

Certificate of Calibration

Fluke Calibration, American Fork Primary Temperature Laboratory

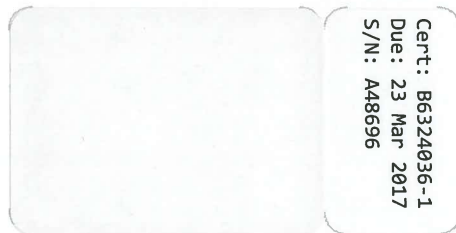
Description:	Readout, Digital Thermometer	Certificate Number:	B6324036-1
Manufacturer:	Fluke	Date of Calibration:	23 Mar 2016
Model:	1502A	Date Due:	23 Mar 2017
Serial Number:	A48696	Temperature:	21.0 to 25.0 °C
Status:	As-Found: In Tolerance As-Left: In Tolerance	Relative Humidity:	15 to 60 %RH
Calibration:	Full	Pressure:	83.5 to 88.5 kPa
Procedure:	HCT106 - 1	Issue Date:	24 Mar 2016
Customer: MESA LABORATORIES INC LAKEWOOD, CO, 80228, US		RMA/SO Number:	30974949
PO Number:	PO-003034		

This calibration is traceable to the SI through recognized national measurement institutes, radiometric techniques, or natural physical constants and is in compliance with ISO17025:2005 and ANSI/NCSL Z540.1. The calibration has been completed in accordance with the Fluke Calibration Quality System document QSD 111.0. Calibration certificates without signatures are not valid. This certificate applies to only the item identified and shall not be reproduced other than in full, without the specific written approval by Fluke Corporation. This certificate shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This calibration certificate may contain data that is not covered by the Scope of Accreditation. The unaccredited test points, where applicable, are indicated by an asterisk (*), or confined to clearly marked sections. Functional tests are not accredited.

Measurement uncertainties at the time of test are given where applicable. They are calculated in accordance with the method described in the ISO Guide to the Expression of Uncertainty in Measurement. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

Comments: Took "As Found" data, repairs were made, recalibrated unit and then took "As Left" data.





 Approved Signatory
 Roger Sims
 Calibration Technician

Standards Used

Description	Serial Number	Due-Date
1504 Digital Thermometer	A4A442	09-Oct-2016
5610 Thermistor Probe	A6B2201	08-Sep-2016
VHP100/400 Standard Resistor	80918	16-Jul-2016
VHP100/200 Standard Resistor	80914	16-Jul-2016
9330/25 Standard Resistor	60605	16-Jul-2016
4030B Standard Resistor	1590063	16-Jul-2016
N/A Test Station	1	NCR

Quality Manuals

This calibration has been completed in accordance with:

- The Fluke Corporate Quality Manual, QSD 111.0, Revision 118, Dated August, 2014 and/or
- The Fluke 17025 Quality Manual, QSD 111.41, Revision 005, Dated Sept. 2014

The instrument described herein was calibrated by one or more of the following methods. Resistance measurements were calibrated by direct measurement of laboratory reference resistors. Ratio measurements were calibrated by comparison to ratio test sets. Thermocouple measurements were calibrated by precision voltage excitation and reference junction compensation measurements. The calibration data, internal calibration constants, and calibration uncertainties are shown on the following page(s) of this report. The calibration uncertainties are shown at a coverage factor of 2 ($k=2$). All known significant sources of uncertainty have been considered. Any limitations or remarks pertaining to this instrument and/or calibration are shown below. Additionally, out of tolerance indications, if any, are identified along with the corresponding data on the following page(s) of this report.

Calibration uncertainties have been taken into account in the determination of tolerance status using risk analysis algorithms. When using the instrument in a calibration process, it is recommended that the instrument specifications be used as the contribution of the instrument rather than the calibration uncertainties. The instrument tolerances are shown on the report at a confidence interval of 95%.

Certificate of Calibration

Model: 1502A

Serial No.: A48696

Certificate No: B6324036-1

As Found Data

Calibration Constants		Test Data				Data ID: 6082164423		
CAL0	0.0000							
CAL100	0.0000							
CAL400	0.0000							
		Nominal Ω	Actual	Measured	Error	Calibration Tolerance	Uncertainty	Pass/Fail
		0	0.00000	-0.00008	-0.00008	± 0.00050	± 0.00010	P
		25	25.0014774	25.0014600	-0.0000174	± 0.0006250	± 0.00015	P
		100	99.99778	99.99810	0.00032	± 0.00250	± 0.00055	P
		200	199.9953	199.9960	0.0007	± 0.0050	± 0.0010	P
		400	400.002	400.006	0.004	± 0.010	± 0.0020	P

As Left Data

Calibration Constants		Test Data				Data ID: 6083153159		
CAL0	0.0000							
CAL100	0.0014							
CAL400	-0.0008							
		Nominal Ω	Actual	Measured	Error	Calibration Tolerance	Uncertainty	Pass/Fail
		0	0.00000	-0.00009	-0.00009	± 0.00050	± 0.00010	P
		25	25.0014774	25.0012675	-0.0002099	± 0.0006250	± 0.00015	P
		100	99.99778	99.99747	-0.00031	± 0.00250	± 0.00055	P
		200	199.9953	199.9948	-0.0005	± 0.0050	± 0.0010	P
		400	400.002	400.003	0.001	± 0.010	± 0.0020	P