Ci61

Spectrophotometer

User Guide

x-rite

Consult this documentation in all cases where the Attention symbol ⚠ appears. This symbol is used to inform you of any potential HAZARD or actions that may require your attention.

CE Declaration

CE Hereby, X-Rite, Incorporated, declares that this Ci6X Series is in compliance with the essential requirements and other relevant provisions of Directive(s) 2014/35/EU (LVD) and 2014/30/EU (EMC).

Federal Communications Commission Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Equipment Information

⚠ Use of this equipment in a manner other than that specified by X-Rite, Incorporated may compromise design integrity and become unsafe.

WARNING: This instrument is not for use in explosive environments.

Do not look directly into the measurement optics when the instrument is on.

Instructions for disposal: Please dispose of Waste Electrical and Electronic Equipment (WEEE) at designated collection points for the recycling of such equipment.

Proprietary Notice

Warranty Information

X-Rite warrants this Product against defects in material and workmanship for a period of twelve (12) months from the date of shipment from X-Rite's facility, unless mandatory law provides for longer periods. During such time, X-Rite will either replace or repair at its discretion defective parts free of charge.

X-Rite's warranties herein do not cover failure of warranted goods resulting from: (i) damage after shipment, accident, abuse, misuse, neglect, alteration or any other use not in accordance with X-Rite's recommendations, accompanying documentation, published specifications, and standard industry practice; (ii) using the device in an operating environment outside the recommended specifications or failure to follow the maintenance procedures in X-Rite's accompanying documentation or published specifications; (iii) repair or service by anyone other than X-Rite or its authorized representatives; (iv) the failure of the warranted goods caused by use of any parts or consumables not manufactured, distributed, or approved by X-Rite; (v) any attachments or modifications to the warranted goods that are not manufactured, distributed or approved by X-Rite. Consumable parts and Product cleaning are also not covered by the warranty.

X-Rite's sole and exclusive obligation for breach of the above warranties shall be the repair or replacement of any part, without charge, which within the warranty period is proven to X-Rite's reasonable satisfaction to have been defective. Repairs or replacement by X-Rite shall not revive an otherwise expired warranty, nor shall the same extend the duration of a warranty.

Customer shall be responsible for packaging and shipping the defective product to the service center designated by X-Rite. X-Rite shall pay for the return of the product to Customer if the shipment is to a location within the region in which the X-Rite service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations. Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service. Do not try to dismantle the Product. Unauthorized dismantling of the equipment will void all warranty claims. Contact the X-Rite Support or the nearest X-Rite Service Center, if you believe that the unit does not work anymore or does not work correctly.

THESE WARRANTIES ARE GIVEN SOLELY TO BUYER AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR APPLICATION, AND NON-INFRINGEMENT. NO EMPLOYEE OR AGENT OF X-RITE, OTHER THAN AN OFFICER OF X-RITE, IS AUTHORIZED TO MAKE ANY WARRANTY IN ADDITION TO THE FOREGOING.

IN NO EVENT WILL X-RITE BE LIABLE FOR ANY OF BUYER'S MANUFACTURING COSTS, OVERHEAD, LOST PROFITS, GOODWILL, OTHER EXPENSES OR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES BASED UPON BREACH OF ANY WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL THEORY. IN ANY EVENT OF LIABILITY, X-RITE'S MAXIMUM LIABILITY HEREUNDER WILL NOT EXCEED THE PRICE OF THE GOODS OR SERVICES FURNISHED BY X-RITE GIVING RISE TO THE CLAIM.

Table of Contents

INTRODUCTION AND SETUP

The spectrophotometer is a compact, rugged and reliable color measurement instrument that reports spectral data.

This manual covers the installation, operation and maintenance of the instrument. Specific instructions for using the instrument with your software application can be found in the software documentation.

Key features of the instrument are:

- Hi-resolution 240 x 320, 18-bit color display
- Navigation control for easy screen selections, measure button, and power on/off

Packaging

Your instrument packaging should contain all the items listed below. If any of these items are missing or damaged, contact X-Rite or your Authorized Representative.

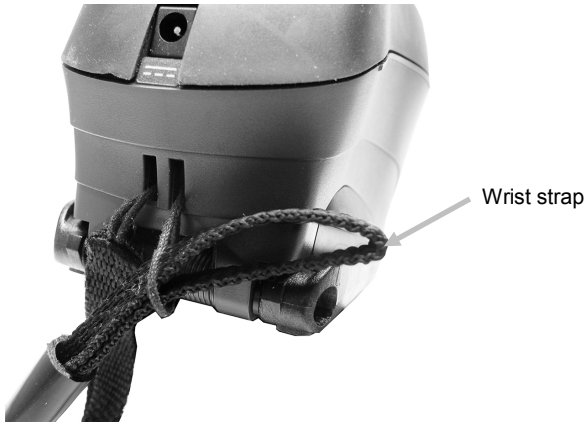
- Ci61 instrument
- Carrying case
- USB interface cable
- AC adapter (X-Rite P/N SE30-277) and line cord
- Calibration reference
- Manuals CD
- Documentation and registration material
- Safety strap

Attaching the Safety Strap

A safety strap is included with your instrument. The strap attaches to the back of the instrument and around your wrist. The strap should not be used to carry the instrument.

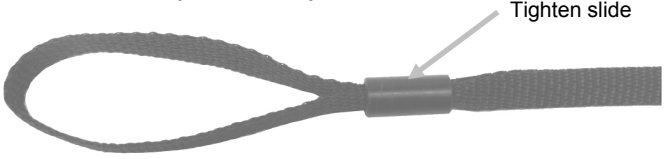
1. Feed the small looped end of the strap around the post at the back of the instrument.

2. Insert the wrist strap end through the small loop.



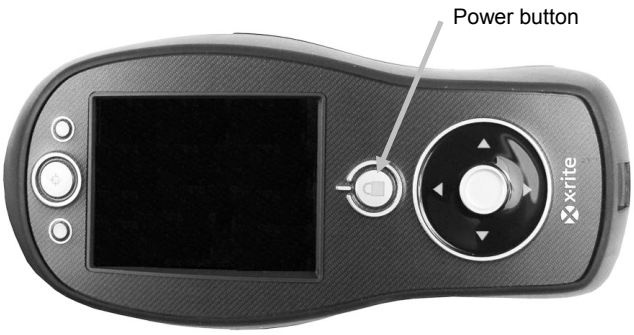
3. Pull on the wrist strap to secure to the strap post.

4. Use the slide to tighten the strap around your wrist.



Powering On and Off

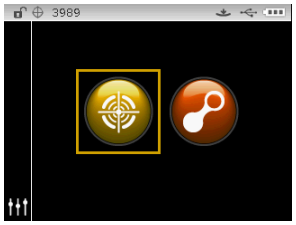
The power button is used to initiate the instrument from a power off state. Simply press and hold the button for three seconds to turn on the instrument. If the instrument does not power up after pressing the power button, the batteries may require charging. Refer to About the Battery Pack.



Powering Off
The instrument can be manually powered off by pressing and holding the power button for three seconds.

When first powered up, the instrument goes through a diagnostics test and displays a splash screen before the main menu screen appears.

