

Test Program for tec5 Operating Electronics
and Spectrometer systems

AdminTool

Manual

Version 1.2

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Sensorik und Systemtechnik

In der Au 25

D - 61440 Oberursel

Telefon: +49 (0)6171 / 9758 - 0

Fax: +49 (0)6171 / 9758 - 50

email: sales@tec5.com

Internet: <http://www.tec5.com>

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AdminTool test software

The AdminTool is a test program for tec5 operating electronics and spectrometer systems. It allows the acquisition and display of pixel related data as well as the setting of the sensor parameters (calibration coefficients, pixel count, sensor type) and their storage on the hardware. The acquired data can be exported as an ASCII file for further data processing.

Furthermore it offers the possibility to calibrate two sensors on each other. Such calibration data can be used by application software for the proper calculation of transmission and absorbance values. The AdminTool is based on the function library SDACQ32MP.

The test software AdminTool and the device drivers are always included in the hardware package.

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1. Start Instructions

Panes

- § **Devices:** Select and configure your hardware.
- § **Measurement:** Acquire spectra from your hardware.
- § **Sensors:** Parameterise the sensor channels
- § **Calibration:** Create a calibration file for two sensors

Remark: In addition the device drivers for your specific hardware have to be installed!

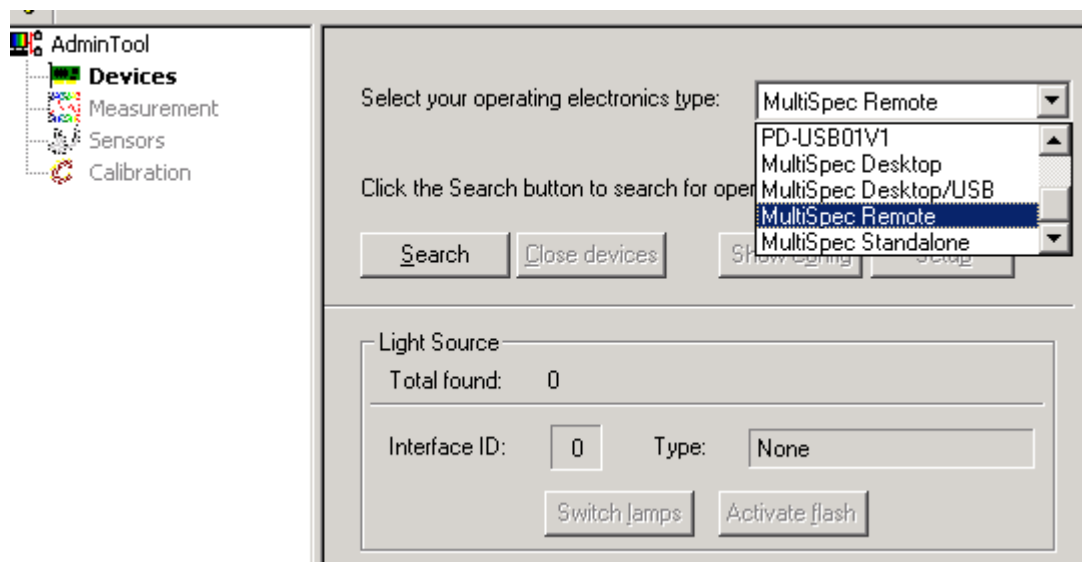
1.1 Installation of the AdminTool

- Step 1 : Insert the ,tec5 tools'-CD
- Directory ,Software & Drivers'
 - Directory 'Software-Tools'
 - Directory 'AdminTool'
 - Start program 'sdacq32at.exe'
 - Follow the instructions of the setup program
 - Reboot the computer at the end of the setup procedure

- Step 2 : Start the AdminTool
- Start the application program named AdminTool via Start / Program / tec5 SDACQ function library/ SDACQ32 Admin or click to the Shortcut Icon (if installed)

2.0 ,Devices'- Select and Configure the Hardware

The Devices Pane is used to search for the operation electronics and to show information about the current configuration.

