datacolor

Datacolor 45
User's Guide

Datacolor 45
(models 45G CT, 45G, 45S)

Datacolor 45 User's Guide (October, 2013)

All efforts have been made to ensure the accuracy of the information presented in this format. However, should any errors be detected, Datacolor appreciates your efforts to notify us of these oversights.

Changes are periodically made to this information and are incorporated into forthcoming versions. Datacolor reserves the right to make improvements and/or changes in the product(s) and/or program(s) described in this material at any time.

To obtain information on local agents, contact either of the offices listed below, or visit our website at www.datacolor.com.

Americas (Lawrenceville, NJ)

Telephone: 1 (609) 924 2189 / 1 (800) 982 6496
Fax: 1 (609) 895 7472

Switzerland (Dietlikon)

Telephone: +(41) 1 835 3711
Fax: +(41) 1 835 3820

Asia (Hong Kong)

Telephone: +(852) 2420 8283
Fax: +(852) 2420 8320

Manufactured At:

Datacolor Technology (Suzhou) Co.
No. 288 Shengpu Road
Suzhou Industrial Park
Export Processing Zone B, Suzhou,
Jiangsu, P.R. China 215021

This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1, second edition, including Amendment 1, or a later version of the same standard incorporating the same level of testing requirements.

Contents

Datacolor 45

About the Datacolor 45

The Datacolor 45 is a member of the newest generation of Datacolor hand-held color measuring instruments, incorporating state-of-the-art CMOS integrated circuit technology in the instrument design. It is intended for use as a device for measuring, specifying and evaluating color in both laboratory and industrial settings.

Electrical/Environmental Requirements

Power	5Vdc, 3.2A (input to the 45) 100 – 240 VAC(input to the AC power adapter) 50/60 Hz, 0.6A Input
Battery	Lithium Ion Rechargeable Battery, 3.7V Charge Voltage 4.2V Maximum Charge Current: 1.5A Charge: 0<T<50°C Discharge : -20<T<60°C Store between 40% and 50% capacity; Do not store above 140°F (60°C). Do not crush, short circuit, mutilate, reverse polarity, disassemble, or dispose of in fire; might explode, cause burns, or release toxic materials.
Absolute Operating Environment	5º to 40º C 20-85% RH, non-condensing Indoor Use Altitude up to 2,000 meters

Safety Warnings

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Battery: Do not store above 60°C (140°F), crush, short circuit, mutilate, reverse polarity, disassemble, or dispose of in fire; might explode, cause burns, or release toxic materials.

CAUTION

There are no user-serviceable parts for this equipment.

For battery replacement: Unit must be returned to factory or an authorized Datacolor Service Center.

Light Source

Do not stare directly into the open port located in the bottom of the instrument when the measurement is in progress. **Staring directly into the light source can result in eye discomfort similar to that of staring at a camera flash.**

Power

CAUTION

Disconnect power before servicing.
The power supply supplied with the unit must be used.

Feature Summary

The Datacolor 45 employs state-of-the-art features including the spectrometer, light source, and optics. Below is a summary of those features:

FEATURE	DESCRIPTION	PURPOSE/BENEFIT
Measurement Geometry	45/0º geometry	Provides accurate and repeatable measurement of smooth and textured surfaces
		Includes a built-in 60º gloss meter for simultaneous measurement of Gloss and Color
SP2000 Spectral Analyzer	Proprietary dual-channel holographic grating. 256-photodiode linear arrays used for both the reference and sample channels.	Dual channel design provides continuous monitoring of sample illumination and compensates for changes. 256-photodiode array enhances the precision of the measurement.
Light source	Total Bandwidth LED Illumination	Provides consistent full width illumination for accurate and repeatable color measurement
Wavelength Resolution	2 nm	Reflectance data is measured at 2.5nm intervals from 400 – 700nm.
Effective Bandwidth	10nm	Greater precision enhances the measurement accuracy.

Datacolor 45 models

Datacolor 45 is available in different models

45G CT	**45G**	**45S**
11mm aperture	11mm aperture	11mm aperture
metal stand	metal stand	metal stand
Tile holder	Tile holder	Tile holder
black trap	black trap	black trap
white tile	white tile	white tile
black gloss tile	black gloss tile	-
Quick Start Guide	Quick Start Guide	Quick Start Guide
User Guide CD	User Guide CD	User Guide CD
Certificate of Instrument performance	Certificate of Instrument performance	Certificate of Instrument performance
Certificate of Characterization White Standardization Tile	Certificate of Characterization White Standardization Tile	Certificate of Characterization White Standardization Tile
USB cable	USB cable	USB cable
Aluminium Case	Aluminium Case	Aluminium Case
USB Stick W/ 45G CT Cal Data	USB Stick W/ 45G Cal Data	USB Stick W/ 45S Cal Data
Power cord/ adapter/international plug adapters	Power cord/ adapter/international plug adapters	Power cord/ adapter/international plug adapters

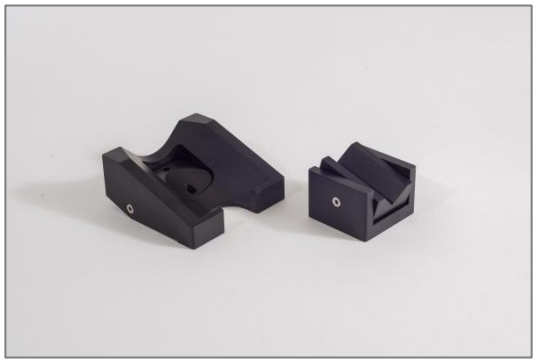
Accessories

Models (Datacolor 45G CT, 45G,45 S) come with the following standard accessories:

- AC Adaptor with power cable
- Precision calibration/measurement stand
- USB cable
- Black Trap, White Tile (models DC45G CT, DC45G, 45S) and Gloss Tile (only model DC45G CT, DC45G)
- USB Flash Drive with Calibration Data

- Optional available in combination with high end calibrator: can holder, V-block

Datacolor 45 with precision calibration/ Measurement stand



V-block, can holder

USB-On-The-Go technology

USB-On-The-Go technology enables USB peripherals, such as, USB flash drive, USB HID keyboard profile for keyboard and barcode scanners.

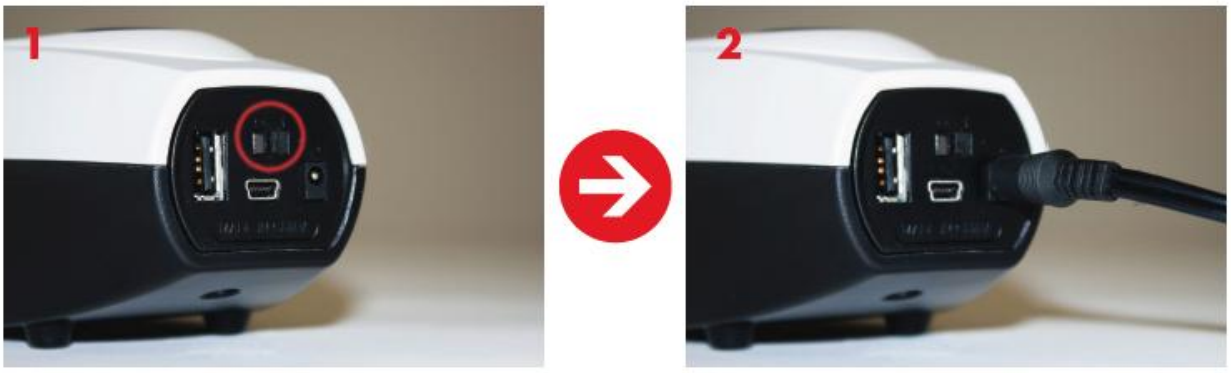
Currently supported keyboard layout is US101..

Charging the Instrument:

Please make sure that your Datacolor 45 instrument is fully charged before using.

DC45 **must** be charged for **8 hours** before use.

Note !Instrument need to be switched to **ON** position before attaching the power connector.



The instrument does not charge through the USB connection, so it is necessary to use the AC Adaptor to charge the instrument.

Each AC Adaptor comes with a collection of plugs for connecting to power supplies in different regions. Select the appropriate plug for your region and place it into the charger head by sliding the lock open and snapping the plug in place. Make sure that the lock slides firmly back in place and that the plug is secure before plugging into your Power Outlet

Global Plugs

Sliding Lock

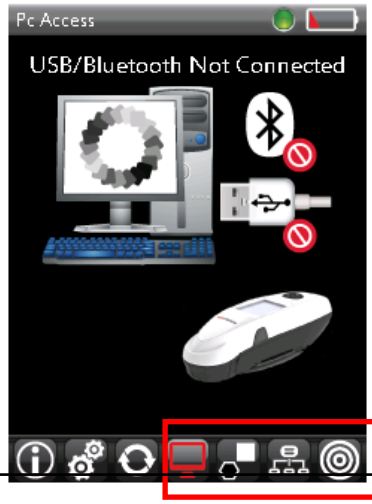
Lock in Place

Connecting the Instrument:

The Datacolor 45 connects to your computer via USB or Bluetooth.

! NOTE: Before you connect the instrument for the first time, please install the Datacolor Tools software provided with the instrument. When fully installed, close the Tools software for the initial Driver connection to the instrument.

To connect the instrument, connect the instrument to the computer via the USB cable and go to the PC Access icon



PC acces menu

For USB, make sure that the instrument is connected to the computer via the provided USB cable and that the Tools software is up and running. For Bluetooth, please make sure that Bluetooth is ON in your computer.

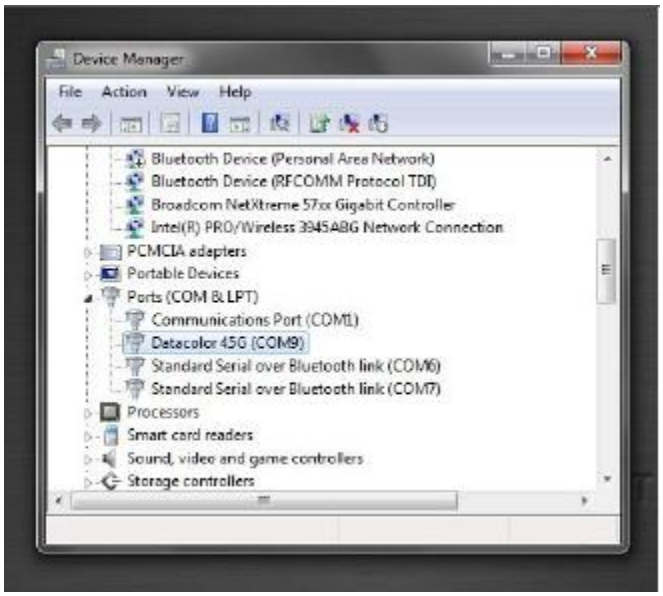
The PC Access screen will show the connection has taken place by displaying arrows on the connection icon.

Not Connected USB Connected

The computer will display a message saying that new hardware is found and the driver is being installed.

The Datacolor 45 uses Serial over USB communication, so you will need to open the Device Manager in the Control panel. Open the Ports (COM & LPT) section:

You will see the Datacolor 45 listed with a Com Port address. Make note of that address and close the device manager. This step is only necessary for the first time an instrument is connected To the Tools software. This address will be remembered by the software after you enter the information in the procedure below.

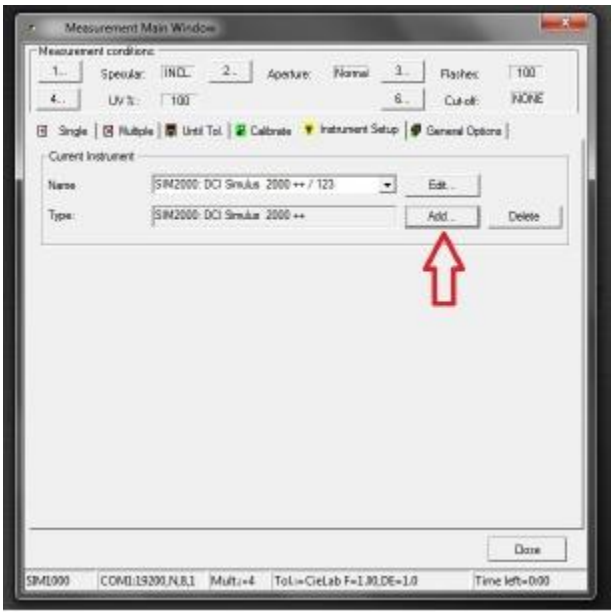


Start the Datacolor Tools software.

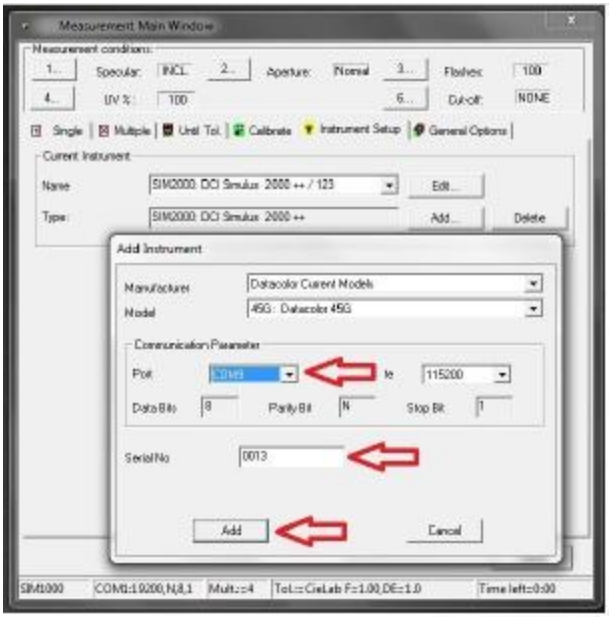
If you have chosen the Textile mode, the default User name is DCI. No password is assigned, so leave the Password field blank.

If you have chosen the Pigment mode, the user name is USER and the password is CC3.

The next window to open is the Driver's measurement window. Press the ADD button to add the Datacolor 45 to the Driver list:



Select CURRENT DATACOLOR INSTRUMENTS and Datacolor 45 from the drop down menus:

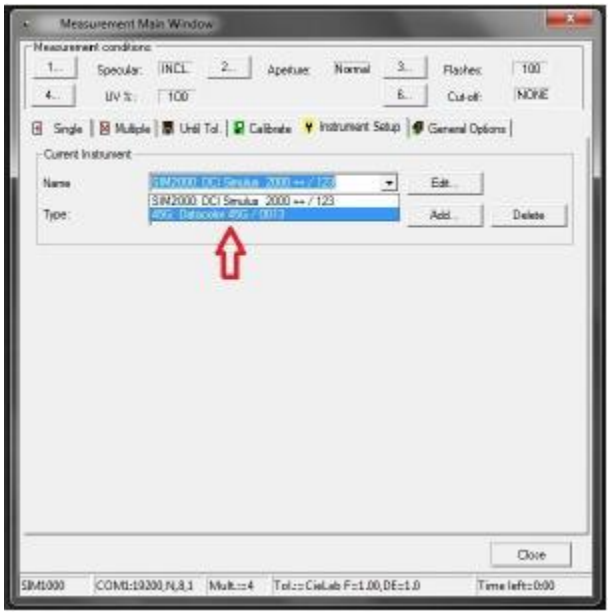


Select the COM port that was noted earlier in the Ports list of the Device Manager.

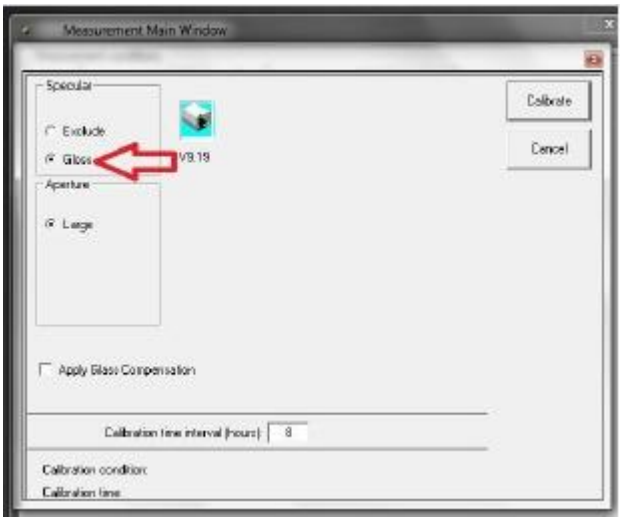
Enter the serial number of the instrument (labeled on the bottom of the Datacolor 45.)

Click ADD to complete the driver process.

If the Datacolor 45 does not appear in the NAME field, click on the drop-down menu and select it:

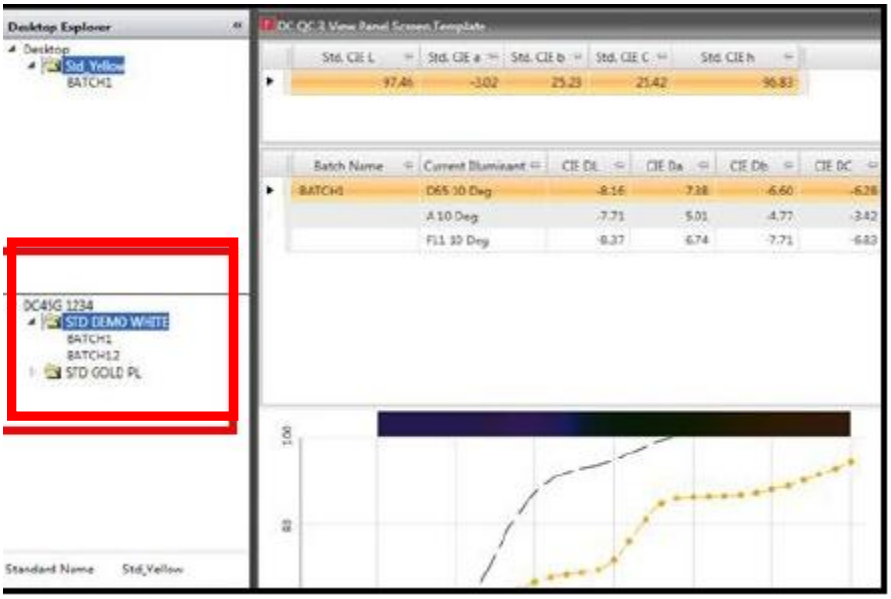


The Driver window will now prompt you to calibrate the instrument. If you wish to use the integrated Gloss Meter, Press the radio button next to GLOSS and click calibrate:



You should now calibrate the instrument, following the instructions from the Calibration Wizard. When calibration is complete, the main Tools program will open.

When connected, the device will appear as a remote drive in the explorer panel on the left-hand side of the Tools Screen. The standards will appear as folders in that drive. Batches will be in the folders. (see RED box in image below.)



! NOTE: While connected, the Datacolor 45 acts as a dumb instrument and does not display or store measurement results. If you navigate away from the PC Access window on the instrument, the connection to the computer will be severed.

To measure through the Tools software, select the Instrument tab in the top menu ribbon and then press CALIB:

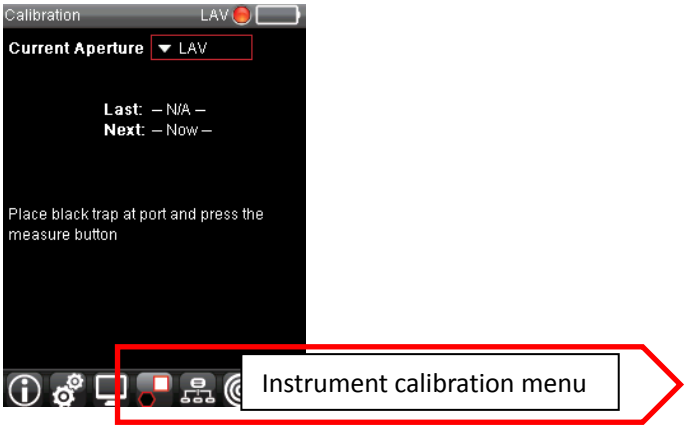
The calibration wizard will then walk you through the steps for calibrating. Choose the GLOSS option if you want to make Gloss measurements. This will ensure that you calibrate for Gloss.

Main Menu (for standalone operation)

Navigation

Navigate using 5-way button (up, down, left, right and OK)
OK selects highlighted function
Left, right will navigate to the different menues

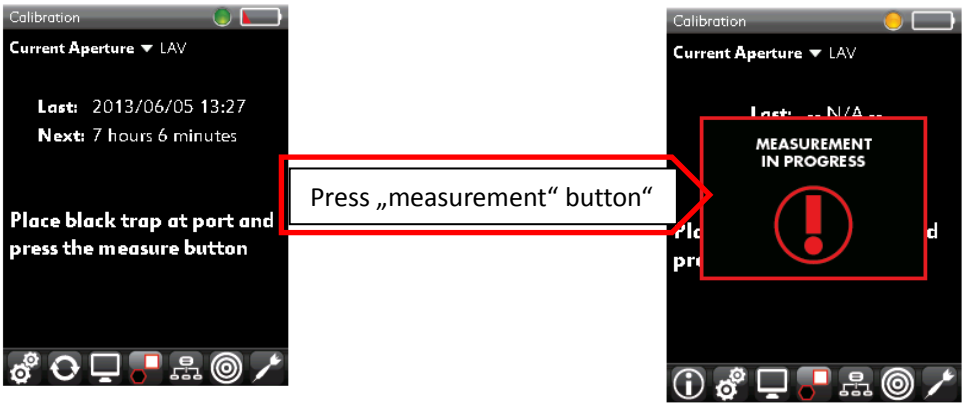
Calibration



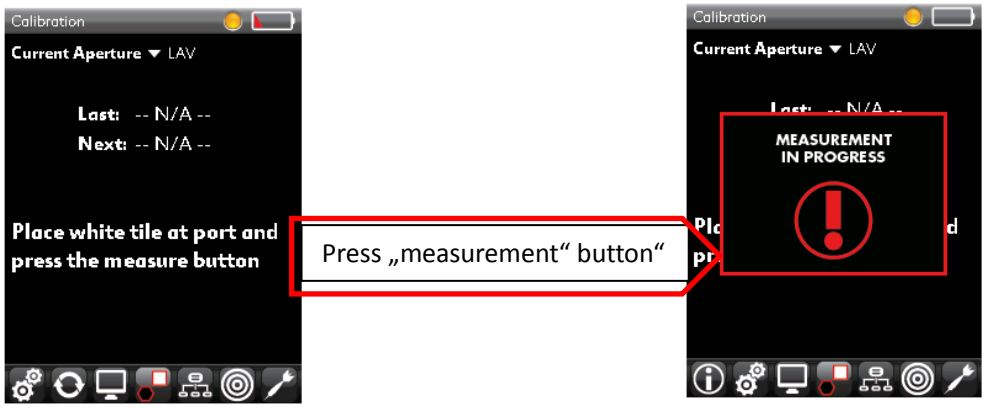
Model (Datacolor 45G CT, 45G, 45S): calibration with high end calibrator (black trap, white tile)
optional for (Datacolor 45G CT gloss tile)

Place the Instrument into the Calibration tray with the measuring aperture over the Black Trap hole (follow instructions on screen)

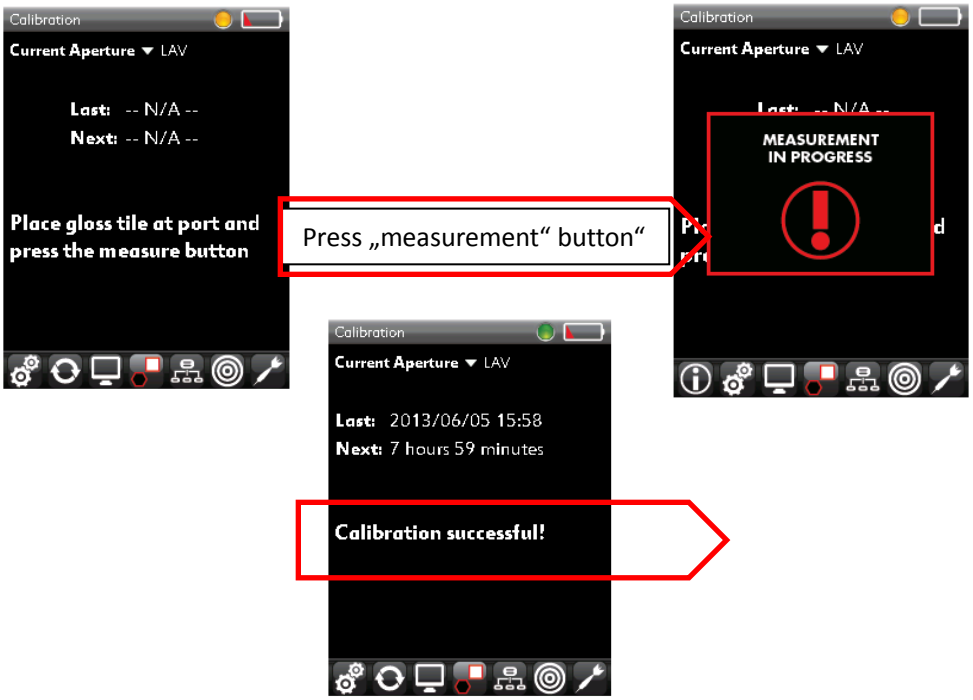
1.Black Trap



2. White Tile

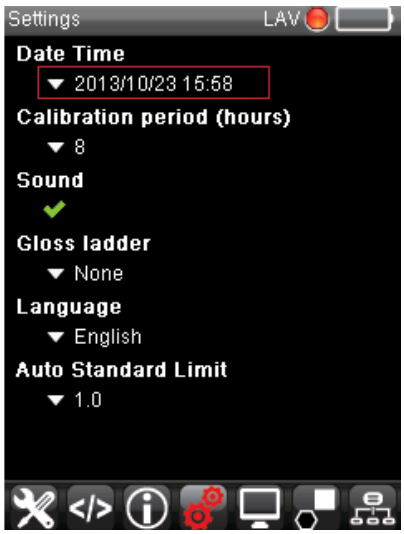


3. Gloss Tile

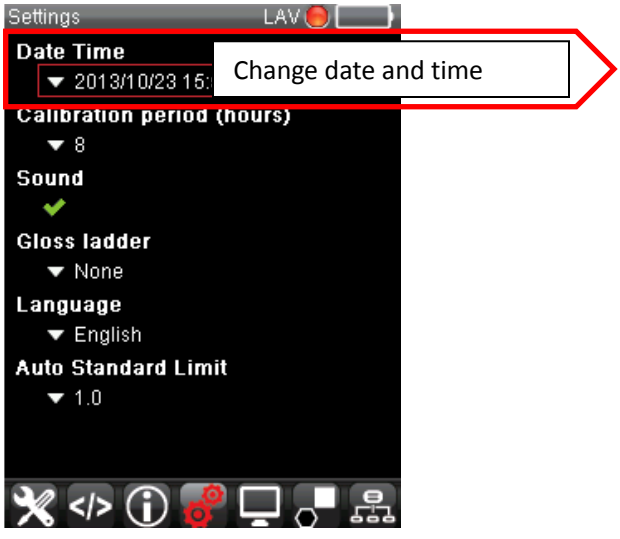


Settings

The Settings menu shows six options. Tap the desired option, or scroll up and down through the options using the up/down buttons, then press OK. The Active Option is highlighted in Red.



