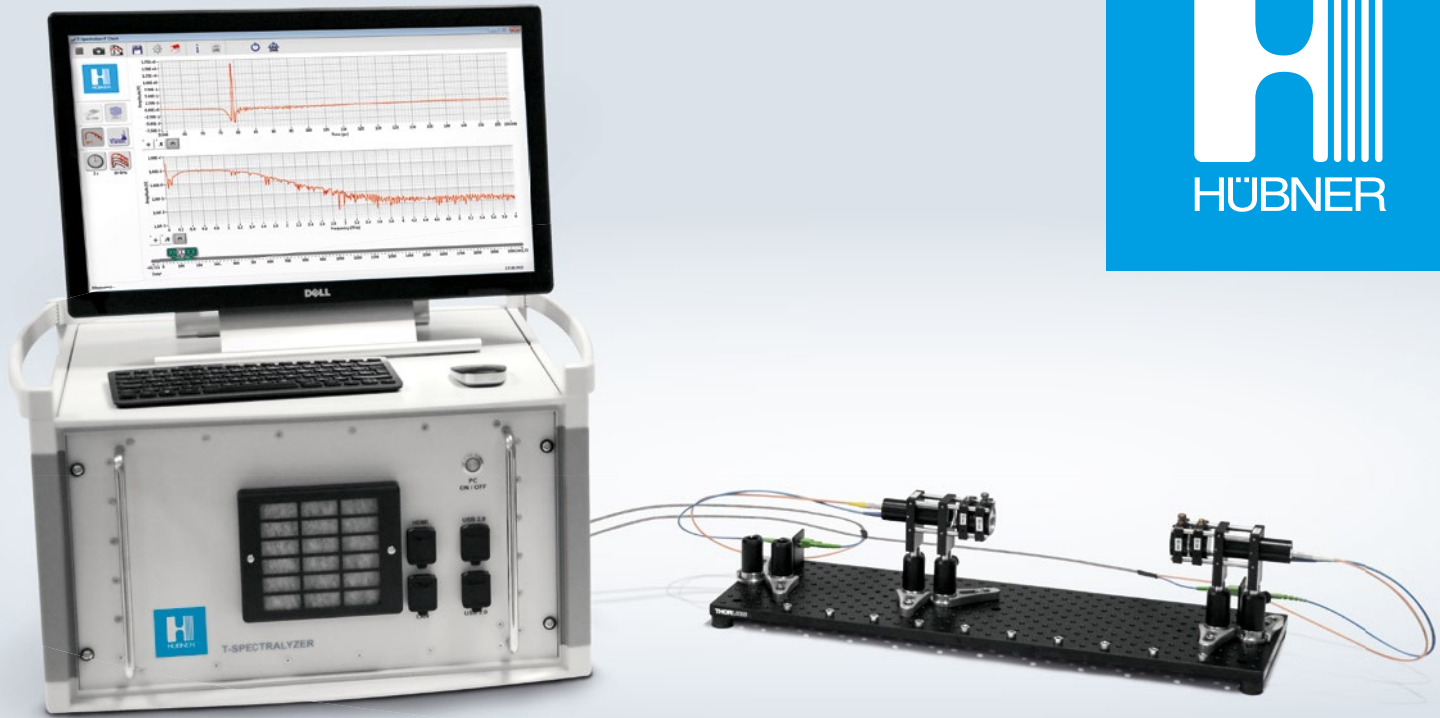


Ideas taking shape – worldwide.



## THE FIBER-COUPLED THZ-SPECTROMETER T-SPECTRALYZER F

The T-SPECTRALYZER F is a high-performance Plug & Play THz-spectrometer. Its design allows high flexibility: Measurements in transmission, reflection and scattering with any angle are possible. The integration of the

THz-Spectrometer into existing measuring systems is simple due to the fiber-coupled transmitter and detector. Only a main connection is required to make the system ready to use without further infrastructure.

### Fields of Application

The T-SPECTRALYZER F opens up new dimensions in many fields of measurement applications, for example:

- THz-Time-Domain Spectroscopy
  - Detecting & characterizing materials
  - Using amplitude and phase information
  - Analysing chemicals in powder and tablet form
  - Analysing liquids and gases
  - Distinguishing crystalline and amorphous structures
  - Determinating the filling level of polymers
  - Distinguishing various isomers
- Non-destructive testing (NDT)
  - Identifying substances even through plastic pipes and tubes and other packaging
  - Determining the layer thicknesses of multi-layer systems

### Advantages

The Plug & Play THz-Spectrometer T-SPECTRALYZER F facilitates non-destructive and contact-free analysis of your samples. Individual measurement modules and an intuitive user interface support the recording, processing and exporting of your measurement results.

T-SPECTRALYZER F is a high-performance THz-Spectrometer offering the frequency range 0.1 – 2.5 THz and a dynamic range of up to 54 dB. Short measurement times of 0.05 s allow the monitoring of processes or spatial mapping of your samples.

