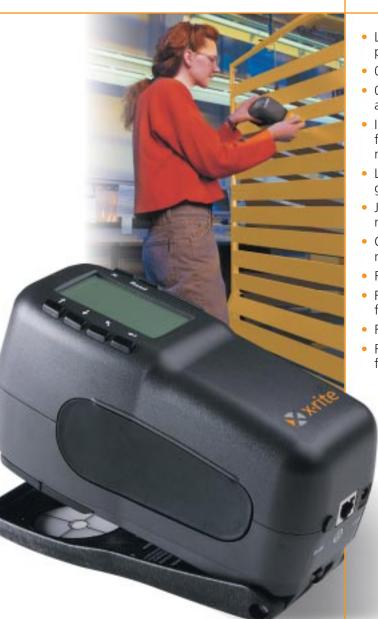


# 964 – Portable 0/45 Spectrophotometer

Advanced color measurement - in the laboratory, plant or field



- Lightweight, compact, portable instrument
- 0/45 optical geometry
- 0.15  $\Delta E_{ab}$  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

Grandville, Michigan USA

(616) 534-7663 (800) 248-9748 FAX (616) 534-8960

- 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\*<sub>ab</sub> based on avg. of 12 BCRA Series II tiles Max. 0.30  $\Delta E^*_{ab}$  on any tile

Avg. 0.20  $\Delta E^*_{ab}$  based on avg. of 12 BCRA Series II tiles Max. 0.40  $\Delta E^*_{ab}$  on any tile

#### Short-term Repeatability

0.05 ΔE\*<sub>ab</sub> 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)

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)

#### Weiaht

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.

<sup>1</sup>Based 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.



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