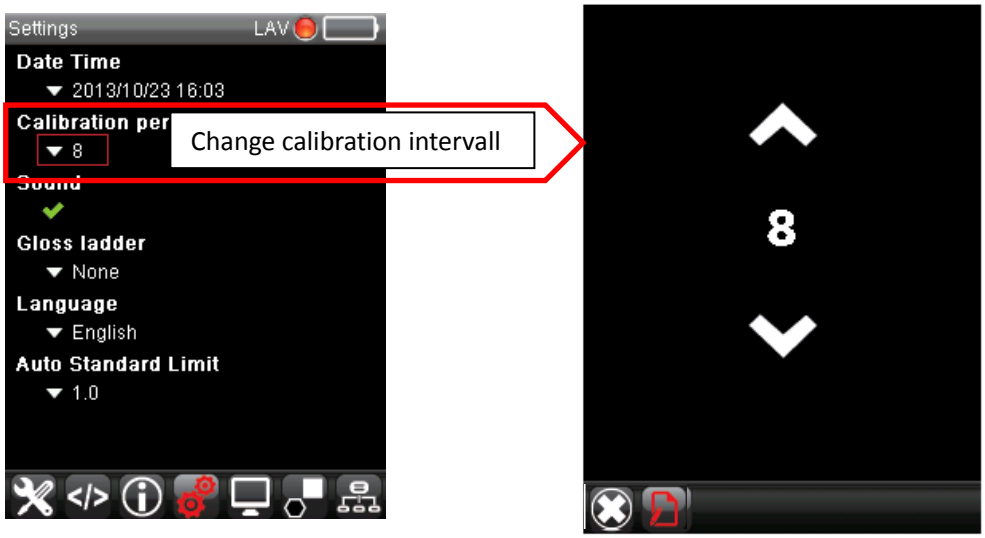
Date and Time



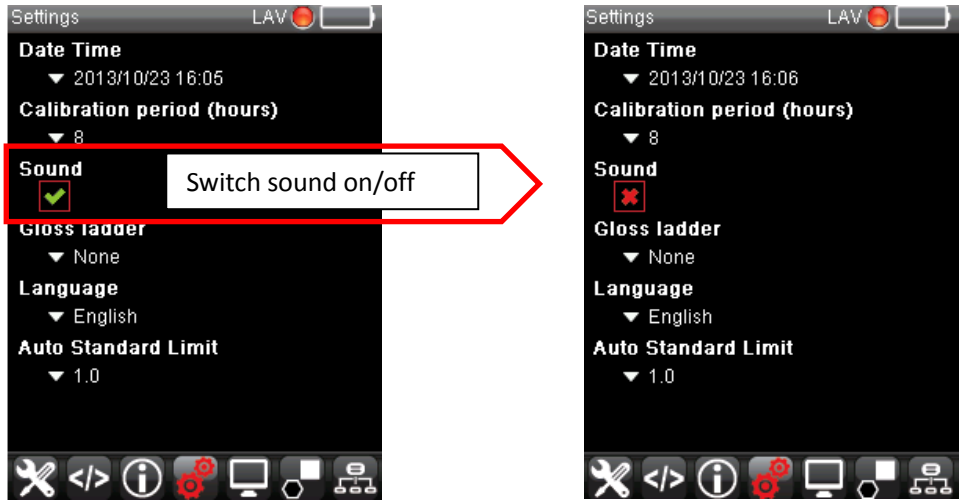
Tap the desired option, or scroll up and down through the options using the up/down buttons, then hit OK. The active option is highlighted in Red.

Calibration Interval

Hit OK to activate calibration interval menu.Use up/down buttons to set calibration interval.OK button to return to last menu.



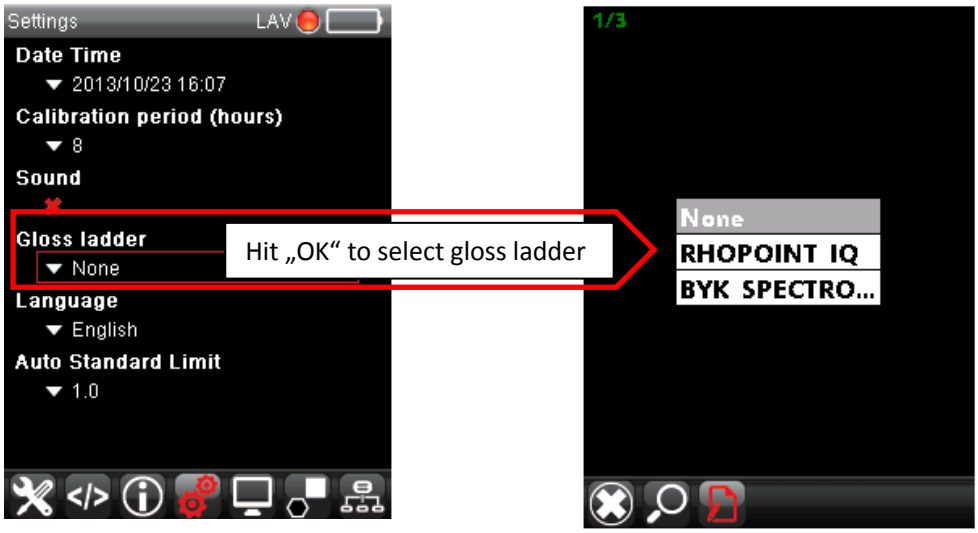
Sound



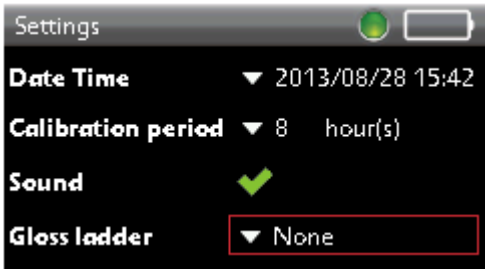
Hit OK to switch between sound on/off (Red is Off. Green is On) for measurements.

Gloss ladder

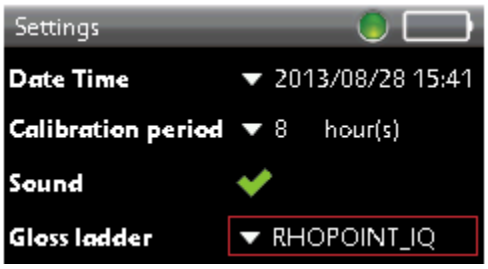
Gloss ladders can be uploaded to the system (for gloss correction)



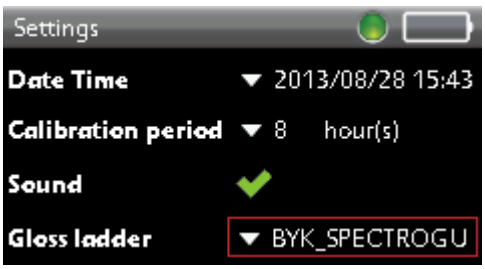
45G (no gloss ladder)



45 G (RHOPOINT gloss ladder)



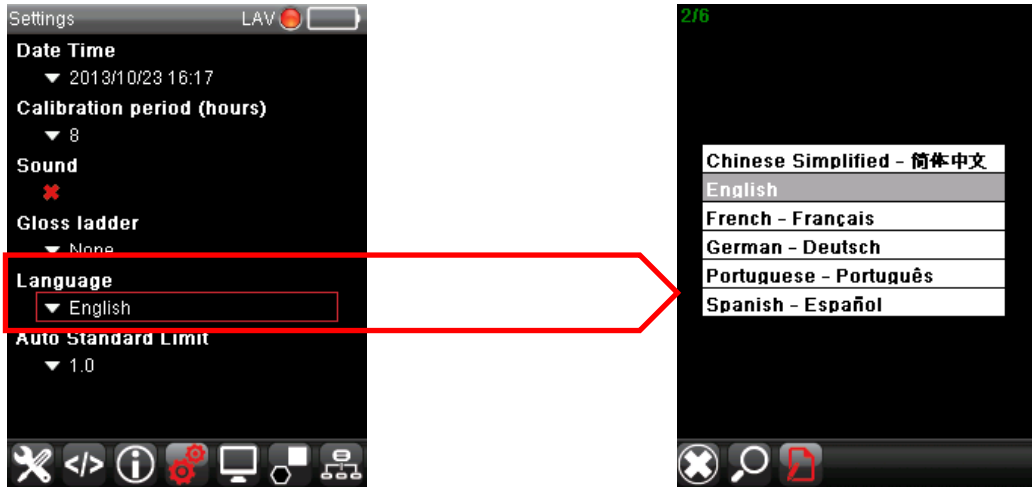
45G (BYK gloss ladder)



Gloss ladders need to be created and loaded into the DC45.

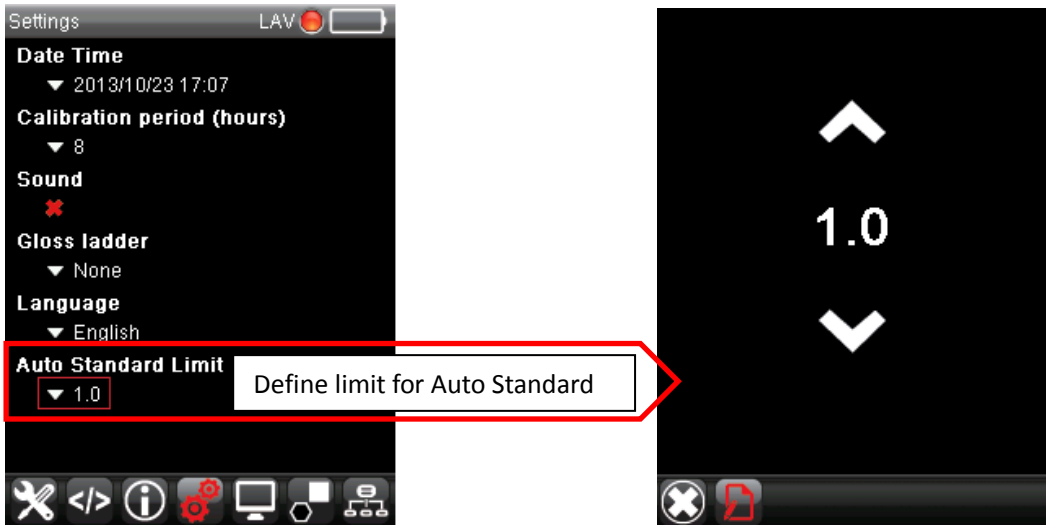
Please contact Datacolor Service for further information (see service hotlines page 70/71)

Language



Select different languages, after selecting, the language will only be active after switching off/on DC45.

Auto Standard Limit

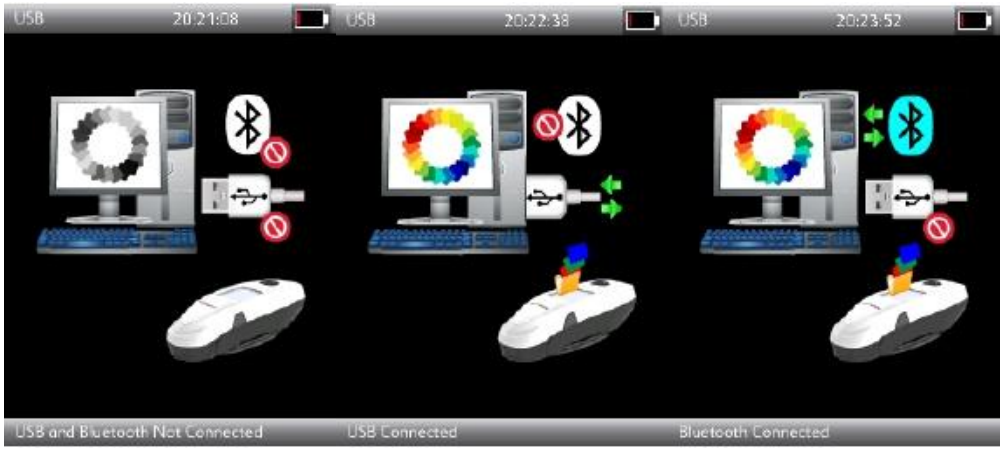


When selected this option during a Batch measurement the application will look for the closest standard (closest checking dE in D65-10) from all the existing standards in the system and associates the measured batch to this standard.

(see further information in “Options” on page 53)

PC Access

#



No connection *USB Connected* *Bluetooth™ Connected*

Navigate to the icon using the navigation buttons and press OK.

If you want to use the Bluetooth™ connection:

Check the device manager on your PC to make sure your Bluetooth receiver is on and that you can see the Datacolor 45 connection (the Datacolor 45 Bluetooth radio is always on when the instrument is in the PC Access mode.)

The display on the Datacolor 45Gwill show when connections are active, as in the diagrams above.

To establish a USB connection:

The PC Access screen will show the connection has taken place by displaying arrows on the connection icon.

Not Connected *USB Connected*

The Computer will display a message saying that new hardware is found and the driver is being installed.
The Datacolor 45 uses Serial over USB communication, so you will need to open the Device Manager in the Control panel. Open the Ports (COM & LPT) section:

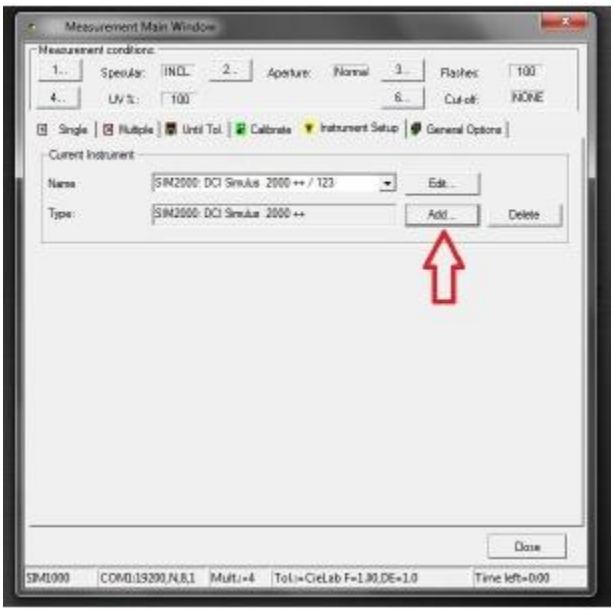
You will see the Datacolor 45 listed with a Com Port address. Make note of that address and close the device manager. This step is only necessary for the first time an instrument is connected To the Tools software. This address will be remembered by the software after you enter the information in the procedure below.

Start the Datacolor Tools software.

If you have chosen the **Textile** mode, the default User name is **DCI**. No password is assigned, so leave the Password field blank.

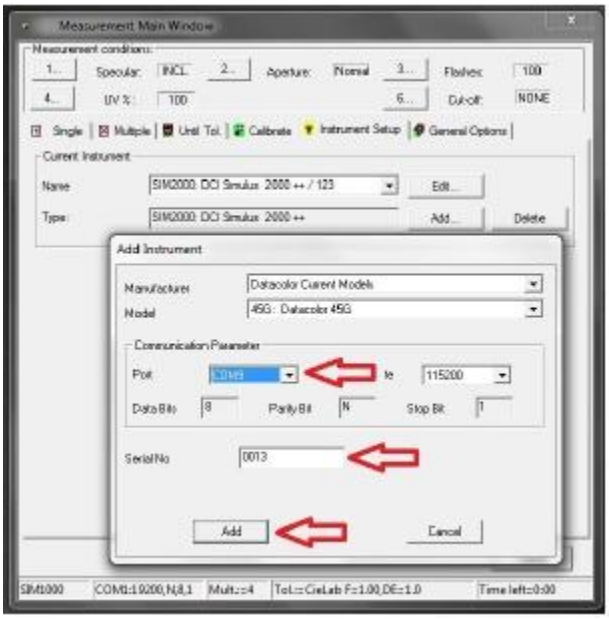
If you have chosen the **Pigment** mode, the user name is **USER** and the password is **CC3.**

The next window to open is the Driver's measurement window. Press the ADD button to add the Datacolor 45 to the Driver list:

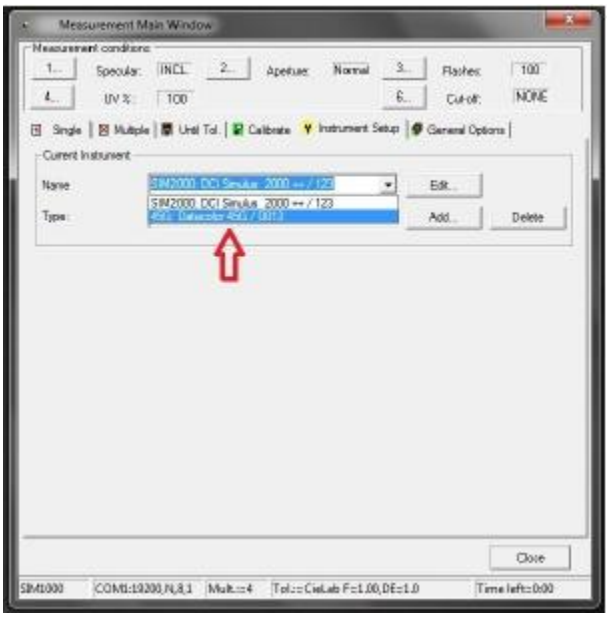


Select CURRENT DATACOLOR INSTRUMENTS and Datacolor 45 from the drop down menus:

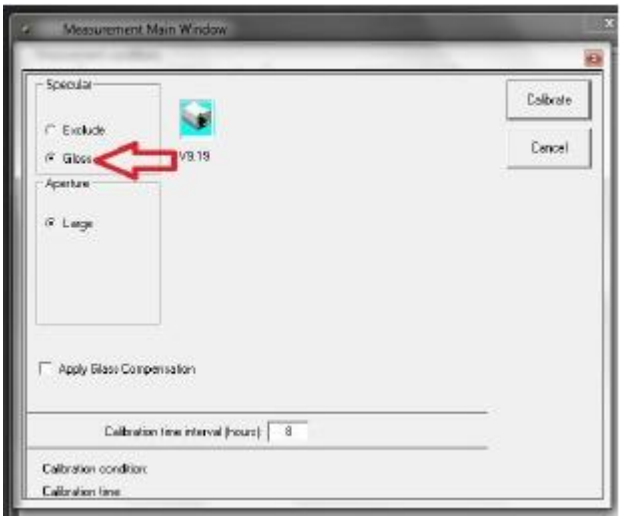
Select the COM port that was noted earlier in the PORT menu of the Device Manager.
Enter the serial number of the instrument (labeled on the bottom of the Datacolor 45.)
Click ADD to complete the driver process.



If the DC45 does not appear in the NAME field, click on the drop-down menu and select it:

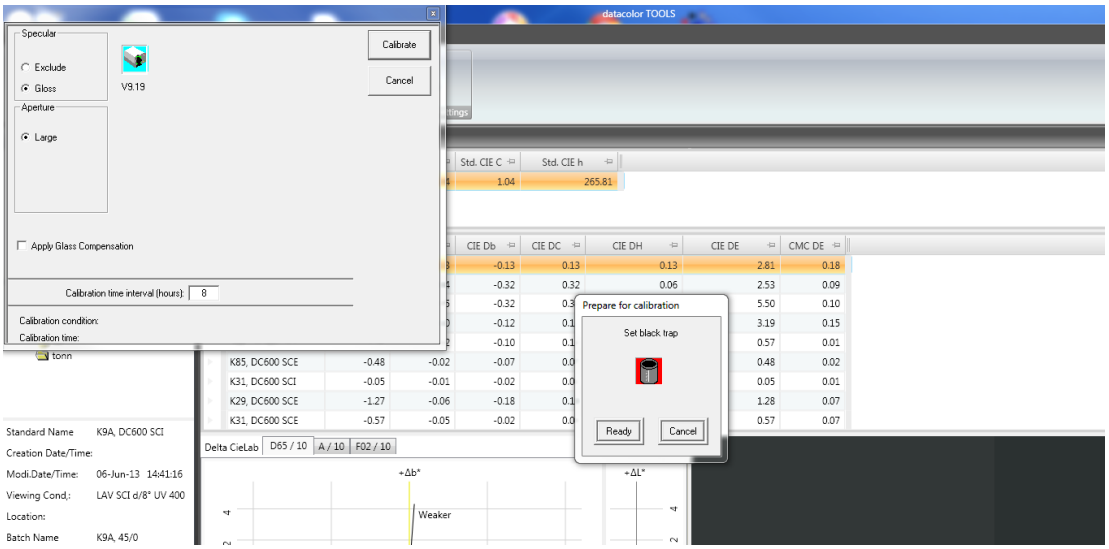


The Driver window will now prompt you to calibrate the instrument. If you wish to use the integrated Gloss Meter, Press the radio button next to GLOSS and click calibrate:

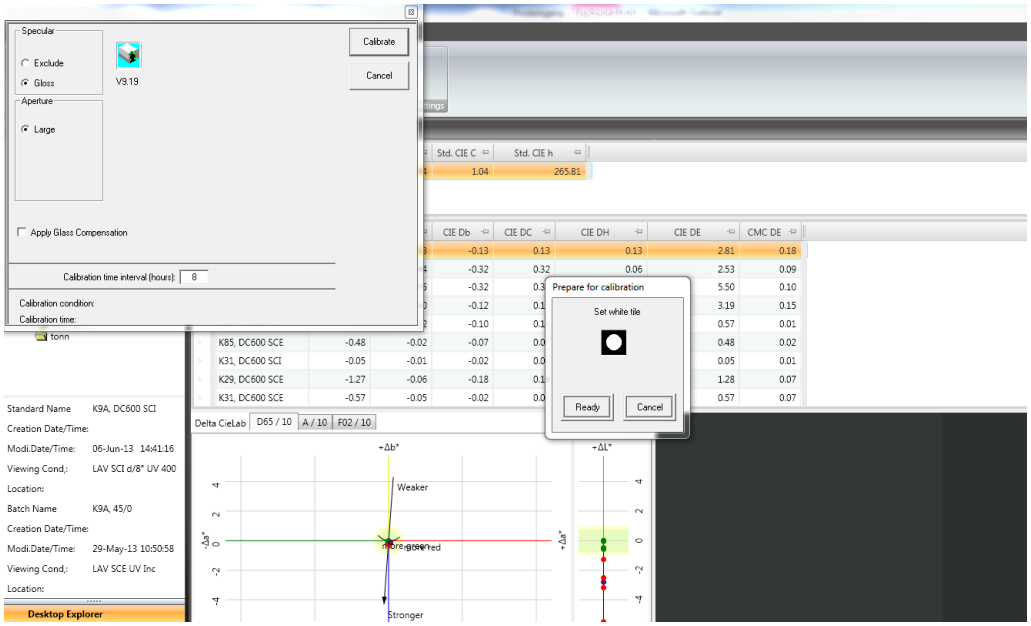


You should now calibrate the instrument, following the instructions from the Calibration Wizard.

