

552

SPECTROPHOTOMETER



Operator's Manual



Dear X-Rite Customer:

Congratulations! We at X-Rite, Incorporated are proud to present you with a 552 Spectrophotometer. This instrument represents the very latest in microcontrollers, integrated circuits, optics, and display technology. As a result, your X-Rite instrument is a rugged and reliable instrument whose performance and design exhibit the qualities of a finely engineered instrument, which is not surpassed.

To fully appreciate and protect your investment, we suggest that you take the necessary time to read and fully understand this manual. As always, X-Rite stands behind your instrument with a one-year limited warranty, and a dedicated service organization. If the need arises, please don't hesitate to call us. The customer service telephone number is: 1-800-248-9748

Thank you for your trust and confidence.

X-Rite, Incorporated

Federal Communications Commission Notice

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.

NOTE: Shielded interface cables must be used in order to maintain compliance with the desired FCC and European emission requirements.

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.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

AVERTISSEMENT : Des câbles d'interface blindés doivent être utilisés afin de se conformer aux règlements européens et FCC (USA) sur l'émission.

ACHTUNG: Um das Produkt innerhalb der FCC (Vereinigten Staaten) und den europäischen Emissions-Richtlinien zu halten, müssen geschirmte Schnittstellenkabel verwendet werden.

AVISO: Para satisfacer las deseadas regulaciones de emisión para Europa y el FCC, se debe utilizar los cables de interfaz protegidos contra las interferencias electromagnéticas.

AVERTISSEMENT: Des câbles d'interface blindés doivent être utilisés afin de se conformer aux règlements d'émission européens et de FCC (États-Unis).

AVVISO: Per conformare con i desiderati regolamentazioni di emissione per Europa ed il FCC, utilizzare i cavi d'interfaccia protetti contro l'interferenze elettromagnetiche.

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

WARNUNG: Das Gerät darf in einer explosiven Umgebung NICHT verwendet werden.

ADVERTENCIA - NO use este aparato en los ambientes explosivos.

ATTENTION: Cet instrument NE DOIT PAS être utilisé dans un environnement explosif.

AVVERTIMENTO - NON usare questo apparecchio in ambienti esplosivi.

CAUTION: Operational hazard exists if battery chargers other than X-Rite SE30-81 (115V) or SE30-77 (100-240V) are used. Use only X-Rite battery pack SE15-26, other types may burst causing personal injury.

VORSICHT: Betriebs- und Verletzungsgefahr besteht bei Gebrauch von anderen Adaptern als X-Rite SE30-81 (115 V) oder SE30-77 (100-240 V). Verwenden Sie nur den X-Rite Akkupack SE15-26.

ADVERTENCIA: No use otro cargador de las pilas que no sea la pieza X-Rite SE30-81 (115V) o SE30-77 (100-240V), para evitar el riesgo de mal funcionamiento del equipo. Use solamente las pilas SE15-26 de X-Rite, es posible que los otros tipos puedan estallar y causar daños corporales.

ATTENTION: Pour ne pas causer un mauvais fonctionnement de l'appareil, veuillez à utiliser uniquement les chargeurs de batterie X-Rite SE30-81 (115 V) ou SE30-77 (100-240 V). Veuillez aussi à utiliser uniquement la batterie X-Rite SE15-26, d'autres batteries pouvant exploser et causer des blessures.

AVVERTENZA: Non usare un altro caricabatterie che non è del pezzo X-Rite SE30-81 (115V) o SE30-77 (100-240V), per evitare il rischio di malfunzionamento dell'apparecchio. Usare solamente gli accumulatori SE15-26 di X-Rite, è possibile che altri tipi possano scoppiare e causare danno personale.

The Manufacturer:	X-Rite, Incorporated
Der Hersteller:	4300 44th Street, S.E.
El fabricante:	Grand Rapids, Michigan 49512
Le fabricant:	
Il fabbricante:	

Declares that:	Spectrophotometer
gibt bekannt daß:	552
advierte que:	
avertit que:	
avverte che:	



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nicht an ein öffentliches Telekommunikations-Netzwerk angeschlossen werden soll.
no debe ser conectado a redes de telecomunicaciones públicas.
ne doit pas être relié à un réseau de télécommunications publique.
non deve essere connesso a reti di telecomunicazioni pubblici.

CE DECLARATION

Manufacturer's Name: X-Rite, Incorporated
Manufacturer's Address: 4300 44th Street, S.E.
Grand Rapids, Michigan 49512
U.S.A.

Model Name: Spectrophotometer
Model No.: 552

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.

WEEE

As of August 13, 2005, X-Rite products meet the European Union – Waste Electrical and Electronic Equipment (WEEE) directive. Please refer to www.xrite.com for more information on X-Rite's compliance with the WEEE directive.

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Warranty Information

X-Rite, Incorporated (“X-Rite”) warrants each instrument manufactured to be free of defects in material and workmanship (excluding battery pack) for a period of 12 months. This warranty shall be fulfilled by the repair or replacement, at the option of X-Rite, of any part or parts, free of charge including labor, F.O.B. its factory or authorized service center.

