X-Rite® 8000 Series

Sphere Spectrophotometer

Operator's Manual

X-Rite®

Equipment Information

FCC
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 digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

AVERTISSEMENT: Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

WARNING: To maintain safe operation of this equipment, do not modify ground circuit in any manner. Use of this equipment other than what it was intended for voids all safety assurance.
ADVERTENCIA Para mantener la segura operación de este aparato, **NO** modifique el circuito a tierra. El uso de este aparato para otra cosa que su intención original, anulará todas las garantías de seguridad.
AVVERTIMENTO Per mantenere la sicura operazione di quest'apparecchio, **NON** modificare il circuito a terra. Il uso di quest'apparecchio per altra cosa di suo intenzione originale, annullerà tutte le garanzie di sicurezza.
WARNUNG: Um das Produkt innerhalb von FCC (Vereinigten Staaten) und europäischen Emissionsrichtlinien zu halten, müssen geschirmte Schnittstellenkabel verwendet werden.
AVERTISSEMENT: Pour maintenir la marche sûr de cet équipement, ne modifiez pas de toute façon la circuit de retour par la terre. L'utilisation de cet équipement dans une manière pour ce qu'il n'était pas désigné annulera toutes les assurances de sûreté.

WARNING: This instrument is not for use in explosive environments.
ADVERTENCIA - **NO** use este aparato en los ambientes explosivos.
AVVERTIMENTO - **NON** usare questo apparecchio in ambienti esplosivi**.**
WARNUNG: Das Gerät darf in einer explosiven Umgebung NICHT verwendet werden.
AVERTISSEMENT: Cet instrument ne doit pas être utilisé dans un environnement explosif.

CAUTION: To prevent electrical shock. DO NOT remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.
ADVERTENCIA Para evitar un choque eléctrico, no quite el recubrimiento del aparato. No hay ninguno componente reparable de usuario, dentro del aparato. Consulte un técnico calificado para servicio o arreglos.
AVVERTIMENTO Per evitare una scossa elettrica, non staccare la coperta del apparecchio. C'è nessuno componenti riparabili d'utente, interno del apparecchio. Consultare un tecnico qualificato per servizio o manutenzione.
VORSICHT: Diese Abdeckung darf nicht entfernt werden, um einen elektrischen Schock zu verhindern. Innen sind keine vom Benutzer zu wartenden Teile. Mit notwendigen Wartungen wenden Sie sich bitte nur an autorisiertes Fachpersonal.
ATTENTION: Pour prévenir un choc électrique, n'enlevez pas cette couverture. Il ne contient aucune pièce réparable. La réparation ne doit être fait que du personnel compétent.

CE Declaration

Manufacturer's Name:	X-Rite, Incorporated
Manufacturer's Address:	3100 44th Street, S.W. Grandville, Michigan 49418 U.S.A.
Model Name:	Spectrophotometer
Model No.:	8000 Series
Directive(s) Conformance:	EMC 89/336/EEC LVD 73/23/EEC

Warning:
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Environmental Specifications

Operating Temp:	10° - 40°C
Relative Humidity:	0 - 85% non condensing
Usage:	Indoor Only
Altitude:	2000m
Pollution Degree:	2
Overvoltage:	Category II

Instrument Information

ATTENTION: This instrument contains a 3V lithium battery. Replace only with X-Rite P/N SE15-15. Use of another battery may present a risk of fire or explosion.

CAUTION: Battery may explode if mishandled. Do not recharge, disassemble or dispose of in fire.

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

Table of Contents

Proprietary Notice

The information contained in this manual is derived from patent and proprietary data of X-Rite, Incorporated. This manual has been prepared solely for the purpose of assisting in the use and general maintenance of this instrument.

The contents of this manual are the property of X-Rite, Incorporated and are copyrighted. Any reproduction in whole or part is strictly prohibited. Publication of this information does not imply any rights to reproduce or use this manual for any purpose other than installing, operating, or maintaining this instrument. No part of this manual may be reproduced, transcribed, transmitted, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, magnetic, mechanical, optical, manual, or otherwise, without the prior written permission of an officer of X-Rite, Incorporated.

The product is patent pending.

Limited Warranty

X-Rite, Incorporated warrants each unit manufactured to be free of defects in material and workmanship for a period of twelve months. If the fault has been caused by misuse or abnormal conditions of operation, repairs will be billed at a nominal cost. In this case, an estimate will be submitted before work is started, if requested.

There are no warranties of merchantability or fitness. This warranty obligation is limited to servicing the unit returned to X-Rite, Incorporated for that purpose.

Always include serial number in any correspondence concerning the unit.
The serial number is located inside the transmittance chamber.

This agreement shall be interpreted in accordance with the laws of the State of Michigan and jurisdiction and venue shall lie with the courts of Michigan as selected by X-Rite, Incorporated.

Overview and Setup

Unpacking and Inspection

CAUTION: The instrument weighs approximately 47 lbs. (21.32 kg). Care should be taken when removing the instrument from the shipping carton.

After removing the instrument from the shipping carton, inspect for possible damage. If any damage occurred during shipping, immediately contact the transportation company. Do not proceed with installation until the carrier's agent has inspected the damage.

Your instrument was packaged in a specially designed carton to assure against damage. If reshipment is necessary, the instrument should be packaged in the original carton. If the original carton is not available, contact X-Rite to have a replacement shipped to you.

