Advanced Photoconducting Drum / Charge Roller Test System

PDT®-2000LA

The PDT-2000LA is an advanced drum test system for characterizing photoreceptors used in electrophotographic printers and copiers. Designed primarily for testing photoreceptors, the PDT-2000LA can also test charge rollers. The PDT-2000LA is used in research and development and in production quality control.

Overview

A unique feature of the PDT-2000LA is its dual charging systems. The system is equipped with both a corona and a charge roller charger, user-selectable via the control software. A standard PDT-2000LA system consists of a light-tight scanner, an electrostatic voltmeter, an external exposure light source with fiber-optic light guide, an LED erase light source, a light meter, and a high-voltage power supply for charge roller charging. A user-supplied computer runs the Microsoft Windows®-based control software and houses the data acquisition and control hardware. The scanner supports a wide variety of drum types and sizes. The computer-controlled tungsten-halogen light source is equipped with bandpass filters for wavelength selection. Custom configurations are also available.

PDT-2000LA test functions are software-controlled. Key test parameters such as charging level, charging method, exposure energy, erase intensity, scan type, and scanning speed are specified by the user. In a typical test session, the operator loads a drum into the scanner, selects the test to be run, sets the test parameters, and activates the test with the control software. The system performs the scan applying the user-specified parameters and reports the results. The scan data are saved for further review and analysis and can be exported to other software.

Built-in Test Functions

- Charge acceptance scans
- Photo-discharge scans
- Dark decay measurement
- Cyclic fatigue tests
- Photo-induced discharge curve (PIDC)
- Erase residual measurement
- Axial, helical, and circumferential scans
- Single and multiple track scans
- Charge and discharge uniformity mapping
- Defect mapping
- Xerographic time-of-flight (option)
- Capacitance measurement (option)
- Charge roller characterization

Typical Applications

- Photoreceptor and charge roller materials research and development
- Photoreceptor and charge roller production quality control
- Photoreceptor and charge roller acceptance testing

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System Specifications*

Test Functions

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- Photo-discharge scans
- Dark decay measurement
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- Capacitance measurement (option)
- Charge roller characterization

Throughput

- Throughput depends on specific test selected

System Hardware

- Instrumentation; data acquisition and control hardware
- All necessary interface electronics, cables, and connectors

Drum Charging

- Charging is by corona or charge roller, interchangeably
- Negative corona standard, positive corona available as an option
- Charge roller power supply can superimpose sinusoidal AC on the DC voltage
- Maximum AC peak-to-peak voltage is 2000 volts; frequency of sinusoidal AC adjustable from 300 to 2000 Hz; DC voltage from 0 to -1500 V

Exposure Light Source

- Tungsten halogen light source
- One interference filter (typically 780 nm) and one neutral density filter (typically 10%) supplied with system; others available as options
- Interference filters available between 400 and 1000 nm (approximate 50 nm increments)
- Exposure on/off controlled by an electromechanical shutter; minimum pulse duration less than 0.1 second
- Computer-controlled aperture for setting exposure intensity; maximum exposure energy approximately 10μJ/cm^2 at 780 nm wavelength
- Light meter provided to monitor exposure intensity on-line
- Xenon flash or LED exposure source (options)

Erasure Light Source

- Erasure light source is a bank of red LEDs; fluorescent erase lamp or LEDs with other wavelengths available as options
- Maximum erasure intensity typically 25μJ/cm^2

Voltage and Current Measurement

- System is equipped with a non-contact electrostatic probe for monitoring drum voltage
- Charging current measurement is built in
- Optional transparent probe allows exposing the drum through the probe

Drum Dimensions

- Maximum drum length 360 mm
- Maximum drum diameter 40 mm
- Geared and gearless drums can be tested. Drum adapters for EX, BX2, and WX geared drums are supplied with the system. Others are available as options.

Charge Roller Dimensions

- Maximum roller length 360 mm
- Maximum roller diameter 15 mm
- Minimum roller diameter 10 mm

Control Software

- Control software provides all measurement, data acquisition and data analysis functions, including basic statistical functions (minimum, maximum, and mean voltages and standard deviation)
- Software allows user to set pass/fail criteria

Computer Configuration (customer-supplied)

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

Electrical Requirements

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

Maintenance and Operating Environment

- Requires 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

- Main Unit: 25 cm x 51 cm x 74 cm (10" x 20" x 29")
- Total Shipping weight (3 packages): 65 kg (142 lb)

Documentation

- User's Guide

* Specifications subject to change without notice. Rev. 4/00