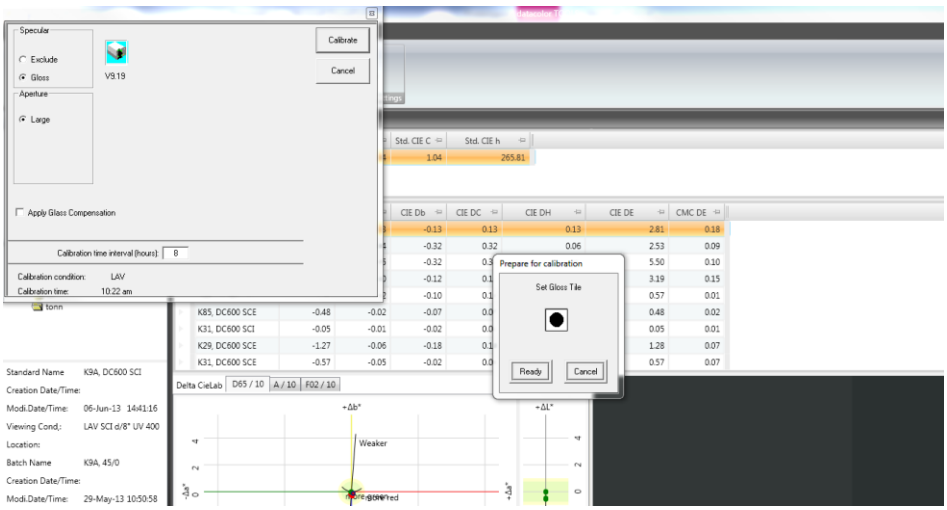
Calibration black trap



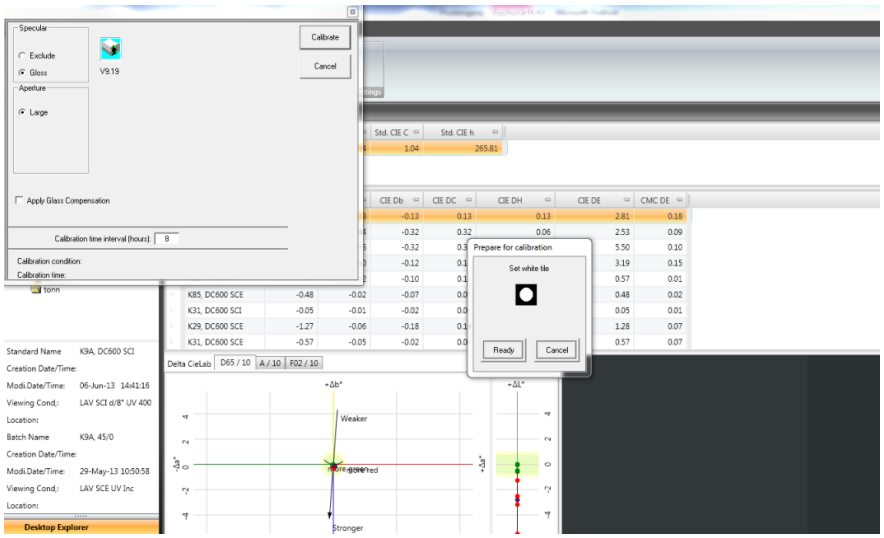
Calibration white tile

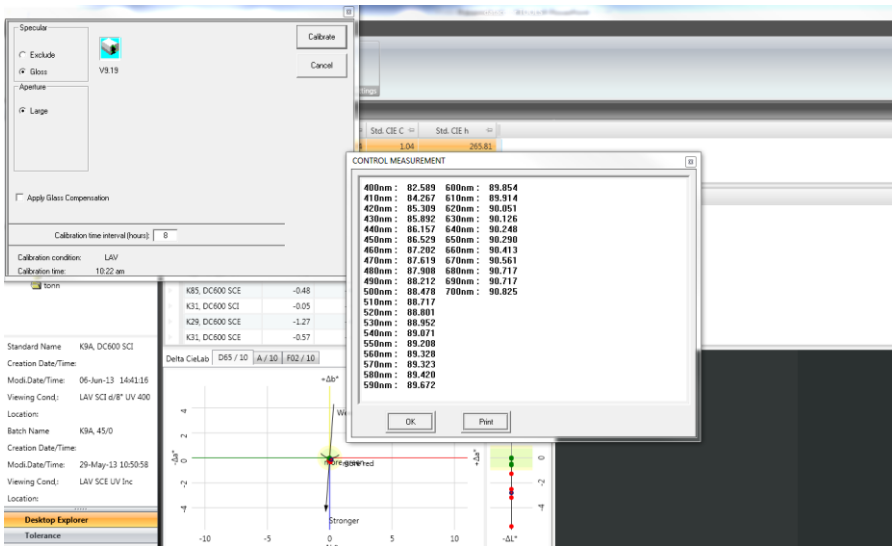


Calibration gloss tile



Calibration white tile



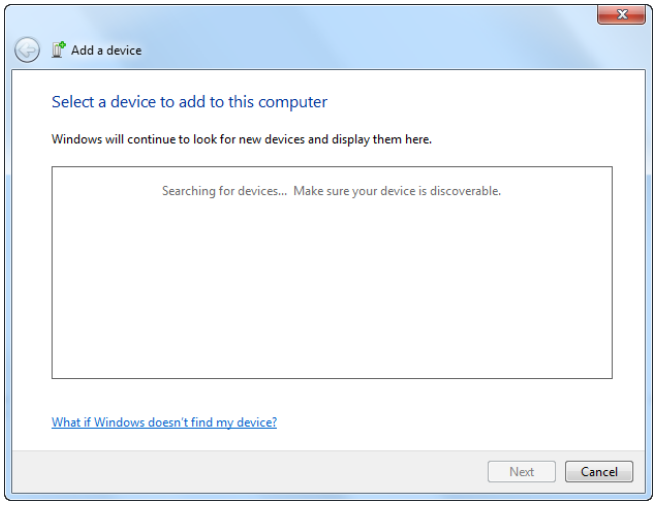


Bluetooth™ Communication

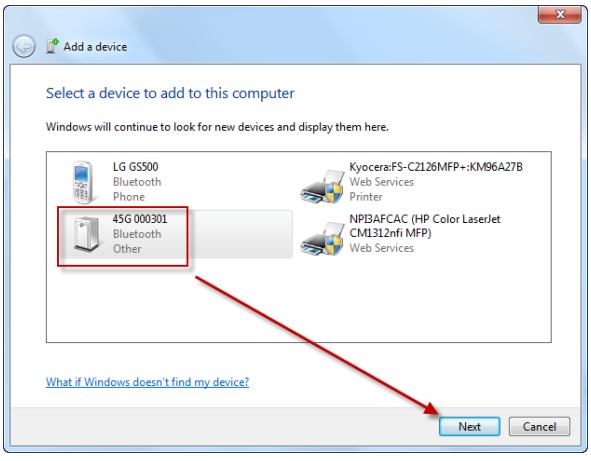
The Datacolor 45 spectrophotometer can communicate in **Bluetooth™** mode.

Follow this procedure to proper setup the communication

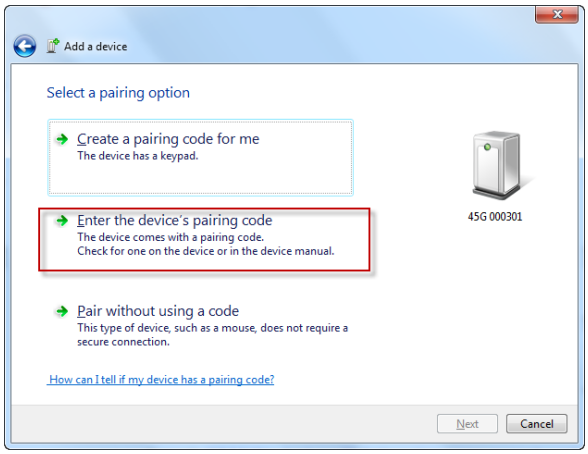
1. Switch on the unit and navigate to PC access.
2. To avoid mistakes with communication ports, disconnect the USB cable.
3. Two communication options are available; USB and **Bluetooth™**, both are not connected for the moment. Switch ON **Bluetooth™** connection on your PC. Right mouse click on your **Bluetooth™** Icon and "Add Device". Windows will search to **Bluetooth™**devices

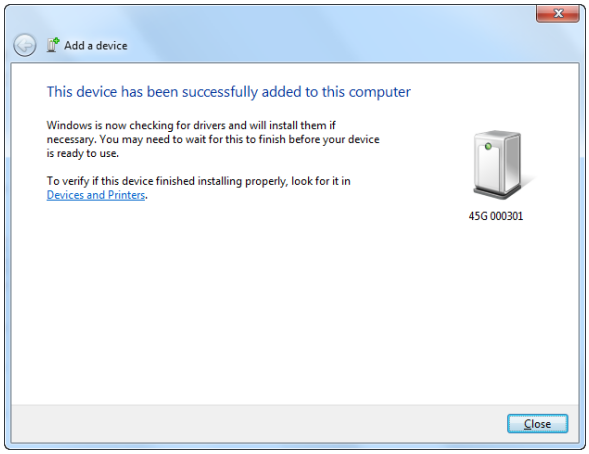


4. Windows will detect the Datacolor 45 and shows following screen: in this case Datacolor 45 with serial 000xxx. Select unit and select "Next".

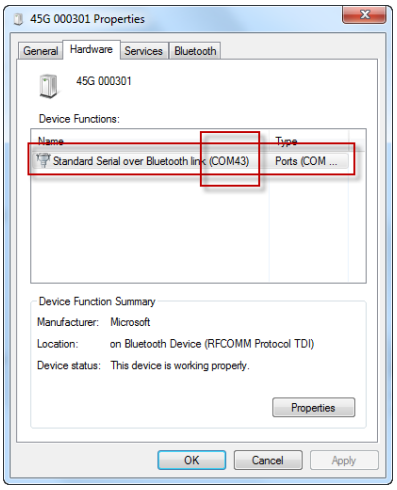


5. **Bluetooth™**devices are typically working with pairing codes, three options are available, select the one where you can enter the code yourself: The code is 1234





6. Once the **Bluetooth™**is connected to the computer, it assigns a COM port to it. There are several ways to detect what com port is assigned to it. The easiest one is to go to devices, go to properties of the connected device and see what com port is has:
   In this case: COM43

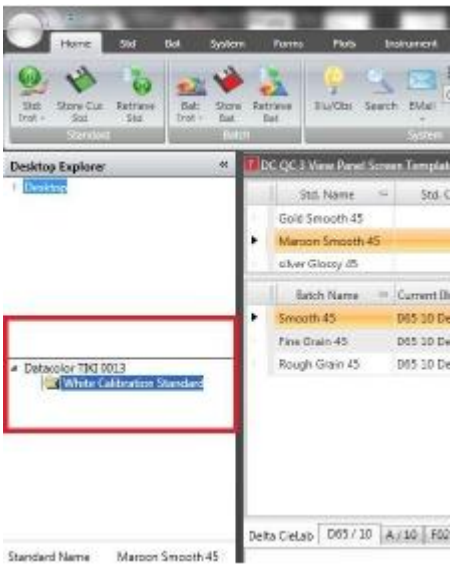


7. When setting up an new instrument in the Datacolor Instrument driver, select proper COM port for Datacolor 45 unit and save it
8. The **Bluetooth™** icon in PC access mode is now changed from Red to Blue (Connected).

Communicating with Datacolor Tools Software:

Consult the Datacolor Tools User Guide for detailed information about the operation of Tools Software.

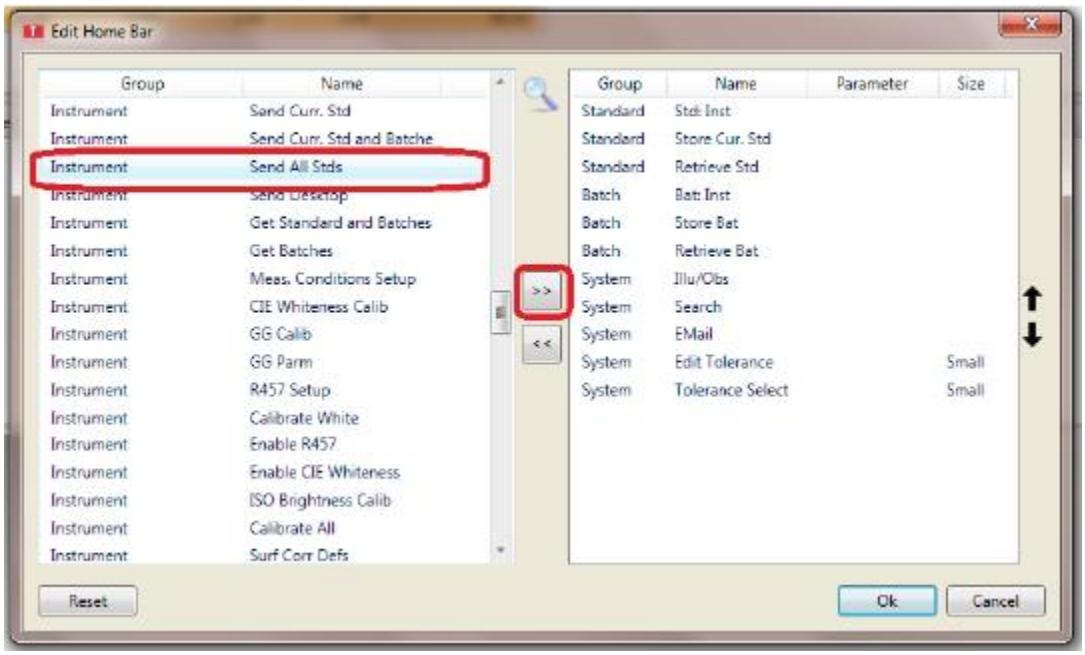
Once connected, the Datacolor 45 instrument shows up in the Tools explorer Window as a flash drive:



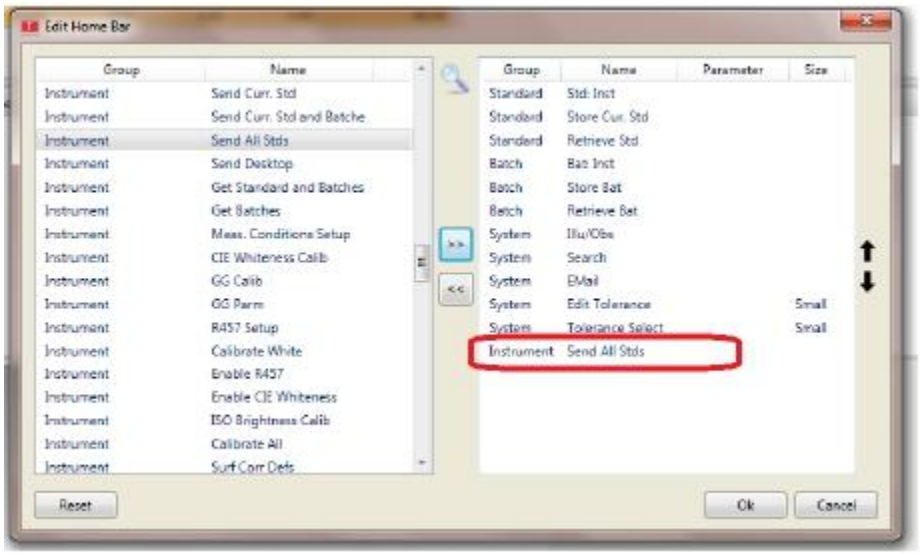
Setting Up Datacolor Tools software for Portable Operation:

To make the transfer of standards easier, please add the following functions to the Home Bar by Clicking on the circle in the Upper Left-hand corner of the screen and clicking on Home Bar Options:

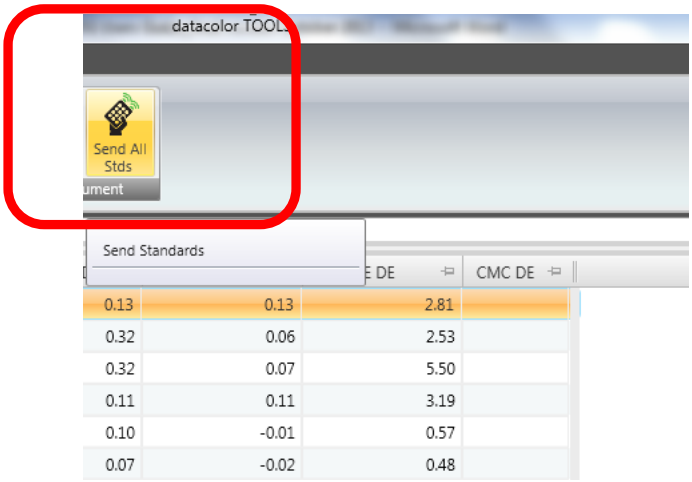
In the EDIT HOME BAR screen, scroll down to INSTRUMENT SEND ALL STDS and hit the right arrow button to move this function over to the Active list:



Click OK on the Add Button screen and function will move over to the Active list:

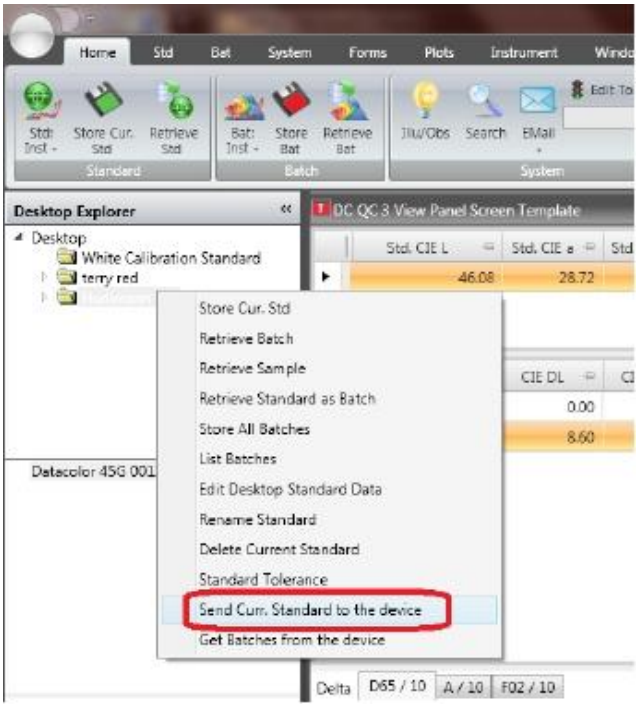


This function now appear in the Home Bar, enabling you to send all of your standards to the instrument with one click .



Loading Standards from Datacolor Tools to Datacolor 45

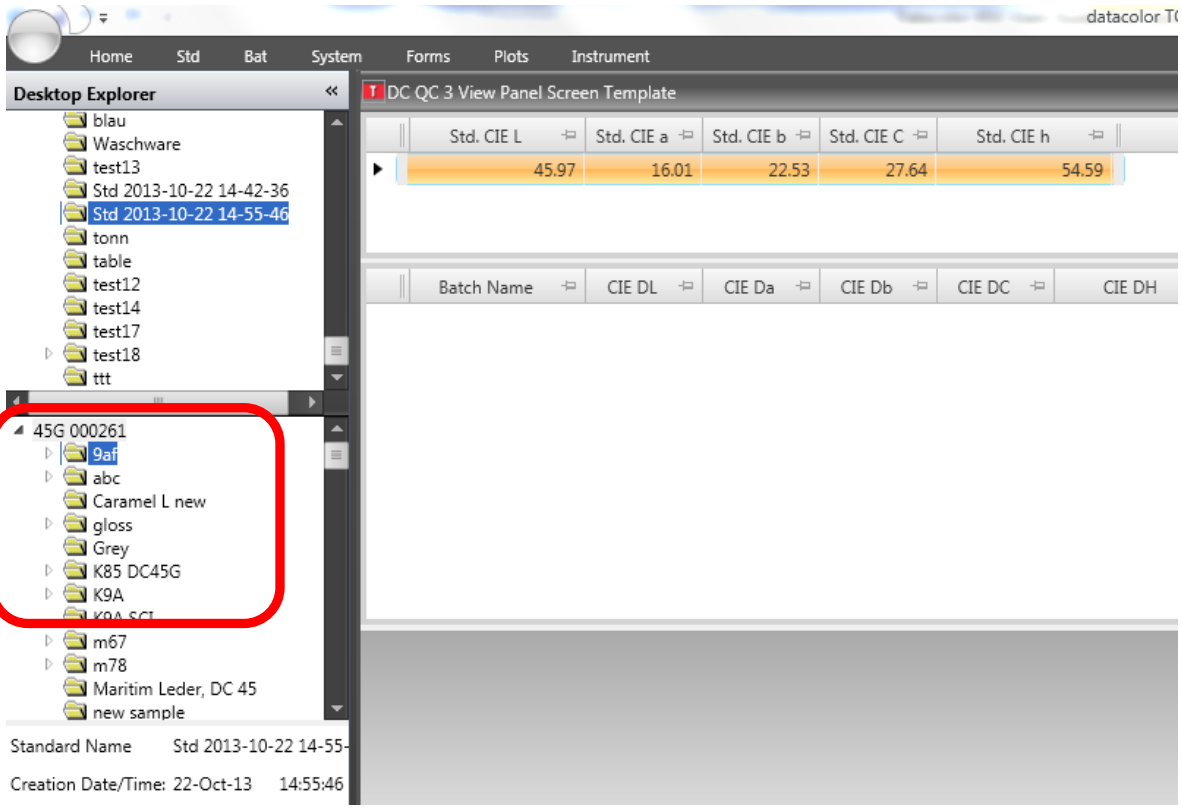
To send a single standard from the Tools desktop to Datacolor 45, Select the standard in the Tools Explorer, right click and select *Send Curr. Standard to the Device.*



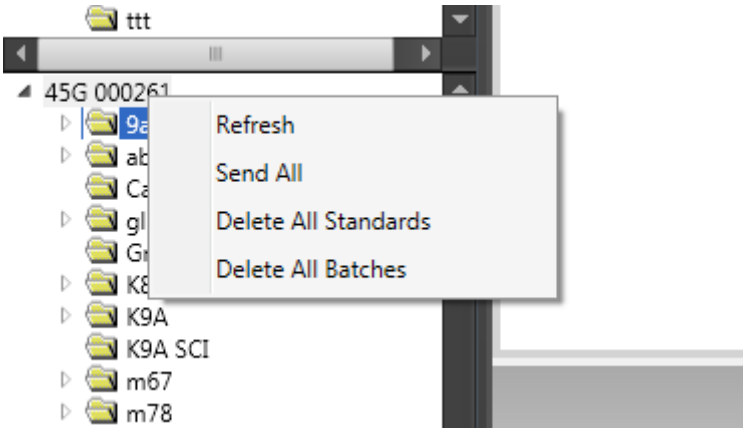
To send all standards from the DC Tools desktop to the Datacolor 45 instrument,
Press the Send ALL STDS button installed on the Home bar at the top of the screen.

Loading Standards from Datacolor 45 to DatacolorTools Desktop

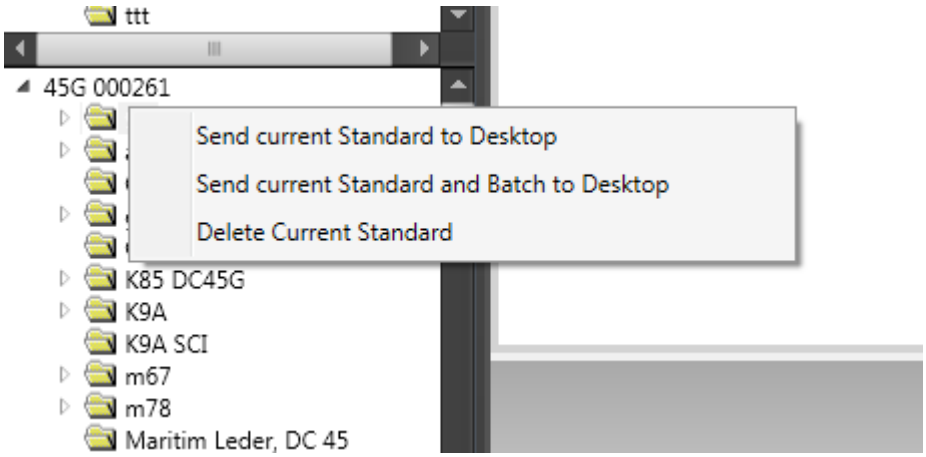
When connecting the device to DC Tools (via USB or Bluetooth) the unit will be shown in DC Tools Explorer as flashdrive.