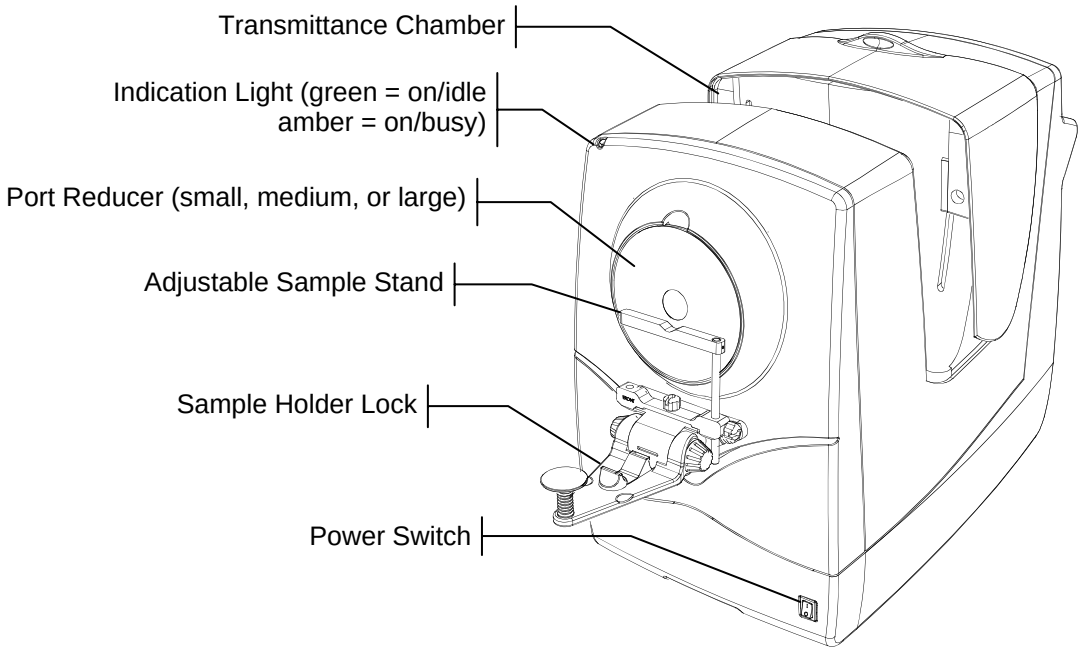
Packaging Content

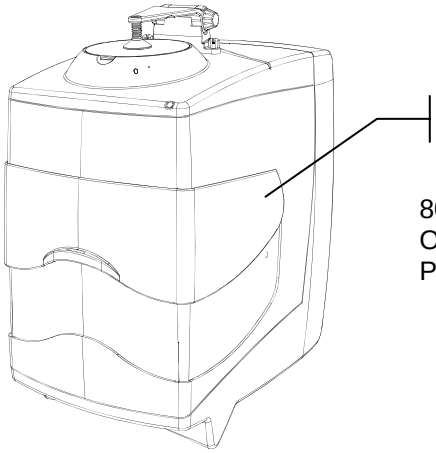
Your instrument packaging should contain all the items listed below. If any of these items are missing, contact X-Rite or an Authorized Representative.

- 8000 Series Instrument
- USB Interface Cable
- Detachable AC Power Cord
- Calibration Reference
- Light Trap
- 3 – Port Reducers
- Documentation and Registration Material

Product Description

The 8000 series includes features such as a targeting camera, variable apertures, and vertical and horizontal positioning, definable configurations and USB interface.





8000 Series Interface Application

The X-Rite 8000 Series Interface Application works in conjunction with X-RiteColor® Master software, providing an interface for the instrument. This application is used for configuring the instrument and calibration. The application also displays the output of a built-in camera within the 8000 series instrument for sample positioning.
The interface application is located on the X-RiteColor Master CD and the 8000 Series Manuals and Utilities CD that accompanies your instrument.

Installing the Software

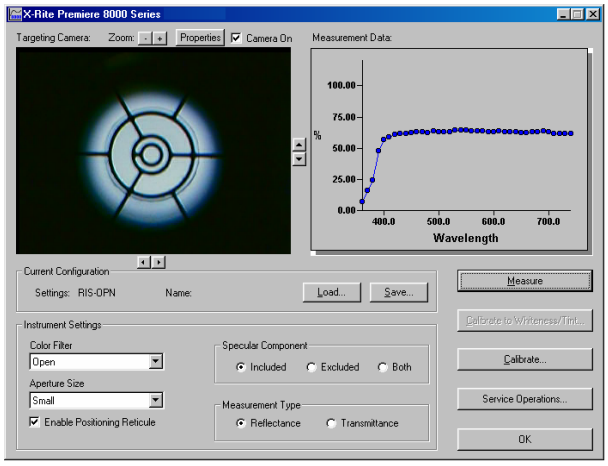
The Interface software uses a standard Windows installation procedure.

1. Insert the software CD into your computer's CD-ROM drive. Browse to the “8000 Series” folder and double-click the **Setup.exe** file.
2. The setup program guides you through the rest of the installation process. Follow the instructions on each setup screen to complete the installation.
3. Before starting the application you must connect the cabling. Refer to Connecting the USB Cable and Power Cable.

Starting the Instrument Interface Application

Toolbar button 

The interface application can be launched using the “8000” short-cut on your desktop or from within the X-RiteColor® Master application. From the application, click the toolbar button or select the configuration link from any measurement window. The configuration link would appear as the current instrument configuration (e.g., RIS-OPN).

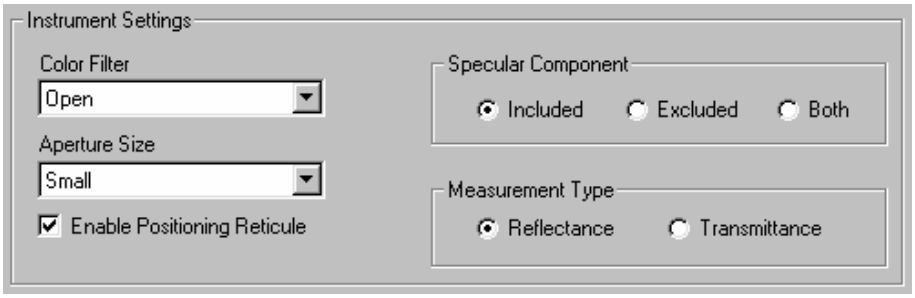


Instrument Interface Configuration

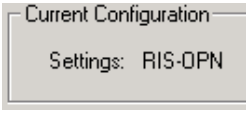
A configuration stores all the instrument settings, such as color filter and aperture size. Customized configurations can be stored and then reloaded as needed.

Setting Configuration Parameters

To edit the configuration setting, select the appropriate options in the Instrument Settings group.



The selected parameters display a code name in the Setting Field. Refer to the table below for all code designations.



Configuration Parameters		Setting Codes
Measurement Type	Reflectance	R
	Transmittance	T
Specular Component	Included	I
	Excluded	E
Aperture Size	Small	S
	Medium	M
	Large	L
Color Filter	Open	OPN
	SP64-Whiteness	SP1
	SP64-DayGlo	SP2
	UV400	UV1
	UV420	UV2
	UV400 Partially Inserted	UV1P-x
	UV420 Partially Inserted	UV2P-x

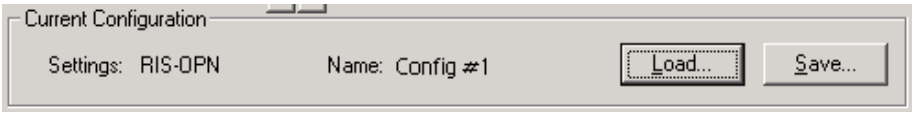
When a filter is partially inserted, the value “x” represents the percentage of UV energy, which can range from 0 to 100.0.

1. To select the color filter, click on the **Color Filter** dropdown list arrow and make selection. If a partially inserted filter is selected, enter the percentage of UV energy in the **% UV Energy** field.
2. To select the aperture size, click the **Aperture Size** dropdown list arrow and make selection.
3. To enable the alignment reticule for the viewing camera, check the **Enable Positioning Reticule** box.
   Note: This option should remain unchecked (disabled) if the targeting camera is not used.
4. To include or exclude the specular component, click the appropriate **Specular Component** option.

5. To select the reflectance or transmittance measurement, click the appropriate **Measurement Type** option.
6. Save the configuration if desired. Refer to Saving and Loading Configurations.

Saving and Loading Configurations

The current configuration displays the setting code and name of the current configuration.



To save configuration:

1. Set desired instrument configuration parameters and click **Save**.
2. Enter a configuration name in the **Name** field and click **OK** to save the configuration. The configuration is now stored on your system.

To load a stored configuration:

1. Click **Load**.
2. Select a previously stored configuration from the list and then click **OK.** The selected configuration is loaded as the current configuration.

Targeting Camera

The targeting camera window enables you to view the sample position in the measurement path. This window displays the sample in real-time. Refer to the application image on page 1-3 for location of controls.

To utilize this option:

1. Check the **Camera On** box at the top of the screen.
2. Click the **Properties** button and edit the camera properties to your preference.
3. Click the **left/right** arrow controls at the bottom of the image window to adjust the horizontal positioning of the image. Click the **up/down** controls buttons on the side of the image window to adjust the vertical positioning of the image.
4. Click the **+/-** controls at the top of the image window to zoom the image in or out.
5. Check the **Enable Positioning Reticule** box.

