

Manual

Software SPECTRO3-MONITORING V5.0

(PC software for Microsoft® Windows® XP, VISTA, 7)

for color sensors of the SPECTRO-3 series

This manual describes the installation and operation of the SPECTRO3-MONITORING PC software version V5.0.

The software was developed for configuring up to 8 color sensors of the SPECTRO-3 series 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-MONITORING software this manual explains the individual functional elements of the graphic Windows® user interface.



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Shortcuts:	
SEND	F9
GET	F10
GO	F11
STOP	F12

1 Installation of the SPECTRO3-MONITORING software

Hardware requirements for successful installation of the SPECTRO3-MONITORING software:

- IBM PC AT or compatible PC
- VGA graphics
- Microsoft® Windows® XP, VISTA, 7
- Serial RS232 interface at the PC
- Microsoft-compatible mouse
- Cable for the RS232 interface
- CD-ROM drive
- 20 MByte of free hard disk space

The SPECTRO3-MONITORING software can only be installed under Windows. Windows must therefore be started first, if it is not yet running.

Please install the software as described below:

1.	The software can be installed directly from the installation CD-ROM. The CD-ROM contains a folder named INSTALL, where you can find a SETUP program. Start this SETUP program to install the software.
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.
3.	During the installation process a new program group for the software is created in the Windows Program Manager. In the this program group an icon for starting the software is created automatically. When installation is successfully completed the installation program displays a "Setup OK" message.
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-MONITORING software

2.1 Software description

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

When the **SPECTRO3-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.

TIP! To avoid problems with the handling of the file path, it is advisable to run the software as administrator. You can either set this in the **Properties** under **Compatibility** or you start the software with a right click and choose **"Run as administrator"**.

* SPECTRO 3-MONITORING V5.0				
File Configure Password RunDataRecording Print ViewData				
Sensor 1	Sensor 2			
SETVALUE: X/s 5670 Y/i 2088 INT/M 820 CNT 0	SETVALUE: X/s 1541 Y/i 1837 INT/M 2735 CNT 0			
X/s deltaC XYINT/siM RGB	X/s deltaC XYINT/siM RGB			
1000-				
Y/i 800-	Y/i 800-			
INT/M 400-	INT/M 400-			
delta C 0-				
Sensor 3	SerNo xxx Sensor4			
SETVALUE: X/s 1230 Y/i 1059 INT/M 1435 CNT 0				
X/s deltaC XYINT/siM RGB				
1000-				
Y/i 800-				
INT/M 400-				
COM PORT 28				

2.1.1 "File" menu

File Configure Tools Password RunDal

Load Configuration File	
Save Configuration File	
Save As Startup Configuration File	

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

Configure	Tools	Password	Rur		
Set Sens	Set Sensor Configuration				
Set Product Parameter					
Set Outp	ut Path				
Set Reco	rd Mode	•			

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

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

* SENSOR CONFIGURATION PANEL				
ENABLE Sensor 1	ENABLE Sensor 2			
INSERT SENSOR NAME Sensor 1	INSERT SENSOR NAME Sensor 2			
FIXED SETVALUES X/8 5670 Y/i 2088 INT/M 820	✓ FIXED SETVALUES X/s 1541 Y/i 1837 INT/M 2735			
delta C TOLERANCE 50	delta C TOLERANCE 50			
SELECT CONNECTION COM PORT 1 BAUD 115200 -	SELECT CONNECTION COM PORT 3 BAUD 115200			
ENABLE Sensor 3	ENABLE Sensor 4			
INSERT SENSOR NAME Sensor 3				
FIXED SETVALUES X/s 1230 Y/i 1059 INT/M 1435				
delta C TOLERANCE 75				
SELECT CONNECTION COM PORT 28 BAUD 115200 -				
ENABLE Sensor 5	ENABLE Sensor 6			
ENABLE Sensor 7	ENABLE Sensor 8			

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.

In the main window **deltaC** is shown in a display and visualised in a graph. The **MONITORING** software calculates **deltaC** with the following formula.

$$deltaC = \sqrt{(SetvalueX / s - X / s)^{2} + (SetvalueY / i - Y / i)^{2} + (SetvalueINT / M - INT / M)^{2}}$$

X/s, Y/i and INT/M are the current data coming from the sensor.

