MetaVue™

VS3100 Spectrophotometer

User Manual

X x·rite

PANTONE®

CE Declaration

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 2011/65/EU.

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.

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

Proprietary Notice

VS3100 Spectrophotometer

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.

VS3100 Spectrophotometer

Table of Contents

1.   Introduction and Setup

The VS3100 instrument is used to measure the color of the customer's sample. This color information is then sent from the instrument to the host computer, where the formulation software computes the paint formula to match the customer's sample. The instrument utilizes on-screen targeting preview in the software for accurate positioning on the sample.

The instrument reads color samples from a variety of materials including paper, plastic, textiles, and various painted objects. The instrument can be adjusted from 2 mm to 12 mm target size on a sample.

The VS3100 requires an AC adapter and USB communication to the host computer. Connections are located at the back of the instrument.

Operation button and status indicator

Power supply and USB connections (back of unit)

Instrument slider

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.
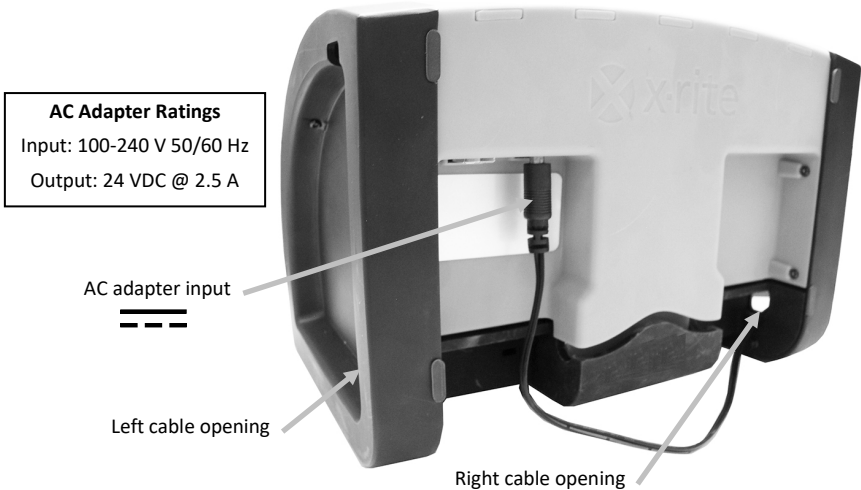
- VS3100 instrument with integrated calibration reference
- USB interface cable
- Power supply (X-Rite P/N SE30-210) and line cord
- Backer mat

- Cleaning Kit
- Documentation and registration material

Connecting the Power Supply

1. Verify the voltage indicated on the power supply complies with the AC line voltage in your area.

2. Feed the small plug from the power supply through either the left side or right side cable opening of the instrument.

3. Insert the plug into the input connector at the back of the instrument.

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

AC adapter input

Left cable opening

Right cable opening

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

⚠ **Operational hazard exists if a power supply other than X-Rite SE30-210 is used.**
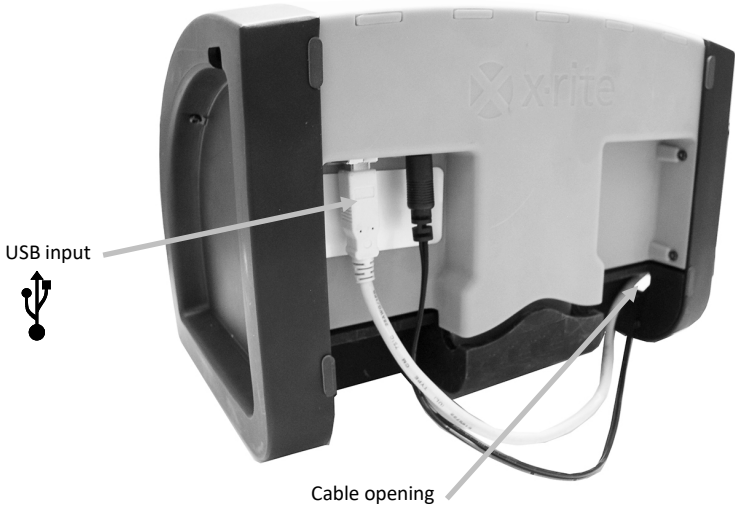
Connecting the USB Cable

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. Feed the square end of the USB cable through the left side or right side cable opening of the instrument.

