

# SPECTRO-3 series

## Changes from SPECTRO3-Scope V3.3 to SPECTRO3-Scope V4.0

Compared to the previous V3.3 version the new SPECTRO3-Scope V4.0 software features some considerable changes, which is why the version number jumped to V4.0 and did not continue with V3.4. This shows that the new version represents a significant step.

You should consider well in advance whether you order SPECTRO-3 sensors with V3.3 or V4.0, especially if delivery should be made to customers who already work with V3.3.

A software update from V3.3 to V4.0 is possible but requires an intermediate step for backing up data. The procedure is described in detail in the "[Firmwareupdate SPECTRO3 V3.x auf SPECTRO3 V4.x](#)" file.

The text below describes the changes that were made with the software update from **SPECTRO3 V3.3 to V4.0**.

### Change 1:

A completely new interface protocol has been introduced.

Compared to the previous 3.3 version this protocol is faster because only data that are required are transferred. In V3.3 data blocks with a fixed number of data were transferred. Since the length was fixed, data that were not used had to be transferred as "dummies".

The new interface protocol also features a "checksum", which means that data exchange in V4.0 has become even more safe than it already was in V3.3.

Furthermore, the baud rate as standard has been increased to 115200 Baud.

For a detailed description of data exchange please refer to the SPECTRO3-Scope V4.0 manual (→ RS232 communication protocol).

**ATTENTION!** Some customers use a PLC or similar device for data exchange with the sensor. These customers must be explicitly informed about the new interface protocol.

### Change 2:



**SEND** and **GET** can now be pressed even when the sensor is in **GO** mode.

### Change 3:



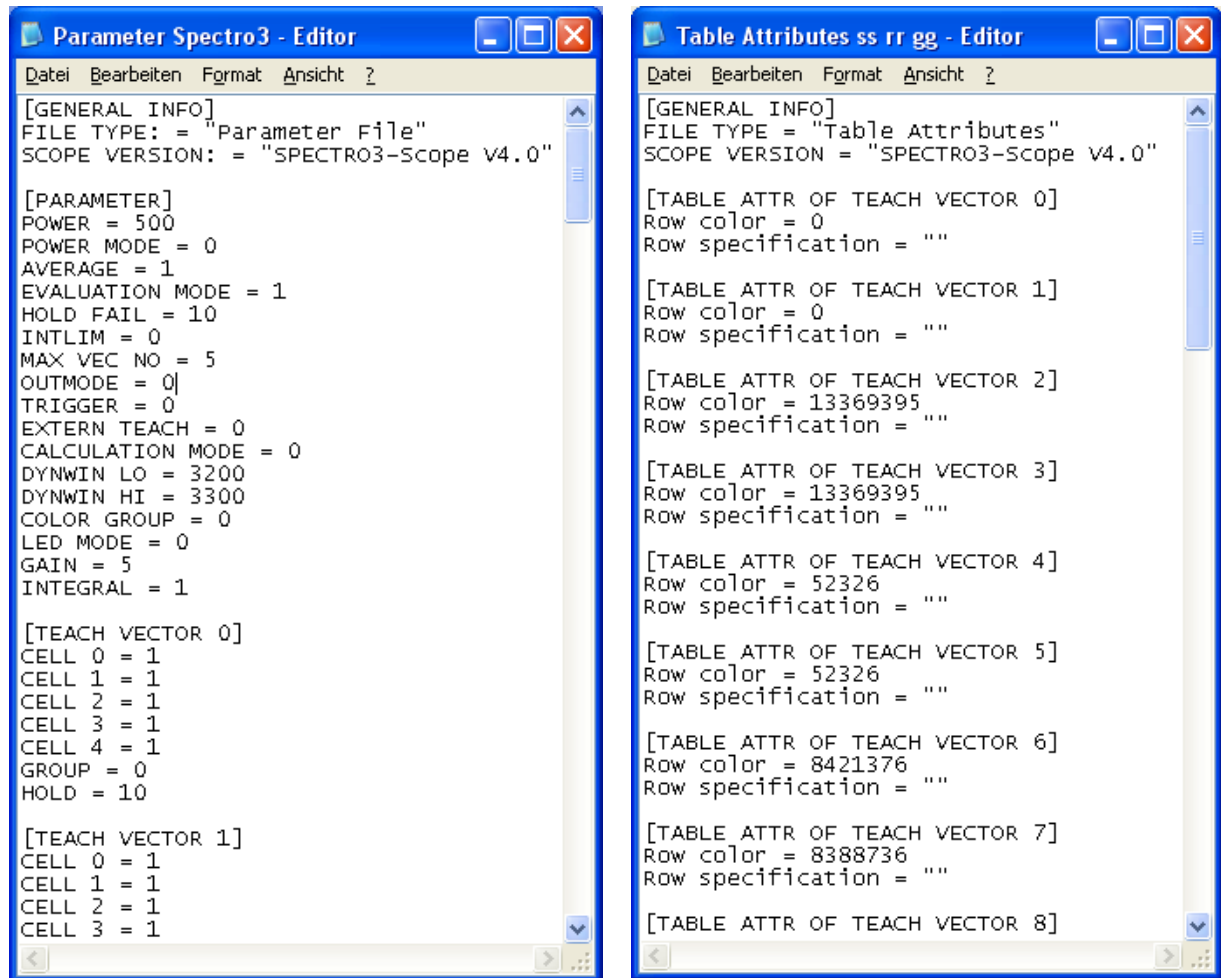
In the "**CONNECT**" **TAB** a status window has been introduced to display the interface status.