Splash Screen



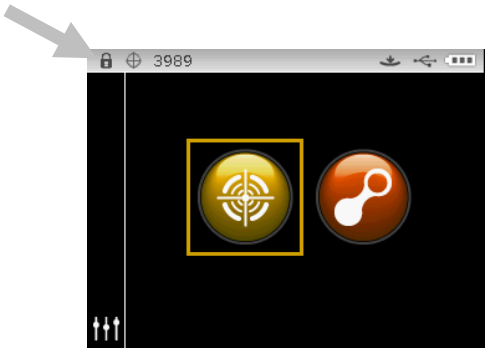
Main Menu

Locking the Navigation Control

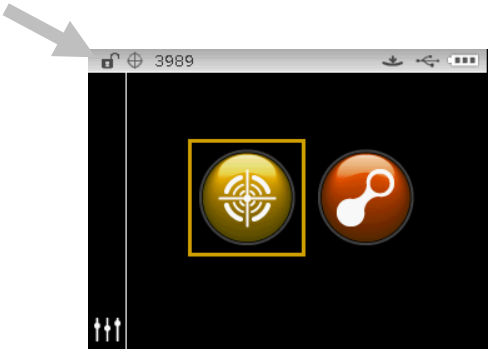
The power button is also used to lock the navigation control. This is useful to avoid inadvertent contact with the control when taking measurements.

Pressing the power button toggles the control to “locked” and “unlocked”.

A padlock icon appears in the header bar of the display to indicate the status of the control.



Locked Control



Unlocked Control

Power Save Modes

The instrument utilizes two power save modes to conserve battery life during nonuse times.

Standby Mode: The instrument is ready to measure, however the display is not on. A button press, measurement, power connection (if not connected), or USB connection will wake up the instrument.

Off Mode: The power button must be pressed to wake up the instrument before a measurement can be taken. Plugging in the AC adapter will also wake up the instrument from power off mode. Off mode does not occur when the AC adapter is attached to the instrument.

Charging the Battery Pack

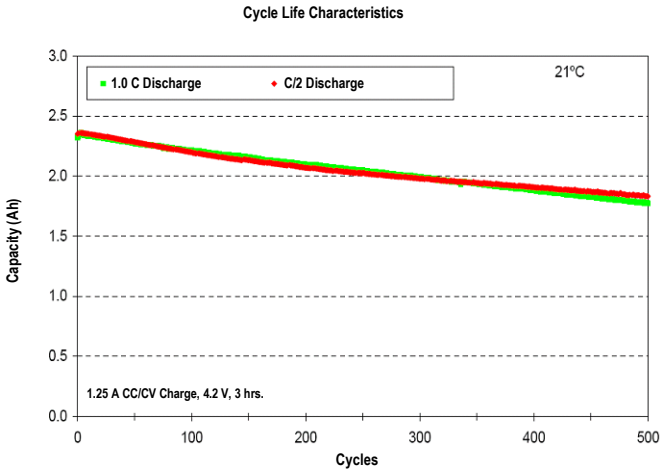
General

The battery pack for your new instrument comes in a low to medium charge state and should be charged before use (up to 4 hours for full charge).

A charged battery pack may eventually lose partial charge if not used for an extended amount of time. You should charge the battery from time to time and store in a cool environment when not in use to maintain battery performance.

Lifespan Expectations

Lithium-ion batteries typically decay to 80% capacity after 400 charge cycles (see chart on next page). A charge cycle can be defined as several partial charges equaling 100%. Partial charge and discharge cycles will help maintain the life of the battery. It is best to avoid full discharge and charge cycles. After roughly 400 charge cycles are reached, the amount of measurements you can expect to achieve from one full charge is reduced. At this point, you may wish to replace the battery pack.



Disposal

Dispose the battery pack in a designated disposal location for recycling.

Connecting the AC Adapter

NOTE: The instrument can operate from the AC adapter only. The battery pack does not need to be installed. The AC adapter (X-Rite P/N SE30-277) overrides any charge condition of the battery pack in the instrument. Measurements can be taken even with a very low battery condition when using the AC adapter.

1. Verify the voltage indicated on the AC adapter complies with the AC line voltage in your area.
2. Insert the small plug from the AC adapter into the input connector on the instrument.
3. Plug the detachable line cord in the AC adapter and plug the line cord into the wall receptacle.

AC Adapter Ratings
Input: 100-240V 50-60 Hz
Output: 12VDC @ 2.5A

⚠ Operational hazard exists if an AC adapter other than X-Rite SE30-277 is used.

Connecting the USB Cable

IMPORTANT: You must install the software before connecting the instrument to your computer.

1. Install the software application if not already installed. Refer to the software documentation for additional information.
2. Turn the instrument on and plug the square end of the USB cable into the back of the instrument.
3. Plug the USB cable into an available port on your computer. The instrument should acknowledge USB presence by displaying the USB icon in the header bar of the screen.

USER INTERFACE

Instrument Controls

The instrument controls are used to navigate the screen, select options, and perform measurements.

Navigation Control (up, down, left, right and center)

The navigation control moves the focus of the highlight around the screen. Tapping on the left side moves the focus to the next available item to the left. Tapping on the right side moves the focus to the next available item to the right. The up and down sides perform the same function, only in an up and down direction.

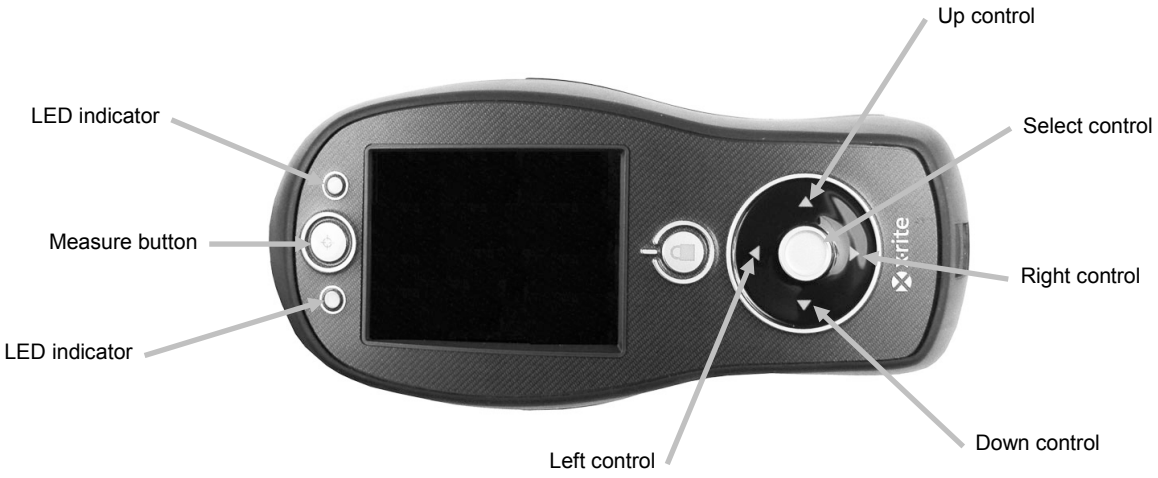
Tapping on the center of the control selects the item that has focus, such as a mode or option.

NOTE: If at any time the navigation control become non-responsive, turning the instrument off and then back on will reset their operation.

You can also use the navigation control to rapidly scroll through a list by touching the control between the arrows and circle left or right.

Measure Button

The Measure button is located at the front of the instrument. The button can be configured to initiate a measurement or be used in conjunction with the read switch.



LED Indictors

Multi-color LEDs located at the front of the instrument provide visual feedback on the status of a measurement. The LEDs will turn off after 5 seconds.

- Green: Indicates a successful measurement has taken place. Flashing green LEDs indicates that the instrument is at an idle state waiting for a measurement.
- Amber: Indicates a measurement is in progress.
- Red: Indicates a measurement error has occurred.

