

TERA ASOPS

High-Speed THz Time-Domain Spectrometer



With the ASOPS technique ultrafast data sampling is no longer limited by the natural restrictions of a mechanically moving optical delay unit. The novel TERA ASOPS high-speed THz time-domain spectrometer system is using this technique to temporally scan THz pulse traces at a revolutionary high rate. At the same time it is extending the detection window to nanoseconds pushing the spectral resolution into the region of hundreds of MHz.

TERA ASOPS is using two ultrafast lasers operating at a locked repetition rate with a tunable difference, providing the optical pulses for THz emission and detection. The lasers are featuring Menlo Systems' patented figure 9[®] mode locking technology for highest stability and reliability. The laser pulses are delivered via optical fiber to the THz antenna modules which are of the latest standard for high-power THz wave emission. A robust, plug-and-play off axis parabolic mirror terahertz optics ensures the highest bandwidth and long term stability of the THz signal for the TERA ASOPS. For seamless integration into existing experiments, the software features remote control of the spectrometer and high-speed data transfer over network. On request, additional laser output ports at 1560 nm and 780 nm can be configured.

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HIGHLIGHTS

- High-speed Data Acquisition
- Full Scanning Range
- Turnkey System Operation
- Intuitive, User-Friendly Software
- figure 9[®] Mode Locking
- Multi-Channel Option
- All-Fiber Flexibility
- Remote Control Engine

KEY SPECIFICATIONS

- >4.5 THz Bandwidth
- >70 dB Dynamic Range
- 10 ns Total Scan Range
- >600 Hz Scan Rate

APPLICATIONS

- Time Resolved THz Spectroscopy
- Chemical Fingerprinting
- THz Imaging
- THz Combs
- Stand-Off Detection

FEATURES

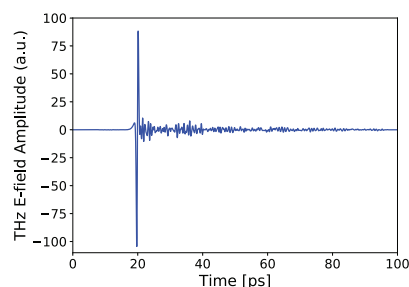
- Transmission and Reflection Geometry
- Fiber Coupled THz Path for Arrangement Outside the Spectrometer Housing
- Real-Time Measurements
- Remote Control via Network

OPTIONS

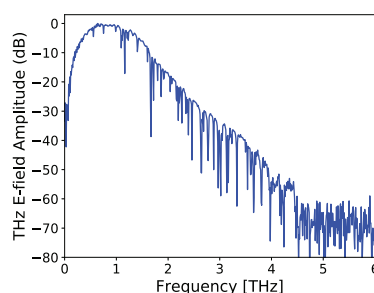
- **Dual-Detection/Multi-Channel**
Suitable for parallel transmission and reflection measurements
- **MULTIBRANCH**
Ask for Additional Optical Port Configuration
- **TERA Image**
Automated XY Translation Stage for THz Imaging
- **Reflection Head**
Compact Sensor Unit with Integrated THz optics
- **THz Purge Box**
Enables Water Line Free THz Spectroscopy
- **TeraLyzr**
Advanced Software for THz Data Analysis
- **Polymer Lens Optics**
- **Custom Fiber Length**

PERFORMANCE DATA

THz pulse measured in low humidity atmosphere*



Calculated THz spectrum



*Settings: Averaging time: 500 s, Scanning rate: 100 Hz

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High-Speed THz Time-Domain Spectrometer

SPECIFICATIONS

Spectral Range	>4.5 THz
Dynamic Range	>70 dB (typically 80 dB)
Total Scan Range	up to 10 ns (pulse-to-pulse distance)
Rapid Sampling Rate	>600 Hz
Laser Output Ports for THz	Two fiber coupled ports, 1560 nm, FC/APC, PM fiber, <90 fs after 2.5 m patch cord
System Repetition Rate	100 MHz (custom repetition rate available)

SYSTEM DIMENSIONS AND WEIGHT

Optomechanical Setup	900 x 600 x 200 mm ³ , 34 kg
THz Control Electronics	mounted in a 19" rack cabinet, 800 x 600 x 1800 mm ³ , 75 kg

SYSTEM COMPONENTS

Optical Breadboard	Two femtosecond laser sources C-Fiber*	
	Fiber coupled THz emitter and receiver modules TERA15-FC*	
	THz TPX polymer lenses	
	THz off-axis parabolic mirrors optics	
TERA ASOPS Control Electronics	Laser control electronics	
	Synchronization electronics	
	THz electronics	
	Data acquisition platform, 16 Bit, 105 MS/s	
	PC and software package for measurement and data analysis	
	22" screen, keyboard and mouse	
	TCP socket remote control interface	
	.NET remote control interface	external analog/digital triggering

*See product data sheet for detailed specifications.

REQUIREMENTS

Operating Voltage	110/115/230 VAC
Frequency	50 to 60 Hz
Cooling Requirements	no water cooling required
Operating Temperature	22 ± 5 °C

ORDERING INFORMATION

Product Code	TERA ASOPS
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Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire.

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Invisible laser radiation
avoid exposure to beam
Class 4 laser

