



# 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

**Cost Center / Customer:** DIV20 / DON BANNON

**Mail Stop:** B51

**Manufacturer/Model:** FLUKE / 54 II

**Description:** THERMOCOUPLE THERMOMETER

**Serial Number:** 90810070

**Asset Number:** 012159

**Procedure:** DIGITAL THERMOMETERS/MODULES - 10 MAY 10

**Work Order:** 303094818

**Date Issued:** 3-Jun-2010

**Date Calibrated:** 3-Jun-2010

**\* Date Due :** 3-Jun-2011

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

**Temperature:** 71.0 °F

**Humidity:** 42 %RH

**Barometer:** 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/NC SL 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:** Calibrated for JKTE Type thermocouples only

### Standards Used

<u>Asset #</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Description</u>	<u>Cal Date</u>	<u>Due Date</u>
004164	FLUKE	5500A/SC	CALIBRATOR	19-Oct-2009	19-Oct-2010

Walt Hill

Laboratory Manager

Thomas Wallace

Metrology Technician

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303094818	Mfr:	Fluke	Technician:	tew
Asset No:	012159	Model:	54 II	Type Data:	Found-left
Serial No:	90810070	Type:	Temperature Meter	Cal Date:	3-Jun-10

Remarks: Calibrated for JKTE Type thermocouples only.

Function/Range	Test Point	TI Reading	Difference	± Limit	± Uncertainty	Result	% Limit	
T1 Type J	°F	°F	°F	°F	°F			
	-300	-299.3	0.7	1.3	0.57	Pass	54%	
	110	110.1	0.1	0.7	0.30	Pass	14%	
	525	525.0	0.0	1.0	0.30	Pass	0%	
	940	939.8	0.2	1.2	0.30	Pass	17%	
	1350	1350	0.0	1.4	0.68	Pass	0%	
	°C	°C	°C	°C	°C			
	-200	-199.5	0.5	0.9	0.32	Pass	56%	
	40	40.0	0.0	0.4	0.18	Pass	0%	
	275	275.0	0.0	0.5	0.21	Pass	0%	
	510	509.9	-0.1	0.7	0.21	Pass	14%	
	750	749.8	-0.2	0.9	0.21	Pass	22%	
	T1 Type K	°F	°F	°F	°F	°F		
		-300	-299.7	0.3	1.3	0.69	Pass	23%
		390	389.9	0.1	0.9	0.55	Pass	11%
1075		1075	0.0	1.2	0.55	Pass	0%	
1760		1759	1.0	1.7	0.55	Pass	59%	
2450		2449	1.0	2.0	1.0	Pass	50%	
°C		°C	°C	°C	°C			
-150		-149.7	0.3	0.8	0.40	Pass	38%	
210		210.0	0.0	0.5	0.32	Pass	0%	
575		574.8	-0.2	0.7	0.32	Pass	29%	
940		939.7	-0.3	1.0	0.32	Pass	30%	
1300		1300	0.0	1.2	0.75	Pass	0%	
T1 Type T		°F	°F	°F	°F	°F		
		-370	-368.7	1.3	2.8	1.3	Pass	46%
		0	0.1	0.1	0.6	0.51	Pass	17%
	212	212.1	0.1	0.8	0.36	Pass	12%	
	392	391.9	0.1	0.8	0.31	Pass	13%	
	730	729.9	0.1	1.1	0.31	Pass	9%	
	°C	°C	°C	°C	°C			
	-225	-224.5	0.5	1.7	0.73	Pass	29%	
	32	32.1	0.1	0.4	0.30	Pass	25%	
	100	100.1	0.1	0.5	0.21	Pass	20%	
	200	200.0	0.0	0.5	0.19	Pass	0%	
	390	390.0	0.0	0.7	0.19	Pass	0%	

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303094818	Mfr:	Fluke	Technician:	tew
Asset No:	012159	Model:	54 II	Type Data:	Found-left
Serial No:	90810070	Type:	Temperature Meter	Cal Date:	3-Jun-10

Function/Range	Test Point	TI Reading	Difference	± Limit	± Uncertainty	Result	% Limit
T1 Type E	°F	°F	°F	°F	°F		
	-230	-229.6	0.4	1.2	1.0	Pass	33%
	32	32.1	0.1	0.6	0.29	Pass	17%
	100	100.1	0.1	0.8	0.29	Pass	12%
	900	899.8	0.2	1.2	0.34	Pass	17%
	1800	1800	0.0	1.7	0.73	Pass	0%
	°C	°C	°C	°C	°C		
	-145	-144.7	0.3	0.8	0.59	Pass	38%
	0	0.2	0.2	0.4	0.20	Pass	50%
	40	40.1	0.1	0.4	0.20	Pass	25%
500	499.9	-0.1	0.8	0.22	Pass	13%	
950	949.8	-0.2	1.0	0.27	Pass	20%	

END OF REPORT