

Calibration Procedure

DeFelsko PosiTector CMM IS Probe

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1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of the DeFelsko PosiTector CMM IS probe with the following specifications:

Table 1-1 Measurement Ranges

Function	Measurement Range	Resolution
Air Temperature	0 to 80 °C (32 to 176 °F)	0.1°C (0.1°F)
Relative Humidity	10 to 100% RH	0.1%

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 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 Function	Range	Accuracy	Test Method
Air Temperature	0 to 80 °C (32 to 176 °F)	± 0.5 °C (± 1.0 °F)	Humidity Generator
Relative Humidity	10 to 90% RH > 90% RH	± 2.0 % ± 3.0 %	

Table 2-2 Minimum Use Specifications

Function	Range	Accuracy
Air temperature	0 to 80 °C (32 to 176 °F)	± 0.125 °C (± 0.25 °F)
Relative Humidity	0 to 100% RH	± 0.75%

Table 2-3 Actual Equipment Specifications

Manufacturer/Model #'s Applicable	Actual Equipment Specifications	
	Range	Accuracy
Thunder Scientific Model 2500 Humidity Generator	0 to 70 °C (60 to 140 °F)	± 0.06 °C (± 0.11 °F)
	10 to 95% RH	± 0.5%

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

Table 2-4 Calibration Environment and Warm-Up Requirements

Measurement Standards & Support Equipment Environmental Requirements:	Temperature: $23 \pm 5^\circ \text{C}$. Relative Humidity: Less than 95% Barometric Pressure $30 \pm 1.5 \text{ in Hg}$ ($1016 \pm 50 \text{ mbar}$)
Measurement Standards & Support Equipment Warm-up and Stabilization Requirements:	Thunder Scientific Humidity Generator: 60 minutes

3 Preliminary Operations

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

3.1 Visual Inspection

3.1.1 Damage or excess wear must be repaired prior to beginning the calibration process.

3.1.2 Visually inspect the UUC for:

- Wear or damage to the probe body or sensor end
- Missing parts
- Proper identification

3.2 Ensure the UUC has been stored within the calibration check chamber for at least 24 hours.

3.3 Remove the battery cap, insert a battery and replace the battery cap.

3.4 Using a smart device, launch the PosiTector SmartLink app and verify the device detects the probe. Also verify the probe has at least 25% battery.

4 Calibration Process

Refer to UUC and equipment instruction manual(s) for menu navigation instructions, details on features and operating instructions.

Note: Whenever a test requirement is not met as indicated in table 6-1, verify the results of the test and take corrective action before proceeding.

4.1 Place the probe(s) in the humidity chamber such that the sensor end is exposed. Do not set the sensor on the bottom of the chamber with the sensor facing down. Multiple probes

can be calibrated in the chamber simultaneously. Record the probe serial number(s) and the Barometric pressure (mbars).

- 4.2 Adjust the set point of the humidity chamber to 50 %RH and allow to stabilize for at least 2 hours. After the stabilization time, record the chamber relative humidity and air temperature. Use a smart device to access the UUC as describe in section 3.4. Record the UUC relative humidity and air temperature.
- 4.3 Adjust the set point of the humidity chamber to 90 %RH and allow to stabilize for at least 2 hours. After the stabilization time record the chamber relative humidity reading. Use a smart device to access the UUC as describe in section 3.4. Record the UUC relative humidity.
- 4.4 Remove the probe(s) from the chamber, remove the battery and immediately store in the Calibration Check Chamber.

5 Performance Requirements

Note: The technician will collect the data needed to complete columns D and E. The technician shall then calculate the values for Column F and record all information as shown in table 5-1. Do not write in this procedure.

Table 5-1 Requirements and Calibration Data for DeFelsko PosiTector CMM IS Probe

Reference (A)	Units (B)	Set Point (C)	Test Equipment Reading (D)	Gage Reading (E)	Probe Measurement Accuracy (F)	Allowable Tolerance (G)
Relative Humidity	%RH	50				± 2.0
Ambient Temperature	°C	N/A				± 0.5
Relative Humidity	%RH	90				± 2.0

Note: To convert from °C to °F → $T_{°F} = 1.8 * T_{°C} + 32$

Management Procedure Change Notice

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Title: Calibration Procedure for DeFelsko PosiTector CMM IS Probe

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

Management Form 0010.02-05/1998