This warranty shall be voided by any repair, alteration, or modification, by persons other than employees of X-Rite, or those expressly authorized by X-Rite to perform repairs, and by any abuse, misuse, or neglect of the product, or by use not in accordance with X-Rite’s published instructions.

X-Rite reserves the right to make changes in design and /or improvements to its products without any obligation to include these changes in any products previously manufactured. Correction of defects by repair or replacement shall constitute fulfillment of all warranty obligations on the part of X-Rite.

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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.

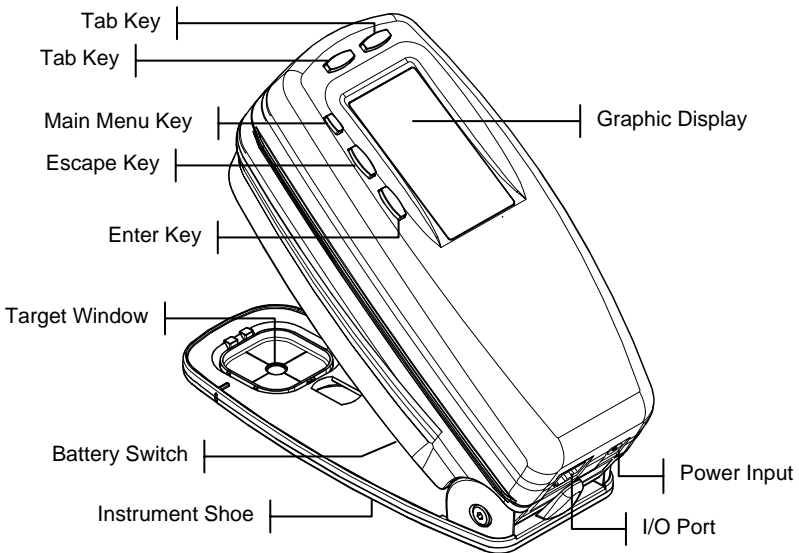
Overview and Setup

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Instrument Description

The 552 Spectrophotometer is used to measure and store sample color readings. When samples are stored, the instrument is used in conjunction with a ColorDesigner software package.

The spectrophotometer can measure color samples on a variety of materials, including paper, textiles, and various painted objects.



Unpack and Inspect

After removing the instrument from the shipping carton, inspect it for damage. If any damage has 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 shipment 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 carton shipped to you.

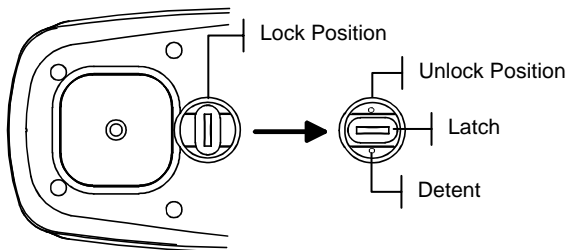
Packaging Drawing and Parts List

Check your packaging contents against your packing list and original order. A detailed packaging drawing and parts list are included in the appendices of this manual.

Shoe Lock Operation

To take measurements with the instrument, you must unlock the shoe. When the instrument is not in use, the shoe should be re-locked to protect the instrument optics. A rotating latch on the bottom of the instrument locks the shoe closed.

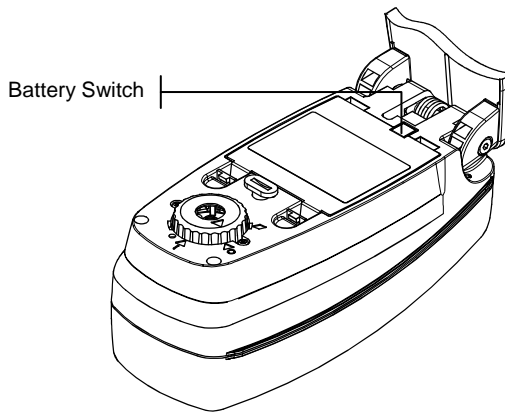
1. To unlock, hold shoe against the instrument and rotate latch. Align latch so that it fits through the cutout in the shoe. Carefully release the shoe to open.
2. To lock, hold shoe against the instrument and rotate latch to catch the detents in the shoe.



Applying Power

The Battery switch—located on the bottom of the instrument—turns the instrument off and on during battery operation. When the AC adapter is attached, the instrument remains on and the battery switch has no affect.

Taking a measurement or pressing a key turns the instrument back on during a power-down. However, if the instrument is turned off with the battery switch you must turn it back on with the battery switch.



