

Description: THERMOCOUPLE THERMOMETER Serial Number: 90810070 Asset Number: 012159 Procedure: DIGITAL THERMOMETERS/MODULES - 28 JAN 11 Certificate #0972-01 Work Order: 303101828 Date Issued: 6-Jun-2011 Date Calibrated: 6-Jun-2011 * Date Due : 6-Jun-2012 ** Results: FOUND-LEFT Temperature: 72.0 °F Humidity: 45 %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/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: Cal'd type J, K, T, E thermocouple

Standards Used

Asset # Manufacturer 006413 FLUKE Model 5520A/SC1100 Description MULTI-PRODUCT CALIBRATOR
 Cal Date
 Due Date

 3-May-2011
 3-May-2012

lie h) uk

Laboratory Manager m:\\A2LA OCT_08.rpt

Joe Greagrey Metrology Technician

Southwest Research Institute Calibration Laboratory Measurement Report

• ~

Work Order:	303101828	Mfr:	Fluke		Technician:	JRG	
Asset No:	012159	Model:	54 II		Type Data:	Found-left 6-Jun-11	
Serial No:	90810070	Туре:	Temperature Me	eter	Cal Date:		
Remarks:							
Function/Range	Test Point	TI Reading	Difference	<u>± Limit</u>	± Uncertainty	Result	% Limit
T1 Type J	°F	°F	°F	®F	°F		
	-300	-299.5	0.5	1.3	0.57	Pass	38%
	110	110.0	0.0	0.7	0.30	Pass	0%
	525	524.9	0.1	1.0	0.30	Pass	10%
	940	939.7	0.3	1.2	0.30	Pass	25%
	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	40.1	0.1	0.4	0.18	Pass	25%
	275	275.1	0.1	0.5	0.21	Pass	20%
	510	510.0	0.0	0.7	0.21	Pass	0%
	750	749.9	-0.1	0.9	0.21	Pass	11%
Т1 Туре К	°F	۴	°F	°F	٦°		
	-300	-299.9	0.1	1.3	0.69	Pass	8%
	390	390.1	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	-149.6	0.4	0.8	0.40	Pass	50%
	210	210.0	0.0	0.5	0.32	Pass	0%
	575	575.0	0.0	0.7	0.32	Pass	0%
	940	939.9	-0.1	1.0	0.32	Pass	10%
	1300	1300	0.0	1.2	0.75	Pass	0%
Т1 Туре Т	°F	°F	°F	°F	°F		
	-370	-368.3	1.7	2.8	1.3	Pass	61%
	0	0.3	0.3	0.6	0.51	Pass	50%
	212	212.2	0.2	0.8	0.36	Pass	25%
	392	392.0	0.0	0.8	0.31	Pass	1%
	730	729.9	0.1	1.1	0.31	Pass	9%
	°C	°C	°C	°C	°C		
	-225	-224 0	1.0	1.7	0.73	Pass	59%
	32	32.2	0.2	0.4	0.30	Pass	50%
	100	100.2	0.2	0.5	0.21	Pass	40%
	200	200.2	0.2	0.5	0.19	Pass	40%
	390	390.0	0.0	0.7	0.19	Pass	0%

