Advances in electrophotography, including color, high-speed and duplex printing and copying, place new emphasis on the role of semi-insulating components in delivering high-quality prints. The DRA-2000L is a computer-controlled test system designed for evaluating the dielectric relaxation properties of semi-insulating components including charge rollers, development rollers, transfer rollers, transfer belts and print media. Based on QEA's patented non-contact, nondestructive electrostatic charge decay (ECD) technology, the system includes a unique mapping feature that gives new insight into the properties critical to print uniformity. The DRA-2000L is an essential tool for developers and manufacturers of print engines and semi-insulating components.

Overview

A standard DRA-2000L system consists of a scanner and electrostatic voltmeter. A PC runs the Microsoft Windows®-based control software and houses the data acquisition and control hardware. The system can be configured to test charge rollers, development rollers, transfer rollers, transfer belts and print media.

DRA-2000L test functions are software controlled, and the key test parameters, such as charging level, scan type, scanning speed, sample rate, and pass/fail criteria, are specified by the user. In a typical test session, the operator mounts a sample in the scanner, and in a few simple steps sets the test parameters and initiates the scan with the control software. The system's innovative mapping feature presents scan results as a detailed map that reveals the variations in voltage, current or effective resistance (user-selectable) of the sample tested. The quantitative measurements from which the map is created are also reported statistically. The system gives a pass/fail reading based on the user-specified parameters. The scan data can be saved for further review and analysis. The software interfaces easily with other Windows applications such as Excel® and Matlab® for advanced analysis.

Built-in Test Functions

- Surface potential mapping
- Charging current mapping
- Effective resistance mapping
- Surface potential decay measurement
- Charging current measurement
- Charge accumulation and dissipation analysis
- Pass/fail indicator controlled by user-specified criteria

Typical Applications

- Development of charge rollers, development rollers, transfer rollers, transfer belts and print media
- Quality control in component production
- Competitive Analysis

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System Specifications*

DRA-2000L™

Test Functions

- Surface potential mapping
- Charging current mapping
- Effective resistance mapping
- Surface potential decay measurement
- Charging current measurement
- Charge accumulation and dissipation analysis
- Corona charger characterization
- Axial and helical scans
- Single and multiple track scans
- User-selectable pass/fail criteria

System Hardware

- Scanner unit with sample mount
- Electrostatic voltmeter
- Instrumentation; data acquisition and control hardware
- All necessary interface electronics, cables and connectors

Sample Dimensions

- Mounting for letter/A4 samples (8½" x 11"/ 210 mm x 297 mm), standard; others available
- Measurable area 8½" x 11"/155 mm x 270 mm, standard

Control Software

- Provides all motion control, data acquisition, measurement control, and data analysis functions in both automatic and manual modes
- Provides graphical analysis tools such as color maps, zoom/unzoom, cursors, indicator for local voltage, current and resistance, and defect locator
- Performs statistical functions (e.g., minimum, maximum and mean voltages and standard deviation)
- Interfaces easily with Excel, Matlab and other software
- Includes on-line documentation

Computer Configuration (customer-supplied)

- Pentium PC
- Two free ISA slots for interface cards
- Two free slots for connector brackets
- Microsoft Windows® 95 or 98
- Microsoft Excel® 7.0 or higher

Electrical Requirements

- 110 VAC±10% @ 50/60 Hz or 230 VAC±10% @ 50 Hz

Maintenance and Operating Environment

Electrical properties of many semi-insulating materials are highly sensitive to temperature and relative humidity. A carefully controlled operating environment is therefore critical for ensuring reliable test results.

A temperature and relative humidity sensor is built into the system for monitoring purposes only. The customer is responsible for controlling test environment conditions.

- Customer should follow good maintenance practices typical for laboratory equipment

Temperature

Operating: 10° to 32° C (50° to 90° F)
Storage: 0° to 35° C (32° to 95° F)

Relative humidity

Operating: 20% to 80%
Storage: 10% to 95% (non-condensing)

Dimensions and Shipping Weight

Standard model - packaged dimensions

- Main unit: 64 cm (W) x 84 cm (L) x 38 cm (H) (25" x 33" x 15")
- Voltmeter: 46 cm (W) x 30 cm (L) x 18 cm (H) (18" x 12" x 7")
- Accessories: 46 cm (W) x 30 cm (L) x 18 cm (H) (18" x 12" x 7")
- Approximate shipping weight: 27 kg (60 lb)

Documentation

- User's Guide