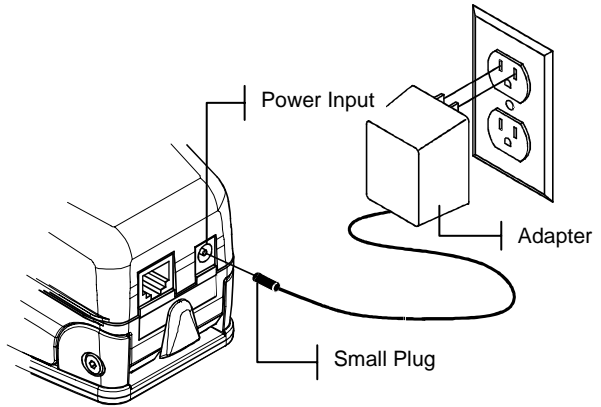
Charging the Battery Pack

Four, AA nickel-metal hydride batteries fastened in a removable battery pack power the instrument. The battery pack must remain in the instrument at all times for proper operation. Before initial “remote” use of the instrument, charge the battery pack for approximately three hours. However, if immediate use is required, the instrument can be operated “tethered” to the AC adapter after a short period of battery charging.

NOTE: Only use the AC Adapter supplied to charge the battery pack. A “Low Battery” message appears on the display when the battery falls below approximately 25% of full charge. Measurements are still possible, but the battery should be charged soon. A “Charge Battery” message appears when not enough battery power remains to take a measurement. The battery must be charged immediately.

To attach the AC adapter:

1. Verify that the voltage indicated on the adapter complies with the AC line voltage in your area. If not, contact X-Rite or an authorized representative.
2. Insert the small plug from the adapter into the power-input connector on the instrument. (If you are using Serial Cable SE108-92, you can plug the small plug into the power connector at the end of the cable.)
3. Plug the adapter into an AC wall receptacle.

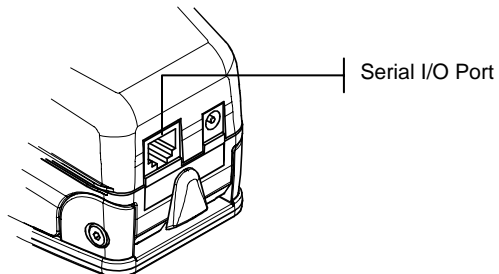


Instrument I/O Serial Interface

Your instrument can be connected to your ColorDesigner system using an interface cable.

To install the interface cabling:

1. Insert the modular end of the interface cable into the I/O port located on the back of the instrument. The cable connector “clicks” when properly attached.
2. Attach the other end of the cable to an available port on your computer.

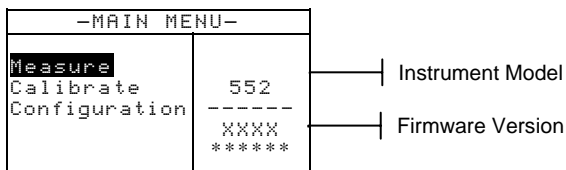


User Interface

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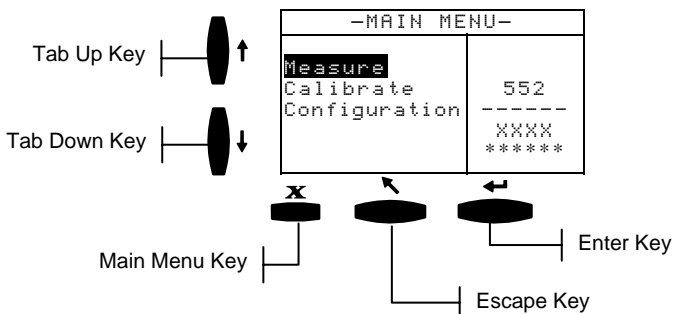
What to Expect

When the instrument is powered-up, the Measure Mode screen appears. Measure Mode operation is covered in Section Four. The screen shown below is the main (top level) screen. The left side of the main menu screen lists all available modes. The right side of the screen lists instrument model and firmware version information.



Navigation – Basic Operation

Perform reading and mode/option navigation with the five keys arranged around the display screen. Each key has a unique symbol for performing a specific operation.





Tab Down key

Advances the highlighted bar (reverse image) to the next available “tab stop.” A “tab stop” indicates an item that can be acted on further, such as a menu item. Tab stops generally follow a left-to-right or top-to-bottom sequence.



Tab Up key

Performs the same function as the Tab Down key except in reverse order. Tab stops follow a right-to-left or bottom-to-top sequence.



Enter key

Activates the highlighted item. When entering an active mode from the main menu, the active mode is displayed with the highlight on the first required operation in the mode.



Escape key

Backs up the instrument screen one menu level.

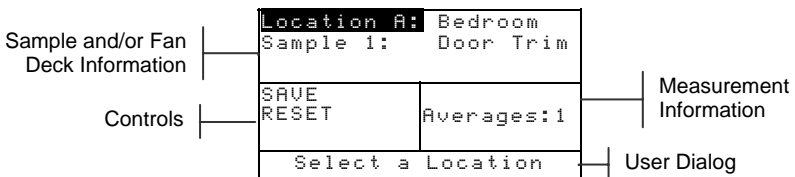


Main Menu key

Returns the instrument screen to the main menu. This is a quick exit out of any mode. If any option is being modified at the time the key is pressed, the edits are aborted and the previous setting reinstated.

Measure Mode Screen

The Measure Mode screen consists of four main areas: Sample information, Controls, User dialog, and Measurement information.