A click on the **GEN. HW INFO FILE** button generates a file in which all the important sensor data are stored in encrypted form. This file can be sent to the manufacturer for diagnostic purposes.

## Change 4:

The parameter file and table attributes file have been changed to so-called "INI FILES". These INI files contain the parameters with their meanings.

**ATTENTION!** Parameter files and table attributes files that were created with V3.3 can no longer be opened with V4.0.



## Change 5:

When the software is closed the following information is saved and automatically loaded when the software is started again:

Panel position and size

The last used paths for parameter, recorder, hardware ini, and table attributes files

The last 10 selected IP addresses

The current communication settings

The current table settings (table attributes)

The original panel size can be restored with a right mouse button double-click for example on the white area.



## Change 6:

The screenshot shows the 'GEN' tab with the following elements:

- Buttons: CONNECT, PARA1, PARA2, TEACH, RECORDER, CALIBRATE, GEN.
- Buttons: GET CYCLE TIME, TEMP.
- Fields: [Hz] 30366, [ms] 0.032932, TEMP 21.
- SET ROW COLORS: MANUALLY (dropdown).
- SELECT ROW: 0, ROW COLOR: [black swatch].
- Buttons: ASSIGN TO ROW, RESET, SAVE TO FILE, GET FROM FILE.
- Table: SPECIFICATION with 8 rows (0-7) and color swatches.

	SPECIFICATION	
0		[red swatch]
1		[green swatch]
2		[blue swatch]
3		[black swatch]
4		[pink swatch]
5		[yellow swatch]
6		[olive swatch]
7		[purple swatch]

The tab for setting the table attributes now is labelled **GEN** for "General".

This tab also contains the temperature value display **TEMP**.

A click on **GET CYCLE TIME** determines and displays the current sensor scan frequency.

For determining the scan frequency the sensor must not be interrupted through the interface for 4 seconds.

