

Short instructions for the operation of color gloss sensors of the SI-COLO-GD series through Software SI-COLO-GD-Scope V1.1

These instructions describe how to perform quick teaching of the color gloss sensors of SI-COLO-GD series with the **SI-COLO-GD-Scope V1.1** software interface.

Basically there are 4 methods of teaching a surface vector. These methods can be set with CALCULATION MODE:

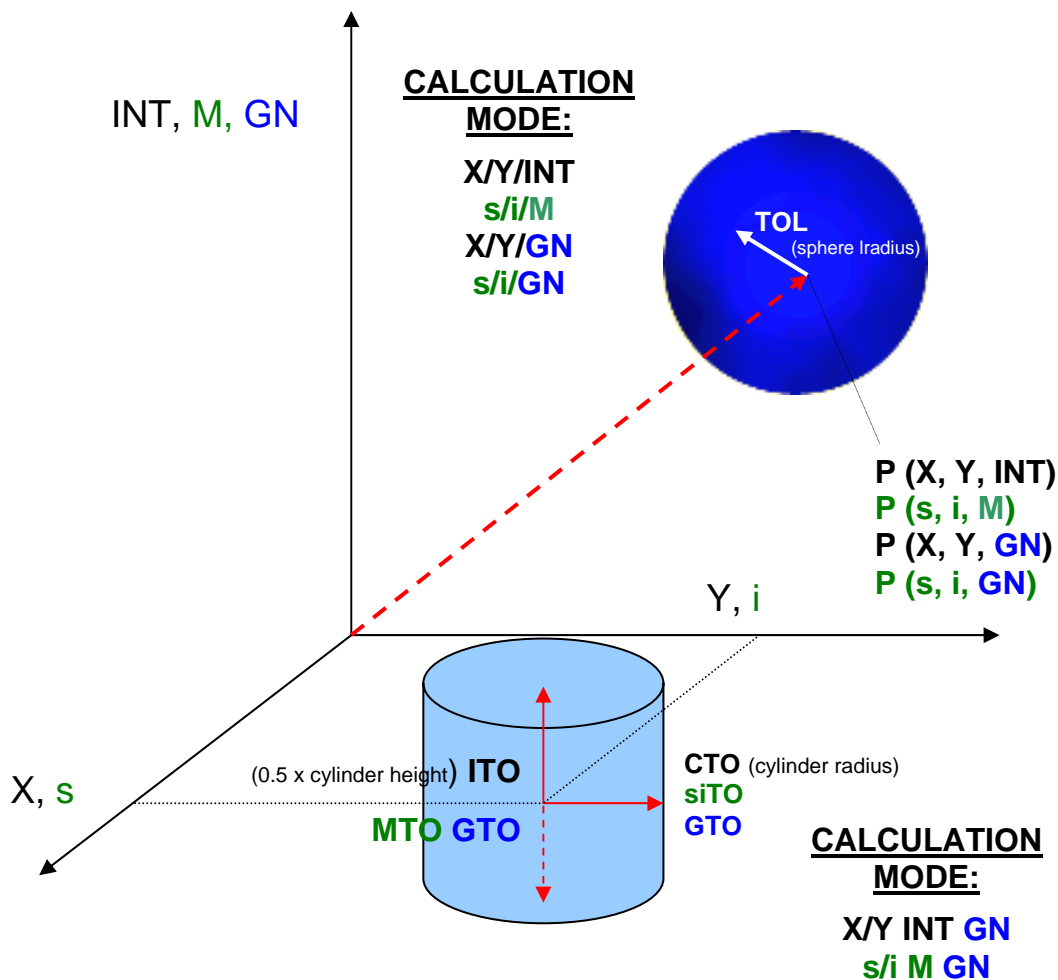
CALCULATION MODE X/Y INT GN (or s/i M GN) considers a color cylinder in space with radius CTO or siTO and with height ITO or M. In addition the gloss norm value GN with a correspondingly adjustable tolerance window is also evaluated here.

CALCULATION MODE X/Y/INT GN (or s/i/M GN) considers a color sphere in space with radius TOL. As above the gloss norm value also is evaluated here.

CALCULATION MODE X/Y/GN INT (or s/i/GN M) considers a color gloss sphere in space with radius TOL. Here the color intensity INT or M is evaluated in addition.

CALCULATION MODE X/Y/INT/GN (or s/i/M/GN) considers a four-dimensional vector in space with tolerance TOL.