Southwest Research Institute Calibration Laboratory Measurement Report

Work Order:	303101828	Mfr:	Fluke		Technician:	JRG	
Asset No:	012159	Model:	54 II		Type Data:	Found-left	
Serial No:	90810070	Туре:	Temperature Meter		Cal Date:	6-Jun-11	
Function/Pance	Test Point	TI Reading	Difference	+ Limit	+ Uncertainty	Result	% Limit
		°E		°E			70 EIIIII
Птуре с	-230	-229.4	0.6	12	10	Pass	50%
	-200	32 4	0.0	0.6	0.29	Pass	67%
	100	100.4	0.4	0.8	0.29	Pass	50%
	900	899.9	0.1	12	0.34	Pass	8%
	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	40.2	0.2	0.4	0.20	Pass	50%
	500	500.0	0.0	0.8	0.22	Pass	0%
	950	949.9	-0.1	1.0	0.27	Pass	10%
Difference	°F	°F	°F	°F	°F		
T1- T 2	0	-0.2	-0.2	1.0	0.43	Pass	20%
	°C	°C	°C	°C	°C		
T1-T2	0	0.0	0.0	0.6	0.26	Pass	0%
T2 Type J	°F	°F	°F	°F	°F		
	-300	-299.6	0.4	1.3	0.57	Pass	31%
	110	109.9	0.1	0.7	0.30	Pass	14%
	525	525.1	0.1	1.0	0.30	Pass	10%
	940	939.9	0.1	1.2	0.30	Pass	8%
	1350	1350	0.0	1.4	0.68	Pass	0%
	°C	°C	°C	°C	°C		
	-200	-199.6	0.4	0.9	0.32	Pass	44%
	40	40.1	0.1	0.4	0.18	Pass	25%
	275	275.2	0.2	0.5	0.21	Pass	40%
	510	510.0	0.0	0.7	0.21	Pass	0%
	750	750.2	0.2	0.9	0.21	Pass	22%
Т2 Туре К	°F	°F	°F	°F	°F		
	-300	-299.3	0.7	1.3	0.69	Pass	54%
	390	390.0	0.0	0.9	0.55	Pass	0%
	1075	1075	0.0	1.2	0.55	Pass	0%
	1760	1760	0.0	1.7	0.55	Pass	0%
	2450	2450	0.0	2.0	1.0	Pass	0%
	°C	°C	°C	°C	°C		
	-150	-149.6	0.4	0.8	0.40	Pass	50%
	210	210.1	0.1	0.5	0.32	Pass	20%
	575	574.9	-0.1	0.7	0.32	Pass	14%
	940	939.9	-0.1	1.0	0.32	Pass	10%
	1300	1300	0.0	1.2	0.75	Pass	0%

Southwest Research Institute Calibration Laboratory Measurement Report

Work Order: Asset No:	303101828 012159	28 Mfr: Fluke Model: 54 II		<u> </u>	Technician: Type Data:	JRG Found-left 6-Jun-11	
Serial No:	90810070	Туре:	Temperature Meter		Cal Date:		
Function/Range	Test Point	TI Reading	Difference	± Limit	± Uncertainty	Result	% Limit
Т2 Туре Т	°F	°F	°F	°F	°F		
	-370	-368.2	1.8	2.8	1.3	Pass	64%
	0	0.2	0.2	0.6	0.51	Pass	33%
	212	212.2	0.2	0.8	0.36	Pass	25%
	392	392.2	0.2	0.8	0.31	Pass	25%
	730	730.1	0.1	1.1	0.31	Pass	9%
	°C	°C	°C	°C	°C		
	-225	-224.0	1.0	1.7	0.73	Pass	59%
	32	32.2	0.2	0.4	0.30	Pass	50%
	100	100.2	0.2	0.5	0.21	Pass	40%
	200	200.2	0.2	0.5	0.19	Pass	40%
	390	390.1	0.1	0.7	0.19	Pass	14%
Т2 Туре Е	°F	°F	°F	°F	٩c		
	-230	-229.4	0.6	1.2	1.0	Pass	50%
	32	32.1	0.1	0.6	0.29	Pass	17%
	100	100.3	0.3	0.8	0.29	Pass	37%
	900	900.1	0.1	1.2	0.34	Pass	8%
	1800	1800	0.0	1.7	0.73	Pass	0%
	°C	°C	°C	°C	°C		
	-145	-144.5	0.5	0.8	0.59	Pass	63%
	0	0.2	0.2	0.4	0.20	Pass	50%
	40	40.2	0.2	0.4	0.20	Pass	50%
	500	500.3	0.3	0.8	0.22	Pass	38%
	950	950.1	0.1	1.0	0.27	Pass	10%

END OF REPORT