

# DERMITRON<sup>®</sup>

## Plating and Coating Thickness Testing Instrumentation



- Advanced line of instrumentation utilizes eddy-current and electromagnetic-induction measuring technologies, plus the Hall-Effect technique

- LED displays feature user prompts to guide the operator through calibration and measurement; read-out can be in British or metric units

- User-selectable Hi-Low limits alert operator to out-of-range measurements

- Multipoint calibration allows use of unlimited number of thickness standards to initially calibrate instrument

- Non-volatile applications memories for instant turn-on and measure capability

- Built-in automatic self test Diagnostic program, with error indicators

- Built-in alphanumeric printer records all data and provides print-out of mean, standard deviation, percent uncertainty, number of readings and histogram bar graphs

- Correlation coefficient ensures maximum accuracy by indicating how accurately the calibration curve fits thickness standards

**Veeco<sup>®</sup>** UPA Technology

*We make the process more productive.<sup>SM</sup>*



# Dermitron Testing Instrumentation



## DERMITRON D-3000-PLUS

Features advanced eddy-current and electromagnetic induction, plus the Hall-Effect technique. In addition to the applications for the D-3000, the D-3000-PLUS measures:

- Electroplated nickel on nonmagnetic bases such as copper, plastic, aluminum, zinc diecast, brass, etc.

## DERMITRON D-3000

Combines eddy-current and magnetic induction principles to measure coating and plating thickness on both ferrous and non-ferrous bases. In addition to the applications of the D-1500, the D-3000 measures:

- Coatings such as zinc, cadmium, copper, Teflon, paint, rubber, etc. on steel and iron
- RFI/EMI coatings on plastic

## DERMITRON D-1500

Utilizes eddy-current technique for thickness measurements of nonconductive coatings including:

- Anodize, paints, Teflon and lacquers on non-magnetic metal substrates (e.g., Al, Zn, Cu, Ti, Brass), and metallic coatings including Zn, Cd, Ni, Cu, Al, and Ag on steel substrates and non-conductive substrates (e.g., plastics, Si, composites and epoxies).

### DERMITRON Specifications

Displays: Four-Digit LED Numerals 0.43" (1.1cm) in Ht; LED operational and prompting indicators

Eddy-Current Mode

Magnetic-Induction Mode

Hall-Effect Mode

Automatic Conductivity Correction Mode

Automatic Eddy-Current Probe Tuning

Probe Guides Available

SLG-2

UMS-2

CB-5

NPG-1, NPG-2

Nonvolatile App./Cal.-Memories

Built-in Printer (28 column high-speed electrostatic-alphanumeric)

D-3000-PLUS

D-3000

D-1500

Inherent Instrument Accuracy  $\pm$  1%

Display Resolution, Maximum 0.001 mil (0.01  $\mu$ m)

Circuitry: Advanced Microprocessor-based with Floating-point calculations and least-squares calibration curve fitting.

Output—RS-232C, Serial Port

Input Voltage 100/120/220/240V  $\pm$  10%, 50/60Hz

Power Consumption

Weight, Net (including Built-in Printer) 15 lbs (6.8 kg)

Size: 17"  $\times$  12"  $\times$  4"; (43.2cm  $\times$  30.5cm  $\times$  10.2cm)

D-3000-PLUS

D-3000

D-1500

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24 watts



# How to select measuring probes

## Eddy-Current Standard and Microprobes for use with D-3000-Plus, D-3000 and D-1500



A wide variety of standard probes and microprobes are available to handle almost any measurement application. All standard probes and microprobes, whether straight or right angled, are available in four frequency measuring ranges: A, B, C, and D.

The standard probe, model M, is used for measuring parts of almost any size and shape. Microprobes are used to measure on very small areas, such as screw-heads, washers, narrow plated areas, or in grooves and slots.

The standard right angle probe, model R, is used for measuring coatings on an internal surface having a 1/2" (12,7mm) or greater diameter, such as the inside of a pipe or tube.

A special right angle probe, model IDP is also used for measurements on internal surfaces having a 1/4" to 1/2" (6,4 to 12,7mm) diameter. Right angle microprobes are used to measure on small internal diameters and other difficult to reach areas.