3. Plug the square end of the USB cable into the connector at the back of the instrument.

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

USB input

Cable opening

Cable Channel

The cable channel located on the back of the instrument is used to secure the power supply and USB cables in place. The cable channel helps prevent the cables from inadvertently disconnecting, or interfering with sample measurements or cleaning when the instrument is resting on its back. The cable channel is used when the cable are routed out the right side of the instrument.

Cable channel
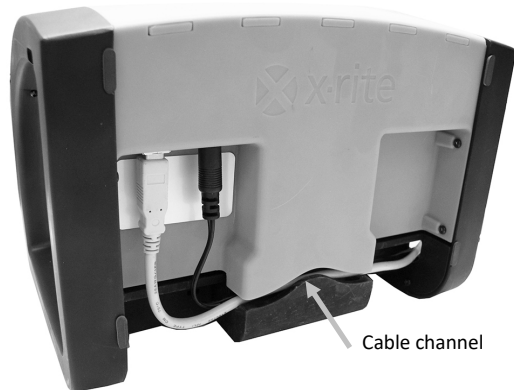
Operation Button

The operation button is used to initiate a measurement after the sample is placed under the slider.

VS3100 Spectrophotometer

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, or not calibrated.
- Blinking Red: Hardware error mode, cannot measure or calibrate.

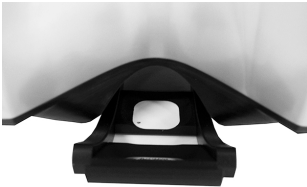Status indicator

Operation button

Instrument Slider Positions

The instrument slider has three positions to perform various functions. Below are images of the slider position from the front and bottom of the instrument.

Measurement and Side Sensor Calibration Position
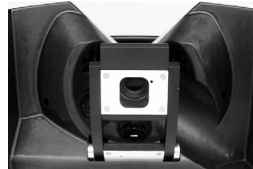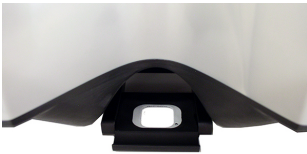
White Calibration Position


Cleaning Position

2.   Measuring Samples

The instrument measures samples under the slider at the bottom. It can take color measurements from almost any clean, dry surface that is reasonably flat. The sample should rest flat and steady below the slider. The sample can be viewed on a preview window within the application for easy positioning.

Important Sample Information

- The sample area to measure must be at least 2 mm to 12 mm in diameter.

- The sample should be opaque (solid), not clear or translucent.

- The measurement region of interest should be centered in the measurement opening. The preview video in the application can also be used for centering your sample.

- For thin samples, ensure that the sample is placed on the supplied sample backer mat before measuring. The backer mat provides the proper background color to ensure measurement accuracy.
 To use, position the instrument directly over the backer mat.

Backer mat
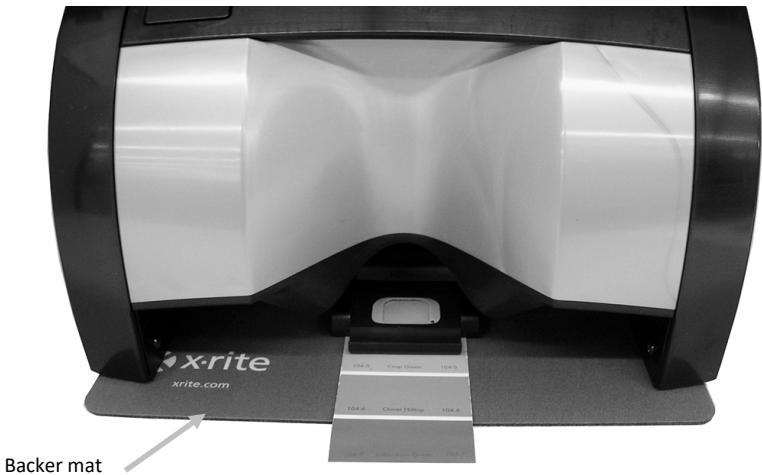
- For best color measurement results, position the sample surface so that it is parallel (or flat) with respect to the instrument's four feet.

