Manual
Software SPECTRO3-MSM-MONITORING V1.0

for color sensors of the SPECTRO-3-MSM series

This manual describes the installation and operation of the SPECTRO3-MSM-MONITORING PC software version V1.0.

The software was developed for configuring up to 8 color sensors of the SPECTRO-3-MSM family (MSM-ANA, MSM-DIG, MSM-SLE, or MSM-SLA) in a multi-sensor system that can be used for the continuous inline measurement and control of surfaces at several measuring points at the same time. Measurement values are recorded and are also displayed at the PC monitor, and they can be printed out after the end of recording.

The software concept provides two user levels: A password-protected administrator function for configuring the inline measurement system and for setting all the parameters for operation, and an easy-to-use user function that only allows the setting of the start and end of recording with input of production parameters (that have been determined by the administrator). The print function also is available for the normal user.

As a support for commissioning and operation of the SPECTRO3-MSM-MONITORING software this manual explains the individual functional elements of the graphic Windows® user interface.

0   Contents

Shortcuts:

SEND   F9
GET   F10
GO   F11
STOP   F12

1   Installation of the SPECTRO3-MSM-MONITORING software

The following requirements must be fulfilled for successful installation of the software:

- Microsoft® Windows® 7, 8, 10
- IBM PC AT or compatible
- VGA graphics
- Microsoft-compatible mouse
- Serial RS232 interface at the PC or USB slot or RJ45 connector
- Cable **cab-las4/PC** for the RS232 interface or **cab-4/USB** USB converter or **cab-4/ETH** Ethernet converter

Please install the software as described below:

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1.	The software can be installed directly from the installation DVD. To install the software, start the SETUP program in the SOFTWARE folder of the DVD.
2.	The installation program displays a dialog and suggests to install the software in the C:\"FILENAME" directory on the hard disk.
	You may accept this suggestion with OK or [ENTER], or you may change the path as desired. Installation is then performed automatically.
3.	During the installation process a new program group for the software is created in the Windows Program Manager. In the program group an icon for starting the software is created automatically. When installation is successfully completed the installation program displays "Setup OK".
4.	After successful installation the software can be started with a left mouse button double-click on the icon.

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2 Operation of the SPECTRO3-MSM-MONITORING software

2.1 Software description

Please read this chapter before you start the process of initialising the software.

