

# Short instructions for operating the color sensors of the SI-COLO4 Series

These instructions allow you to perform quick teaching of the color sensors of the SI-COLO4 series by using the **COLOR4-Scope Vx.x** software.

Please carry out the steps described below.

## Step 1:

Make sure that the sensor is properly connected and is supplied with the required operating voltage. Furthermore, the sensor head must shine onto the brightest surface (paper, leather, glass, etc.) of the colors to be taught. This is absolutely necessary for setting a suitable POWER value for the sensor.

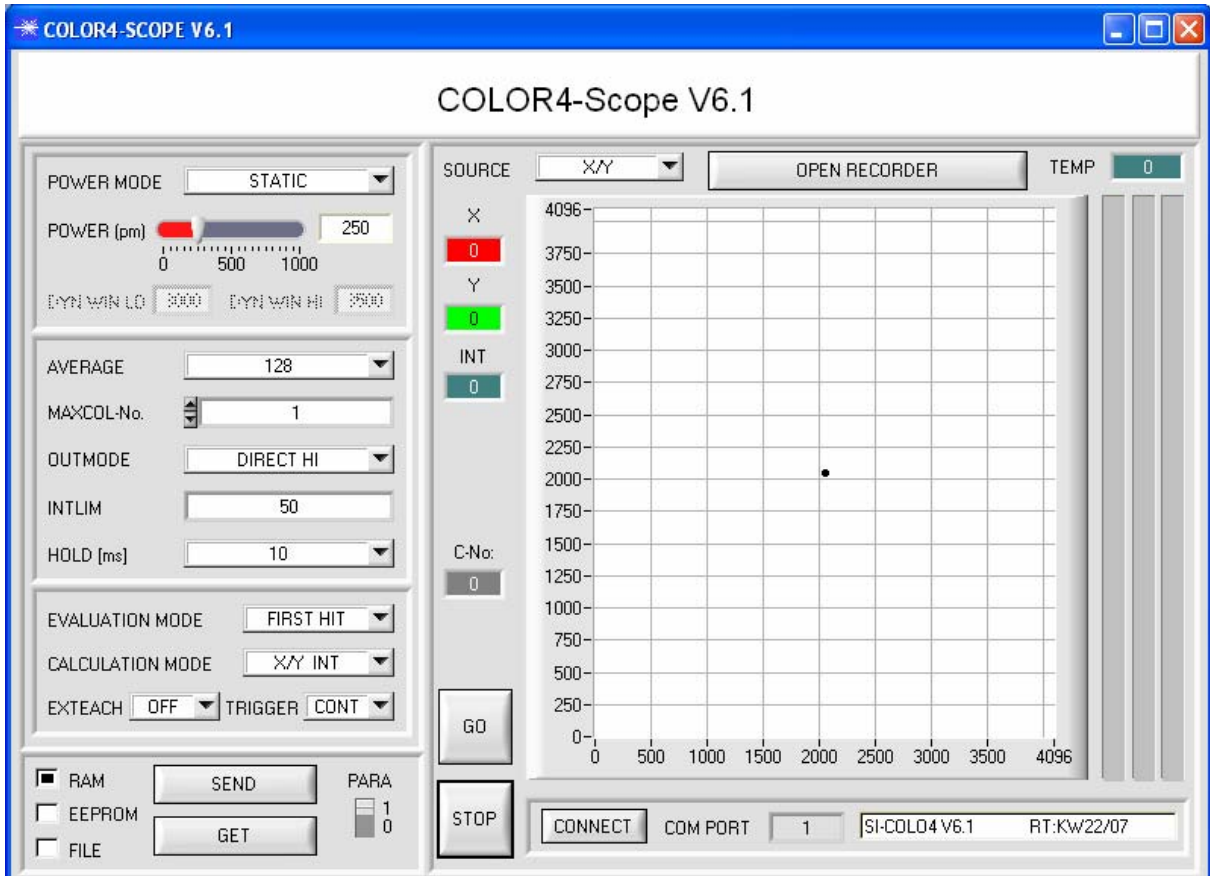
## Step 2:

Start the COLOR4-Scope Vx.x software.

Please make sure that the message „ SI-COLO4 Vx.x                      RT:KWxx/xx “ is shown in the status line in the right bottom

Please note:

Moving the mouse cursor to an individual control element and clicking the right mouse button will provide a short info about the respective control element.



### Step 3:

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

All the other parameters should be set as shown in the picture below (please also refer to the FILE function in the manual.)

