

Changes after Software Update from SPECTRO3-MSM-DIG-Scope V1.4 to V1.5

Change 1:

If an application involves both very bright and very dark surfaces, and the sensor is set such that it is not in saturation at the bright surfaces, the dark surfaces frequently provide only a very low signal.

Little variations with a very low signal lead to a large change in color space calculation (**C-SPACE**). To minimise this effect, the sensor in **PMODE = DOUBLE** automatically switches back and forth between 2 **DOUBLE PARAMETER sets**. Set 2 must be parameterised such that the signal is maximally amplified.

When the signal is too high (saturation), it automatically switches to set 1.

To get correct color space coordinates with set 2, a correction factor must be used for the signal.

The two **DOUBLE PARAMETER sets** must be set at the sensor in advance.

When you click on **SET DP** (Set Double Parameter) a window will open at the right side, where you can set two sets. A Double Parameter set is defined by **POWER, GAIN** and **INTEGRAL**.

The screenshot shows the software interface for SPECTRO3-MSM-DIG-Scope. The main window is titled 'DOUBLE PARAMETER (DP)' and contains several tables and control elements. The 'DOUBLE PARAMETER (DP)' table has columns for POW, GAIN, and INT 1, with two rows of data. The 'XYZ VALUES' table has columns for X, Y, and Z, with three rows of data. The 'CORRECTION VALUES' table has columns for X, Y, and Z, with one row of data. The 'DOUBLE PARAMETER SET' section shows a value of 0. There are also control buttons like 'START ASSISTANT', 'ASSIGN 1', 'ASSIGN 2', 'ASSIGN 3', and 'SET DP'. A vertical bar on the right shows RAW X (2502), RAW Y (2385), and RAW Z (780) values.

Automatic setting of the DOUBLE parameter sets:

Pressing **START ASSISTANT** starts menu navigation for the automatic setting of the double parameter sets. Simply follow the instructions.

Manual setting of the DOUBLE parameter sets:

Set **CALIB=OFF** and **POWER MODE=SINGLE** on.

Place the brightest surface in front of the sensor and select a fitting **POWER, GAIN** and **INTEGRAL** value in such a way that the brightest channel is at c. 3000 digits.

Now press **ASSIGN 1** to accept the double parameter in the **DP** table in line 1.

The X Y Z values are also entered in the **XYZ VALUES** table.

Now place the dark surface in front of the sensor.

The dark surface should be constituted so that the weakest channel has a signal greater than 100 digits.

After pressing **ASSIGN 2**, the X Y Z values are accepted in line DARK DP1 of the **XYZ VALUES** table.

Now **POWER, GAIN** and **INTEGRAL** must be set in such a fashion that the strongest value lies at c. 3000.

Press **ASSIGN 3** to accept the Double Parameter in the **DP** table in line 2 and to accept the X Y Z values in the **XYZ VALUES** table.

The correction value is calculated automatically and entered in the **CORRECTION VALUES** table.

INFO!

The double parameter sets are first activated after pressing **SEND!**

The tables are for display purposes only. They cannot be edited.

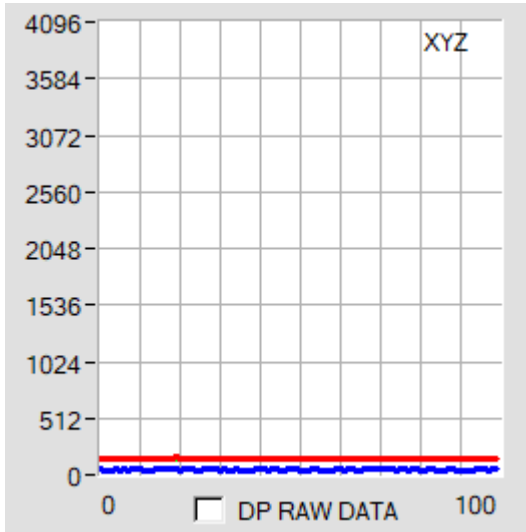
The **DOUBLE PARAMETER SET** and **DP SET** displays show the double parameter sets with which the sensor is currently working.

