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Tel: (201)933-6300 • Fax: (201)933-3801

E-Mail: phase2@comcast.net

Web Site: <http://www.phase2plus.com>

Digital Coating Thickness Gauge

Model No. PTG-4500

Revised 10/15/2010





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Features:

*** Automatic substrate recognition (Fe, NFe)**

* The PTG-4500 is capable of measuring the thickness of non-magnetic coatings (e.g. Paint, Plastic, enamel, copper, zinc, aluminum, chrome, etc) on magnetic materials (e.g. Iron, Nickel, etc.) It is often used to measure the thickness of a galvanized layer, lacquer, porcelain, phosphide, copper tile, aluminum tile and some alloy tiles, paper, etc.

* The 4500 is also capable of measuring the thickness of non-magnetic coatings on non-magnetic metals. It is used on anodizing, varnish, paint, enamel, plastic coatings, powder, etc. applied to aluminum, brass, and non-magnetic stainless steel, etc.

- This unit is suitable for laboratories or out in harsh field conditions.
- Utilizing a state of the art micro computer circuitry, this gage will deliver high accuracy measurements along with quick reading response time.
- This model has a wide measuring range coupled with high resolution
- Digital FLIP display eliminates guessing and /or errors when reading upside down or other angle
- The PTG-4500 is made of a durable light weight ABS plastic housing assuring maintenance free performance for many years.

Specifications:

- Display: 3 digits, 14mm LCD
- Range: 0-1000 μ m / 0-40 mil
- Resolution: 0.1 μ m / 3.93 μ in (0-99.9 μ m)
1 μ m / 39.37 μ in (over 100 μ m)
- Accuracy: +/- 2 μ m+3%N (N= actual value)
+/- 0.1mils +3%N
- Power Supply: 1- AAA Batteries
- Operating Condition: 0-50 $^{\circ}$ c Humidity < 80%
- Size: 95 x 45 x 21mm
- Weight: approx 2.7oz.

**PTG-4500 comes complete with
set of calibration foils, 2 substrates, AAA battery and carry case.**



PTG-4500

3-1 Sensor

3-2 Display

3-3 Inch/Metric Conversion

Increase Value

3-4 Memory Recall

3-5 Flip Display

Decrease Value



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Measuring Procedure:

Place 3-1 sensor on an uncoated metal substrate sample(supplied) and the unit will automatically power on and begin Zero calibration process. Continue to hold the sensor on this substrate until the display shows "00.0"

- 1) Select the measurement unit **Mil** or **µm** by pressing 3-3 µm/mil button
- 2) Remove one of the calibrated coating specimens from the carry case and place it over the supplied metal substrate (steel or Aluminum). You should choose the substrate that closely resembles the material you will be testing. You should also choose a coating specimen that is closest to the thickness of your application.
- 3) Press the sensor on top of the specimen that is on top of the substrate to take your measurement. The PTG-4500 should show the correct thickness value shown on the specimen. If the displayed value is not within allowable tolerance you should perform a new calibration. See instructions below.

Calibration:

- 1) Zero Adjustment: Place the sensor. If the value on the display is not 00.0, then you must push the 3-3 (+) button for 2 seconds. Once 00.0 is shown on the display, you can begin your calibration procedure.
- 2) Select an appropriate calibration foil that is similar in thickness to your application.
- 3) Place the foil on top of the supplied substrate or uncoated standard.
- 4) Place the sensor 3-1 lightly on the foil and hold until measured value is shown on display. If the result is not within the allowable tolerance, you may adjust the result and save the calibration by pressing the 3-4 MEM button for 2 seconds, then adjusting the display value to match the specimen value by pressing the + or – buttons. Once the value matches the specimen, you must press the 3-4 MEM button and then take a quick test to save it. This procedure may need to be done a few times for proper calibration to be set.

Memory recall:

- 1) Press the 3-4 MEM button to view the previous 10 test results. "0" will be shown on the bottom of the display. You must press either the + or – button to scroll through the 10 test results.