Service Operations

The Service Operations dialog contains diagnostic and servicing operations that should be accessed with the guidance of an X-Rite Customer Service Representative. This dialog is not needed for normal instrument operations.

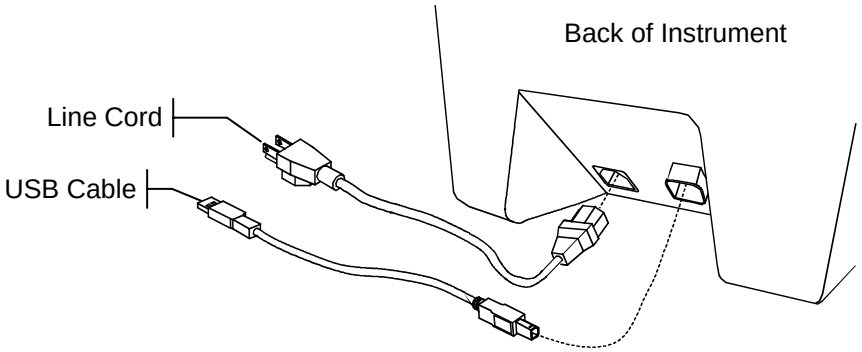
Connecting the USB Cable and Power Cable

Communication with the host computer is accommodated via a USB cable supplied with the instrument.

1. Connect the detachable line cord into the power input on the back of the instrument. Plug the power cord into an A.C. wall outlet.
2. Connect the square end of the USB cable to the back of the instrument and the other end to an available USB port on your computer.

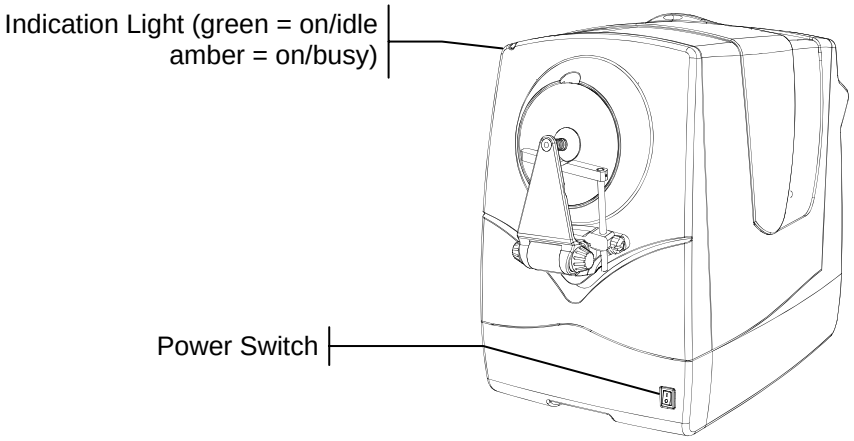
NOTE: You will be prompted to install the USB drivers to your computer if the 8000 series application was installed on a Windows 98 system (refer to Step 3 and 4). On Windows 2000 and XP systems, USB drivers were installed with the 8000 application.

3. A window appears for installing the instrument USB driver, click Next. Make sure the CD is in the drive and CD-ROM is selected for the search location. Follow the remaining instructions on your screen to complete the driver installation.
4. After the instrument USB driver is installed, the camera USB driver must be installed. Follow the same procedure as mentioned in Step 3.



Applying Power

The power switch is located on the front, lower right of the instrument. Toggle the switch to the "**I**" position to turn power on the instrument. The instrument should be allowed to warm-up for a minimum of one hour before use.



Sample Holder and Stand

The sample holder can be locked in a down position. This is convenient when large samples are measured, or when the port reducer is changed or the sample holder is removed. For procedure on removing the sample holder and stand, refer to Section Three, Removing the Sample Holder.

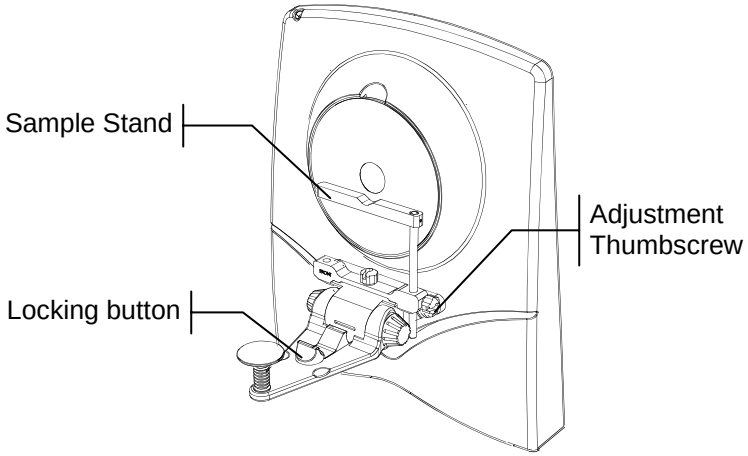
The sample stand is used to help align a sample to the port. It can also be useful when several samples require measurement at the same location.

To lock the sample holder in the down position:

1. Pull back the sample holder until it is at a right angle with the port reducer. The button on the inside of the holder locks into position automatically.
2. To unlock, press slightly downward on the sample holder and slide the locking button away from the instrument.

To adjust the sample stand:

1. Loosen the thumbscrew on the side and slide the stand up or down.

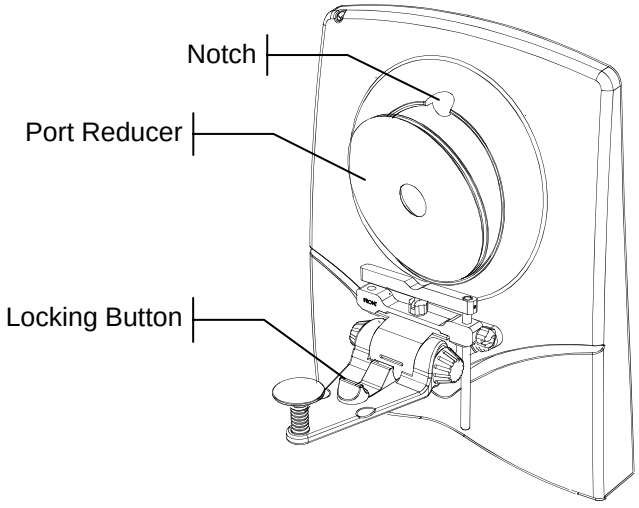


Changing Port Reducers

The port reducers are easily interchangeable and designed to snap in place with little effort. **NOTE: Use caution not to touch the inside white surface of the port reducer when handling. Always protect the white area during storage.**

To change a port reducer:

1. Pull the sample holder back until it locks into place and lower the sample stand.
2. Hold the bottom of the port reducer. Place your finger in the notch on the top and pull the port reducer out.
3. Place the bottom of the new port reducer in position and press the top of the port reducer in until it snaps in place.
4. Unlock the sample holder.