The reference values SetvalueX/s, SetvalueY/i and SetvalueINT/M are preset in the SENSOR CONFIGURATION PANEL. FIXED SETVALUES allows the user to change the values in the main window while data recording is running.

In the **deltaC TOLERANCE** field a threshold can be set for the **deltaC graph** in the main window. If the current **deltaC** value exceeds this threshold, or if **deltaC=-1**, the background of the graph and of the **deltaC** display will turn red.

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:

RODUCT PARAMETER CONFIGURA					
ENABLE AND SELECT PRODUCT PARAMETERS, WHICH ARE FIX AND MUST BE STORED IN THE OUTPUT FILE AND PRINTED AT THE REPORT					
ENABLE PRODUCT PARAMETER 1	Example Machine Number				
✓ ENABLE PRODUCT PARAMETER 2	Example Plant				
ENABLE PRODUCT PARAMETER 3					
ENABLE PRODUCT PARAMETER 4					
ENABLE PRODUCT PARAMETER 5					
ENABLE PRODUCT PARAMETER 5 ENABLE AND SELECT PRODUCT PARAME BY THE MACHINE OPERATOR WHEN					
ENABLE AND SELECT PRODUCT PARAME					
ENABLE AND SELECT PRODUCT PARAME BY THE MACHINE OPERATOR WHEN	THE MEASUREMENT STARTS				
ENABLE AND SELECT PRODUCT PARAME BY THE MACHINE OPERATOR WHEN	THE MEASUREMENT STARTS Example Product Number				
ENABLE AND SELECT PRODUCT PARAME BY THE MACHINE OPERATOR WHEN	THE MEASUREMENT STARTS Example Product Number Example Order Number				
ENABLE AND SELECT PRODUCT PARAME BY THE MACHINE OPERATOR WHEN C ENABLE PRODUCT PARAMETER 6	THE MEASUREMENT STARTS Example Product Number Example Order Number Example Operator				

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.

迷 Insert Product Parameter 👘 🔀
Example Product Number
QK

Product Number.