### Eddy-Current Probes

Straight Standard MD/SLG-2 MC/SLG-2 MB/SLG-2 MA/SLG-2	Right Angle RC RB RA
Straight Microprobes M3C/SLG-2 M3B/SLG-2	Right Angle Microprobes RM3C RM2B

*NOTE: Above lists typical eddy-current probes available from stock. When ordering probes specify basic unit model number and thickness/frequency range: A, B, C, or D. Other size-ranged probes not listed are available on special order.*

### Probe Dimensions and Cables

Straight standard probes and straight microprobes are 3" (7,6cm) long and 3/8" (9,5mm) O.D., having a cable length of 33" (83cm), total length 36" (91cm). Extension cables are available in the following lengths: 3' (0,9m), 5' (1,5m), 9' (2,8m), and 21' (6,4m). However, the total length of the probe and cable should not exceed the following:

- Probe A—24 feet (7,3m)
- Probe B—12 feet (3,7m)
- Probe C— 8 feet (2,4m)
- Probe D—Extension cable not available for Probe D



### Probe Model ASP-3 for D-3000-Plus, D-3000

This single point magnetic-induction probe model ASP-3 typically measures nonmagnetic coatings on flat areas. A spring-loaded sleeve provides constant pressure to ensure accuracy. Built-in "V" slots permit easy measurements on cylindrical parts.

The sensing-element of the probe is recessed, protecting it from unnecessary wear. The probe is designed so it can be used in a measuring stand UMS-2, using ASP-3 probe adaptor.

Length	3"	(7,6cm)
O.D.	.435"	(10,8mm)
Measuring Range	0-100 mils	(0-2,5mm)
Effective Measuring Area: Flat-Dia.	400 mils	(10,0mm)
Min. sample size Cylindrical-Dia	0.050"	(1,27mm)
Cable length	4 ft.	(1,2m)
Extension Cable Length (optional)	up to 40 ft.	(up to 12m)



### Probe Model NC for D-3000-Plus

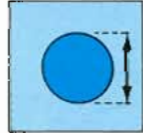
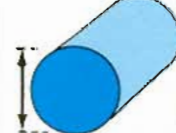


Hall-Effect Probe Model NC is used for measuring electrodeposited nickel on nonferrous base materials, including copper, brass, bronze, zinc-diecast, beryllium-copper, aluminum, plastic, ceramics, epoxy, etc.

Probe can be used with UMS-2, measuring stand and CB-5, NPG-1, and NPG-2 guides.

Length	3"	(7,6cm)
O.D.	.435"	(10,8mm)
Nickel Meas. Range	0-5 mils	(0-125um)
Effective Meas. Area* (Flat-Dia.)	300 mils	(7,5mm)
Min. Sample Size (on nonferrous base)		
Flat-width	.010"	(0,25mm)
Flat-length	0.25"	(6,4mm)
Cylindrical-Dia.	.020"	(0,51mm)
Cylindrical-length	0.25"	(6,4mm)
Cable Length	2.25 ft.	(0,68m)

*NOTE: For smaller measuring areas, calibrate using thickness standard made of specific sample geometry.*

## Selecting the correct probe for your application

To select a probe, first find the description representing the geometry and measuring area of your part in the chart. Then determine the straight or right angle probe required.	Minimum Area (Dia.) for measurements on flat surfaces.	Minimum outside diameter of cylinders on which measurements can be made.	Minimum inside diameter of cylinders on which measurements can be made.	Minimum radius of curvature of concave surfaces on which measurements can be made.
				
<b>STRAIGHT PROBES</b> Description Model				
Standard M	.360" (9,2mm)	.062" (1,6mm)* .250" (6,4mm) <sub>1</sub> .500" (12,7mm) <sub>x</sub>	4.0" (102mm)	440" (11,2mm)
Microprobe M1 M2 M3	.180" (4,8mm) .130" (3,2mm) .090" (2,2mm)	.62" (1,6mm) .053" (1,3mm) .045" (1,1mm)	Normally not used	.080" (2,0mm) .080" (2,0mm) .060" (1,5mm)
<b>RIGHT ANGLE PROBES</b> Description Model				
Standard R	.360" (9,2mm)	Normally not used	.500" (12,7mm)	Normally not used
Microprobe RM1 RM2 RM3	.180" (4,8mm) .130" (3,2mm) .090" (2,2mm)	Normally not used	.300" (7,6mm) .300" (7,6mm) .200" (5,1mm)	Normally not used
Internal Diameter Probe	Normally not used	Normally not used	.250" (6,4mm)	Normally not used

