CIF3100/3200

Spectrophotometer

User Manual

x-rite

PANTONE®

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 model is in compliance with the essential requirements and other relevant provisions of Directives 2014/30/EU (EMC), 2014/35/EU (LVD), and RoHS EU 2015/863.

Conforms to IEC/EN 62471 for LED Lighting Products.

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.
- Make sure the outlet used for power is protected earthed for safe operation of this instrument.
- Only use a compliant power cord that meets the IEC 60799:2018 Electrical accessories - Cord sets and interconnection cord sets.

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

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-

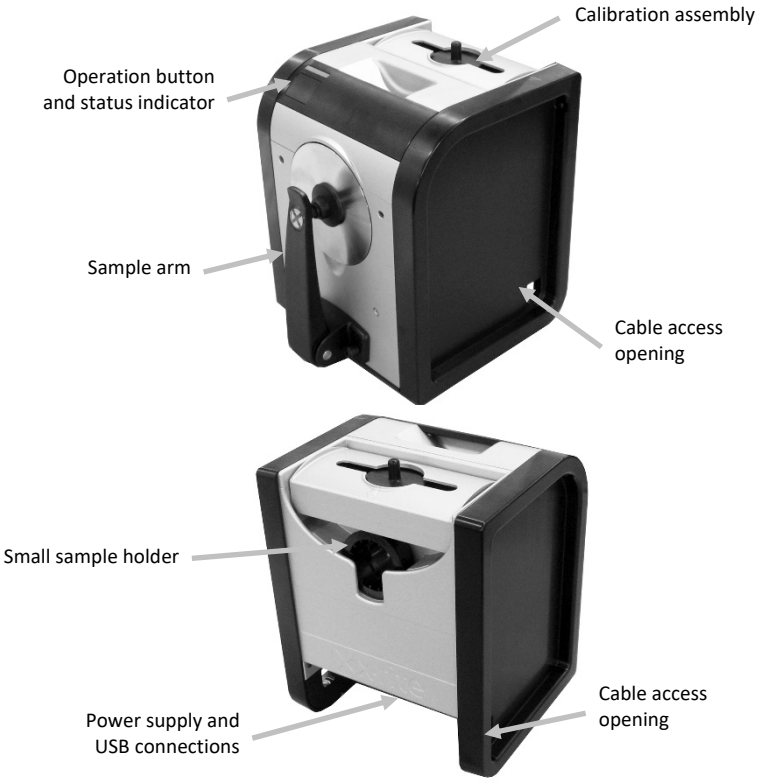
INFRINGEMENT. NO EMPLOYEE OR AGENT OF X-RITE, OTHER THAN AN OFFICER OF X-RITE, IS AUTHORIZED TO MAKE ANY WARRANTY IN ADDITION TO THE FOREGOING.

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

1. Introduction and Setup

The CIF3100/3200 instrument is used to measure and identify colors in retail paint and industrial applications.
The instrument reads color samples from a variety of materials including metal, paper, plastic, textiles, and various painted objects. The instrument can measure from 2 mm to 12 mm target size on a sample.
The CIF3100/3200 requires an AC adapter and USB communication to the host computer. Connections are located at the side of the instrument.



How to Use this Manual

This manual is intended to provide setup, operation, and general maintenance of the instrument. Specific software application information is available in the software help system.

Packaging Contents

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.

- CIF3100/3200 instrument
- Calibration assembly
- Small sample holder
- Power supply (X-Rite P/N SE30-390) and line cord
- USB interface cable
- Quick Start Guide

Connecting the Power Supply

Operational hazard exists if a power supply other than X-Rite SE30-390 is used.

1. Verify the voltage indicated on the power supply complies with the AC line voltage in your area.
2. Insert the power supply plug into the input connector at the back of the instrument. If desired, you can first feed the cable through the cable access opening at the side of the instrument.