## Change 7:

The screenshot shows the 'RECORDER' tab with the following elements:

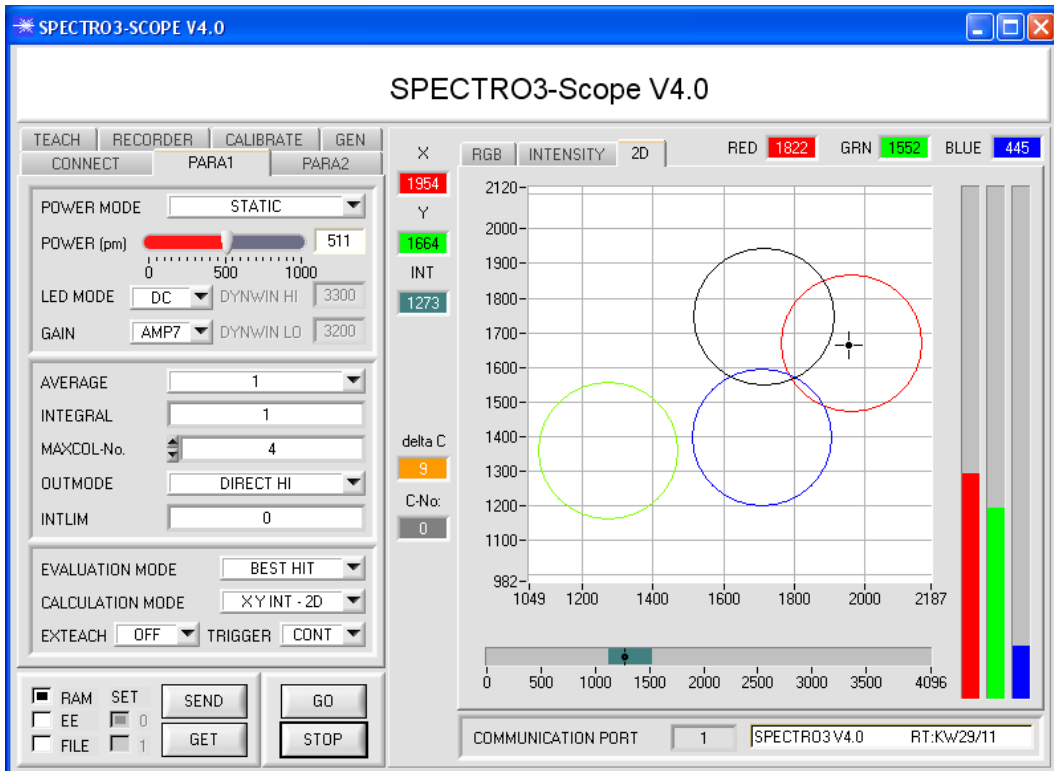
- Buttons: CONNECT, PARA1, PARA2, TEACH, RECORDER, CALIBRATE, GEN.
- RECORD MODE: AUTO LIMITED (dropdown).
- RECORD-TIME INTERVAL [sec]: 0.25.
- RECORD VALUES (MAX 32767): 1000.
- TOTAL RECORD TIME (days hours min sec): 0 0 4 10.00.
- RECORDED: 0, REMAINING: 1000.
- Buttons: START RECORD, STOP RECORD.
- ID: [empty field].
- Buttons: SELECT RECORD FILE, SHOW GRAPH.
- Path: d:\Mist\RecordFile.dat.

The **RECORD-TIME INTERVAL [sec]** now has a finer resolution of 0.1 seconds.

