# SOUTHWEST RESEARCH INSTITUTE®

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## Certificate of Calibration

ACCREDITED
Calibration Laboratory
Certificate #0972-01

**Submitted By:** DIV20
**Address:** B57
**Contact:** DON BANNON
**Manufacturer / Model:** DURO-SENSE / TYPE K
**Description:** THERMOCOUPLE
**Serial No:** 333
**Asset No:** 008427
**Procedure:** TEMPERATURE PROBES - 5 JUNE, 2006

**Work Order:** 303075860
**Date Issued:** Aug 14, 2007
**Calibration Date:** Aug 14, 2007
***Calibration Due:** Feb 14, 2008
**Calibration Location:** Bldg. 64
**Environment:** Temp. 73.0°F Hum. 40 %RH
****Data Type:** FOUND-LEFT
**DivID/Location:** N/A

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 2005, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The client has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance. See Remarks or attached Measurement Report with the same Work Order number for data.

Reported uncertainty calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM) and represents an expanded uncertainty with a coverage factor of k=2 to approximate a 95% confidence level.

**Remarks:** Cal'd at 0 and 150 °C

### Standards Used

| Asset No. | Serial No. | Manufacturer | Model | Description | Cal Due |
|---|---|---|---|---|---|
| 009137 | A21208 | HART SCIENTIFIC | 1575 | SUPER THERMOMETER | Dec 22, 07 |
| 010281 | 0421 | HART SCIENTIFIC | 5628 | SPRT | Nov 30, 08 |
| 010814 | A44625 | HART SCIENTIFIC | 1529 | THERMOCOUPLE THERMOMETER | Oct 17, 07 |

Reviewed by: ( ) wgh ( ) srk ( ) jrg ( ) blt (✓) pwc
Metrology Technician

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

| | | | | | |
|---|---|---|---|---|---|
| Work Order: | 303075860 | Mfr. | DURO-SENSE | Technician | blt |
| Asset No: | 008427 | Model | Type K | | |
| Serial No: | 333 | Type | Thermocouple | Cal Date | 14-Aug-07 |
| Remarks: | Limits taken from ASTM E230-02 and are based on brand new unused thermocouples.<br><br>Limited Cal - tested at 0.0 and 150 C | | | | |

| Function/Range | Test Point | TI Read | Difference | +/-Limit | +/-Uncertainty | Found/Left |
|---|---|---|---|---|---|---|
| Temperature | ° C | ° C | ° C | ° C | ° C | Result |
| | 0.079 | 0.11 | -0.03 | 2.2 | 0.19 | Pass |
| | 149.979 | 149.57 | 0.41 | 2.2 | 0.30 | Pass |

END OF REPORT