Sample Information

This area displays the location name, sample name and samples stored in the selected location. Pressing the Enter ↵ key when **Location** is highlighted provides access to the selection editor. Pressing the Enter ↵ key when **Bedroom** (user defined location name) or **Door Trim** (user defined sample name) is highlighted provides access to the location names or sample names stored in the instrument.

Controls

This portion of the screen is used to save or reset the current sample measurement. Pressing the Enter ↵ key when **SAVE** is highlighted stores the current measurement in the instrument. Pressing the Enter ↵ key when **RESET** is highlighted reset the average counter to zero for the current sample.

User Dialog

This portion of the screen indicates the current mode or condition of the instrument. For example, if the highlighted tab stop focus is on **Location A**, the user dialog would display `Select a Location`. Measurement conditions are also displayed in this location.

Measurement Information

This portion of the screen displays how many measurements have been completed on the current sample.

Using the Instrument Keys

There are several techniques used to navigate through the instrument screens, select functions and settings, and define names.

Opening a Mode or Menu

Opening a mode or menu gives you access to additional items related to the menu or specific information for a mode.

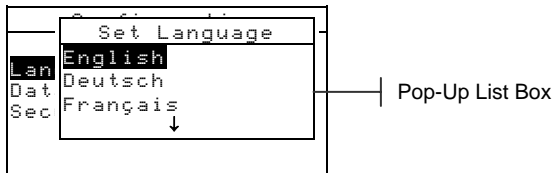


To open a mode or menu:

1. Use the Tab Up key ↑ or Tab Down key ↓ to highlight the desired mode or menu item.
2. Press the Enter ↵ key.

Opening a Pop-Up List Box

Opening a pop-up list box allows you to select items and/or change settings for a selection or function. Below is an example of a list box.

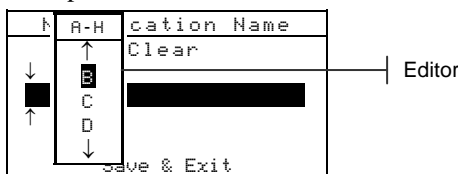


To open an pop-up list box:

1. Use the Tab keys ⇅ to highlight the desired selection or function.
2. Press the Enter ↵ key to access the pop-up list box.

Using the Alphanumeric Editor

Location and sample names can be edited using the alphanumeric editor if you do not have an optional barcode reader. Selecting Clear in the editor provides a quick method of removing all characters in the string. Pressing the Tab keys ⇅ simultaneously clears the selected character. Below is an example of the editor.



To open the editor:

1. Use the Tab **↑↓** keys to choose the desired digit or number location (arrows above and below designate selection).
2. Press the Enter **↵** key to access the editor.

NOTE: You can press the Enter **↵** key again to quickly page through groups of letters, symbols, and numbers. Use the Escape **⌫** key to move from a character back to the group selection.

3. Use the Tab **↑↓** keys to highlight the desired character.
4. Press the Enter **↵** key to select the highlighted character and exit the editor.

Using the Location/Sample Editor

The measure mode has a special control that is used to select storage locations, location names, and sample names. The list can be paged through either forward or backward to reduce time.

Indicates the editor control is activated

◀ Location A: Bedroom	
Sample 1: Door Trim	
SAVE	Averages: 1
RESET	
<Select a location>	

To open the editor:

1. Use the Tab **↑↓** keys to highlight the location, location name, or sample name.
2. Press the Enter **↵** key to activate the editor.
3. Press the Down Tab **↓** key to page forward through the list, or press the Up Tab **↑** key to page backward through the list.
4. After the desired item is displayed, you can press the Enter **↵** key to select the item, or press the Escape **⌫** key to go back to the original setting.

Important Measurement Techniques

The variety of items that the instrument can measure is almost endless. However, to obtain accurate and repeatable measurements, the bottom of the shoe must be on the surface to be measured. The reason for this is that any movement during a reading can cause the data to vary. To obtain the most accurate and repeatable measurements, there are a few guidelines you must follow:

- The sample to read must be larger than the target window opening.
- If the sample to be read is smaller than the shoe, you may want to make a platform—the same height of the sample—for the instrument to sit on.
- The sample color should be uniform and consistent across the measurement area, with no fading or blemishes.
- The sample should be solid—not clear or translucent.

Instrument Calibration

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General Information

Under normal circumstances, the instrument should be calibrated at least once a day.

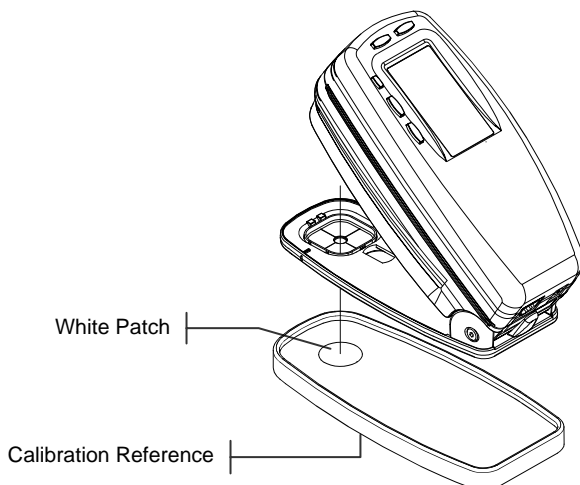
At the Main Menu, use the Tab Up ↑ or Tab Down ↓ key to highlight **Calibrate**. Press the Enter ↵ key to access the Calibration Menu.

