SENTECH Erfolg durch Leistung

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Spectroscopic Tabletop Reflectometer
UV-VIS Reflectometer RM 2000

- **Contactless, optical reflection measurement at normal incidence for the characterization of thin films and bulk materials**
- **Spectral range from 240 – 950 nm**
- **Powerful, unmatched analysis software package FTPexpert**
- **Highly stable deuterium and halogen tungsten light source**
- **Highly precise sample alignment with optical auto collimating telescope and microscope**
- **Optional XY mapping up to 200 mm with high lateral resolution**
- **Modern, comfortable, streamlined and robust user interface includes a comprehensive package of predefined applications representing semiconductor microelectronics, magnetic media, life science, color measurements and more**

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Product Description

The Spectroscopic Tabletop Reflectometer **RM 2000** is an optical reflection measurement instrument for the characterization of thin films and bulk material in a broad spectral range.

The **UV-VIS Reflectometer RM 2000** provides reflectivity spectra at normal incidence which are analyzed by the **FTPexpert** software according to the sample parameters like film thickness, absorption, composition, energy gap, color, spectral bandwidth and more.

A major application is the fast and easy thickness measurement of transparent and semitransparent films on transparent and absorbing substrates. It covers a film thickness range from 5 nm to 50 microns and can be applied to a high variety of material systems due to the large and extensible material library.

The principle of the **RM 2000** reflectivity measurement is based on the measurement of the reflected intensity which is normalized to an intensity taken at a reference sample. The reference sample is part of the delivery.

Fast algorithms allow to perform the optical measurement and the calculation of the film thickness with a high repetition rate. The **AutoModeling** feature allows to detect sample types by fast comparison with a spectrum library.

The **UV-VIS Reflectometer RM 2000** comprises the tabletop microscope unit with sample stage and optical setup for the illumination of a relatively small spot of the sample and detection of the reflected light. Further it comprises a sample alignment arrangement consisting of an auto-collimating telescope and a microscope objective for the exact control of height and tilt of the sample. The electronics box contains an embedded microcontroller and the spectrometer. The electronics box can be interfaced to any state of the art PC running under MS Windows via an Ethernet LAN connection.

The **UV-VIS Reflectometer RM 2000** can be optionally equipped with a computer controlled XY – mapping stage to scan the sample properties laterally. The mapping software allows to define any kind of measurement pattern, to display the results in 2D and 3D plots and to perform statistics over the sample.

The user software is easy to handle and presents the measurement result in a clear way. It supports the thickness measurement of single layers as well as the analysis of layer stacks. The software offers ready and user defined applications.

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Technical specifications:

Measured values: Reflectivity R
Analysis and Display of Film thickness, refractive index, absorption and more
Range of thickness measurement 5 nm ... 50 µm
Thickness accuracy better than 1 nm (typ. for 400 nm SiO_2/Si)
Precision (1 σ) 0.3 nm (typ. for 400 nm SiO_2/Si)
Measurement time Typical 300 ms
Spectral range 240 nm - 950 nm
Spot size 500 µm
Light source: stabilized Deuterium andHalogen Tungsten lamp
Detector: spectrometer with SMA fiber input, high performance photodiode array for spectral intensity measurement

19” Controller box table top case, 6HE
Wide range (85...264VAC) power supply,
Power cable (specify country specific plugs),
Network connector RJ-45

Requirements for user PC Desktop-PC with monitor, keyboard, mouse or notebook with 600 MHz, 64 MB RAM, Ethernet-network connector, 10 Mbit (10Base-T), CD-ROM drive, OS: WinNT 4.0, Win2000, WinXP

User PC is not part of the UV-VIS Reflectometer RM 2000

UV-VIS Reflectometer RM 2000 software comes on CD-ROM with the instrument.
The measurement software includes

- the **FTPexpert** software for the measurement of thickness and refractive index and recipe oriented operation,
- the measurement of reference sample, background signal and sample,
- the display of measured and fitted spectra,
- the display of thickness result,
- the reporting,
- the modelling,
- AutoModeling with sample type detection from extendable spectra library,
- Communication with FTP controller box via TCP/IP using XML formatted commands.

Ordering information of **UV-VIS Reflectometer RM 2000**

Spectroscopic Tabletop Reflectometer **RM 2000** including:
microscope stand with illumination and detection optics, adjustable sample stage with 6” sample platform, sample alignment arrangement with auto-collimating telescope and microscope objective, optical fiber between spectrometer in controller box and microscope stand, network cable, FTPexpert software, tool with reference sample and background measurement position.