Datacolor 20D

Datacolor 20D User's Guide
Part No., 008-400666 Rev A

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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.

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

Support Questions?
A complete user guide is provided with this product. However, there are also resources regarding color education on the Datacolor website.

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

Below is contact information for local Datacolor offices:

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

Email Addresses

Asia	ASPSupport@datacolor.com
Europe, Middle East and Africa	EMASupport@datacolor.com
North and South America	NSASupport@datacolor.com

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Product Overview

The Datacolor 20D is an easy-to-use, portable spectrophotometer that enables accurate color measurement on a wide variety of sample shapes and sizes - anywhere in the store or at a customer job site.

Measure with high accuracy

- **Best-in-class matching performance for portable retail paint**
  - o The sphere geometry of Datacolor 20D enables accurate color measurement of both flat and textured samples. Gloss detection enables determination of sample sheen to assure perfect color formulation.
  - o The Datacolor 20D shares the same high accuracy SP2000 spectrometer as Datacolor's world-renowned benchtop spectrophotometers to enable lab-grade color matching accuracy for paint retailers.

- **Easy Measurement Wherever & Whenever**
  - o Portable design enables measurements of any sample, anywhere within the store or at a customer job site.
  - o Initial instrument installation is simple with all required set-up data loaded at the factory. Just connect to your computer, start the Paint v 2.x Software and you are ready to go.
  - o Large color LCD screen with an intuitive user interface makes the Datacolor 20D easy to learn and easy to handle.
  - o Precisely position your sample for measurement using the illuminated sample alignment port.

- **Bluetooth® and USB Peripheral Support Allows Flexible Connectivity Wherever You Are**
  - o Use Bluetooth or USB to seamlessly transfer measurement data from the Datacolor 20D to Datacolor Paint v 2.x software.

  Support for USB keyboards and bar code scanners.

Get it right the first time with Datacolor 20D and Paint v 2.x

- Datacolor 20D turns paint retailers into experts in matching color on a wide variety of sheens and sample sizes.

- Highly accurate measurements combined with the powerful algorithms of the Paint v 2.x software yield the best first shot match on the market, saving time and money.

Feature Summary

The Datacolor 20D employs state-of-the-art features that include:

Feature	Description
Measurement Geometry	Diffuse illumination 8º viewing in conformance with CIE publication No. 15.2 Colorimetry
SP2000 Spectral Analyzer	Proprietary dual-channel holographic grating, 256-photodiode linear arrays used for both the reference and sample channels
Light Source	Pulsed xenon
Wavelength Resolution	2nm
Effective Bandwidth	10nm
Aperture Size	**Type** **Illuminated** **Measured** SAV 10 mm 6.5mm
Sphere Diameter	51mm/2 inches

S*ee also Appendix, Instrument Specifications for complete device specifications.*
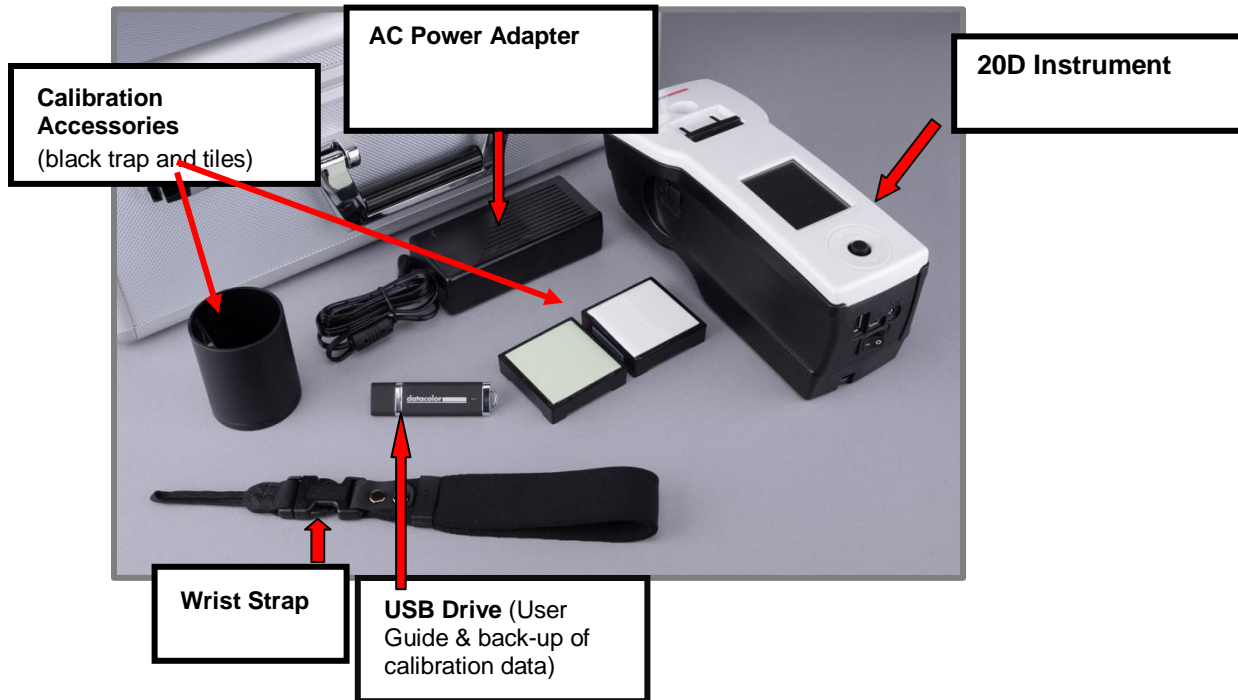
🗇 **Caution**

Disconnect power before servicing
There are no user-serviceable parts for this equipment

Accessories

Below are the accessories supplied with the unit:

Calibration Accessories (black trap and tiles)

AC Power Adapter

20D Instrument

Wrist Strap

USB Drive (User Guide & back-up of calibration data)

USB Host Port Technology

The USB host port enables USB peripherals.

- Allows easy export of data to a USB flash drive
- Connection to USB HID keyboards or USB barcode scanners allows easy naming of samples

The keyboard layout currently supported is US101.

Not supported for terminal server environment

About This User's Guide

This guide is provided in a PDF format for easy access. To return to the page previously viewed when using the hyperlinks, press the following key combination:

<ALT> <left arrow key>

Electrical/Environmental Requirements

Input Power Requirements	5VDC, 2.0A 50/60 Hz
Battery	Lithium Ion Rechargeable Battery, Maximum Charge Current: 4.0A
Absolute Operating Environment	**Temperature:** 5°C to 40°C Maximum Relative Humidity: 20%-85% non-condensing **Altitude:** Up to 2,000 meters Do not store above 140°F (60°C) Indoor Use Do not crush, short circuit, mutilate, reverse polarity, disassemble, or dispose. In fire, might explode, cause burns, or release toxic materials

⚠ Safety Warnings

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

Battery: Do not store above 140°F (60°C), crush, short circuit, mutilate, reverse polarity, disassemble, or dispose

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 the eye discomfort similar to that of staring at a camera flash.

Battery Replacement: Unit must be returned to factory or to an authorized Datacolor Service Center

Power Supply: The power supply provided with the unit must be used.

In Fire: Might explode, cause burns or release toxic materials
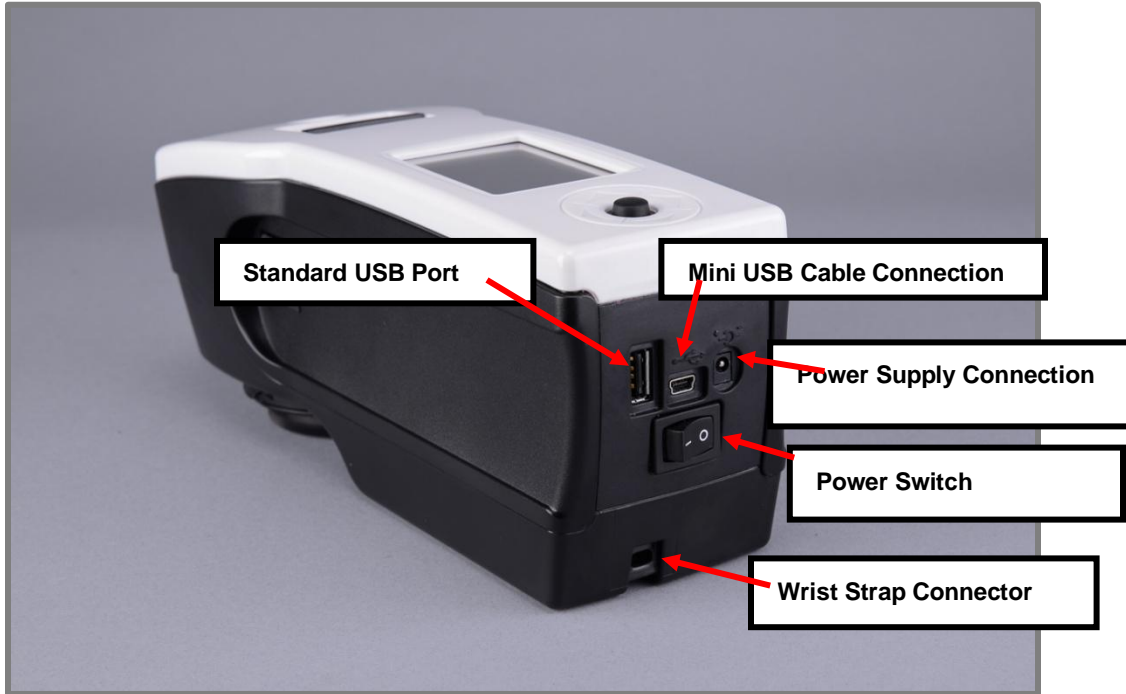
Cable Installation and Power Switch

The Datacolor 20D requires the use of two cables, a power cable for recharging the instrument battery, and a USB cable to connect the instrument to a computer. The connections for these cables are found on the rear of the unit:

Standard USB Port. For data export to a USB flash drive, or connection to a USB HID keyboard or bar code scanner.