-MAIN MENU-	
Measure	
Calibrate	552
Configuration	-----
	XXXX

Positioning the Instrument on the White Calibration Reference

NOTE: Make sure the calibration reference is clean before use. Refer to the calibration cleaning procedure.

Place the instrument onto the calibration reference. The instrument fits snugly with the target window opening centered over the white ceramic disk.



Calibration Procedure

A calibration procedure consists of a white measurement. The instrument notifies you when a calibration is required.

To perform a calibration:

1. At the Calibration menu screen, position the target window over the white ceramic disk as previously explained.

CALIBRATION
<Measure White Ref>
Status: Cal OK S/N *****

2. Lower the instrument to the shoe; hold steady until the instrument indicates the calibration is completed.
3. Store the calibration reference in a dry, dust free area, away from direct exposure to light.

Instrument Operations

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Measure Mode	4-1

General Information

The basic operation of the measure mode is to measure and store sample data. Sample data is then uploaded to a ColorDesigner system where a color match is performed.

Sample Averaging

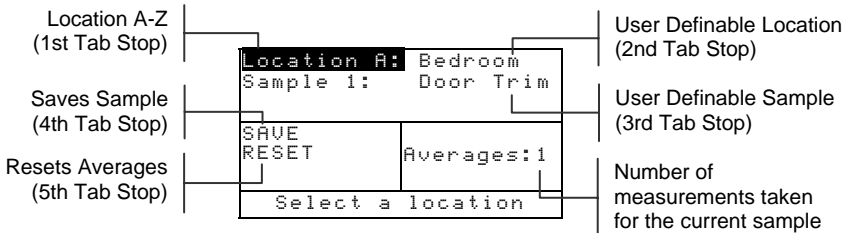
Averaging allows you to take additional reading on the same sample to calculate an average reading. This is helpful in a number of circumstances, for example: If a customer wants to match paint to a fabric that is faded in some areas, you can read several points on the fabric and store data that is an average of those readings. If a customer has, for instance, curtains with two different shades of blue in them and wants a paint that matches both, you can measure both blues and achieve an average of the two. The maximum number of sample measurements that can be taken to achieve an average value is 99.

Measure Mode

The measure mode provides a method for storing sample measurements in the instrument's database. A sample is assigned to a specific location. Location names and sample names are created using the alphanumeric editor (refer to Section five, Configuration). Each location can store a maximum of 50 sample measurements.

To access the measure mode:

If not already in the measure mode, use the Tab Up ↑ or Tab Down ↓ key to highlight **Measure** at the Main Menu. Press the Enter key ↵ to access the measure mode.



To measure and store a sample:

1. At the measure menu screen, make sure **Location** is highlighted and select the desired location (refer to Section Two for procedure). Locations are labeled A – Z (excluding I and O).
2. After the location is selected, press the Tab Down ↓ key to move the highlight to the 2nd tab stop, location name. Select the desired location name (refer to Section Two). If no location names exist, <blank> is displayed. Location names are created by using the Add Location Name option (refer to Section 5, Configuration, Database Tools).
3. After the location name is selected, press the Tab Down ↓ key to move the highlight to the 3rd tab stop, sample name. Select the desired sample name (refer to Section Two). If no sample names exist, <blank> is displayed. Sample names are also created using the Add Sample Name option (refer to Section Five, Database Tools).
4. After all selections are made, position the instrument’s target window on the sample and take a measurement by lowering the instrument to the shoe and holding. Release the instrument when Measurement Complete is displayed.
5. Continue with additional measurements if sample averaging is used.

NOTE: Highlighting RESET and pressing the Enter ↵ key will set the Averages number to zero. This allows you to collect new measurement data on the current sample.

6. After measuring, press the Tab Down ↓ key to move the highlight to the 4th tab stop, **SAVE**. Press the Enter ↵ key to store the sample in the database.

Instrument Configuration

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General Information

The configuration menu contains several menu items that can be modified to meet your individual requirements.

To access the Configuration menu:

1. At the Main Menu, use the Tab Up ↑ or Tab Down ↓ key to highlight **Configuration**. Press the Enter ↵ key to access the configuration menu.

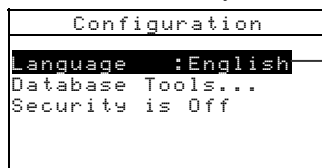


Language

The Language configuration allows you to select the language you want to display on your instrument. The instrument resets whenever the language is changed.

To select a language:

1. Use the Tab ↑↓ keys to highlight **Language**.
2. Press the Enter ↵ key to access the Language editor.



English, Deutsch,
Español, Français,
Italiano, Português

3. Use the Tab ↑↓ keys to highlight the desired language.
4. Press the Enter ↵ key to save the selected language. The instrument restarts with the selected language active.

