

Overview tec5 Function Libraries

For the integration of tec5 Operating Electronics and Systems in customer's application software two function libraries are available. Both libraries differ significantly in respect to functionality and level of abstraction.

1. SDACQ32MP

The library SDACQ32MP contains functions for spectral data acquisition, hardware configuration, initializing and parameter setting (e.g. integration time, averaging). The function themselves are quite independent from the used hardware. The access to inquired spectral data and related information is performed by means of physical channels. SDACQ32MP provides the inquired spectral data as pixel oriented raw data. Except for an optional averaging and dark current correction no further data processing is performed.

In addition functions for spectral data acquisition, the SDACQ32MP library provides special functions:

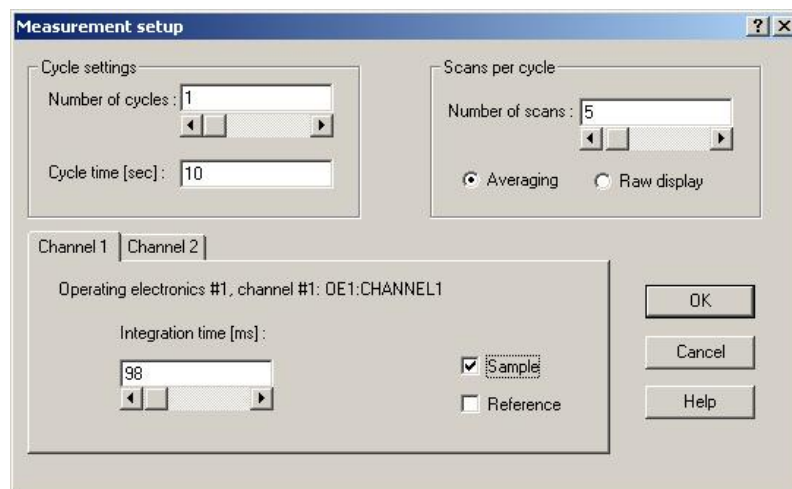
- § Control of the digital I/O ports of the Interface Electronics
- § Control of light sources
- § Generic I²C functions for operation of external components

The integration in user applications is possible under all common programmer languages. The library is supplied as a DLL module with related declaration files and example programs for C/C++ (Microsoft Visual C++), Visual Basic and Delphi.

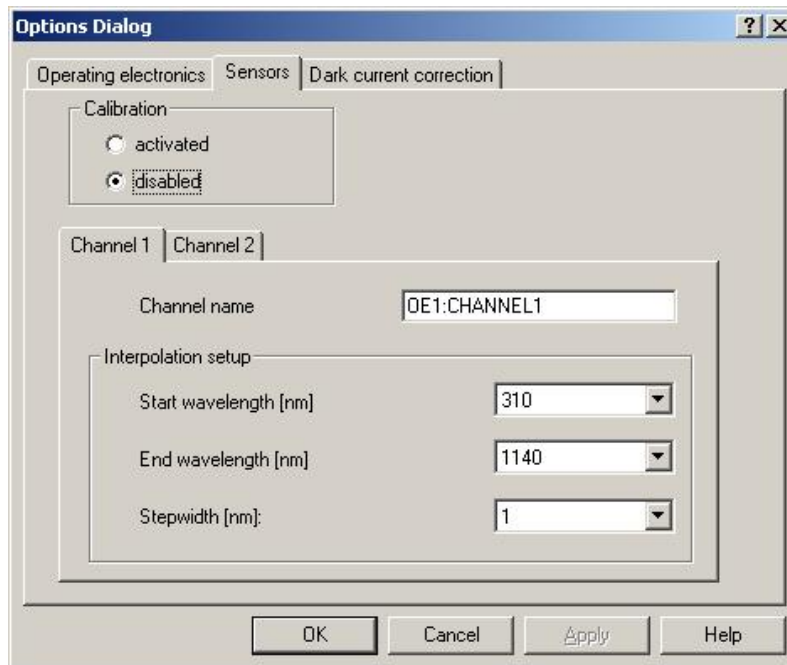
2. SDPROC32

The library SDPROC32 offers ready-to-use dialogue boxes for spectral data acquisition, configuration and parameter setting on a high level of abstraction. Processed data (interpolated, wavelength based) are transferred to the application software. Due to the comprehensive functionality this library supports the developer in respect to standard procedures and, therefore, allows the programmer to concentrate on more specific data evaluation.