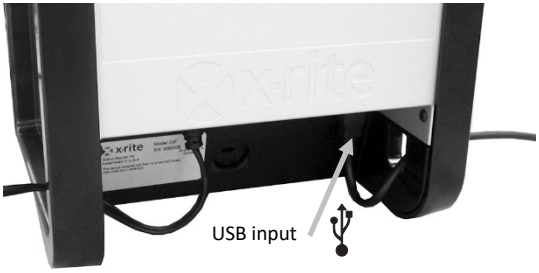
Power Supply Ratings
Input: 100-240 V 50/60 Hz
Output: 24 VDC @ 2.5 A

3. Plug the detachable line cord into the power supply and plug the line cord into the wall receptacle.

Connecting the USB Cable

IMPORTANT: You must install the USB driver 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. Plug the square end of the USB cable into the connector at the back of the instrument. If desired, you can first feed the cable through the cable access opening at the side of the instrument.



3. Plug the USB cable into an available port on your computer.

Operation Button

The operation button is used to initiate a measurement after the sample is placed at the sample port.

Status Indicator

The status indicator conveys a variety of instrument conditions, such as calibration and measurement status. Refer below for additional indicator conditions.

- Off: Instrument is off (not plugged in).
- Solid Blue: Booting up before firmware starts.
- Pulsing Blue: Instrument is in standby mode.
- Solid Green: Calibrated and ready to measure.
- Blinking Green: Measurement or calibration in progress.
- Solid Red: Firmware startup completed, ready for connection, not calibrated.
- Blinking Red: Hardware error mode, cannot measure or calibrate.

2. Calibrating

Normally, the software application prompts you for an instrument calibration when required. This typically occurs once a day.

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

Refer to Cleaning section in the Appendices for information on cleaning the optics area, white calibration tile and black trap.

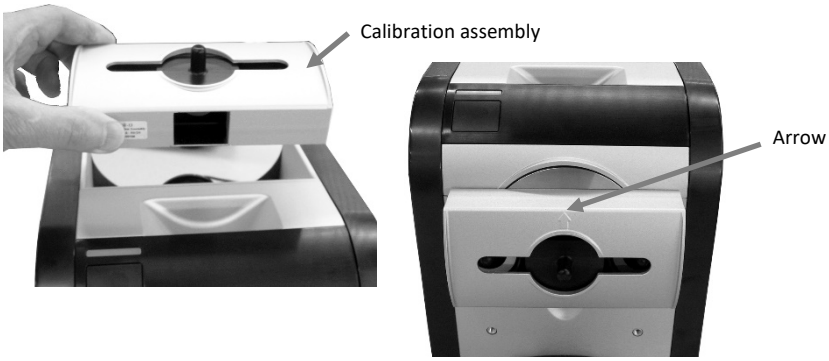
NOTE: Make sure to use the calibration assembly supplied with the instrument for calibrating. Do not substitute this calibration assembly with a calibration assembly from another instrument. The serial number on the calibration assembly should match the serial number on the instrument.

Calibration Notes

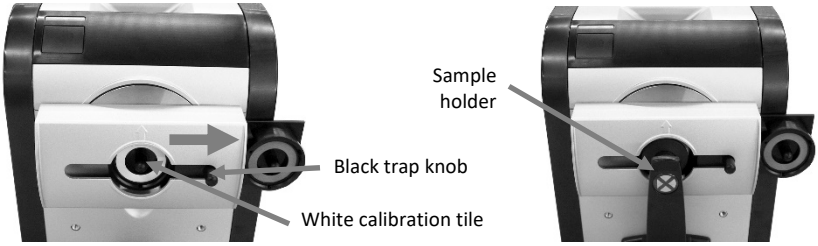
- Dirt or dust in the aperture area will cause an inaccurate calibration reading. Refer to the Appendices for optics cleaning procedure.
- The white ceramic tile is dramatically affected by smudge marks, dust, and fingerprints. Refer to Appendices for ceramic tile cleaning procedures.
- The black trap should be cleaned periodically to remove any dust or contamination. Refer to Appendices for black trap cleaning procedures.

Calibration Procedure

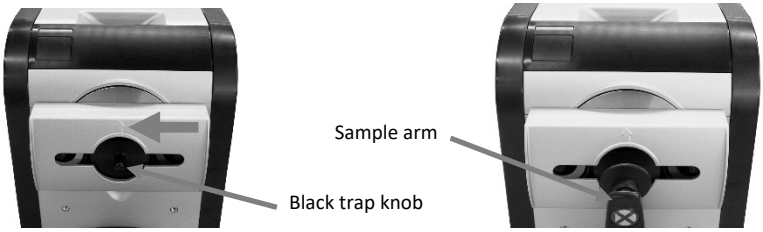
1. Pull down on the sample arm and remove the calibration assembly from the top-back of the instrument. The assembly contains the white tile, black trap and green tile.
2. Make sure the arrow on the calibration assembly is pointing upward and position the assembly over the sample port.



