

DISCLAIMER

Extech recommends the use of our test and measurement calibration services at our facility in Nashua, NH. We utilize proprietary calibration procedures, which may be provided to our customers as a courtesy. Use of Extech calibration procedures by anyone other than Extech technicians may void the factory warranty and is at the user's own risk.

Extech Instruments Corporation
EICM407907-CP
November 2011
Revision: Initial Release

407907 CALIBRATION PROCEDURE

Written By: _____
Teri M King

Approved By: _____ Date Approved: _____
Robert Godzwon

407907 Calibration Procedure	<i>Revision #:</i> Initial
	<i>Page #:</i> 2 of 8
Procedure Number: EICM407907-CP	

Revision Log

Revision Number	Date Approved	Pages Affected	Description of Revision
Initial	November 2011	All	Initial Release

407907 Calibration Procedure	Revision #: Initial
	Page #: 3 of 8
Procedure Number: EICM407907-CP	

Table of Contents

REVISION LOG 2

1.0. INTRODUCTION..... 4

 1.1. Purpose..... 4

 1.2. Policy..... 4

 1.3. Scope / Field of Application..... 4

 1.4. Document Security..... 4

 1.5. Document References..... 4

 1.6. Special Terms / Definitions..... 4

2.0. REQUIRED EQUIPMENT..... 4

3.0. 407907 ACCURACY TEST..... 4

4.0. 407907 CALIBRATION ADJUSTMENTS..... 5

 4.1.0. Ohms Adjustment 5

FIGURE: 1 “Calibration Potentiometers”..... 6

FIGURE: 2 7

APPENDIX: A “Checking Procedure”..... 8

407907 Calibration Procedure	Revision #: Initial
	Page #: 4 of 8
Procedure Number: EICM407907-CP	

1.0. INTRODUCTION

1.1. Purpose

The purpose of this procedure is to provide detailed instructions on how to test and/or adjust Extech Instruments Model 407907.

1.2. Policy

This procedure will be used as a guideline for instructions needed to properly calibrate Extech Instruments Model 407907.

1.3. Scope / Field of Application

This procedure will be used by Extech Instruments Calibration Laboratory for detailed instructions on how to test and/or adjust Extech Instruments Model 407907.

1.4. Document Security

This document is considered to be proprietary. Therefore, this document may not be reproduced or transmitted in any form for use outside of Extech Instruments without the consent of Extech Instruments Corporation.

1.5. Document References

- Model 407907 “Heavy Duty Precision RTD Thermometer” Checking Procedure.
- 407907 Data Sheet (EICDS- 407907).

1.6. Special Terms / Definitions

- National Institute of Standards and Technology (NIST) – Is the internationally recognized body in which all calibrations are traceable through.

2.0. REQUIRED EQUIPMENT

The following equipment will be needed to properly calibrate the instrument.

- (1) Calibrated Leeds and Northrup Decade Box or equivalent.
- (1) Calibrated Aligent 34410A or equivalent

3.0. 407907 ACCURACY TEST

407907 Calibration Procedure	Revision #: Initial
	Page #: 5 of 8
Procedure Number: EICM407907-CP	

- 3.1. Install one (1) 9VDC battery into the instrument.
- 3.2. Connect the output of the Resistance Box to the input as shown in Figure 2.
- 3.3. Power on the 407907.
- 3.4. Apply 22.80Ω's (-190.00 °C) to the input of the 407907.
- 3.5. Record the 407907 reading on the proper data sheet. (EICDS- 407907)
- 3.6. For the remaining test points refer to the "Model 407907 – Checking Procedure" listed in Appendix A.

NOTE: For instruments coming in under a RMA number, record all of the readings on the proper data sheet, even if they are not within the specified tolerance. If the instrument is new and out of the specified tolerances, proceed to Section: 4. There is no need to record "Out of Tolerance" conditions for new instruments.

- 3.7. If any of the readings were outside of the specified tolerances, proceed to Section: 4.
- 3.8. If all of the readings were within the specified tolerances, the verification is now complete.

4.0. 407907 CALIBRATION ADJUSTMENTS

NOTE: To perform the following adjustments, the same equipment is required as in Section: 2.0.

