SPECTRO3-MSM-DIG-Scope
Changes due to software update
from V1.4 to V1.5

This manual summarises the changes that were made with the software update from **SPECTRO3-MSM-DIG V1.4** to **V1.5**.

A software update from V1.x to V1.5 can be performed quite easily.
All you need is the FirmwareLoader V1.1 and the firmware files for V1.5.
The FirmwareLoader V1.1 can be found on the software CD/DVD that is provided with the sensor or can be downloaded from our homepage.
The firmware files are available from your sensor supplier.
The respective procedure is exactly described in the **"Manual FirmwareLoader V1_1"** file.

## There is only one extension in DOUBLE mode:

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 **POWER MODE = 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**.
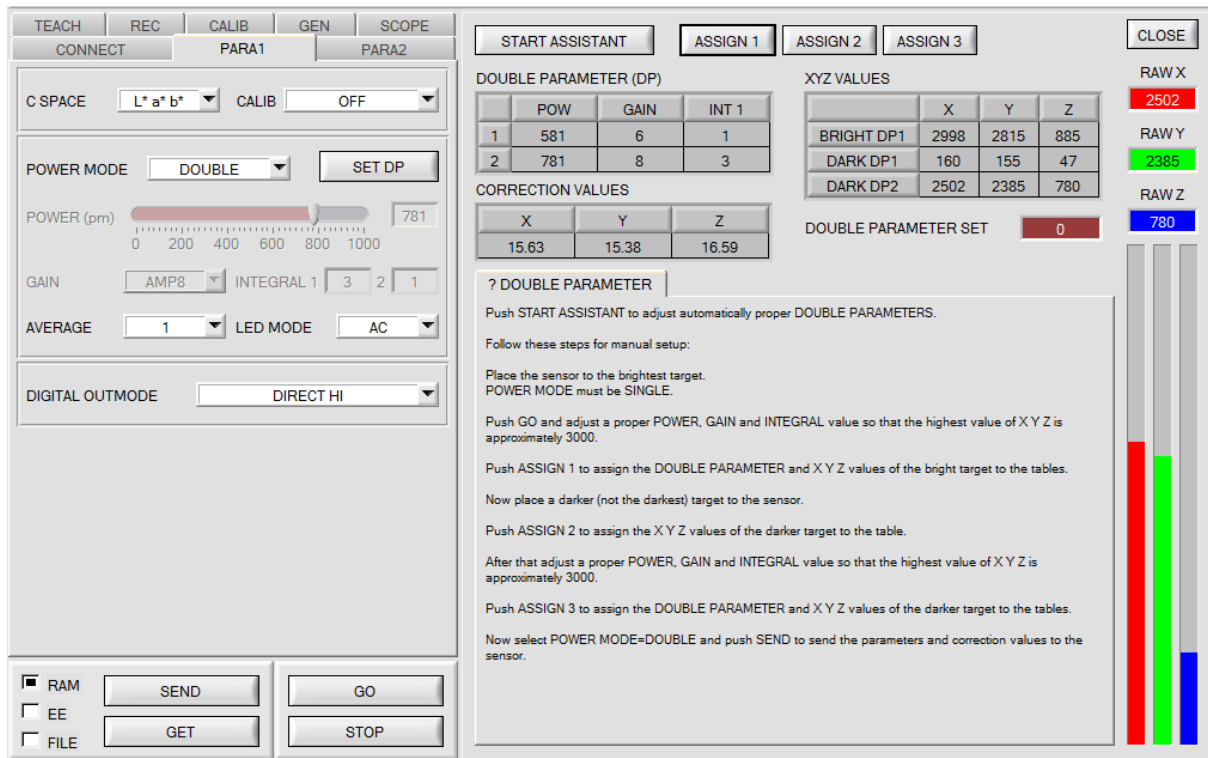
Automatic setting of the DOUBLE parameter sets:
Pressing **START ASSISTANT** starts menu navigation for the automatic setting of the double parameter sets. Simply follow the instructions.

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.
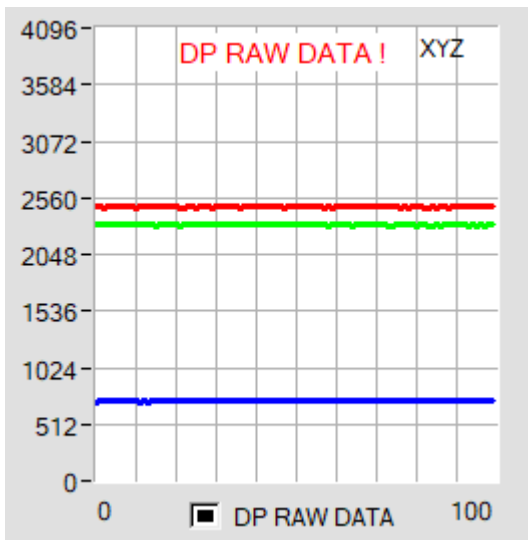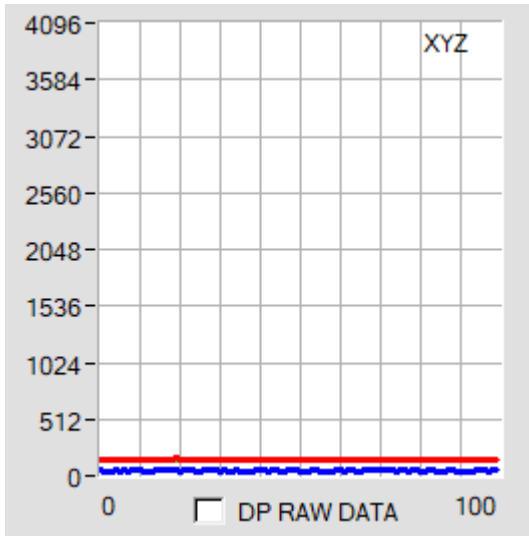

INFO!
The double parameter sets are first activated after pressing **SEND**!
The tables are for display purposes only. They cannot be edited.
The **DOUBLE PARAMETER SET** and **DP SET** displays show the double parameter sets with which the sensor is currently working.
If the display shows 0, the sensor 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.