\*Plating on magnetic base    <sub>1</sub>Plating on nonmagnetic base    <sub>x</sub>Nonconductive coating on nonmagnetic base



## DERMITRON PROBE GUIDES and STANDS

### Universal Measuring Stand UMS-2

For use with straight, eddy-current probes and micro-probes, magnetic probe ASP-3, and Hall-Effect probe NC.

Model UMS-2 provides precise probe positioning for repeatable and reliable thickness measurements on parts of almost any size or configuration.



### Probe Guide SLG-2

For use with standard eddy-current and microprobe.

Provides quick and simple probe positioning on flat areas. Sleeve guide features a built-in V-groove to measure on the O.D. of tubular shaped samples. Removable ring tip allows probe to fit in hard to reach areas.



### Probe Guide CB-5

Positions NC probe on circuit boards.

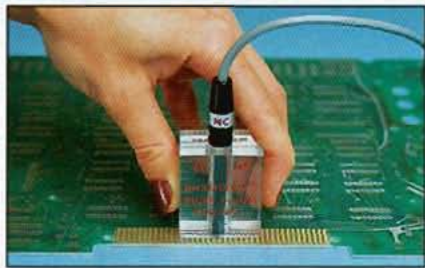
Nickel plating thickness on printed circuit board fingers can be easily measured with unprecedented speed and accuracy by using this guide. (Patent #4,449,048)



### Probe Guide NPG-1

Low cost guide positions NC probe on circuit boards.

Economical, hand-held probe guide measures nickel with probe NC on printed circuit boards and other flat areas. Cross hairs etched into the NPG-1 aid proper alignment.



### Probe Guide NPG-2

Precisely positions and holds small parts such as electrical connectors, contacts, pins, etc. for rapid nickel thickness measurements using NC probe.

*Our expert applications engineers will be pleased to help you select the components best suited to your specific measurement applications and needs.*

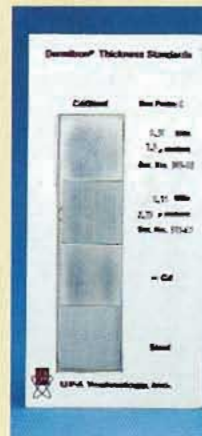


## THICKNESS STANDARDS

### Plated Thickness Standards

For Use With Eddy-Current Mode (for use with all models)

Plated thickness standards consist of a sample of the base material, a sample of infinitely thick coating material, and two plating thickness standards. Standards are used to initially calibrate the instrument and are available certified and traceable to NIST (National Institute of Standards Technology).



### Gauging Sheets

For Use With Eddy-Current and Magnetic Modes (for use with all models)

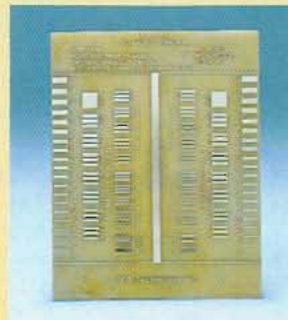


Type "GS" gauging sheets (nonconductive plastic strips of uniform thickness) are used to measure nonconductive coatings on nonmagnetic metals (e.g., paint, anodize, etc. on aluminum and copper, etc.) and for measurements of nonmagnetic coatings on steel and iron. Each gauging sheet is packaged in an individual folder with the thickness noted on the front cover.

With the protective covers rotated aside, the gauging sheet is placed during initial calibration on an uncoated sample, simulating a coating thickness.

### Nickel Thickness Standards

For Hall-Effect Mode (for use with D-3000-Plus only)



The N-PWB thickness standard is designed specifically for printed circuit board applications. The N-PWB standard includes a representative variety of PCB tab widths and center-to-center spacings for both single and double-sided PCB applications. This enables accurate calibrations to be made for measurements on virtually any PCB tab. A general purpose nickel standard model Ni/Cu/Epoxy is available for measuring nickel on any nonmagnetic base on large, flat areas.

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