Right mouse click on instrument name/serial number will give 4 different options to load data or delete data from the unit to DC Tools, it is also possible to “refresh” the status of the instrument connection.

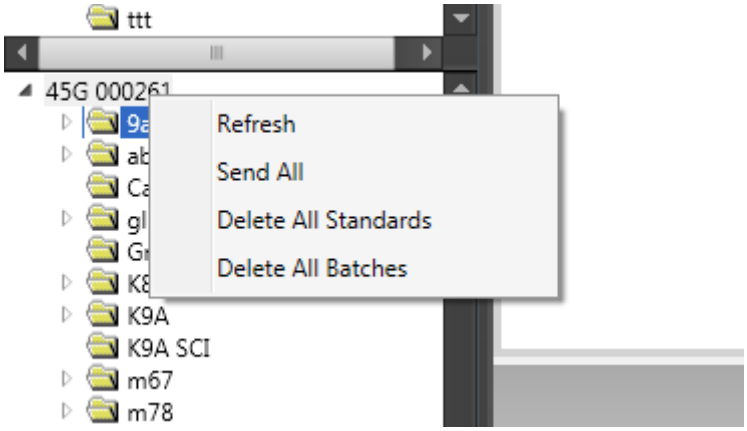


Right mouse click on a selected Standard will give 3 different options to load data from the unit to DC Tools.



Transferring Batches into Datacolor Tools from Datacolor 45 Instrument

After measuring batches, reconnect Datacolor 45 to the DC Tools software. The instrument will again reappear in the Tools Explorer window as a Mass Storage Drive. To send all Batches to the Tools Desktop , right-click on the Instrument name and select SEND ALL:

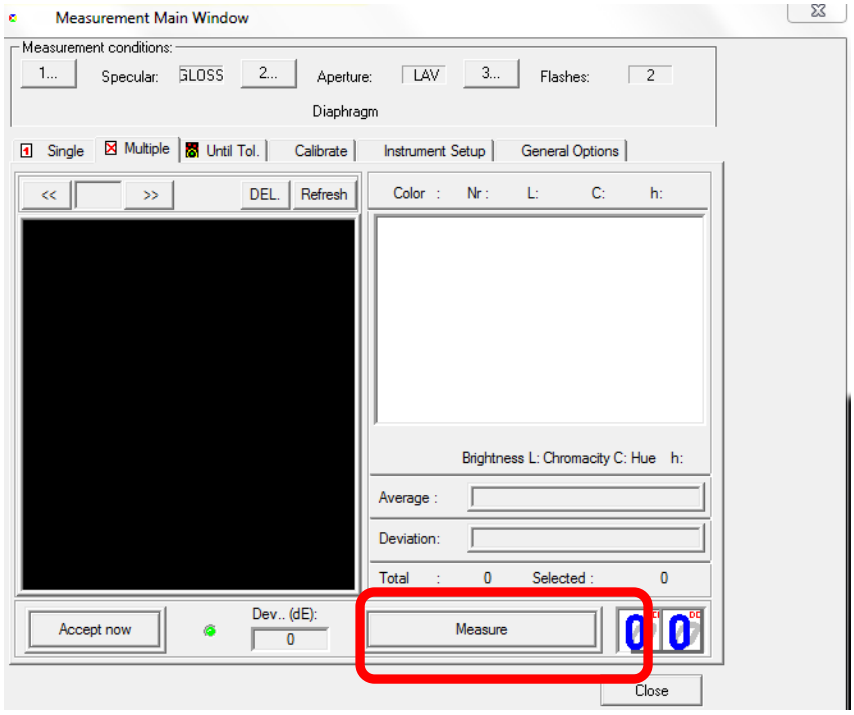


Measuring Standards/Batches directly into the Datacolor Tools Desktop

Datacolor 45 can measure standards and batches directly into the Tools Desktop.

In this mode, Datacolor 45 acts like a desktop instrument and does not store or display data.

Measurements can be released either by using the “Measurement Main Window” directly or pushing directly the measurement button at the unit.

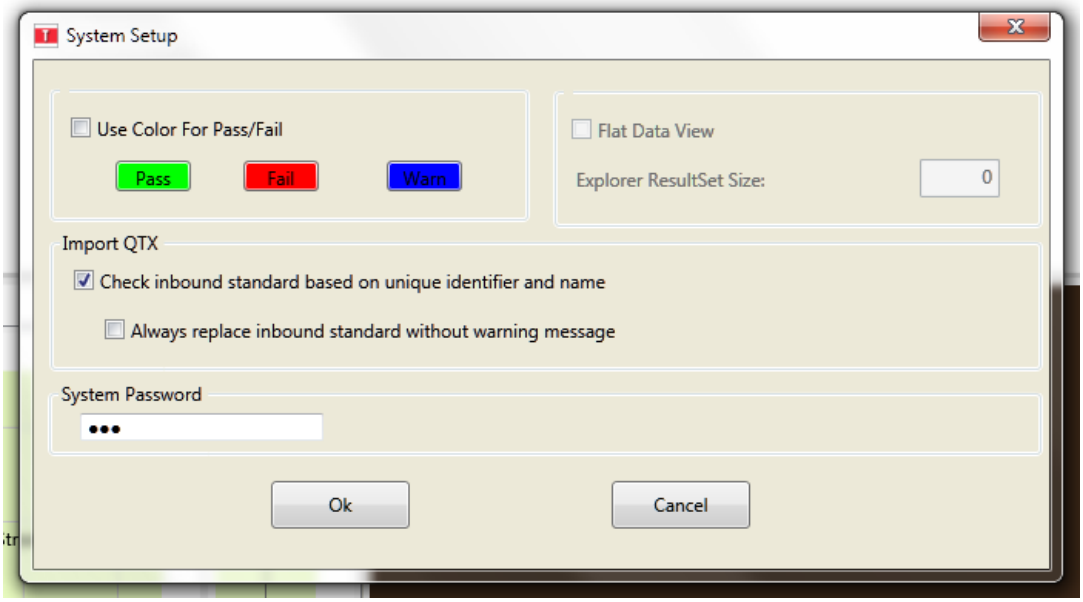


! Important Note:

Instrument must remain in PC Access mode when communicating with the Tools Software.

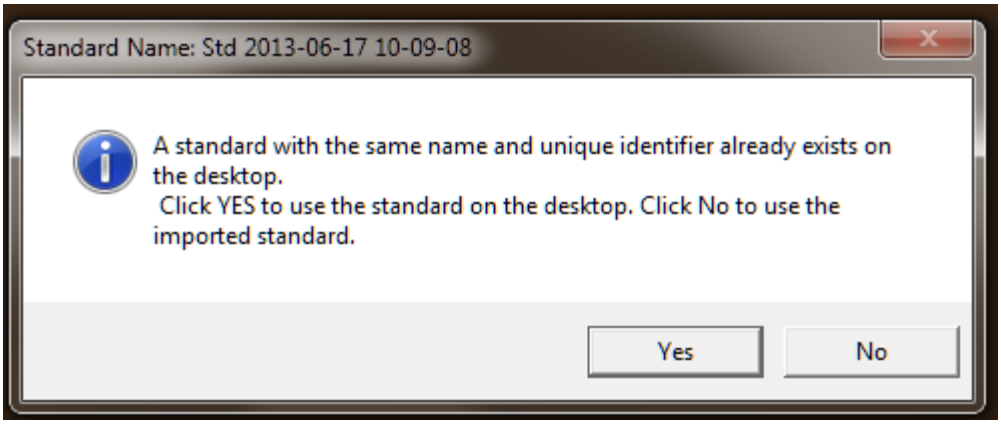
Datacolor Tools set up (only importing batches from Datacolor 45)

If the Import QTX setting (shown below) is not checked then a new standard is automatically created on the desktop when retrieving only batches from Datacolor 45.

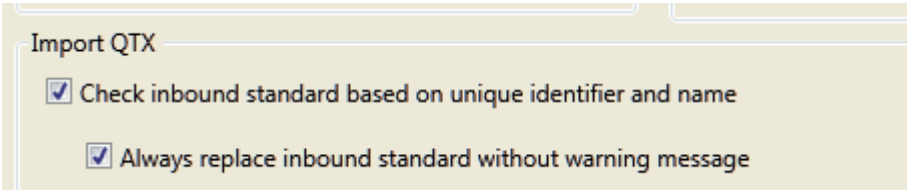


If this option is checked, the following dialog is displayed. If I choose YES, then we use the desktop standard and

if choosing NO a new standard is created on the desktop.



If the second check box is checked as shown below, then it will use the desktop standard without prompting.

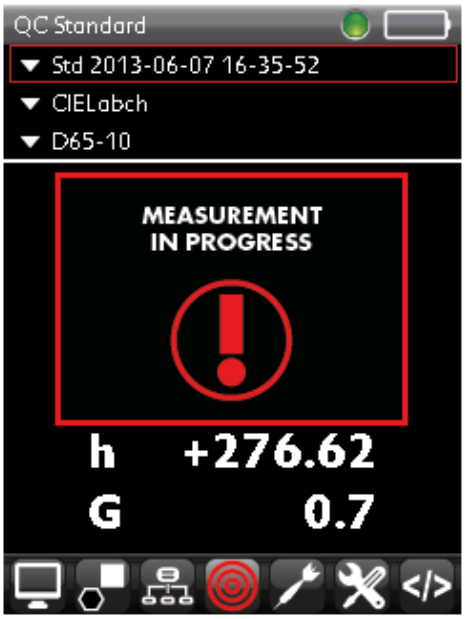


Stand-Alone Operation

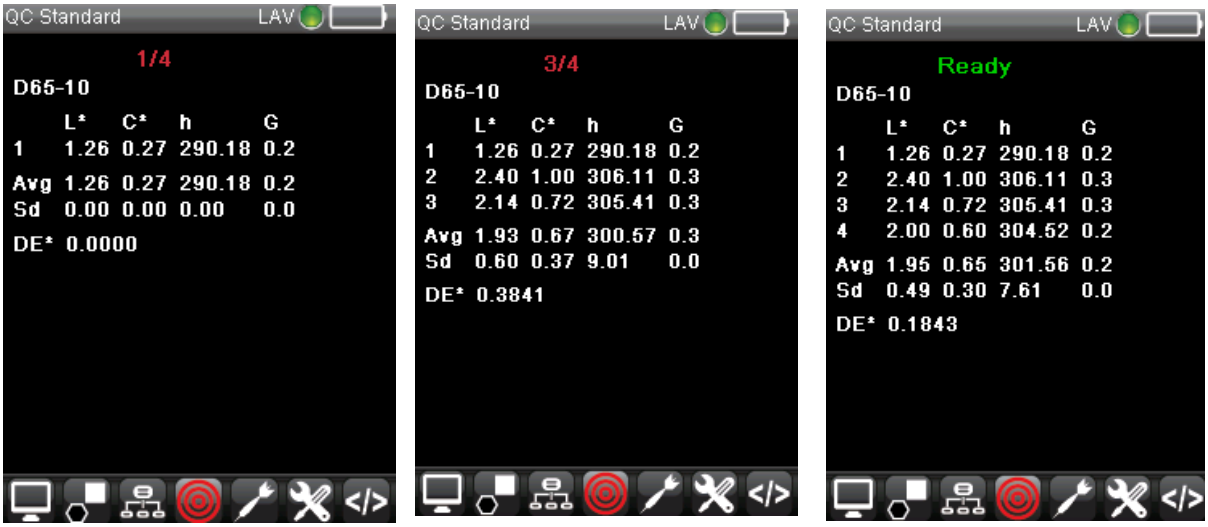
Standards & Batches

Measure new Standard

Select Standard menu with left and right navigation, press measurement button to measure new standard

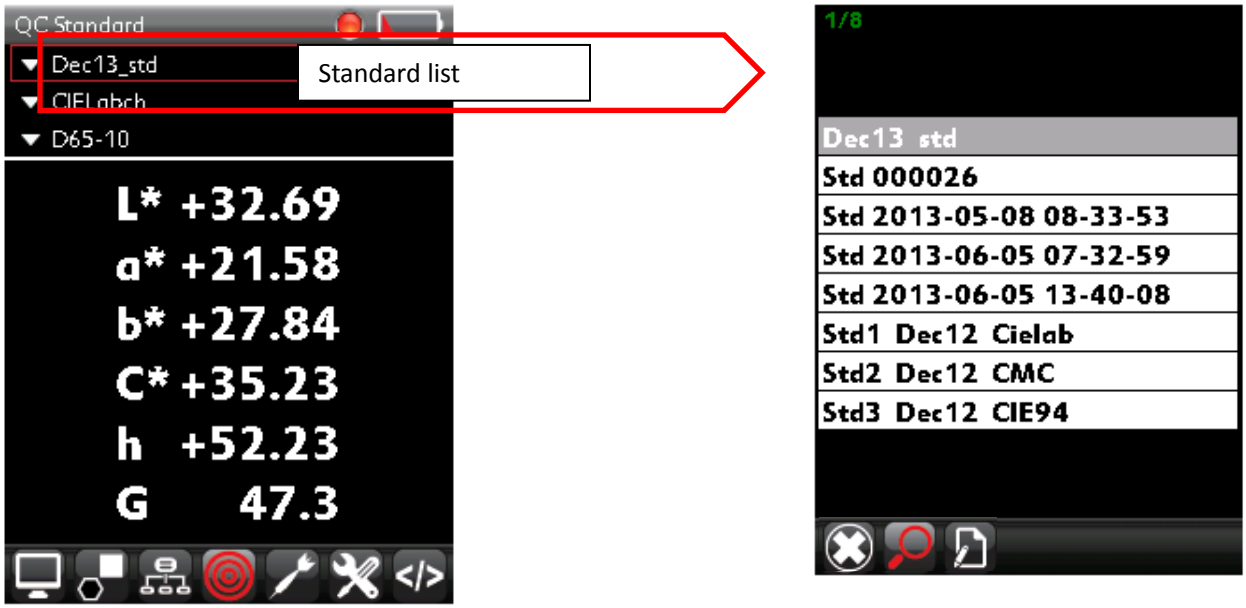


Depending on setting for “multiple measurement” 1,2,3..measurements have been done using measurement buttons. After multiple measurements press ok to save the measurement

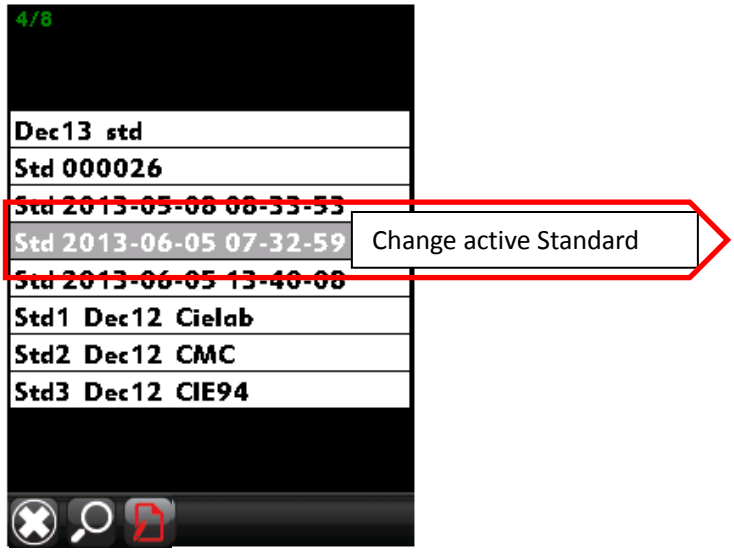


Hit OK to save standard, depending on “naming” setting, auto name will be given or name has to be typed in with the keyboard (see page 47)

Use current Standard from instrument

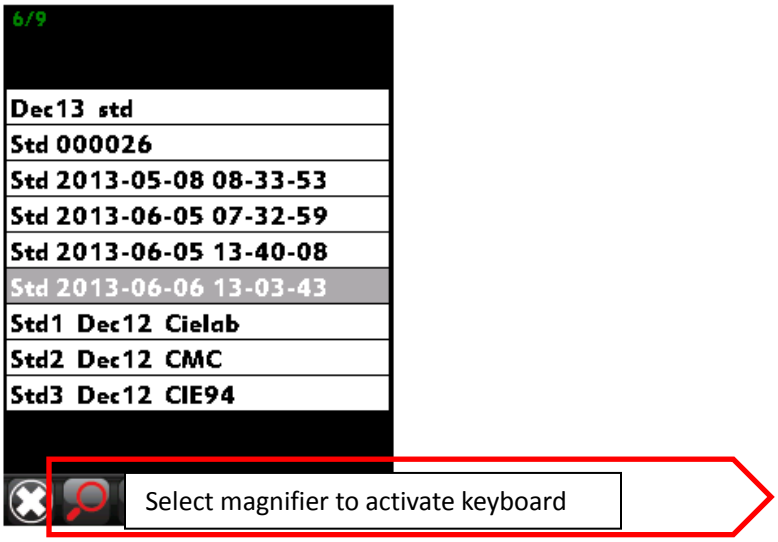


Hit OK to see Standard list on instrument

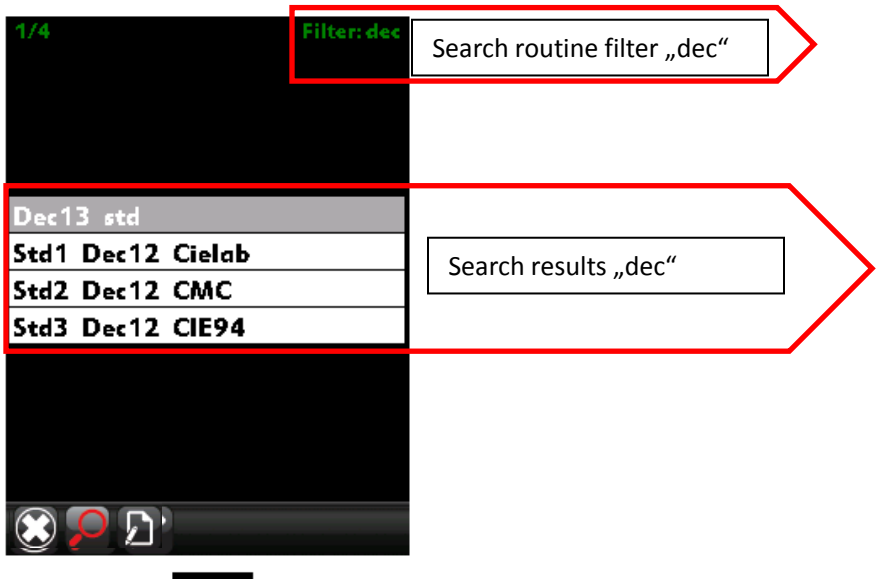


Use Up and Down button to select standard and hit OK

Search and Find Standards



Select magnifier to activate keyboard and type in Search routine (e.g. “dec”)



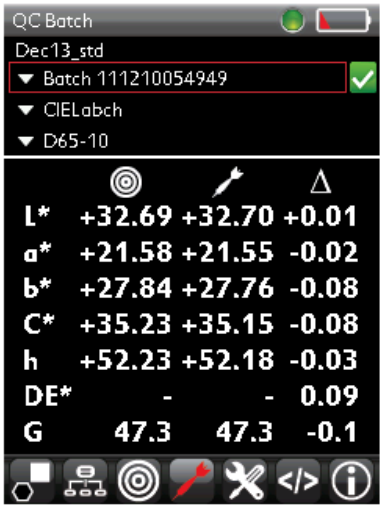
All Standards found with “dec” are listed on screen, select with OK

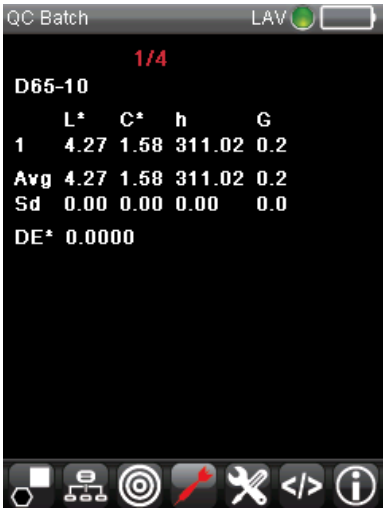
Measure new Batch:

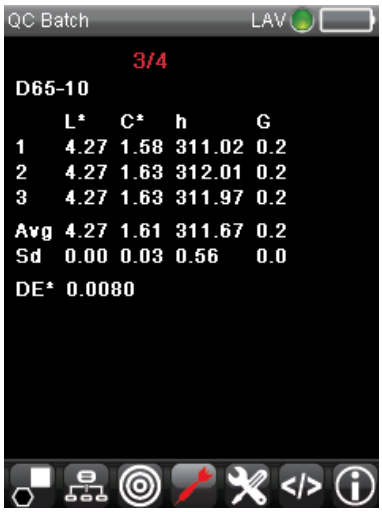
Measure new Batch vs. stored Standard

If there is no batch available, the screen will display this message

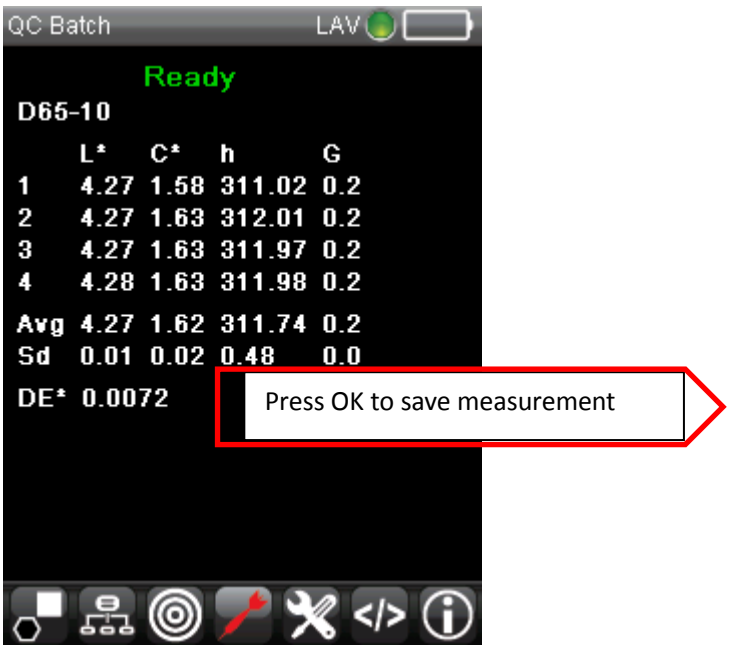
Select Batch menu with left and right navigation, press measurement button to measure new batch, batch will be compared with current Standard in Standard menu







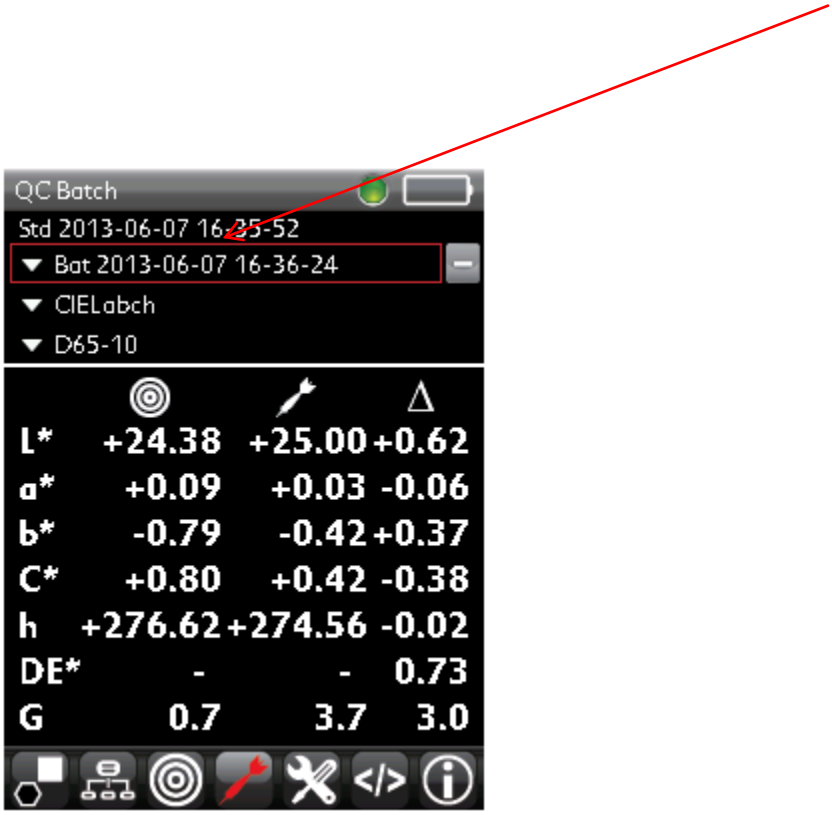
Depending on setting for “multiple measurement” 1,2,3..measurements have been done using measurement buttons. After multiple measurements press ok to save the measurement