Mini USB Connection. Used to connect the instrument to the pc.

Power Supply

A power supply 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 Adapter

You need a power adapter that is specific to your geographical location. This is specified as part of the shipment. Four adapters are available. Only one is shipped with the unit.
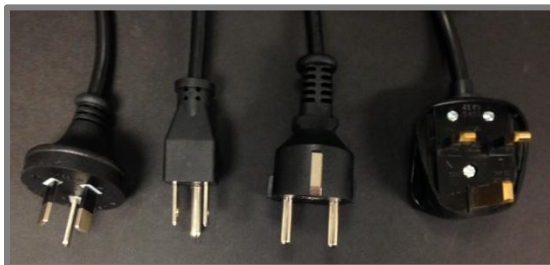
Connecting the Power Supply

1. Connect the power cord to the power supply.

To outlet ←

(3)

(1)

(2)

→ **To Datacolor 20D power supply connection**

2. Connect the AC adapter to the power supply connector on the back of the Datacolor 20D.
3. Plug the power cord into the outlet.

Powering the Instrument

To start the instrument:

- Press the rocker switch on the back of the instrument from the "0" position to the **"l"** position. The instrument will power up and the main screen will display.

🗒 **NOTE**

If the instrument calibration has expired, the program will automatically prompt you to calibrate the instrument.

Power Switch

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

🗒 **NOTE**

The instrument does NOT charge on the USB cable. The AC adapter must be used to charge the instrument.

Charging the Instrument

Datacolor 20D must be fully charged before using. It takes 8 hours to fully charge the unit.

🗒 **NOTES**

The instrument does NOT charge through the USB connection. You must use the AC adapter to charge the instrument.

The unit includes a selection of AC adapter plugs to enable proper connection regardless of geographical region.

The instrument must be switched to the ON position before attaching the power connector.

1. Switch the instrument to the **On (-)** position.
2. Connect the power supply to the power adapter.
3. Connect the power supply to the unit.
4. Plug the adapter into the outlet.

Power Supply Connection

Power Switch
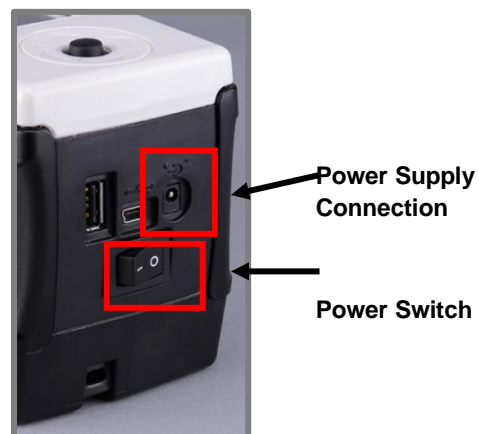
Datacolor 20D Stand-Alone Operation

The Datacolor 20D can be used either as a stand-alone data collection device, or interfaced to a computer to be used with Datacolor PAINT. This section will provide detailed instructions regarding the stand-alone operation of the instrument.

NOTE
When used with the Datacolor PAINT program, you can transfer measurement data from the instrument to the computer, and use it to match and correct colors. *See also Working with Datacolor PAINT for instructions to use Datacolor 20D with Datacolor PAINT.*

Controls and Indicators

Buttons on the unit are used to make software selections and measurements.

Measure Button

Measure Button

Software Navigation Button
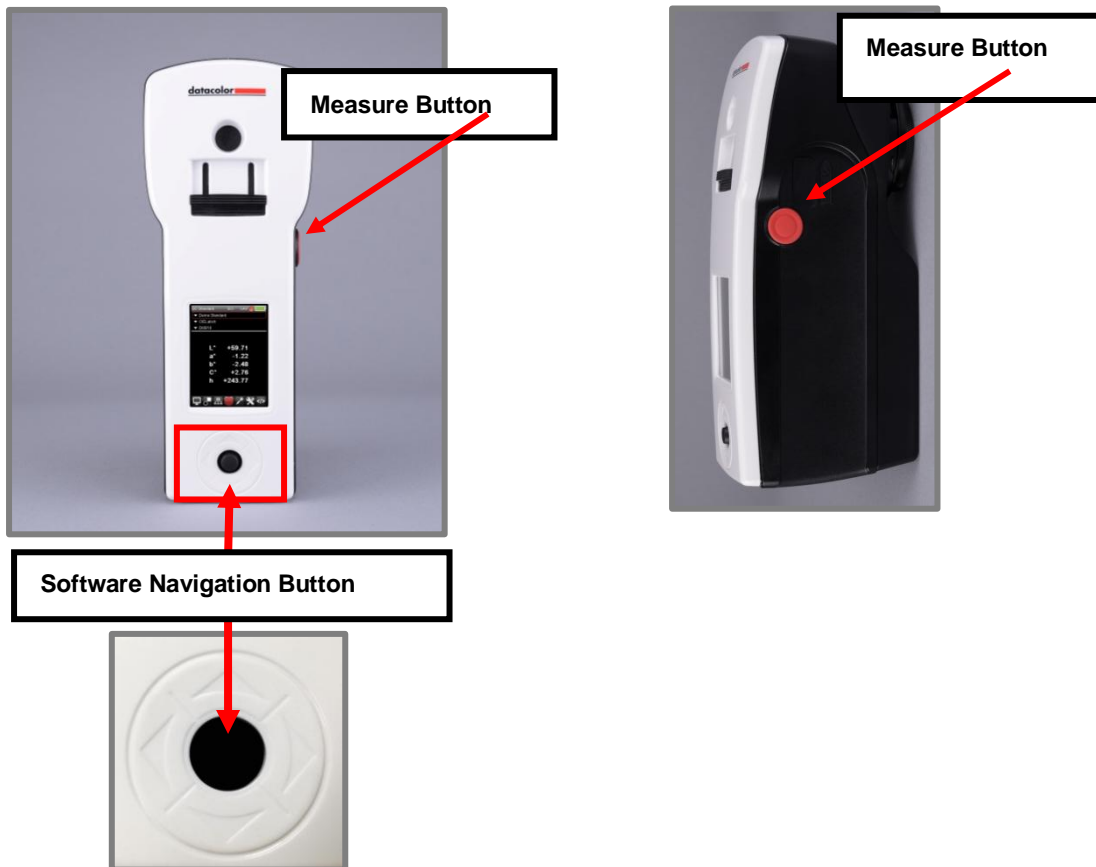
Navigating the Display

Below is an example of a display screen for *Sample* mode. Use the black program navigation button on the unit to navigate to specific fields and screens, and to make selections.

Program Navigation Control

- Push the black button in the direction of the up/down arrows to scroll through the *field selections at the top of the screen*, including *Sample Name*, colorimetric (CIELab) output *and Illuminant/Observer* condition.

- Push the black button in the direction of the left/right arrows to scroll *through the options on the Live bar* at the bottom of the screen, and to enter sample names using the digital keyboard.

- Press the black button to complete a selection.

Fields on the Screen

In stand-alone mode, the Datacolor 20D displays the *Sample* screen and reports the CIEL*a*b* coordinates for the sample, and the current measurement conditions selected.

Below is an explanation of the output display:

Title Bar

Color Coordinates

Live Bar
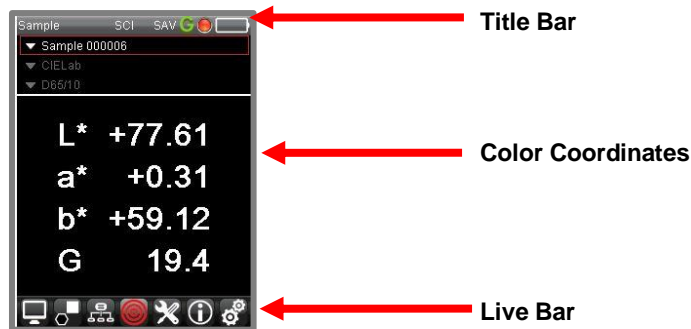
Title Bar

Along the title bar are a series of icons that indicate the *current* hardware and software selections and instrument status.

NOTE

The icons on the title bar indicate the *current instrument conditions*. These are the conditions that will be used when you press the measure button. These conditions are not necessarily the same conditions used to generate the data that is displayed.


Title Bar Legend

Sample	**Current screen identification** **Sample:** Displays the color data for the last sample measured or selected **Options:** Displays the Options page **Settings:** Displays the Settings page **PC Access:** Displays current status of connection between instrument and computer
SCI **SCE**	**Measurement Mode** **Specular Component Included (SCI)**. Specular port is closed. Measurement *includes* the specular component **Specular Component Excluded (SCE)**. Specular port is open. Measurement *excludes* the specular component
SAV	**Current Aperture Selection** The aperture selection is always **S**mall **A**rea **V**iew
(gloss icons)	**Gloss Determination** **Gloss enabled.** Two measurements are made of each sample; gloss value displayed. **Gloss disabled.** One measurement is made of each sample; no gloss value displayed.
(calibration icons)	**Instrument Calibration** **Red:** Instrument calibration has expired. You must recalibrate the instrument. **Green:** Instrument is calibrated.
(battery icon)	**Remaining Battery Life** **Empty.** Battery needs to be recharged. **1-4 (green) bars**. As the battery discharges, the icon changes from 4 bars to 0 bars.