Color evaluation according to **s/i M** uses the **Lab calculation method**. The teach process if the same for both methods.



The text below describes a teach process with **EVALUATION MODE = BEST HIT** and **CALCULATION MODE = X/Y/GN INT**.

Step 1:

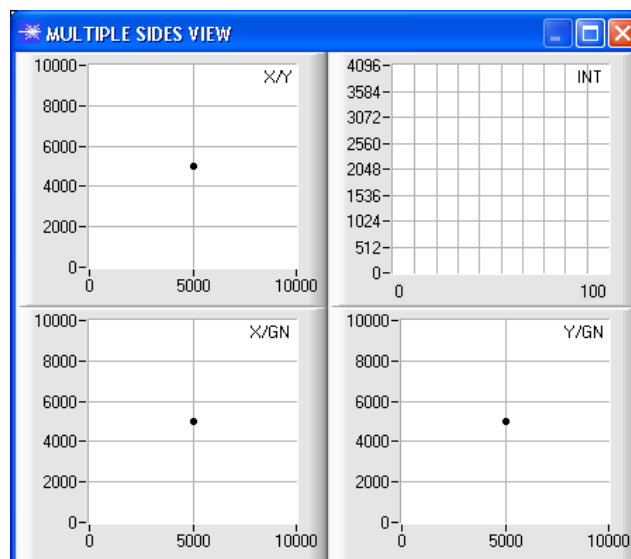
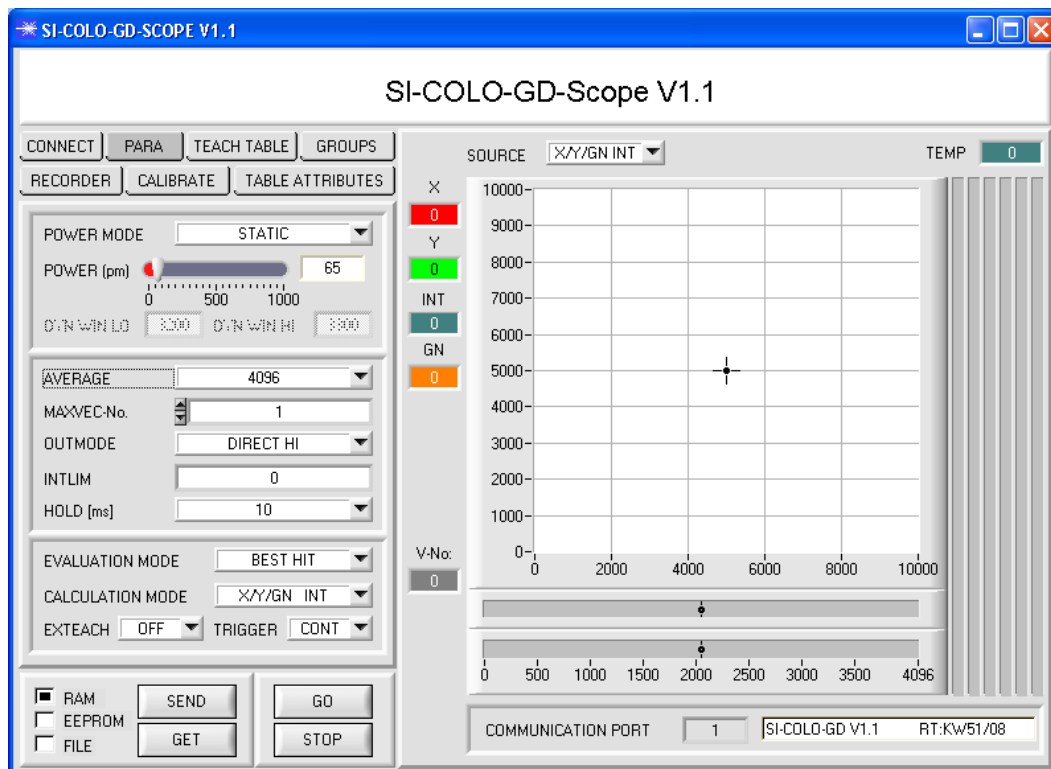
Prior to the use of the software aids (graphic display of sensor signals) the sensor must be manually adjusted to the respective target or background as accurately as possible. The reference distance of the sensor to the target is defined in the data sheet of the sensor.