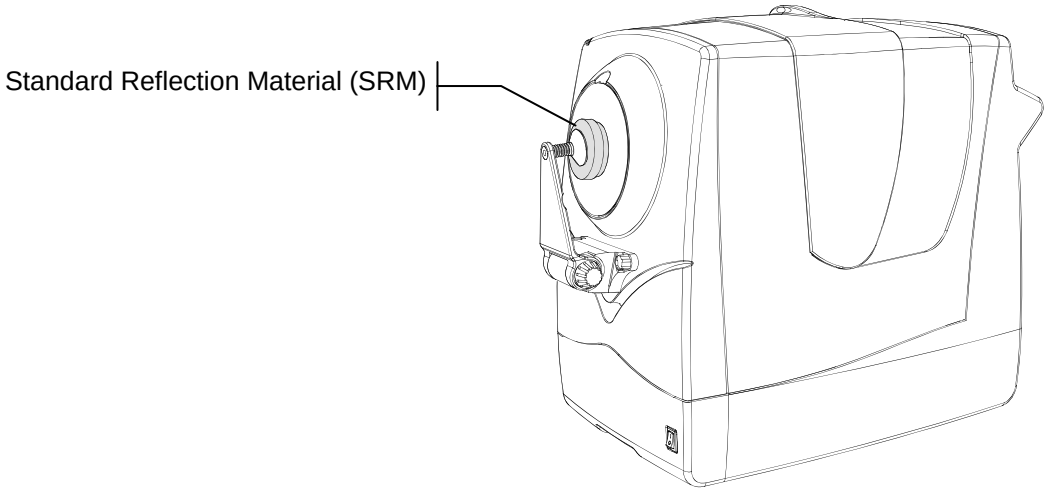
Calibration

The instrument will automatically require calibration every eight hours of use, more often if additional precision is required (configurable in the Service Operations dialog). Normally, the host computer informs you when calibration is required.

Positioning the SRM

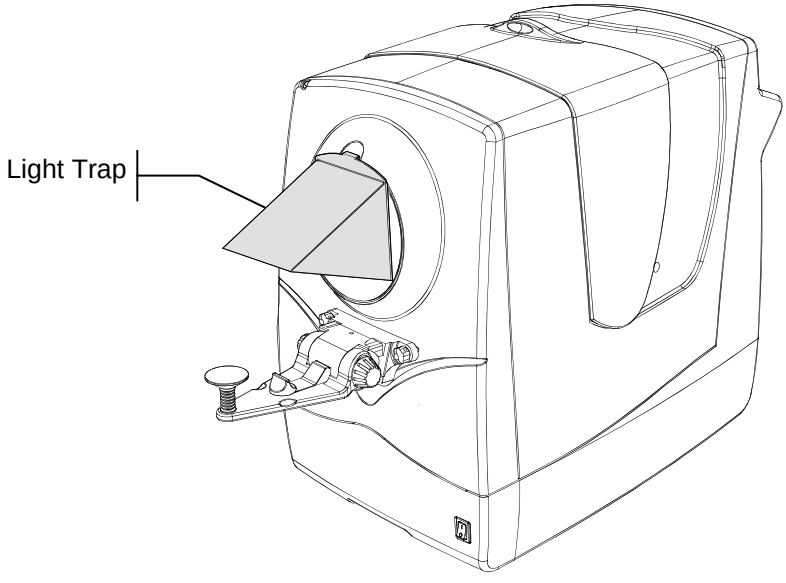
The SRM is stored in a case with a screw off lid to prevent contamination. Pull the sample holder arm back and place the SRM over the port reducer. Place the sample arm on the SRM to hold it in place.

NOTE: The SRM cap should be removed for calibration *only*. **Do not touch the White Disk—it must be kept clean to ensure accurate measurements.**



Positioning the Light Trap

The light trap is used for zero reflectance measurements. Pull the sample holder back and lock in place. Position the light trap on the port reducer with the tab hook at the top. The light trap hangs from the top of the port reducer at the notched area.

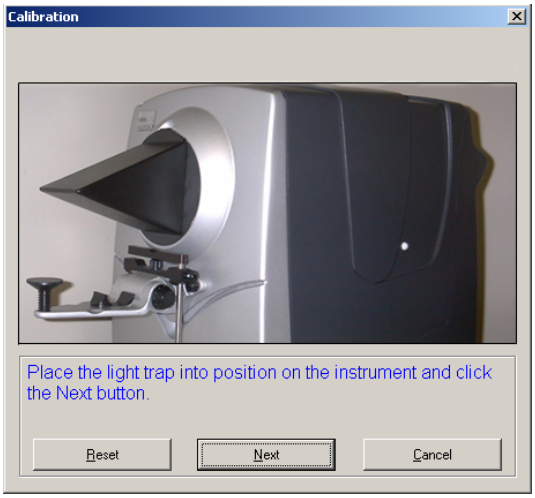


Reflectance Calibration Procedure

1. Verify the desired configuration for “reflectance” measurement type is set or loaded. See Instrument Interface Configuration, Section One.
2. Click **Calibrate** on the instrument interface application or within the X-RiteColor Master application.
3. The first screen prompts you to measure the SRM. Position the SRM on the port reducer as previously explained and click **Next** to measure.

After the measurement, remove the SRM.

4. The second screen prompts you to measure the light trap. Position the light trap on the port reducer as previously explained and click **Next** to measure.



After the measurement (when indication light turns green), remove the light trap.

NOTE: If “Enable Cal Data Report” is checked in the Service Operations dialog, you will be prompted to measure the SRM again.

5. Click **Close** to exit calibration or click **Print** to print cal report if option is enabled in the Service dialog.
6. If “Both” is selected as the specular component for the configuration, you will be required to perform the calibration procedure one additional time.

Transmittance Calibration Procedure

1. Verify the desired transmittance instrument configuration is set or loaded. See Instrument Software Configuration, Section One.
2. Click **Calibrate** on the instrument interface application or within the X-RiteColor Master application.
3. Position the SRM over the port reducer as previously explained.
4. If you are going to be measuring thin films, calibrate with nothing (air) in the sample path. If you are going to be measuring liquids in a glass cuvette, calibrate with a cuvette filled with distilled water. (Refer to Liquid Transmittance Kit, Section Three for installation details.) Click **Next** to measure.

After the measurement, remove the cuvette if used.

5. Leave the SRM in place over the port reducer and place an opaque material in the rear sample holder. Click **Next** to measure.

After the measurement, remove the opaque material and leave the white SRM in place for all transmittance measurements.

NOTE: If “Enable Cal Data Report” is checked in the Service Operations dialog, you will be prompted to measure the SRM again.

6. Click **Close** to exit calibration or click **Print** to print cal report if option is enabled in the Service dialog.

Whiteness/Tint Calibration Procedure

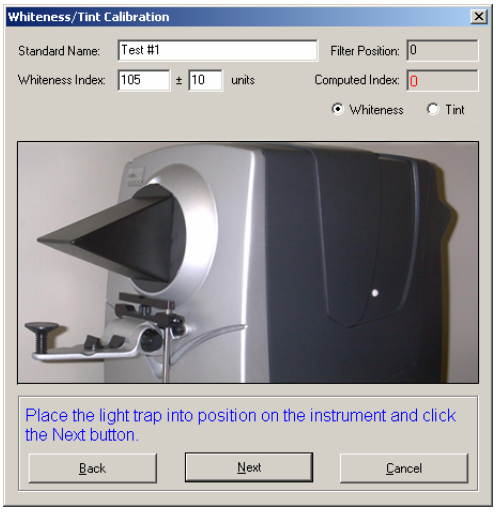
When the partially inserted UV cutoff filter is selected in configuration, the position of the filter can be adjusted to control the amount of UV included in the illumination.