When the **SPECTRO3-MSM-MONITORING** software is started, the following window appears on the Windows user interface. Depending on the settings in the **"Startup Configuration File"**, various elements are displayed.
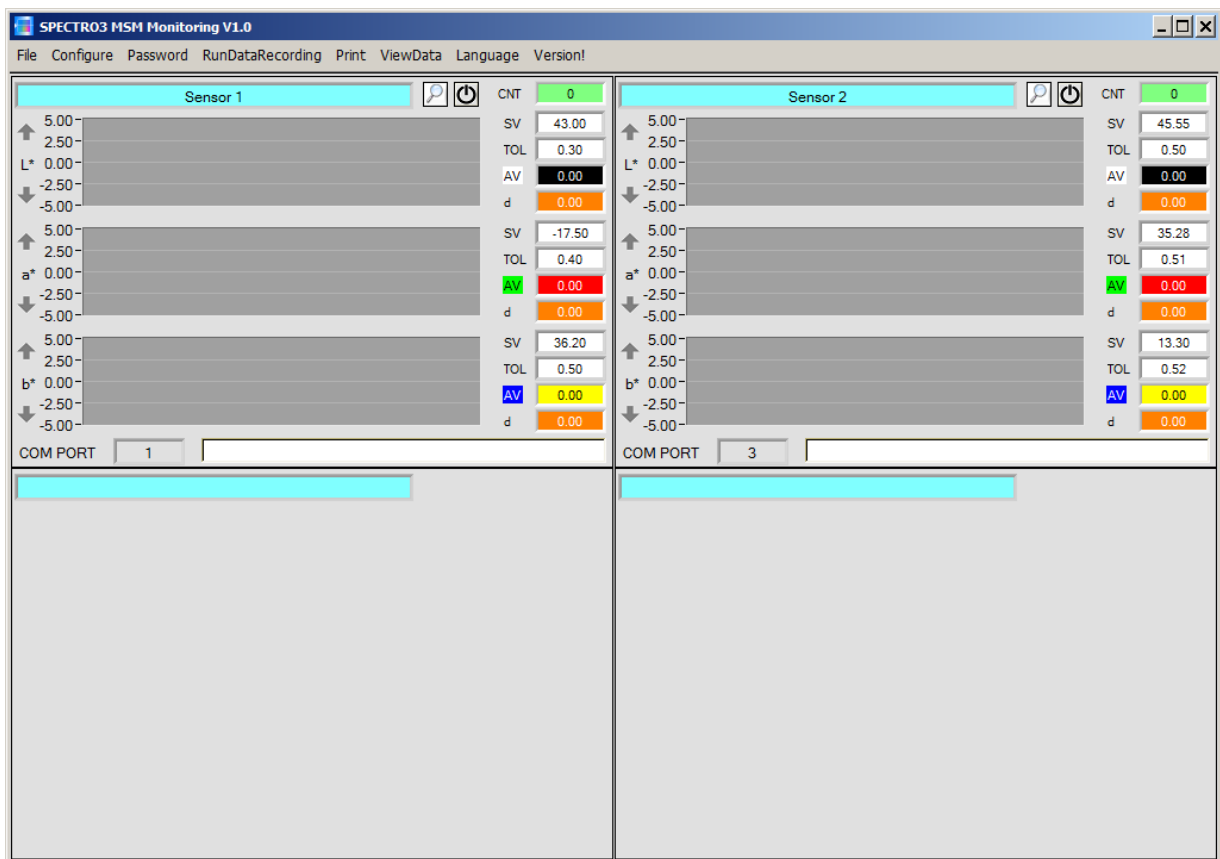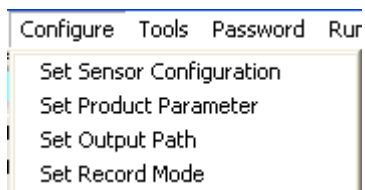

