



RapidMatch™ XI

Spectrophotometer



User Guide

Version 1.0





RapidMatch™ XI Spectrophotometer

CE Declaration

CE Hereby, X-Rite, Incorporated, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive(s) R & TTE 1999/5/EC, LVD 2014/35/EU and RoHS 2011/65/EU.

EAC Hereby X-Rite Incorporated declares that this device is in compliance with the technical regulations of the customs union according to declaration registration number: TC N RU Д-US.A301.B.01051

For more information please see <http://fsa.gov.ru/>

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.

NOTICE:

Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.

Industry Canada Compliance Statement

CAN ICES-3 (A) / NMB-3 (A)

NOTICE:

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

this device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio.

exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Exposure

- The radiated output power of the device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during Wi-Fi transmission is minimized.
- La puissance rayonnée par cet appareil est très inférieure aux limites d'exposition aux ondes radio définies par la FCC. Néanmoins, l'appareil doit être utilisé de telle manière que le potentiel de contact humain pendant la transmission par Wi-Fi soit minimisé.

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Safety

- **WARNING:** This instrument is not for use in explosive environments.
- Do not immerse the instrument in liquid.
- **Transportation:** This product contains a lithium-ion battery. Should you need to ship this device, you may wish to consult published guidance documents by one or more of these organizations for advice on how to comply with the regulations: IATA, ICOA, IMDG & PHMSA. The battery contained in this device is 107g in weight, 7.4V, 2.4 Ah, and complies with the UN 38.3 tests in effect the year it was originally shipped.
- The RapidMatch™ XI product is a sensitive measurement instrument. If the instrument experiences a drop, a calibration should be performed before any measurements are taken to ensure the instrument is working properly. Refer to the Calibration section for information on performing a Calibration.

Certifications and Compliance

- cULus listing, FCC part 15B & subpart C, CeC BC, Industry Canada Class A, CE, RCM, EAC, BIS, PSE, NOM, KC, KCC, KMEPS, IRAM, CCC, China RoHS, BSMI, SII, ISC, KONCAR, KUCAS, SASO, KEBS, ST COA, KVALITET, PSB, SONCAP, SABS, UKR cert.
- See the “Legal Information” menu on the device for Certification and Compliance, including FCC ID. To view, choose Settings > System and Diagnostics > Legal Information.



Equipment Information



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.

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

To avoid discomfort, do not look directly into the measurement optics when the instrument is on.

Operational hazard exists if a power adapter other than the one provided is used.

Use the rechargeable Li-ion batteries provided; other types may cause personal injury or damage to the device.

Please remove the battery from the device before shipping.



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

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1. Packaging

Standard

- RapidMatch™ XI instrument
- USB interface cabling
- Power adapter
- Power cords
- Calibration reference
- Battery pack
- Safety strap
- USB Image library (contains User Guide)
- Two light seals
- Screen protector

Optional

- Carrying case
- Home base

2. Overview



3. Installing the Battery Pack

Your new instrument is shipped from the factory with the battery pack removed. The battery pack is located in the instrument case and should be charged before use. The instrument will also operate from the power adapter without a battery pack installed.



Use the rechargeable Li-ion batteries; other types may cause personal injury or damage to the device. Replacement batteries can be purchased from your authorized X-Rite representative or E-One Moli Energy Corp.

NOTE: If the battery pack is ever dropped, check it for damage and replace if necessary. Refer to Section 17 Specifications.

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1. Carefully turn the instrument over and slide open the latch (1) that secures the battery pack access cover. Open the access cover.
2. Slide the new battery pack (2) into the instrument with the battery contacts facing down until the battery is positioned below the holding latch (3).
3. Close the access cover by pressing down until it locks into position.



4. Powering On

Press the power on/off and measure button or plug in the power adapter to turn on the instrument. If the instrument does not power up after pressing the power button, the batteries may require charging.

You can press and hold the button for three seconds, and then tap Power Off in the display to turn off the instrument.



5. 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.
- The battery pack can be charged in the instrument (Refer to Section 6 Connecting the Power Adapter) or by use of the optional charging station. The charging station is useful for charging up to two battery packs.
- Battery Charge Temperature Range 5°C to 40°C.

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Battery Lifespan Expectations

- Lithium-ion batteries typically decay to 80% capacity after 700 charge cycles. 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 700 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 of the battery pack in a designated disposal location for recycling.

6. Connecting the Power Adapter

NOTE: The instrument can operate from the power adapter only. The battery pack does not need to be installed. The power adapter 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 power adapter and the battery pack is charging.