When measuring fluorescent samples, whiteness or tint can be calibrated to determine the percentage of insertion required for the filter to achieve the desired result, when measuring a sample for which standard values are known (not included).

1. Verify the desired instrument configuration is set or loaded with the desired partially inserted filter. See Instrument Software Configuration, Section One.
2. Click **Calibrate to Whiteness/Tint** on the instrument interface application.
3. The Whiteness/Tint Calibration dialog appears. Click the **Whiteness** or **Tint** option as the measurement type. Enter the **Standard** name and **Index** value and **± Units** (tolerance) in the appropriate fields.
4. Position the SRM over the port reducer as previously explained. Click **Next** to measure.

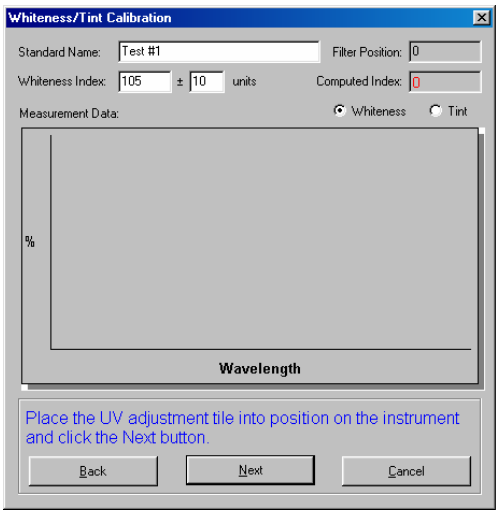
After the measurement, remove the SRM.

5. The next screen prompts you to measure the light trap. Position the light trap over the port reducer as previously explained. Click **Next** to measure.



After the measurement (when indication light turns green), remove the light trap.

6. The next screen prompts you to measure the sample with known $D65_{10}$ whiteness values. Position the tile over the port reducer. Click **Next** to measure.



The instrument will take multiple measurements to compute the required filter insertion. After the measurements are completed and the index is computed, remove the tile.

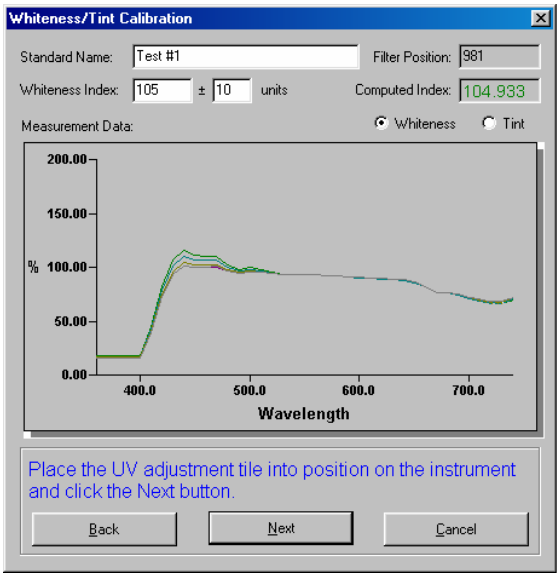
7. Position the SRM once again over the port reducer. Click **Next** to measure.

   After the measurement, remove the SRM.

8. Position the light trap once again over the port reducer. Click **Next** to measure.

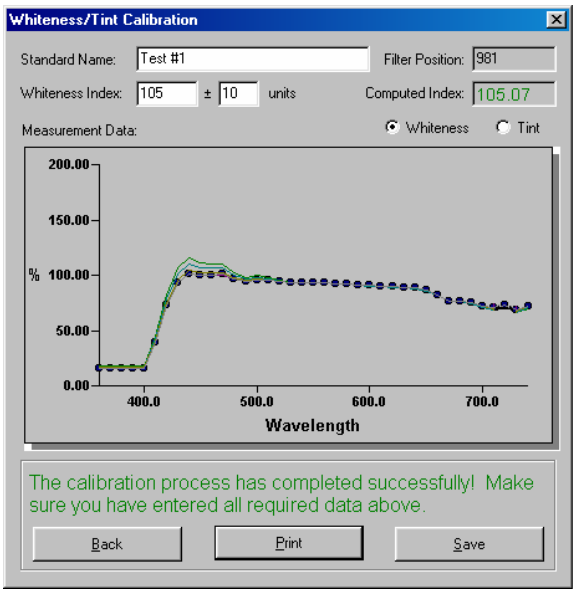
   After the measurement (when indication light turns green), remove the light trap.

9. The next screen prompts you to measure the tile again. Position the tile over the port reducer for measurement, and click **Next** to measure.

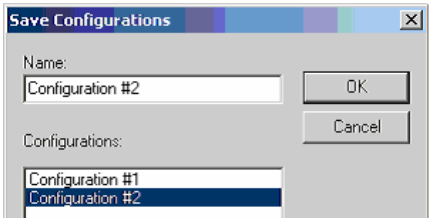


After the measurement, remove the tile.

10. Calibration is now completed. If you would like to printout the calibration data, click **Print**. Make sure all required data has been entered and click **Save** to access the Save Configurations dialog to save this calibration.



11. Enter a configuration name in the **Name** field and click **OK**.

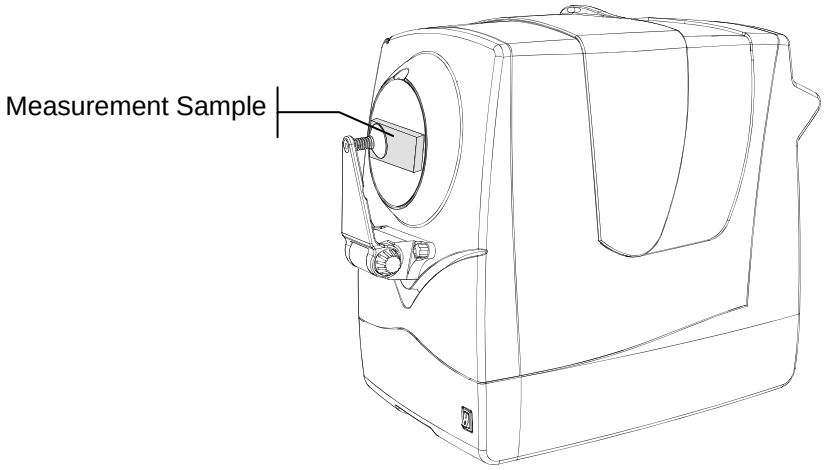


Measuring Samples

The X-Rite 8000 Series Benchtop Spectrophotomer is used in conjunction with X-RiteColor®Master software. Sample positioning techniques are shown in this section. For information on usage with X-RiteColorMaster, refer to the X-RiteColor®Master software application.