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

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Inst	truments

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

SELECT HOW TO CREATE THE OUTPUT FILENAME	🗮 ОПТЬП	FILE CONFIG	SURATION PAN	IEL 🛛 🔀		
Output Directory dt/Mist SELECT A FILE EXTENSION xxx. dat © OPERATOR CREATES FILENAME MANUALLY Image: CREATE FILENAME AUTOMATICALLY Image: PRODUCT PARAMETER 1 Image: PRODUCT PARAMETER 2 Image: PRODUCT PARAMETER 2 Image: PRODUCT PARAMETER 3 Image: PRODUCT PARAMETER 4 Image: PRODUCT PARAMETER 5 Image: PRODUCT PARAMETER 6 Image: PRODUCT PARAMETER 7 Image: PRODUCT PARAMETER 8 Image: PRODUCT PARAMETER 9 Image: PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product PARAMETER 10	SELECT HOW TO CREATE THE OUTPUT FILENAME					
SELECT A FILE EXTENSION XXX. dat OPERATOR CREATES FILENAME MANUALLY CREATE FILENAME AUTOMATICALLY PRODUCT PARAMETER 1 PRODUCT PARAMETER 2 PRODUCT PARAMETER 3 PRODUCT PARAMETER 3 PRODUCT PARAMETER 4 PRODUCT PARAMETER 6 PRODUCT PARAMETER 6 PRODUCT PARAMETER 6 PRODUCT PARAMETER 7 PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Red V Y i V GRP V RAW G Green V Int M V Trigger V RAW B M Blue V delta C V TEMP	🔽 SAVE DA	SAVE DATA TO FILE				
SELECT A FILE EXTENSION XXX. dat OPERATOR CREATES FILENAME MANUALLY CREATE FILENAME AUTOMATICALLY PRODUCT PARAMETER 1 PRODUCT PARAMETER 2 PRODUCT PARAMETER 3 PRODUCT PARAMETER 3 PRODUCT PARAMETER 4 PRODUCT PARAMETER 6 PRODUCT PARAMETER 6 PRODUCT PARAMETER 7 PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Red V Y i V GRP RAW G Green V Int M V Trigger RAW B V Blue V delta C V TEMP	Output Din	ectory d:\Mist	t			
 □ OPERATOR CREATES FILENAME MANUALLY □ CREATE FILENAME AUTOMATICALLY □ PRODUCT PARAMETER 1 □ PRODUCT PARAMETER 2 □ PRODUCT PARAMETER 3 □ PRODUCT PARAMETER 4 □ PRODUCT PARAMETER 5 □ PRODUCT PARAMETER 6 □ PRODUCT PARAMETER 7 □ PRODUCT PARAMETER 8 □ PRODUCT PARAMETER 8 □ PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE I Red I Y I I GRP I RAW G I Green I Int M I Trigger RAW B I Blue I delta C I TEMP	SELECTAE	ILE EXTENSION	l vvv dat			
Image: PRODUCT PARAMETER 1 Image: PRODUCT PARAMETER 2 Image: PRODUCT PARAMETER 3 Image: PRODUCT PARAMETER 4 Image: PRODUCT PARAMETER 4 Image: PRODUCT PARAMETER 5 Image: PRODUCT PARAMETER 6 Image: PRODUCT PARAMETER 6 Image: PRODUCT PARAMETER 7 Image: PRODUCT PARAMETER 7 Image: PRODUCT PARAMETER 8 Image: PRODUCT PARAMETER 9 Image: PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product Parameter 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product Parameter 10						
Image: PRODUCT PARAMETER 1 Image: PRODUCT PARAMETER 2 Image: PRODUCT PARAMETER 3 Image: PRODUCT PARAMETER 4 Image: PRODUCT PARAMETER 4 Image: PRODUCT PARAMETER 5 Image: PRODUCT PARAMETER 6 Image: PRODUCT PARAMETER 6 Image: PRODUCT PARAMETER 7 Image: PRODUCT PARAMETER 7 Image: PRODUCT PARAMETER 8 Image: PRODUCT PARAMETER 9 Image: PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product Parameter 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Image: Product Parameter 10						
 PRODUCT PARAMETER 3 PRODUCT PARAMETER 4 PRODUCT PARAMETER 5 PRODUCT PARAMETER 6 PRODUCT PARAMETER 7 PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE ✓ Red ✓ Yi ✓ GRP ✓ RAW G ✓ Green ✓ Int M ✓ Trigger ✓ RAW B ✓ Blue ✓ delta C ✓ TEMP						
PRODUCT PARAMETER 4 PRODUCT PARAMETER 5 PRODUCT PARAMETER 6 PRODUCT PARAMETER 7 PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE V Red V Y i V GRP V RAW G Green V Int M V Trigger V RAW B I Blue V delta C V TEMP	□ PR	ODUCT PARAM	ETER 2			
PRODUCT PARAMETER 5 PRODUCT PARAMETER 6 PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE V Red V Y i V GRP V RAW G Green V Int M V Trigger RAW B I Blue V delta C V TEMP	🗖 PR	ODUCT PARAM	ETER 3			
 □ PRODUCT PARAMETER 6 □ PRODUCT PARAMETER 7 □ PRODUCT PARAMETER 8 □ PRODUCT PARAMETER 9 □ PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE I Red I Y i I GRP I RAW G I Green I Int M I Trigger I RAW B I Blue I delta C I TEMP	🗖 PR	ODUCT PARAM	ETER 4			
PRODUCT PARAMETER 7 PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Red	PRODUCT PARAMETER 5					
PRODUCT PARAMETER 8 PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Red Y i GRP RAW G Green Int M Trigger RAW B Blue delta C TEMP	PRODUCT PARAMETER 6					
PRODUCT PARAMETER 9 PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE Red Y i GRP RAW G Green Int M Trigger RAW B Blue delta C TEMP						
PRODUCT PARAMETER 10 SELECT DATA WHICH SHOULD BE SAVED TO FILE ✓ Red ✓ Yi ✓ GRP ✓ RAW G ✓ Green ✓ Int M ✓ Trigger ✓ RAW B ✓ Blue ✓ delta C ✓ TEMP						
SELECT DATA WHICH SHOULD BE SAVED TO FILE F Red FY i F GRP F RAW G Green F Int M F Trigger RAW B F Blue F delta C F TEMP						
Image: Red Image: Yi Image: GRP Image: RAW G Image: Green Image: Int M Image: Trigger Image: RAW B Image: Blue Image: Green Image: Green	PRUDUCI PARAMETER 10					
Image: Red Image: Yi Image: GRP Image: RAW G Image: Green Image: Int M Image: Trigger Image: RAW B Image: Blue Image: Green Image: Green						
I Green I Int M I Trigger I RAW B I Blue I delta C I TEMP						
🔽 Blue 🔽 delta C 🔽 TEMP						
				IV HAW B		
		,				

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, USA, ...). 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 \rightarrow Settings \rightarrow Control Panel \rightarrow 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:

* RECORDER CONFIGURATION PANEL	X
SELECT THE RECORD MODE	
SELECT DATA RECORDING AUTO LIMITED	•
RECORD-TIME INTERVAL IN SECONDS 1	
VALUES TO BE RECORDED (MAX 50 000) 1000	
· · · · · · · · · · · · · · · · · · ·	

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-Scope).