General Sample Measurement

The instrument can take measures from just about any clean, dry surface that is reasonably flat. The instrument shoe should be able to rest flat and steady on the sample area. If the item to be measured is smaller than the shoe, you may want to make a platform—at the same height as the item—for the rest of the instrument's shoe to sit on.

Procedure:

1. Clear the sample surface of any dirt, dust, or moisture.
2. Position the target window over the sample to measure. If possible, place the entire instrument on the sample.

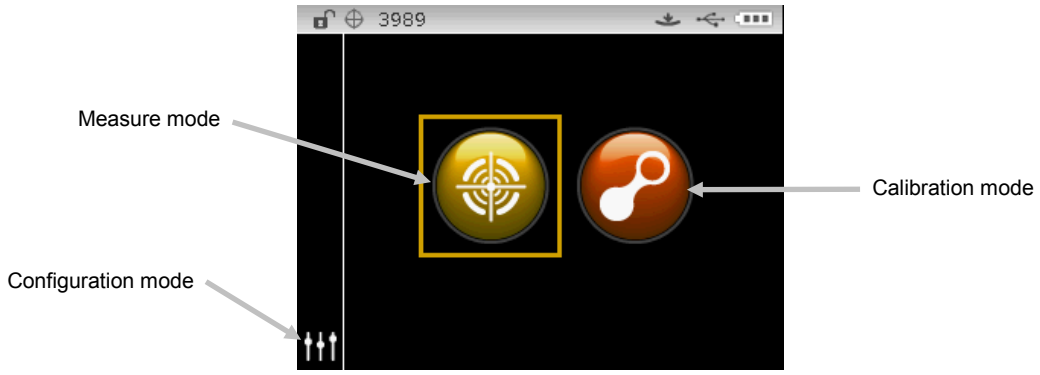
3. Press the instrument firmly to the shoe and hold steady until the display indicates that the measurement is complete.

4. Release the instrument and view the measurement results.

   An unsuccessful measurement will be indicated by an error message. See the Troubleshooting section for more details.

Main Screen Menu

When the instrument is powered-up, the main (top level) screen appears after the diagnostics test is complete. The main screen consists of the header bar and operation modes. The operation modes are selected by using the navigation buttons located to the side of the display screen.



Measure Mode

The measure mode is the main mode of operation. Use the Measure mode to take and analyze measurements, and select measurement options. Refer to the Measurement Mode section for information.

Calibration Mode

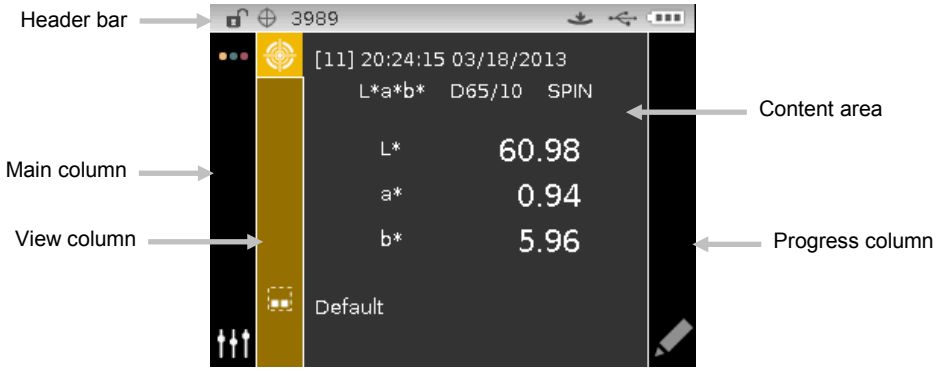
The calibration mode is used to perform white reference and black trap calibrations. Refer to the Calibration Mode section for information.

Configuration Mode

The configuration mode is used to set and edit the instruments configuration options. The configuration options should be set before you use your instrument for the first time. Refer to the Configuration Mode section for information.

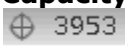
Display Screen Layout

The display screen is divided into five main areas.



Header Bar

The header bar at the top displays various icons showing the current instrument setup and condition. Refer below for a description of each.

- **Controls Lock**: Displays a locked  or unlocked  icon for the instrument controls. Refer to Locking the Navigation Control earlier in this manual for an explanation.
- **Storage Capacity:** Displays an icon and the number of remaining sample storage locations  . A maximum of 4000 samples can be stored.
- **Measurement Trigger Method**: Displays the measurement method currently selected for the instrument.

 Indicates the instrument must be pressed to the shoe to activate the read switch to take a measurement.

 Indicates the measure button on the top of the instrument must be pressed to take a measurement.

 Indicates a software command is required to initiate a measurement. No read switch or measure button are used.

 Indicates that both the read switch and measure button are required to take a measurement.

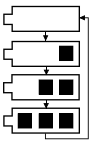
- **USB Connection**: The USB icon appears when the instrument is plugged into the USB port on the computer.
- **Battery Gauge**: Depicts the current condition of the battery pack.

 Indicates the battery pack is fully charged.

 Indicates the battery pack has a sufficient charge for a substantial number of measurements.

 Indicates the battery pack is low, but measurements are still possible. Battery pack should be charged soon.

 Indicates the battery pack is **very** low and only a few measurements remain. Battery pack should be charged immediately.

 Indicates the AC adapter is plugged in and the battery pack is charging (battery indication segments cycle). The battery indicator will stop cycling and display three segments when the battery pack is fully charged.

 Indicates that battery pack is removed and the instrument is operating from the AC adapter only.

Main Column

The main column is used to access the main instrument screen and configuration mode.

View Column

The view column lists options that may be available for the selected mode. The highlighted option is the one that is currently displaying in the content area.

Content Area

The content area displays the data, steps, and information.

Progress Column

The progress column displays controls supporting the currently active content area, such as step sequences, etc.

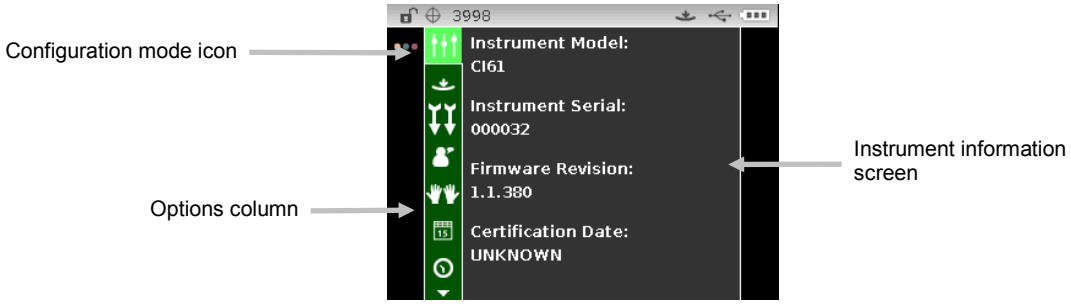
CONFIGURATION MODE

Configuration mode is used to adjust and view the instrument's settings. You should set the configuration options before using the instrument for the first time. However, you can go back and change these settings at any time. Each configuration option is explained in detail on the following pages.

Entering Configuration Mode

1. From the Main screen, use the **Navigation** control to move the highlight focus to the Configuration icon.

2. Tap the **Select** button to access the main configuration screen. The screen displays the instrument information (model, serial number, firmware and certification date).