Reflectance Measurements

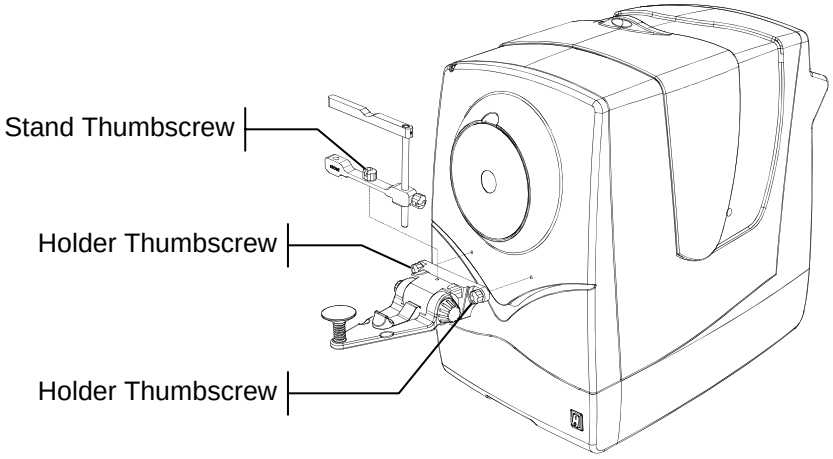
1. Confirm that the desired port reducer is installed. Edit the current configuration or load appropriate configuration from the application.
2. Calibrate for the current configuration if needed.
3. Pull back the sample holder and place the item to be measured over the sample port. Secure in place with the sample holder. If additional positioning accuracy is required, check the camera box in the interface application and view on-screen to position.



4. Activate the measurement within X-RiteColor Master. The instrument takes the measurement and displays the measurement data.

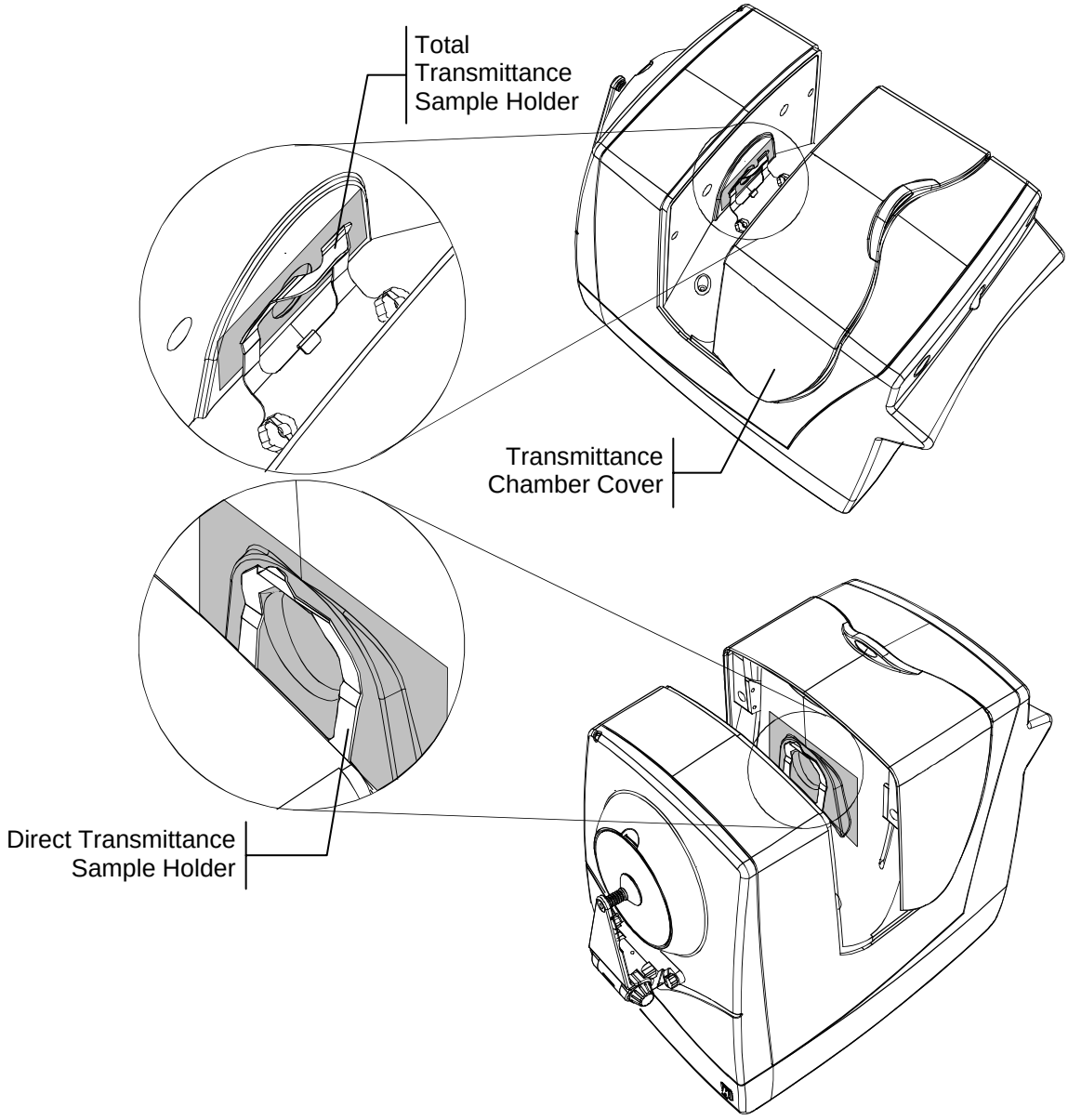
Removing The Sample Holder

The sample holder can be removed to facilitate the measurement of large samples. To remove, lock in the down position as previously shown and remove the sample stand thumbscrew. Remove the two sample holder thumbscrews.



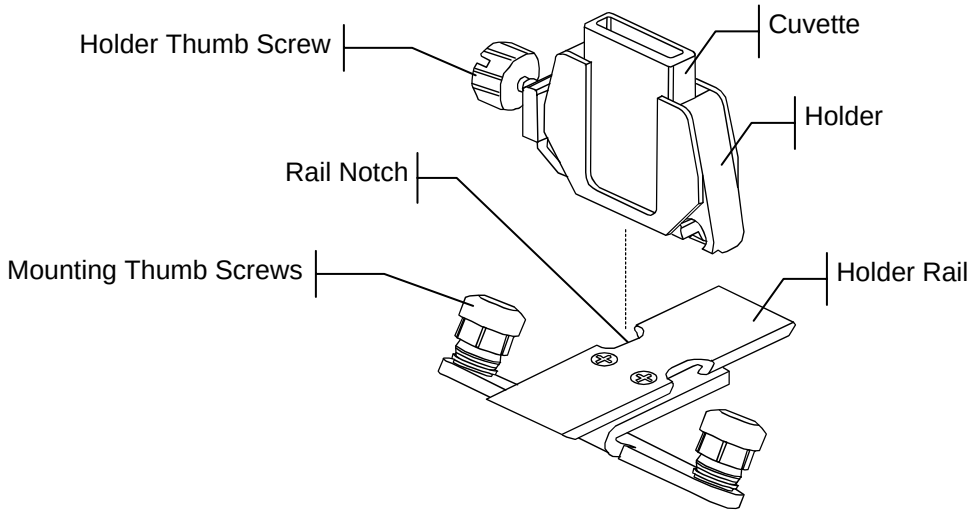
Transmittance Measurements

1. Open the transmittance chamber cover to access the sample holders. This is accomplished by lifting upwards on the cover and sliding backwards.
2. When measuring hazy or cloudy materials, use the total side of the spring clamp sample holder for best results. When measuring clear materials, place sample under the direct side of the spring clamp holder.
3. Slide the transmittance chamber cover to the closed position.
4. Select Transmittance in Measurement Type or load appropriate configuration from the application. **NOTE:** For best results, set Large Aperture and Specular Included in the configuration.
5. Activate the measurement within X-RiteColor Master. The instrument takes the measurement and displays the data in X-RiteColor Master.