Configurable Fields

The fields immediately below the title bar identify the sample selected, the colorimetric data displayed and the Illuminant/Observer selected.
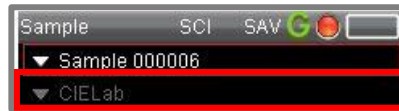
See also Navigating the Display for instructions to navigate to these fields and to change the selections.
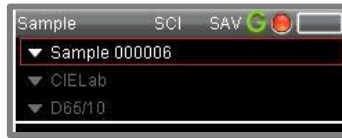
Sample Name. This selection can be changed.	
Colorimetric Output. For Datacolor 20D it is always CIEL*a*b*.	
Illuminant/Observer condition. This selection can be changed. **NOTE:** When you change the Illuminant/Observer, the color coordinates will change.	
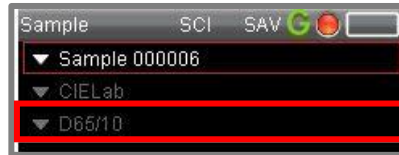
The rows in the center of the screen display the colorimetric data (L*a*b*) for the standard and batch:
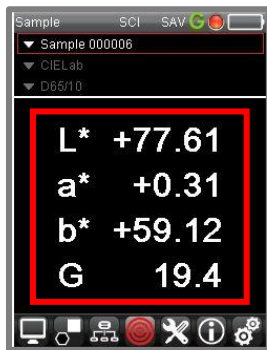
Gloss Determination

When the Gloss option is enabled, the estimated gloss (G) of the sample is included with the color coordinates. *See also Gloss Feature.*

Gloss Determination Enabled   **Gloss Determination Disabled**

LRV Index

Datacolor 20D will also display an LRV value for the sample. This is used in paint applications to evaluate the overall lightness of the sample. When this is enabled, the output selection automatically changes to *CIELab LRV*, and the LRV value is included :

See also LRV Option for instructions to enable/disable this evaluation.

Live Bar Options

A live bar at the bottom of each screen provides access to maintenance options in the on-board software.
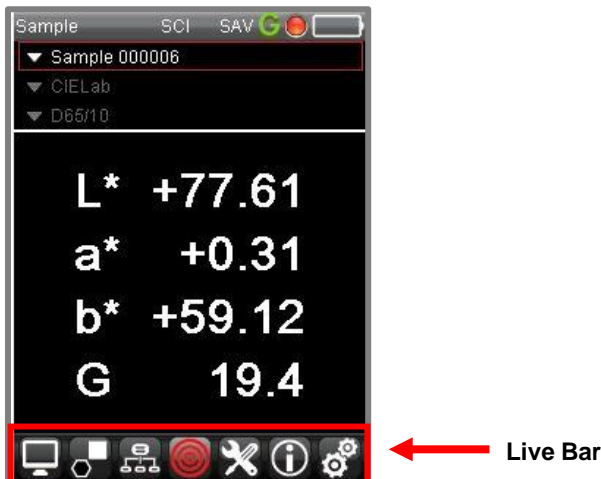
← **Live Bar**

When an option is selected, it turns red.

	Unselected	Selected
In the example above, the *Sample Mode* is active.		

Live Bar Legend

The live bar contains a series of icons used to access the on-board software options.

Below is the legend for the Live bar icons:

	PC Access Starts the communication between the Datacolor 20D and the computer. When connected, you can transfer data from the stand-alone instrument to the computer, and/or use the instrument as a measuring device for Datacolor PAINT. *See also PC Access for information on this feature.*
	Instrument Calibration Starts the stand-alone calibration procedure. *See also Instrument Calibration.*
	Delete Samples Delete sample data as needed. *See also Delete Samples*
	Sample Data Displays colorimetric data for a sample. Select/measure a sample to view the colorimetric data.
	Options Page Display/edit software configuration options. *See also Options Page.*
	System Information Display/edit system information including software version, instrument serial number etc. Also accesses options for updating and/or restarting the system. *See also System Information.*
	Settings Display and edit system configuration settings including date, time, language, etc. *See also Settings Page.*

Edit Options

When you select an option from the Live bar, editing icons may display at the bottom of the screen:

Below is the legend for these options:

	Return to the previous screen.
	Display a keyboard for searching data.
	Start the editing function.

Routine Functions

Instrument Calibration

The instrument must be calibrated regularly to ensure the measurement data is accurate. If the calibration interval has expired, you will not be able to make a measurement. The measurement is started from the button on the right side of the instrument.
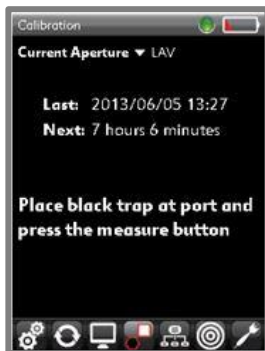
> **NOTE**
> If you used the Datacolor PAINT program to calibrate the instrument while it is attached to the computer, you may be required to recalibrate it in stand-alone mode to update the calibration data stored on the unit.
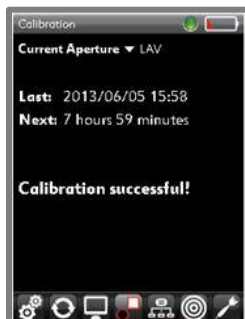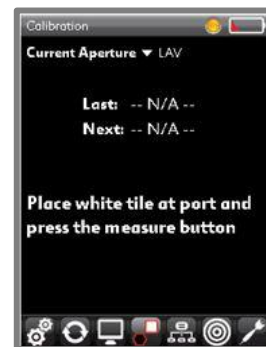
To calibrate the instrument:

1. Turn on the instrument.

2. Using the black button, navigate to the *calibration* icon on the live bar and select it:

3. The program will prompt you to measure the black trap. Position the trap over the aperture and press the **Measure** button.	4. Place the white tile over the aperture and press the **Measure** button.
When the black trap measurement is complete the instrument will beep, and the program will prompt you to measure the white tile.	

The instrument will beep when the measurement is completed, and the program will notify you that the calibration is successful.

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Measure Samples

Once the instrument is calibrated, you can measure samples and display CIEL*a*b* color coordinates.

Measure Button

NOTES

The Measure button is located on the right side of the instrument. Press the Measure button to start a measurement.

You can configure the instrument to autoname the samples, to number the samples, or to enter a custom name. *See also Sample Naming for instructions to editing the naming options.*

When measuring samples with irregular surfaces, you may need to average a series of scans. *See also Options Page, Average for instructions to enable the averaging feature.*

Sample Mode

The instrument has one mode for measurement, *Sample* mode. The icon is found on the live bar.

Measure Samples

You can measure new samples or retrieve samples stored on the instrument. *See also Recall Sample Data for instructions to retrieve a stored measurement.*

To measure a new standard:

1. From the Live bar, select the *Sample* icon to activate the measurement mode:

2. Position the sample to be measured at the instrument port.

3. Press the **Measure** button on the side of the instrument.

When the measurement is complete, the colorimetric data for the standard will display.


NOTE

When the Autosave option is enabled, the measurement is stored automatically. When it is not, the program will prompt you to save the measurement. *See also Options Page, AutoSave for instructions to enabled.*

Measurement Averaging

Datacolor 20D includes the feature to average a series of scans. When you are measuring samples with irregular surfaces, averaging a series of scans improves the repeatability of the measurement.

1. Set the number of measurements to be **greater than 1**. *See also Options Page, Average for instructions to enable measurement averaging.*

2. **Measure** a sample. The program will prompt you for multiple scans. Following each scan, it will update the display and include the data for each individual scan.
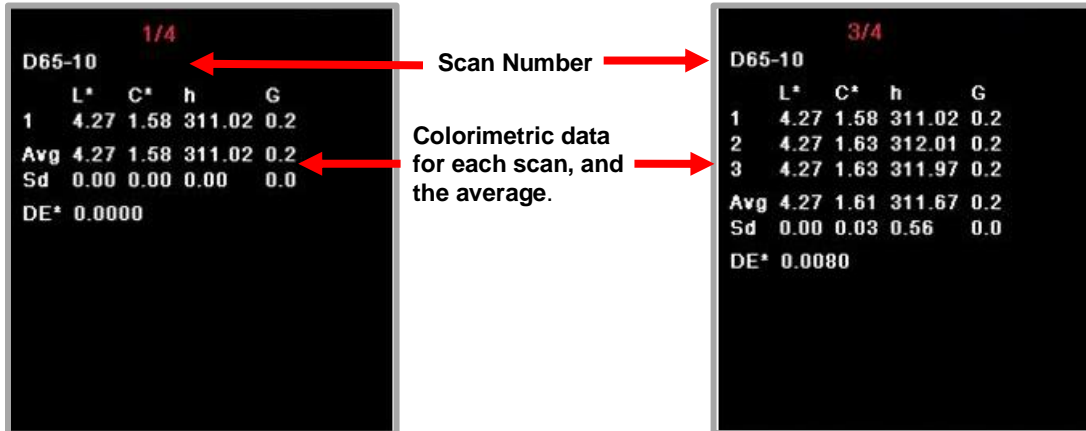
Contact Datacolor Service for full applications support for this feature.

CIEL*a*b* Color Coordinates

In stand-alone mode, you can display the CIEL*a*b* coordinates for the sample. When the Gloss option is enabled, the estimated gloss of the sample is included with the color coordinates.

Gloss Determination Enabled   **Gloss Determination Disabled**

NOTES

Color coordinates are dependent upon the current Illuminant/Observer selection. When you change the Illuminant/Observer, the color coordinates for the standard and batch will change.

See also Configurable Fields for instructions to select a different Illuminant/Observer combination.

See Options page, Gloss Determination page for instructions to enable/disable the gloss feature.

Maintenance Features

Overview

The software provides several options for setting the defaults and editing the display selections. This section provides detailed instructions for viewing and changing these selections.

The *Sample Name* and *Illuminant/Observer* selections are edited directly from the screen.

- Push the black navigation button up/down to navigate to one of these fields.
- Press the black button to display the choices.
- Push the black navigation button up/down to move through the list.
- Press the black button to make the selection.

