

TeraSmart

Compact Industry-Proven THz-TDS System



Redefining Terahertz Technology

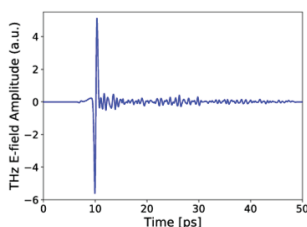
Our next-generation terahertz time-domain solutions set a new benchmark in speed, power, and performance. Achieving over 125 waveforms/s @ 50 ps, a bandwidth of 6.5 THz, and >100 dB dynamic range in under 5 seconds, these advancements are unmatched in the industry.

The newly upgraded TeraSmart spectrometer delivers unparalleled scanning speed, THz power, dynamic range and bandwidth. Featuring our high-power TERA15 antenna modules, an ultra-fast optical delay unit (up to 1700 ps) and a homebuilt transimpedance amplifier, it is designed for seamless integration into industrial and academic environments.

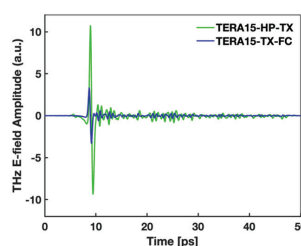
The available multichannel setup options enable simultaneous measurements with multiple emitter/detector pairs powered by a single femtosecond fiber laser oscillator. The new TeraSmart is more versatile and customizable than ever, now supporting high-power pump-probe applications with 1 W of pump power at 780 nm. Other enhanced features like an intuitive software interface, new TERA Image linear stages, and intelligent TCP socket connectivity make TeraSmart ideal for non-destructive testing and manufacturing line automation.

PERFORMANCE DATA

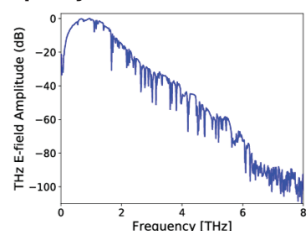
Time domain data: TERA15-TX-FC



New! Comparison of our emitters



Frequency domain data: TERA15-TX-FC



- TERA15-TX-FC measurement settings: 100 V bias with 25 mW optical powers at 24 Hz scan speed to achieve >6 THz and >95 dB in 60 sec
- TERA15-HP-TX measurement settings: 200 V bias with 50 mW optical powers at 24 Hz scan speed to achieve >6 THz* and up to 110 dB in 60 sec
- All measurements were conducted under ambient conditions without purging

MenloSystems

HIGHLIGHTS

- All-Integrated Turnkey System
- Compact 19" Rack Solution
- Industry-Proven Delay Unit
- Industry-Proven fs Fiber Laser
- figure 9® Mode Locking
- Multi-Channel Option
- All-Fiber Flexibility
- Ethernet Based Remote Control Engine
- Class 1 Laser Product

KEY SPECIFICATIONS

- >6 THz (typ. 6.5 THz)
- 100 dB (up to 110 dB) Dynamic Range
- Up to 300 μ W Average THz Power (with HP emitters)
- Scan Range up to 1700 ps, Flexible Setting of Range and Speed
- High Spectral Resolution < 0.6 GHz

APPLICATIONS

- Inline Thickness Measurements
- Time Resolved THz Spectroscopy
- Material Characterization
- Non-Destructive Testing (NDT)
- Pharmaceutical Monitoring

FEATURES

- Turnkey Operation
- Broadband Application
- Transmission & Reflection Geometry
- Fiber Coupled THz Antennas for Arrangement Outside the Spectrometer Housing
- Real-Time Measurements
- OEM Integration-Capable
- Modular Platform

OPTIONS

- **Dual-Detection/Multi-Channel**
- **TERA Image**
Hyperspectral Imaging & Analysis Platform
- **Reflection Head**
Compact Sensor Unit with Integrated THz optics
- **THz Purge Box**
Enables Water Line Free THz Spectroscopy
- **TeraLyzer & TeraLyzer pro**
Advanced Software for THz Data Analysis
- **Mirror or Polymer Lens Optics**
- **Custom Fiber Length**
- **THz Path Length Adaptation**
>3 m on request

Compact Industry-Proven THz-TDS System

THZ SPECIFICATIONS

Fast Scanning Speed	125 traces/s @ 50 ps
Spectral Range	>6 THz (up to 6.5 THz)
Dynamic Range	>100 dB (up to 110 dB)
Average Power	Up to 300 μ W (with HP emitters)
Total Scan Range	Up to 1700 ps flexible scan range and speed, customizable THz path length >3m
THz Frequency Resolution	Up to 0.6 GHz
Laser Output Ports for THz	2 fiber-coupled ports, 1560 nm, FC/APC, PM fiber, <90 fs after 2.5 m patch cord
Laser System Repetition Rate	100 MHz

DETAILED SPEED SPECIFICATIONS

Scan length (ps)	Scan frequency (Hz)
5	>335
10	>260
25	>170
50	>125
100	>85
150	>70
200	>10

SYSTEM DIMENSIONS AND WEIGHT

Enclosure	19" x 3U (448 x 132 x 495 mm ³), 18 kg
Optics, Monitor and Accesories	12 kg

SYSTEM COMPONENTS

Optical Components	Integrated femtosecond laser source ELMO*	
	Integrated fiber-coupled optomechanical delay line	
	External fiber-coupled THz emitter and receiver modules TERA15-FC*	
	Compact THz optics with parabolic mirrors	
Control Electronics	Transimpedance amplifier	
	Integrated 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	100/115/230 VAC
Frequency	50 to 60 Hz
Power Consumption	<200 W
Cooling Requirements	No water-cooling is required
Operating Temperature	15-35°C
Storage Temperature	0-40°C
Humidity	80% RH noncondensing

ORDERING INFORMATION

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