Liquid Transmittance Kit (optional) – P/N 8000-810

Liquid transmittance measurements are performed by using the optional Liquid Transmittance Kit. The kit contains six cuvettes (2.5mm, 10mm and 20mm) with lids, three holders and one holder rail.

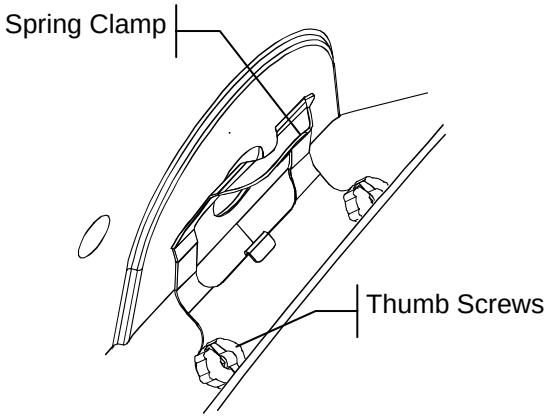


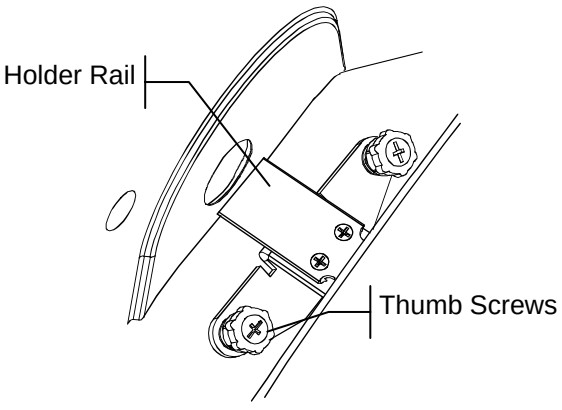
Cleaning and Handling

- Care should be taken to ensure the cuvette and holder is kept clean. Carefully wash the holder and cuvette in warm, soapy water and rinse thoroughly.
- Never touch the cuvette windows with your fingers as the oils in your skin will etch the windows. Handle the cuvette by the edges.
- Always leave an air gap between the bottom of the lid and the top of the liquid sample. The force of pressing the lid against the liquid sample can cause the windows to be weakened and crack.
- Extreme care should be taken to prevent the sample liquid from being spilled into the transmittance chamber. **NEVER FILL THE CELL WHILE IT IS IN THE TRANSMITTANCE CHAMBER.**

Installing the Liquid Transmittance Kit

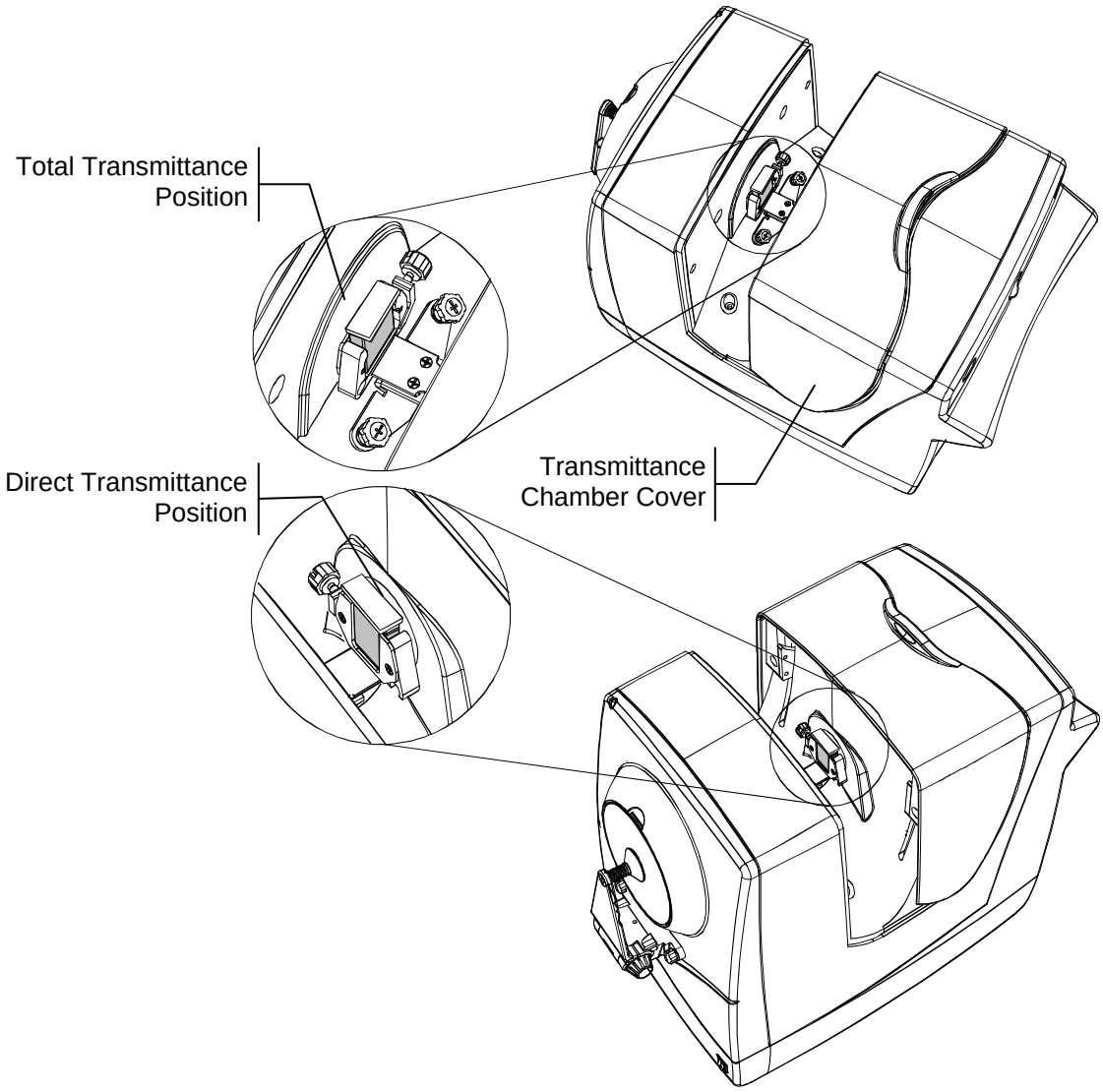
1. Open the chamber cover and remove the two thumb screws securing the spring clamp.
2. Carefully remove the spring clamp. Care should be taken not to touch the aperture lens or chamber surface when removing the spring clamp.
3. Position the holder rail over the appropriate area and secure in place with the two thumb screws.





Liquid Transmittance Measurements

1. Make sure the cuvette is clean (see Cleaning and Handling on previous page). Carefully fill the cuvette with the sample liquid until the liquid is approximately 8mm from the top.
2. Press the lid into the top of the cuvette and place the cuvette into the holder. If any liquid spills on the sides of the cuvette, wipe it off with a clean cloth.
3. Open the transmittance chamber cover and position the holder over the notch in the holder rail. The holder is then slid forward or backward depending on liquid.
4. When measuring hazy or cloudy liquids, slide the holder to the "total transmittance" location (sphere side) for best results. When measuring clear liquids, slide the holder to the "direct transmittance" position (lens side). Secure holder to the rail with the thumb screw on the holder.
5. Slide the transmittance chamber cover to the closed position.
6. Select Transmittance in Measurement Type or load appropriate configuration from the application. **NOTE:** For best results, set Large Aperture and Specular Included in the configuration.
7. Activate the measurement within X-RiteColor Master. The instrument takes the measurement and displays the data in X-RiteColor Master.