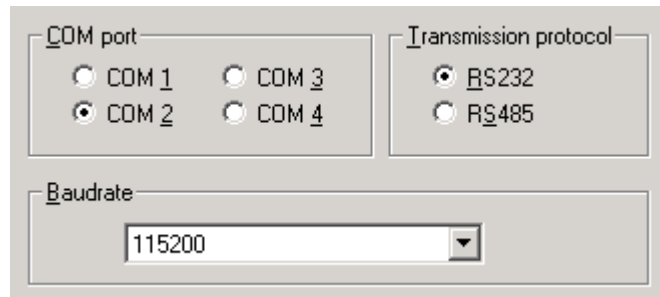


Step 3: Select the type of your operation electronics from the list:

By clicking *Search*, the AdminTool searches your system for devices of that type:

- 'MOE-V1' or MultiSpec^{Remote}
- ',PD-10401V1' or MultiSpec^{StandAlone}
- ',PD-PCI01V1' or MultiSpec^{Desktop}
- ',PD-USB01V1' or MultiSpec^{Desktop/USB}

Step 4: For MOE based systems like MultiSpec^{Remote}, the communication parameters have to be specified prior to searching for the MOE electronics. Please select the COM port (default: COM 1), baud rate (default: 115200) and transmission protocol (default: RS232).



The screenshot shows a configuration dialog box with three sections. The top-left section is titled 'COM port' and contains four radio buttons: 'COM 1', 'COM 2', 'COM 3', and 'COM 4'. 'COM 2' is selected. The top-right section is titled 'Transmission protocol' and contains two radio buttons: 'RS232' and 'RS485'. 'RS232' is selected. The bottom section is titled 'Baudrate' and contains a text input field with '115200' and a dropdown arrow on the right.

After the search operation has completed, the found electronics are displayed.

⇒ If the Searching process was successful you get the message „**1 (or more) operating electronics found and opened**“

Note: The search operation can take a while, especially if using several MOEs connected to a RS485 bus.

Light Source

Remark: When working with MultiSpec Systems available light source module(s) will be displayed. The light source can be switched on/off by software. Please check that the toggle switch 'Shutter' on the front plate of the light source cassette is on 'automatic' Position.

Note: Only light source module(s) which are controlled by the internal I2C Bus of the standard MultiSpec systems will be displayed.

Please notice that the ignition of the D2 light source takes approx. 1 minute.

Select your operating electronics type: MultiSpec Remote

1 Operating electronics found and opened

Search Close devices Show Config Setup

Light Source

Total found: 1

Interface ID: 1 Type: LS: Halogen lamp

Switch lamps Activate flash

The light source can be switched on/ activated with the Button ,Switch lamps' (for Deuterium and Halogen) or with ,Activate Flash' (for Xe flash lamp).

2.1 Error Messages

⇒ You will get the message „**No operating electronics found**“ if communication was not successful.

Possible error sources:

⇒ Wrong PC COM port selected within the software or link cable is connected to wrong port (MOE/ MultiSpec^{Remote})

⇒ Interface cable bad or not connected properly

⇒ PCI-Interface board is not installed properly (MultiSpec^{Desktop}).

⇒ You get the message „**Unable to read the frontend of device....**“. and following the status „**1 operating electronics found (1 not usable)**“.

Possible error sources:

⇒ MultiSpec^{Desktop}: The PCI-Interface board was found, but no communication is possible with the system (or FEE). The Interface cable is bad or not connected properly. Please check!

⇒ Connecting an old Front End Electronics (FEE 003 or HSMO) to an operation electronics of the new type results in a reading error.

Note: You can only view the current configuration and parameterize the sensor channels, if your electronics/system supports the PnP mechanism (not supported with older ISA electronics and MOEs with firmware version < 1.13)

For non-PnP devices you have to setup your hardware manually.

The screenshot shows a configuration dialog box with the following sections:

- Front End Electronics:** A list of radio buttons with 'FEE HSMO' selected. Other options include FEE 003, FEE NJR, FEE HR, FEE HS, and FEE CCD.
- Multiplexer:** A list of radio buttons with 'None' selected. Other options include MUX 4A, MUX 4P, and MUX 8A.
- Physical channels:** A numeric input field containing the value '1'.
- Sensors:** Two dropdown menus. The 'Type' dropdown is set to 'Hamamatsu S390X (MMS)' and the 'Size' dropdown is set to '256'.
- Buttons:** 'OK' and 'Cancel' buttons are located in the top right corner.
- Text:** A note at the bottom right says 'Please specify the current hardware of interface id 1.'

To display the hardware configuration click the Button ,**Show Config**':

2.2 'Show Config' – Display the Current Hardware Configuration

The screenshot displays a software interface for hardware configuration. On the left is a tree view showing a hierarchy of components, each with a green checkmark icon. On the right are three panels: 'General Info', 'Sensor Parameters', and 'Interface electronics'. The 'General Info' panel lists assembly, version, serial number, PLD version, FIFO size, and integration time base. The 'Sensor Parameters' panel shows settings for channel 1, including sensor type, size, and four calibration coefficients (C0-C3). The 'Interface electronics' panel shows the firmware version.