- The measurement of wet paint samples is not recommended. Wet paint (especially latex) will dry to a significantly different color, resulting in an unsatisfactory color.

VS3100 Spectrophotometer

Measurement Procedure

1. Start the color match function in the application.

2. Make sure the slider is in the measurement position.

3. Place the sample under the slider until the area to measure is positioned within preview window in the application. If the sample being measured fills the complete preview window skip to Step 5, no targeting adjustments are required. If the sample does not completely fill the preview window, continue to Step 4 for information on adjusting the targeting size to fit the sample.

   NOTE: If the sample is large or oddly shaped, position the instrument on its back and locate the sample against the slider. Use the preview window in the application to guide the sample to the desired measurement location. Refer to the next page for positioning illustration.

Slider

Fandeck sample
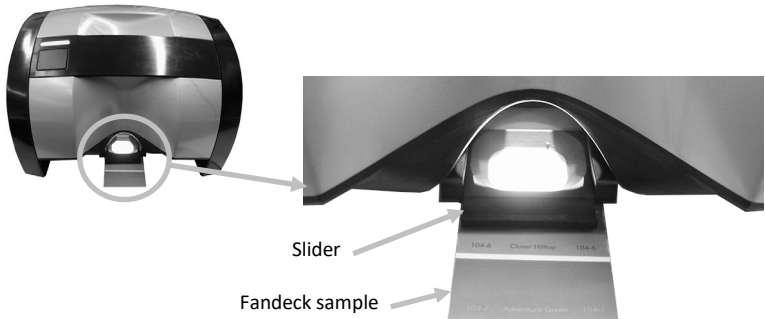
Application Preview Window

Measurement area in preview window
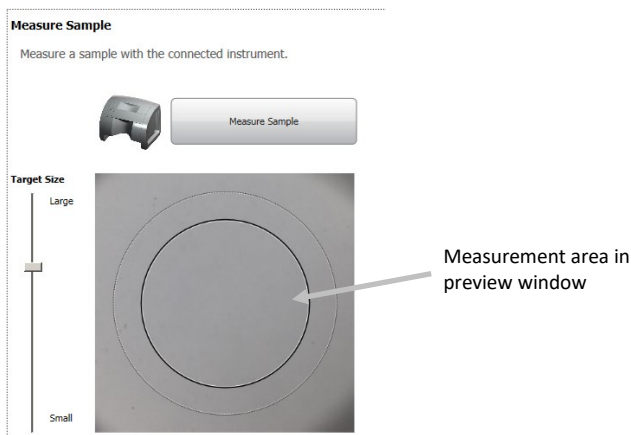
4. In the application, select the measurement area from Large (12 mm) to Small (2 mm) using the Target Size slider. The default setting is 12 mm.

NOTE: The measurement area can also be moved around the sample by clicking within the larger 12 mm circle shown in the application's preview video image. The Target Size slider must be set to < 12 mm for this to occur. This is helpful if you want to avoid some defect on the sample, or want to explicitly point to the measurement region of interest.

5. 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.

Large Sample Positioning Technique

3.   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.

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

Cleaning the Instrument Lenses (weekly or whenever visible contamination is present)

Important: The instrument must be calibrated after cleaning the lenses to ensure sample measurement accuracy. Refer to Section 4 after cleaning.

⚠ **NOTE:** Use of an abrasive material or unnecessary rubbing may scratch the lens surface and eventually cause permanent damage.