NOTE: If the AC adapter is not plugged into the instrument, press any key to reactivate the instrument after language selection.

Database Tools

The Database Tools allow you to configure the following settings:

- **Add Location Name** – Used to manually enter location names using the editor.
- **Add Sample Name** – Used to manually enter sample names using the editor.
- **Factory Presets** – Allows you to reload the factory default settings whenever required. Databases are not affected.
- **Clear all Databases** – Allows you to clear all stored samples from all locations. Configuration settings are not affected.
- **Clear all Samples** – Allows you to clear all stored samples (sample names are NOT deleted from the list).
- **Clear all Locations** – Allows you to clear all stored samples from all locations (location names are NOT deleted from the list).

To open the Database Tools menu:

1. Use the Tab \updownarrow keys to highlight **Database Tools**.

```

Configuration
Language      :English
Database Tools...
Security Off
  
```

2. Press the Enter \leftarrow key to access the Database Tools menu.

Add Location Name or Sample Name

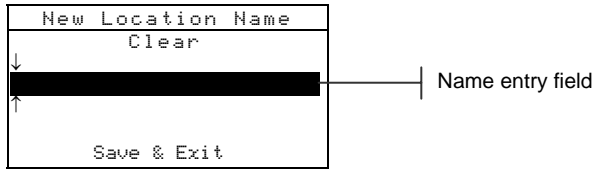
To add a location name or sample name:

1. Use the Tab \updownarrow keys to highlight **Add Location Name** or **Add Sample Name**.

```

Database Tools
Add Location Name...
Add Sample Name...
Factory Preset...
Clear all Databases
Clear all Samples
Clear all Locations
  
```

2. Press the Enter \leftarrow key to open the New Location Name or New Sample Name menu.



NOTE: To quickly remove a name, highlight `Clear` and press the Enter \leftarrow key.

3. Use the Tab \updownarrow keys to highlight the name entry field.

NOTE: If you are using the optional bar code reader, you may scan the name in at this point.

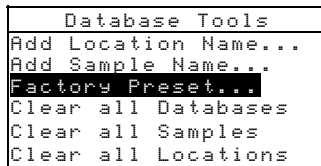
4. Use the Tab \updownarrow keys to choose the desired character location (arrows above and below designate the selection). Press the Enter \leftarrow key to access the alphanumeric editor.
5. Press the Enter \leftarrow key again to quickly page through groups of letters, symbols, and numbers.
6. Use the Tab \updownarrow keys to highlight the desired character and press the Enter \leftarrow key to exit editor.
7. Continue with additional character edits.
8. When editing is completed, use the Tab \updownarrow keys to highlight `Save & Exit` and press the Enter \leftarrow key.

Factory Presets

NOTE: All configuration options and stored data will be lost when reloading the factory defaults.

To restore factory presets:

1. Use the Tab \updownarrow keys to highlight `Factory Presets`.

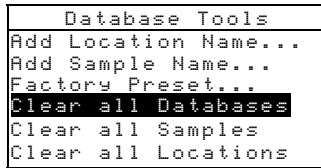


2. Press the Enter \leftarrow key to open the `Factory Defaults` window.
3. Use the Tab \updownarrow keys to highlight `Yes` and press the Enter \leftarrow key. The factory defaults are now loaded in the instrument.

Clear all Databases

To clear database:

1. Use the Tab \updownarrow keys to highlight `Clear all Databases`.

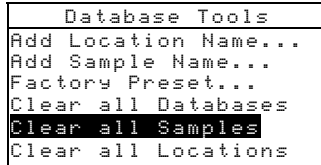


2. Press the Enter \leftarrow key to open the Delete Databases window.
3. Use the Tab \updownarrow keys to highlight **Yes** and press the Enter \leftarrow key. The instrument's databases are now deleted.

Clear all Samples

To clear all samples:

1. Use the Tab \updownarrow keys to highlight **Clear all Samples**.



2. Press the Enter \leftarrow key to open the Delete Samples window.
3. Use the Tab \updownarrow keys to highlight **Yes** and press the Enter \leftarrow key. The instrument's samples are now deleted.

Clear all Locations

To clear all locations:

1. Use the Tab \updownarrow keys to highlight **Clear all Locations**.



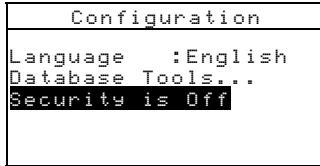
2. Press the Enter \leftarrow key to open the Delete Locations window.
3. Use the Tab \updownarrow keys to highlight **Yes** and press the Enter \leftarrow key. The instrument's samples are now deleted.

Security

When security is activated (on) the Configuration options menu will **not** appear on the instrument screen. *See following steps to access the Configuration menu when Security is activated (on).*

To set the security option:

1. Use the Tab $\uparrow\downarrow$ keys to highlight **Security is**.



2. Press the Enter \leftarrow key to toggle between Off and On.
3. Press the Escape \backslash key to save and exit the configuration menu.

