



964 – Portable 0/45 Spectrophotometer

Advanced color measurement - in the laboratory, plant or field



- Lightweight, compact, portable instrument
- 0/45 optical geometry
- 0.15 ΔE_{ab} inter-instrument agreement
- Interchangeable apertures for 4mm, 7mm or 15mm measurement area available
- Large, easy-to-read graphical LCD display
- JOBS and PROJECT operation mode
- Opacity and color strength measurement
- Reflectance curve graphics display
- Flip-back target shoe for flexible use
- Rugged construction
- Rechargeable battery for remote use

EXPERIENCE

the measurable color difference.™

964 – Portable 0/45 Spectrophotometer

Measuring Functions and Indices

The 964 provides absolute and difference values for the following colorimetric systems. These values can be obtained for any of nine illuminants with the 2° or 10° observer: CIE XYZ, CIE Yxy, CIE LAB, Hunter LAB, CIE LCH, CMC and CIE94. Whiteness and Yellowness per ASTM E313-98, Metamerism Index and DIN 6172.

Special JOB and PROJECT Modes

The JOB function is a programmed sequence of specific steps to assist the operator in the color measurement process. Up to six lines of specific instructions per measurement routine can be downloaded from X-Rite software and displayed on the 964's LCD screen. Multiple color standards can also be collected under an identified PROJECT, a feature that supports corporate color standards programs.

Pass/Fail Mode

The 964 stores up to 1,024 standards with tolerances for easy pass/fail measurement. A red/green LED indicator and the instrument's LCD display provide visual confirmation of results. A tone also sounds to indicate a fail result and measurement completion.

Interchangeable Apertures

The internal apertures can be changed for 4mm, 7mm or 15mm measurement areas. This allows the operator to change measurement area quickly, depending on the sample size.

Inter-Instrument Agreement

The 964 has superior inter-instrument agreement—essential in multiple-instrument color-control programs. The 964 offers excellent inter-instrument agreement with X-Rite's 968 0/45 spectrophotometer. Both input data into X-Rite's line of Windows-based color quality assurance and color formulation software.

Opacity, Color Strength and Shade Sorting

The 964 can measure opacity as well as three color-strength options: chromatic, apparent and tri-stimulus calculations. The 964 also performs 555 shade sorting. These are important considerations in the color quality control of manufactured products involving plastic, painted or textile materials.

User-Friendly Ergonomics

A wrist strap and tactile side grips make the instrument easy to hold. Read-outs are large and easy to see. A rechargeable battery pack allows extended operation of the instrument.

Options

- Remote battery charger
- Replacement rechargeable battery packs
- Rigs & Jigs (fixtures and accessories for standardized measurement of product samples)
- Quality assurance and control software
- Color formulation software
- Turnkey systems
- Extended service and support plans
- UV filter 968-61-08E

Specifications:

Model Numbers

964 (includes all three aperture sizes)

Measuring Geometrics

0°/45°, DRS spectral engine, interchangeable apertures:

- 4mm measurement area/6.5mm target window
- 7mm measurement area/9mm target window
- 15mm measurement area/21.5mm target window

Light Source

Gas-filled tungsten lamp

Illuminant Types

C, D50, D65, D75, A, F2, F7, F11 & F12

Standard Observers

2° & 10°

Detector

Blue-enhanced silicon photodiodes

Spectral Range

400 – 700nm

Spectral Interval

10nm – measured
10nm – output

Storage

1,024 standards with tolerances,
2,000 samples

Inter-instrument Agreement

CIE L*a*b*:

7mm/15mm

Avg. 0.15 ΔE^*_{ab} based on avg. of
12 BCRA Series II tiles

Max. 0.30 ΔE^*_{ab} on any tile

4mm

Avg. 0.20 ΔE^*_{ab} based on avg. of
12 BCRA Series II tiles

Max. 0.40 ΔE^*_{ab} on any tile

Short-term Repeatability¹

0.05 ΔE^*_{ab} on white ceramic
(Standard deviation)

Measurement Range

0 to 200% reflectance

Measuring Time

Approx. 2 seconds

Lamp Life

Approx. 500,000 measurements

Power Supply

Removable (Ni-metal hydride)
battery pack

AC adapter Requirements

90–130VAC or 100–240VAC,
50–60Hz, 15W max

Charge time

Approx. 4 hours – 100% capacity

Measurements Per Charge

1,000 measurements (within 8 hours)

Display

128 x 256 pixel graphical LCD

Data Interface

Patented bi-directional RS-232,
300-57,600 baud

Operating Temperature Range

50° to 104°F (10° to 40°C)
85% relative humidity maximum
(non-condensing)

Storage Temperature Range

-4° to 122°F (-20° to 50°C)

Weight

2.4 lbs. (1.1 kg)

Dimensions

4.3"H 3.3"W 7.7"L
(10.9 cm 8.4 cm 19.6 cm)

Accessories Provided

Calibration standards, operation
manual on CD-ROM, AC adapter and
a carrying case.

¹Based on 20 measurements on a white tile.

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



xrite.com

X-RITE WORLD HEADQUARTERS

Grandville, Michigan USA
(616) 534-7663
(800) 248-9748
FAX (616) 534-8960

X-RITE LATIN AMERICA

Hollywood, Florida USA
954-927-4979
FAX 954-927-4979

X-RITE LTD.

Poynton, Cheshire
United Kingdom
44 (0) 1625 871100
FAX 44 (0) 1625 871444

X-RITE MÉDITERRANÉE

Massy, France
33 1-6953-6620
FAX 33 1-6953-0052

X-RITE ITALY S.R.L.

Origgio (VA), Italy
(39) 02-967-34266
FAX (39) 02-967-30681

X-RITE GmbH

Köln, Germany
(49) 2203-91450
FAX (49) 2203-914519

ISO 9001
Certified

X-RITE ASIA PACIFIC LTD.

Quarry Bay, Hong Kong
(852) 2-568-6283
FAX (852) 2-885-8610

X-RITE K.K.

Tokyo, Japan
81-3-5439-5971
FAX 81-3-5439-5972

INFORMATION PROVIDED IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. The user assumes the entire risk as to the accuracy and the use of this information. All text must be copied without modification and all pages must be included. All components of this information must be distributed together. This

information may not be distributed for profit. © X-Rite, Incorporated 2003. X-Rite® is a registered trademark of X-Rite, Incorporated. Other brand and product names are trademarks of their respective holders. All trademarks may be registered in the United States and/or other countries. Product design and specifications subject to change without notice.

L10-158 (11/03) Printed in U.S.A.