The l*ive bar* at the bottom of the screen accesses current instrument settings, output display configuration and other configuration features. Use the *left/right and up/down program navigation buttons* on the instrument to select these options and to change the selections
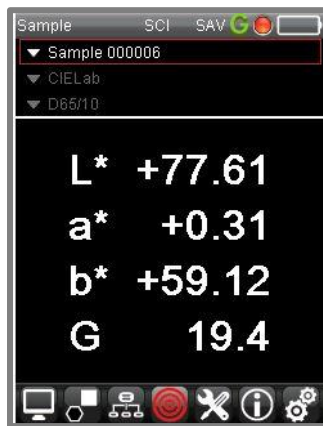

Sample Name

Illuminant/Observer

Program Navigation Button
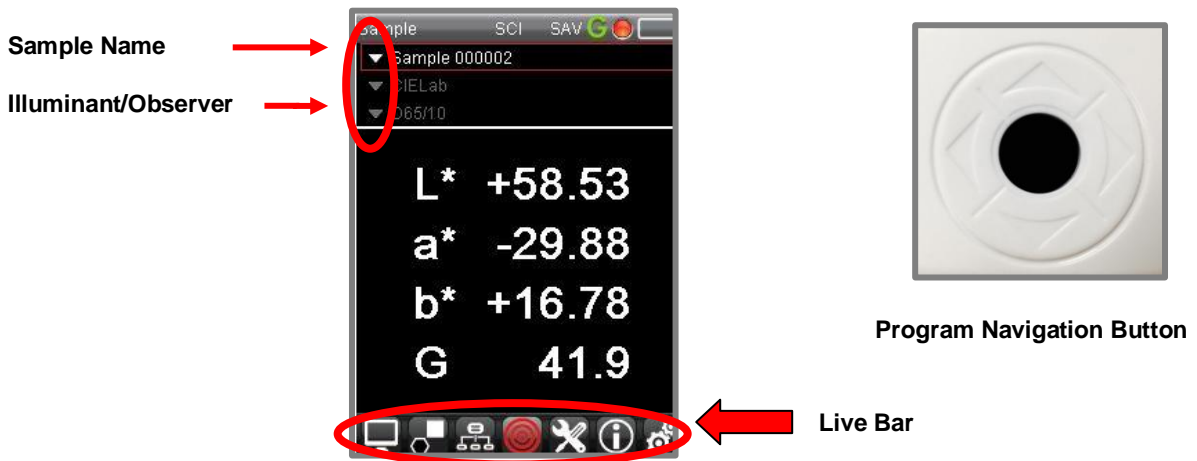
Live Bar

Recall Sample Data

1. Use the program navigation button on the instrument to navigate to, and select the *Sample field.* The Sample list can also be accessed using the Live bar.
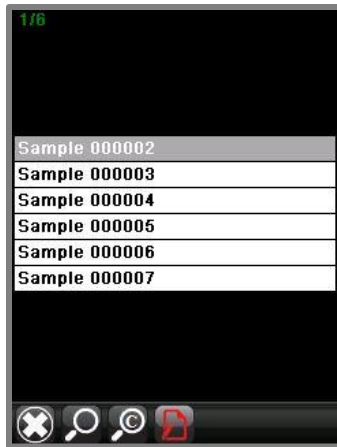
2. Use the *black navigation button* to scroll through the list, and press the black button to make the selection. The data display will update.
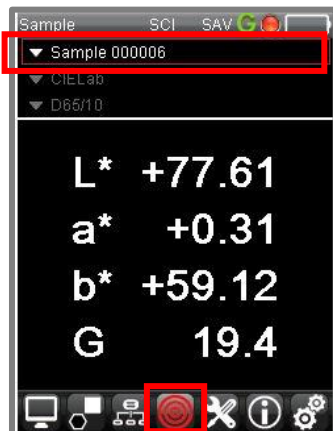

Name Sample

The instrument can be configured to autoname the samples. When enabled, the sample is automatically named. When this option is not enabled, the program will prompt you for a sample name. *See also Options page for instruction to configure the naming options.*
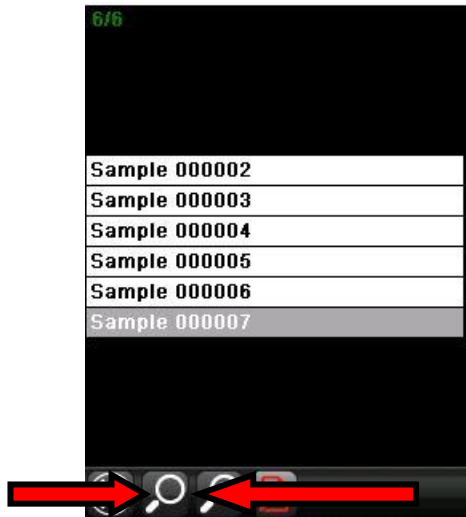
Sample Search

If you have a large number of samples on the unit, you can search for a sample by name.

1. Use the black navigation button to navigate to the *Sample Name* field or to select the *Sample mode* on the live bar.
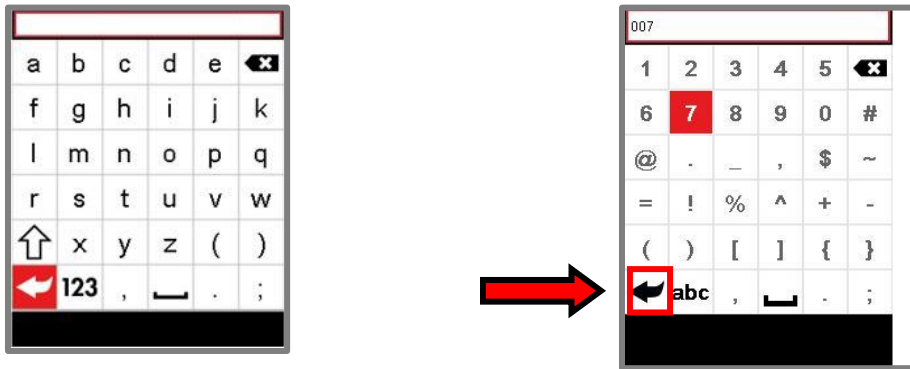
2. Press **the black button** to display a list of samples.

3. Navigate to the *Search Name* icon on the editing bar and select it.


A keyboard will display.

4. Move the navigation button on the instrument right/left, and/or up/down to key in the sample name. You can enter a partial name.

5. When finished, navigate to the back button on the keyboard and select it. The search results display.
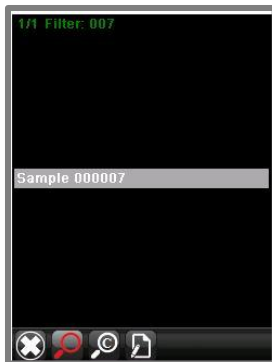
6. When the list contains multiple samples, use the program navigation button to highlight one of the samples and select it.. The data for the sample will display.
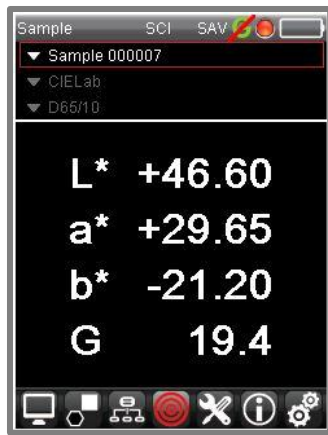
Delete Sample Data

You can delete a single sample or you can delete all samples stored on the unit. To delete sample data:

1. Navigate to the **Delete Sample** icon on the live bar:
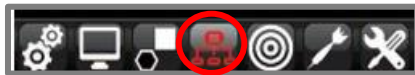
The editing options display:

Delete sample. Delete the current sample.

Delete all samples. Deletes all of the samples stored on the unit.

Customizing the System

You can customize the system configuration to your specific use. This includes enabling/disabling hardware and software features, limiting output screen selections and illuminant/observer choices, and other user-specific choices. This is done by accessing options on the Settings page, the Options page and the Preferences page.

Settings Page

The Settings page provides default selections for system information such as date, time, language, calibration information, etc. It also includes defaults for autonaming samples.

To access settings:

- Use the black button on the instrument to navigate to the *Settings* icon on the live bar and press to select.
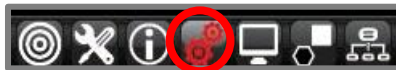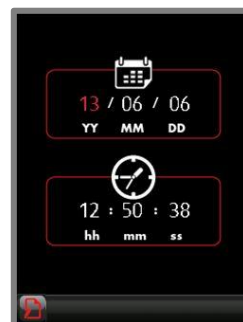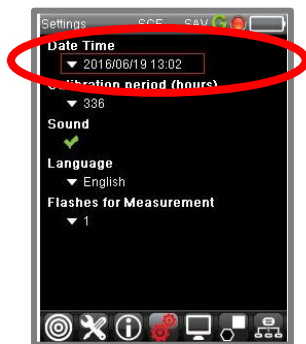

The *Settings* page displays:

Date and Time

1. Use the *black navigation button* to navigate to the *Date/Time* field, and press to select.

2. Use the black navigation button to navigate to each field to be changed.

3. When you are finished with the edits, press the **black button**. The date and time will update immediately.

Calibration Period

This controls the length of time the on-board calibration remains valid. The default interval is 336 hours (2 weeks).

1. Use the black button to navigate to the Settings icon on the Live bar, and press to select.

2. Navigate to the *Calibration Period* field. Use the black button to scroll to the appropriate calibration interval, expressed as *hours*.
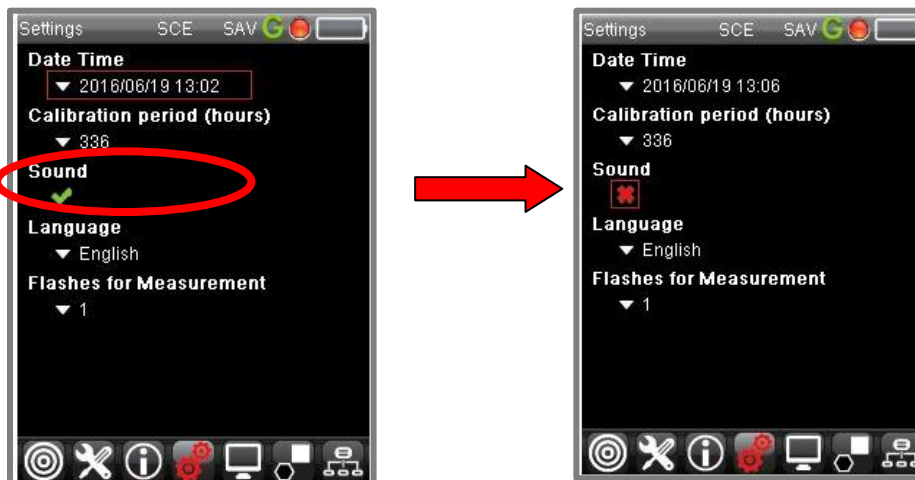

3. When the edit is complete, press the black button. The selection will update.

Sound

This option controls the sound of the navigation keys on the instrument.

