Dipl.-Ing. (FH) Thomas Fuchs

Engineer's Office for Applied Spectroscopy

Ingenieurbüro für Angewandte Spektrometrie

FTM-ProLib++

Programming Library for Film Thickness Measurement using TranSpec Film Thickness Gauges

For developing your own film thickness measurement applications using our TranSpec film thickness gauges, we provide our powerful and easy-to-use programming library **FTM-ProLib++**.

With FTM-ProLib++ the entire spectra data acquisition, like scanning the diode array, raw data averaging, dark current correction and the spectra normalization is fully encapsulated in just a few simple function calls. The measured interference spectra will be evaluated in real-time for either single layer or double layer film thickness using the same high precise Fast-Fourier Transform (FFT) algorithm as our FTM-ProVis Professional and FTM-ProVis Lite software packages.

FTM-ProLib+ gives you full access to all measured spectra (including raw data), the computed FFT spectrum and film thickness results and lets you create the so-called Spectra-Recorder files, which can be viewed and re-processed using FTM-ProVis. This way you can easily view and check all measurements executed with your application and FTM-ProLib++.

- Runtime licensed Dynamic Link Library (DLL) providing standard C calls
  Compatible with common C/C++ compiler, Visual Basic and VBA (Excel), LabVIEW
- Extensive parameter checking and measurement status verification during runtime
  You hardly can do anything wrong when working with FTM-ProLib++
- Supports special external I/O module with 8-channel TTL and 4-channel analog out
- Detailed user manual as PDF file and optionally as printed document
- Demo software as Windows console application, including C/C++ source code
- See next page for a short programming example!

Technical specifications on next page ►

ZIP & City: 73430 Aalen - Germany
Street: Bischof-Fischer-Str. 108
Fon: +49 - 7361 - 97 53 28 0
Fax: +49 - 7361 - 97 53 28 5
Web: www.applied-spectroscopy.com
Email: sales@applied-spectroscopy.com

Dipl.-Ing. (FH) Thomas Fuchs
Engineer's Office for Applied Spectroscopy
Ingenieurbüro für Angewandte Spektrometrie

FTM-ProLib++ Programming Library • Technical Specifications

May 2025, related to version 4.6, without guarantee, subject to changes

Minimum Hardware and Software Requirements

- Standard PC/Laptop with Windows 10 or Windows 11
- C/C++ development system (MS Visual Studio recommended), Delphi, Visual Basic or VBA (Excel), LabVIEW
- TranSpec Process Spectrometer or TranSpec Lite Film Thickness Gauge
- FTM-ProVis software is recommended, but not required

Programming Example

```
// Step 1: open and initialize spectrometer
FTMPRO_SPECHARDWARE sSpecHardwareInfo;
FTMPro_OpenSpectrometer( FTMPRO_TRANSPEC_LITE, &sSpecHardwareInfo );

// Step 2: setup measurement parameter:
FTMPRO_MEASPARA sMeasPara;
sMeasPara.dIntegrationTime = 20.0;          // 20 ms integration time
sMeasPara.bEnableAverage  = 1;              // averaging on
sMeasPara.lNumberAverage = 10;              // 10 scans for averaging
FTMPro_SetMeasPara( &sMeasPara );           // notify settings to spectrometer

// Step 3: perform measurement of an averaged Dark Current
FTMPro_CloseShutter();                      // close shutter of connected lamp
FTMPro_RunMeasDarkCurrent();                // start measurement
FTMPRO_SPECSTATUS sSpecStatus;
FTMPro_GetSpecStatus( &sSpecStatus );       // wait until measurement is done
while ( sSpecStatus.bRunDarkCurrent )
    FTMPro_GetSpecStatus( &sSpecStatus );

// Step 4: perform measurement of an averaged and Dark Current corrected Reference spectrum
FTMPro_OpenShutter();                       // open shutter of connected lamp
FTMPro_RunMeasReference();                  // start measurement
FTMPro_GetSpecStatus( &sSpecStatus );       // wait until measurement is done
while (sSpecStatus.bRunReference )
    FTMPro_GetSpecStatus( &sSpecStatus );

// Step 5: setup film thickness evaluation parameter (simple example)
FTMPRO_EVALPARA sEvalPara;
sEvalPara.bSpecEvalRangeFull = 1;           // use entire interference spectrum for evaluation
sEvalPara.bPeakSearchRangeFull = 1;         // search entire FFT spectrum for peak
sEvalPara.dRefIndex = 1.56;                 // refraction index of the layer
FTMPro_SetSingleLayerEvalPara( &sEvalPara); // initialize single layer evaluation

// Step 6: measure and evaluate an averaged and Dark Current corrected interference spectrum
FTMPro_RunMeasInterference();               // start measurement
FTMPro_GetSpecStatus( &sSpecStatus );       // wait until measurement is done
while (sSpecStatus.bRunInterference )
    FTMPro_GetSpecStatus( &sSpecStatus );
FTMPRO_RESULT sResult;
FTMPro.EvalSingleLayer( &sResult );         // evaluate interference spectrum

// Done!  Aside from other information, the structure <sResult> now contains:
sResult.dThickness      // the film thickness in microns
sResult.bIsPlausible    // thickness seems to be plausible or not
sResult.sDateAndTime    // the date and time (microsecond resolution) of the measurement
```


ZIP & City: 73430 Aalen - Germany
Street: Bischof-Fischer-Str. 108
Fon: +49 - 7361 - 97 53 28 0
Fax: +49 - 7361 - 97 53 28 5
Web: www.applied-spectroscopy.com
Email: sales@applied-spectroscopy.com