1. Verify the voltage indicated on the power adapter complies with the AC line voltage in your area.
2. Open the access cover (1) at the back of the instrument.
3. Insert the small plug from the power adapter (2) into the input connector on the instrument.
4. Plug the detachable line cord in the power adapter and plug the line cord into the wall receptacle.



Power Adapter Ratings

Input: 100-240V 50-60 Hz and Output: 12VDC @ 2.5A

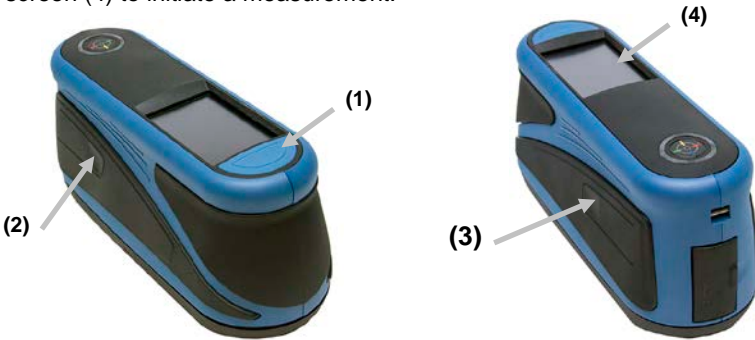
Operational hazard exists if a power adapter other than the one provided is used.



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7. Measure Buttons

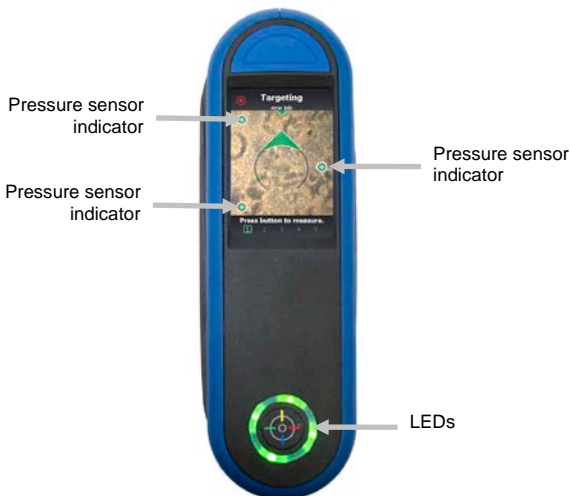
The instrument incorporates three measure buttons. One measure button (1) is located on the top of the instrument. This is the same button that is used to power on and off the instrument. The other two buttons are located on the left (2) and right (3) sides of the instrument. You can also tap the center of the screen (4) to initiate a measurement.



8. Pressure Sensors, Indicators and LEDs

The indicators in the screen are arranged in the same pattern as the pressure sensors located around the measurement port.

- **Green Indicator:** ideal pressure is being applied to the corresponding sensor. A measurement can be taken when all three indicators illuminate green.
- **Red Indicator:** the required pressure is not being applied to the corresponding sensor. Correct pressure must be applied to achieve a green indicator condition.



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The Circular multi-color LED located on the top of instrument provides visual feedback on the status of a measurement and pressure sensors.

- **Green LED:** Indicates all three pressure sensors are activated properly and a measurement can now be triggered.
- **Red LED:** Indicates one or more of the pressure sensors is not properly activated or an error has occurred during a measurement.
- **White LED:** Indicates the instrument is being powered on or the power adaptor is plugged in.
- **Off:** Indicates the instrument is in battery mode or off, not ready to measure, or not in measure mode.

9. Main Screen

When the instrument is powered-up, the main (top level) screen appears after the diagnostics test is complete. Select the modes by tapping the icons located on the display screen.



Add New Job: This mode is the main mode of operation. Sample measurements are taken, saved and analyzed in this mode.

Completed Jobs: This function is used to view and delete stored jobs.

Open Jobs: This function displays current jobs that have been downloaded from the software and require measurements.

Settings Mode: The settings mode is used to set and edit the instruments configuration options, and to enter the calibration mode. The settings options should be reviewed before you use your instrument for the first time.

Footer Bar: Displays the calibration status, Wi-Fi connection (where applicable), battery life status, and current time.

10. Battery Gauge

The battery gauge on the display depicts the current condition of the battery pack.



Indicates the battery pack is fully charged.

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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 power adapter is plugged in and the battery pack is charging.