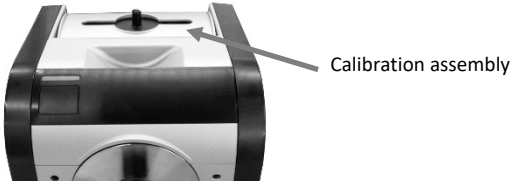
3. Slide the knob at the center of the assembly to the end of the right slot. This will cause the white tile in the assembly to be positioned over the sample port.
4. Close the sample arm to the white calibration tile, verifying that the sample arm pushes the white calibration tile tight against the instrument.



5. Select the Measure option in the software application to initiate the white calibration measurement.
6. After white calibration is complete, the status indicator changes from blinking green to solid red. Slide the knob at the right of the assembly to the center of the assembly. This will cause the black trap in the assembly to be positioned over the sample port.
7. Close the sample arm to the black trap.



8. Select the Measure option in the software application to initiate the black trap calibration measurement.
9. After the black trap calibration is completed, the status indicator changes from blinking green to solid green. This is an indication that the calibration procedure was successful.
10. Remove the calibration assembly from the sample port and return it to the storage location on top of the instrument.



3. Measuring Samples

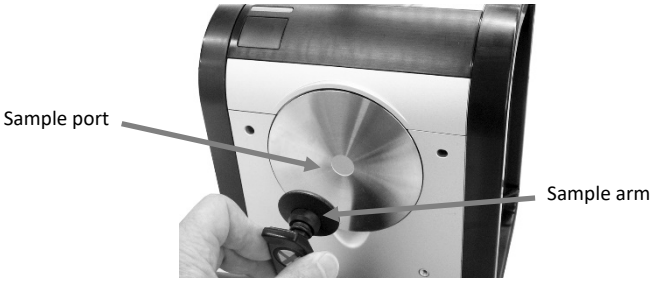
The instrument measures color samples from almost any clean, dry surface that is reasonably flat. The sample should rest flat and steady against the sample port. The sample can be viewed on a preview window within the software application for easy positioning.

Important Sample Information

- The sample area to measure must be between 2 mm and 12 mm in diameter.
- The sample should be opaque (solid), not clear or translucent.
- Consistency in positioning should be maintained from standard to sample to achieve best results.
- The measurement region of interest should be centered in the measurement opening.
- Refer to the Small Sample Measurement Procedure on the next page for small sample measurement procedure.
- Oddly shaped samples may require the sample holder arm to be completely open or removed. Refer to the Large Sample Positioning Techniques section that follows.

Measurement Procedure

1. Open the sample arm on the instrument to the fully open position.



2. Position the sample at the sample port until the area to measure is positioned within the preview window in the software application. Skip to Step 4 if the measurement sample fills the complete preview window, because no targeting adjustments are required. If the sample does not completely fill the preview window, continue with Step 3 for information on adjusting the targeting size to fit the sample.

   NOTE: If the sample is large or oddly shaped, position the sample holder to the fully open position. Use the preview window in the application to guide the

sample to the desired measurement location. Refer to the following pages for positioning illustration.

3. In the software application, use the Target Size slider to select the measurement area from Large (12 mm) to Small (2 mm). The default setting is 12 mm.

   Slowly close the sample arm. The sample arm is dampened to prevent the arm from closing with too much force and possibly damaging the sample.

4. Initiate the measurement by pressing the Operation button on the instrument or from the software application.

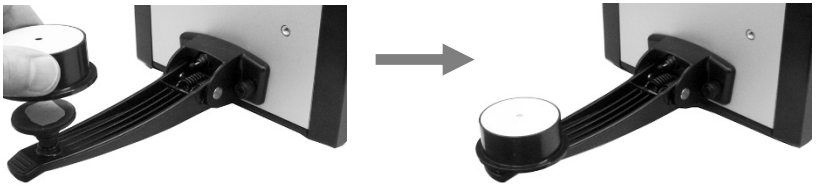
   The status indicator changes from solid green to blinking green during the measurement.