If the display shows 0, the sensor in **POWER MODE = SINGLE** works with the settings in the **PARA1** tab.

DP SET

2

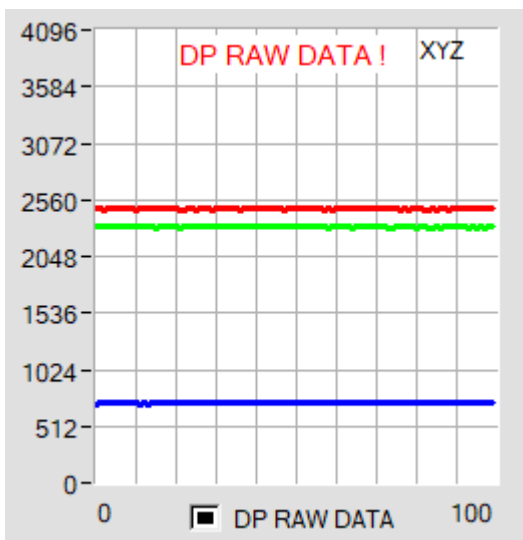
In order to understand with which **X, Y** and **Z** values the sensor works in parameter set 2, you can display this raw data in the display **XYZ** using the **DP RAW DATA** check box.



As mentioned above, the colour space coordinates are calculated using the raw data **X, Y** and **Z** received with parameter set 2.

At the end of the calculation, they are divided using the correction factor.

This method avoids rounding errors in the calculation and thus maintains accuracy.



Change 2:

With **START CALIBRATION ASSISTANT** you can start an assistant that guides you through the calibration.

The following three conditions must be met:

1. You need **one** reference card. This is either the card RAL 9003-P, RAL 9010-P, or RAL 9016-P.
2. You need different RAL colors RAL from the *RAL CLASSIC* or *RAL DESIGN SYSTEM plus* series. These are available from the sensor supplier.
3. You need a file in which the L*a*b* values for the different RAL cards are stored. This file is also available from the supplier.

The screenshot shows a software interface for calibration. The main window is titled 'CALIB REF' and has tabs for 'CALIB DATA' and 'SENSOR DATA'. A 'Scroll all' checkbox is checked. A 'CLOSE' button is in the top right.

On the left side, there are several sections:

- PARAMETER**: A text box with the instruction: "Make sure that you have adjusted the sensor with proper parameter values."
- REFERENCE**: A section with a dropdown menu for 'COLOR SPACE OF REF SETVALUE' set to 'L* a* b*' and an 'ASSIGN ACTUAL XYZ VALUE OF REF' button.
- SETVALUE TABLE**: A section with a dropdown menu for 'C SPACE' set to 'L* a* b*' and a 'ROWS' field set to '1'.
- ACTUAL XYZ VALUE TABLE**: A section with an 'ASSIGN TO ROW' button, a 'No.' field set to '1', and an 'Inc' button.
- Buttons: 'CALC CF', 'SEND CF', 'GET CF', and a large 'START CALIBRATION ASSISTANT' button.
- At the bottom left, there are checkboxes for 'RAM', 'EE', and 'FILE', and buttons for 'SEND', 'GO', 'GET', and 'STOP'.

The main area contains two tables:

REFERENCE SETVALUE			ACTUAL XYZ VALUE OF REF		
L*	a*	b*	X SI	Y SI	Z SI
0.0000	0.0000	0.0000	0	0	0

CALCULATED XYZ OF REF			Xn Yn Zn		
X	Y	Z	Xn 95.05	Yn 100	Zn 108.9
0.0000	0.0000	0.0000	4096	4096	4096

Below the tables are buttons: '? PARA', '? REFERENCE', '? SETVALUE', '? ACTUAL VALUE', and '? FINISH'.

A large text box contains the instruction: "Make sure that you have adjusted the sensor with proper parameter values." Below it, recommended settings are listed: "Recommended settings: PMODE=DOUBLE (be aware that you have set proper double parameter sets) LED MODE = AC".

On the right side, there are three status indicators: 'RAW X' with a red '0', 'RAW Y' with a green '0', and 'RAW Z' with a blue '0'. A vertical scrollbar is also visible.