

## FAST FROG

FROG stands for Frequency Resolved Optical Gating. The Femto Easy Fast Frog product line provides reliable and compact single shot FROGs, based on second harmonic generation. Key design features, such as the wavefront division technique and the mini imaging spectrometer, make the Fast Frog very easy to use and provide a high level of accuracy. Six models are available to cover a broad spectral range and a broad pulse duration range from sub-5 fs to 10 ps. Two designs are available : one for long pulses mainly relying on transmission optics, and one for ultrashort pulses which is completely achromatic. We also propose a wavelength tunable Fast FROG that combines a very broad spectral range with a high spectral resolution.



- *Very easy to use*
- *Real time phase retrieval*
- *Suitable for any rep rate*
- *Single shot up to 80 kHz<sup>1</sup>*
- *High level of accuracy*
- *No calibration and no teaking necessary*
- *Sub-5 fs pulses*
- *Broad accessible spectral range<sup>2</sup>*
- *Achromatic and non-dispersive<sup>3</sup>*

Models	FC 600	FC 400	FS 600	FS 400	PS <sup>†</sup> 600	PS <sup>†</sup> 400
Pulse duration range (fs)	4 - 150 fs	4 - 150 fs	10 - 300 fs	10 - 300 fs	50 – 10 000 fs <sup>†</sup>	50 – 5 000 fs <sup>†</sup>
Spectral range (nm)	600 - 2000 <sup>2</sup>	450 - 2000 <sup>2</sup>	600 - 2000 <sup>2</sup>	450 - 2000 <sup>2</sup>	600 - 2000 <sup>2</sup>	450 - 2000 <sup>2</sup>
Spectral window $\Delta\lambda$	600 nm	600 nm	500 nm	500 nm	200 nm	200 nm
Shot to shot measurement capacity	80 kHz with synchronisation / 40 kHz without <sup>1</sup>					
Input pulse repetition rate	From Hz to GHz					
Input pulse energy (nj) single shot: 1 MHz: 100 MHz: 1 GHz:	$> 5000$ $> 100$ $> 5$ $> 0.050$ (with low energy option)					
Input polarization	linear vertical or horizontal					
Detection	CMOS 12 bit - 3 Mpx - 72 dB					
PC interface	USB 3 or GigE					
Beam height (mm)	83 - 180					

<sup>†</sup> four pulse duration ranges available :  
 - PS1 : 50 - 1 000 fs  
 - PS3 : 200 - 3 000 fs  
 - PS5 : 300 - 5 000 fs  
 - PS10 : 500 - 10 000 fs

<sup>2</sup> The announced spectral range is the bandwidth accessible in factory. The customers have to choose a detection window of width  $\Delta\lambda$  within this range. Custom spectral window and spectral resolution can be made upon request.

<sup>3</sup> The FC and FS models are non-dispersive and achromatic to achieve non-ambiguous phase retrieval.

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<sup>1</sup> Over 80 kHz, the measurements are average over several shots. The number of shots depends on the laser rep rate (ex: 4 shots for 200 kHz). Devices with higher shot to shot measurement capacity can be made upon request.