Small Sample Measurement Procedure

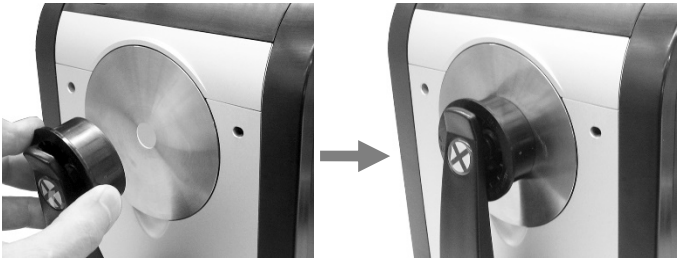
1. Remove the small sample holder from its storage location under the calibration assembly.

2. Open the sample arm on the instrument to the fully open position.
3. Place the small sample on the toggle pad of the sample arm. Make sure the area to measured is centered on the pad and facing upward.

4. Slide the small sample holder over the sample arm toggle pad until is rests on the sample. Verify that the area to be measured is visible through the aperture in the sample holder.



5. While carefully holding the sample holder against the toggle pad, lift the sample arm and close to the sample port.



6. In the software application, use the Target Size slider to select the 2 mm measurement area.

7. Initiate the measurement by pressing the Operation button on the instrument or from the software application.

   The status indicator changes from solid green to blinking green during the measurement.

   Positioning Techniques for Large Samples

   When measuring large or oddly shaped samples you can open the arm completely or remove the holder if necessary. The sample is then held securely against the sample port.

NOTE: The sample port is very sensitive to motion and light!

When hand-holding a sample for measurement, remember to keep the sample perfectly still. Also, the sample surface should be able to rest completely flat against the sample port, preventing any light from entering the measurement area.

4. 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 (www.xrite.com) and click the **Contact Us** link.
- 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 common user problems.
- Send an e-mail to Technical Support (casupport@xrite.com) detailing your problem and listing your contact information. Use "**CIF3100/3200**" as the subject in your email.
- 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 sent to your local X-Rite office listed on our web site. You may also contact X-Rite using one of the numbers listed on the back page of this manual.

Cleaning the Instrument

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

General Cleaning

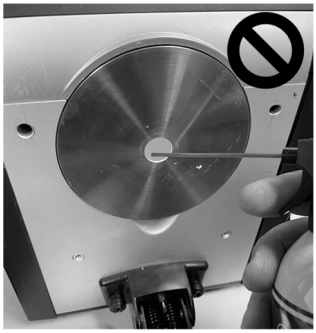
The exterior of the instrument may be wiped clean with a cloth dampened in water or mild cleaner.

If the sample plate needs to be cleaned remove it from the front of the instrument first by pulling it from its magnetic mounts.

IMPORTANT NOTES:

NEVER measure wet paint or loose material that can fall into and contaminate the instrument's integrating sphere.

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



DO NOT blow air into the sample port to avoid forcing contamination into the optical system.

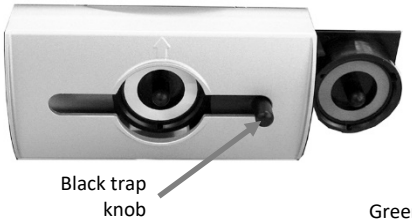
DO NOT spray any cleaning solution (e. g. glass cleaner) toward or into the sample port to avoid contaminating the optical system.

Cleaning the White Calibration Tile and Green Tile

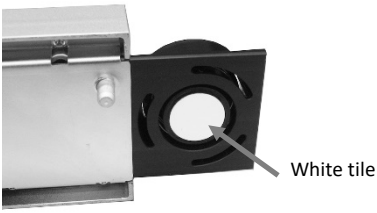
The white calibration tile and green tile require very little cleaning because they are protected by the calibration assembly. When calibrating you should be very careful

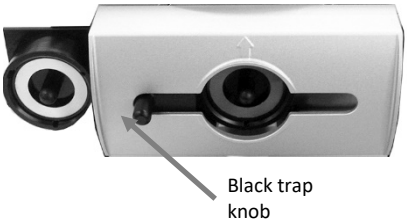
not to touch the surface. Fingerprints can affect the measurement accuracy of the instrument. Should your calibration tile or green tile become dirty or smudged follow the steps below for cleaning.