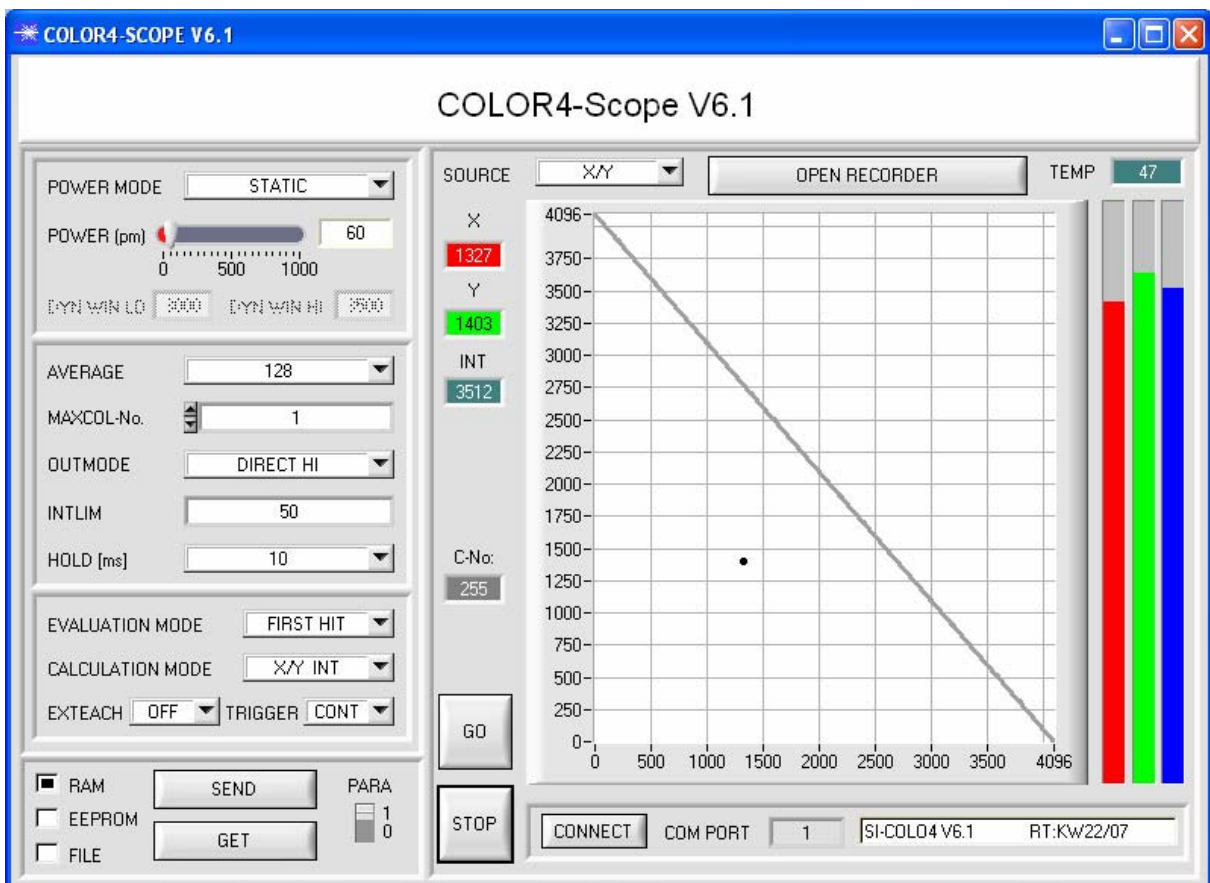
Now press the GO button. This will start data exchange between sensor and PC. The contents for RED, GREEN, and BLUE that are diffusely reflected from the surface are represented as bars in the software. Set the POWER value such that the three bars are in the upper third of their dynamic range.

#### ATTENTION:

When you have changed the POWER value, the sensor needs to be informed about this. Press the SEND button for this purpose. Check the bars by pressing GO again. Repeat this procedure until you have reached a suitable POWER value.

Optimally the three bars should be approximately at the same level on white paper. If the bars should vary too much, you need to perform white-light balancing.

(Please refer to „manual COLOR4-CALIB-Scope“ on the supplied CD.)



#### Step 4:

An X and a Y coordinate, as well as an intensity INT are calculated from the red, green, and blue data.

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

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

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

Press the GO button again to read the current data.