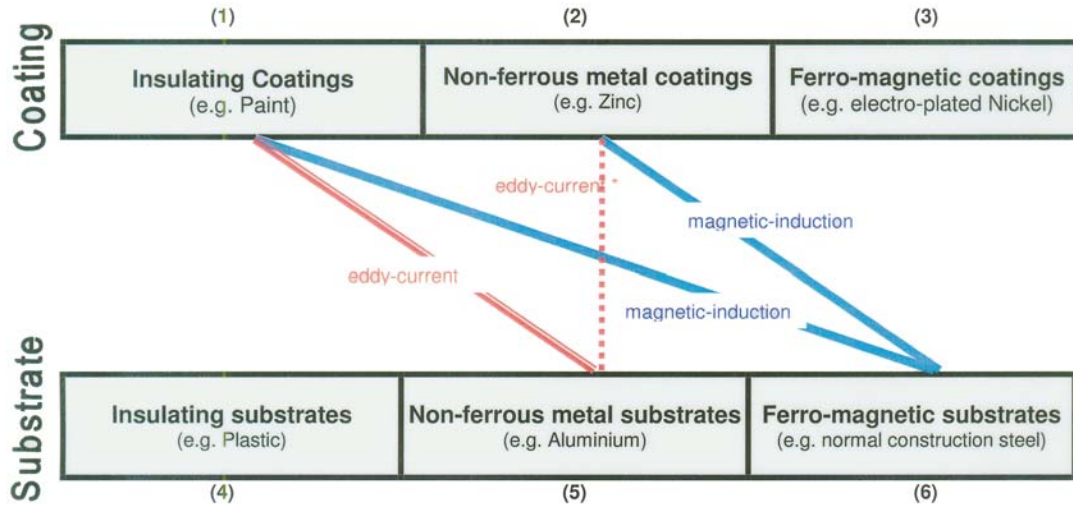
Battery Replacement:

- 1) When the battery symbol appears on the display, it is time to replace the battery
- 2) Slide the rear battery cover away from the instrument and remove the battery.
- 3) Install 1 AAA battery paying careful attention to polarity. Please discard used battery according to local rules and regulations.

Typical application for coating thickness measurements using the magnetic-induction and the eddy-current principle

The picture below shows the various Coating / Substrate – combinations and the necessary measuring principle.

The lines between the upper and lower boxes indicate the measuring principles to be used.



REMARKS:

eddy-current *

: Restricted application!

With the eddy current principle

Coating / Substrate – combinations are measurable only:

- Chromium on copper, maximum coating thickness 40µm / 1.6mils
- Chromium on aluminium, maximum coating thickness 40µm / 1.6mils
- Tin on copper, maximum coating thickness 40µm / 1.6mils

NOTE: for the above Coating / Substrate – combinations special marked calibration foils are necessary. Please specify the required Coating / Substrate – combination.



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Typical coating materials:

(1) Insulating coatings

- Paint
- Plastic
- Enamel
- Anodising (on Alum.)
- Ceramic

(2) non-ferrous coatings

- Brass
- Bronze
- Chromium
- Copper
- Lead
- electroless Nickel (with more than 10% phosphor)
- Tin
- Zinc

(3) ferro-magnetic coatings

- Electro-plated Nickel

Typical substrate materials:

(4) Insulating substrates

- Plastic
- Ceramic
- Epoxy
- Glass

(5) Non-ferrous substrates

- Aluminium
- Brass
- Bronze
- Copper
- Lead
- Titan
- Zinc

(6) Ferro-magnetic substrates

- Steel (St33 – St60 or C15 - C45)
- some kind of stainless steel, which are ferrous

Special Coating / Substrate – combinations

- Chromium on copper or on aluminium: see remarks under the picture on page 1.
- Tin over copper: see footnote under the picture on page 1
- Micaceous iron ore coatings (ferromagnetic) over steel: see “Compendium to Coating thickness measurement”

cannot measure:

- Electro-plated Nickel on steel or on non-ferrous metal substrates or on insulating substrates
- insulating coatings (as paint) on insulating substrates (as plastic)
- non-ferrous metal coatings on non-ferrous metal substrates, exceptions see remarks on page 1
- non-ferrous metal coatings (as copper) on insulating substrate (as epoxy)

**Phase II Machine & Tool, Inc.
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