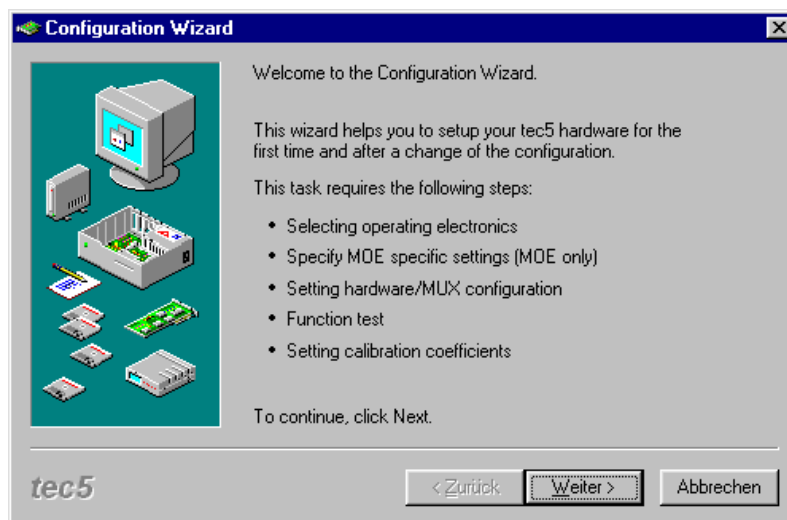
Example: Menu "Measurement setup"



Example: Menu "Options Dialog / Sensors"



Hardware settings and library parameters are saved to a configuration file. This file is created by a configuration assistant which can be supplied as a module by tec5:



Independent from the implemented dialogues, the following parameters can be set directly by separate functions:

- § Integration time, averaging, number of bursts
- § flash lamp control
- § Digital and analog I/O

The access to the spectral data is performed via logical channels. The acquired data is provided wavelength based and interpolated in an equidistant way. Besides the raw data in counts the library can calculate and provide transmission and absorption values in respect to the reference data. As reference an acquired spectrum of the same channel (in case of a one channel setup) or an additional reference channel (of a multi-channel setup) can be used.

Especially in case of a multi-channel application a calibration, generated externally for both channels, can be taken into account for data processing.

An automated dark current measurement is part of the library. After changing of relevant parameters (like integration time or averaging) the measurement of the dark current is inquired automatically.

Since the software interface is independent of the hardware it is possible to implement future tec5 electronics into existing applications without changes.

Furthermore, tec5 can add new functions for users, without the need for modifying the application software, e.g.:

- § Integration of a flash lamp
- § Merging of spectral data of VIS and NIR spectrometers into one spectrum

The library is provided as a DLL module and as a COM / automation server. The DLL interface is especially useful for integration into C/C++ applications. The COM interface can be integrated into all programming languages with COM support. Due to the integrated automation interface a link to script languages (e.g. VBA in Microsoft Office <Excel etc.>) is possible.

3. Overview

FEATURE	SDACQ32MP	SDPROC32
ABSTRACTION	low	high
DIRECT ACCES TO HARDWARE	R	S
CHANNEL ASSIGNMENT	physical	logical
CONFIGURATION FILE	S	R
HARDWARE TRANSPARENT FOR APPLICATION	S	R
READY-TO-USE CONFIGURATION DIALOGUE	S	R
CONTROL OF LIGHT SOURCES	R	R
DARK CURRENT CORRECTION	R	R
WAVELENGTH RELATED DATA	S	R
CALCULATION OF TRANSMISSION / ABSORPTION	S	R
DLL INTERFACE	R	R
COM / AUTOMATION INTERFACE	S	R