1. Use the black navigation button to navigate to the *Sound* field and select it. .

2. Use the black navigation button to change your selection. The field on the Settings page updates immediately.

Language

The program is translated into several languages.

1. Use the black button on the instrument to navigate to *the Language* field and select it.
2. Navigate to the preferred language, and press the button to select it.

📋 **NOTE**

When the language is changed, you must restart the unit to update the screens with the language selection.

Flashes for Measurement

For the measurement of uniform samples, the light source only needs to flash once for a scan to generate a repeatable, reproducible measurement, and the default setting for this feature is "1". However, the unit can be programmed to flash to light source multiple times for a single scan. This may improve the measurement accuracy for very dark samples. *Contact Datacolor Applications for additional information on this feature.*

Options Page

This page includes configurations for a variety of hardware and software features. To access this page:

1. From the l*ive bar*, use the black navigation button to navigate to and select the ***Options*** page. The screen below displays:
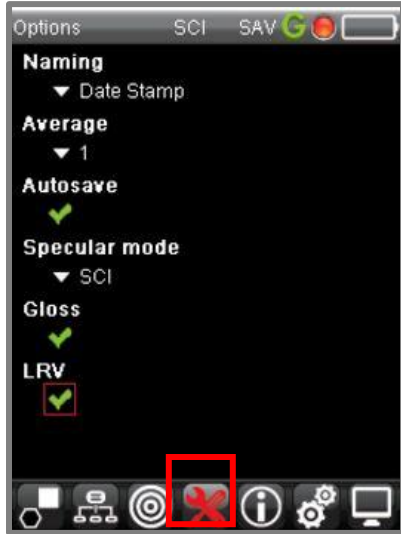
Sample Naming

Several options are provided for naming the samples. They can be automatically named, or you can configure the system to prompt you for a name at the time of measurement.

1. Using the *black navigation button* on the instrument, navigate to the **Naming** field and **select it**. The *Naming* options display:
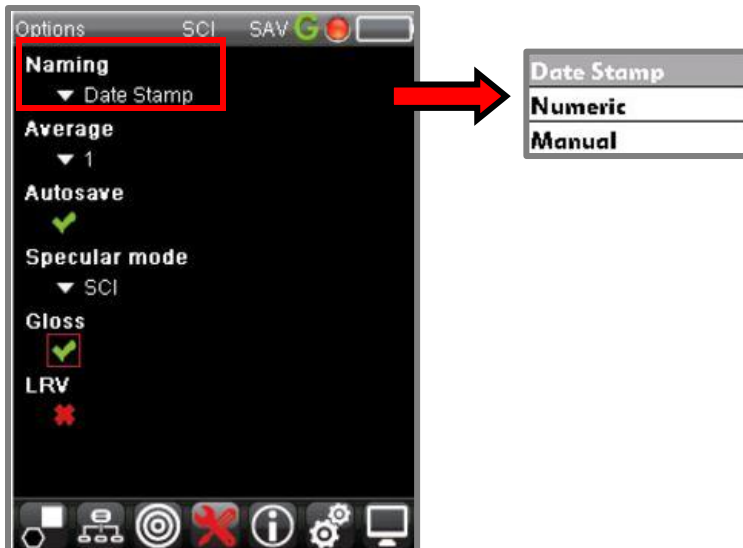

- **Date Stamp**. The program will assign the date and time of measurement as the sample name.
- **Numeric.** The program assign a sequential number as the sample name.
- **Manual.** The program will prompt you to assign a name to the sample using a digital keyboard. After you measure a sample, the program will prompt you to input a name using a digital keyboard. See Sample Search for instructions to work with the digital keyboard.

2. Use the black button on the unit to navigate to one of the naming options, and to select it.

Average

This selection enables/disables measurement averaging. When you are measuring irregular surfaces, you may need to average several scans of the sample to get a repeatable measurement. The maximum number of scans is nine (9).

To enable/disable *Measurement Averaging*:

1. Using the black navigation button, navigate to the **Option**s page and select it.

2. Using the *black button*, navigate to the **Average** field and select it.

3. Using the *black navigation button,* select the number of scans to average. The *Average* field updates.
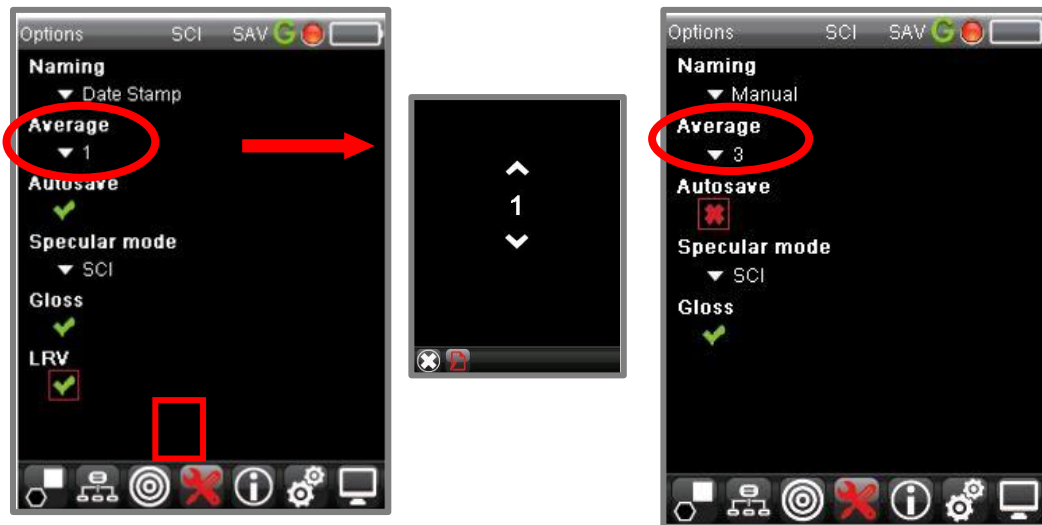
See *Routine Functions, Measurement Averaging* for an example of the operation of this feature.

Contact Datacolor Service for full applications support for this feature.

AutoSave

The software can be programmed to automatically save every measurement. To enable/disable this feature:

1. Using the black navigation button on the instrument, navigate to the live bar, and select **Options**.

2. Navigate to *the Autosave* field and select it.   The field will automatically update.

Specular Mode

This option controls the position of the specular port in the instrument when a measurement is made.

- **Specular Component Included (SCI)**. Specular port is closed. One measurement is made of the sample, which *includes* the specular component. This is the most common setting.

- **Specular Component Excluded (SCE)**. Specular port is open. One measurement is made of the sample, which *excludes* the specular component

To enable/disable this feature:

1. Using the black navigation button on the instrument, navigate to the live bar, and select **Options**.

2. Navigate to *the "Specular Mode* field and select it. The field and the specular mode icon on the title bar automatically update.

 NOTE

The gloss determination selection overrides this option. When gloss determination is enabled, two measurements are made for each sample, regardless of the Specular Mode selection.

Gloss Determination

Datacolor 20D includes a feature that *determines* the gloss of the sample being measured. When this feature is enabled, it requires that two measurements are made for each sample.
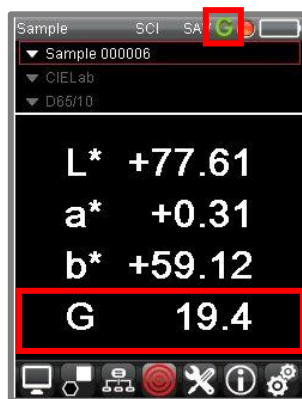
NOTES

The gloss value reported is based on the use of a 60° gloss meter.

Using this feature slows the measurement time. If you don't need gloss information, disable this feature to reduce the measurement time.

When this feature is activated, the gloss icon shows "enabled" and the colorimetric output includes a gloss value:
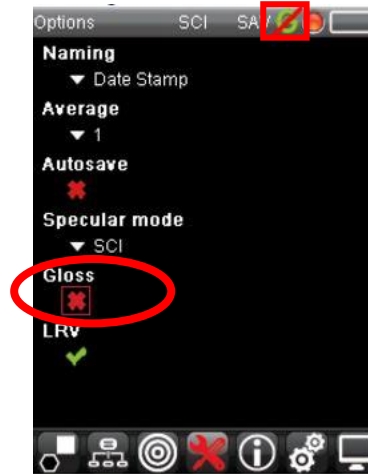
Gloss Determination Enabled   **Gloss Determination Disabled**

To enable/disable *Gloss Determination*:

- Use the black navigation button on the instrument to navigate to the **Options** page on the live bar, and select it.

- Navigate to the *Gloss* field, and select it. The gloss selection will update, indicated by the gloss icon on the title bar.


LRV Evaluation

LRV is the lightness reflectance value. It is the Y tristimulus value for the sample and is used in paint industry to describe the lightness of a color.

To enable/disable the LRV evaluation:

- Use the black navigation button on the instrument to navigate to the **Options** page on the live bar, and select it.

- Navigate to the *LRV* field, and select it. The output display will update to reflect the change.
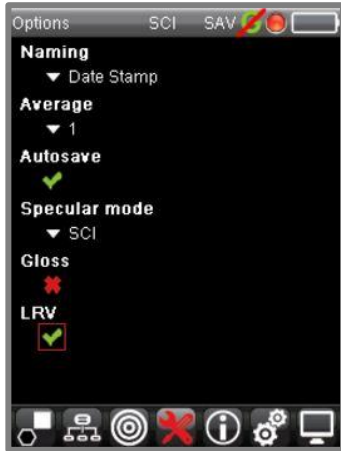
LRV Enabled   **Output Display**

LRV Disabled   **Output Display**

System Information

Refer to the [Appendix](#) for details on these options.