Indicates the power adapter is plugged in and no battery pack is installed.

11. Wi-Fi Option



This option is used to activate or deactivate Wi-Fi mode.

The Wi-Fi icon appears at the bottom of the display when the option is activated in the Settings.

To activate, tap **Wi-Fi** and then tap the toggle switch. When the toggle switch is in the right position the option is ON, and when the toggle switch is in the left position the option OFF.

Once activated, the screen will show all available networks.

RapidMatch XI supports Wi-Fi standards IEEE 802.11 b/g/n in the 2.4GHz Band. For maximum data transmission speed, channel bandwidth in the settings of the wireless Access Point (AP) should be set to 40MHz or auto. Please note that the AP will default back to 20MHz if the area is congested with a high number of APs.

12. Navigating the Screen

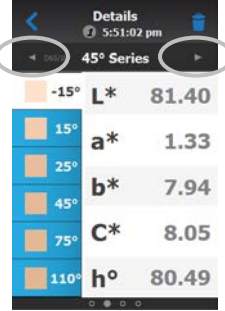
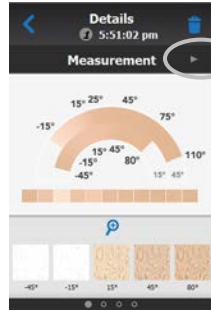
The instrument features a graphical touch screen display. All functionality is accessed directly through the screen.

Scrolling through Settings and Data

A scroll bar appears on screens when some settings or measurement data cannot be accessed from the main view. A scroll bar on the right indicates additional settings or data views are available. Swipe the screen up or down to view the additional settings.

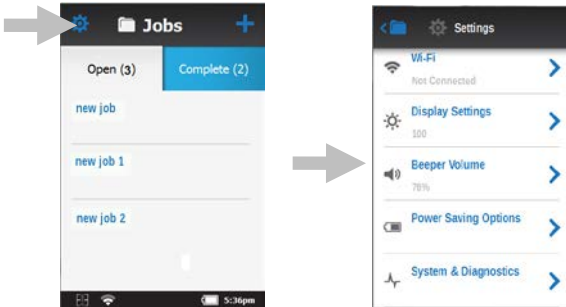
Left and right arrows at the top of the screen indicate that additional data is available. Swiping the screen or tapping the arrows moves the screen to the next available data screen. Swiping to the right or tapping the arrow returns the screen to the previous view.

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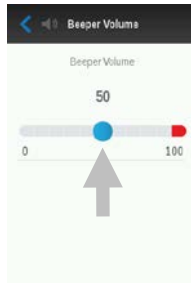


Opening Settings and Jobs

Settings and jobs are accessed by tapping the corresponding icon on the screen. For this example, the Settings icon was tapped to open the Settings screen.



For setting controls that navigate from side to side, slide the dot icon to the right or left to change the parameter. The Beeper Volume option is shown below.



13. Calibration

The instrument must be calibrated on the white tile and effect tile every 30 days. The calibration icon at the bottom of the screen changes to indicate that



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a calibration must be performed. No measurements can be taken until the calibration is completed.

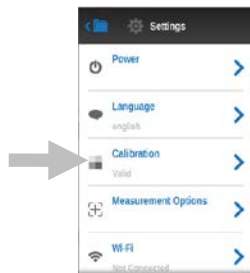
NOTE: Make sure to use the calibration reference supplied with the instrument for calibrating. Do not substitute this reference with a reference from another instrument. The serial number on the reference should match the reference serial number displayed on the instrument screen during calibration.

- The white tile in the calibration reference is dramatically affected by smudge marks, dust, and finger prints.

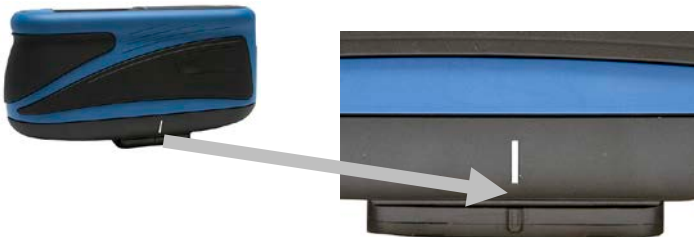
Cleaning the Calibration Reference

The white tile and effect tile in the calibration reference should be cleaned using a mild soap and warm water solution, thoroughly rinsed with warm water, and wiped dry with a clean, lint-free cloth. You must let the reference dry completely before taking a calibration measurement.

