



SOUTHWEST RESEARCH INSTITUTE®

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-4834



Calibration Laboratory
Certificate #0972-01

Certificate of Calibration

Submitted By: DIV20

Address: B57

Contact: DON BANNON

Manufacturer / Model: DURO-SENSE / TYPE K

Description: THERMOCOUPLE

Serial No: 12403

Asset No: 012403

Procedure: TEMPERATURE PROBES - 5 JUNE, 2006

Work Order: 303075479

Date Issued: Jul 17, 2007

Calibration Date: Jul 17, 2007

***Calibration Due:** Jul 17, 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: Calibrated at 25°, 100° and 200°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 |
| 010329 | 7949003 | FLUKE | 525A | TEMPERATURE/PRESSURE CALIBRATOR | Oct 17, 07 |
| 011904 | 0133 | HART SCIENTIFIC | 1913.6 | PLATINUM RTD | Oct 12, 07 |

Reviewed by: () wgh () snk () jrg () blt () pwc

Metrology Technician

m:\a2la1.rpt Rev date August 15, 2005

Measurements by: Bob Trollinger

Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

| | | | | | |
|--|-----------|-------|--------------|------------|-----------|
| Work Order: | 303075479 | Mfr. | DURE-SENSE | Technician | blt |
| Asset No: | 012403 | Model | Type K | Cal Date | 17-Jul-07 |
| Serial No: | 12403 | Type | Thermocouple | | |
| Remarks: Limits taken from ASTM E230-02 and are based on brand new unused thermocouples. | | | | | |
| Limited Cal - tested at 25, 100 and 200 °C | | | | | |

| Function/Range | Test Point | TI Read | Difference | +/-Limit | +/-Uncertainty | Found/Left |
|----------------|------------|---------|------------|----------|----------------|------------|
| Temperature | ° C | ° C | ° C | ° C | ° C | Result |
| | 25.033 | 25.04 | -0.01 | 2.2 | 0.30 | Pass |
| | 99.935 | 100.19 | -0.25 | 2.2 | 0.30 | Pass |
| | 200.345 | 200.06 | 0.28 | 2.2 | 0.30 | Pass |

END OF REPORT