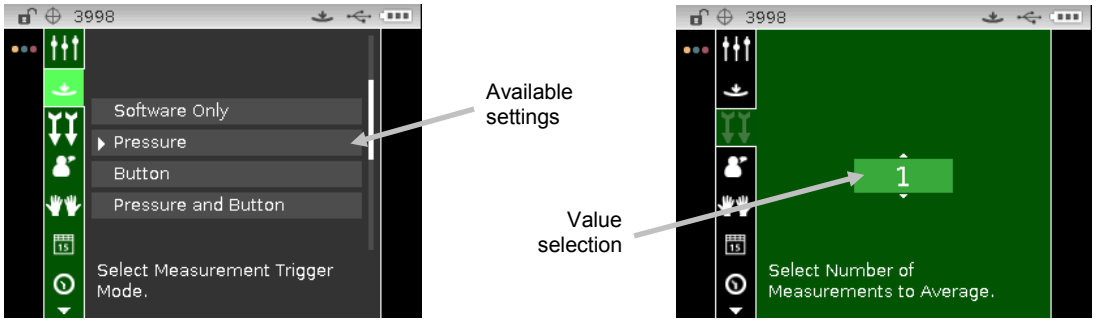


3. From the Configuration screen, use the **Up** or **Down** navigation buttons to move the highlight focus to the desired configuration icon in the Options column.

   NOTE: The arrow icon (▼ or ▲) at the end of the Options column indicates that additional options are available. Move the highlight focus to the arrow icon to advance to the additional options.

4. Tap the **Right** navigation button to enter the option settings area.

5. *For Option Selections:*
   Use the **Up** or **Down** navigation buttons to move the highlight focus to the desired setting and tap the **Select** button to change your setting. An arrow (▶) appears next to the selected setting.
   For Value Selections:
   Tap the **Select** button to activate the parameter and use the **Up** or **Down** navigation buttons to select the value. Tap the **Select** button to save the value.



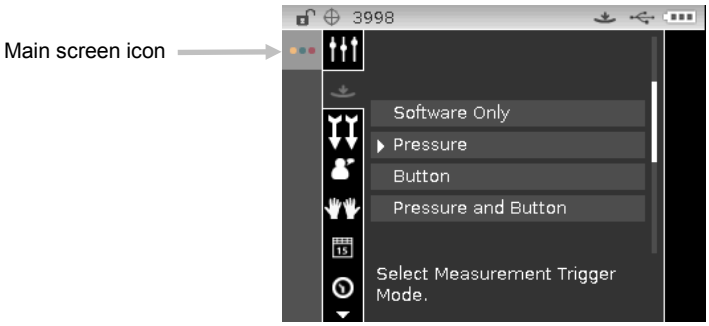
6. Tap the **Left** navigation button to return to the Options column.

Exiting Configuration Mode

After configuring options, use the **Left** navigation button to move the highlight focus to the Main screen icon in the

Main column and tap the **Select** button to exit.

NOTE: If a setting has a checkmark save icon it must be selected before exiting or any changes that were made will be lost.



Measurement Trigger


This option is used to determine which inputs are used to trigger a measurement on the instrument. The available settings are Software Only, Pressure (default), Button, and Pressure and Button.

Software Only: No button or read switch is required to take a measurement. This setting would be selected when software input is used to trigger a measurement.

Pressure: Shoe closing is required to take a measurement.

Button: Measure button is required to take a measurement.

Pressure and Button: Both the read switch and measure button are required to a take a measurement.

Averaging


This option is used to set the number of measurements required for calculating a single measurement. Measurements are taken at different locations on a sample to achieve average measurement values. The available settings are 1 to 99.

Language


This option is used to set the language that is displayed on the instrument. The available settings are English (default), German, French, Spanish, Italian, Portuguese, Chinese Simplified, Chinese Traditional, Korean, and Japanese.

Instrument Orientation


This option is used to change the display direction to accommodate both right and left handed users. The available settings are Right Handed (default) and Left Handed.

Date Format


This option is used to adjust the date format the instrument uses. The available settings are: MM/DD/YYYY (default), DD/MM/YYYY, DD.MM.YYYY, YYYY/MM/DD, and YYYY-MM-DD.

NOTE: The date format automatically changes to the correct format for the selected language. If desired, you can change the format after selecting the language.

Instrument Date/Time


This option is used to set the instrument date and time.

1. Use the **Right/Left** and **Up/Down** buttons the select the month, day, year, hour, or minute option.
2. Tap the **Select** button to access the parameter.
3. Use the **Up** or **Down** navigation buttons to edit the parameter and then tap the **Select** button.
4. Repeat steps 1 through 3 until the date and time are set.
5. Tap the **Right** navigation button and highlight the checkmark icon  in the Progress Column.
6. Tap the **Select** button to save the date and time.

Clear All Samples


This option is used to clear all samples stored in the instrument. To clear all samples, tap the **Right** side of the navigation control to move highlight focus to the checkmark icon in the Progress column. Tap the **Select** control.

Restore Factory Settings


This option is used to restore the instrument's configuration settings back to their original factory settings. All jobs, projects, standards and samples will also be deleted.

To restore the factory settings, tap the **Right** side of the navigation control to move highlight focus to the checkmark icon in the Progress column. Tap the **Select** control.

CALIBRATION MODE

The calibration consists of a ceramic plaque for white measurements and a trap opening for black measurements.

A calibration should be performed when prompted for by the instrument or when desired.

Refer to Cleaning section in the Appendices for information on cleaning the optics area and references.

NOTE: Make sure to use the calibration reference supplied with the instrument for calibrating. Do not substitute this reference with a reference from another instrument. The serial number on the reference should match the reference (plaque) serial number on the instrument.

Calibration Notes

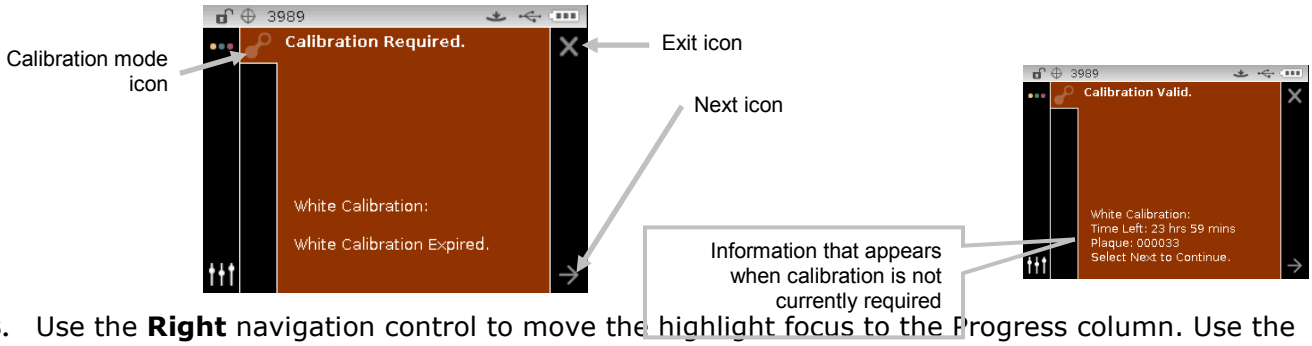
- Dirt or dust in the aperture area will cause an inaccurate calibration reading. Refer to the Appendices for optics cleaning procedure.
- The **white ceramic plaque in the calibration reference is dramatically affected by smudge marks, dust, and finger prints**. Refer to Appendices for calibration reference cleaning procedures.
- The **black trap should be cleaned periodically to remove any dust or contamination**. Refer to Appendices for black trap cleaning procedures.
- **Do not move instrument while taking a calibration measurement**. If motion is detected, calibration will be aborted.
- **Important:** If the lamp signal in your instrument reaches a level that is 50% below the factory level stored, the warning symbol shown at the right appears after a calibration is completed. This indicates that the illumination level is getting low and you should have your instrument serviced soon.

