



® Management Procedure 2542
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Calibration Procedure

DeFelsko Corporation

PosiTector 6000 FHXS

Coating Thickness Probe

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1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of DeFelsko Corporation PosiTector 6000 FHXS probe with the following specification:

Table 1-1 Measurement Ranges

Probe	Measurement Range
6000 FHXS	0 – 10,000 microns (0 - 400 mils)

1.2 The unit being calibrated will be referred to as the UUC (Unit-Under-Calibration).

2 Measurement Standards and Support Equipment Performance Requirements

2.1 The UUC accuracy requirements are based upon the published UUC performance specifications.

2.2 The test uncertainty ratio applied in this Calibration Procedure is 4:1 unless otherwise stated.

2.3 The Minimum-Use-Specifications are the minimum test equipment specifications required to meet all the UUC accuracy requirements and the test uncertainty ratio applied.

Table 2-1 UUC Accuracy Requirements and Description

UUC	Performance Specifications		Test Method
6000 FHXS	0 – 10,000 microns (0 - 400 mils)	\pm (2 microns + 3% of reading) \pm (0.1 mils + 3% of reading)	Compared to Reference Standards

Table 2-2 Minimum use specification

Range	Accuracy
0 - 10,000 microns (0 - 400 mils)	\pm 0.5 microns (\pm 0.025 mils)

Table 2-3 Actual Equipment Specification

Equipment Generic Name	Range	Accuracy	Manufacturer / Model #'s Applicable
Coating Thickness Reference Standards	1500 – 8900 um (60 - 350 mils)	\pm (2.5 microns + 0.05% of thickness) \pm (0.1 mil + 0.05% of thickness)	DeFelsko Corporation, STD-P7

Caution: The instructions in this Calibration Procedure relate specifically to the equipment and conditions listed in Section 2. If other equipment is substituted, the information and instructions must be interpreted accordingly.

Table 2-4 Calibration Environmental and Warm-Up Requirements

Measurement Standards & Support Equipment Environmental Requirements:	Temperature: $23 \pm 5^\circ \text{C}$. Relative Humidity: Less than 95%
Measurement Standards & Support Equipment Warm-up and Stabilization Requirements:	Not Required

3 Preliminary Operations

Note: Review the entire document before starting the calibration process.

3.1 Visual Inspection

3.1.1 Visually inspect the UUC for:

- damaged LCD readout
- probe wear or coating
- cracked or broken case
- missing probe cover, battery door, or other parts
- proper identification

3.1.2 Damage or excess wear shall be repaired prior to beginning the calibration process.

3.2 Gage Reset

3.2.1 When the unit is powered down, simultaneously hold the “+” and middle buttons until the reset symbol (2 arrows) appears.

Caution: Be sure to keep the probe well away from any metal surface during the RESET process.

3.2.2 Measure a flat uncoated 1018 steel plate at least 4” x 4” x 0.2”. If the probe reads more than +/- 4 um reject the probe for characterization.

3.3 Probe Zero

3.3.1 Measure a flat uncoated (zero) 1018 steel plate at least 4” x 4” x 0.2”. Compare the reading to the allowable limits in table 5-1. If it is within limits proceed to section 4 otherwise follow the zeroing process in 3.3.2 – 3.3.3.

3.3.2 Select the Main Menu “Zero” function and then indicate the number of readings (3) to be used to determine an average.

3.3.3 Measure the zero plate the require number of times then repeat step 3.3.1.

4 Calibration Process

Note: Whenever the test requirement is not met, verify the results of each test and take corrective action before proceeding.

4.1 Review the Performance Requirements Table 5-1.

Note: The probe calibration may be verified in either normal or high-resolution mode. Accuracy is the same for both modes.

4.2 Using the appropriate Certificate of Calibration template for the UUC, record the thickness from the Reference Standard labels.

4.3 Determine the allowed range of readings for the UUC using the calculation methods shown in Table 5-1.

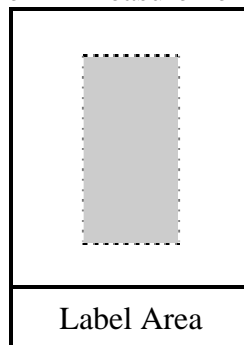
4.4 Place the Reference Standard(s) on the same uncoated plate used to zero the probe.

4.5 Use the UUC to take readings of the applicable reference standard. Verify that the readings are within the allowable limits determined in section 4.3. Record the readings on the Certificate of Calibration.

Note: Record all digits displayed on the LCD. This may vary depending on the resolution mode.

4.6 In taking readings the probe tip shall be centered in the shaded area on the Reference Standard as shown in Figure 4-1.

Figure 4-1 Measurement Area



5 Performance Requirements

Note: The technician will collect the data needed to complete columns A and B of the appropriate table below. Do not write in this procedure.

Table 5-1 Performance Requirements and Calibration Data for PosiTector 6000 FHXS

Thickness on Reference Standard Label (microns)	Min. Reading Allowed ^❶ (microns)	Max. Reading Allowed ^❷ (microns)	Actual Probe Measurement (microns)
A			B

❶ Calculation (A times 0.97) - 2. Round up to nearest 1 micron.

❷ Calculation (A times 1.03) + 2. Round down to nearest 1 micron.

*For imperial/metric readings convert using 1 mil = 25.4 microns

Management Procedure Change Notice

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Title: Calibration Procedure for PosiTector 6000 FHXS

Reason for Change: <ul style="list-style-type: none">• New product
Description of Change: <ul style="list-style-type: none">• New procedure

I confirm I have read and understand the procedure and the change described above.

Printed Name	Signature	Date

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