2.1.1 "File" menu
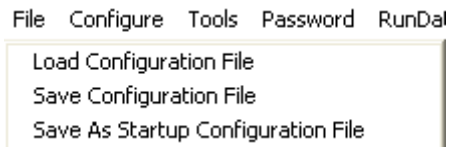
In the **"File"** menu, configuration files that are set under **"Configure"** can be saved to a file or loaded from a file.
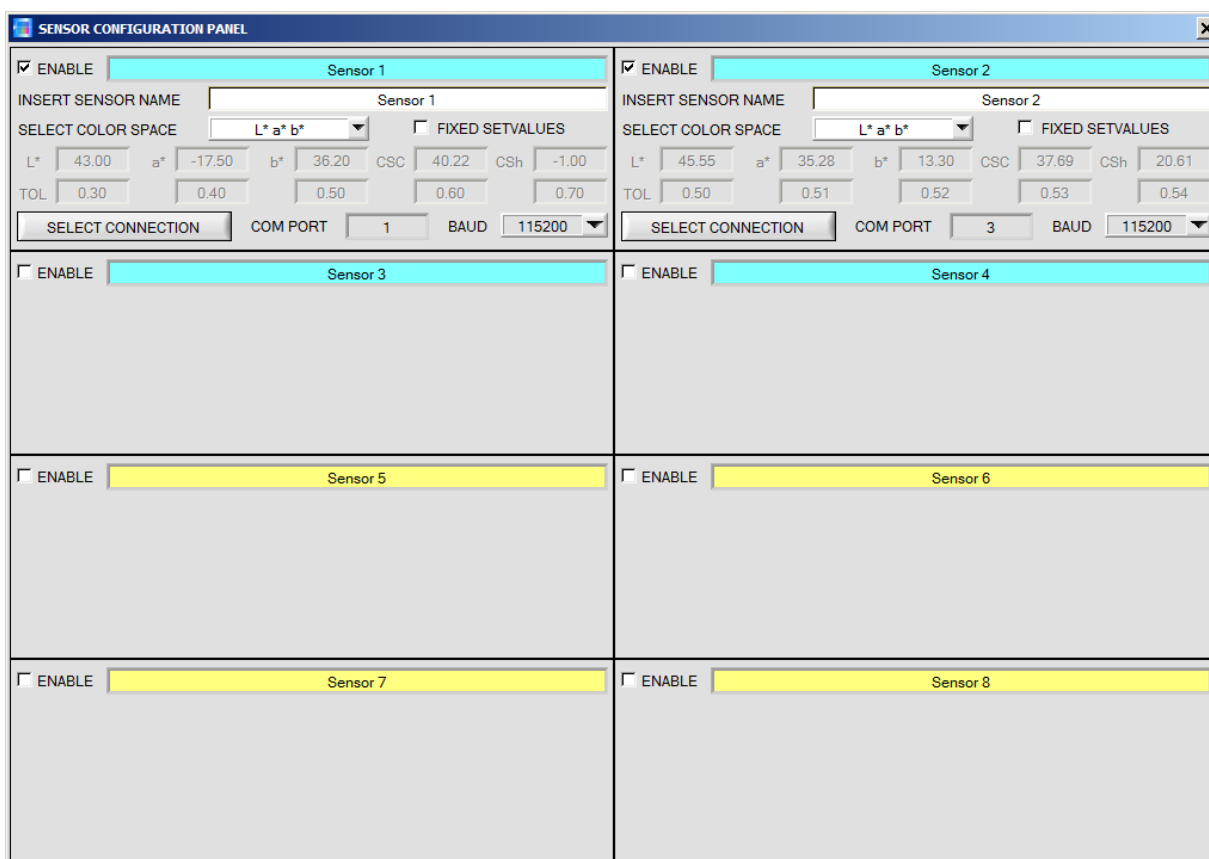The **"Save As Startup Configuration File"** item defines the currently set parameters as startup parameters, i.e. these parameters will be loaded automatically when the software is started.

2.1.2 "Configure" menu

The **"Configure"** menu can be used for performing certain parameter presettings.

A click on "**Set Sensor Configuration**" opens the following **SENSOR CONFIGURATION PANEL**:

If data should be recorded from a sensor, the sensor must be activated with **"ENABLE"**.
In the **"INSERT SENSOR NAME"** field a name can be assigned to the sensor. This name will then be displayed in the main window, saved in the output file, and will also be printed.

A display in the main window shows the current color space coordinates (in this example L*a*b*) as well as chroma C* and hue angle h*.

The reference values (setpoint values) **Setvalue L*, a*, b*, C*, h*** as well as the respective tolerances are specified in the **SENSOR CONFIGURATON PANEL**. If the **FIXED SETVALUES** checkbox is activated, these values are fixed and cannot be changed in the main window. If **FIXED SETVALUES** is not activated, the user is allowed to change these values in the main window during data recording.

The interface between a sensor and the PC is specified under **"SELECT CONNECTION"**.

A click on **"Set Product Parameter"** opens the **PRODUCT PARAMETER CONFIGURATION PANEL**:

There are 5 parameters that can be individually entered. All these data are fixed and are, if they are enabled, saved in the file and printed in the report.
Parameters 6 to 10, if they are enabled, must be entered by the operator after pressing **"Start"**.
These data also are saved in the file and printed.

Attention!
The characters / \ : . * ? " < > | must not be used.

