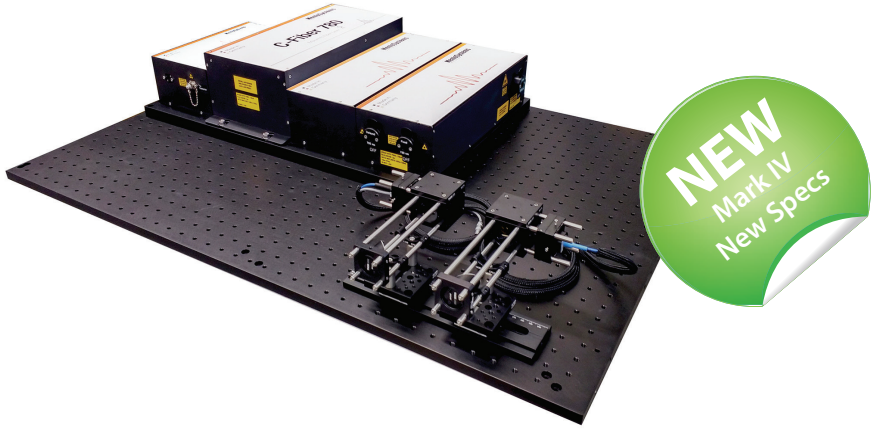
# TERA K15

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




**Introducing our new generation TERA K15 Systems with unparalleled performance**

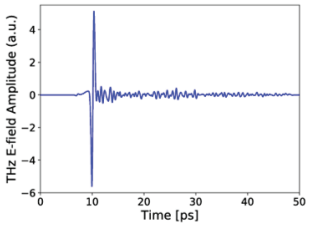
The TERA K15 fiber-coupled terahertz spectrometer offers a comprehensive solution for high-speed broadband time-domain THz spectroscopy, delivering exceptional flexibility for scientific applications. By incorporating our groundbreaking TERA15 antenna modules, the new generation TERA K15 system exhibits unprecedented enhancement in performance. The TERA K15 integrates every feature of the TeraSmart and adds further versatility options, earning it the "multi-talent" reputation amongst our product line.

The dual-detector option can be used to enable measurements in both transmission and reflection geometries on a given sample. For THz imaging applications, our TERA Image extension, complete with advanced software for imaging acquisition and reconstruction, can easily be integrated into your setup to unlock and facilitate your experiments. To fully leverage the modularity provided by the TERA K15 platform, you can opt to synchronize the system to an external laser and/or extend it with supplementary laser output ports at 780 nm, 1040 nm and 1560 nm wavelengths. Given these features, the TERA K15 provides a unique interface for optical pumping – terahertz probing and can serve as an ideal testbed for exploring innovations in photonics and semiconductor science.

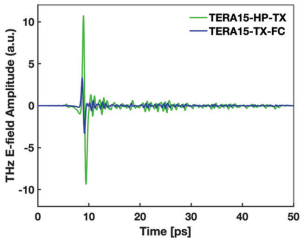
The TERA K15 integrates Menlo Systems' cutting-edge fiber-based femtosecond laser operating at an emission wavelength of 1.5 µm, utilizing our proprietary figure 9® mode-locking technology. Additional components include a fiber-coupled optical light path with a fast delay line, customizable THz free-space optics, including THz emitter and detector. The system is equipped with control electronics and a PC fitted with data acquisition and evaluation software. The delay line offers a flexible scan range that covers a standard scanning window of >850 ps with a spectral (THz) resolution below 1.2 GHz. For customers seeking the highest spectral resolution (<0.6 GHz), an extended scanning range (>1700 ps) is available as an option.

## PERFORMANCE DATA

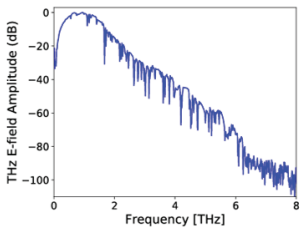
**Time domain data: TERA15-TX-FC**




**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

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### KEY SPECIFICATIONS

- >6 THz* Bandwidth
- > 100 dB (Up to 110 dB*) Dynamic Range
- Up to 300 µW* Average THz Power
- Scan Range up to 1700 ps, Flexible Setting of Range and Speed
- High Spectral Resolution < 0.6 GHz
- Additional 780 nm Laser Ouput
- 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 & 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 <0.6 GHz and >1700 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 & TeraLyzer pro**
  Software for THz Data Analysis
- **Polymer Lens Optics**
- **Custom Fiber Length**
- **THz Path Length Adaptation**
  >3 m on request

# TERA K15

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## THz Time-Domain Spectrometer

### THZ SPECIFICATIONS

| | |
|---|---|
| Spectral Range | >6 THz* |
| Dynamic Range | >100 dB (Up to 110 dB*) |
| Average Power | Up to 300 µW * |
| Total Scan Range | Up to 1700 ps, flexible scan range and speed, customizable THz path length >3 m |
| 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*, synchronizable to external source on request |

* Specifications for systems with high-power emitter. High-power bandwidth only guaranteed when using newer generation detector. **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 $mm^3$, 34 kg |
| THz Control Electronics | 448 x 132 x 550 $mm^3$, 8 kg |
| Laser Control Unit | 448 x 132 x 437 $mm^3$, 12 kg |

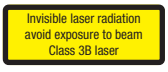
### SYSTEM COMPONENTS

| | | |
|---|---|---|
| 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 | |
| | .NET remote control interface | external analog/digital triggering |
| Laser Control Unit | | |

### ORDERING INFORMATION

| | |
|---|---|
| **Product Code** | TERA K15 |

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

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