Press OK to save measurement

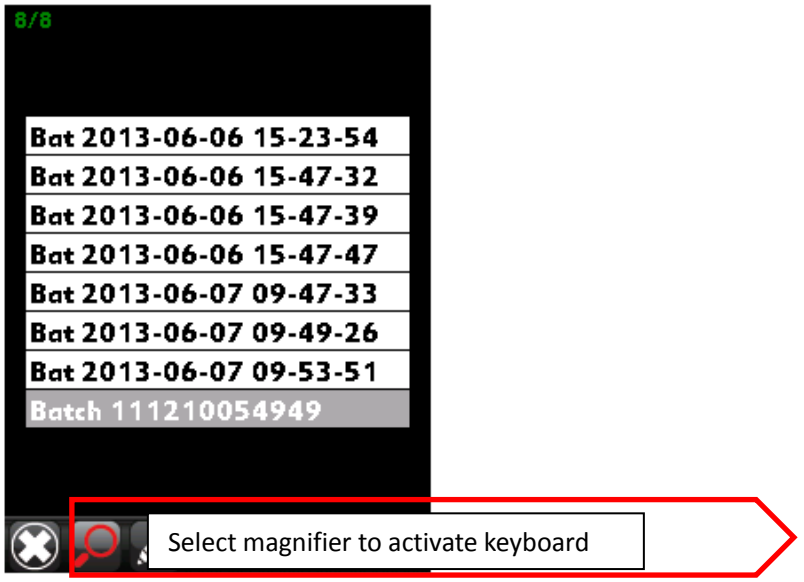
Depending on “naming” setting, auto name will be given or name has to be typed in with keyboard (see page 47)

Standards and Batch results will be shown on screen (depending on the screen form selection, see page 47)

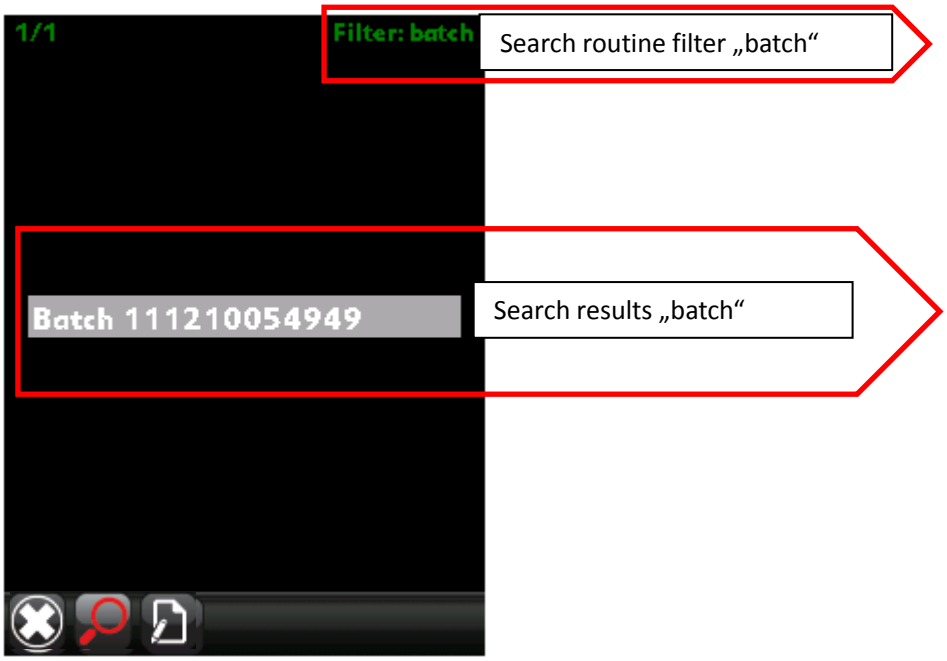


Search and find stored Batches

Use up and down buttons to find stored batches, press ok to change  current batches



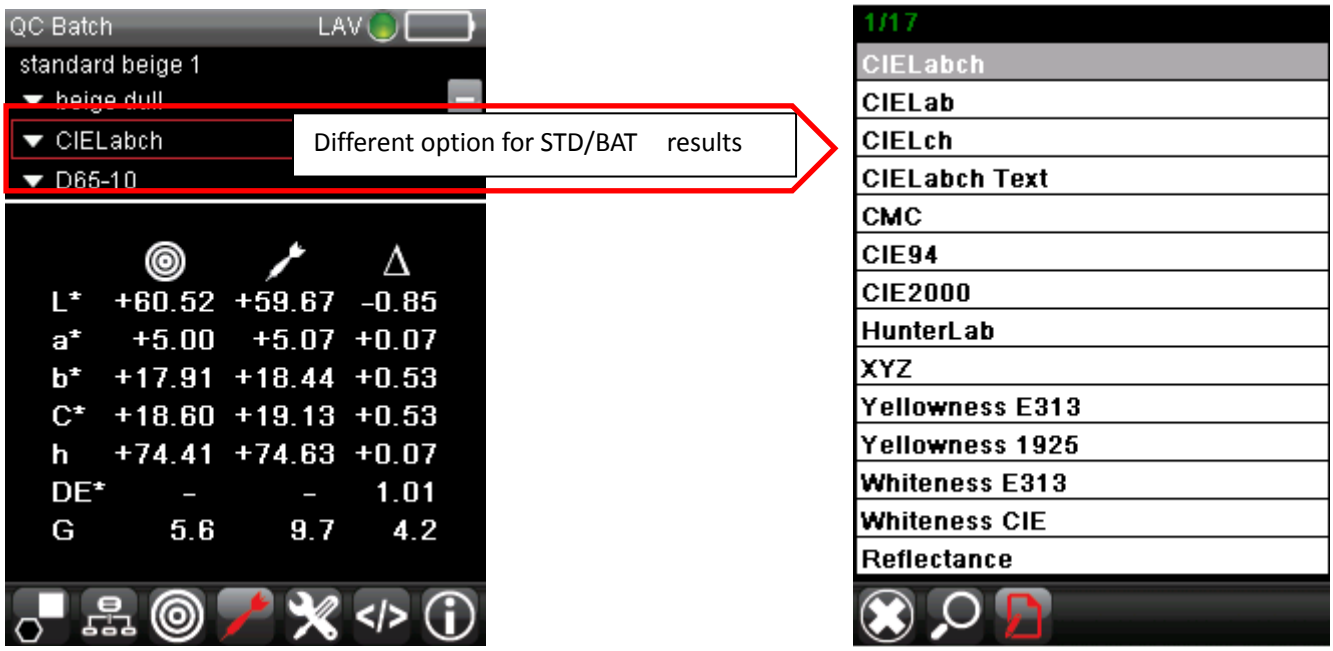
Search batches starting from a name using magnifier and filter (e.g. “batch”)



All Batches found with “batch” are listed on screen, select with OK

Results Standard/Batch options

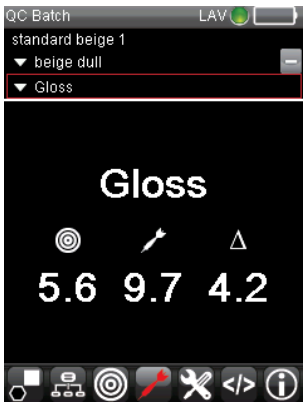
STD/BAT results can be displayed differently. Use up and down, press OK to select different options (14)



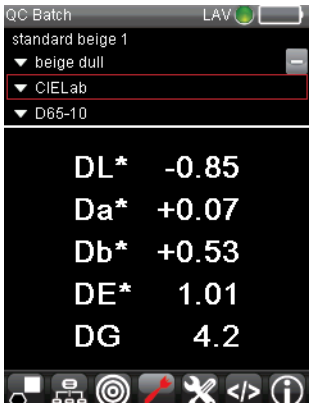
Use up and down buttons for selected other option, press OK to save selection.

CIELab Text

Gloss



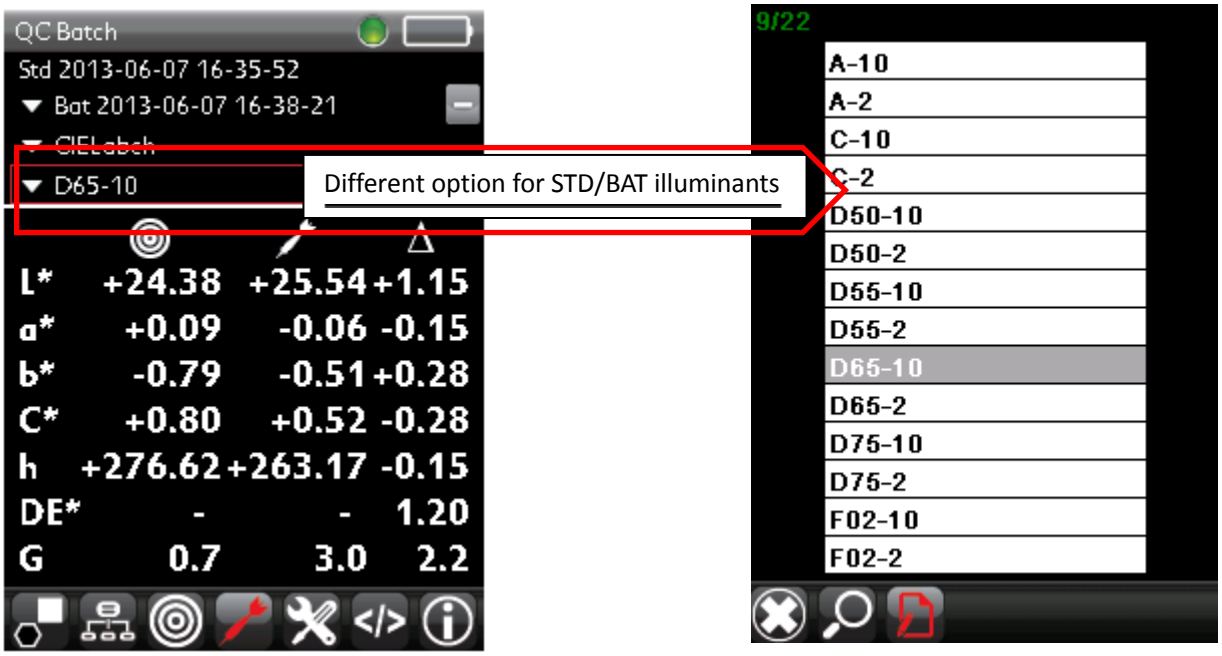
CIELab



CIE2000

Results Standard/Batch, illuminants:

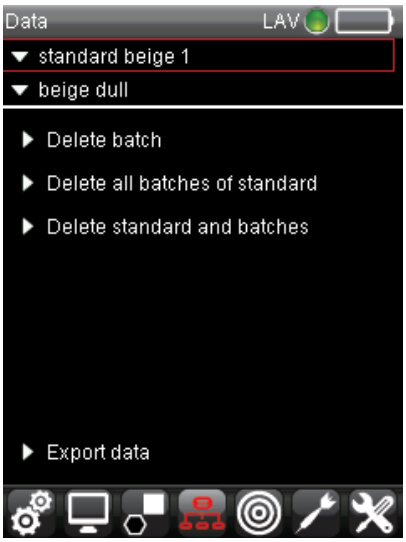
STD/BAT illuminants can be displayed differently. Use up and down, press OK to select different options



Use up and down buttons for selected different illuminant (22 are available), press OK to save selection.

Data:

Delete Standards/Batches:



→ List of Standards

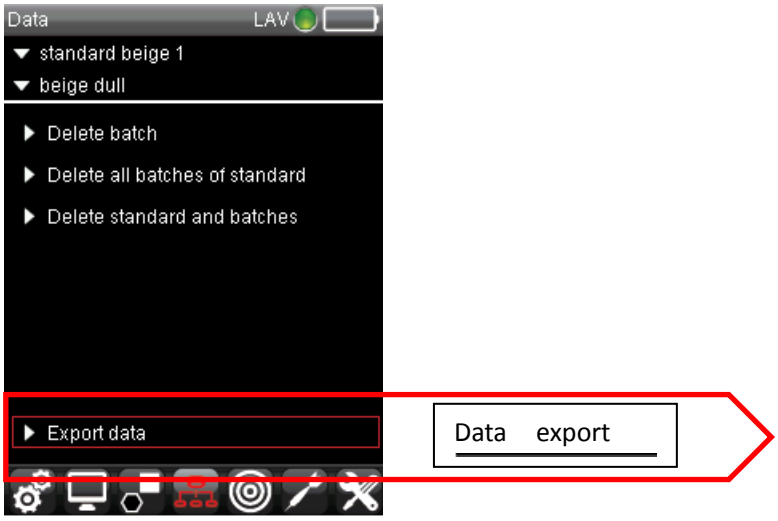
→ List of Batches

→ Will delete selected batch

→ Will delete all batches of selected standard

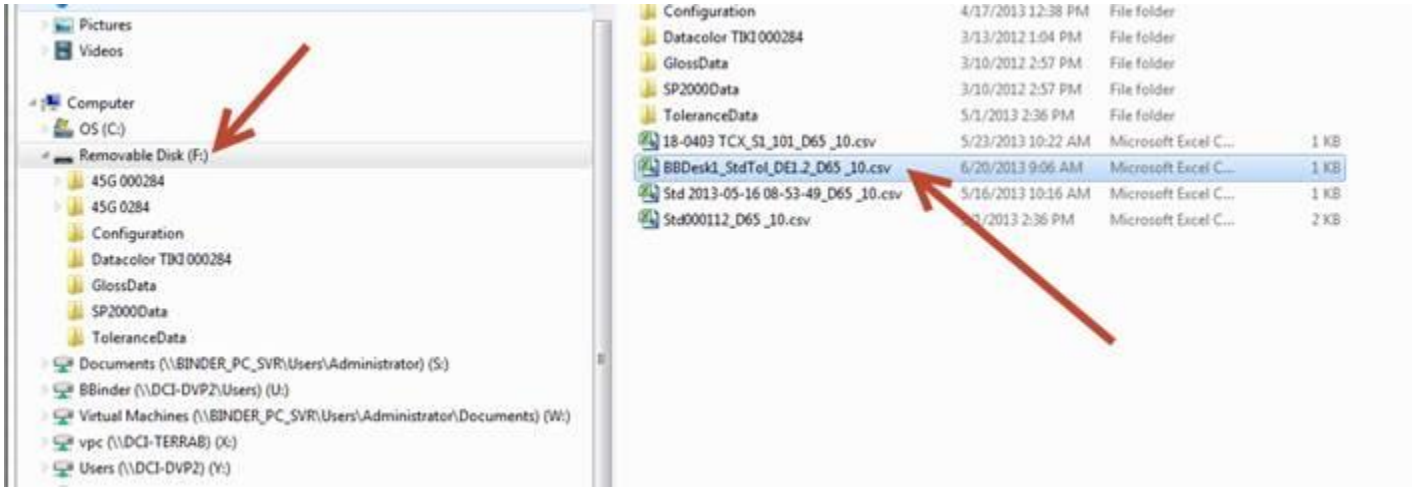
→ Will delete all standard and batches

Export data



Export is sending the data for a standard and its batches to a .csv text file.

The data is saved in the root folder of the device. If Datacolor 45 is set to PC Access mode , the data file is available in Win Explorer.

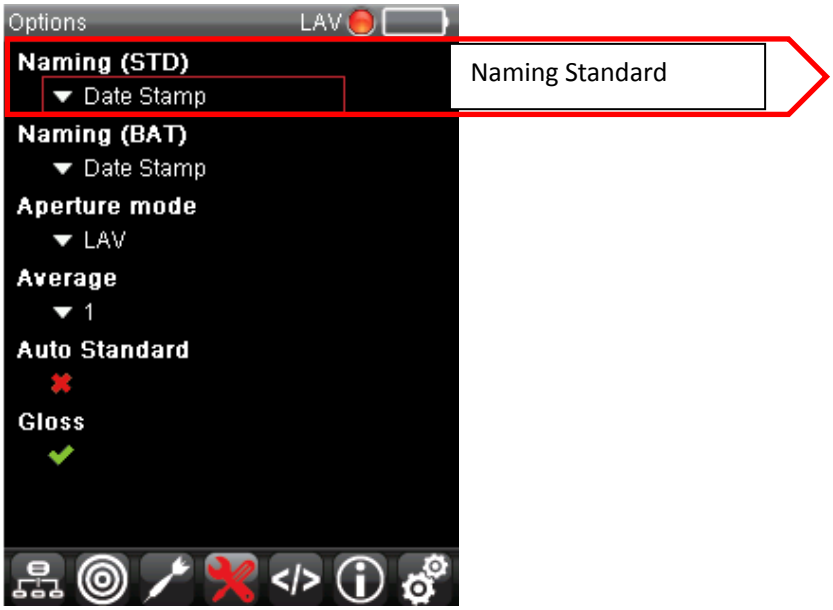


The following data is exported:

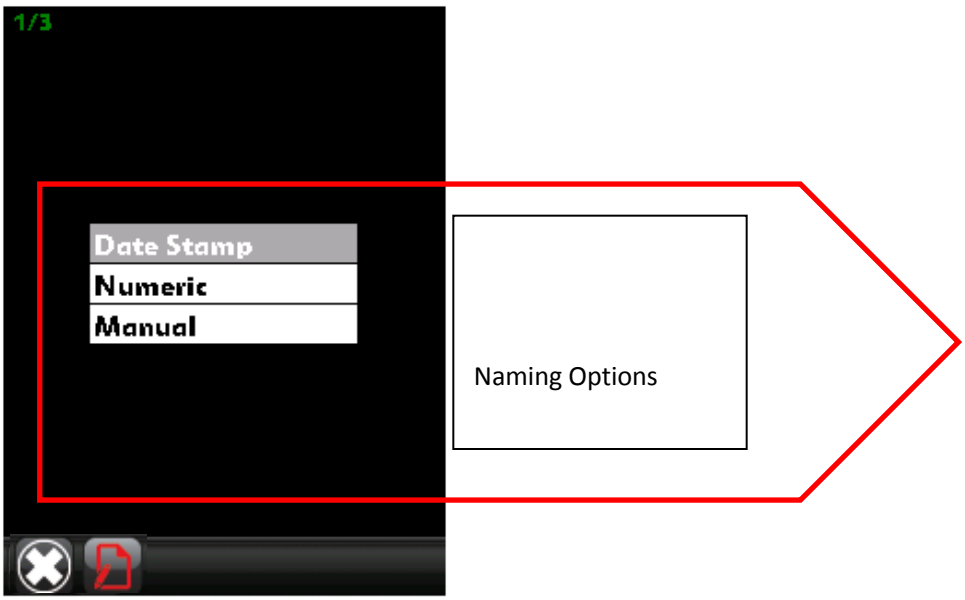
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Name	Illuminant	X	Y	Z	x	y	L*	a*	b*	C*	h	DX	DY	DZ	Dx	Dy	DL*	Da*	Db*	DC*	DH*	DE*	G	DG	Pass\Fa
2	BBDesk1_StdTol_DE1.2	D65-10	5.01	4.39	2.39	0.42	0.37	24.91	11.27	14.25	18.17	51.65														
3	Bat 2013-06-14 11-53-43	D65-10	5.21	4.53	2.43	0.43	0.37	25.36	11.75	14.73	18.84	51.43	0.2	0.15	0.04	0	0	0.46	0.47	0.48	0.67	-0.07	0.82	13.9		Pass
4	Bat 2013-06-14 11-53-51	D65-10	4.57	4.07	2.42	0.41	0.37	23.91	9.95	12.27	15.8	50.95	-0.44	-0.31	0.03	-0.01	0	-1	-1.32	-1.98	-2.37	-0.2	2.58	12.7		Fail
5	Bat 2013-06-14 11-54-05	D65-10	4.74	4.22	2.54	0.41	0.37	24.4	10	12.25	15.81	50.79	-0.27	-0.16	0.15	-0.01	0	-0.5	-1.28	-2	-2.36	-0.25	2.42	13.4		Fail
6																										

Options

Naming Standards

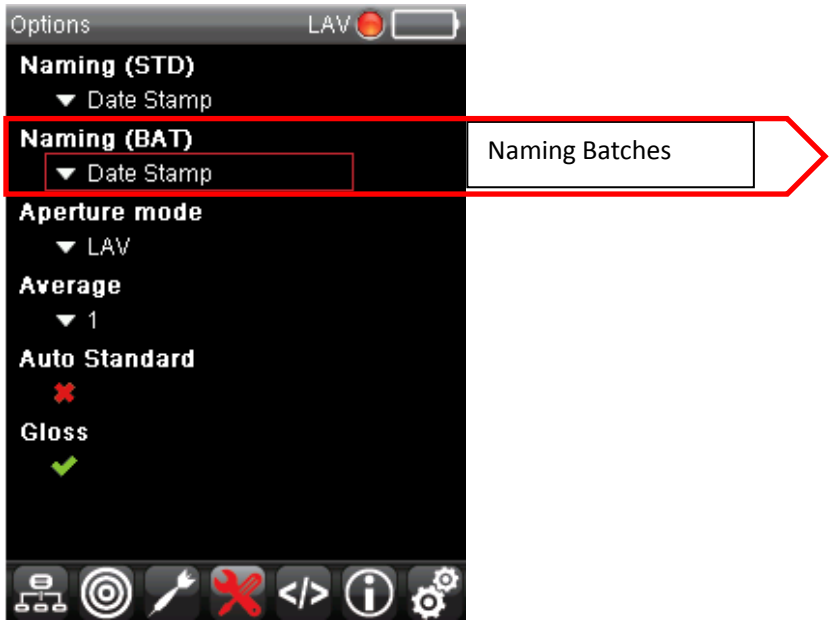


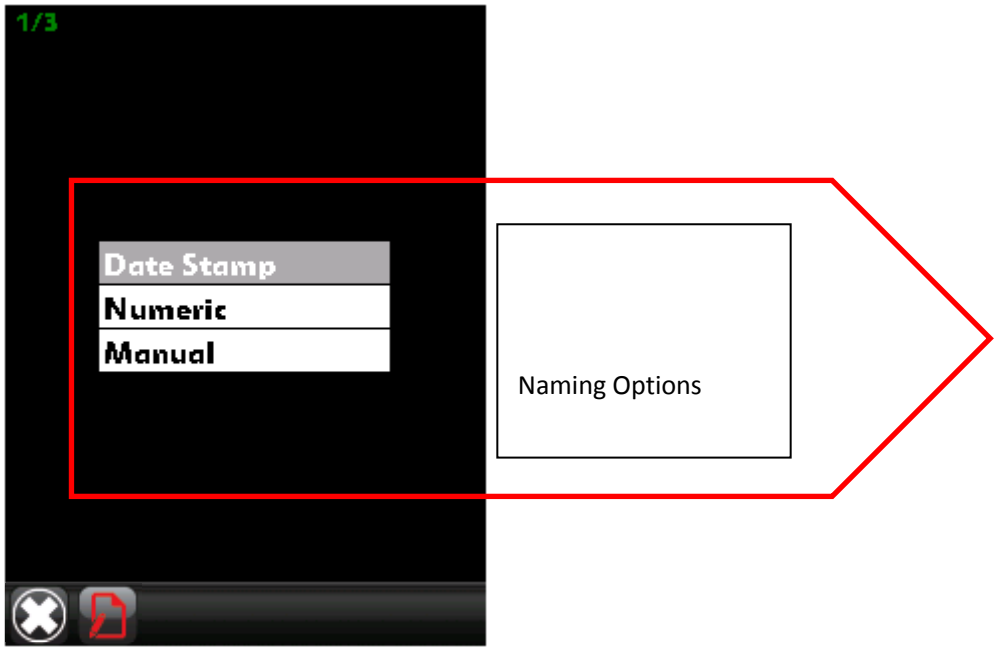
Press OK to select Naming options



Select “Date Stamp”, “Numeric” or “Manual” and press OK to save.
If selecting “Manual” names can be given after the measurement by using the integrated keyboard.