# Datacolor 20D and Datacolor PAINT

You can connect the Datacolor 20D to a PC to use it with Datacolor PAINT. . The instrument can be connected wirelessly using a Bluetooth® connection, or through a USB cable connection.   When connected you can match and correct samples stored on the instrument using Datacolor PAINT. You can also use the instrument as a measuring device for Datacolor PAINT.

PC Access

IMPORTANT
The PC Access feature on the stand-alone unit should be selected whenever the instrument is connected to the computer.
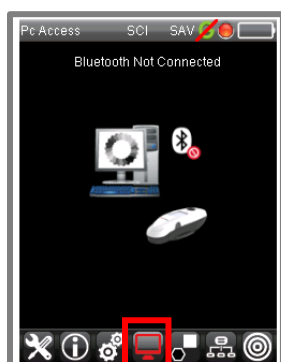
Use the black navigation button on the instrument to put it into **PC Access Mode**. The screen will display the current status of the PC connection.

USB Cable Connection

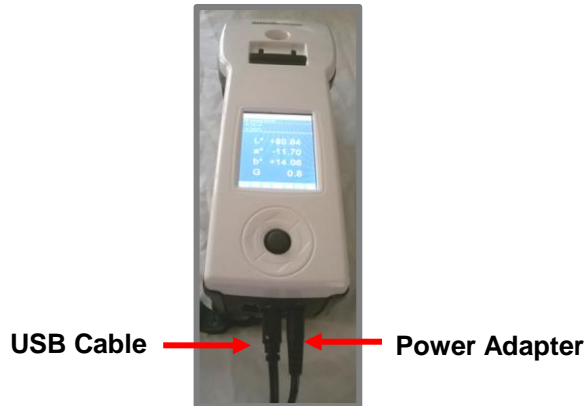To connect the unit to the computer using the USB cable:

USB Cable (1)Insert the mini-USB connector into the instrument.	(2)Insert the USB connector into a USB port on the computer

---

USB Cable → ← **Power Adapter**

Bluetooth® Wireless Connection

Datacolor 20D can be connected to a computer wirelessly, using a Bluetooth connection. Establishing the initial connection between the instrument and the computer is a two-step process:

1. Activate the Bluetooth connection on the computer. This is only done once.

2. Place the instrument in **PC Access** mode. *This should be done each time you enable the Bluetooth communication between the instrument and Datacolor Paint.*

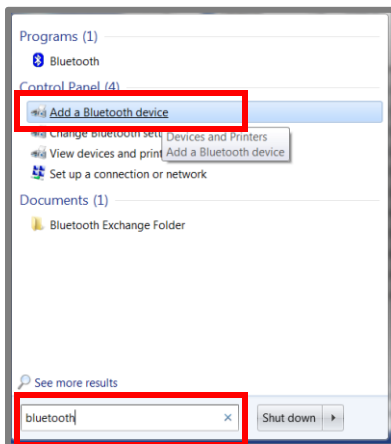## Activate Bluetooth Connection

To activate the Bluetooth connection on the computer:

1. Power the instrument and put it into *PC Access* mode.

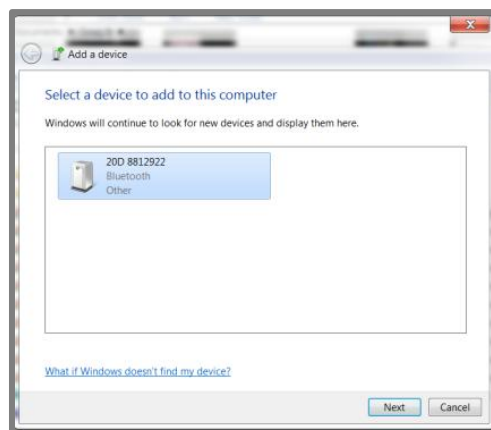2. Click on the **Windows icon** on the bottom left of the computer window
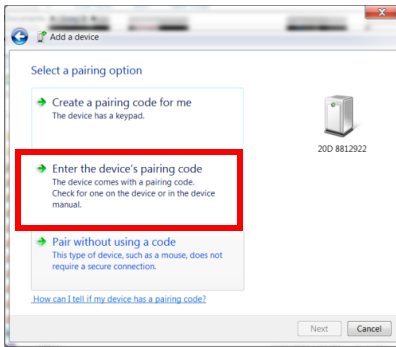

The dialog below displays.

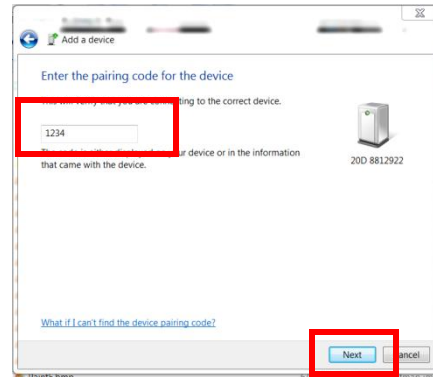3. In the *Search* field, enter **Bluetooth**. Select **Add a Bluetooth Device.**

4. The program will display the Bluetooth devices it finds. Highlight the icon showing the **Datacolor instrument** and click **Next**.
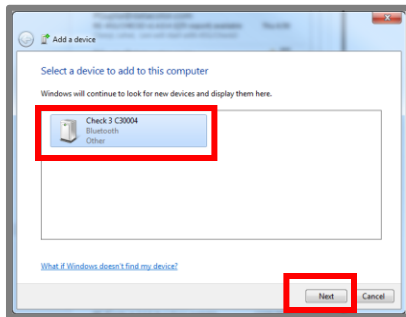
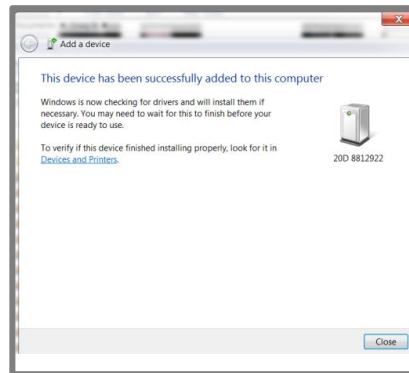5. Select **Enter the device's pairing code** and click **Next**.

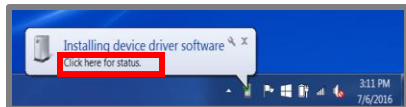6. Enter the pairing code. The default is **1234**. Click Next.

7. The program will prompt you to add a device. Highlight the device labeled **Check 3** and click **Next.**

8. The program will install the device driver.

9. The message below displays in the system tray:

10. If you select Click here for status" the dialog below opens. When the *status* of both drivers is *Ready to Use*, click **Close**.
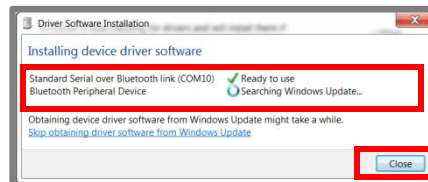
 NOTE

AccessWindows Control Panel, Devices and Printers to verify that the instrument Bluetooth® connection is enabled.

PC Access

You must put the Datacolor 20D into *PC Access Mode* to ensure a Bluetooth connection. This is done by selecting the *PC Access* option from the Live bar on the unit:

A graphic should display identifying that the instrument is connected.

 NOTE
The Datacolor 20D Bluetooth radio is always on when the instrument is in PC Access mode.

Using Datacolor PAINT

Datacolor 20D offers two options for use with Datacolor PAINT:

- The instrument can gather measurement data at remote locations. The data can then be uploaded from the instrument to the computer for use with Datacolor PAINT. *See also Retrieving Samples from Datacolor 20D for instructions to access the measurement data on the instrument from Datacolor PAINT.*

- The instrument can be used as the measuring instrument with Datacolor PAINT. *See also Instrument Configuration for instructions to activate Datacolor 20D with Datacolor PAINT.*

Datacolor PAINT Installation

Datacolor PAINT is a product that is purchased separately. It includes a DVD that contains the program. The installation procedure will launch automatically when the DVD is inserted into the drive. Follow the prompts on the screen to complete the Datacolor PAINT installation.

You must also have a database compatible with the materials from your paint manufacturer.

Instrument Communications

When using the Datacolor 20D with Datacolor PAINT, the instrument can communicate with the computer using either a USB cable or a Bluetooth® connection. A USB cable is provided with the instrument.

Connect the instrument to the computer either using a USB cable or a Bluetooth wireless connection before launching Datacolor PAINT.

NOTES

See USB Cable Connection for instructions to connect Datacolor 20D using a USB cable. See Bluetooth Wireless Connection for instructions to connect the instrument to the computer through a Bluetooth connection.

Launching Datacolor PAINT

1. Power up the instrument.

2. Connect the instrument to the computer, using either the USB or Bluetooth wireless connection.

3. Click on the Datacolor PAINT icon to launch program. The program will prompt you for a user, POS ID and password. Enter the POS ID and Password, and click **Log in**.

📑 **NOTES**

The POS ID is found on a printed document in the instrument case.

The default user and password is *admin*. The Datacolor PAINT v 2.x main window will display. All program features are accessed from the PAINT main screen.

Instrument Configuration

You must configure the program to recognize both the dispenser and the instrument you are using. This is done through the *Settings* feature in Datacolor PAINT.

1. On the main window, click on the **Settings** *i*con.

The window below displays.

2. Access the *Devices* page.

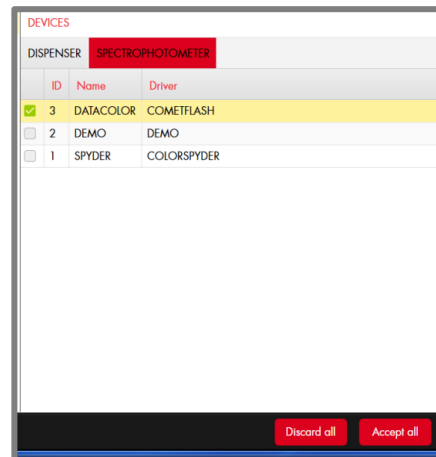|	ID	Name	Driver	Tinting System
✓	3	COROB	CPSDRIVER	ST-DEF
✓	2	FAST & FLUID	IDD2	ST-DEF
✓	4	FLINK	FLINK	ST-DEF
✓	1	Manual	MANUAL	ST-DEF

You must select a dispenser and a spectrophotometer.

