DeFelsko®

Management Procedure 2557
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Calibration Procedure

PosiTector SST Soluble Salt Tester

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1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of DeFelsko Corporation PosiTector SST probe and gage.

Table 1-1

Models	Measurement Range
PosiTector SST	0.0 – 1500 µS/cm
	0.0 – 50.0 °C

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. The 0.0 – 200 µs/cm range has a 2.5:1 test uncertainty ratio.

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 Parameter	Performance Specifications		Test Method
Conductivity	0.0 – 200 µS/cm	± 2 µS/cm	Compare to Standard
	>200 – 600 µS/cm	± 10 µS/cm	
	>600 – 1500 µS/cm	± 20 µS/cm	
Solution Temperature	0.0 – 50.0°C	± 0.5°C	Digital Thermometer

Table 2-2 Minimum Use Specification

Parameter	Range	Accuracy
Conductivity	0.0 – 200 µS/cm	± 0.5 µS/cm
Conductivity	>200 – 600 µS/cm	± 2.5 µS/cm
Conductivity	>600 – 1500 µS/cm	± 5.0 µS/cm
Solution Temperature	0.0 – 50.0°C	± 0.125°C

Table 2-3 Actual Equipment Specification

Parameter	Range	Accuracy	Manufacturer/Model #'s Applicable
Conductivity	84 µS/cm	± 0.8 µS/cm	Inorganic Ventures CON84-25
Conductivity	500 µS/cm	± 2.0 µS/cm	Inorganic Ventures CON500-25
Conductivity	1413 µS/cm	± 5.0 µS/cm	Inorganic Ventures CON1413-25
Solution Temperature	Room Temperature	± 0.05°C	Control Company 6412

***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 ± 2° C. Relative Humidity: 40 - 60%
Measurement Standards & Support Equipment Warm-up and Stabilization Requirements:	Probe and test solution must be at same temperature.

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, but not limited to:

- Dirty or contaminated test cell
- Probe damage

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

3.1 For product returned for service, ensure the gage has been updated with the most recent firmware.

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.

3.3 On the Gage body menu navigate to the "Setup" menu, select "Hi Res" then select "Exit"

4 Calibration Process

Note: Do not place any objects in the sensor cell. Do not blow into the sensor cell. Do not touch the tip of the conductivity standard or deionized water spouts with exposed skin. Make sure the conductivity standards and probe have had a chance to reach room temperature. To reduce temperature effects, touch the probe as little as possible.

4.1 Review the Performance Requirements Table 5-1.

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

4.2 Conductivity

4.2.1 Place the UUC such that the probe is over a container that can collect the liquids that will spill.

4.2.2 Fill the probe test cell to over flowing with the 84 µS/cm conductivity standard and empty it out. Do not take a reading.

4.2.3 Repeat step 4.2.2 a second time.

4.2.4 Fill the probe test cell a third time and verify there are no air bubbles in the test cell.

4.2.5 Record the γ reading, in µS/cm, as displayed on the UUC.

Note: The unit automatically performs temperature compensation to 25^{o}C so no compensation is required by the user.

4.2.6 Repeat steps 4.2.2 - 4.2.5 using the 500 µS/cm standard solution and again with the 1413 µS/cm solution.

4.2.7 Record the conductivity value and lot numbers from the certificates of analysis for the conductivity solutions.

4.2.8 Rinse the test cell with deionized water.

4.3 Solution Temperature

4.4 Place at least the entire white plastic tip of the UUC probe in an insulated chamber containing the reference temperature probe.

4.5 After at least 30 minutes record the UUC and reference probe readings.

5 Performance Requirements

Table 5-1 Performance Requirements and Calibration Data for PosiTector SST

Parameter	Reference Value	Min[1]	UUC Reading	Max[2]	Lot Number
Conductivity					
Conductivity					
Conductivity					
Solution Temperature					N/A

1) 84.0 µS/cm min= reference value - 2.0 µS/cm
   500 µS/cm min = reference value - 10 µS/cm
   1413 µS/cm min = reference value - 20 µS/cm
   Temperature = reference value - 0.5°C

2) 84.0 µS/cm min= reference value + 2.0 µS/cm
   500 µS/cm min = reference value + 10 µS/cm
   1413 µS/cm min = reference value + 20 µS/cm
   Temperature = reference value + 0.5°C

Note: Do not write in this procedure.

Management Procedure Change Notice

Procedure Number: MP 2557
Revision Level: C
Date of Change: October 12, 2021
Title: Calibration Procedure, PosiTector SST Soluble Salt Tester

Reason for Change:
• Clarify that temperature compensation is being performed.
Description of Change:
• Added stabilization comment to table 2-4 • Added note to section 4.2.5 indicating temperature compensation is being performed

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

Printed Name	Signature	Date

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