NOTE: You must turn the instrument off and then back on for the to activate the security option.

To gain access to the Configuration menu if Security is enabled:

1. Remove the AC adapter and turn off the instrument with the battery switch.
2. Press and hold the read switch on the bottom of the instrument as you turn the instrument on with the battery switch.
3. When the main menu appears, release the read switch. The Configuration item appears in the main menu.

NOTE: You must set the Security to **Off** if you want the Configuration item to automatically appear the next time you turn the instrument on.

CHAPTER FIVE

Service and General Maintenance

Repair Information	6-1
Cleaning the Instrument	6-1
Replacing the Battery Pack	6-2

Repair Information

The 552 instrument is covered by a one-year limited warranty—excluding battery pack—and should be referred to factory or 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: 1-800-248-9748).

X-Rite will repair any instrument past warranty. The customer shall pay shipping cost to the factory or authorized service center and repair cost. 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

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

NOTE: *DO NOT* use any solvents to clean the instrument; this causes damage to the cover.

Cleaning the Optics

The optics should be cleaned once a week in normal environments, and more often in dirty or dusty environments. Carefully lift the instrument and blow short bursts of clean, dry air into the measurement aperture. This should remove any accumulated dust in the optics area.

WARNING: *DO NOT* invert cans that use Freon as a propellant; doing so could cause damage to the optics assembly.

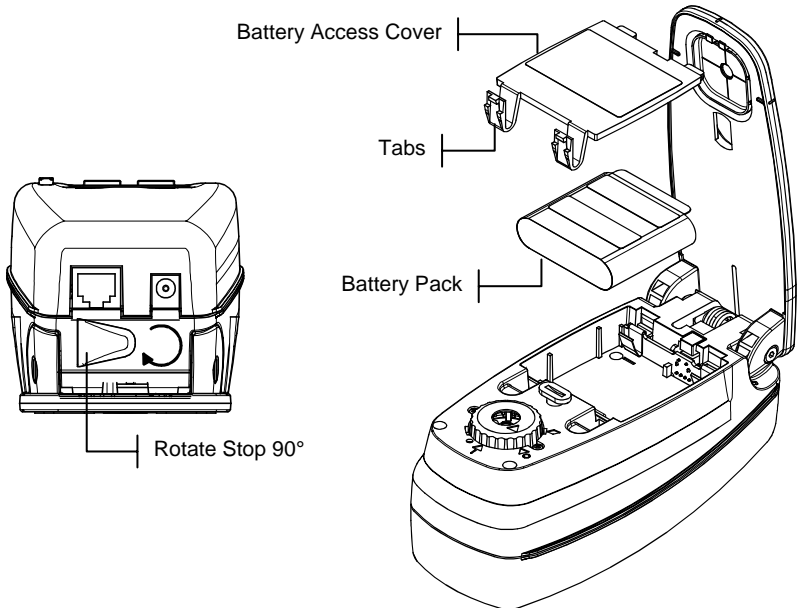
Cleaning the Calibration Reference

Carefully clean the reference and white ceramic disk with a dry, lint-free cloth. Do not use solvents or cleaners of any kind.

Make sure to store the calibration reference in a dry, dust free area, away from direct exposure to light.

Replacing the Battery Pack

1. Rotate the shoe stop 90° and carefully turn the instrument over. This allows the shoe to open perpendicular to the instrument housing.
2. Using your fingers, compress the two tabs on the battery access cover and remove it.
3. Remove old battery pack from instrument and discard of properly.
4. **MAKE SURE THE LABEL IS VISIBLE ON THE NEW BATTERY PACK.** Slide the battery pack into the compartment with the battery contacts toward the rear of the instrument. Press down on the battery pack to install it properly.
5. Re-install the battery access cover into the instrument housing and rotate shoe stop to its down position.



Appendices

Instrument Specifications	7-1
Error Messages	7-2
Parts List and Packaging	7-3

Instrument Specifications

Measurement Geometry	45°/0° per ANSI & ISO standards
Spot Size at Sample	6.0mm (.236 in.)
Light Source	Gas Pressure @ 2856°K
Spectral Sensor	DRS Technology, 24 point engine, 31 point reporting
Spectral Range	400nm to 700nm
Illuminant Types	A, C, D50, D65, D75, F2, F7, F11, & F12
Standard Observers (set by RCI)	2° & 10°
Measurement Range	0 to 160% R
Measurement Time	Approx. 1.4 seconds
Warm Up Time	None
Repeatability	0.10 ΔE Max
Inter-Instrument Agreement	0.40 ΔE _{cmc} Max (based on avg. of 12 BCRA tiles)
Data Interface	RS-232 serial interface with baud rates from 300 to 57.6k communication
Power Source	Ni-MH battery pack, 4.8v rated @ 1650mah (included)
Charge Time	Approx. three hours
AC Adapter Requirements	Domestic: Input 120 VAC / 60 Hz Output 15 Vdc / 700 mA International: Input 230VAC / 50 Hz Output 15 Vdc / 700 mA
Environmental	+10° to +35°C operating, 30% to 85% RH non condensing
Physical Dimensions	Height: 81mm (3.2 in.) Width: 76mm (3.0 in.) Length: 197mm (7.8 in.)
Weight	1050 grams (2.3 lbs.)
Accessories Provided	Calibration Reference, Manual, AC Adapter, Carrying Case
Usage	Indoor only
Altitude	2000m
Pollution Degree	2
Overvoltage	Category II

X-Rite standards are traceable to National Research Council Canada, Laboratory for Basic Standards. Specifications and design subject to change without notice.