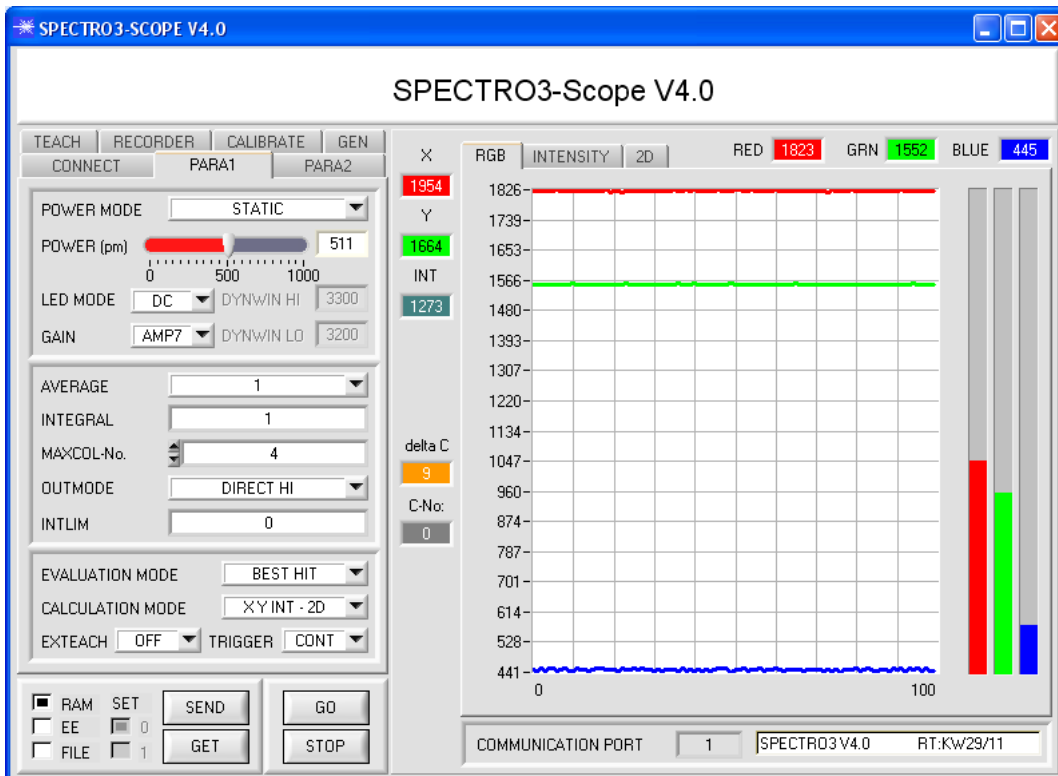
The smallest possible value is 0.25 seconds.

## Change 8:

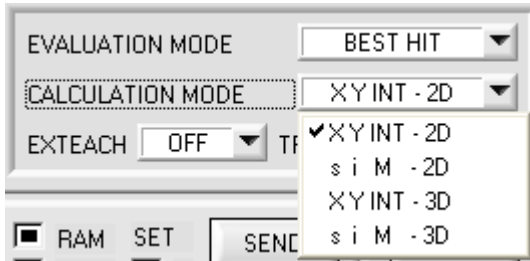
The interface has been changed to tabs.



In the **RGB** and **INTENSITY** "TABS" a left double-click in the graph starts an automatic "ZOOM" function. A single left click returns to fixed scaling again.