Dispenser Selection	Instrument Selection
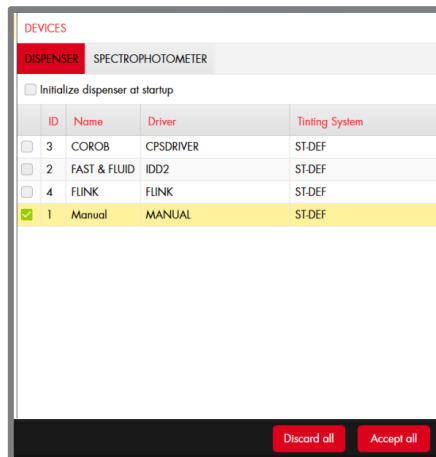
3. To select the dispenser:

- Highlight the *Dispenser* tab.

- Place a check next the dispenser connected to the computer. If no dispenser is connected, choose **Manual**.

4. To select an instrument:

- Highlight the Spectrophotometer tab.

- Select the Datacolor 20D instrument. The driver must be *Cometflash*.

5. Click **Accept All**.

6. When you connect for the first time, the software will search and connect to the instrument.
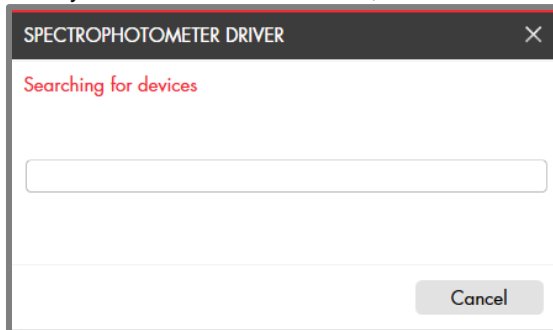
7. When the connection is made, return to the PAINT main window. Select **Custom Match**.
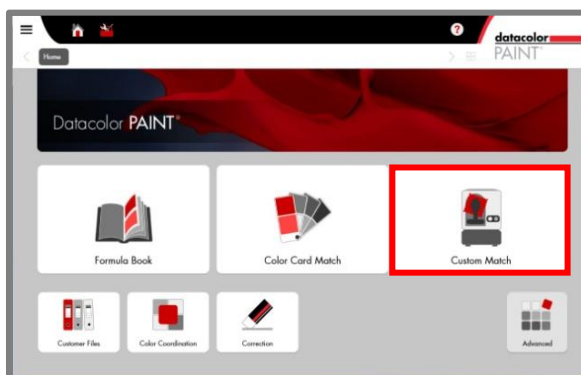
The instrument conditions are displayed.
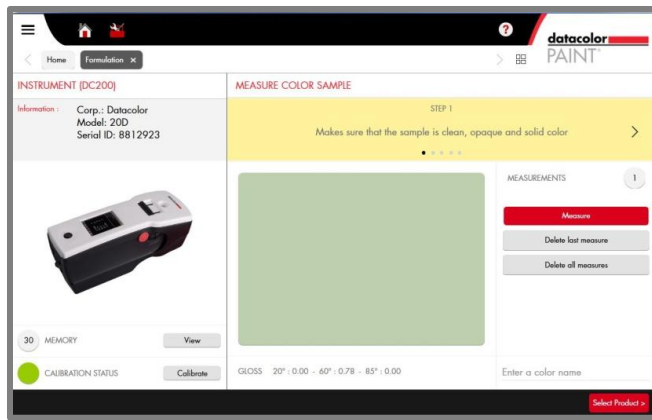
8. Check the *Calibration Status.*

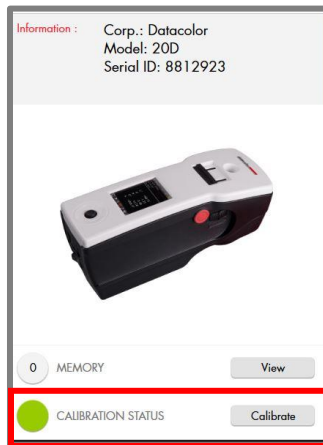If the calibration is current, you can begin measuring colors and generating formulas. If the calibration has expired, you must calibrate the instrument. This is performed using the Datacolor PAINT program. *See also Instrument Calibration below for step-by-step instructions.*

Instrument Calibration

You must calibrate the instrument when you connect it to Datacolor PAINT for the first time, and whenever the Calibration Status is red (expired). You will need the black trap, white tile and green tile to complete the instrument calibration using Datacolor PAINT.

1. On the Measure Color Sample window, click **Calibrate**.

2. The system will prompt you for the black trap, white tile, and green tile measurements. Follow the program prompts.

3. Position each sample to fully cover the port, and click **Ready**. The program will prompt you for the next calibration tile.
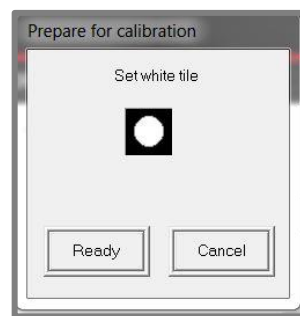
When the calibration is completed, the calibration status will change to green on the Custom Match window. You can now work with all the features in Datacolor PAINT v 2.x.
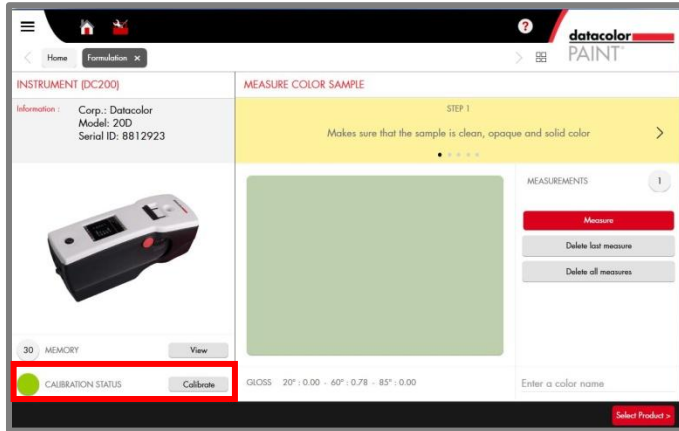
Sample Measurement

1. From the PAINT main window, select **Custom Match.**
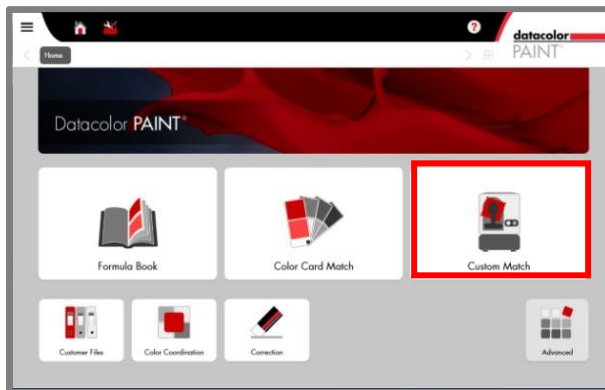
The Measure Color Sample window displays.
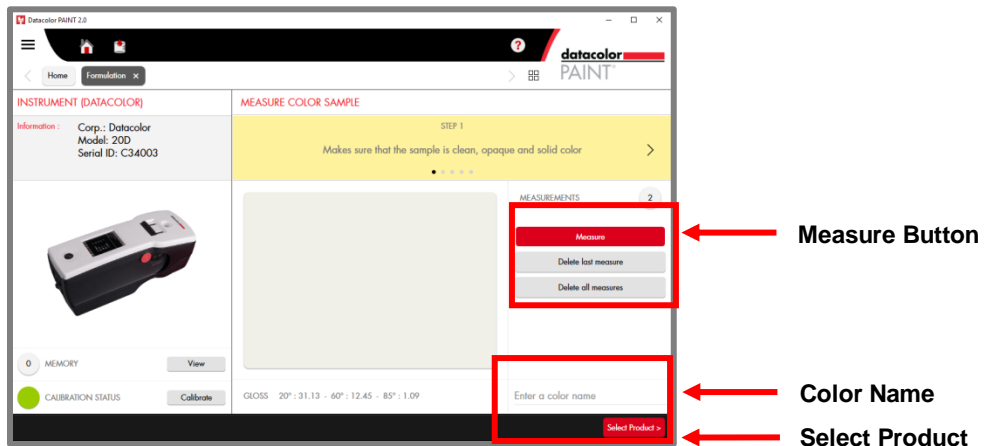
2. Position the sample to fully cover the port opening, and press the **Measure** button.

3. If you suspect a bad measurement, click on **Delete last measure** or **Delete All Measures** and remeasure the sample.

4. Enter a **name** for the color you just measured.

5. **Click Select Product**, and make the appropriate selections for the product and formula.

📋 NOTES

For some samples with texture (i.e. textiles, stucco, etc.) the user may need to measure different areas of the sample to obtain an average measurement. See Datacolor PAINT User's Guide for instructions to enable measurement averaging, and for a detailed explanation of all program features.


Retrieving Samples from Datacolor 20D

You can retrieve any of the samples stored on the Datacolor 20D to be matched using Datacolor PAINT. To view and retrieve the samples on the unit:

1. From the PAINT main window, select **Custom Match**.
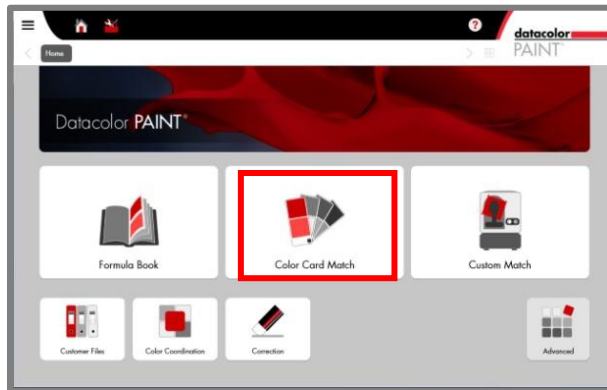
2. The Measurement window displays.