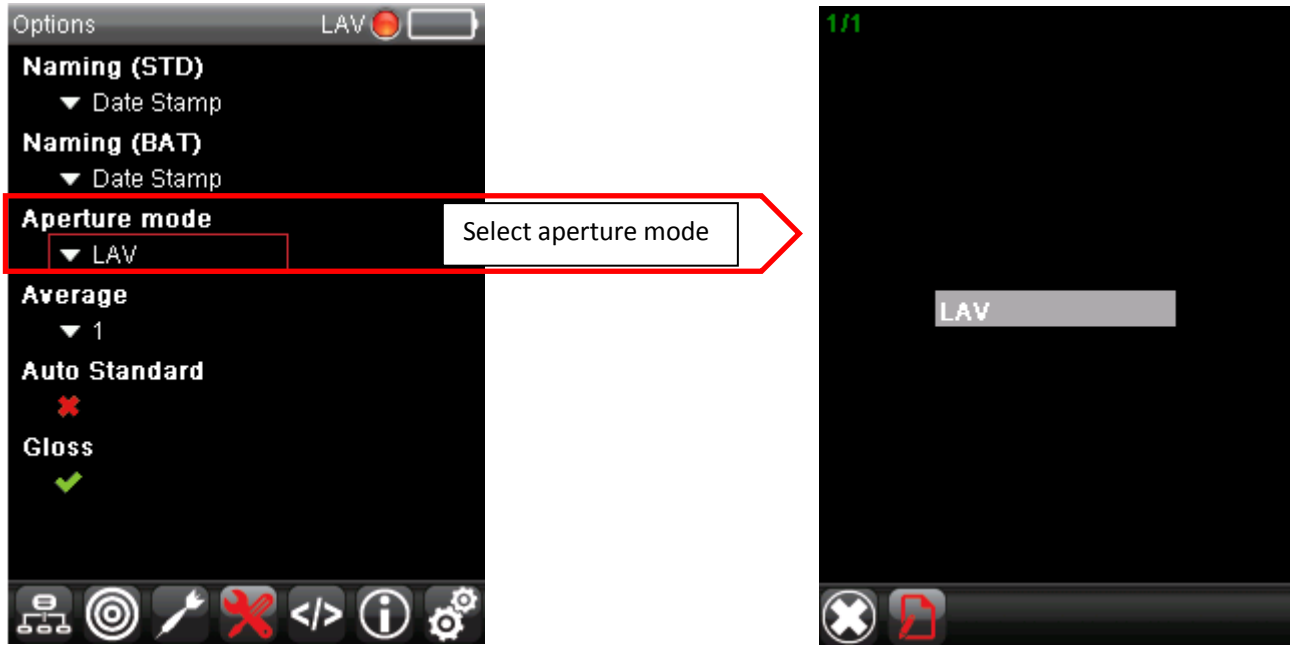
Naming Batches



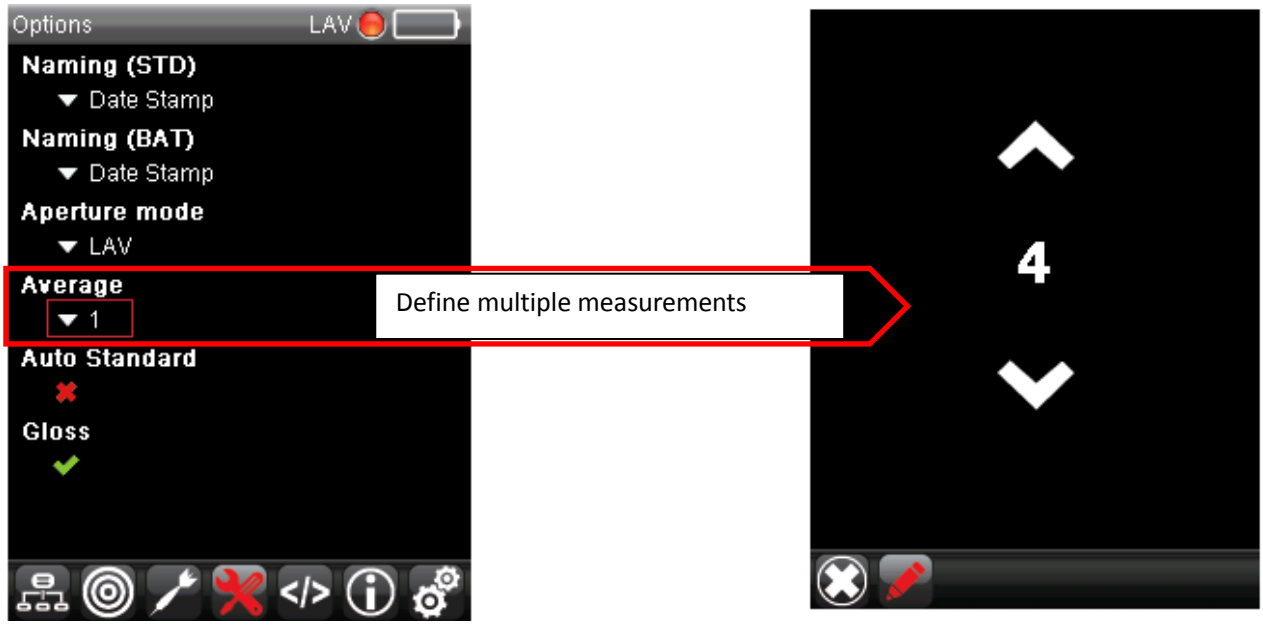


Select “Date Stamp”, “Numeric” or “Manual” and press OK to save.
If selecting “Manual” names can be given after the measurement by using the integrated keyboard.

Aperture Mode



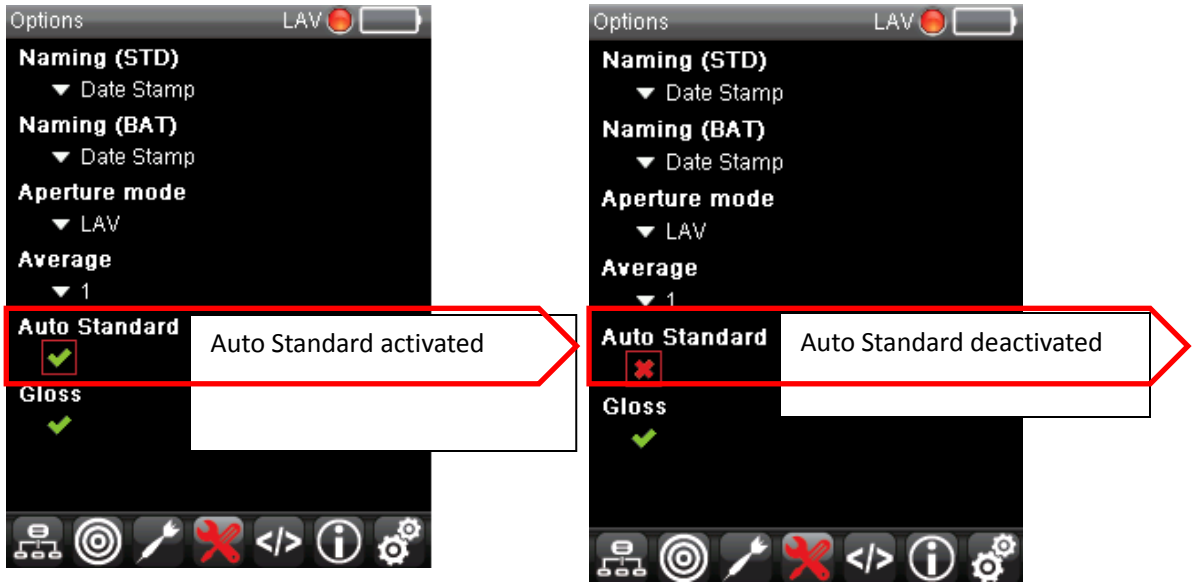
Multiple / Average Measurements



Select numbers of measurements and press OK to save setting.

Auto Standard

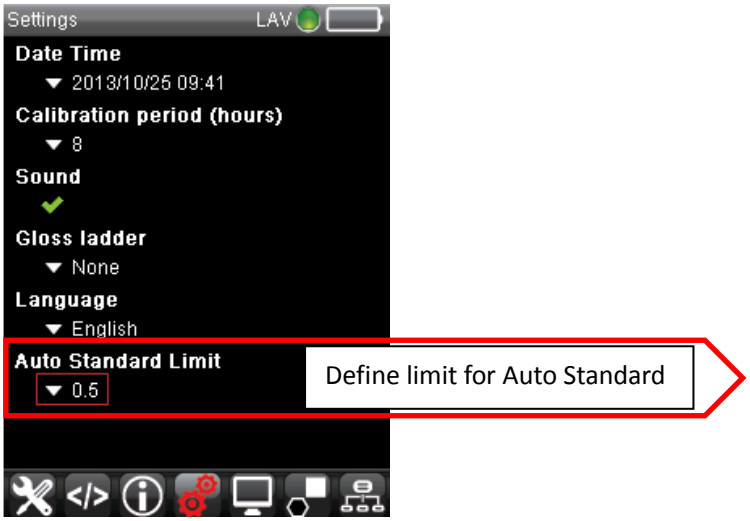
Press OK to activate or deactivate.



When selected this option during a Batch measurement the application will look for the closest standard (closest checking DE in D65-10) from all the existing standards in the system and associates the measured batch to this standard.

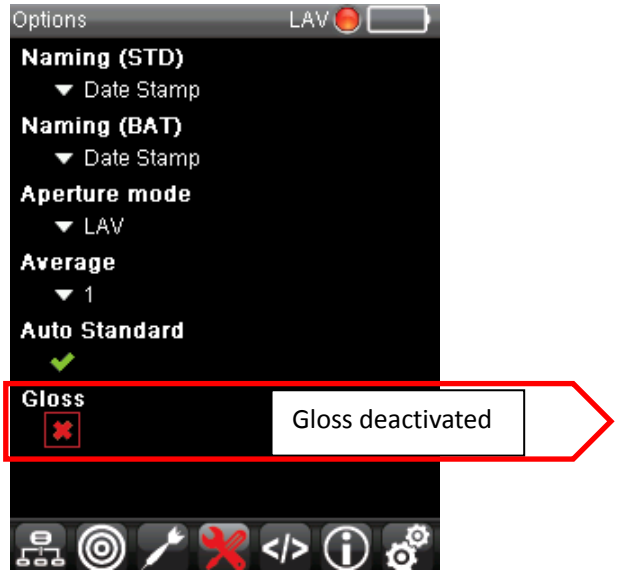
Optionally the user can set an Auto Standard Limit in Settings screen to a different value than 0.0 and that means the standards near to the selected standards beyond this limit will be also displayed for selection (with possibility to check the DE and also the Gloss value of the standards). They will be listed in order of closest first.

See also “Settings” (page 21) to define “Auto Standard Limit”.



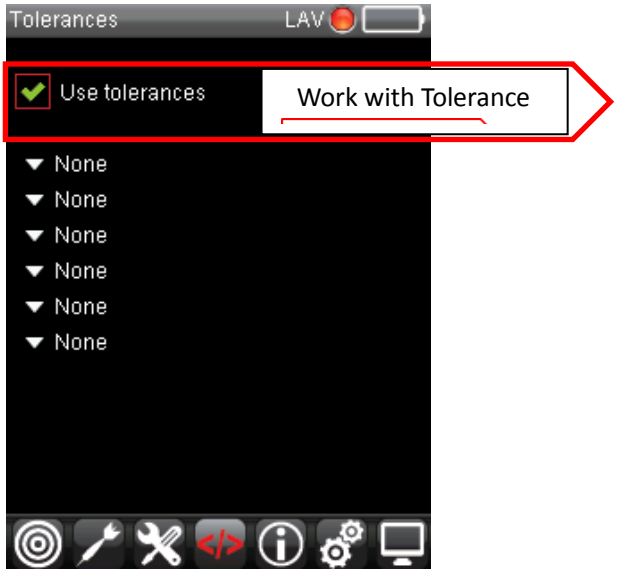
Gloss measurements

Press OK to activate or deactivate.



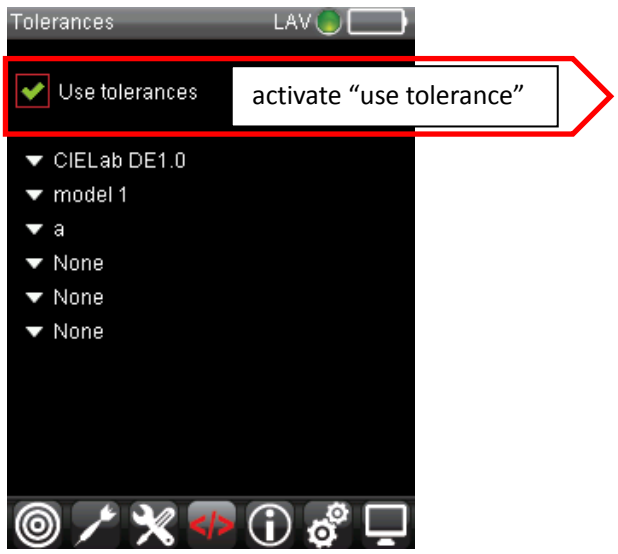
Tolerances

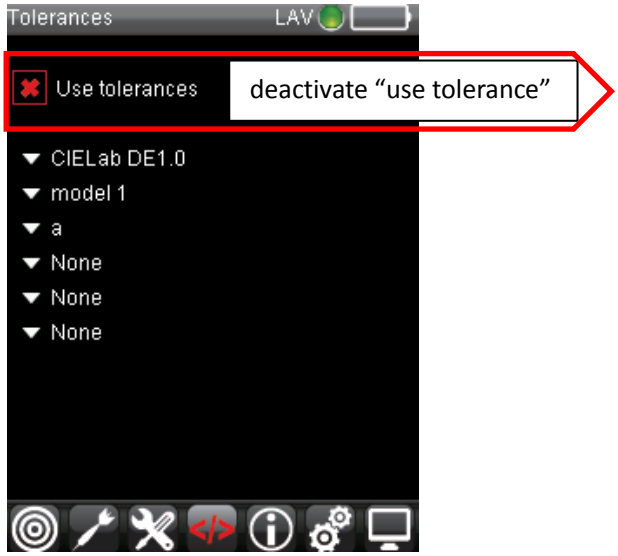
Press OK to activate or deactivate use of Tolerances.



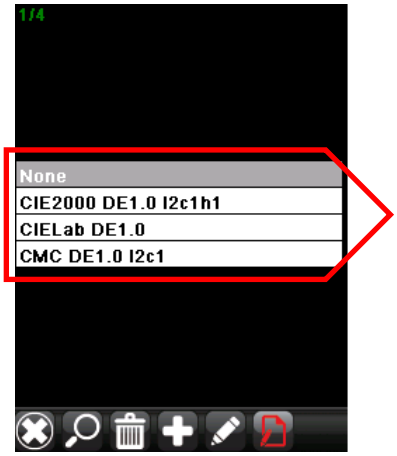
Selecting Tolerances

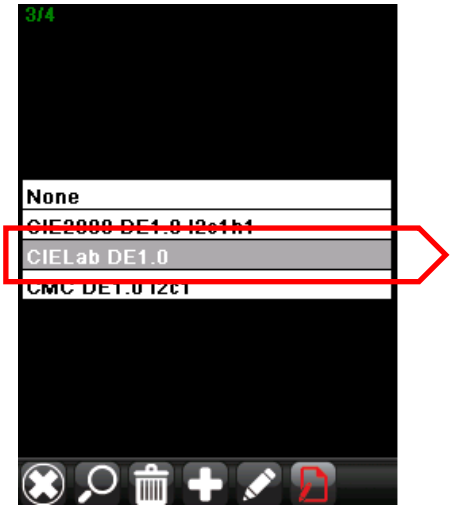
Use up and down buttons to define tolerances, press OK to select tolerance.

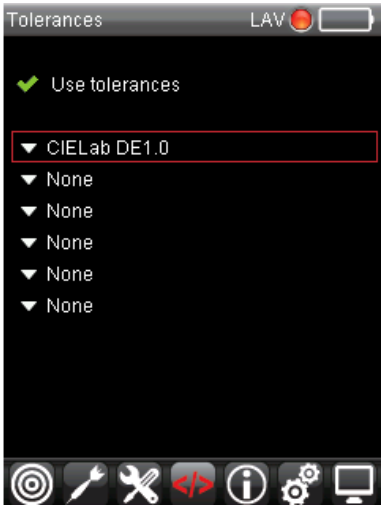




Select stored tolerance with up and down button, press OK to safe setting.

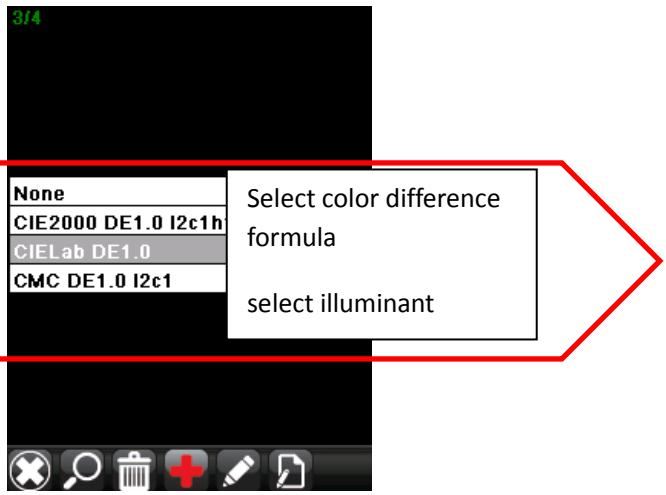


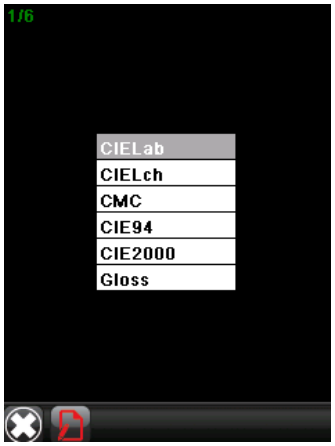


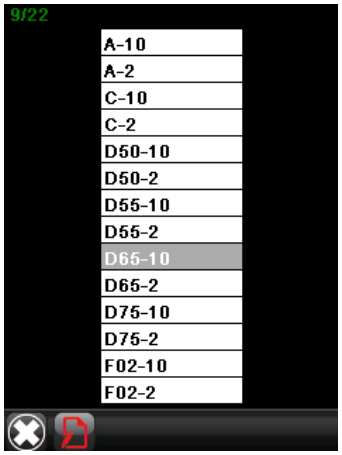


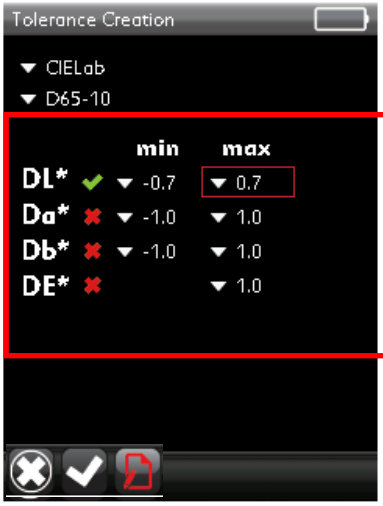
Edit Tolerances

Go to tolerance menu, select " + " in the sub menu to modify tolerance



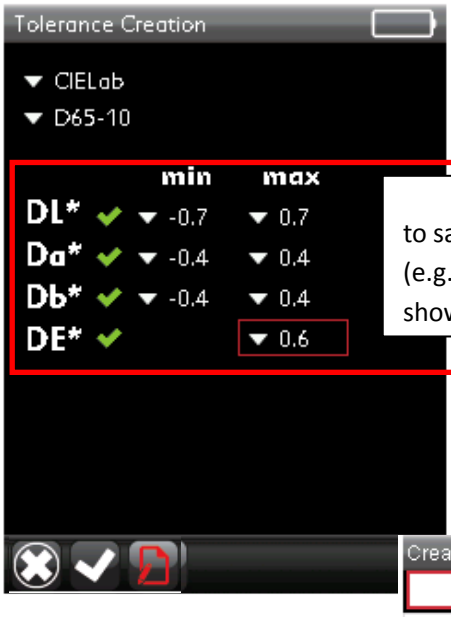




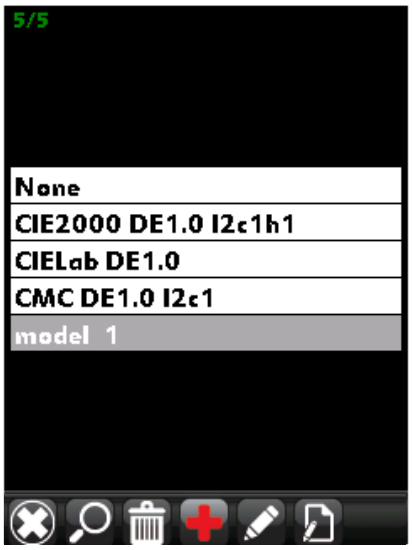


Use OK to activate single dE values (e.g. dL*), use up and down button to modify tolerance, max./min. value

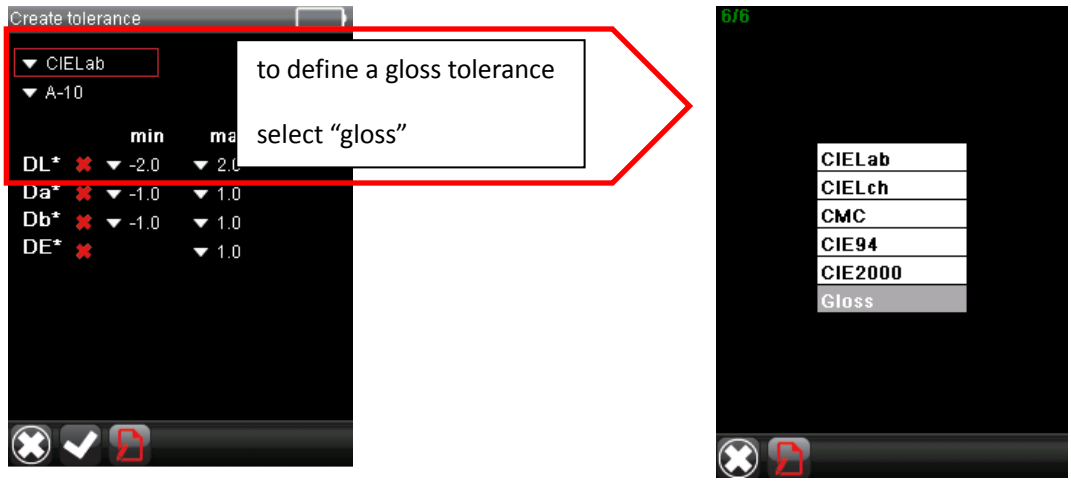
to switch between max./min. use button down, press OK



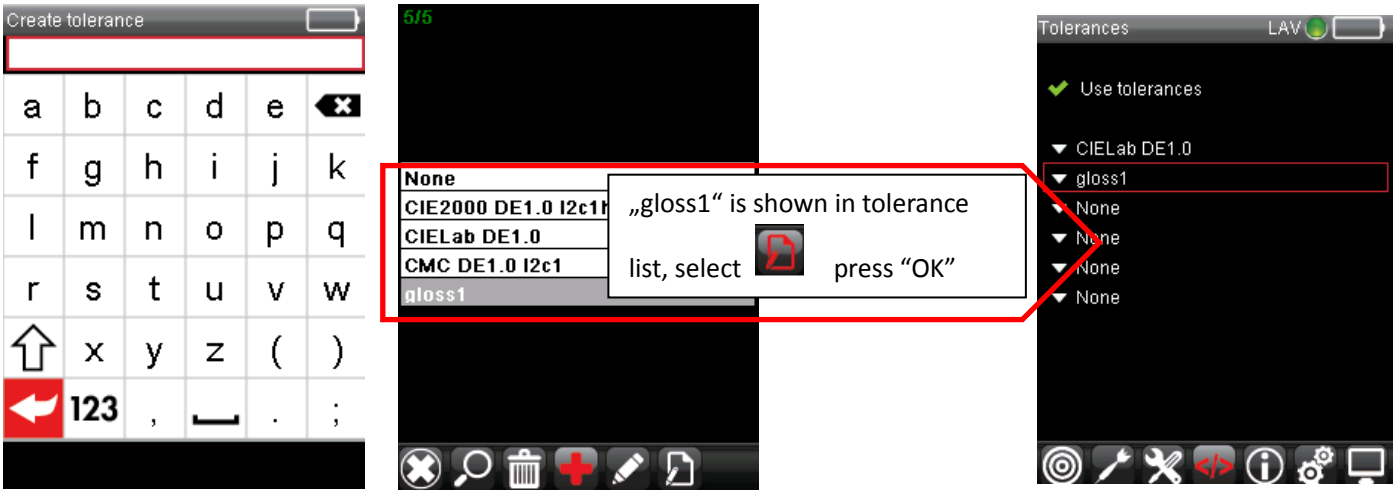
to save tolerance, select  , give name for tolerance (e.g. model 1) and press "OK", tolerance is saved and shown in the stored tolerances.