The operation is user-friendly – no time consuming training is required. The standardized hardware and software interfaces help you to integrate the spectrometer into your existing network and process flow. No safety precautions are necessary as terahertz waves are completely safe.

## System specifications\*

Frequency range 0.1 THz up to 2.5 THz  
(33 cm<sup>-1</sup> up to 82.5 cm<sup>-1</sup>)

Dynamic range > 54 dB at 0.5 THz (16.7 cm<sup>-1</sup>)

### Frequency resolution

Standard 10 GHz (measurement range 100 ps)  
Maximum 5 GHz (measurement range 200 ps)

### Measurement time

Standard 5 s (100 ps at 20 ps/s)  
Minimum 0.05 s (100 ps at 2,000 ps/s)

## Dimensions and weight

### 19" rack

W x H x D 43 x 27 x 46 cm<sup>3</sup>  
Weight 30 kg

### Terahertz transmitter/detector module (each)

W x H x D 5 x 5 x 10 cm<sup>3</sup>  
Weight 0,5 kg each

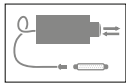
## Surroundings and electrical supply

Operating temperature 16 – 32°C (60 – 90°F)  
Operating voltage 115 – 230 VAC  
Frequency 50 – 60 Hz  
Power consumption < 200 Watt

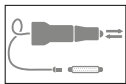
## Modules



Fiber-coupled transmitter and detector modules



Fiber-coupled transceiver module

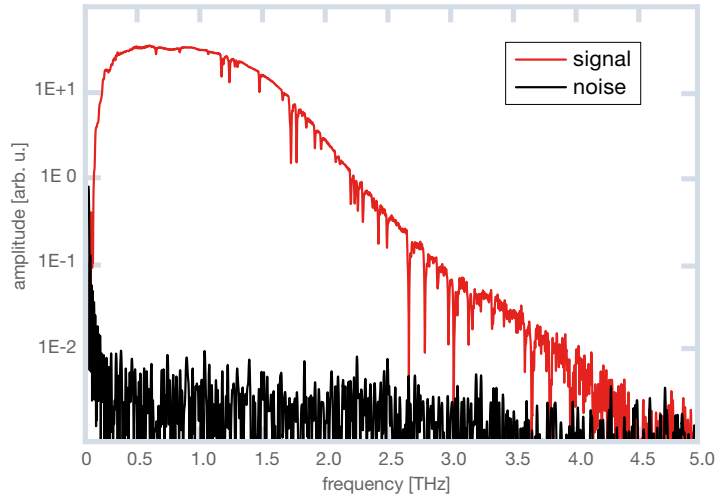


Fiber-coupled ATR module\*\*

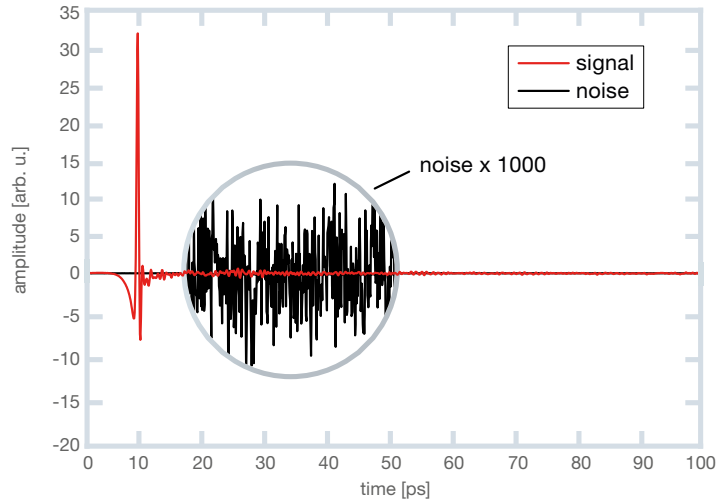
\*All shown data measured with fiber-coupled transmitter and detector modules, 5 m fiber each, with two collimating and two focusing TPX lenses (four lenses overall), without any sample at 5 s of measurement time, 100 ps of measurement range, 10 GHz of frequency resolution, a temperature of 22 °C, relative humidity of 27 %.

\*\*The ATR Module is currently in development.

f [THz]	dynamic range			
	minimum		typical	
	ratio	[dB]	ratio	[dB]
0.5	500 : 1	54.0	900 : 1	59.1
1.0	475 : 1	53.5	850 : 1	58.6
1.5	250 : 1	48.0	450 : 1	53.1
2.0	85 : 1	38.4	150 : 1	43.5
2.5	30 : 1	28.9	50 : 1	34.0
3.0	10 : 1	18.4	15 : 1	23.5
3.5	6 : 1	14.9	10 : 1	20.0
4.0	3 : 1	8.9	5 : 1	14.0



Spectral signal and noise information (typical)



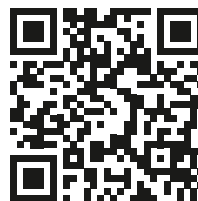
Time-dependent signal and noise information (typical)



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