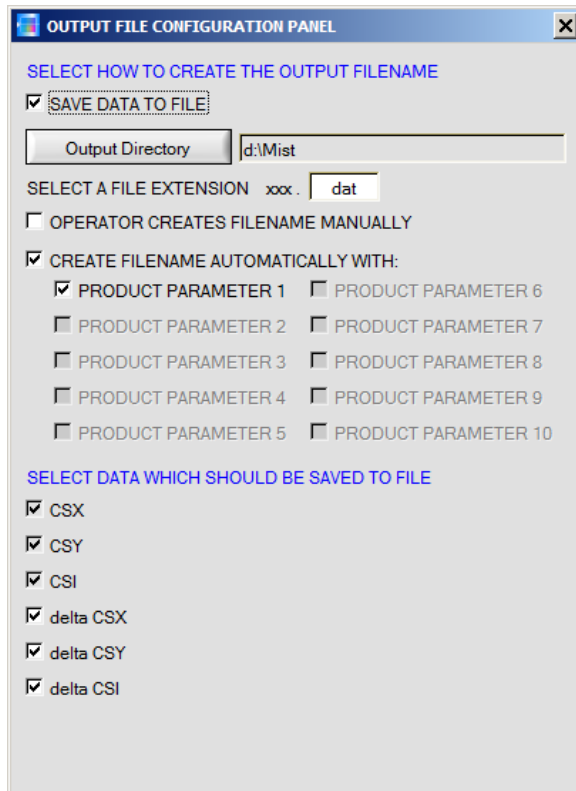

Example:
"ENABLE PRODUCT PARAMETER 6" is activated and is assigned the input of **"Example Product Number"**.
When **"RunDataRecording"** and **"Start"** is pressed, a window will appear prompting the operator to enter a Product Number.

A click on **"Set Output Path"** opens the **OUTPUT FILE CONFIGURATION PANEL**:

This window is used for defining the output file.

"SAVE DATA TO FILE" determines whether the data should be stored to a file, or whether they should be visualized only. If **"SAVE DATA TO FILE"** is not enabled, all setting possibilities will be faded out.

If **"OPERATOR CREATES FILENAME MANUALLY"** is activated, the software, after the operated presses **"Start"**, prompts the operator to define an output file.

If **"CREATE FILENAME AUTOMATICALLY"** is activated, the software automatically creates the output file.
The output path is determined with **"Output Directory"**. The file name comprises the activated **"PRODUCT PARAMETER"**, the sensor name and the extension defined under **"SELECT A FILE EXTENSION"**.

Under "**SELECT DATA WHICH SHOULD BE SAVED TO FILE"** that data are selected, which should be stored.

INFO!
If the output file should be opened with Microsoft EXCEL, the regional settings in Windows should first be set to an Anglo-American country (Great Britain, U.S.A., ...). The reason for this is that EXCEL interprets a number with comma as a date information. If the file is saved in Anglo-American mode and the regional settings are then set back to your respective country, EXCEL will recognise a number with comma correctly. If the file is saved in the Anglo-American mode, and if the regional settings are then set back to the respective country, EXCEL recognises the gloss factor as a floating point number.

The following steps must be performed to change to an Anglo-American language:
Start → Settings → Control Panel → Regional and Language Settings
An Anglo-American language can then be selected in the "Regional Settings" tab.

A click on **"Select Record Mode"** opens the **RECORDER CONFIGURATION PANEL**:
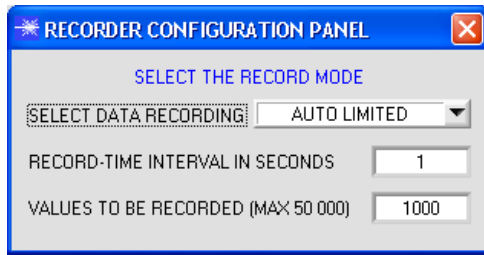
This window is used for determining the data recording mode.

With **"AUTO LIMITED"**, an adjustable number of data is recorded after an adjustable time interval.

With **"AUTO UNLIMITED"** data are recorded after an adjustable time interval until recording is stopped by pressing "Stop".

