



# SOUTHWEST RESEARCH INSTITUTE®

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Institute Quality Systems  
Institute Calibration Laboratory  
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Calibration Laboratory  
Certificate #0972-01

## Certificate of Calibration

**Cost Center:** DIV20

**Mail Stop:** B51

**Customer:** DON BANNON

**Manufacturer/Model:** DURO-SENSE / TYPE K

**Description:** THERMOCOUPLE

**Serial Number:** 12406

**Asset Number:** 012406

**Procedure:** TEMPERATURE PROBES - 5 JUN 06

**Work Order:** 303088982

**Date Issued:** 17-Jul-2009

**Date Calibrated:** 16-Jul-2009

**\* Date Due :** 16-Jul-2010

**\*\* Results:** FOUND-LEFT

**Temperature:** 76°F

**Humidity:** 49 %

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. \*\*Data type found in this certificate or attached measurement report must be interpreted as: Found-left - adjustment and/or repair was not performed, As-found - data is before unit is adjusted and/or repaired, As-left - data is after adjusted and/or repaired was performed. The customer has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance.

Measurement uncertainty calculated in accordance with the method described in the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM), for a confidence level of approximately 95 percent using a coverage factor of  $k=2$ .

**Remarks:** 3 POINT CAL (25 °, 100 °, 200 °C)

### Standards Used

<u>Asset #</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Description</u>	<u>Cal Date</u>	<u>Due Date</u>
009137	HART SCIENTIFIC	1575	SUPER THERMOMETER	15-May-2009	15-Nov-2009
013908	HART SCIENTIFIC	5628	SPRT	20-Feb-2008	20-Feb-2010
015240	HART SCIENTIFIC	2566	TC SCANNER, 12-CHANNEL MODULE	10-Dec-2008	10-Dec-2009

Walt Hill

Laboratory Manager

Mark Romero

Metrology Technician

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303088982	Mfr.	Duro-Sense	Technician:	Mark Romero
Asset No.	012406	Model	Type K	Type Data:	Found-left
Serial No.	12406	Type.	Thermocouple	Cal Date:	16-Jul-09
Remarks: Limits taken from ASTM E230-02 and are based on brand new unused thermocouples.					

Function/Range	Test Point	TI Reading	Difference	+/- Limit	+/- Uncertainty	Result	% Limit
Temperature	°C	°C	°C	°C	°C		
	25.115	24.942	-0.173	2.2	0.5	Pass	8%
	100.159	100.179	0.020	2.2	0.5	Pass	1%
	200.153	199.718	-0.435	2.2	0.5	Pass	20%
END OF REPORT							