1. Place the instrument on its back.
2. Position the instrument slider to the back to gain access to the lenses.
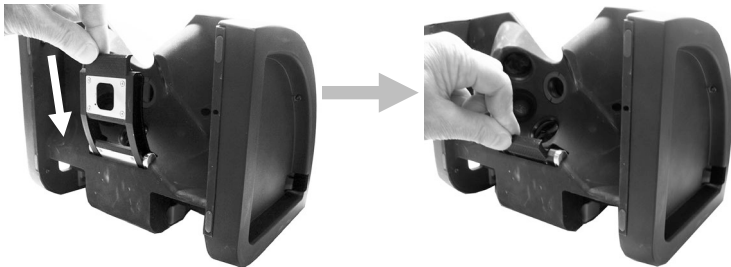
3. If you are using the ColorDesigner PLUS application, click the **Color Match** button. This will illuminate the LEDs in the instrument to 50% strength, allowing you to see any finger prints or dust on the lenses.
4. Using one of the supplied lens cleaning tissues, clean all four lenses by wiping in a circular motion.

Lenses

Lenses

Lens tissue
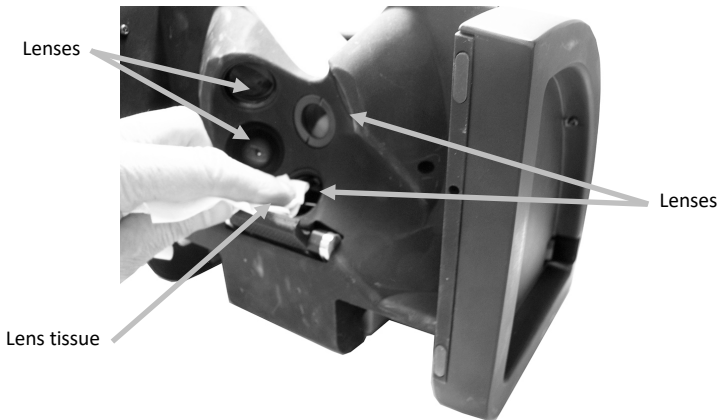
5. Place the instrument back upright and clean the calibration references. Refer to Cleaning the White Calibration References that follows.

Cleaning the White Calibration and Measurement References (weekly or whenever visible contamination is present)

Caution should be used when cleaning the calibration references. Color measurement accuracy is directly dependent on maintaining clean, contamination-free calibration references. Be careful not to touch the reference surfaces during normal calibration and measurement. Both white references are critical to calibration and measurement.

1. Position the instrument slider to the white calibration position.

2. Use clean, low-pressure air to remove any dust or debris from the white reference. If a more thorough cleaning is required, clean with one of the supplied wipes.

3. Position the instrument slider to the measurement position.

4. Use clean, low-pressure air to remove any dust or debris from the measurement reference. If a more thorough cleaning is required, clean with one of the supplied wipes.

VS3100 Spectrophotometer

⚠ **Caution:** If the calibration or measurement reference is cleaned with the supplied wipes, wait until the reference is completely dry before performing a calibration or measurement.

5. Perform a white calibration. Refer Section 4 for procedure.
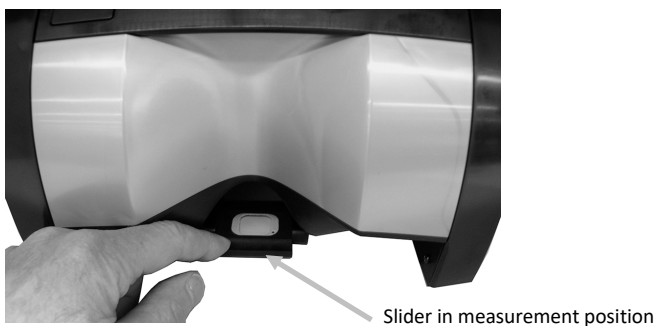
4.   Calibrating

Normally, the software application prompts you for an instrument calibration when required. This typically occurs once a day. The calibration reference is mounted on the instrument slider. Refer below for calibration procedure.

