

62/964

ELECTROPHOTOMETER

Operator's

9 6 2 / 9 6 4

S P E C T R O P H O T O M E T E R

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.

CAUTION: Operational hazard exists if battery chargers other than X-Rite SE30-

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SPECTROPHOTOMETER **20344 T2**

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Overview and Setup

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Instrument Description

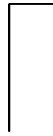
The X-Rite 962 and 964 Spectrophotometer's compact spectral engine utilizes X-Rite's DRS (Dynamic Rotational Sampling) technology, allowing accurate and precise measurements. This instrument has intuitive keys and-

Features

Install the Battery Pack

The instrument is shipped from the factory with the battery pack removed. The battery pack is located in a carrying case compartment and must be installed before the instrument is





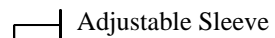
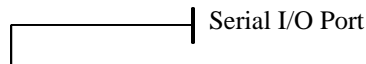
Lift Upwards

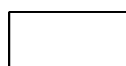
To latch the Instrument Shoe:

1. Simply close the shoe to the instrument. The latch is spring-loaded and automatically latches to the shoe catch.

Instrument I/O Serial Interface

Your instrument can be connected to a computer or printer using a serial RS-232 interface cable and adapter. X-Rite carries a variety of adapters to meet your requirements.





Colorimetric Screens

The QA, Analyze, Compare, Strength, and Opacity screens consist of three main areas: Data Storage Information, Color Data Parameters, and Color Data.

Proj 1: Cartons

To open the editor:
3.

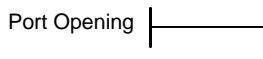
Instrument Calibration

General Information

Positioning the Instrument on the Reference

The calibration reference consists of a ceramic disk for white calibration measurements and a trap opening for black calibration measurements. The instrument shoe fits snugly in both positions. *Refer below for proper positioning.*

NOTE: Make sure the calibration reference is clean before use. F3



Calibration Procedure

A normal calibration procedure consists of one white measurement followed by one black measurement (two white measurements are required if an aperture change is made). The instrument features a built in calibration timer that can be set from 1-96 hours. *Refer to Instrument Configuration for procedure.* The instrument then notifies you when a calibration is required.

CHAPTER THREE

Measure Options

The Measure Options configuration allows you to determine the following settings:

- **Store Samples** – Allows you to enable (on) or disable (off) the measurement storage capabilities of the instrument.

SETTING INSTRUMENT CONFIGURATION

CHAPTER FOUR

Data Display – Select Over White, Over Black, or Color at 100%.

Set k1 and k2 – Allows you to adjust the opacity constant of k1 and k2.

- **Strength** – Determines the strength method and predicted mode.

Method – Select Apparent, Chromatic, or Tristimulus as the strength calculation.

Predicted is @ – Select 100% or Min ΔE as the predicted mode.
- **Metamerism Index** – Determines the metamerism mode
cetamerism midex

Color Options	
Active Functions...	
Active Illum/Obs...	
Opacity	: Color
Strength	: Tristimu


SETTING INSTRUMENT CONFIGURATION

CHAPTER FOUR

2. Use the Tab keys to highlight the desired combination: A2, A10, etc. Press the Enter key to save your setting and return to the Metamerism menu.

DEcmc Factors

To access the DEcmc Factors:

1. Use the Tab keys to highlight 

CHAPTER FOUR

ΔE_{94} Factors...

2. Press the Enter key

3. Use the Tab keys



SETTING INSTRUMENT CONFIGURATION

Orientation – Determine whether you want the display viewable for right-handed (right) or left-handed (left) use.

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).*

SETTING INSTRUMENT CONFIGURATION

Hardware Settings

SETTING INSTRUMENT CONFIGURATION

Clock Adjust

CHAPTER FOUR

Load Factory Defaults

The instrument can be reset to its original state whenever required. All configuration settings and function options are set to the factory defaults. **Restoring the defaults also clears all stored standards, samples, and tag data in the instrument.**

To initiate a factory default reload:

1. Unplug the AC Adapter (if connected) and press the power switch to Off. Simultaneously press and hold the Tab Down key and Main Menu key .
2. Press the power switch to On. The X-Rite logo momentarily appears followed by Factory Defaults, Settings have been restored. Press the Enter key to clear the message dialog.

-MAIN MENU-

Instrument Operation

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Standards

The standards function accesses the Edit Standard menu. From this menu, standard data can be measured or manually entered, and specific tolerances and shade sort options can be set for each standard.