## Change 9:



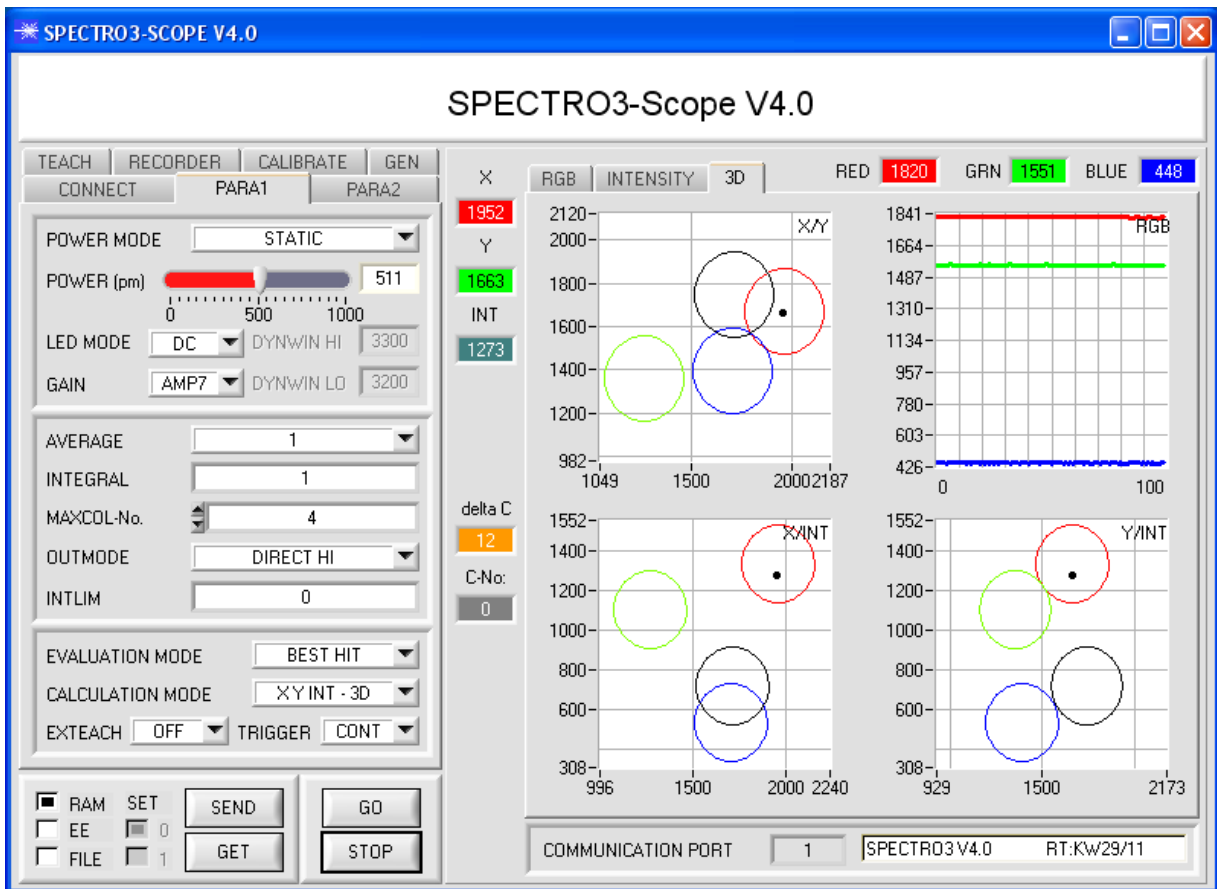
In **CALCULATION MODE** new designations have been introduced that should facilitate communication with the customer.

**2D** stands for two-dimensional.

**3D** stands for three-dimensional.

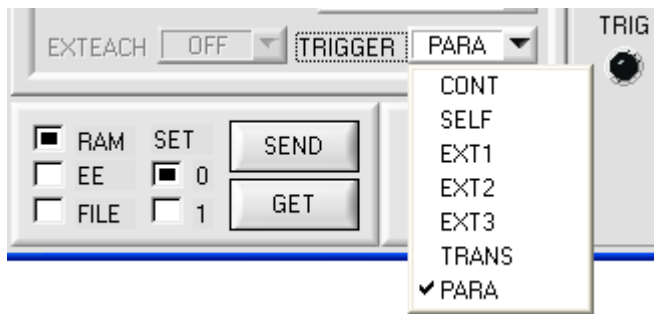
## Change 10:

The three-side view in 3D mode has been permanently integrated in the software interface.



## Change 11:

The sequence under **TRIGGER** has been changed, and a new trigger possibility has been added.



- CONT** Continuous evaluation, no trigger event required.
- SELF** Self-trigger as usual. The sensor is triggered when row 0 is left. When row 0 is detected again the color that was detected longest is output.
- EXT1** The color that was detected longest during the trigger (IN0=HI) is output.
- EXT2** The detected color is output while IN0=HI.  
When IN0=LO the color that was detected last remains active at the output.
- EXT3** The detected color is output while IN0=HI.  
When IN0=LO an error signal is output.
- TRANS** The transmitter can be turned on and off through input IN0.