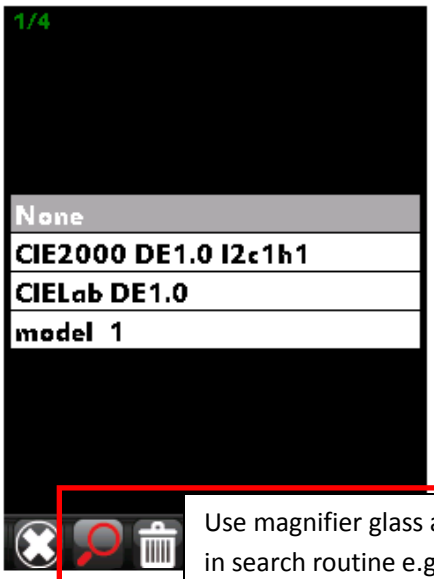
Define Gloss Tolerance



Define “min”, “max” for the gloss tolerance:



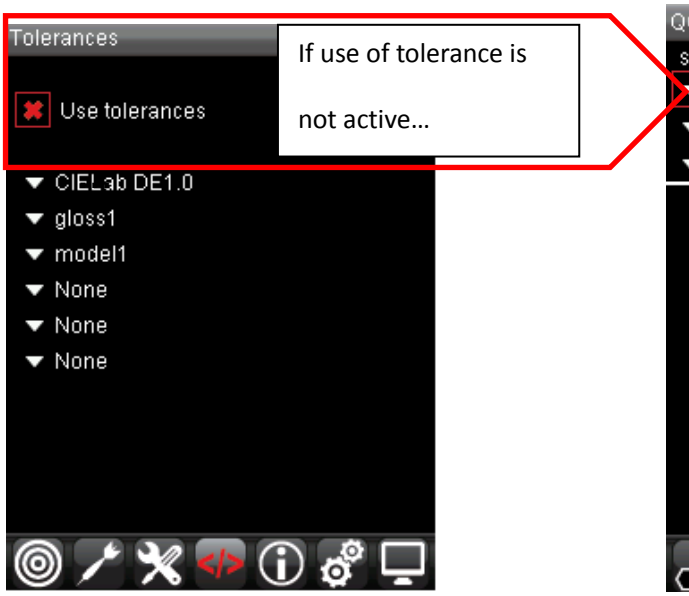
Searching for Tolerances



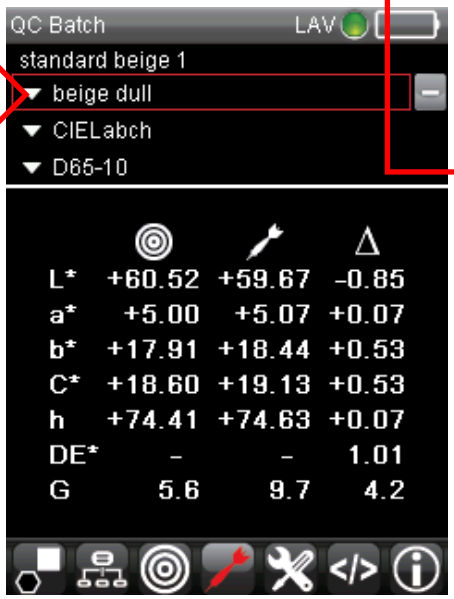
Use magnifier glass and type in search routine e.g. “cie”

All results starting with “cie” are shown on screen

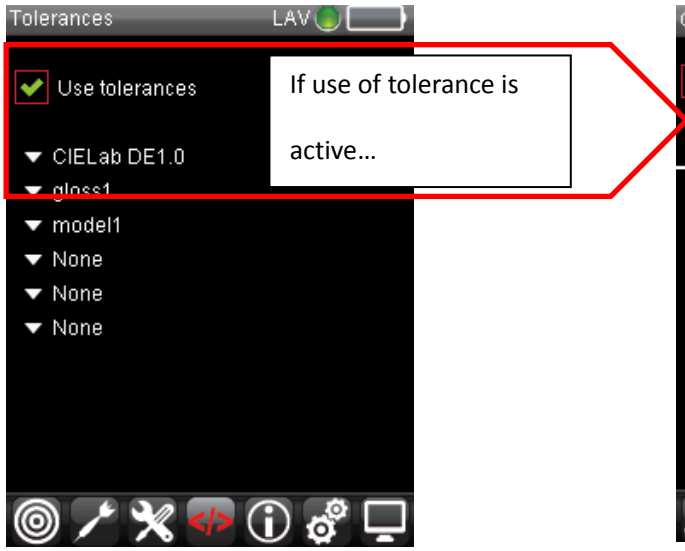
Work with Tolerances



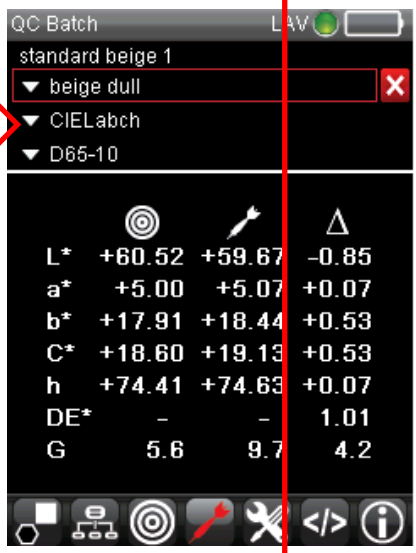
If use of tolerance is not active…



..this symbol  is showing in QC Batch that no tolerance is used



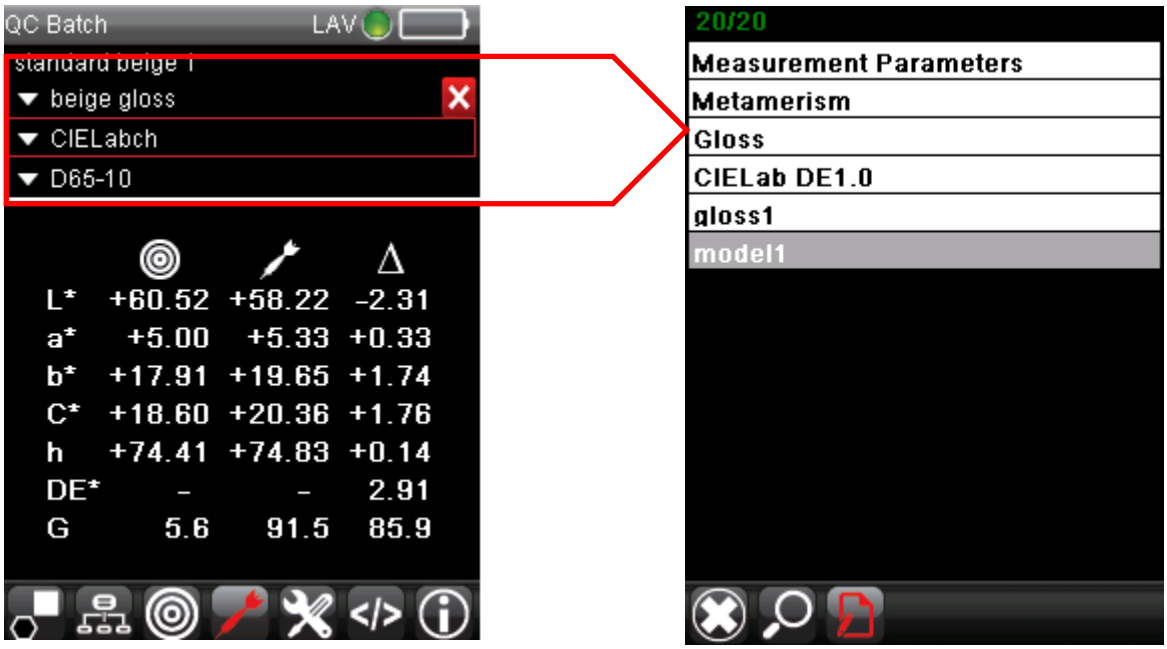
If use of tolerance is active…

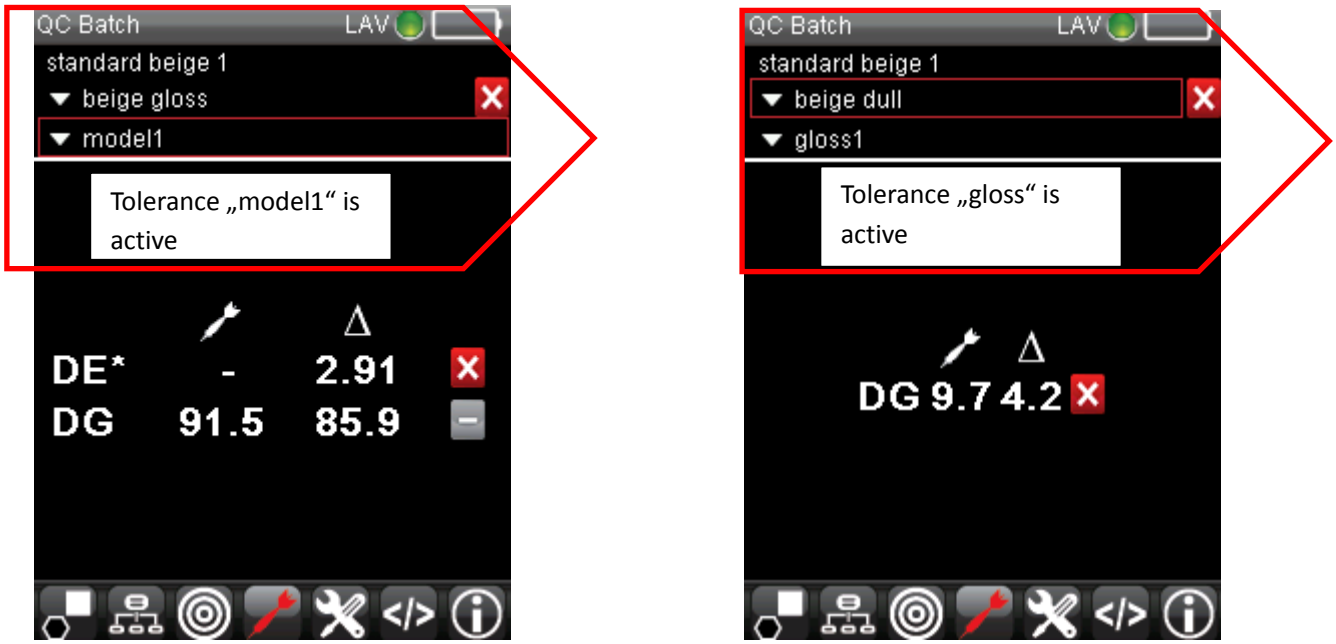


..this symbol is  showing in QC Batch that batch fails

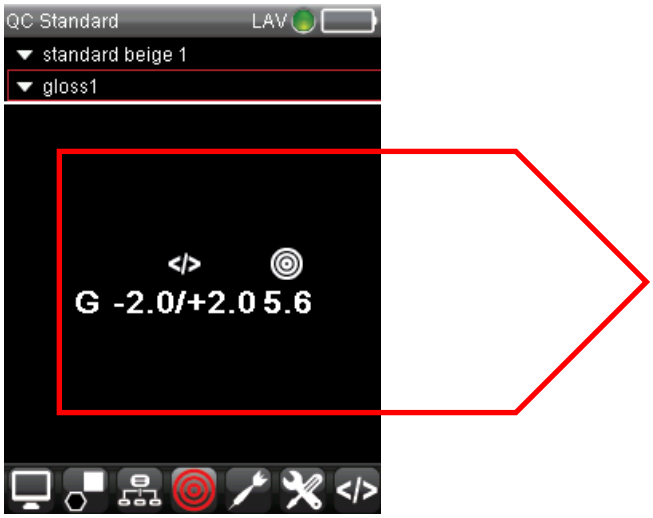
.. this symbol is  showing in QC Batch that batch ~~is pass~~passes

A tolerance is not related to a Standard. In QC batch the tolerance which should be used can be selected.



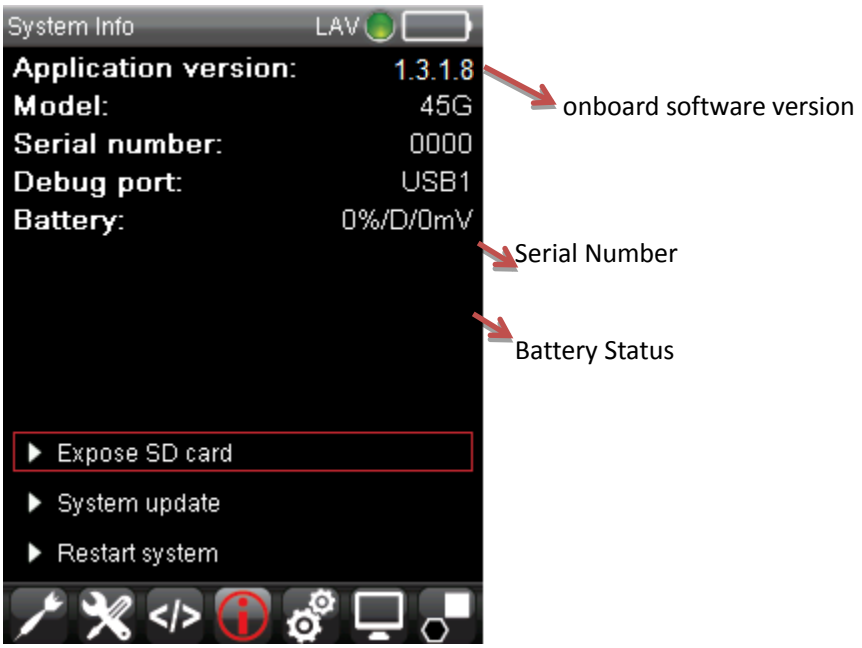


Min./Max. for tolerances can be seen in “QC Standard”, select tolerance e.g. “gloss1”

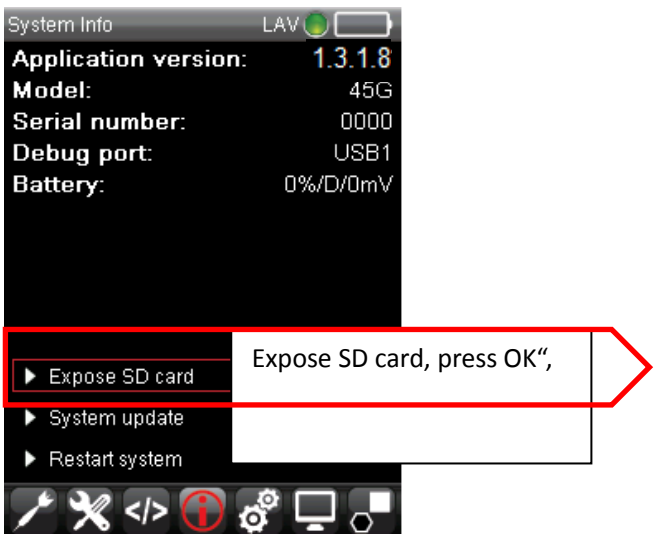


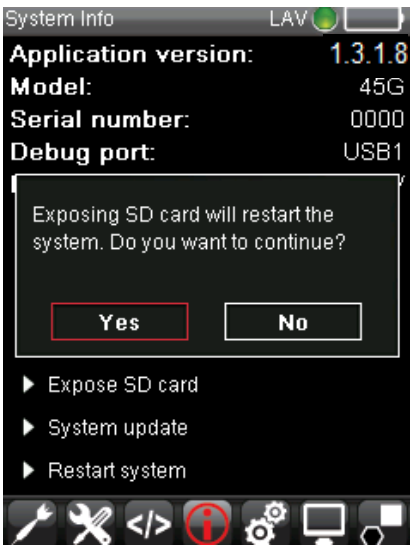
Delete Tolerances

System Info

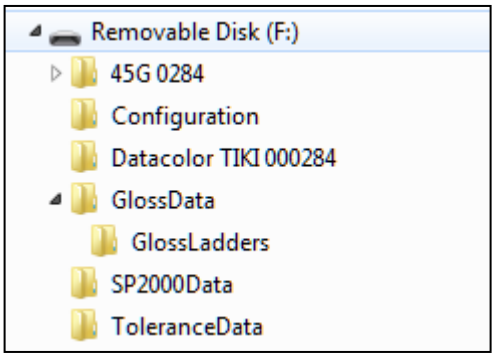


Connect DC45 with USB cable to computer.



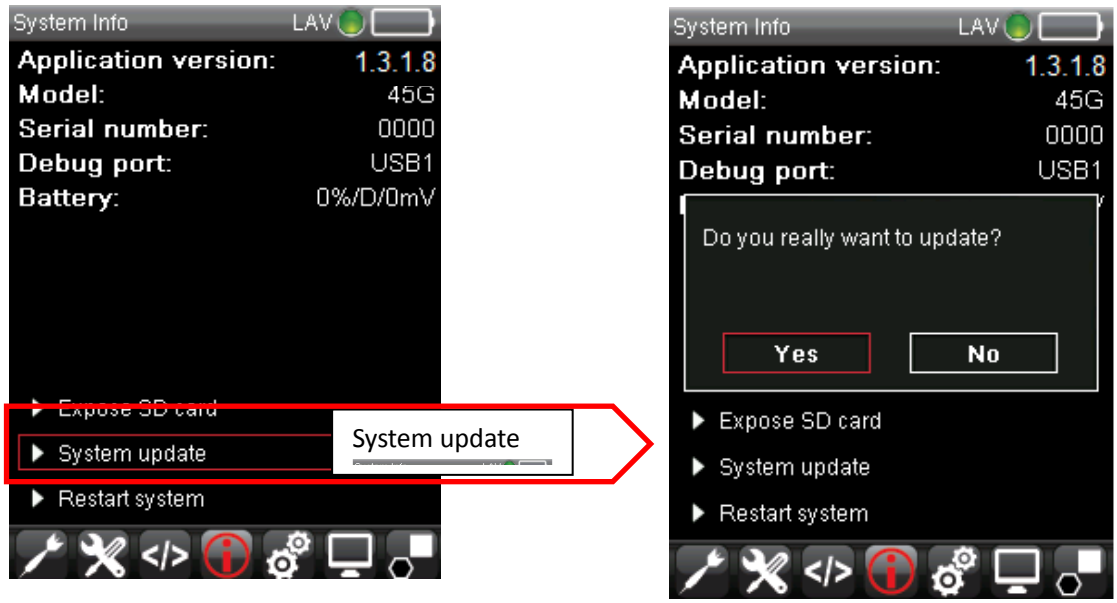


Select “expose SD Card”, “Yes”, will connect unit to computer as “removable disk”, content from SD card is visible, e.g. gloss ladders can be added



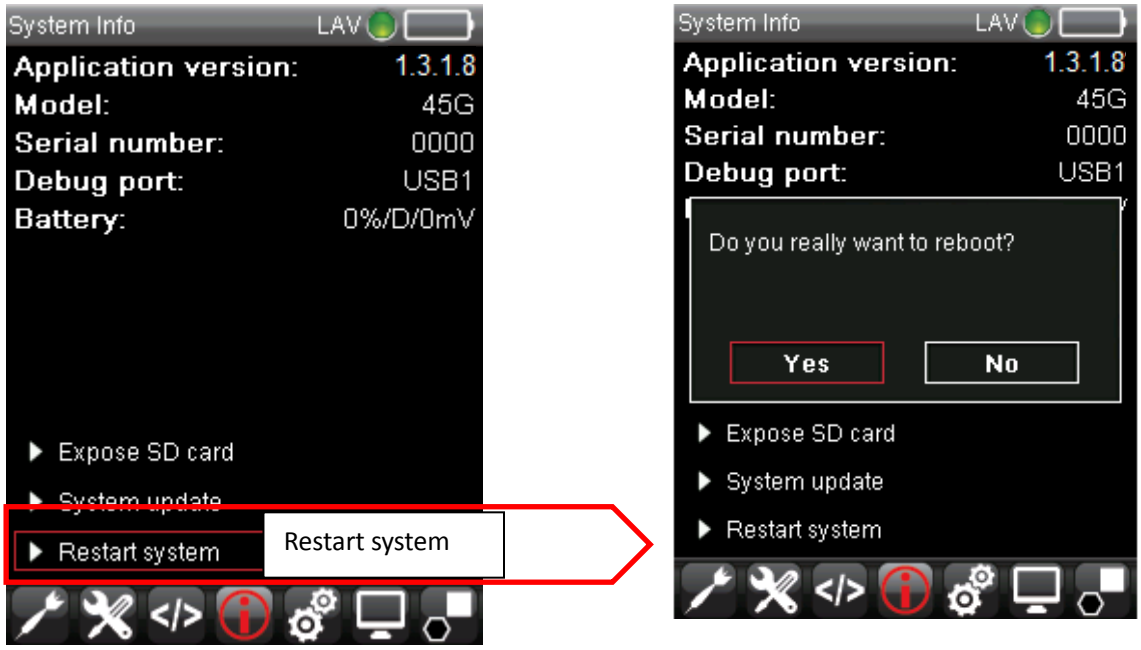
To finish process, select “hide SC card”, unit will restart.

Update Firmware



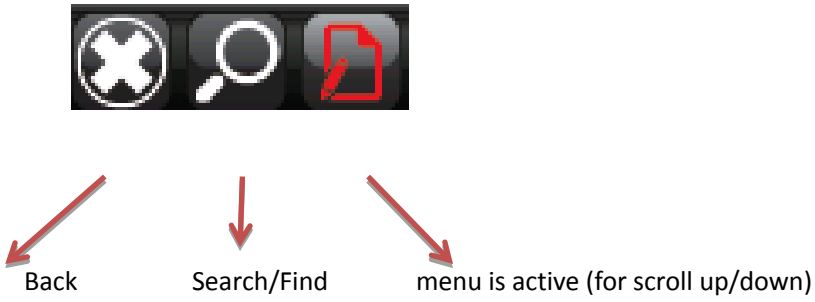
Onboard software can be upgraded with the memory stick, connect memory stick, select “system update”, hit “Yes”, System will update automatically (follow instructions on screen)

Restart system



"Restart System", "Yes" will reboot DC45.

General information for all sub menus:



Cable Installation and Power Switch

Cables

WARNING

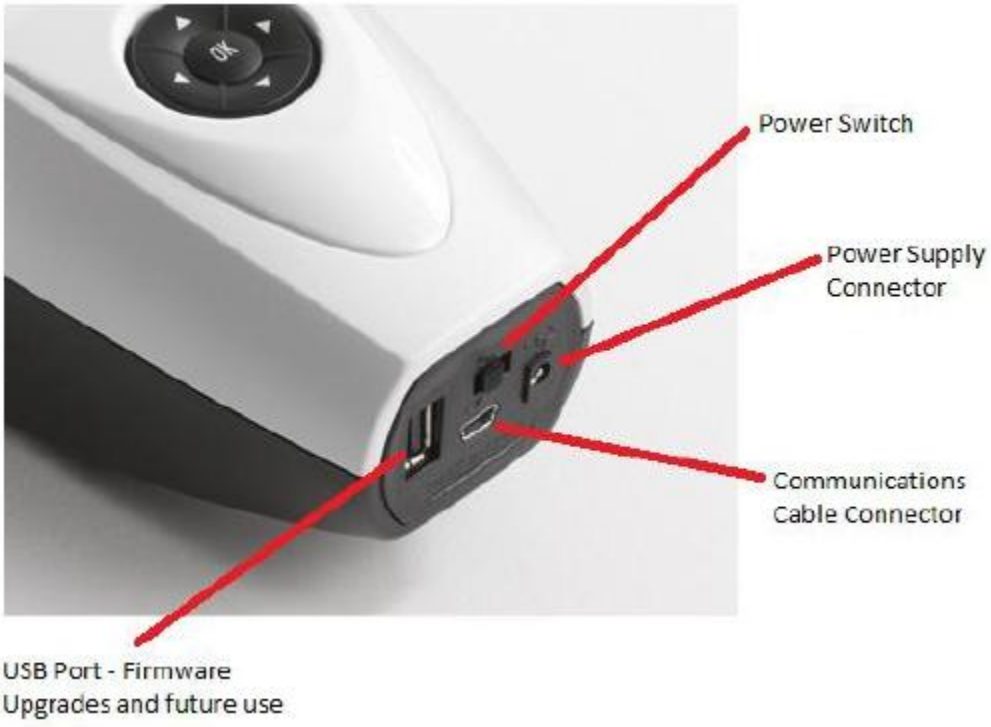
BE SURE TO TURN OFF THE POWER BEFORE WORKING WITH ANY CABLES.