Tree View:

- 1. Interface: MOE-V1
 - Front End Electronics: FEE-HS
 - Multiplexer Type: MUX-4P
 - 1. Sensor Type: Hamamatsu S390X (MMS)
 - 2. Sensor Type: Hamamatsu S390X (MMS)
 - 3. Sensor Type: Hamamatsu S390X (MMS)
 - 4. Sensor Type: Hamamatsu S390X (MMS)
 - 1. LS

General Info:

- Assembly: 0
- Version: 2,1
- Serial Number: 311
- PLD Version: 3,00
- FIFO Size: 8192
- Integrationtime base: 14,745600 MHz

Sensor Parameters:

Channel	1
Sensor Type	Hamamatsu S390X (MMS)
Sensor Size	256
C0	193,6473694
C1	2,140674353
C2	-2,915840741E-005
C3	0,00000000000

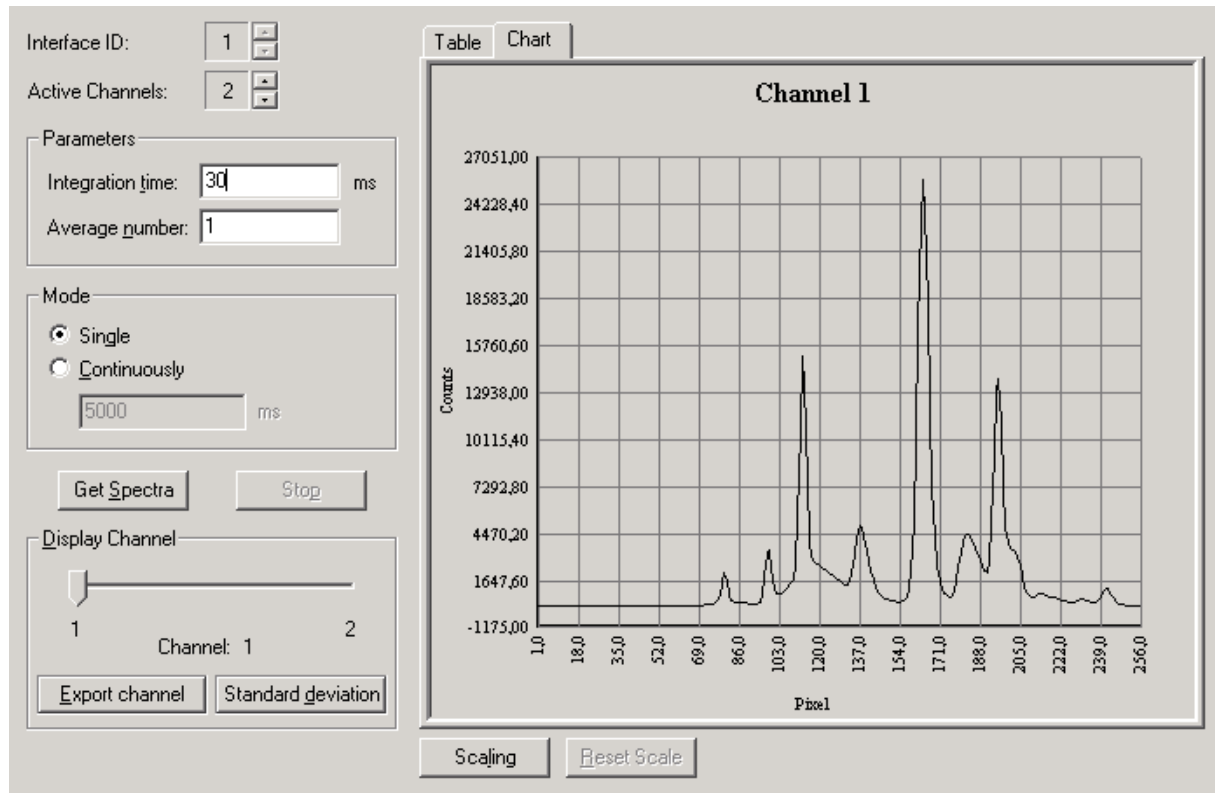
Interface electronics:

- Firmware version: 3.15

Buttons: OK

2.3 ,Measurement' - Acquire Spectral Data

The Measurement Pane is intended to verify that the spectral data acquisition works correctly.