White and Black Calibration Procedure

1. From the Main screen, use the **Navigation** control to move the highlight square to the Calibration icon.

2. Tap the **Select** control to access the calibration screen.

   Calibration Required appears if calibration is needed. If calibration is not currently needed, the time remaining before the next calibration along with the white reference (plaque) serial number appears. To exit calibration mode without calibrating, select the Exit icon (**x**) in the Progress column.



3. Use the **Right** navigation control to move the highlight focus to the Progress column. Use the **Down** navigation control to highlight the Next arrow icon (→) if not highlighted and tap the **Select** button.
4. Remove the protective cap from the white ceramic plaque in the calibration reference.
5. Position the instrument target window over the white ceramic plaque.

6. Press the instrument firmly to the shoe and hold steady until the display indicates that the reading is complete. Release the instrument.
7. Reinstall the protective cap on the white ceramic plaque.
8. Position the instrument target window over the black trap opening of the calibration reference.

9. Press the instrument firmly to the shoe and hold steady until the display indicates that the reading is complete. Release the instrument.
10. Tap the **Select** control to save the calibration and exit to the main menu.
11. Store the calibration reference in a dry, dust free area, away from direct exposure to light.

    NOTE: If an error message appears during or after white calibration, tap the **Select** control to clear the message and try measuring the white reference again. If an error still occurs, clean the white calibration reference as explained in the Appendices.

MEASURE MODE

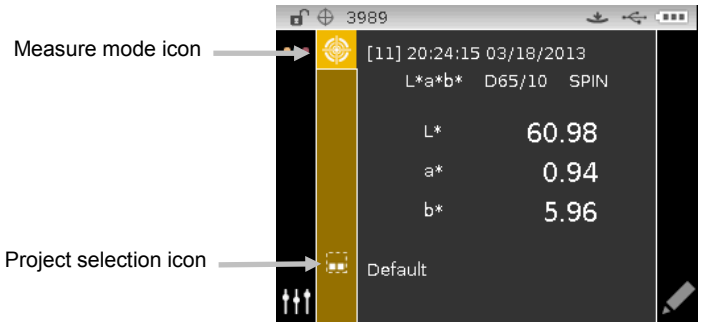
The measure mode is the main operation mode of the instrument used to obtain sample data. Stored sample data is downloaded to the software application. The Ci61 can store 4000 measurement across user-selected projects.

The measure mode screen displays the selected project name, sample data and measurement number with timestamp. The sample can be renamed from the default timestamp if desired. Refer to Renaming the Sample Name later in this section.

Entering Measure Mode

1. From the Main screen, use the **Navigation** control to move the highlight square to the Measure mode icon.

2. Tap the **Select** control to access the main measure screen.



Measure Mode Icons

A description of the icons found in the measure mode is shown below.

Icon	Description
	Access the main measurement screen.
	Access project detail, selection, and creation screen. Arrow points to current project selected.
	Exits the averaging measurement sequence for the current sample.
	Access the edit screen.

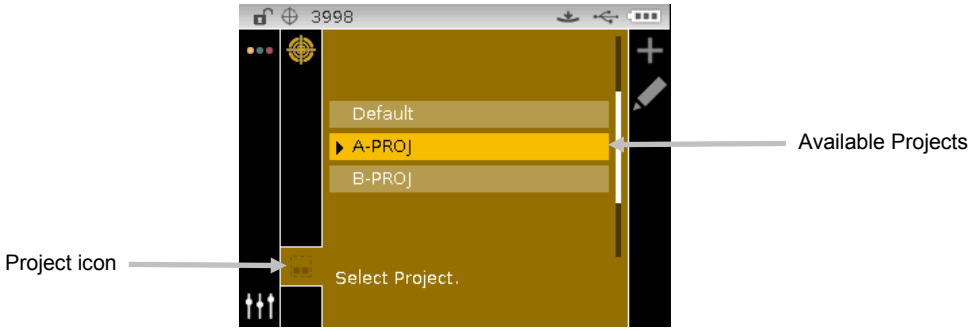
Projects

Projects are typically created and downloaded from a software application. You must select the desired project that the sample measurements are stored in before taking measurements. The selected project is used until a different project is chosen. Projects can also be created using the instrument. Refer to the procedure that follows for creating projects.

Selecting a Project

To select a project:

1. From the Measure screen, use the **Up** or **Down** navigation buttons to move the highlight focus to the Project icon .
2. Tap the **Select** or **Right** button to access the project selection area.

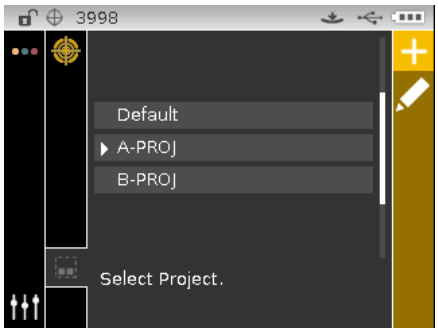


3. Use the **Up** or **Down** navigation buttons to move the highlight focus to the desired project.
4. Tap the **Select** button. An arrow (▶) appears next to the selected project and the screen returns to the measure screen.

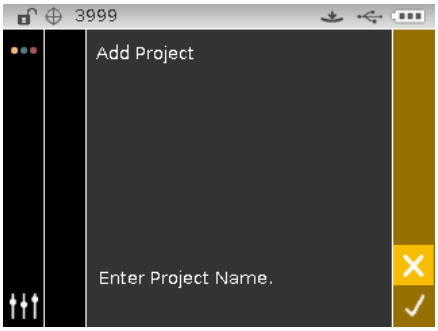
Creating a Project

To create a project:

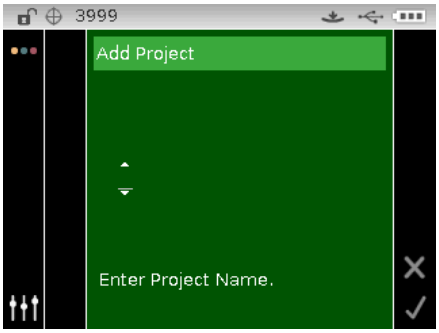
1. From the Measure screen, use the **Up** or **Down** navigation buttons to move the highlight focus to the Project icon .
2. Tap the **Right** button twice to move the focus to the Progress Column.



3. Select the Add icon and tap the **Select** button to view the Add Project screen.



4. Tap the **Left** navigation button to move the highlight to the Add Project screen.



5. Tap the **Select** button to highlight the first character position.
6. Use the **Up** or **Down** navigation buttons to page through the alphanumeric list for the first character of the name.

NOTE: You can also use the navigation control to rapidly scroll through a list by touching the control between the arrows and circle left or right.

7. Tap the **Select** button set the first character.
8. Tap the **Right** navigation button to move the two arrows to the next character space and tap the **Select** button.
9. Use the **Up** or **Down** navigation buttons as previously explained to set the character and tap the **Select** button.
10. Continue until all characters for the name are set.
11. Tap the **Right** navigation button and highlight the Checkmark icon in the Progress Column.
12. Tap the **Select** button to save the name for the project.

