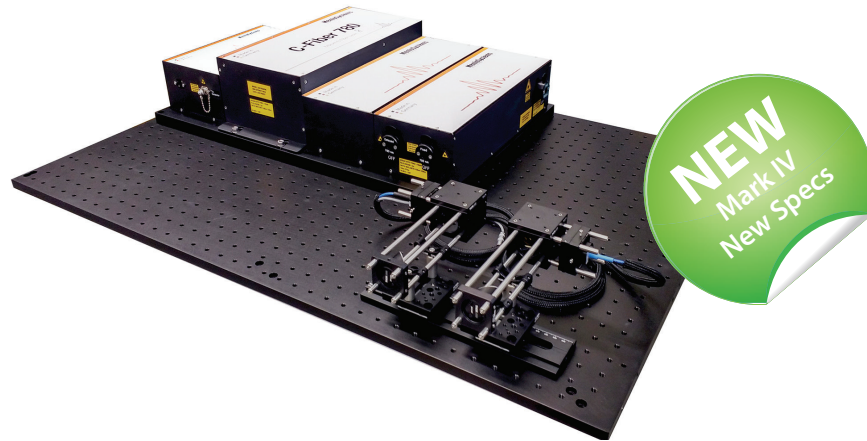


# TERA K15

Versatile, All-fiber THz Time-Domain Platform  
Based on 1560 nm Femtosecond Fiber Laser



The TERA K15 fiber-coupled terahertz spectrometer provides a complete solution for fast broadband time-domain THz spectroscopy, offering maximum flexibility for scientific THz applications.

The system includes our latest figure 9<sup>®</sup> femtosecond laser source at 1.5  $\mu\text{m}$  emission wavelength, fiber-coupled optical light path with delay line, a THz wave path with THz Emitter, THz detector and TPX THz optics, control electronics and a PC with data acquisition and evaluation software. The delay line offers flexibility by covering a standard scan window of  $>850$  ps enabling a high spectral (THz) resolution below 1.2 GHz. Customers demanding superior spectral resolution ( $<0.7$  GHz) can opt for the long scan range ( $>1600$  ps). The dual detector option offers simultaneous measurements in transmission and reflection geometry. For THz imaging applications our extension unit TERA Image can be integrated into the setup, including image acquisition and reconstruction software.

Optionally, the system's laser source is synchronizable to an external source, and can be extended by additional laser output ports at 780 nm and 1560 nm. To perform THz-TDS with optical sample excitation at those wavelengths, the TERA K15 setup can be upgraded with our THz-Pump-Probe add-on.

**MenloSystems**

## KEY SPECIFICATIONS

- $>6$  THz Bandwidth
- $>100$  dB Dynamic Range
- Scan Range  $>850$  ps
- Spectral Resolution  $<1.2$  GHz
- Additional 780 nm Laser Output
- Modular, Breadboard-based THz-TDS Platform

## APPLICATIONS

- Testbed for THz Components
- Characterization of Solid State THz Sources
- Investigation of Charge Carrier Dynamics
- Characterization of Quantum Cascade Lasers
- THz Plasmonics
- Investigation of Synchrotron Radiation

## FEATURES

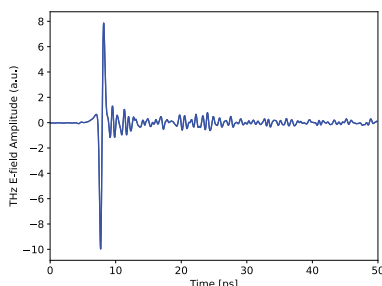
- Broadband THz Spectroscopy
- Simultaneous Operation of THz setup and fs Laser
- Turnkey Operation
- Supports Standalone fs Lasers Applications

