

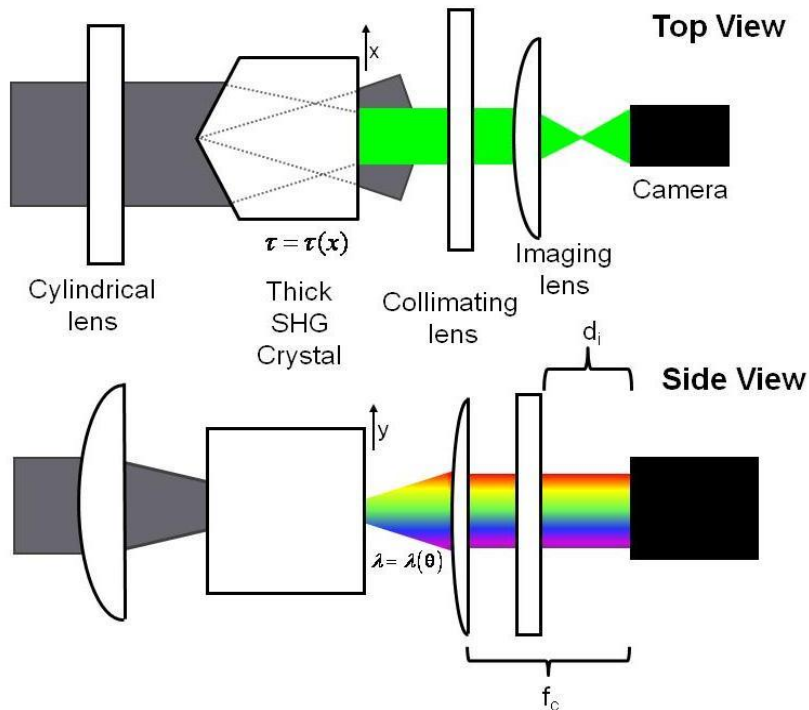
LONG-PULSE GRENOUILLE MODELS AND SPECIFICATIONS (KIT)

GRENOUILLE	8-1-pico	10-1-pico	15-1-pico
Wavelength range	790nm – 810nm	1055nm – 1075nm	1540nm – 1560nm
Pulse-length range	~1ps – ~12ps		
Delay increment	~30fs/pixel		
Temporal range¹	35ps		
Spectral resolution	0.003nm	0.004nm	0.01nm
Spectral range¹	3nm	4nm	10nm
Pulse complexity	Time-bandwidth product < ~20		
Intensity accuracy	2%		
Phase accuracy	0.01 rad (intensity-weighted phase error)		
Single-shot operation	Yes; both free-running mode & triggered single-shot.		
Sensitivity (at 10³ pps)	10μJ		
Sensitivity (at 10⁸ pps)	5nJ		
Required input polarization	Any (just rotate GRENOUILLE)		
Required beam diameter	2 – 4mm (collimated)		
Input-beam lateral-displacement tolerance	1mm		
Number of alignment knobs	Zero		
Time to set up	~ 20 minutes		
Dimensions (L x W x H)	61cm x 7.5cm x 16.5cm		
Weight	6kg		

1. Temporal and spectral ranges are the full-scale ranges, not the pulse FWHM (that is, a factor of 3 larger than the pulse length to be measured).

ADDITIONAL NOTES

Shown below is the schematic of the device, which uses a novel pentagon-shaped thick SHG crystal.



The pentagon-shaped crystal both crosses the beams (see top view) and angularly disperses the signal beam (see side view). The collimating lens maps the wavelength of the angularly dispersed beam to vertical position at the camera. The imaging lens maps the relative delay at the crystal to horizontal position at the camera. This device is a novel version of the GRENOUILLE device, specifically designed for measuring few-ps pulses.

See: J. Cohen, D. Lee, V. Chauhan, P. Vaughan, and R. Trebino, "Highly simplified device for measuring the intensity and phase of picosecond pulses," Opt. Expr. 18, 17484-17497 (2010).