NOTE: To exit the name without saving, highlight the Exit icon in the Progress Column and tap the **Select** button.

Deleting a Project and Samples

Projects and samples can be deleted from the instrument. When a project is deleted, any samples included are also deleted.

To delete a project or samples:

1. Select a project as previously explained and then tap the **Right** navigation button. Highlight the Edit icon in the Progress Column.

2. Tap the **Select** button and then tap the **Left** navigation button to move the highlight to the select option screen.
3. Use the **Up** or **Down** navigation buttons to choose Delete This Project or Delete All Samples. Tap the **Select** button to choose the option.
4. Tap the **Right** navigation button and highlight the Checkmark icon in the Progress Column.
5. Tap the **Select** button to delete the selected option.

Locking a Project

After a project is created it can be locked to help prevent any inadvertently deleting of stored samples.

To lock a project:

1. Select a project as previously explained and then tap the **Right** navigation button. Highlight the Edit icon in the Progress Column.
2. Tap the **Select** button and then tap the **Left** navigation button to move the highlight to the select option screen.
3. Use the **Up** or **Down** navigation buttons to choose the Lock Project option. Tap the **Select** button to choose the option.
4. Tap the **Right** navigation button and highlight the Checkmark icon in the Progress Column.
5. Tap the **Select** button to lock the project.

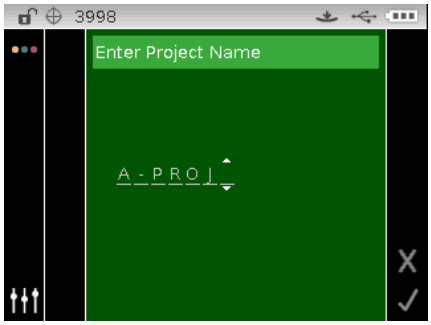
Unlocking a Project

Projects can be unlocked by selecting the Unlock Project option after the project is locked.

Editing Project Name

To rename a project:

1. Select the project (if not already selected) that you want to rename and move the highlight to the Progress Column.
2. Highlight the Edit icon and tap the **Select** button to view the select option screen.
3. Select the Edit icon and tap the **Select** button to view the Enter Project Name screen.
4. Tap the **Left** navigation button to move the highlight to the Enter Project Name screen.



NOTE: Select the backspace character (◀) and use the **Left** navigation button to delete the unwanted characters.

5. Use the **Left** or **Right** navigation buttons to move the two arrows to the character location and tap the **Select** button.
6. Use the **Up** or **Down** navigation buttons to page through the alphanumeric list for the character location of the name.

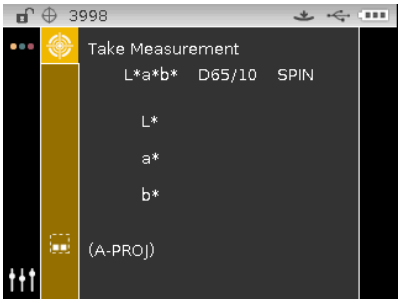
NOTE: You can also use the navigation control to rapidly scroll through a list by touching the control between the arrows and circle left or right.

7. Tap the **Select** button set the character.
8. Tap the **Left** or **Right** navigation button to move the two arrows to the next character space and tap the **Select** button.
9. Use the **Up** or **Down** navigation buttons as previously explained to set the character and tap the **Select** button.
10. Continue until all characters for the name are set.
11. Tap the **Right** navigation button and highlight the Checkmark icon in the Progress Column.
12. Tap the **Select** button to save the name for the project.

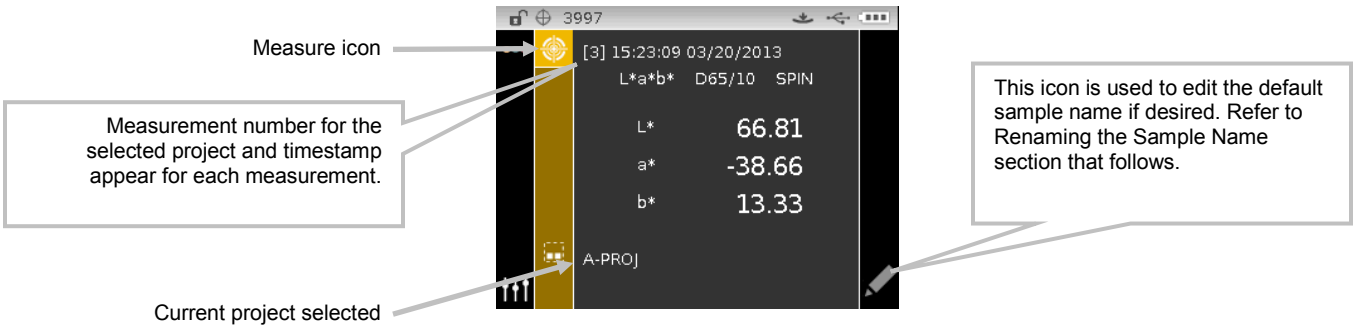
Measuring a Sample

To measure a sample:

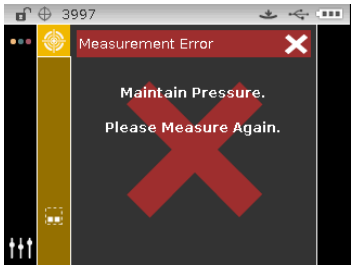
1. Select the project as previous explained.
2. From the Measure screen, use the **Up** or **Down** navigation buttons to move the highlight focus to the Measure icon .



3. Position the instrument on the sample using the techniques previously explained.
4. Take a measurement via read switch and/or the measure button.
5. If averaging is used, reposition the instrument on the sample and take additional measurements. Refer to Using Measurement Averaging later in this section for information.
6. View measurement results on the display.



NOTE: If an error occurs during a measurement, try measuring the sample again. If the error still occurs, refer to the Troubleshooting section in the Appendices.

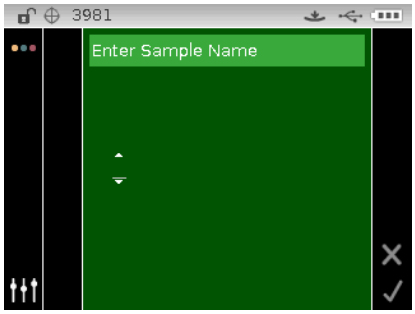


Renaming a Sample

The last measured sample can be renamed from the default timestamp if desired.

To rename a sample:

1. Select the Edit icon and tap the **Select** button.
2. Tap the **Left** navigation button to move the highlight to the Enter Sample Name screen.



3. Tap the **Select** button to highlight the first character position.
4. Use the **Up** or **Down** navigation buttons to page through the alphanumeric list for the first character of the name.

NOTE: You can also use the navigation control to rapidly scroll through a list by touching the control between the arrows and circle left or right.

5. Tap the **Select** button set the first character.
6. Tap the **Right** navigation button to move the two arrows to the next character space and tap the **Select** button.
7. Use the **Up** or **Down** navigation buttons as previously explained to set the character and tap the **Select** button.
8. Continue until all characters for the name are set.

9. Tap the **Right** navigation button and highlight the Checkmark icon in the Progress Column.
10. Tap the Select button to save the name for the sample.

NOTE: To exit the name without saving, highlight the Exit icon in the Progress Column and tap the **Select** button.

