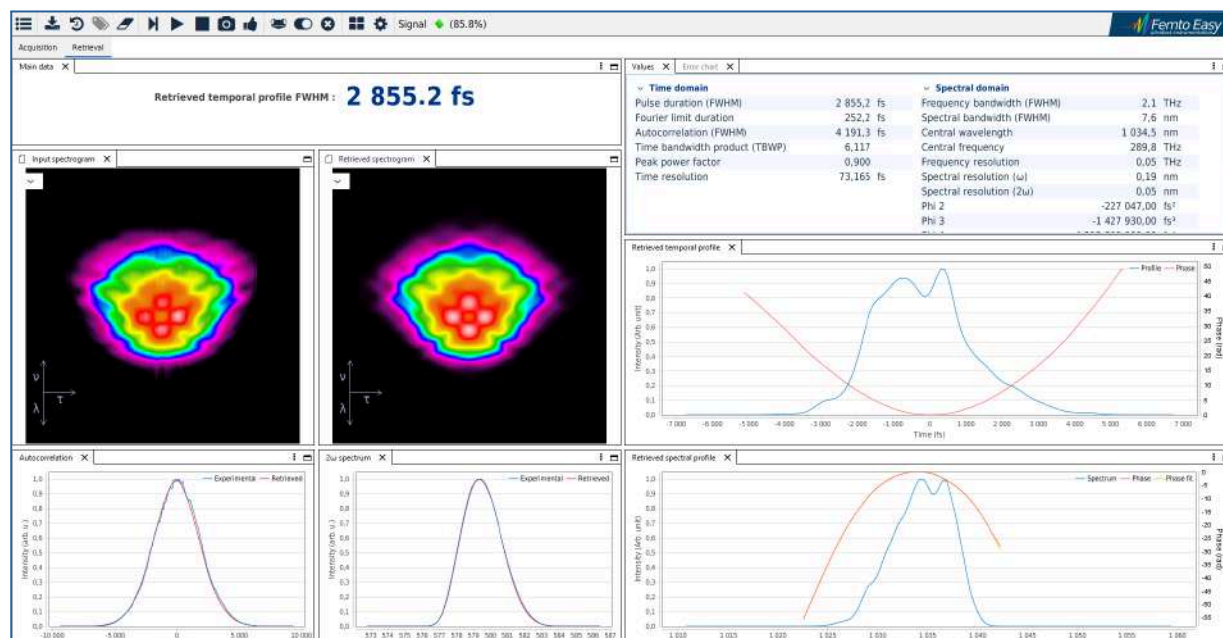
◆ Live extraction of shot to shot pulse properties: temporal profile intensity and phase, fundamental spectrum and phase, Chirp, Third-order dispersion...

◆ Several algorithms (including the Ptychographic Iterative Engine) are combined to enhance the reconstruction speed and quality

◆ Enhanced background & hot pixels treatment, for optimum dynamic and signal to noise ratio

◆ Client / Server interface, allowing remote control through network

◆ All data exportable into most common formats