PICOSECOND & NANOSECOND FROG KITS

COMPLETE SINGLE-SHOT MEASUREMENT OF MANY-PICOSECOND AND NANOSECOND LASER PULSES IN TIME

In the 1960s, laser pulse lengths broke the nanosecond barrier, becoming shorter than could be measured electronically and giving birth to the field of ultrashort-pulse measurement. Since then, measuring much shorter, femtosecond, pulses has become routine, but it has only recently become possible to completely measure a single nanosecond pulse. It was Swamp Optics (with DARPA support) that finally solved this problem, and it now offers the first commercially available devices (kits) for the complete characterization of ~10ps to few-ns pulses with time-bandwidth products up to ~10.

Prototype of the multi-ps/ns FROG

It's no longer necessary to purchase an extremely expensive oscilloscope that yields only a blurry black and white picture of a many-picosecond-to-few-nanosecond pulse.

Swamp Optics' many-picosecond and nanosecond FROGs provide a high-definition full-color picture—the complete intensity and phase and spectrum and spectral phase—for a small fraction of the price of a less informative oscilloscope.

Swamp Optics' ps and ns FROGs measure pulses with pulse lengths from ~10ps to ~400ps and from ~100ps to ~4ns and wavelengths from 1000 to 1100nm and 1500 to 1600nm.

Free-space coupling and fiber coupling for simple integration with fiber-optic systems are both available.

We provide the optics and clear instructions on their positions and mounting. Additional advice and help at no charge.

NANOSECOND FROG AT A GLANCE

- **The pulse intensity and phase vs. time**
- **The pulse spectrum and spectral phase vs. wavelength**
- **Single-shot measurement**
- **The autocorrelation**
- **No pulse-shape assumptions**
- **High sensitivity**
- **Rapid intensity and phase retrieval**
- **Laptop and USB compatibility**
- **Low cost**

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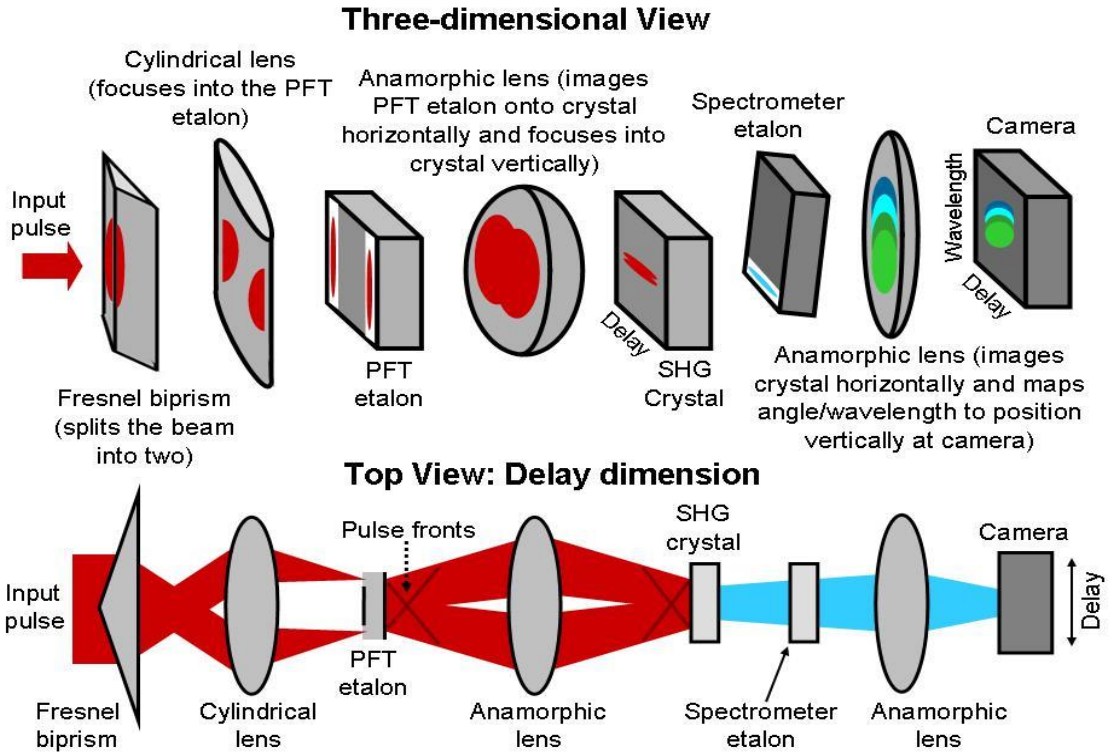
PICOSECOND & NANOSECOND FROG KIT SPECIFICATIONS

FROG model	10-10-pico-USB kit	10-100-pico-USB kit	15-10-pico-USB kit	15-100-pico-USB kit
Wavelength range	1000 – 1100nm		1500 – 1600nm	
Pulse-length range	~10ps – ~400ps	~100ps – ~4ns	~10ps – ~400ps	~100ps – ~4ns
Delay increment	3ps/pixel	30ps/pixel	3ps/pixel	30ps/pixel
Temporal range[1]	1.2ns	12ns	1.2ns	12ns
Spectral resolution	0.5pm	0.05pm	1pm	0.1pm
Spectral range[1]	240pm	24pm	5pm	50pm
Pulse complexity	Time-bandwidth product < ~10			
Intensity accuracy	2%			
Phase accuracy	0.01rad (intensity-weighted phase error)			
Sensitivity (at 10^3 pps)	30mW (30uJ)			
Sensitivity (at 10^8 pps)	30W (300nJ)			
Required input polarization	Horizontal			
Required beam diameter	1 – 3mm (collimated)			
Dimensions (L x W x H)	40cm × 20cm × 15cm			
Weight	7.0kg			

1. Temporal and spectral ranges are the full-scale ranges, not the pulse FWHM (which is typically a factor of 2-3 smaller).

ADDITIONAL NOTES

- There is a (removable) ambiguity in the direction of time. (In contrast, autocorrelation has infinitely many unknown ambiguities, and oscilloscopes do not measure the phase and require deconvolutions.)
- Comparison of the retrieved and measured traces confirms the measurement.



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