4.1.0 Ohms Adjustments

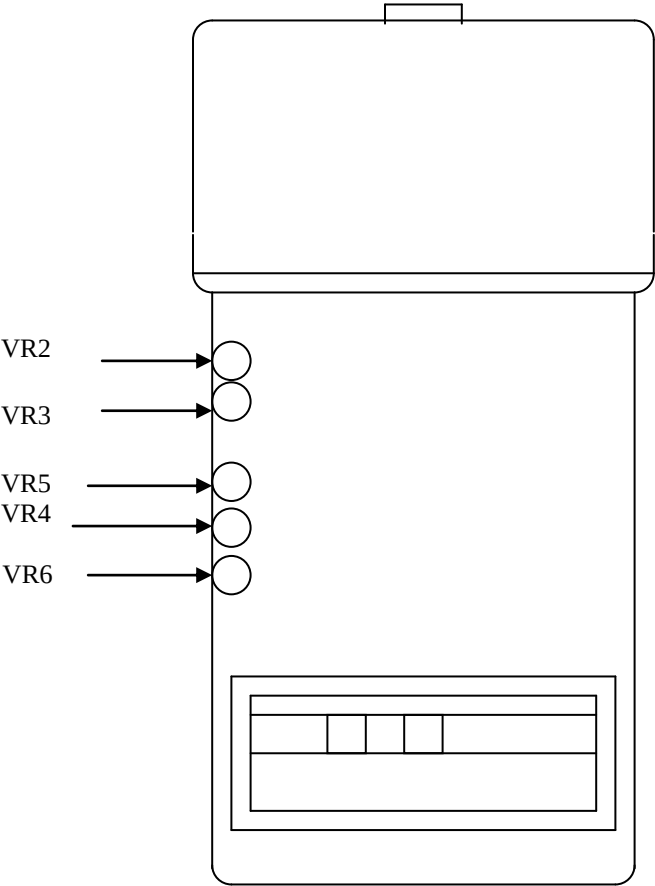
- 4.1.1 Short "J3" then power on the unit, the unit is now in calibration mode.
- 4.1.2 The 407907 display should show "T1" and "PT3850"
- 4.1.3 Apply 100.00 Ohms and adjust VR2 until the unit displays a value of "0.00°C".
- 4.1.4 The 407907 display should show "T1" and "PT3850"
- 4.1.5 Apply 138.50 Ohms and adjust VR3 until the unit displays a value of "100.00°C".
- 4.1.6 Press the "SENSOR" button.
- 4.1.7 The 407907 display should show "-T2" and "PT3850"
- 4.1.8 Apply 172.16 Ohms and adjust VR5 until the unit displays a value of "190.00°C".
- 4.1.9 Press the "SENSOR" button.
- 4.1.10 The 407907 display should show "-T2" and "PT3850"
- 4.1.11 Apply 22.80 Ohms and adjust VR4 until the unit displays a value of "-190.00°C".
- 4.1.12 Press the "SENSOR" button.
- 4.1.13 The 407907 display should show "MAX" and "PT3850"
- 4.1.14 Apply 264.11 Ohms and adjust VR6 until the unit displays a value of "450.00°C".
- 4.1.15 Remove the jumper from "J3" and power off the unit.
- 4.1.16 The calibration is now complete.

407907 Calibration Procedure	Revision #: Initial
	Page #: 6 of 8
Procedure Number: EICM407907-CP	

NOTE: After all adjustments have been made, proceed to Section: 3 to retest the instrument. Record the data from Section: 3 as the “Final Reading” of the instrument. If the instrument is new, record the data as the “Calibration Data”.