Please make sure that the sensor is properly connected and supplied with power. Furthermore the sensor head must be directed onto the brightest surface (paper, leather, glass, etc.) of the color to be taught. This is absolutely necessary for being able to set a suitable **POWER** value for the sensor.

Step 2:

Start the SI-COLO-GD-Scope V1.1 software. Please check whether the status line at the right bottom displays the „SiColoGd V1.1 RT:KWxx/xx“ message.

Info: Moving the mouse cursor to a control element and clicking with the right mouse button displays a short info on the respective individual control element.



Step 3:

Please make sure that for the time being **RAM** and not **EEPROM** is selected for the data exchange with the sensor (RAM is a volatile memory in the sensor, i.e. the data will be lost when power is turned off. EEPROM is a non-volatile memory in the sensor, i.e. the data will not be lost when power is turned off.)

All the other parameters should be set as shown in the picture below. Press the tab **PARA** to show the parameters. (See the FILE function in the manual.)

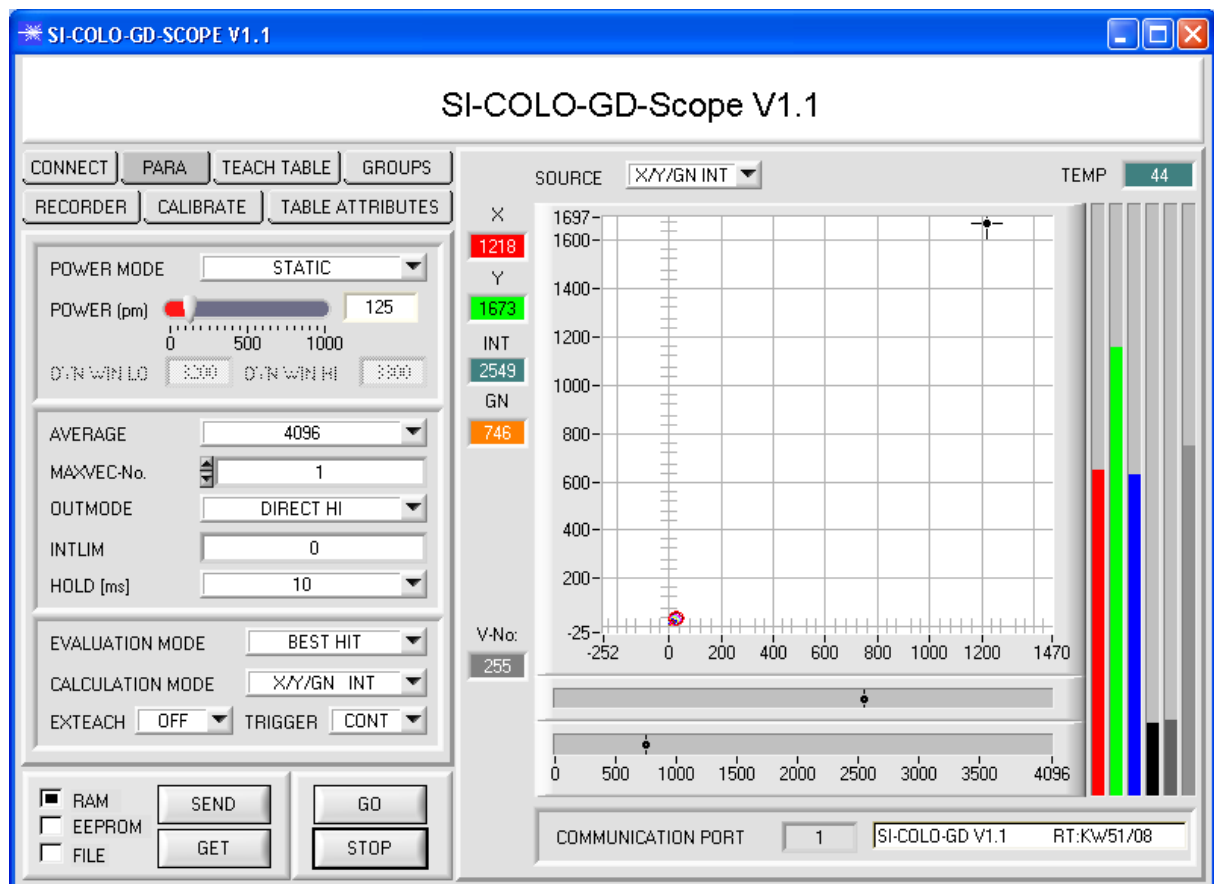
Now press the **GO** button. Data exchange between sensor and PC will then start. The contents for **RED**, **GREEN**, **BLUE**, **REF**, **DIR**, and **DIF** that are reflected from the surface are represented as bars on the PC software interface. Set the **POWER** value in such a way that at least one of the three bars is in the upper third of its dynamic range, but none of them is in saturation.

