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Extech Instruments Corporation
EICM42510A-CP
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42510A CALIBRATION PROCEDURE

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Revision Log

Revision Number	Date Approved	Pages Affected	Description of Revision
Initial	July 2011	All	Initial Release
1.0	February 2012	4 & 5	On page 4 & 5, changed the equipment Hart 9132 to Fluke 4181.
1.1	October 2012	3, 4, 5, 6, 9	Revised the Table of Contents and the Introduction. In Section 4.2 and 4.3 and on page 9, changed 6in to 12in.

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1.0. INTRODUCTION

1.1. Purpose

The purpose of this procedure is to provide calibration instructions for Extech Instruments Model 42510A.

1.2. Scope / Field of Application

This procedure will be used by Extech Instruments Calibration Laboratory staff when calibrating Extech Instruments Model 42510A.

1.3. Document Security

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1.4. Document References

- Model 42510A “1200F Hand Held Infrared Thermometer” Checking Procedure.
- 42510A Data Sheet (EICDS- 42510A).

2.0 REQUIRED EQUIPMENT

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

- (1) Calibrated Fluke Model 4181 IR Calibrator or equivalent.
- (1) Calibrated Hart Model 9133 IR Calibrator or equivalent.
- (1) One 12 inch ruler.

3.0 42510A ACCURACY TEST

3.1. Install one “9V” battery into the instrument.

3.2. Using the Mode function, set the emissivity of the 42510A to 0.95.

3.3. Set the Fluke Model 4181, or equivalent, to 150.0°F

3.4. Point the IR sensor of the 42510A to the middle of the blackbody at a 12 inch distance.

NOTE: The 42510A should read $150.0 \pm 3.0^{\circ}\text{F}$.

3.5. Record the reading on the proper data sheet. (EICDS-42510A)

3.6. For the remaining test points refer to the “Model 42510A – Checking Procedure” listed in Appendix: A.

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NOTE: When calibrating customer owned instruments, technicians must record all of the “as received” readings on the corresponding data sheet. If the instrument is newly purchased from stock and does not meet the specified tolerances, proceed to Section: 4. Technicians are not required to record “Out of Tolerance” indications for newly purchased 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 42510A CALIBRATION ADJUSTMENTS

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

4.1.0 Ambient IR Adjustment

- 4.1.1. Short “JP” cal pin (See Figure 1).
- 4.1.2. Press and hold the “MODE” button and power on the UUT.
- 4.1.3. The display will show “11” and room temperature. Release the “MODE” button.
- 4.1.4. Allow the reading to stabilize then release the “ON/OFF” button.

4.2.0 300°C Temp IR Adjustment

- 4.2.1 Set the Fluke 4181 or equivalent to 300°C.
- 4.2.2 Short “JP” cal pin (Figure:1) and the “A and B” pin (Figure:2) located in the backside of the handle.
- 4.2.3 Press and hold the “MODE” button and power on the UUT.
- 4.2.4 The display will show “22”.
- 4.2.5 Point the IR sensor of the 42510A to the middle of the blackbody at approx. 12 inches.
- 4.2.6 Allow the reading to stabilize then release the “ON/OFF” button.
- 4.2.7 Remove the short from “A and B” pins.

4.3.0 0°C Temp IR Adjustment

- 4.3.1 Set the Hart 9133 or equivalent to 0°C.
- 4.3.2 Short “JP” cal pin (Figure:1).
- 4.3.3 Press and hold the “MODE” and the “UP” buttons.
- 4.3.4 Power on the UUT and the display will show “33”.
- 4.3.5 Release the “MODE” and “UP” buttons.
- 4.3.6 Point the IR sensor of the 42510A to the middle of the blackbody at approx. 12 inches.
- 4.3.7 Allow the reading to stabilize then release the “ON/OFF” button.
- 4.3.8 Remove the “JP” short.

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NOTE: After performing the above calibration procedure and the UUT still needs to be adjusted repeat section 4.

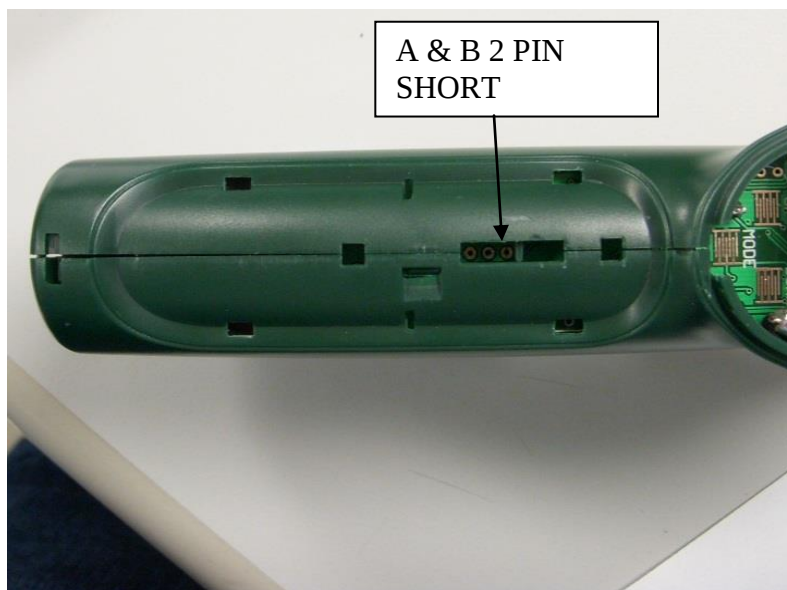
FIGURE: 1

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FIGURE : 2

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Appendix: A

CHECKING PROCEDURE

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Model #42510A

1200 °F Hand Held Infrared Thermometer

- 1.) VISUAL - Check for cosmetic problems, damaged housing or wrong labels etc.
- 2.) Observe the correct polarity and insert a "9V" battery.
- 3.) Power ON by pressing the "trigger" and check for any missing display segments.
- 4.) Press the "Mode" button until the "°F or °C" is flashing, select "°F". Press the "Mode" button again until the emissivity icon flashes. Use the "▲ or ▼" buttons to set the emissivity to 0.95.
- 5.) Check that when the "trigger" is released the display reads "Hold" and meter displays the Last temperature taken.

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6.) Use a calibrated infrared standard (0.95 emissivity Black Body) as a reference and test as follows measuring from a distance of approximately 12 inches.

STANDARD	TOLERANCE	ALLOWABLE	NOTES
-20.0 °F (black body)	+/- 5.0 °F	-25.0 to -15.0	* optional
32.0 °F (ice bath)	+/- 3.0 °F	29.0 to 35.0	
77 °F (black body)	+/- 3.0 °F	74.0 to 80.0	
150 °F (black body)	+/- 3.0 °F	147.0 to 153.0	
250 °F (black body)	+/- (1.0%rdg+2.0 °F)	245.5 to 254.5	
450 °F (black body)	+/- (1.5%rdg+2.0 °F)	441.2 to 458.8	
650 °F (black body)	+/- (1.5%rdg+2.0 °F)	638.2 to 661.8	
850 °F (black body)	+/- (2.0%rdg+2.0 °F)	831.0 to 869.0	
1100 °F (black body)	+/- (2.0%rdg+2.0 °F)	1076 to 1124	* optional

7.) Check that the "°C", "△"(laser), and "⚙" (backlight) functions all work.

8.) Verify that the laser beam lines up with the measuring area.

9.) If all conditions are within acceptable limits, re-pack for shipping and transfer to warehouse status.