Error Messages

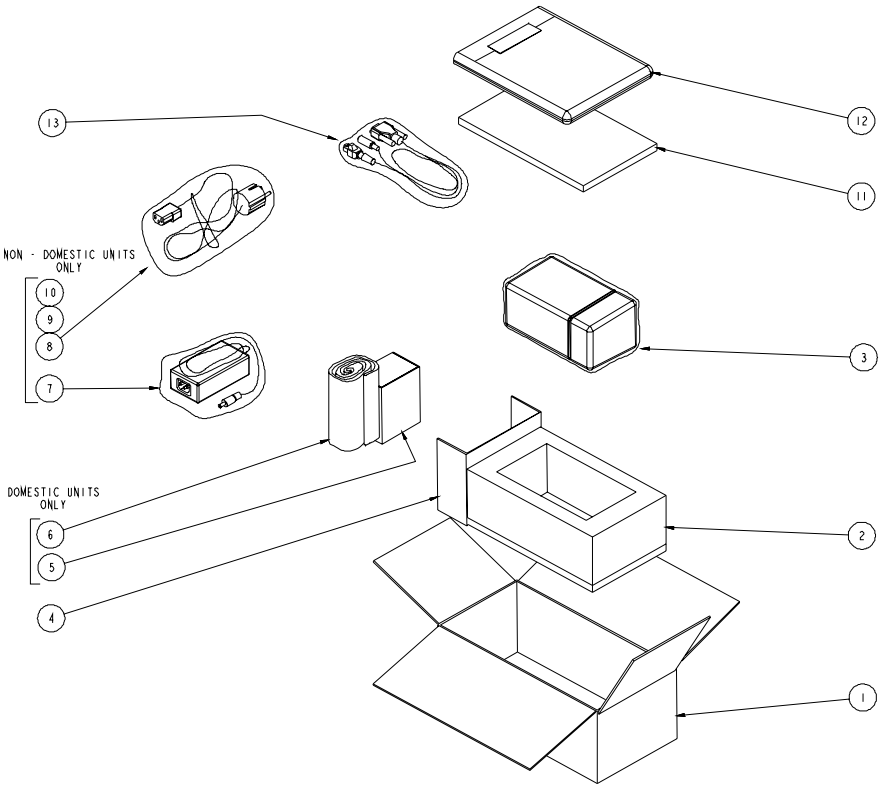
Errors encountered during a measurement are displayed on the instrument screen. All errors are accompanied by a long beep.

Displayed Errors:	Reason
Measurement was aborted by user	Displays with an incomplete measurement or calibration. Instrument was released too soon.
Calibration has timed out	The calibration interval time set via RCI has been reached. Calibration is now required.
Calibration required	Displays anytime the instrument requires a calibration.
Calibration has failed	Calibration failed. Make sure the instrument is properly positioned on the reference.
The battery is getting low	This warning appears when the battery falls below approximately 25% of full charge. Measurements are still possible, but the battery should be charged soon.
Batteries are dead	Displays when not enough battery power remains to take measurement. The current measurement is aborted.
Batteries are missing	The battery pack is not installed. Instrument will not allow any measurements.
Incorrect Charger Voltage	Wrong charger is connected or charger is bad.
The battery is over-charged	The battery pack is too hot. Remove battery pack and let it cool off.
Lamp is getting weak, replace soon	Reading lamp is at 50% strength or less from its original intensity. Measurements are still possible but the lamp should be replaced soon.

Parts List

13	I	I	SE108-92-01	INTERFACE CABLE
12	-	I	500-903	DOCUMENTATION PACK - 552X
	I	-	500-902	DOCUMENTATION PACK - 552
11	I	I	SD200-518-03	FOAM INSERT
10	-	I	SD65-13	BAG
9	-	I	SD203-01	RUBBER BAND
8	-	I	SD33-08	LINE CORD - 230V
7	-	I	SE30-77	BATTERY CHARGER, 230v
6	AR	-	SM48-01	BUBBLE WRAP, (1 @ 7" x 12")
5	I	-	SE30-81	BATTERY CHARGER, 115v
4	I	I	SD200-418-11	CARTON INSERT
3	I	I	552-00-01	552 MatchRite SPECTRODENSITOMETER INSTR ASSY
2	I	I	SD200-518-02	FOAM INSERT
1	I	I	SD200-308-05	CARTON
ITEM	QTY 552 115V	QTY 552X 230V	PART NUMBER	DESCRIPTION
PARTS LIST				

Packaging





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