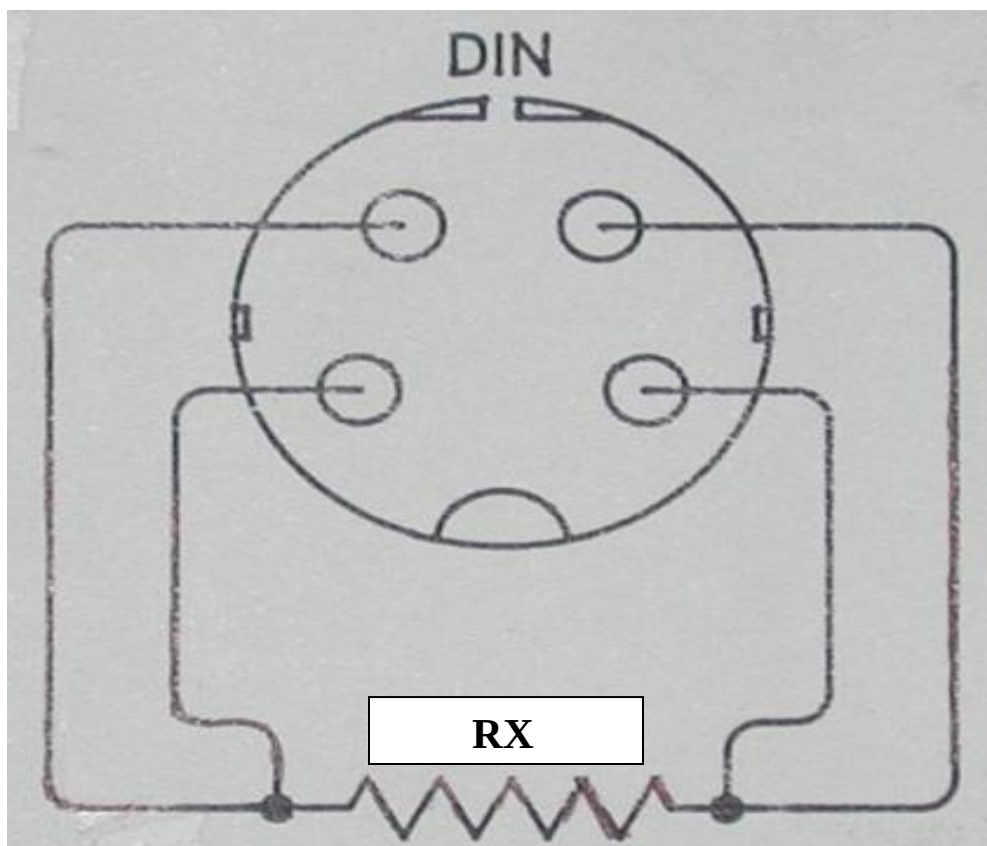
FIGURE 1
Heavy Duty Moisture Meter

Note: To access the calibration potentiometers, remove the battery cover, located on the lower back case.



407907 Calibration Procedure	Revision #: Initial
	Page #: 7 of 8
Procedure Number: EICM407907-CP	

Figure: 2



407907 Calibration Procedure	Revision #: Initial
	Page #: 8 of 8
Procedure Number: EICM407907-CP	

CHECKING PROCEDURE

Page 1 of 1

MODEL 407907

Precision RTD Thermometer

1. VISUAL - Check for cosmetic problems, scratches, wrong labels, loose labels, etc.
2. Insert 1 each "9V" battery and observe correct polarity.
3. Power ON and preset the 407907 to read degrees C and 0.01 degree resolution.
4. Test the unit using either an input from a MicroCal 2 set up for "RTD" or a high precision resistance decade box capable of selecting hundredths of an Ohm. Use a specially modified 4 pin "DIN" type connector for the input. Connect the red and green wires together and the blue and white wires together and then input the resistance to the red/green and blue/white combination.
5. Test the following functions: (ITS-90 Alpha = 0.00385)

FUNCTION	INPUT	RESISTANCE	TOLERANCE	READING	NOTES
4 wire Pt-3850 -199.99 to 199.99 °C	-190.00 °C	22.83 Ω	+/- (0.1%rdg+0.2°C)	-190.39 to -189.61	0.01 resolution
	0.00 °C	100.00 Ω	+/- (0.1%rdg+0.2°C)	-0.20 to 0.20	
	100.00 °C	138.51 Ω	+/- (0.1%rdg+0.2°C)	99.70 to 100.30	
	190.00 °C	172.17 Ω	+/- (0.1%rdg+0.2°C)	189.61 to 190.39	
200.0-850.0 °C	250.0 °C	194.10 Ω	+/- (0.1%rdg+0.2°C)	249.5 to 250.5	0.1 resolution
	450.0 °C	264.11 Ω	+/- (0.1%rdg+0.2°C)	449.3 to 450.7	
	840.0 °C	387.33Ω	+/- (0.1%rdg+0.2°C)	839.0 to 841.0	

6. Change the 407907 to read °F. (ITS 90 Alpha = 0.00385)

FUNCTION	INPUT	RESISTANCE	TOLERANCE	READING	NOTES
4-wire Pt-3850 -199.99-392.00 °F	-193.00 °F	50.07 Ω	+/- (0.1%rdg+0.4°F)	-193.59 to -192.41	0.01 resolution
	32.00 °F	100.00 Ω	+/- (0.1%rdg+0.4°F)	31.57 to 32.43	
	212.00 °F	138.50 Ω	+/- (0.1%rdg+0.4°F)	211.39 to 212.61	
	392.00 °F	175.86 Ω	+/- (0.1%rdg+0.4°F)	391.21 to 392.79	
392.0-1562.0 °F	401.0 °F	177.70 Ω	+/- (0.1%rdg+0.4°F)	400.2 to 401.8	0.1 resolution
	1004.0 °F	294.21 Ω	+/- (0.1%rdg+0.4°F)	1002.6 to 1005.4	
	1553.0 °F	389.01 Ω	+/- (0.1%rdg+0.4°F)	1551.0 to 1555.0	

7. Press the "Hold" button and verify that the unit displays "HOLD" and that the display maintains the last reading. Press "Hold" again to return to normal operation.
8. Press the "RECORD" button and change the input to a high reading and a low reading. Press "RECALL" and note the display shows "Record" and "Max" on the display along with the highest reading. Press "Recall" again and note the display now displays "Record" and "Min" along with the lowest reading. Press

407907 Calibration Procedure	<i>Revision #:</i> Initial
	<i>Page #:</i> 9 of 8
Procedure Number:	EICM407907-CP

"Record" to exit.

9. Power OFF the unit, re-pack and check for: 1 ea. - manual