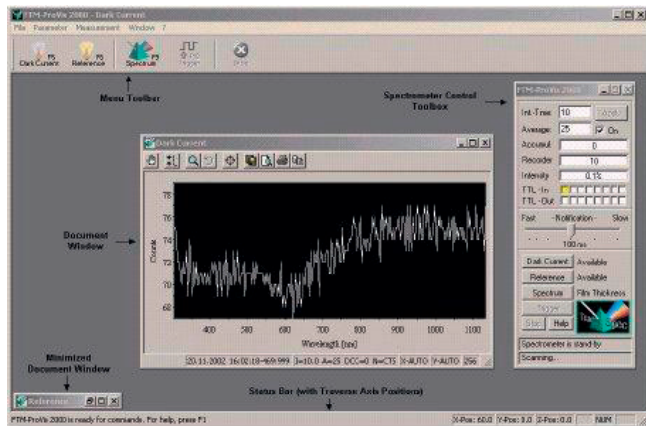


# Film Thickness Measurement Software

## TF<sup>Pro</sup> UV-Vis



TF<sup>Pro</sup> UV-Vis is a software package designed to determine the film thickness of transparent layers. It provides spectrometer system control, data acquisition and processing, as well as many different display options including TTL output control. TF<sup>Pro</sup> UV-Vis supports tec5 Operating Electronics with PCI interfaces and tec5 desktop spectrometer systems.



TF<sup>Pro</sup> UV-Vis Application Desktop

- **Film thickness ranges from 0.1 ... 150 microns (depending on the spectrometer module)**
- **Film thickness accuracy: +/- 0.005 microns**
- **Continuously running measurement with automatic data/result storage**
- **Two independent evaluation parameter sets permit simultaneous double-layer evaluation**
- **Various status/error/warning messages**
- **Provides TTL trigger input and output**
- **Supports scanning bridges for Web Coaters**
- **Runs on Windows 2000/XP**

## Spectrometer System Control

TF<sup>Pro</sup> UV-Vis permits to set parameters for all major tec5 spectrometer system functions, the like as integration time, averaging and automatic shutter control of a connected halogen and/or deuterium light source. Integrated TTL trigger input and two TTL trigger output ports allow direct feedback of the measured film thickness results for process control.

## Data Acquisition Modes

TF<sup>Pro</sup> UV-Vis provides various measurement setups, by which the data acquisition can be triggered either manually or automatically via a TTL trigger event. All spectra measured can be automatically saved to a so-called Spectra-Recorder File. Independently from the connected spectrometer system hardware, the Spectra-Recorder File can be accessed off-line thus allowing data processing for film thickness evaluation.

## Film Thickness Determination

The interference pattern of the typical spectrum created by a thin transparent layer is analyzed by a special developed Fast Fourier Transform algorithm.

Certain software evaluation filters permit to improve the data processing, for instance, defining a spectral evaluation range to reduce statistical noise of the measured interference spectrum.

TF<sup>Pro</sup> UV-Vis provides to setup user defined film thickness limits, which can be used to trigger the spectrometer TTL out ports for a current feedback loop of your in-line process control.

## Specifications

### General

- Multi-Document-Interface for easy data access
- Multi-threaded Document View (charts)
- Spectrometer Control Toolbox

### Data Acquisition

- Single, multiple and continuous measurements
- Automatic Dark Current correction
- Automatic shutter control
- External TTL Trigger for scan cycles
- Support of scanning bridge for fully automatic two-dimensional film thickness determination
- Spectra-Recorder for data storage

### Data Evaluation

- Dispersion correction via Cauchy function
- Simultaneous double-layer examination
- On-line film thickness trend analysis

### On-Line Charts

- Raw Data, Dark Current, Reference and Interference Spectrum
- FFT Spectrum and film thickness result
- 2D film thickness trend chart
- 3D film thickness contour chart

### Data Export/Storage

- Manual and automatic data export of all documents in ASCII format (Excel compatible)
- Spectra-Recorder File including Dark Current, Reference and all Interference Spectra

### Trigger Input/Output

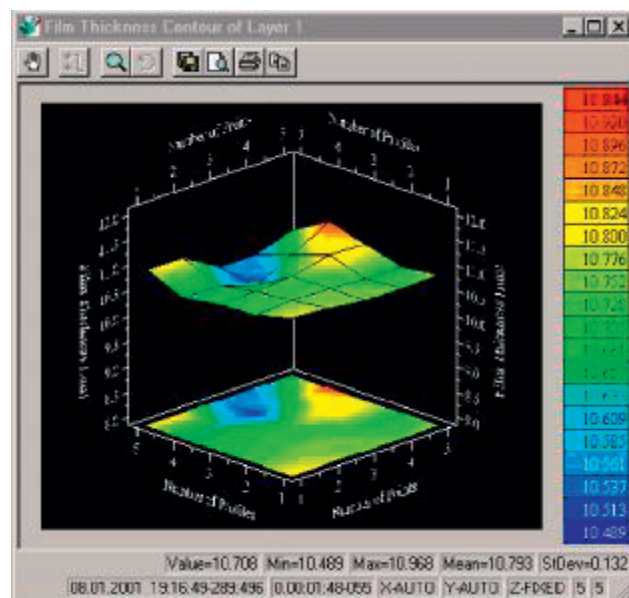
- One TTL trigger input
- Two independent usable TTL trigger outputs
- Internal trigger option for scanning bridges



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### Optical Thickness Ranges and Accuracy

- 0.8 ... 180  $\mu\text{m}$  (MCS UV-NIR)
- 2.1 ... 198  $\mu\text{m}$  (MCS NIR)
- 0.7 ... 49  $\mu\text{m}$  (MMS-1)
  
- Overall accuracy:  $\pm 0.005 \mu\text{m}$
- Overall repeatability:  $\pm 0.002 \mu\text{m}$  (standard WEG test)



TF<sup>Pro</sup> UV-VIS 3D film thickness contour plot

### Hardware Requirements

- tec5 spectrometer system or operating electronics with PCI interface and light source
- PC with Windows 2000/XP
- Intel Pentium 4, 256 Mbytes RAM 20 MB HDD space, SVGA, High Color