Measurement Averaging

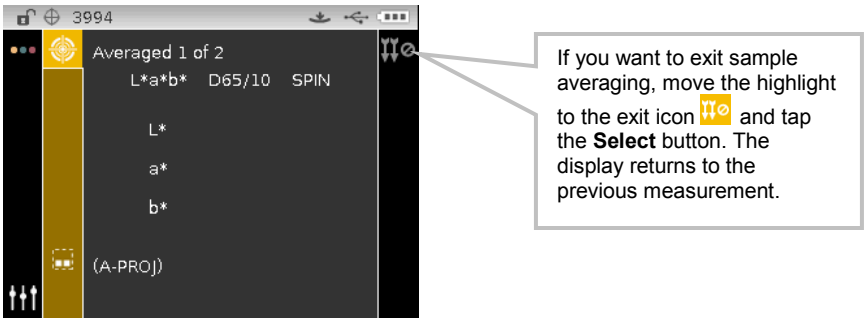
NOTE: Measurement Averaging must be activated in Configuration before averaging can be performed. Refer to the Configuration Mode for procedure on setting averaging.

Measurements are typically taken at various locations on a sample to achieve average data values. Averaging should be used when measuring non-uniform samples, textured materials, and any dark or high chroma colors.

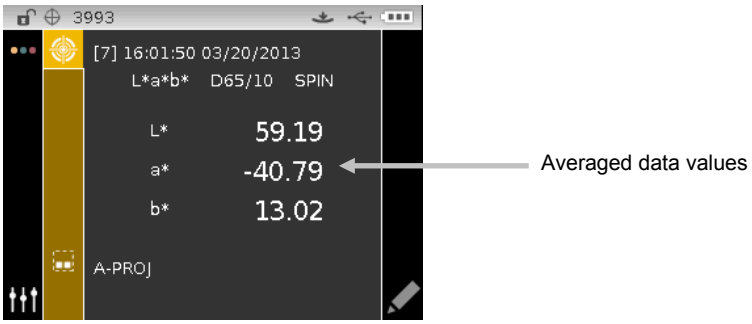
The following example has an average setting of **2**.

To measure using averaging:

1. Select the project as previous explained.
2. Position the instrument on the first area of the sample and take a measurement. After the measurement, the instrument displays "Averaged 1 of 2" in the screen, indicating one more measurement is required for results.



3. Position the instrument on the second area of the sample and take a measurement. After the measurement, the instrument momentarily displays "Processing" and then the averaged data values.



APPENDICES

Service Information

X-Rite provides repair service to their customers. Because of the complexity of the circuitry, all warranty and non warranty repairs should be referred to an authorized service center. For non warranty repairs, the customer shall pay shipping and repair cost to the authorized service center, and the instrument shall be submitted in the original carton, as a complete unaltered unit, along with all the supplied accessories.

X-Rite, Incorporated has offices around the world. You can contact us using one of the following methods:

- To identify the X-Rite service center nearest you, please visit our web site at: www.xrite.com.
- For online help, visit our web site (www.xrite.com) and click the **Support** link. Here you can search for software or firmware updates, white papers, or frequently asked questions which can quickly resolve many common user problems.
- Send an e-mail to Technical Support: casupport@xrite.com detailing your problem and listing your contact information.
- For sales questions or to order cables and accessories, visit our web site (www.xrite.com) or contact your nearest X-Rite dealer or service center.
- Problems and questions can also be faxed to your local X-Rite office listed on our web site.

Cleaning the Instrument

Your instrument requires very little maintenance to achieve years of reliable operation. However, to protect your investment and maintain reading accuracy, a few simple-cleaning procedures should be performed from time to time.

General Cleaning

The exterior of the instrument may be wiped clean with a cloth dampened in water or mild cleaner.

NOTE: DO NOT use any solvents to the clean the instrument, this will cause damage to the cover.

Cleaning the Optics

The optics should be cleaned once a week in a normal environment. If the instrument is used in a dirty or dusty environment, more frequent cleaning may be required.

Carefully lift the instrument, open the shoe and blow short bursts of clean, dry air into the measurement port. This should remove any accumulated debris from the optics.

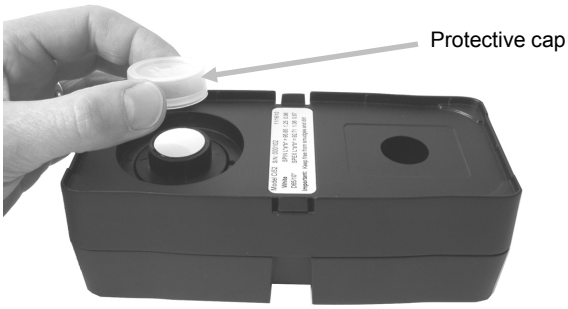
IMPORTANT: If can air is used for cleaning, do not invert or tilt the can during use. This could cause damage to the optics.

Cleaning the Calibration Reference

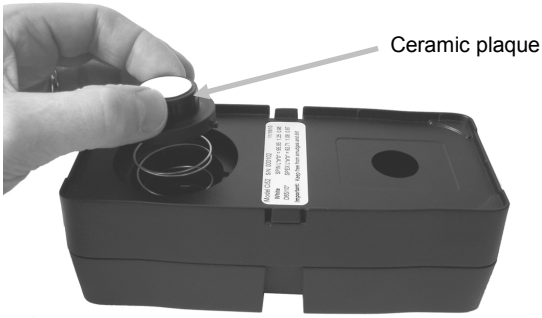
The calibration reference consists of white and green ceramic plaques, and a black trap opening. The calibration reference should be cleaned periodically.

Ceramic Plaque Cleaning Procedure

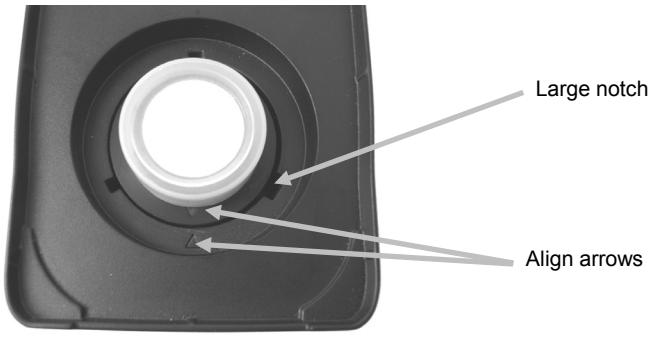
1. Remove the protective plastic cap from the ceramic plaque.



2. **Important:** Always grip the ceramic plaque from the edges, being careful not to touch the white/green surface.
   Press downward on the ceramic plaque and turn counterclockwise until it stops. Lift upward and remove the ceramic plaque from the base.