The Datacolor 45 requires the use of two cables, a power cable for recharging the instrument's batteries, and a USB cable, to connect the instrument to the computer.

WARNING

*Refer to "Electrical/Environmental Requirements section **before** connecting your instrument.*

The connections for these cables are found on the back of the instrument.



Power Supply

A power supply, with multiple region connectors is provided with the instrument.

Power is supplied to the back of the unit via an ac adaptor jack.

WARNING

The power cord supplied with the unit *must* be used. No other cords are acceptable

Power Switch

The power switch is located on the rear panel of the instrument.

!Note: The power switch must be in the "ON" position to charge the battery, or to power the unit with the battery when the power supply is not connected to the instrument.

The instrument does not charge on the USB cable.

The AC adaptor must be used to charge the instrument.

Communications Cable

The instrument is connected to a computer through either the USB port or via Bluetooth:

1. Plug the AC Adaptor jack of the power cord into the power receptacle on the rear panel of the instrument. Insert the Adaptor plug into a standard AC outlet.
2. Connect the small USB connector on the instrument cable to the appropriate female connector on the rear panel of the instrument.
3. Connect the large USB connector on the instrument cable to a USB female port on the computer.

Viewing/Changing System Port Assignment

As part of this installation process, a port number is assigned to the USB port or Bluetooth connection. The default selection is the next available com port. Depending on the application you are running, you may need to know this port assignment to configure the Datacolor applications program(s) to recognize the USB port.

NOTES

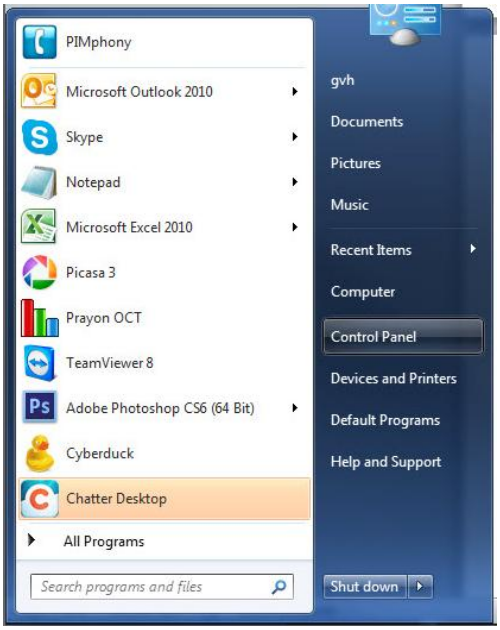
Some Datacolor programs automatically configure the Bluetooth or USB port assignment. Others require that you manually assign the port number. Refer to the program User's Guide for information to assign/edit the instrument port number.

If the computer has more than one USB port, the program will default to the first one available. If you want to connect the instrument to a different USB port, you must assign the port manually in the applications software.

The com port assignment is accessed through the Windows Control Panel as follows:

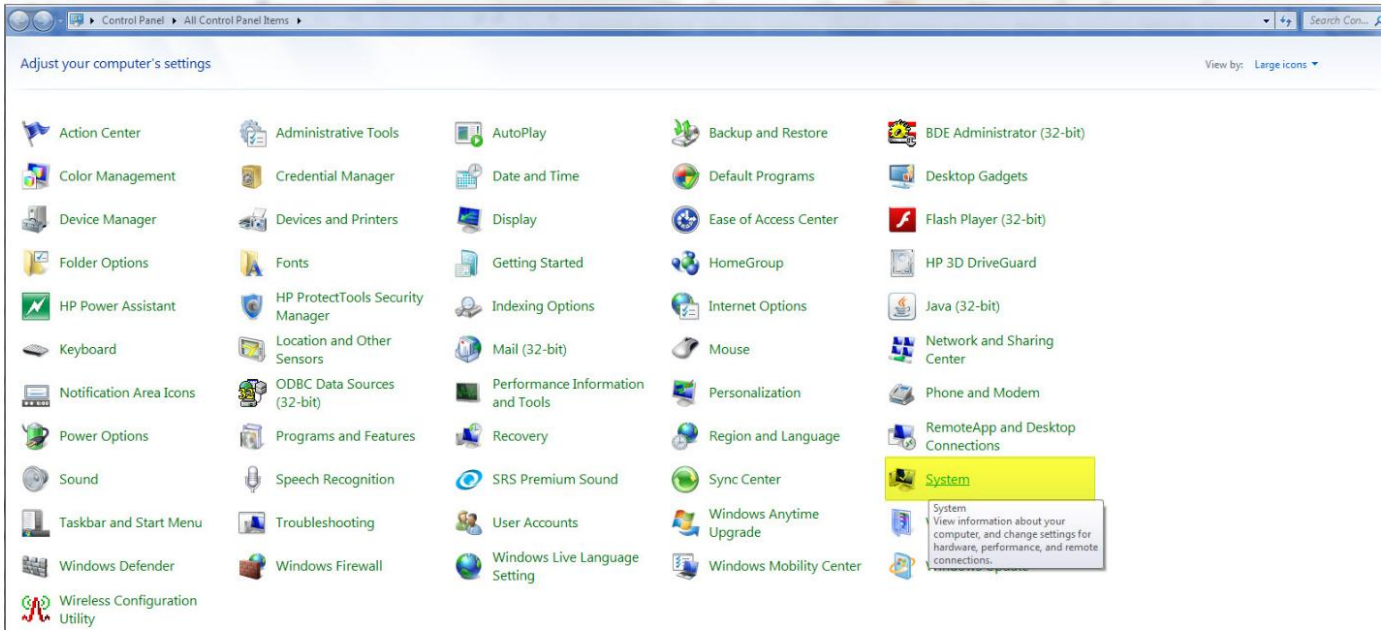
1. Click the **Windows** button at the bottom left of the screen.

The Start menu displays.

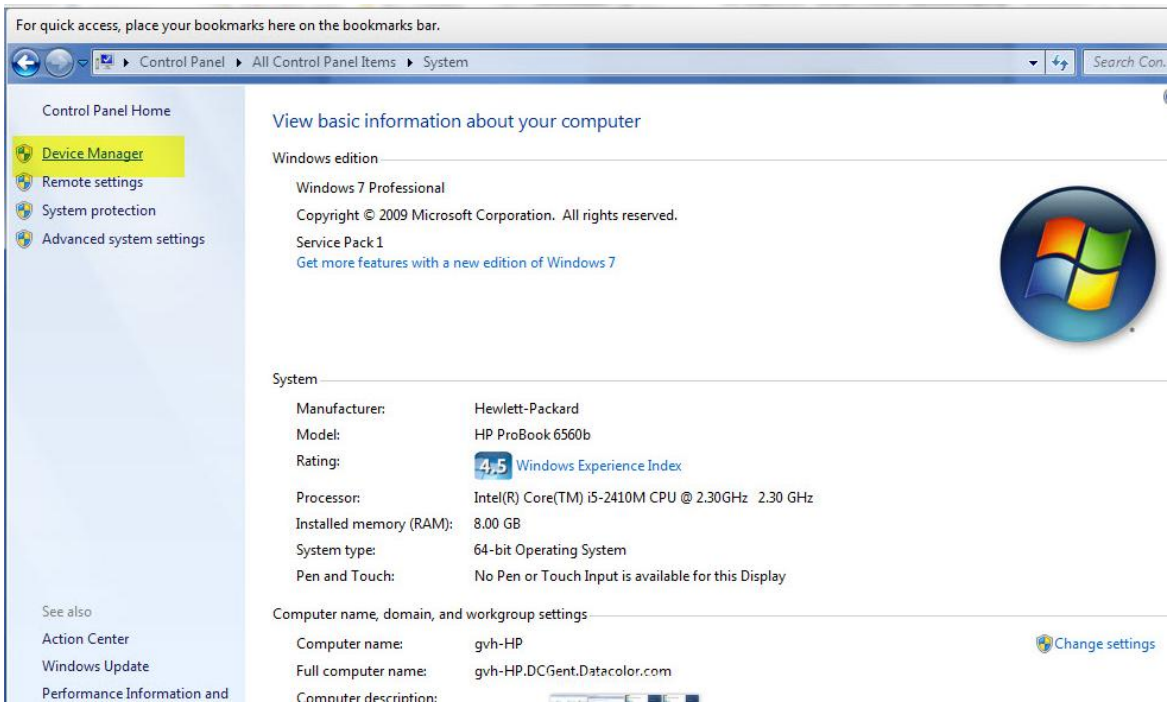


2. Select **Control Panel**

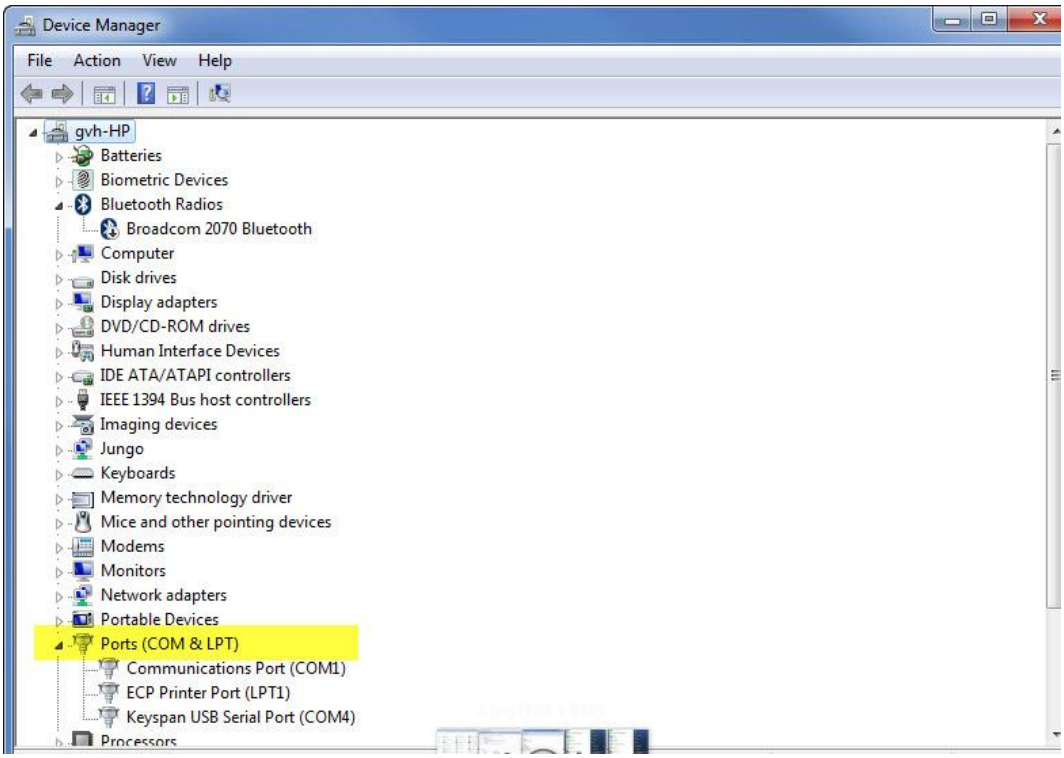
3. When the Control Panel window displays, double-click on **System**.

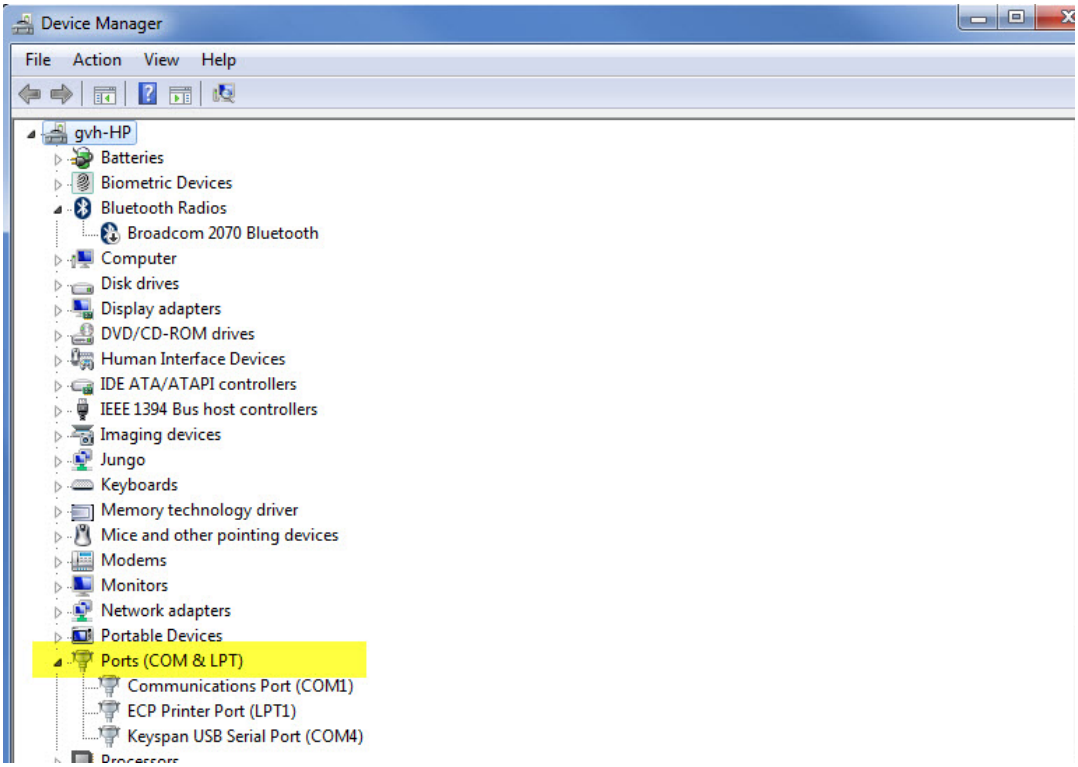


The Systems Properties dialog box displays:



4. Select Device Manager.



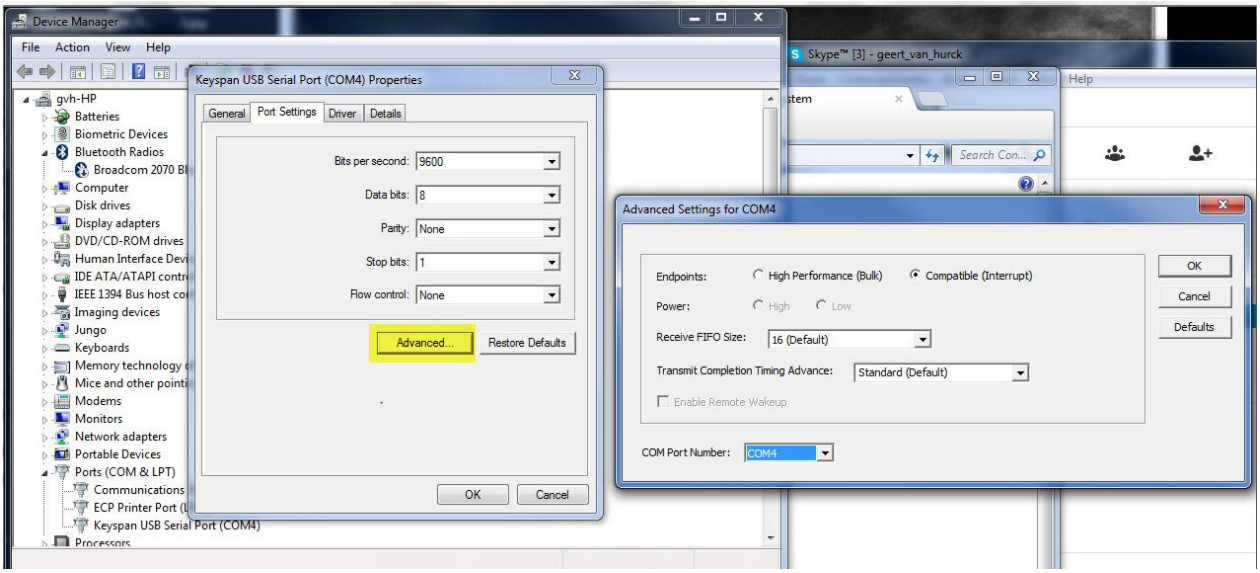


The Device Manager window displays.

5. Go to the **Ports** heading. Click on the plus (+) to display the port selections.

6. Click **USB Serial Port**. The USB Serial Port (COM4) Properties dialog box displays.

7. Click **Port Settings**. The dialog box below displays:



8. Click the **Advanced** button.
9. The Advanced Settings for COM4 dialog box displays.

The field labeled *COM Port Number* displays the current assignment for the USB port.

To change the port setting, click the drop-down list arrow. The list of COM ports is displayed.

10. Click on the port assignment to be used for the USB port.
11. When you have completed the changes, click **OK**.

Changing the COM Port Assignment in Datacolor Programs

To enable the USB port or Bluetooth connection for color measurements, you may need to change the com port assignment in the applications program. *Refer to the program documentation for the specific Datacolor applications program you are running for instructions to configure the instrument.*

Instrument Calibration Data

Each Datacolor 45 instrument has a unique set of Calibration data resident in the firmware. A back-up copy of this unique Calibration Data is provided on a USB Flash Drive included in the Datacolor 45 package. Keep this Memory stick in a safe place in case the calibration data on the instrument is lost.

Maintenance

The certificate of performance supplied with this instrument is valid for 1 year when used in an environment suitable for this type of instruments and when it's handled and used with care. As the environmental conditions have an effect on the measurements, Datacolor strongly recommends to have this Instrument regularly (preferably once a year) serviced by an authorized service engineer.
Maintenance & Certification Services, matching everyone's needs are available from Datacolor…
please contact your local Datacolor office for more information.

About Instrument Maintenance

The sections that follow provide detailed instructions for maintaining the instrument and calibration tiles. These instructions and tips will help to insure that the instrument continues to perform properly over its Life

.

CAUTION

There are no user-serviceable parts for this equipment.

Instrument Cleaning

The measurement port should be examined visually for the presence of dust, sample particles, fibers, and excessive yellowing due to environmental influences. *This inspection should be performed frequently, especially if you measure loose materials.*

If you discover loose materials in the sphere, they should be removed.

Tile Handling and Cleaning

Handling Tiles

- Handle calibration tiles with **extreme care**. Do not drop them, or scratch the glazed surface.
- Always grasp the tile using its edges.

Cleaning Tiles

- The calibration tiles should be cleaned before each use. Wipe each tile clean with a soft, lint-free cloth.
- A detergent, free of optical brighteners, fluorescent materials or photoactive dyes should be used as needed to clear any oils, fingerprints, or other deposits. Liquid dish detergent is a suitable detergent. The detergent/water solution should be prepared as follows:

  1 part detergent: 250 parts water
- Use a few drops of the detergent solution to moisten a soft, lint-free cloth, and gently wipe the tile surface. Rinse the detergent from the tile by wiping it with a cloth, moistened with clean water.
- **NEVER** use abrasive cleansers, razor blades, or other metal objects to remove dirt or foreign substances from the calibration tiles. This will damage the tile surface.

- **NEVER** immerse the tiles in water.
- Tiles that have scratches, chips, abrasions or cracks must be replaced. Signs of wear on the tile surface will affect the accuracy of the calibration.

Storage

- Large temperature variations will affect the accuracy of your calibration, requiring more frequent calibration. The calibration tiles should be stored in an environment that simulates the temperature of the samples to be measured.
- Prolonged exposure to sunlight or other sources of ultra-violet radiation will cause the color of the tiles to change. The tiles should always be stored in a protective case or container away from direct sunlight and environmental contaminants.

Cleaning the Black Trap

- The black trap should be kept dust-free. Dust accumulating in the black trap should be blown out with compressed air.

Appendix

Datacolor Global Support

This product comes with a complete user guide which helps you to get started measuring colors. However you can easily maximize its use by expanding your knowledge about color, see the Datacolor Support pages for more information on Application Support and training courses.

http://industrial.datacolor.com/support/contact-us-2/

US (Lawrenceville, NJ)	Datacolor	+1 800 982 6496
Europe (Belgium, Netherland and Luxembourg)	Datacolor België BVBA	+32 9 243 87 27
Europe (France, Paris)	Datacolor SAS	+33 148185 480
Europe (Germany, Marl)	Datacolor Marl	+49 2365 510950
Europe (Italy)	Datacolor Italy SRL	+ 39 0362 332142
Europe (Switzerland and Other Countries Including Middle East & Africa)	Datacolor AG Europe	+41 448353711
Europe (United Kingdom)	Datacolor Ltd	+44 1619299441
Asia (China Hong Kong)	Datacolor Hong Kong	+852 2420 8283
Asia (China, Shanghai)	Datacolor Shanghai	+86 21 5308 6988
Asia (India, Mumbai)	Datacolor Mumbai	+91 22 6640 4488
Asia (Taiwan & Taipei)	Datacolor Taiwan	+886 2 2321 2356
Latin America (All Countries Except Brazil)	Datacolor & Local Agents	+1 800 982 6496
Latin America (Brazil)	Datacolor & Local Agents	+55 119996-8479 +55 1197095-9434

Asia:	ASPSupport@datacolor.com
Europe, Middle-East and Africa:	EMASupport@datacolor.com

North & South America: NSASupport@datacolor.com

PC requirements for DC Tools (version 2.06 build 10 or higher)

RECOMMENDED CONFIGURATION Not to limit performance	Component	Recommended	Notes
	Processor	Dual Core processor	1
	Memory RAM	8 GB	1
	Free Hard Drive Capacity	500 GB	1
	Video Resolution	True Color	2
	DVD Drive	DVD Writer	3
	Available Ports	(1) RS-232 Serial (for older spectrophotometers)	4
		(3) USB	
	Operating System	Windows 7 (32 or 64 bit), Windows 8 (32 or 64 bit)	5
	Email (for supported level)	Outlook 2007 or above, POP3	
	Authenticated Sybase Database, supplied with the system	Sybase 12.0.1. EBF 3505	
	Optional Textile Database upon request	Microsoft SQL Server 2008	6
	Server OS	Microsoft Server 2008R2	

1) Minimum system configurations may limit performance, data capacity and operation of some features. Faster processor, more memory and faster hard drives will significantly enhance performance.
2) Accurate on-screen color display requires monitor calibration and true-color video mode.
3) Datacolor TOOLS is supplied on one CD and Sybase 12 is supplied on a DVD. Recommend a DVD writer for data backup and file transfer from stand-alone systems.
4) Datacolor spectrophotometers use either an RS-232 Serial or USB connectors. Datacolor Spyder4™ requires a universal serial bus (USB) connection. Printer port requirements depend on the specific printer selected.
5) Windows 32 bit and 64 bit operating systems are supported. 64 bit hardware running Windows 32 bit operating system is supported. Datacolor Tools is a 32 bit application.
6) Microsoft SQL Server database is only available for the textile database format.

Instrument Specifications

Specifications are subject to change without notice.

ITEM	DESCRIPTION
Instrument Type	Dual beam 45/0 with pan-chromatic LED array.
Measuring Geometry	45º/illumination, 0 º viewing
Illumination Source	Pan-Chromatic LED Array approximating D65 above 400nm
Spectral Analyzer	Proprietary SP 2000 analyzer with dual 256-diode array and high-resolution holographic grating.
Wavelength Range	400 – 700nm
Effective Bandwidth	10nm
Wavelength Resolution	2nm
Photometric Range	0 to 200%
Photometric Resolution	0.003%
Aperture Configuration	Large Area View. 11 mm
Power	Battery: Lithium Ion Rechargable Battery, 3.7V Charge Voltage 4.2V Maximum Charge Current: 1.5A Charge: 0<T<50°C Discharge : -20<T<60°C Store between 40% and 50% capacity; Do not store above 140°F (60°C). Do not crush, short circuit, mutilate, reverse polarity, disassemble, or dispose of in fire; might explode, cause burns, or release toxic materials. AC Adaptor ; 5Vdc, 3.2A (input to the 45G) 100 – 240 VAC(input to the AC power adapter) 50/60 Hz, 0.6A Input Lithium Ion Rechargeable Battery, 3.7V
Performance— Repeatability*	<0.01 CIELAB Max on white ceramic
Performance— Reproducibility*	45G CT ≤ 0.10 CIELAB ΔE average; 0.15 CIELAB DE max of 12 BCRA tiles 45G, 45S ≤ 0.15 CIELAB ΔE average; 0.25 CIELAB DE max of 12 BCRA tiles
Absolute Operating Environment	5º to 40º C, 20-85% RH, non-condensing
Interface	Bluetooth ~or~ USB v1.1 or higher
Warranty	1-year parts and labor. Extended warranty available.

** Specification based on following environmental conditions: 20°C; 50% RH;*

Index