3. Locate the *Memory* field and click **View**.
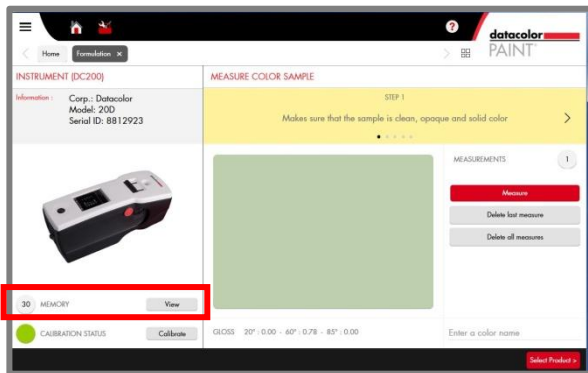
The samples stored on the unit are displayed.
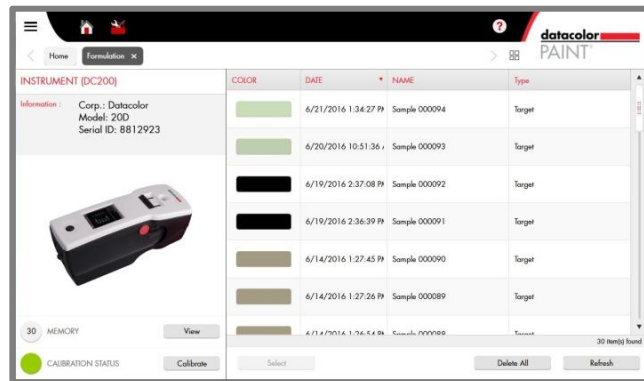
4. Highlight the sample to be retrieved and click **Select**.

.

5. The selected sample displays in the *Custom Match* window.

6. **Click Select Product**, and make the appropriate selections for the product and formula. *See also Datacolor PAINT User Guide for details on the Custom Match feature.*

Appendix

Datacolor 20D Instrument Specifications

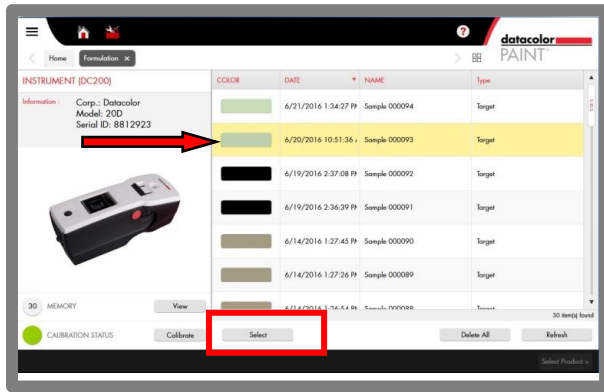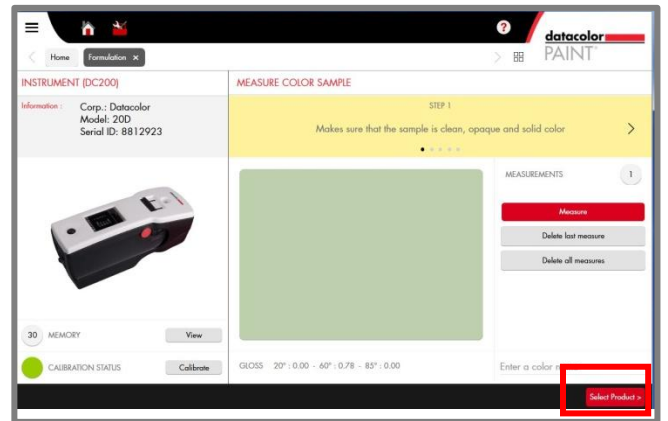| Physical Specifications	Description
Display	50.54mm x 68.62mm x 3.55mm
Display Resolution	240 x 320
Weight	1.25kg/ 2.75 lb
Dimensions	235mm x 90mm x 99mm/ 9.2 in x 3.4 in x 3.9 in
Technical Specifications	
Measuring Geometry	d/8°
Sphere diameter	2 inches
Light Source	Pulsed xenon
Spectral Range	400 nm -700 nm
Effective Bandwidth	10 nm
Wavelength Resolution	2 nm
Spectrometer Principle	Concave holographic grating
Detector	Proprietary Dual 256 element diode array
Color Repeatability	< 0.05 CIELAB ΔE* max on white ceramic tile
Color Inter-Instrument Agreement	0.20 CIELAB ΔE* avg. of 12 BCRA tiles
Aperture Size	SAV - 10mm illuminated, 6.5 mm measured
Battery	Rechargeable Li-Ion Battery > 2,000 measures/charge
Operating Environment	5° to 40°C, 20% to 85% RH, non-condensing
Interface	USB, Bluetooth® wireless
Functional Data	
Color Systems	CIE L*,a*,b*, coordinates
Illuminants	D65, A, F2, F11
Observers	10°
Data Storage	Up to 2,000 samples
Languages	English, French, German, Portuguese, Simplified Chinese, Polish, Italian and Spanish

System Requirements for Datacolor PAINT

Below is the recommended configuration to enhance system performance when running Datacolor PAINT *or connecting through PC ACCESS option*.

Component	Recommended	Notes
Processor	Dual Core processor	1
Memory RAM	4 GB	1
Free Hard Drive Capacity	10 GB	1
Minimum Size	1280 x 1024	1
Video Memory	512 MB	1
Video Resolution	True Color	2
DVD Drive	DVD Writer	3
Available Ports	1 USB (or RS-232 Serial) for the spectrophotometer 1 USB (or RS-232 Serial) for the dispenser 1 USB for the label printer Other ports: depending on the hardware devices connected to the computer	4
Operating System	Windows 7 SP1 (32 or 64 bit) Windows 8.x (32 or 64 bit) Window 10 (32 or 64 bit)	5

Notes:
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 PAINT 2.0 is supplied on a DVD disk. 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 Select requires a universal serial bus (USB) connection. Printer port requirements (Parallel or USB…) 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 PAINT 2.0 is a 32 bit application.

NOTE

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.

System Information

When troubleshooting a problem, you may need to provide specific information regarding the software installed on the unit, the serial number and other technical details. In some cases, you will need to restart the system under the direction of Datacolor support personnel. Technical information and access to specific troubleshooting features are found on the System Info page.

- • Using the black navigation button on the instrument, navigate to the *System Info* icon on the Live bar. The screen below displays:
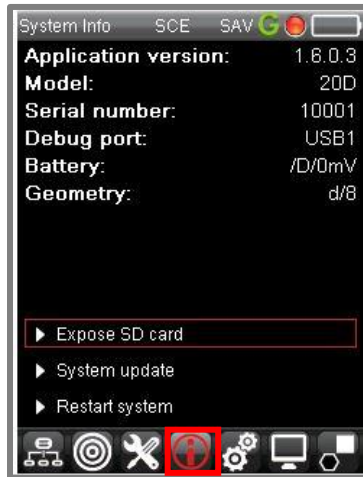
Application Version	Identifies the version of the stand-alone software installed on the instrument.
Model	Identifies the instrument type.
Serial Number	Identifies the instrument serial number.
Debug Port	Identifies the port for debugging.
Battery	Identifies the battery life remaining on the unit
Geometry	Identifies the viewing geometry (diffuse/8°)
Expose SD Card	N/A
System Restart	N/A

 IMPORTANT

Use the three options below ONLY under the guidance of a Datacolor service representative. Improper handling will make the Datacolor 20D inoperable.

Expose SD Card

The purpose of this option is to manually backup the Datacolor 20D's internal memory, including settings. To access this option: Connect Datacolor 20D to the computer.

 NOTE

When this option is selected the Datacolor 20D is no longer seen as a Spectrophotometer but as a Flash drive.

System Update

The instrument firmware can be updated in the field, using a Flash Drive provided by Datacolor.

Do NOT execute this option without a Update Firmware Flash Drive and instructions from a Datacolor Support engineer.

System Restart

In the event that it is necessary, you can restart the Datacolor 20D without powering it OFF and ON again.

- Navigate to the System Info icon on the Live bar and select it:
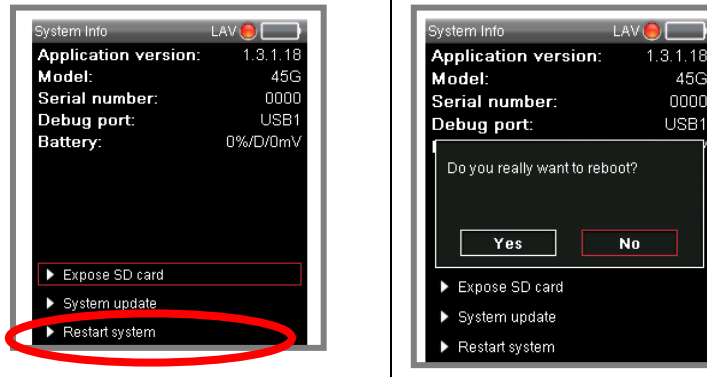
- *Select Restart System.*
- The program will ask you to confirm the operation. Click **Yes** to restart or **No** to cancel the operation.

Instrument Maintenance

The certificate of performance supplied with this instrument is valid for one (1) year under the following conditions:

It is used in an environment suitable for the instrument type.

It is handled and used with care.

Datacolor strongly recommends that the instrument be serviced once/year by an authorized service engineer.

Datacolor offers a variety of maintenance and certification services to match your needs. Please contact your local Datacolor office for more information.

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.*

Loose materials in the sphere should be removed by a Datacolor-certified technician.

Tile Handling and Cleaning
Handling Tiles

Handle calibration tiles with extreme care. Do not drop them, or scratch the glazed surface.

Always use the edges to grasp the tile.

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 use 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 surface.

Never immerse the tiles in water.

Tiles that have scratches, chips, abrasions or cracks must be replaced. Signs of wear and tear on the tile surface will affect the accuracy of the calibration.

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.

Tile Storage

Large temperature variations will affect the accuracy of the 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.