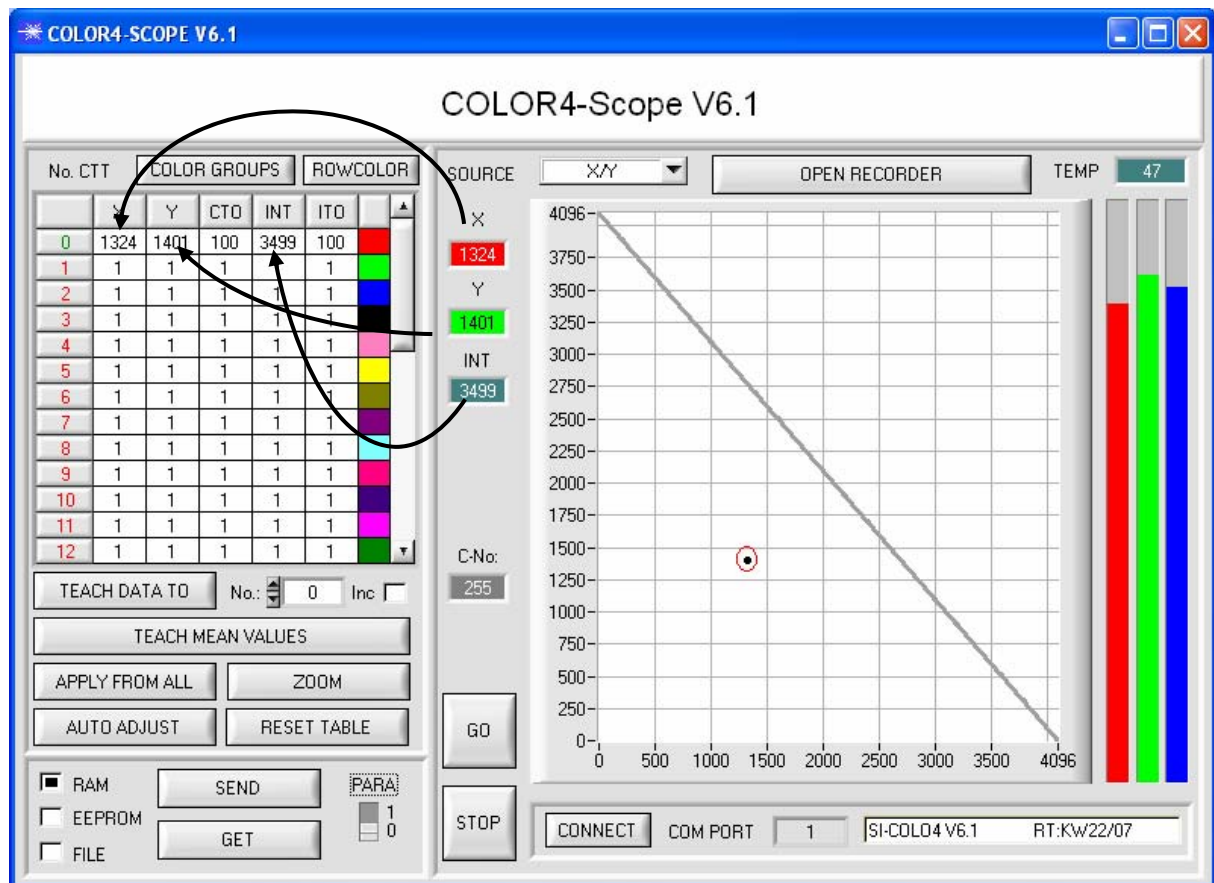
Press STOP to stop the data exchange.

Now switch over to COLOR TEACH TABLE by pressing the PARA button.

Under No.: select a channel to which the currently present color should be taught. (ATTENTION: Only the lines marked in green will be evaluated by the sensor. If you want to teach several colors, please set the corresponding number of colors in the MAXCOL-No. edit box).

Now press the TEACH DATA TO button. The calculated values for X, Y, and INT are written to the COLOR TEACH TABLE, namely in the line that is selected in the No.: edit box.

When you press APPLY FROM ALL, a circle will appear in the graphic display. This is the tolerance circle for the color. The radius of this circle can be set under CTO (Circle Tolerance). If you want to change the CTO value, double click with the left mouse button in the corresponding cell of the COLOR TEACH TABLE. There also is an ITO (Intensity Tolerance) which determines a plus/minus tolerance window for the intensity.



Now press the SEND button again to inform the sensor about the taught color. Then activate the GO mode again. When the sensor recognizes a line vector (color), the responding line number is visualized in C-No.: at the software user interface. The value 255 means that none of the taught colors has been recognized.



A color is only recognized, if its current X/Y coordinate lies in the tolerance circle. **In addition** the current intensity must also lie in the predefined intensity window.

**Step 5:**

For teaching the second color, please make sure that the sensor head shines onto this color. Then repeat step 4.

**Step 6:**

When you have finished teaching both channels, select EEPROM and press SEND to save the data in the non-volatile memory of the sensor. Please refer to the manual for a description of the remaining parameters and for instructions on how to use them.