Password RunDataRecording Print Vie Activate Password Protection Deactivate Password Protection Change Password	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 zeros). The password can be individually changed.		
🗮 CHANGE PASSWORD PANEL 🛛 🔀	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.		
CHANGE PASSWORD	Attention! Password protection must be activated again with "Activate Password Protection".		
ENABLE PASSWORD PROTECTION SAVE CHANGES			

2.1.3 "Password" menu

2.1.4 "RunData RunDataRecording	Recording" menu In this menu item data recording can be started with "Start" and stopped with "Stop".
Start Pause Continue 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.
SPECTRO 3-MONITORIN	G V5.0
File Configure Password R	unDataRecording Print ViewData

File Configure Password RunDataRecording Print ViewData						
Sensor 1	Sensor 2					
SETVALUE: X/s 5670 Y/i 2088 INT/M 820 CNT 725	SETVALUE: X/s 1541 Y/i 1837 INT/M 2735 CNT 725					
X/s deltaC XYINT/siM RGB	X/s deltaC XYINT/siM RGB					
5654 50-						
Y/i 40-	Y/i 64-					
INT/M 20- 793 10-	INT/M 32-					
delta C 31						
COM PORT 1 SPECTR03 V4.1 RT Jun 19 2012	COM PORT 3 SPECTR03 V4.1 RT Jun 19 2012					
Sensor 3	SerNo xxx Sensor4					
SETVALUE: X/s 1230 Y/i 1059 INT/M 1435 CNT 725						
X/s deltaC XYINT / siM RGB						
1224 1442-						
Y/i 1154-						
INT/M 577-						

The data that are selected in the **OUTPUT FILE CONFIGURATION PANEL** are immediately saved in the correspondingly created file, if this is activated, and are visualised on the screen. The **CNT** display shows the total number of recorded values.

The current values of X/s, Y/i, INT/M, and deltaC are displayed in the respective fields left of the graph.

The SETVALUES for X/s Y/i and INT/M that are set in the SENSOR CONFIGURATION PANEL are displayed above the graph. If FIXED SETVALUES is deactivated in the SENSOR CONFIGURATION PANEL, the SETVALUE function elements have a white background, and the current values that are shown in the display fields can be directly adopted as SETVALUES with a right-click on one of the function elements.

The **deltaC** tab provides a display that in a graph visualises **deltaC** and the **deltaC TOLERANCE** that is set in the **SENSOR CONFIGURATION PANEL**. If the current value of **deltaC** exceeds the tolerance threshold, the background of the graph and of the **deltaC** display will turn red.

The X Y INT / s i M and RGB tabs provide a graphic representation of the current values of X/s, Y/i and INT/M and of RGB (red, green, blue), respectively.

For memory capacity reasons the graphs only show the last 1000 values. The output file, however, contains all the values.



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

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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	
Page3	

For reasons of space only 4 sensors can be displayed on a screen. **"Page1"** and **"Page2"** can be used to toggle between the first 4 and the last 4 sensors.

"Page3", however, displays the delta C and the C-No. of all 8 connected sensors.

Attention! The display only shows the sensors that are set to enabled.

SPECTRO 3-MONITORING V5.0				
File Configure Password RunDataR	-			
Sensor 1		Se	nsor 2	
delta C	CNT	delta C	CNT	
30	12	78	12	
SPECTR03 V4.1	RT Jun 19 2012	SPECTR03 V4.1 RT Jun 19 2012		
Sensor 3		SerNo xxx Sensor4		
delta C	CNT			
6	12			
SPECTR03 V4.1	RT Jun 19 2012			
SerNo xxx Sensor5		SerNo xxx Sensor6		
SerNo xxx Sensor7		SerNo xxx Sensor8		