## OPTIONS

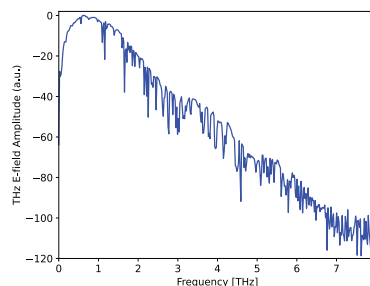
- **Dual-Detection/Multi-Channel**  
Suitable for parallel transmission and reflection measurements
- **TERA Image**  
Hyperspectral Imaging & Analysis Platform
- **THz Pump-Probe**  
Second Delay Line for Optical Pump – THz Probe Spectroscopy
- **High Resolution**  
Spectral Resolution of  $<0.7$  GHz and  $>1600$  ps Scan Window
- **SYNC**  
Synchronizable Menlo Oscillator, suitable for ASOPS-Upgrade or Optical Pump – THz Probe measurements
- **Reflection Head**  
Compact Sensor Unit with Integrated THz optics
- **THz Purge Box**  
Enables Water Line Free THz Spectroscopy
- **TeraLyzer**  
Software for THz Data Analysis
- **Polymer Lens Optics**
- **Custom Fiber Length**
- **THz Path Length Adaptation**  
 $>3$  m on request

## PERFORMANCE DATA

THz pulse measured in ambient air\*



THz spectrum showing absorption lines of atmospheric water vapor



<b>THz Bandwidth</b>	$>4.5$ THz	in 0.03 sec.
	$>6$ THz	in $<5$ sec.
<b>Dynamic Range</b> (Spectrum)	$>60$ dB	in 0.03 sec.
	$>80$ dB	in $<5$ sec.
	$>95$ dB	in $<60$ sec.
	$>100$ dB	in $<200$ sec.

\*Settings: 50 ps scan window measured at 34.7 Hz scan speed to achieve  $>6$  THz and  $>95$  dB in  $<60$  sec. Measured in transmission with our off axis parabolic mirrors THz optics according to the VDI/VDE 5590 standard Terahertz systems - Time domain spectroscopy (TDS) systems.

# TERA K15



## THz Time-Domain Spectrometer

### THZ SPECIFICATIONS

Spectral Range	>6 THz
Dynamic Range	>100 dB
Total Scan Range	>850 ps, flexible scan range and speed, customizable THz path length > 3 m
THz Frequency Resolution	<1.2 GHz (High resolution variant: <0.7 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*, synchronizable to external source on request

\*Optional multichannel extension (up to 4 laser ports).

### OPTICAL OUTPUT SPECIFICATIONS (OPTIONAL)

Wavelength	1560 nm	780 nm
Average Output Power	>500 mW	>250 mW **
Pulse Duration	<90 fs	<100 fs
Auxiliary Output Ports	Free space port, fiber-coupled port on request	Free space port

\*\* Menlo Systems' C-Fiber 780: freely tunable power ratio between 780 nm and 1560 nm port.

### SYSTEM DIMENSIONS AND WEIGHT

Optomechanical Setup	900 x 600 x 200 mm <sup>3</sup> , 34 kg
THz Control Electronics	448 x 132 x 550 mm <sup>3</sup> , 8 kg
Laser Control Unit	448 x 132 x 437 mm <sup>3</sup> , 12 kg

### SYSTEM COMPONENTS

Optical Components	Femtosecond laser source: C-Fiber or C-Fiber 780	
	Fiber-coupled optomechanical delay line	
	Fiber-coupled THz emitter and receiver modules TERA15-FC	
	Compact THz optics with parabolic mirrors	
Control Electronics	Transimpedance amplifier	
	PC and software package for measurement and data analysis	
	22" screen, keyboard and mouse	
	TCP socket remote control interface	
Laser Control Unit	.NET remote control interface	external analog/digital triggering

### ORDERING INFORMATION

Product Code	TERA K15
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Please call for pricing. Specifications are subject to change without notice. Custom modifications are available, please inquire.



Invisible laser radiation  
avoid exposure to beam  
Class 3B laser

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