When a calibration is requested from the application:

1.   If not already done, position the instrument slider so that the white calibration reference is located below the lenses.

Calibration reference

Slider in calibration position
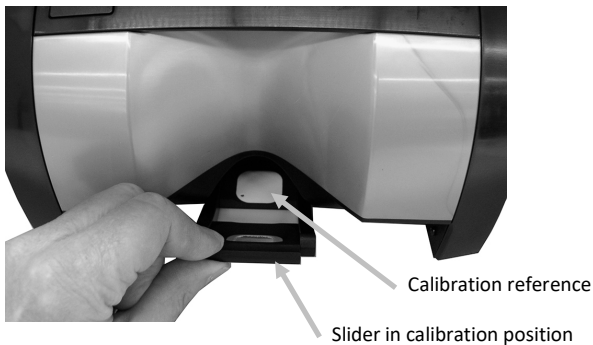
2.   Select the Measure option in the software application to initiate the white calibration measurement.

3.   After the white calibration measurement, the status indicator changes from blinking green to solid red. Position the instrument slider to the measurement position.

Slider in measurement position

4.   Select the Measure option in the software application to initiate the target window calibration measurement.

5.   After the target window calibration is completed, the status indicator changes from blinking green to solid green. This is an indication that the calibration procedure was successful.

5.   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 (mrsupport@xrite.com) detailing your problem and listing your contact information. Use "**VS3100**" 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.

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:

- Lenses are dirty and require cleaning. Refer to Cleaning the Instrument Lenses in Section 3.
- Problem with the sample or sample positioning. Refer to Important Sample Information in Section 2.

Repeated calibration failures:

- Clean the white calibration reference. Refer to Cleaning the Calibration Reference in Section 3.

Repeated sample measurement failures:

- Lenses are dirty and require cleaning. Refer to Cleaning the Instrument Lenses in Section 3.
- Ensure the sample is being positioned correctly. Refer to Important Sample Information in Section 2.
- 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.
- Make sure the USB driver is properly installed.

VS3100 Spectrophotometer

Technical Specifications

General	Performance
Instrument Type: Spectrophotometer	**Warm up Time:** 60 seconds
Geometry: 45°/0°	**Measurement Time:** < 8 seconds
Monochromator: Spinning filter wheel	**Cycle Time:** 1 sec. time interval between measurements
Light Source: Full spectrum LED	**Ambient Light Rejection:** 1000 Lux
Measurement Size: Variable virtual pickup spot size (2 mm – 12 mm)	**White Repeatability:** 0.04 DEab
Image Sensor: CMOS camera chip	**Inter-Instrument Agreement:** 0.30 DEab average
Measuring Distance: 1.96 in. (50 mm)	**Calibration Interval:** >= 24 hours
Insensitivity to Depth of Measuring Field: ±0.09 in. (2.5 mm)	**Measurement Area:** 2 to 12 mm
Operating Temp: 10° - 40°C (50° – 104°F) Ambient	**Spectral Range:** 400 nm to 700 nm
Operational Humidity: 0 - 85% non-condensing	**Spectral Interval:** 10 nm
Storage Temp: -40° - 70°C (-40° – 158°F)	**Product Life:** 7 years (target)
Operating Voltage: 24 VDC @ 2.0 A	**LED Life:** 15,000 meas/year
Communication I/O: USB 2.0 (Type-B Interface connector)	
Overall Size: L: 9.75 in. (24.76 cm), W: 7.1 in. (18.03 cm), H: 7.25 in. (18.41 cm)	
Weight: 5.55 lbs. (2.51 kg)	
Safety Compliance	
UL 61010-1,	
Usage: Indoor Only	
Altitude: 2000 m	
Pollution Degree: 2	
Overvoltage: Category II	

Design and specifications subject to change without notice.

VS3100 Spectrophotometer

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

18