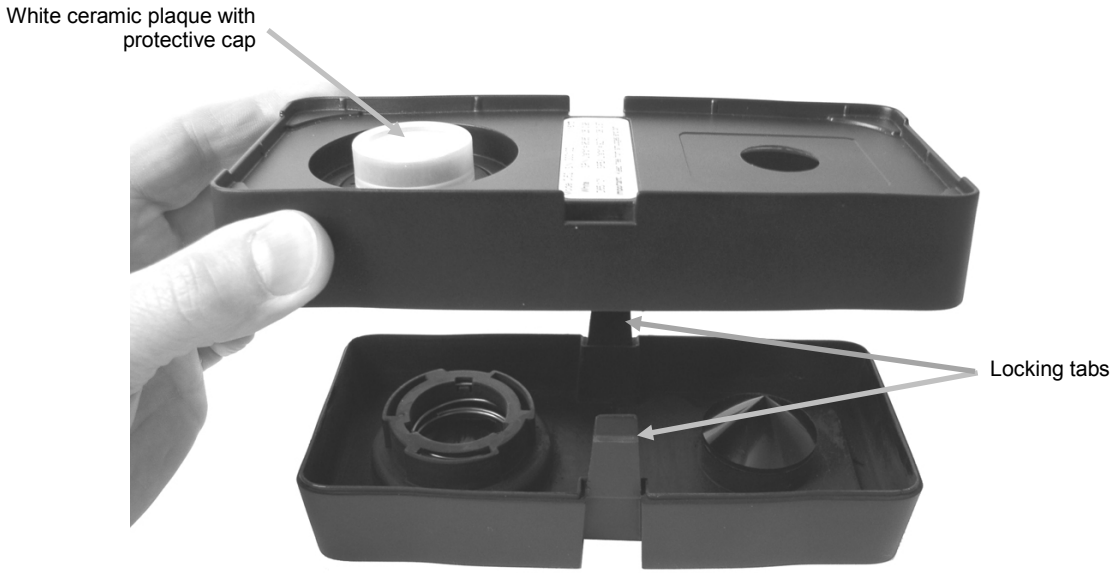


3. Clean the plaque using a mild soap and warm water solution. Thoroughly rinse with warm water and wipe dry with a lint-free cloth. Do not use solvents or cleaners of any kind.
4. After the ceramic plaque is completely dry, align the large tab on the side of the ceramic plaque with the large notch in the base. Compress the spring downward with the ceramic plaque until it stops. Holding the ceramic plaque down, rotate clockwise until it stops. Slowly allow the plaque to rise. The arrow on the ceramic plaque and the arrow on the base should be aligned when properly positioned.
5. Reinstall the protective cap over the ceramic plaque when not in use.

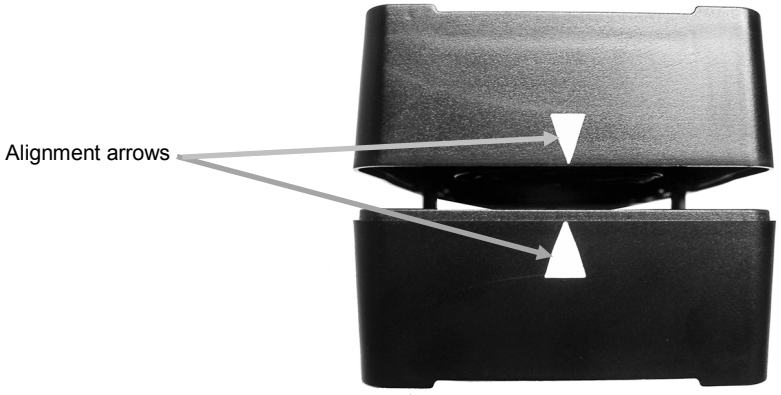


Black Trap Cleaning Procedure

1. Take apart the two sections by compressing the two locking tabs on both sides with your fingers and separating.
2. Clean with clean, dry air, or wipe clean with a lint-free cloth to remove any dust or contamination.



3. After cleaning, align the two arrows on the end before reassembling the sections.
   Note: The tabs will not lock correctly if assembled in the opposite direction.



Replacing the Battery Pack

⚠ Use the rechargeable Li-ion battery pack provided (X-Rite P/N SE15-40); other types may burst causing personal injury.

1. Carefully turn the instrument over and rotate the shoe back until it is completely open.
2. Using your finger, pull back on the battery access cover latch while lifting upwards on the cover to remove it from the instrument housing.
3. Remove the old battery pack and dispose in a designated disposal location for recycling.
4. Insert the new battery pack into the instrument with the battery contacts facing down and towards the back of the instrument.

5. Reinstall the battery access cover by inserting the back edge first and then pressing downward until the access cover locks into position.

6. Return the shoe to the closed position.

Troubleshooting

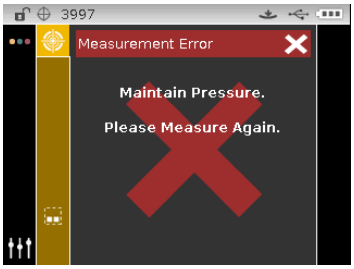
Prior to contacting the support department for instrument problems, try the applicable solution(s) described below. If the condition persists, contact us using one of the methods listed in the Service Information section.

Problem	Cause/Solution
Instrument not responding (no display or beep during measurements).	*Battery pack is very low or bad.* Charge the battery. If battery pack is bad, replace using the procedure in the Appendix.
	No battery pack installed. Install batteries or plug in AC adapter.
Measurement error or results appear inaccurate.	*Measurement or calibration failed.* If error persists, clean instrument optics and calibration reference (see General Cleaning). Turn instrument power off and then on.
Navigation control buttons are non-responsive.	Turn the instrument off and then back on to reset their operation.
Calibration procedure fails.	*Calibration reference is dirty or damaged.* Clean the reference per procedure in Appendix, or replace if damaged.
Instrument and software not communicating.	*Interface cable not connected.* Connect the interface cable between the computer and the instrument. Close and restart the software application. If this does not work, reboot the computer. Remove power from the instrument, reapply power and see if the condition is corrected. Check for proper configuration setting from the software provider.
Repeated sample measurement failures.	Ensure that the sample is being read in accordance with your software's documentation. Close and restart the software application. Perform a calibration on the instrument (see Calibration section).

Screen Messages

Screen messages can appear on the display during error conditions or for informational purposes. Messages may also be accompanied by a number to indicate a specific condition. If an error condition persists, please contact our technical support using one of the methods listed in the Service Information section.

Sample Error Message



Technical Specifications

Measurement Geometrics	d/8°, DRS spectral engine, choice of optical aperture: 8 mm measurement area/14 mm target window 14 mm measurement area/20 mm target window
Receiver	Blue-enhanced silicon photodiodes
Light Source	Gas-filled tungsten lamp
Illuminant Type	A, C, D50, D55, D65, F2, F7, F11, and F12
Standard Observer	2° and 10°
Spectral Range	400nm – 700nm
Spectral Interval	10nm – measured, 10nm – output
Measurement Range	0 to 200% reflectance
Measuring Time	Approx. 2 seconds
Inter-Instrument Agreement	Avg. 0.30 ΔE^*_{ab}, based on avg. of 12 BCRA series II tiles (specular component included) Max. 0.50 ΔE^*_{ab} on any tile (specular component included)
Short-Term Repeatability	.10 ΔE^*_{ab} on white ceramic (standard deviation)
Lamp Life	Approx. 500,000 measurements
Power Supply	Removable Li-ion battery pack; 7.4 VDC rated @ 2400 mAh
AC Adapter Requirements	Input 100-240 VAC, 50/60Hz Output 12 VDC @ 2.5 A
Charge Time	Approx. 4 hours – 100% capacity
Measurements Per Charge	1,000 measurements typical
Data Interface	USB 2.0
Operating Temperature Range	50° to 104°F (10° to 40°C) 85% relative humidity maximum (non-condensing)
Storage Temperature Range	-4° to 122°F (-20° to 50°C)
Dimensions	4.3”H (10.9 cm) 3.6”W (9.1 cm) 8.4”L (21.3 cm)
Weight	2.32 lbs. (1.05 kg)
Accessories Provided	Calibration Standard, Manual, AC Adapter, Carrying Case
Usage	Indoor only
Altitude	2000m
Pollution Degree	2
Overvoltage	Category II

Specifications and design subject to change without notice.

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P/N Ci61-500 Rev. C