Service and General Maintenance

Repair Information

The X-Rite 8000 Series is covered by a one-year limited warranty and should be referred to the factory or an authorized service center for repairs within the warranty period. Attempts to make repairs within this time frame may void the warranty.

X-Rite provides a factory repair service to their customers. Because of the complexity of the circuitry, all repairs should be referred to the factory or an authorized service center (call: 1-888-826-3044).

X-Rite will repair any instrument past warranty. Shipping cost to the factory or authorized service center shall be paid by the customer, and the instrument shall be submitted in the original carton, as a complete unaltered unit.

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

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

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

Cleaning the SRM

Wipe with a clean, dry cloth. If a stain is difficult to remove, a soft cloth moistened with lens-cleaning fluid may be used. After cleaning the surface with lens-cleaning fluid, wipe the surface with a soft cloth moistened with water and then let the surface dry before use. Use caution not to scratch the surface of the SRM.

Cleaning the Light Trap

The light trap may be wiped clean with a clean dry cloth.

Cleaning the Sphere

In-order to clean the sphere, you must lock the reading arm in place and remove the port reducer from the instrument. Use clean, dry compressed air to blow short bursts into the sphere. This should remove any dust, dirt or other contamination off the inside surface of the sphere. Do not touch the inside surface of the sphere or stick anything into the sphere.

Cleaning the Port Reducers

The front surface of the port reducer may be wiped clean with a cloth dampened in water or a mild cleaner. Use an optics blower to blow any dust, dirt or other contamination off the white surface. Do not touch the white surface with you fingers or attempt to wipe it off with a cloth. If blowing off the white surface does not remove the contamination, contact the X-Rite customer service department.

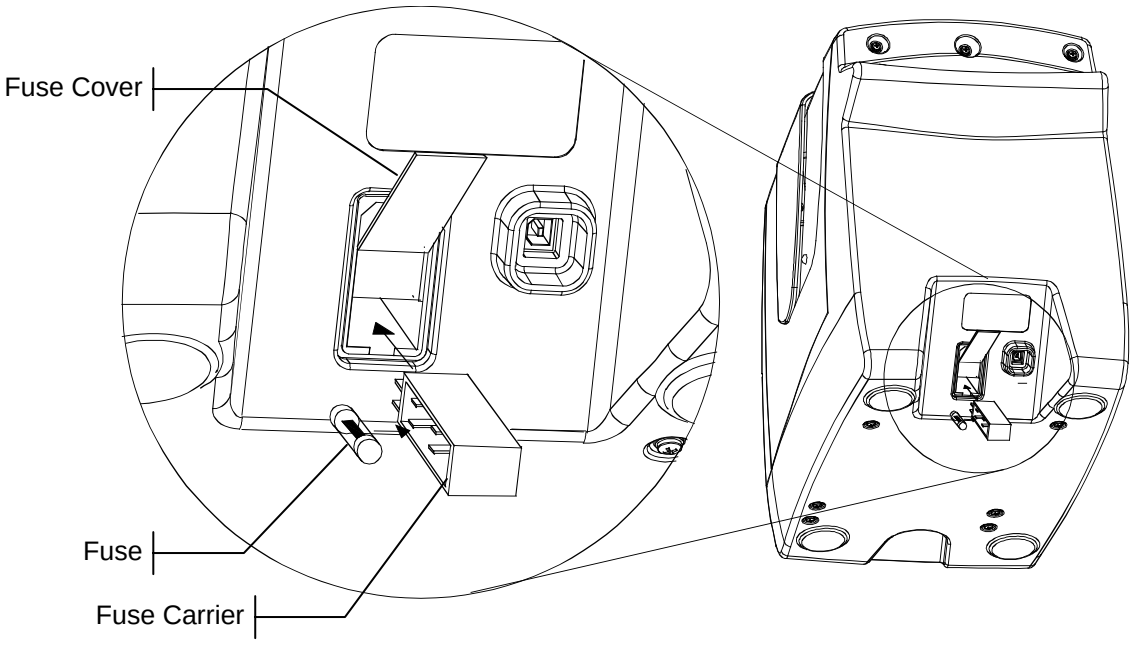
Cleaning the Transmittance Chamber

Use clean, dry compressed air to blow any dust, dirt or other contamination out of the transmittance chamber.

Replacing the Fuse (Replacement Fuse - 1 AMP, 250VAC slo-blow)

The fuse is located in the A.C. socket at the rear of the instrument.

1. Disconnect the line cord from the instrument.
2. Use a small flat-blade screwdriver and pry open the fuse cover.
3. Remove the fuse carrier and replace the fuse.



Appendix

Technical Specifications

Spectrophotometer:	Horizontal and vertical
Geometry:	d/8°
Sphere diameter:	6” (Spectralon®)
Specular component:	Included/excluded
Detector:	Photodiode array with holographic grating (x2)
Light source:	Pulsed Xenon
Photometric range:	0-200%
Spectral range:	360-740 nm
Wavelength interval:	10 nm
Reflectance resolution:	0.001%
Inter-instrument agreement:	0.08 ΔE* avg. 19.00mm aperture (8400 unit) 0.30 ΔE* max. 13-BCRA tiles (8400 unit) 0.15 ΔE* avg. 19.00mm aperture (8200 unit) 0.35 ΔE* max. 13-BCRA tiles (8200 unit)
Repeatability (white):	0.01 ΔE* avg. (8400 unit) 0.02 ΔE* (8200 unit)
Status indicator:	LED
Measurement time:	Approx. 2 sec. (variable with area of view)
Weight:	47 lbs. (21.32 kg)
Software interface:	USB
Transmission measurement:	Direct and total
Fluorescent measurement:	Auto UV calibration
UV exclusion filtration:	400 nm and 420 nm (8400 unit) 400 nm (8200 unit)
View aperture size:	4.0/8.0/19.0 mm
Illumination spot size:	7.5/12.7/25.4 mm
Required computer:	Windows PC compatible
Required software:	X-RiteColor® Master
Sample holder:	Dampening, with adjustable sample alignment platform
Sample positioning:	Computer imaging with physical reticle
Power:	110V 50/60 Hz 230V 50/60 Hz
Environment:	Operating temperature 50° to 104°F (10° to 40°C) 85% RH non-condensing

Specifications and design subject to change without notice.

Technical Support

When contacting one of our technical support sites, please provide the following:

- Your instrument model and serial number
- Your name, company name, e-mail address and telephone number
- Details of any error messages and the steps you took which prompted them
- When you contact technical support by phone, have the hardware and software running and within reach of the telephone

To contact an X-Rite support site:

X-Rite, Incorporated has offices around the world. To identify the X-Rite service center nearest you, please visit our web site http://www.x-rite.com/contact/contactus.asp.

After locating the nearest office, contact us using one of the following methods:

- Visit the Help Desk area of our web site at http://www.x-rite.com/support/default.asp. 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: techsupport@x-rite.com detailing your problem and listing your contact information. Use “X-Rite 8000 Series” 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 faxed to your local X-Rite office listed on the back page of this manual.

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