When **TRIGGER=PARA** is selected, two completely independent parameter sets including colors can be saved in the sensor.

**SET** is used to inform the sensor whether the current settings should be saved as parameter set 0 or parameter set 1.

**SET** only is available with **TRIGGER=PARA**.

**Input IN0** is used to switch the parameter sets.

If **IN0=LO**, the sensor operates with parameter set 0.

If **IN0=HI**, the sensor operates with parameter set 1.

The software visualises the status of IN0 with **TRIG**.

For being able to watch evaluation with the software, the respective parameter set must be loaded with **SET** and **GET**.

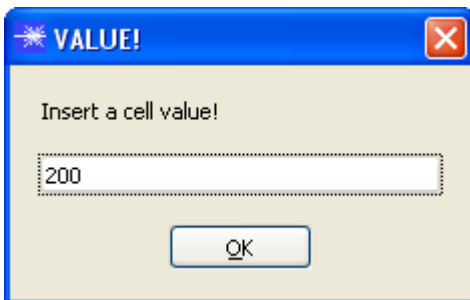
## Change 12:

	X	Y	INT	TOL		
0	2014	1195	1683	200	1	Red
1	1442	1676	1547	200	1	Green
2	931	914	1990	200	1	Blue
3	1					
4	1					
5	1					
6	1					
7	1					
8	1					
9	1					

With **Set selection to** several cells in the **TEACH TABLE** can be filled with a value.

For this purpose the cells that should be changed must first be selected.

A right mouse click then opens a popup menu.



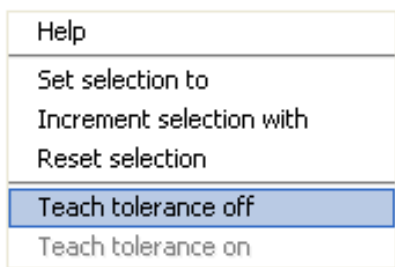
If you click on **Set selection to** there, a popup window will open where you can enter the value to which the cells should be changed.

	X	Y	INT	TOL		
0	2014	1195	1683	200	1	Red
1	1442	1676	1547	250	1	Green
2	931	914	1990	300	1	Blue

Incrementing tolerance values can be entered by using **Increment selection with**.

The start value is the value of the topmost left cell. Starting from this cell the following cells are increased each by the value that is entered in the popup window.

A click on **Reset selection** resets the selected cells to a value of 1.



When you use **TEACH DATA TO** the software suggests tolerance values and writes these values to the respective cells.

This function can be turned off and on with **Teach tolerance off** and **Teach tolerance on**.

A click on **Help** opens a popup window that provides explanations for the respective functions.

At the end of January 2012 the software was slightly modified.  
 The changes that were made with this modification do not require a new version number.  
 The items that were modified are shortly summarised below.

The software firmware string was changed from calendar week to date.