ATTENTION: The sensor must be informed when you have changed the **POWER** value. Press the **SEND** button to send this information to the sensor. Check the bars by pressing **GO** again. Repeat this process until you have a suitable **POWER** value.

Optimally the three bars for **RED**, **GREEN**, and **BLUE** should be at approximately the same level on white paper. If the bars vary too much, you need to perform white light balancing.

(For white light balancing see the "SI-COLO-GD-Scope" manual on the supplied CD.)

Tip! There is a trick for finding a suitable **POWER** value in no time at all. Set **POWER MODE = DYNAMIC**. The sensor then tries to find a suitable **POWER** value. Check this by pressing **GO**. Press **STOP** when the bars have "levelled out". Then press **GET**. The **POWER** value that was found now is shown in the **POWER** function field. Now set **POWER MODE = STATIC**, and press **SEND**.



Step 4:

An **X** and a **Y** coordinate as well as an intensity **INT** are calculated from the **RED**, **GREEN**, and **BLUE** data.

$$X = (R \cdot 4095) / (R + G + B)$$

$$Y = (G \cdot 4095) / (R + G + B)$$

$$INT = (R + G + B) / 3$$

A gloss norm value is calculated from **DIR** and **DIF**.

$$GN = (DIR \cdot 4095) / (DIR + DIF)$$

Press the **GO** button once again to read out the current data.

Press **STOP** to stop the data exchange.

Now use the tab **TEACH TABLE** to switch to the TEACH TABLE.

Select a row under No.: to which the currently present vector should be taught.

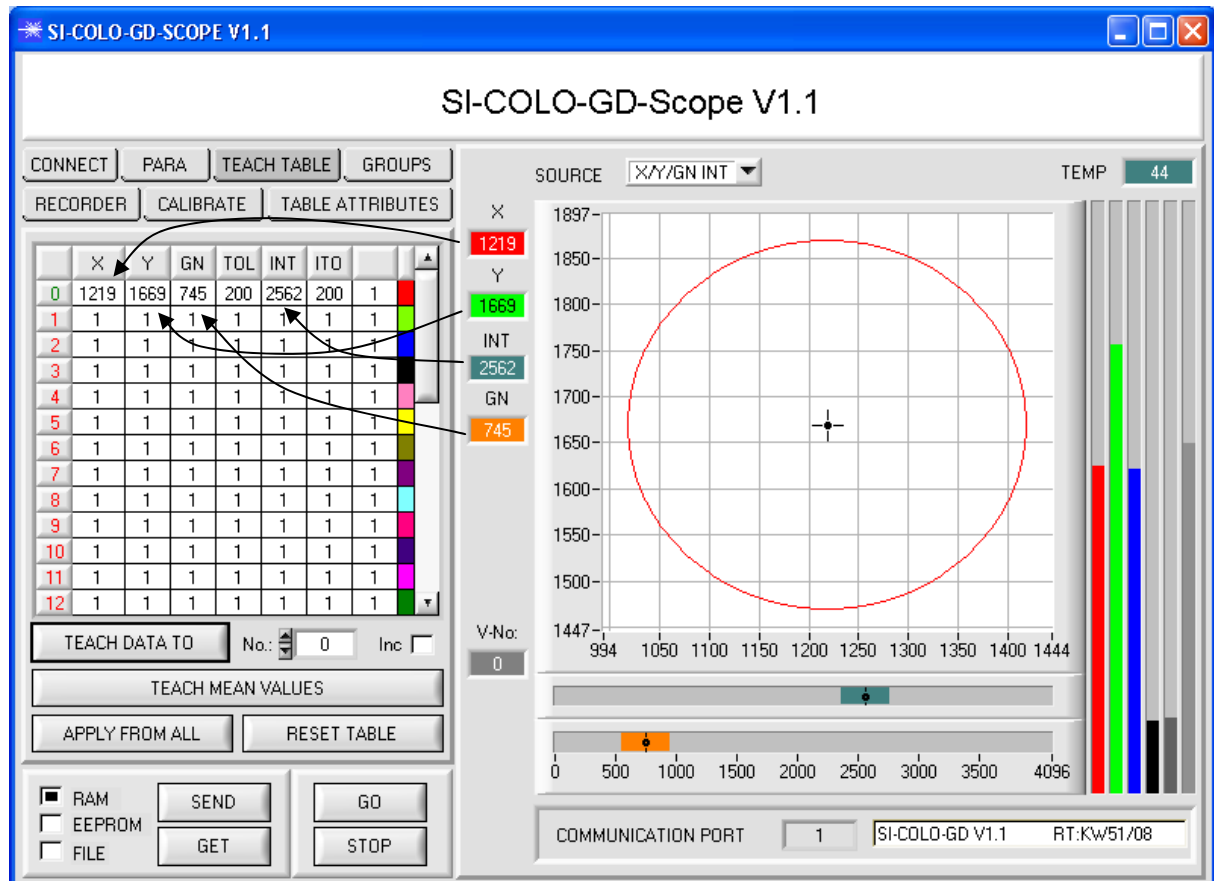
(ATTENTION: Only the rows marked with green numbers are evaluated by the sensor. If you want to teach more vectors, use the MAXVEC-No. parameter to select how many colors you want to teach.)