1. Remove the calibration assembly from the top-back of the instrument.
2. Slide the black trap knob to the end of the right slot to expose the green tile.



3. From the back side of the calibration assembly, clean the surface using a mild soap and warm water solution. Rinse with warm water and wipe dry with a lint-free cloth. Do not use solvents or cleaners of any kind.
4. Slide the black trap knob to the end of the left slot to expose the white tile.

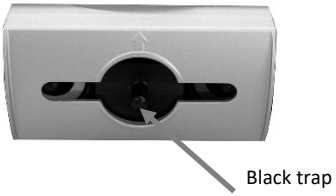




5. Clean the surface using a mild soap and warm water solution. Rinse with warm water and wipe dry with a lint-free cloth. Do not use solvents or cleaners of any kind.

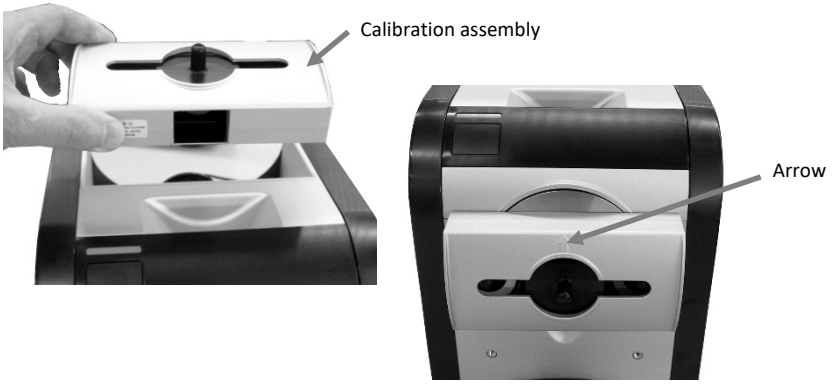
Cleaning the Black Trap

1. Remove the calibration assembly from the top-back of the instrument.
2. Make sure the black trap knob is centered in the calibration assembly.
3. From the back side of the assembly, clean with clean, dry air to remove any dust or contamination.

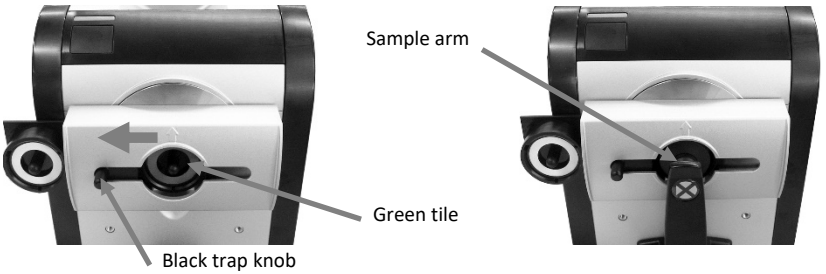


Green Tile Color Check

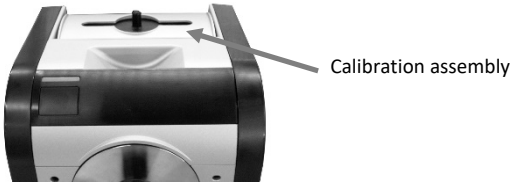
1. Pull down on the sample arm and remove the calibration assembly from the top-back of the instrument. The assembly contains the white tile, black trap and green tile.
2. Make sure the arrow on the calibration assembly is pointing upward and position the assembly over the sample port.



3. Slide the knob at the center of the assembly to the end of the left slot. This will cause the green tile in the assembly to be positioned over the sample port.
4. Close the sample arm to the green tile.



