

Report of Calibration

This report is to certify that the instrument listed below has been calibrated by *Thermo*Probe, Inc. to NIST traceable criteria.

Report No.:2008-11-05-9082

Model: **TL-1A** Received Condition: New Received Date: -factory newSerial No.: 1-<u>9082</u>

Customer: ACME Inc.

Calibration Data As Found

The item tested *WAS* in tolerance at the time of calibration. Adjustments are noted and any out of tolerance data are listed.

Nominal Value	Actual Test Temp.	Reading of TL-1	Correction	Tolerance	In Tolerance (yes/no)	Measurement Uncertainty (k=2)
- 4 °F				0.10 °F	Yes	0.030 °F
32 °F	T I • •	1	.1	0.10 °F	Yes	0.029 °F
120 °F		em tested was n s Found" obser	1	0.10 °F	Yes	0.028 °F
200 °F	were r	ecorded.''		0.10 °F	Yes	0.031 °F
300 °F				0.10 °F	Yes	0.031 °F
554 °F				0.20 °F	Yes	0.056 °F

Calibration Data As Left TL-1s are adjusted to read as closely as possible to the actual test temperature. Any variance that remains after the "As Left" readings are included as a correction that can be added to achieve the closest match to the actual temperature.

Nominal Value	Actual Test Temp.	Reading of TL-1	Correction	Tolerance	In Tolerance (yes/no)	Measurement Uncertainty (k=2)
- 4 °F	°F	۴	0.00	0.10 °F	Yes	0.030 °F
32 °F	32.06 °F	32.06 °F	0.00	0.10 °F	Yes	0.029 °F
120 °F	119.94°F	119.93°F	0.01	0.10 °F	Yes	0.028 °F
200 °F	199.02°F	199.04°F	-0.02	0.10 °F	Yes	0.031 °F
300 °F	300.16°F	300.19°F	-0.03	0.10 °F	Yes	0.031 °F
554 °F	°F	°F	0.00	0.20 °F	Yes	0.056 °F

Calibration Date: November 5, 2008

Ambient Temp.: 23°C +2°C

Calibrated By:

Report of Calibration

Test Method: The calibrations procedure used were *ThermoProbe, Inc. Calibrations Procedures* based on ASTM E-644-06. This probe was immersed in a constant temperature bath with a reference thermometer which determined the actual test temperature. The readings were compared and correction factors for the probe were calculated. The As Left readings reflect the TL-1's readings after calibration.

Nominal Temp	Bath	Fluid	Reference	Calibratio n Date	Next Calibration Due
-4 °F	PolyScience 9501	water/glycol	Hart Scientific 1502A/Advanced Sensing Devices - WSP500 (s/n: A64287/650314)	07/20/08	07/20/09
32 °F	PolyScience 9501	water/glycol	ThermoProbe TL-1R (s/n: 5770)	07/16/08	07/16/09
120 °F	PolyScience 8101	silicon oil	ThermoProbe TL-1R (s/n: 5769)	07/16/08	07/16/09
200 °F	Fluke 6330	silicon oil	Hart Scientific 1502A/Hayashi Denko Pt100-A-1-M (s/n: A53906/11-008)	04/30/08	04/08/09
300 ⁰F	Hart Scientific 6330	silicon oil	Hart Scientific 1502A/Advanced Sensing Devices - WSP500 (s/n: A64287/650314)	07/20/08	07/20/09
554 °F	Hart Scientific 6330	silicon oil	Hart Scientific 1502A/Advanced Sensing Devices - WSP500 (s/n: A64287/650314)	07/20/08	07/20/09

Traceability: This calibration is traceable to NIST through an unbroken chain of comparisons. ICL Calibration Laboratories calibrated the references shown above using transfer standards which in turn were calibrated by their primary reference thermometer (Rosemount 162CE, 25.5 Ohm SPRT, serial no. 5058, calibrated by NIST May 15, 2006, 3 year calibration cycle).

Uncertainty Statement: Uncertainties were computed using the concepts, methods and techniques of the ISO Guide to the Expression of Uncertainty in Measurement⁴ (the GUM). The calculated uncertainty is an expanded uncertainty (k=2). It does not consider errors due to possible damage to the TL-1 from shipping, temperature drift, or thermal hysteresis effect. To maintain the accuracy of the TL-1, users should take care to protect it during shipping, avoid using it to measure temperatures significantly above the highest calibrated temperature, and have the TL-1 recalibrated annually.

Calibrator's Signature: _____

Test Results Approved by: _____

Date: November 5, 2008 Title: Lab Manager

The results stated on this report relate only to the items specifically identified. This test report or calibration certificate shall not be reproduced except in full, without written approval of the laboratory