The standards serve as approved references against which your sample measurements are evaluated, using QA, Strength, Opacity, or Analyze functions.

Standards can also be downloaded to the instrument from an X-Rite software package, such as QA-Master 2000. Then, after sample measurements are performed, data is uploaded to the software package, where it is analyzed.

The main Standard

The Standard Entry field displays “Empty”, when an available standard location is selected. This is the location you would use to enter a new standard.

To access a new or existing standard location:

Measuring a Standard

1. Make sure **Measure** appears in the upper left corner of the display. If **Manual** appears, press the Enter key

4. Use the Tab keys to highlight the desired color space attribute. Press the Enter key to open Edit Color Data menu.

Edit Standard : 1
Std Entry: Empty
Std Name :
Tolerances...
Shade Sort Opts...
Std Lock : Unlocked
Delete THIS Std...

2. Press the Enter key to access the tolerance entry menu.

± Tol: Std : 1
<Set Equal Limits

10. When editing is completed, use the Tab keys to highlight **Save & Exit** and press the Enter key.
11. Continue with additional attribute editing for the selected tolerance type.
12. When all attributes have been edited for the selected tolerance type, highlight **Save** and press the Enter key ...11.

To access the shade sort options menu: 5

INSTRUMENT OPERATION MODES

Edit Standard : 1
Std Entry: Measured
Std Name :
Tolerances...
Shade Sort Opts...
Std Lock : Unlocked
Delete THIS std...

.72 .3.122THIS sj -99 Tj 87.48 0 TD 0 Tc 0.0011 6 TD

Projects

The projects function is used to access the View Project menu.

INSTRUMENT OPERATION

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Selecting a Project

The instrument defaults to Proj 1 until a project is downloaded or man

Tagging Samples

- **NOTE:** Tags are attached to samples using an optional BCR (bar code reader). If you intend on using a BCR for tagging samples,

CHAPTER FIVE

CHAPTER FIVE

INSTRUMENT OPERATION MODES

CHAPTER FIVE

3.

INSTRUMENT OPERATION MODES

NOTE:

Accesses
Sample Tools |

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Strength Measurement

The Strength function displays the color strength of the

Opacity

The Opacity function is used for making multiple measurement calculations to determine Contrast Ratio or Percent Opacity. Each measurement requires three readings (over-black, over-white, and a measurement of the white backing). The final data

Opacity Measurement

Analyze

The Analyze function allows you to compare sample measurements to stored standards. The resulting color data (actual and difference) is not stored in the instrument. Measured data can be automatically transmitted from the RS-232 port if Auto Xmt is activated in the Instrument Configuration.

To access the Analyze function:

1. Use the Tab keys to highlight **Analyze**.

—MAIN MENU

Compare

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INSTRUMENT OPERATION

Scanning a Bar Code

1. Hold the BCR in your hand as you would a pencil. The BCR works best when tilted from 10° to 30°, although any angle from 5° to 45° will work.

INSTRUMENT OPERATION MODES

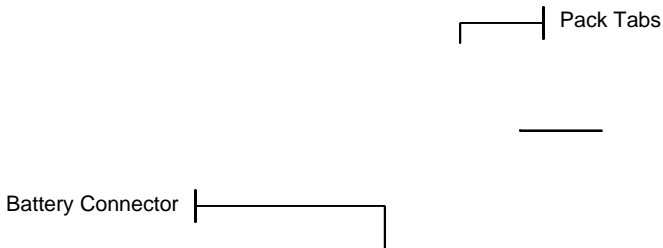
Does the BCR tip need replacement?

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Replacing the Battery Pack

3. Unplug the AC adapter and click the battery switch to Off.
4. Hold the shoe next to the instrument housing and lift upward on the spring-loaded latch. Open the shoe.



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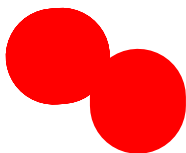
Instrument Specifications

Measurement Geometrics	0/45°, DRS spectral engine, choice of optical aperture: 4mm, 8mm, and 16mm
Light Source	Gas-filled tungsten lamp
Illuminant Types	A, C, D50,

Error Messages

Errors encountered during a measurement are displayed on the instrument screen. All errors are accompanied by a long beep and flashing yellow light. The error message is cleared from the instrument screen by pressing the Enter key .

Parts List (962)

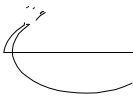


Packaging (964)



Changing the Aperture

NOTE: The 964 instrument includes all three apertures.



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