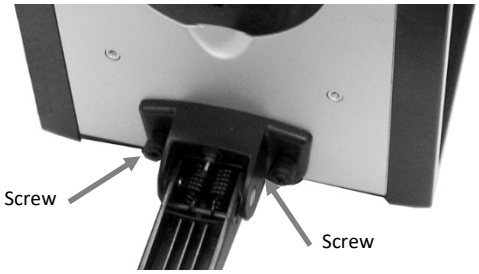
5. Select the Measure option in the software application to initiate the green tile color check.
6. After green tile check is complete, the status indicator changes from blinking green to solid green. Slide the knob at the left of the assembly to the center of the assembly.
7. Remove the calibration assembly from the sample port and return it to the storage location on top of the instrument.



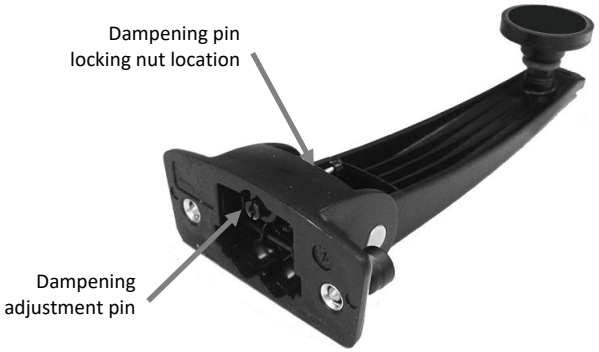
Adjusting the Sample Arm Dampening

If required, the sample holder dampening effect can be changed when closing the sample holder. Simply adjust the pin in the arm holder to increase or decrease dampening.

1. Open the sample arm to its fully open position. Remove the sample arm from the front of the instrument by loosening the two screws.



2. Loosen the locking nut on the front side of the dampening pin.
3. Adjust the dampening pin located on the back of the arm using a flat-blade screwdriver to change the dampening effect.
4. Tighten the dampening pin locking nut after the adjustment is completed and reinstall the sample arm.



Troubleshooting Tips

Prior to contacting X-Rite 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.

Instrument not responding:

- Ensure power supply is connected to the instrument and the AC wall receptacle.

Measurement error or results appear inaccurate:

- Problem with the sample or sample positioning. Refer to Important Sample Information in Section 3.

Repeated calibration failures:

- Clean the white ceramic tile and black trap. Refer to procedures earlier in this section.

Repeated sample measurement failures:

- Optics are dirty and require cleaning. Refer to Cleaning the Optics earlier in this section.
- Ensure the sample is being positioned correctly. Refer to Important Sample Information in Section 3.
- Calibrate the instrument.
- Close and restart the software application.

Instrument and software not communicating:

- Check the USB cable connection.
- Close and restart the software application. If this does not solve the problem, reboot the computer.
- Remove power from the instrument, reapply power and see if the condition is corrected.

Technical Specifications

General	Performance
Instrument Type: Spectrophotometer	**Warm up Time**: 60 seconds
Geometry: d/8°, DRS spectral engine	**Measurement Time**: 15 seconds
Light Source: Full spectrum LED	**Cycle Time**: 1 sec. time interval between measurements
Measurement Size: Variable virtual pickup spot size (2 mm to 12 mm)	**White Repeatability**: 0.04 CIELAB (CIF3100) 0.025 CIELLAB (CIF3200)
Operating Temp: 10° - 40°C (50° – 104°F) Ambient	**Inter-Instrument Agreement**: 0.30 avg CIELAB (CIF3100) 0.15 avg CIELAB (CIF3200)
Operational Humidity: 0 - 85% non-condensing	**Calibration Interval**: 24 hours
Storage Temp: -20° - 70°C (-4° – 158°F)	**Measurement Area**: 2-12 mm
Operating Voltage: 24 VDC @ 2.0 A	**Spectral Range**: 400 nm to 700 nm
Communication I/O: USB 2.0 (Type-B Interface connector)	**Spectral Interval**: 10 nm
Overall Size: L: 9.62 in (24.4 cm), W: 8.17 in (20.8 cm), H: 10.46 in (26.6 cm)	**Product Life**: 7 years (approx. 15,000 measurements/year)
Weight: 8.8 lbs. (4.0 kg)	
Safety Compliance	
UL 61010-1,	
Usage: Indoor Only	
Altitude: 2,000 m	
Pollution Degree: 2	
Overvoltage: Category II	

Design and specifications subject to change without notice.

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Please visit www.xrite.com for a local office near you.

P/N CIF3100-500 Rev C EN