- Set integration time (i.e. 30 ms)
- Set number of spectra to average (i.e. 1)
- Set mode (single or ,continuous' measurement)
- Set a delay time between two spectra acquisitions (i.e. 500 ms)
- Select display type ,Table' or ,Chart'
- Start acquisition via Button ,Get spectra'
- Stop acquisition via Button 'Stop''

Assure that the set number of active channels, say the number of sensors you actually use at the interface, is correct. If the new values are beyond the limit of the current configuration they are automatically adjusted to the nearest valid value.

Note: If more than one device is available please select the interface first (,Interface ID').

The software provides two acquisition modes. In single mode spectra are acquired once from all channels. In continuous mode spectra are acquired periodically with an adjustable interval time.

You can display one channel at a time as table or chart. The channel is selected by the slider *Display Channel*. To export the pixel based data of the current channel as ASCII format (.txt) click the *Export channel* button.


Note: The test software AdminTool currently supports only the simultaneous operation mode. When the operating electronics is equipped with a MUX you need at least 2 spectrometers attached! Otherwise you will get error messages.

You may also calculate the standard deviation of the current channel by clicking the *Standard deviation* button. The software acquires 20 spectra and calculates the standard deviation. The results are shown in the following dialog:

Channel		
Operating Electronics ID:	1	
Channel Number:	1	
Standard deviation		
Min:	0,82	/ Pixel: 202
Max:	2,63	/ Pixel: 220
Average:	1,43	

2.4 ,Sensors'- Parameterise the Sensor Modules

The Sensor Pane shows the configuration of the sensor channels of each interface. You may also change the values as appropriate. At the top you select the interface. The sensor type and size are per-interface settings. They are currently not supported to be different for each channel. The calibration coefficients are sensor specific. The sensor configuration as well as the calibration coefficients are stored on an internal EEPROM chip.

Interface		<input type="button" value="Change"/> <input type="button" value="Apply"/> <input type="button" value="Cancel"/>
Interface ID:	1	
Sensors:	4	
Sensor type:	Hamamatsu S390X (MMS)	
Sensor size:	256	
Sensor rows:	1	
Sensor coefficients		 <p>The calibration coefficients are stored on the EEPROM chip as floating point values. This can lead to minor deviations between the stored and the set values.</p> <p>Starting only with the 5th number after the decimal point, such deviations do not affect the specified wavelength accuracy of the sensor.</p>
Sensor Nr:	1	
C0:	193,6473694	
C1:	2,140674353	
C2:	-2,915840741E-005	
C3:	0,0000000000	
		<input type="button" value="Load ..."/>

If you want to modify a setting click the *Change* button. You may select another sensor type/size from the list or enter new coefficients. You may also load them from an **csv** file supplied by the vendor.

To apply your changes click the *Apply* button, otherwise click *Cancel*.

Note: Changes of sensor parameters of a MOE device require a reset in order to take affect immediately. If you leave the sensor pane or switch to another device id, you will be asked if the MOE device shall be reset.

Attention: Please check that the correct calibration coefficients are stored. Compare the stored values with the C0' to C3' values on the Carl Zeiss certificate. This certificate you find enclosed in the package or attached to your operating manual.

Attention: The calibration coefficients are stored on the EEPROM chip as floating point values. Because of this, minor deviations between the stored and the set values can occur. These deviations, starting only with the 5th number after the decimal point, do not affect the specified wavelength accuracy of the sensor.

2.5 ,Calibrate'

The Calibration Pane is intended for calibrating two channels on each other. The calibration file can be used by application software for the proper calculation of transmission and absorbance values.

Note: This calibration is not used by the AdminTool therefore the 'Calibrate' dialog is not needed when using the AdminTool alone.

The screenshot shows a 'Calibrate' dialog box with the following settings:

- Channels:**
 - Channel 1: Interface ID: 1, Channel Number: 1
 - Channel 2: Interface ID: 1, Channel Number: 2
- Measurement:**
 - Integration time: Auto, Manual, value: 30 ms
 - Average number: 10

You can set the integration time manually or automatically. The optimal value will be at about 80 % of the saturation level.

Remark: For automatic control of the lamp source unit the shutter switch on the front panel has to be on "automatic"

Warnings:

The warning „not enough light“ will show up, if you can not reach the saturation level with the maximum integration time possible.

The warning „too much light“ will show up, if you reach the saturation level even with the minimum integration time possible.