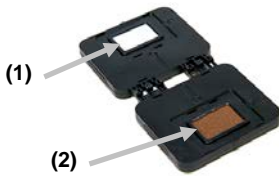
- Do not move instrument while taking a calibration measurement. If motion is detected, an error message will be displayed and calibration aborted.
 - When in calibration mode, swipe the screen to the left for additional information on positioning.
1. Select the Calibration option from the Settings menu. **Note:** If “Calibration required” message appears, advance to Step 2.





2. Tap Calibrate to continue with the calibration.
3. Lay the calibration reference flat. Position the instrument on the calibration reference over the white tile (1) so that the three pressure sensors around the measurement port align with the slots in the calibration reference, and the white line aligns with the reference marks.




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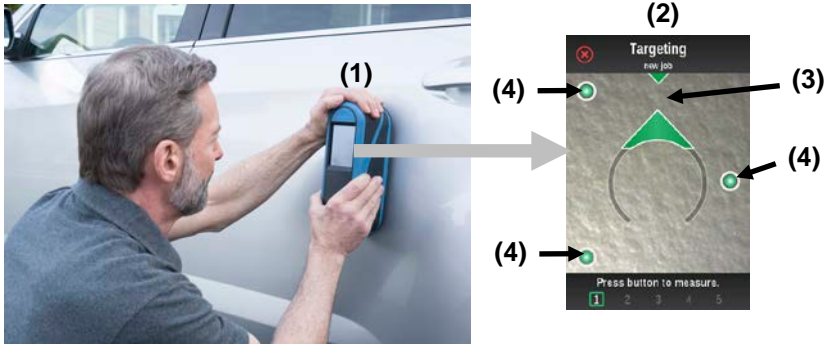
4. When ready, press the Measure button or tap the Calibrate icon in the screen. Do not touch the instrument throughout the measurement sequence. 
5. After calibration is completed, remove the instrument from the white tile and position the measurement port over the effect tile (2) in the calibration reference. Press the Measure button or tap the Calibrate icon in the screen. Do not touch the instrument throughout the reference verification sequence. 

14. Measurement

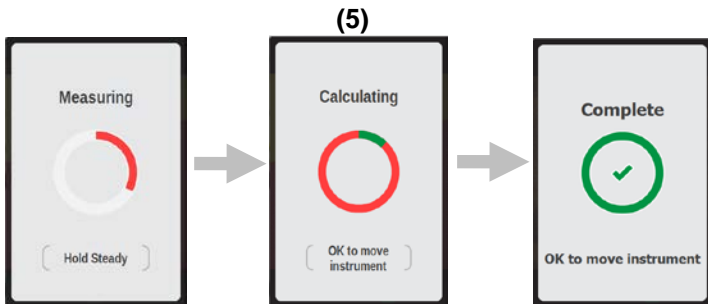
The Job mode is used to measure, view and delete sample data. The following is a general job measurement procedure.

1. Search for a check area near the repair spot that is as flat as possible and clean the area.
2. From the Main screen, select a downloaded job from the Open list or tap the new job icon at the top of the screen to start a new job. The instrument goes into targeting mode. 
3. Using both hands, rotate the instrument to a vertically aligned position with the top Measure button (1) up. Locate the measurement port in the bottom of the instrument over the first measurement area while viewing the screen (2). The large alignment arrow in the center of the screen should turn green and be aligned with the small green arrow at the top of the screen (3).
4. Gently rock the instrument until all three positioning indicators (4) in the screen turn green. This indicates that all three pressure sensors are activated.

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5. Hold the instrument steady and press a Measure button or tap the screen to initiate a measurement. Continue to hold the instrument steady until "Calculating" (5) appears in the screen.
6. Continue with the remaining area measurements to complete the job.
7. Tap the check mark icon on the Summary screen to save the job and return to the main job screen. ✓



15. Light Seal Check and Replacement

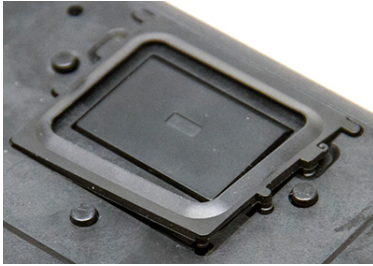
The light seal that surrounds the measurement port on the bottom of the instrument is important in providing consistent and accurate measurements. Refer below for information on proper light seal installation.

