

### Changes after Software Update from SPECTRO3-MSM-ANA-Scope V3.2 to V3.3

**!!! A software update from V2.x to V3.3 and vice versa is not possible.**

#### 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 **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 with several panels. On the left, there are tabs for REC, CALIB, GEN, and SCOPE. Below these are sub-tabs for CONNECT, PARA1, and TEACH. The main panel on the left contains settings for C SPACE (L\* a\* b\*), CALIB (OFF), POWER MODE (DOUBLE), POWER (869), GAIN (AMP8), INTEGRAL 1 (4, 2, 1), AVERAGE (1), LED MODE (AC), ANALOG OUTMODE (COLOR SPACE), ANA OUT SIGNAL (U (0...10V)), ANA OUT (CONT), ZOOM (x1), and DIGITAL OUTMODE (DIRECT HI). At the bottom left are buttons for RAM, EE, FILE, SEND, GET, GO, and STOP.

The right panel shows the DOUBLE PARAMETER (DP) table, the XYZ VALUES table, and the CORRECTION VALUES table. The DP table has columns POW, GAIN, and INT 1. The XYZ VALUES table has columns X, Y, Z and rows BRIGHT DP1, DARK DP1, and DARK DP2. The CORRECTION VALUES table has columns X, Y, Z.

The 'DOUBLE PARAMETER' dialog box contains the following text:

**? DOUBLE PARAMETER**  
 Push START ASSISTANT to adjust automatically proper DOUBLE PARAMETERS.  
 Follow these steps for manual setup:  
 Place the sensor to the brightest target.  
 POWER MODE must be SINGLE.  
 Push GO and adjust a proper POWER, GAIN and INTEGRAL value so that the highest value of X Y Z is approximately 3000.  
 Push ASSIGN 1 to assign the DOUBLE PARAMETER and X Y Z values of the bright target to the tables.  
 Now place a darker (not the darkest) target to the sensor.  
 Push ASSIGN 2 to assign the X Y Z values of the darker target to the table.  
 After that adjust a proper POWER, GAIN and INTEGRAL value so that the highest value of X Y Z is approximately 3000.  
 Push ASSIGN 3 to assign the DOUBLE PARAMETER and X Y Z values of the darker target to the tables.  
 Now select POWER MODE=DOUBLE and push SEND to send the parameters and correction values to the sensor.

#### 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.