With **"AUTO TRIGGERED"** the sensor automatically sends data which are then recorded and saved.

Attention!
For using the "AUTO TRIGGERED" function the sensor must operate in one of the trigger modes, because data only are sent when the trigger condition drops (cf. instruction manual SPECTRO3-MSM-… Scope).

2.1.3 "Password" menu

The **"File"** and **"Configure"** items can be protected by a password. Password protection can be enabled and disabled.
The default password is: 0000000000
(in words: 10 zeroes).
The password can be individually changed.

When password protection is enabled, the menu items **"File"** and **"Configuration"** only can be accessed after pressing **"Deactivate Password Protection"** and entering the correct password.
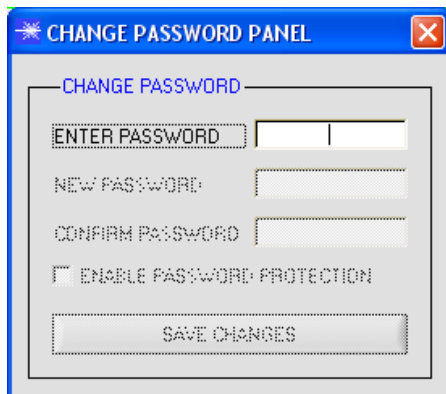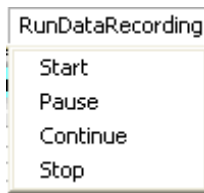
Attention!
**Password protection must be activated again with "Activate Password Protection".**

2.1.4 "RunDataRecording" menu

RunDataRecording
Start
Pause
Continue
Stop

In this menu item data recording can be started with **"Start"** and stopped with **"Stop"**. Data recording furthermore can be paused with **"Pause"** and then continue again with **"Continue"**.

When **"Start"** is pressed, the product parameters 6 to 10 that are enabled in **"Set Product Parameter"** must be entered.

If OPERATOR CREATES FILENAME MANUALLY is activated under **"Set Output Path"**, the operator will be prompted to specify a file.
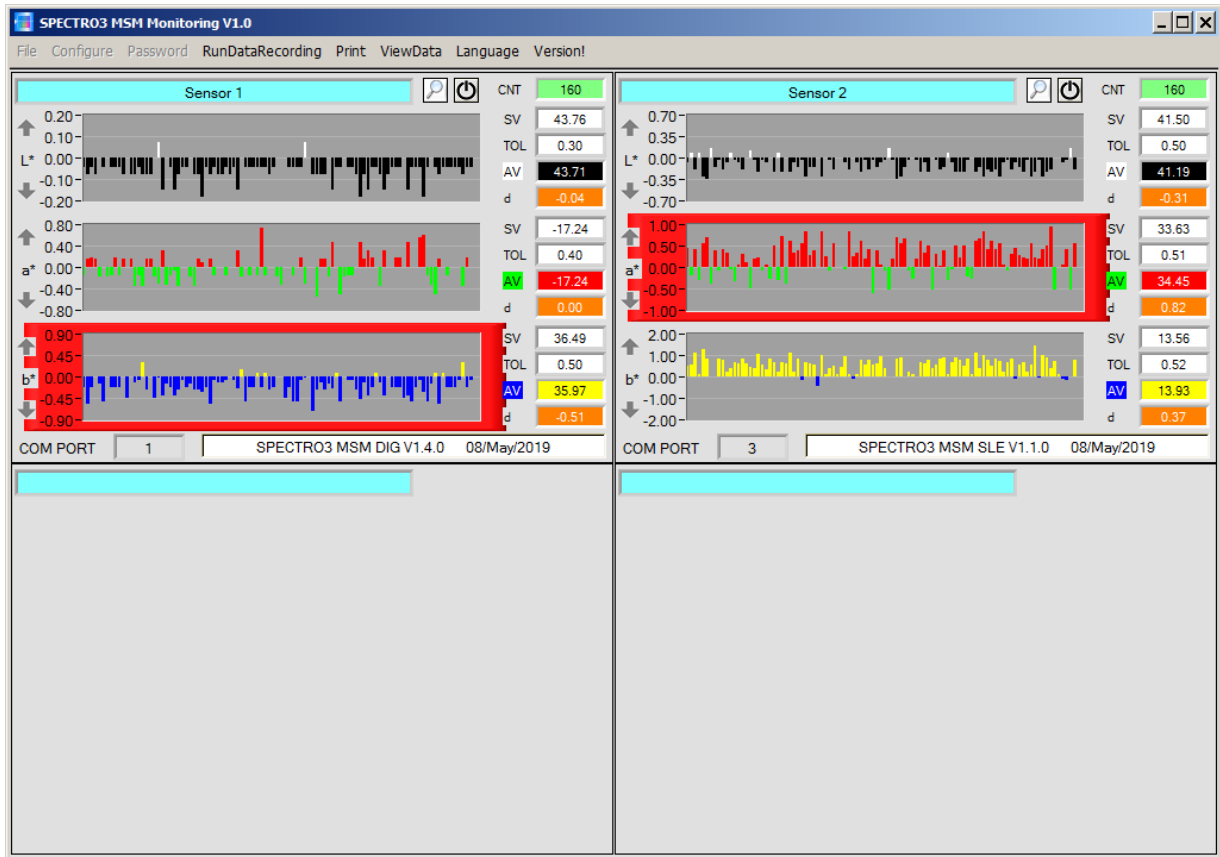