Now press the **TEACH DATA TO** button. The calculated values for **X**, **Y**, **INT**, and **GN** are transferred to the **TEACH TABLE** in the row that was selected under **No.:**

The graphic display then shows a circle. This is the tolerance circle for the X/Y coordinates. The radius of this circle can be set under **TOL** (tolerance). To change the TOL value please double-click on the corresponding cell in the TEACH TABLE with the left mouse button.

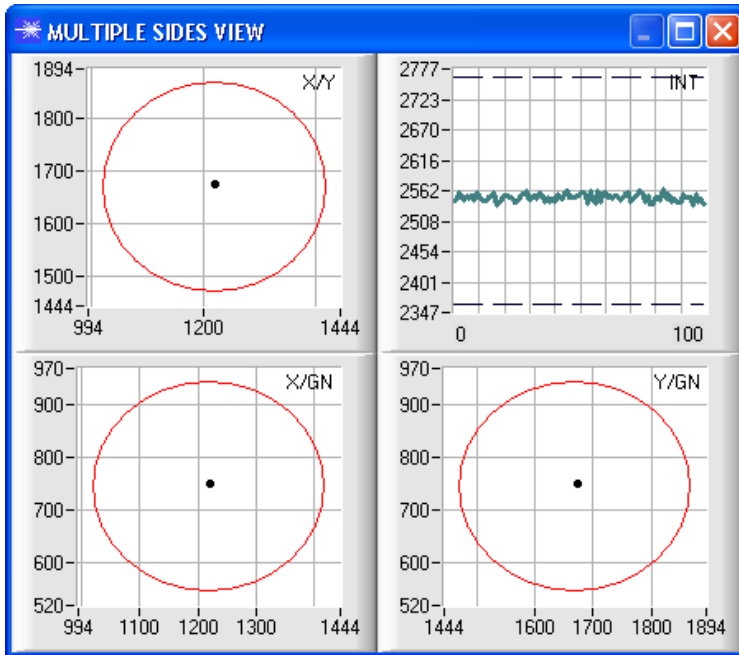
The two small graphs show the intensity **INT** with tolerance window in turquoise, and the gloss norm value **GN** with tolerance window in orange.

In accordance with a row vector the display of the respective tolerance window is selected with **No.:**



Now press the **SEND** button again to inform the sensor about the taught color. Then activate the **GO** mode again. When the sensor recognises a row vector, the corresponding row number is visualised on the software interface under **V-No.:** A value of 255 means that none of the taught vectors were recognised.

As you know the **X/Y/GN INT** mode uses a color gloss sphere in space. To provide a better visual representation of this sphere, an additional panel is displayed here that shows the color gloss sphere in a three-side view with the axes X/Y, X/GN, and Y/GN. Furthermore the current intensity with the tolerance window set under **No.:** is also displayed (see below).



V-No:
0

A vector is only recognised if its current coordinates lie in the tolerance circle and if the current intensity lies in the corresponding tolerance window.

Step 5:

For teaching additional vectors please make sure that the sensor head is directed onto the respective color. Then repeat the procedure starting from step 4.

Step 6:

When you have taught all the channels, please select **EEPROM** and press **SEND** to save the data to the non-volatile memory of the sensor.

For the meaning and handling of the remaining parameters please refer to the manual.