**AVERAGE** and **INTEGRAL** were integrated in the frame for setting the signal detection.

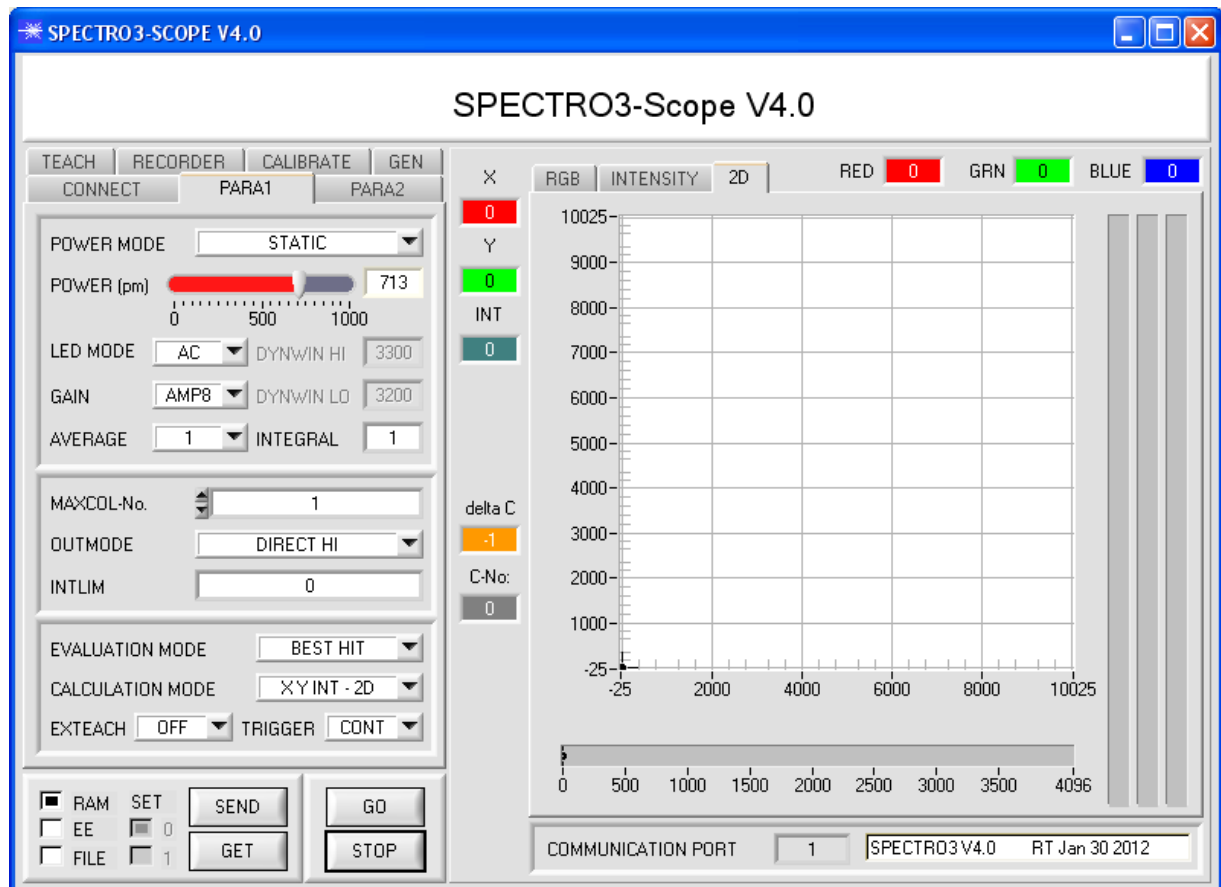
**INTLIM** now also works in **POWER MODE = DYNAMIC**.

**INTLIM** can be used to set an intensity limit. If the current intensity **INT** or **M** that arrives at the receiver unit drops below this limit, color evaluation is no longer performed, and an error state is output.

With **POWER MODE = DYNAMIC** the **POWER** value is used for intensity evaluation, and no longer the intensity that is calculated from the signals (see above). The **INT** or **M** display therefore does not show the "true" intensity, but the transmitter intensity that corresponds with the actual **POWER** parameter.

In the sensor, however, the "true" intensity is still calculated and used for the interrogation of **INTLIM**. This was not possible before.

**ATTENTION!** Since this is a firmware modification, this feature only works with a sensor firmware dated as from Jan 30 2012.



The **START SELF CALIBRATION** button was added to the CALIBRATE tab.

A click on **START SELF CALIBRATION** causes the sensor to calculate the calibration factors itself. It is not possible to specify a **SETVALUE** and a **MAX DELTA** here.

When the sensor has calculated the calibration factors, it displays them on the software interface. In the corresponding input fields it also displays the **SETVALUE** that it used for calculation and the **MAX DELTA** value that resulted from calculation. The **SEND CF** button must be pressed to confirm the calculated calibration factors.

**ATTENTION!** Since this is a firmware modification, this feature only works with a sensor firmware dated as from Jan 30 2012.