The data selected in the **OUTPUT FILE CONFIGURATION PANEL** and the respective **d** values are immediately saved in the correspondingly created file, if this is activated.

The total number of recorded values is shown in the **CNT** display.

The **SETVALUES (SV)** specified in the **SENSOR CONFIGURATION PANEL** are displayed beside the graphs. The **AV** display shows the currently recorded value (actual value).

The **d** display shows the deviation of the actual value from the setpoint value. This deviation in addition is visualised in the graph whose background turns red if d exceeds the set tolerance.

If **FIXED SETVALUES** in the **SENSOR CONFIGURATION PANEL** is deactivated, the **SETVALUES** function elements have a white background, and with a right-click on one of the function elements the actual values that are shown in the displays can be directly accepted as **SETVALUES**. The values can be directly edited by double-clicking with the left mouse button or by pressing F2.
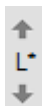
The Y-axis of the graph can be scaled by clicking on the arrows.

A click on the **RESET** button sets the graphs in all three tabs to zero.

A click on the magnifier icon opens a panel with a magnified view of the respective sensor window. In this window chroma **C*** and **h*** are also displayed.

C* and **h*** are calculated on the PC interface and are only displayed if **L* a* b***, **L* u* v*** or **L* C* h*** is selected in the **SENSOR CONFIGURATION PANEL**.
