

Dielectric Relaxation Analysis System **DRA™-2000L**



Advances in electrophotography, including color, high speed and duplex capabilities in both 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 that emulates the electrophotographic printing process, thereby providing the most reliable data on all types of semi-insulating rollers and belts. Based on QEA's patented nondestructive, non-contact electrostatic charge decay (ECD) technology, the system includes a unique mapping feature that affords new insight into the properties critical to print uniformity, a key factor in print quality.

The DRA-2000L is an essential tool for developers and manufacturers of laser printer engines and semi-insulating functional devices and components. The versatility of the system gives it an important role in a variety of applications:

- Development of charge rollers, development rollers, transfer rollers, transfer belts and print media
- Competitive benchmarking
- Process development
- Process monitoring and control
- Quality control, product qualification and acceptance
- Problem solving
- Customer support

A typical DRA-2000L system consists of a scanner unit with a sample mount and an electrostatic voltmeter. A user-supplied PC runs the Microsoft Windows®-based control software, which interfaces with the data acquisition and control hardware. To maximize efficiency and flexibility, the DRA-2000L incorporates different adapters accommodating a variety of component models and sizes. Optional adapters are also available, including a holder for paper, print media or other sheet materials, and fixtures for transfer belt testing.

In a typical test session, the operator mounts a sample in the scanner and sets the test parameters in a few simple steps. The scan is initiated through the control software, and within minutes the analysis is complete. QEA's patented 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; results are also presented statistically. The scan data can be saved for further review and analysis, and the software interfaces easily with other applications such as Excel® for advanced analysis.

A variety of available optional adapters makes the DRA-2000L system highly versatile. It can be configured to test charge rollers, development rollers, transfer rollers, transfer belts, paper, print media or other sheet materials. Also, key test parameters are user-defined, allowing for maximum control over conditions such as charging level, scan type, scanning speed, sample rate, and pass/fail criteria.

The DRA-2000L is a must-have system for non-contact, non-destructive characterization of semi-insulating rollers, belts and media. Its wide range of test functions—mapping of surface potential, charging current, and effective resistance; measurement of surface potential decay and charging current; and analysis of charge accumulation and dissipation—makes it indispensable for obtaining highest-quality prints in the electrophotographic arena.



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DRA™-2000L

System Specifications**

TEST FUNCTIONS

- Surface potential mapping
- Charging current mapping
- Effective resistance mapping
- Surface potential decay measurement
- Charging current measurement
- Charge accumulation and dissipation analysis
- Single and multiple track axial scans

CONTROL SOFTWARE

- EPLab® 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 and other software
- Includes on-line documentation

TYPICAL APPLICATIONS

- Development of charge rollers, development rollers, transfer rollers, transfer belts and print media
- Competitive benchmarking
- Process development
- Process monitoring and control
- Quality control, product qualification and acceptance
- Problem solving
- Customer support

SYSTEM HARDWARE

- Scanner unit with sample mount
- Electrostatic voltmeter
- Instrumentation; data acquisition and control hardware
- All necessary interface electronics, cables and connectors
- One set of charge roller, development roller or transfer roller adapters provided
- Optional adapters for various rollers, including a holder for paper, print media or other sheet materials, and fixtures for transfer belt testing are available. Please consult factory for details.

SYSTEM AND SAMPLE PARAMETERS

- Charge voltage: up to 8kV
- Maximum scan speed: ~400mm/s
- Typical roller diameter: 8 to ~24mm
- Maximum roller diameter: 60mm
- Maximum sample length: ~380mm
- Maximum belt width: ~310mm (Option)
- Belt circumference: 365mm-900mm (Option)
- Paper holder diameter: up to A4 (Option)

MINIMUM PC REQUIREMENTS (CUSTOMER-SUPPLIED)

- Operating System: Windows® 7 to 10, 64-bit
- RAM: 8GB or more
- Microsoft Excel 7 or higher
- CD-ROM drive
- Two USB 2.0 ports

RECOMMENDED APPLICATION SOFTWARE

- Microsoft Office Professional® 2007 *Including Excel 2007 and Access 2007. (Note that no third party application software is required for basic data acquisition, display, and simple analyses. To perform more extensive data analyses and to take advantage of advanced data reporting in relational database format, the above application software is highly recommended)*

SYSTEM PERFORMANCE

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, and 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 80° C (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") (Scanner requires similar footprint or table space)
- 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

** Specifications subject to change without notice. Rev. 160223.

