TERAHERTZ - SPECTROMETER

T-SPECTRALYZER

Ideas taking shape – worldwide.

HÜBNER

MATERIAL ANALYSIS. SUBSTANCE IDENTIFICATION.

With us, your analysis is simple and efficient – for research and industry. HÜBNER is a systems provider with tradition for the technical industry developing innovative technologies for the world market.

Our expertise enables us to create innovative, intelligent products that make your work easier and more efficient – the new T-SPECTRALYZER is part of our expertise.

Applications

The HÜBNER Terahertz-Spectrometer opens up new dimensions in many fields of measurement applications, for example:

- Identification of substances even through plastic pipes and tubes and other packaging
- Analysis of chemicals in powder and tablet form
- Analysis of liquids and gases
- Characterization of doped semiconductor materials
- Investigation of moisture distributions
- Determination of the filling level of polymers
- Distinguishing various isomers
- Distinguishing crystalline and amorphous structures
- Determining the layer thicknesses of multi-layer systems
- Identifying flaws and cavities in non-electrically conductive components

Advantages

The mobile T-SPECTRALYZER was designed for quick set-up and for routine measurements in everyday analysis tasks. Only a mains connection is required to make the system ready to use without further infrastructure. Due to latest technology, the terahertz spectrometer does not require any additional cooling or external gas supply. This ensures a cost-effective operation.

Individual expansion modules and an intuitive user interface support recording, processing and exporting your measurement results. Thanks to the touchscreen based user-friendly operation no time-consuming and costly training is required. As terahertz waves are completely safe no expensive safety precautions are necessary.

Within a few seconds the non-destructive and contact-free analysis of your samples is done. Full automation of your measurement process allows for extensive data sets to be taken without high personnel costs. Its standardized hardware and software interfaces seamlessly integrate the spectrometer into your existing network and process flow.

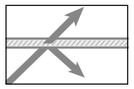
Software

- Intuitive use
- JCAMP compatible data format
- Compatible with *The Unscrambler®*
- Customized solutions available upon request

Interfaces

- NAMUR
- OPC
- LAN / WLAN
- USB 3.0

Extension modules

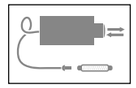


Simultaneous transmission and reflection measurements

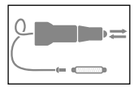
Spectral imaging

Larger sample tray 335 x 240 mm²

Fiber-coupled transmitter and detector modules



Fiber-coupled transceiver module



Fiber-coupled ATR module

System specifications

Frequency range	0.1 THz up to 4.0 THz (3.3 cm^{-1} up to 133 cm^{-1})
Dynamic range	> 70 dB at 0.5 THz (16.7 cm^{-1})

Frequency resolution

Standard	20 GHz (measurement range 50 ps)
Maximum	5 GHz (measurement range 200 ps)

Measurement time

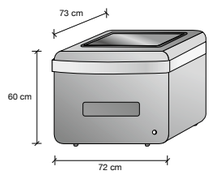
Standard	8 s (50 ps at 6.25 ps/s)
Minimum	2 s (20 ps at 10 ps/s)

Sample scan range/beam diameter

Standard	200 x 200 mm² (~ 0.2 mm accuracy)
Beam diameter	~ 1.5 mm (frequency-dependent)

Dimensions and weight

H x W x D	60 x 72 x 73 cm^3
Weight	87 kg

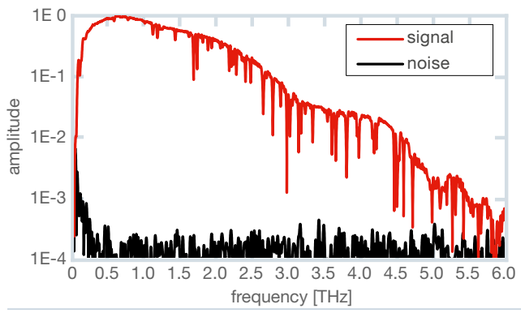


Surroundings and electrical supply

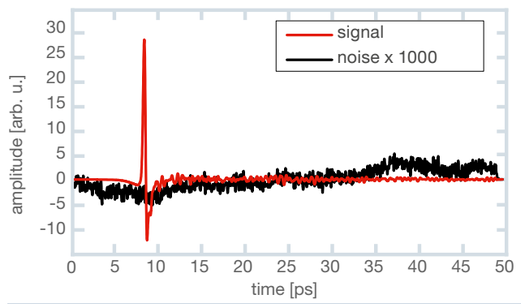
Operating temperature	16 – 32 °C
Voltage	115 – 230 VAC
Frequency	50 – 60 Hz
Power consumption	< 200 Watt

All shown data measured without extension modules at 8 s of measurement time, 50 ps of measurement range, 20 GHz of frequency resolution, a temperature of 22 °C, relative humidity of 27 %.

f	dynamic range minimum		typical	
[THz]	ratio	[dB]	ratio	[dB]
0.5	3,500 : 1	70.9	10,000 : 1	80.0
1.0	2,700 : 1	68.6	7,050 : 1	77.0
1.5	1,350 : 1	62.6	4,240 : 1	72.5
2.0	740 : 1	57.4	2,750 : 1	68.8
2.5	450 : 1	53.1	1,030 : 1	60.3
3.0	160 : 1	44.1	360 : 1	51.1
3.5	50 : 1	34.0	200 : 1	46.0
4.0	15 : 1	23.5	140 : 1	42.9



Spectral signal and noise information (typical)



Time-dependend signal and noise information (typical)

HÜBNER GmbH & Co. KG
Heinrich-Hertz-Straße 2
34123 Kassel, Germany

Photonics
Tel. +49 561 998-2085
Fax +49 561 998-2025

photonics@hubner-germany.com

www.hubner-photonics.com

Project in cooperation with

Fraunhofer IPM

T-SPECTRALYZER – EN – Edition: March 2014 – Subject to change