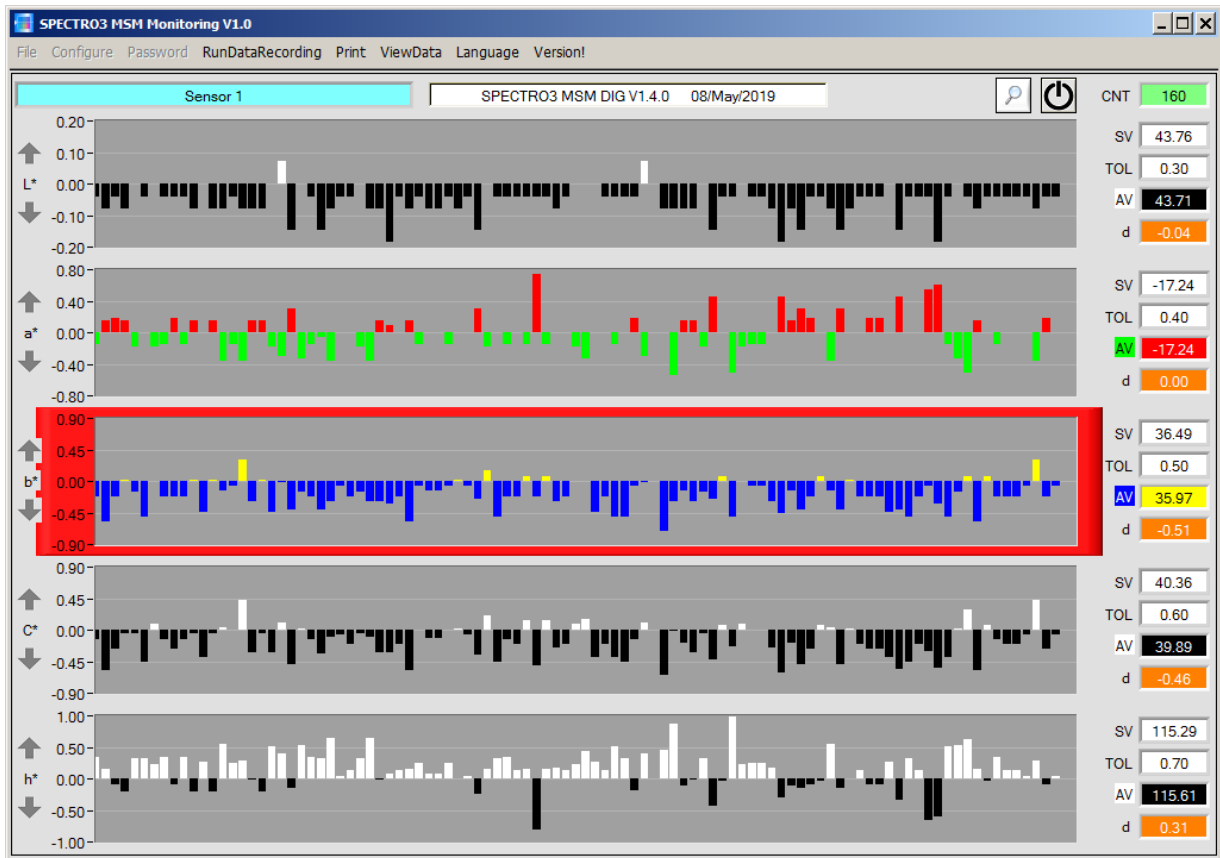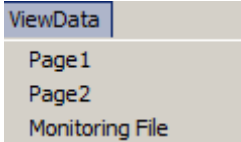

ATTENTION!

For memory space reasons only the last 100 values are displayed in the graphs.
The output file, however, contains all the values and can be opened in the **"ViewData" menu**.

2.1.5 "Print" menu

Print   ViewData
|
Print Configuration Data
Print Monitoring Data
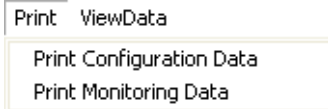
A stored configuration file can be selected and printed by pressing **"Print Configuration Data"**.
"Print Monitoring Data" prints the activated product parameters and a screenshot of the current user interface.

2.1.6 "ViewData" menu

ViewData
|
Page1
Page2
Monitoring File

Due to lack of space only 4 sensors can be displayed on the screen.
Use the **"Page1"** and **"Page2"** menu items to toggle between the first 4 and the last 4 connected sensors.

Attention! Only sensors that have been activated will be displayed.

A click on **Monitoring File** opens a dialog where you can open a desired data file.

The parameters and data that are saved in the file will be shown in the displays and the three graphs.
Of the complete file the graph only shows a section of 100 color space coordinates.
Use the **BEGIN AT POS** slider to scroll through the complete file.
The yellow **TIME WINDOW** displays show the time window currently represented in the graphs.

Use the cursor to move to individual points, the values of which are shown in the displays at the right side.
The **TIME AT CURSOR** display shows when this point was recorded.