Checking the Light Seal Installation

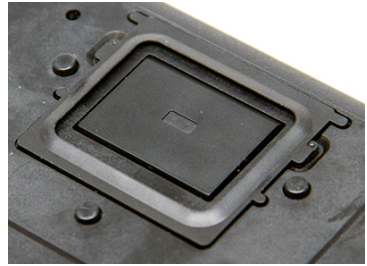
Verify the seal is lying flat and properly installed. If not, press into place using your finger.

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Not Properly Installed

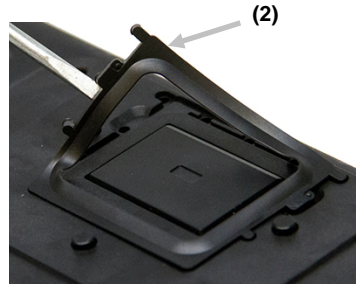
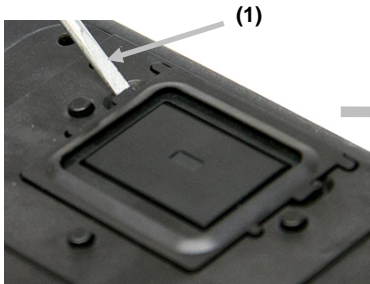


Properly Installed



Replacing the Light Seal

1. Using your finger nail or a small flat blade screwdriver (1), lift out one edge of the light seal (2) from the recessed area and remove.



2. Orientate the new light seal over the recessed area around the measurement port.
3. Press the new light seal into place until all 14 of the rubber tabs are inserted properly and the light seal is lying flat.



16. Cleaning

The exterior of the instrument may be wiped clean with a cloth dampened in water or mild cleaner. Dried paint on the exterior of the instrument can be carefully removed using a paint scraper.

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Important Notes:

- DO NOT use any solvents to clean the instrument, this will cause damage to the cover and internal electronic components.
- Compressed air should not be used to clean the instrument. Cleaning the instrument with blown air can cause dirt on the outside of the instrument to enter into the device, and contaminate optical components.

17. Specifications

Environmental

- Operating Temp: 50°F to 104°F (10°C to 40°C)
- Humidity Max: 85% RH max (non condensing)
- Storage Temp: -4°F to 122°F (-20°C to 50°C)

Battery

- Cells: 2, Size: 18650
- Voltage: 7.4V
- Capacity: 2.4AH (2400mAh)
- Max Discharge: 2.4A
- Max Charge: 2.0A
- Package: Hard Plastic Case
- Compliance: UL Listed, PSE, KCC, CE, UN38.3,
- IEC CB 621331-1 2ND Edition
- Contains internal overcurrent & overvoltage protection

18. Troubleshooting

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.

Problem	Cause	Solution
Instrument not responding.	Instrument is in power down mode.	Press the power button.
	Battery pack is very low or bad.	Charge the battery. If battery pack is bad, replace the battery pack.
	No battery pack installed.	Install batteries or plug in power adapter.
		Reset the instrument from the Settings>Systems &

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		Diagnostics>Systems Information screen.
Measurement error or results appear inaccurate.	Material being measured is damaged (e.g. scratched)	Obtain new material.
	Instrument requires calibration.	Refer to the Calibration procedure.
Calibration procedure fails.	Calibration reference is dirty or damaged.	Clean the reference per procedure in the Calibration section, or replace if damaged.
Instrument and software not communicating (USB connection).	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.
		Reset the instrument from the Settings>Systems & Diagnostics>Systems Information screen.
Instrument will not measure or calibrate.	Sensor indicators in the display do not change color.	Make sure the light seal is lying flat and not interfering with the pressure sensors on the bottom of the instrument. Refer to the Light Seal Check and Replacement section for information on properly installing a light seal.
		Pressure sensors are not working correctly. Put the instrument into targeting mode and place the instrument on a flat surface and then lift. If one or more of the sensor indicators in the display do not change color when lifted, there may be a problem with the pressure sensor. Contact technical support.
	Light seal not installed properly or damaged.	Refer to the Light Seal Check and Replacement section for information on properly installing a light seal.

19. 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.
- Send an e-mail to Technical Support: casupport@xrite.com detailing your problem and listing your contact information.

20. Replacement Parts

Part	Part Number
USB cable	SE108-USBAB-03
Line Cord – US 10A – 125V	SD33-07
Line Cord – European 10A – 250V	SD33-08
External Power Supply	SE30-277
Safety Strap	MA98-99
Screen Protector	KOH-27088
Light Seal	KOH-26506
External Battery Charger	SE15-42
Battery	SE15-40

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