

Certificate of Calibration Fluke Park Laboratory

1001 A03SC

Description:	SUPER-DAQ PRECISION TEMPERATURE SCANNER	Certificate Number:	1500280673
Manufacturer:	FLUKE	Date of Calibration:	18 Mar 2020
Model:	1586A	Date Due:	
Serial Number:	49045019	Temperature:	20.0 to 26.0 °C
Status:	AS-LEFT	Relative Humidity:	10 to 70 %RH
		Pressure:	95 to 103 kPa
Calibration:	FULL	Issue Date:	18 Mar 2020
Procedure:	Fluke 1586A (1 Year): 5522A/5700A/8508A Rev:20170210		
Customer:	FLUKE DO BRASIL LTDA SAO PAULO, BR	RMA/SO Number:	31906430
PO Number:	11888		

This calibration is traceable to the SI through recognized national measurement institutes (NIST, PTB, NPL, NIM, NRC, etc.), radiometric techniques, or natural physical constants and is in compliance with ISO/IEC 17025:2005 and ANSI/NCSL Z540.1. The calibration has been completed in accordance with the Fluke Corporate Quality System document QSD 111.0. Calibration certificates without identification of the authorizing person 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 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. This certificate shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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:



FLUKE
Calibration

Cert # : 1500280673
Date Cal: 18 Mar 2020
Date Due:
S/N : 49045019
877-355-3225 www.flukecal.com

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APROVADO	
Responsável: <u>RENATO</u>	
Padrão: <u>1001 A03SC</u>	
Data: <u>15/01/2021</u>	
Validade: <u>18/03/2022</u>	

Approved Signatory
Tai Nguyen

Standards Used

Description	Serial Number	Due-Date
FLUKE 5522A CALIBRATOR	4513903	12-Apr-2020
FLUKE 5720A CALIBRATOR	2342202	30-Apr-2020
FLUKE 8508A REFERENCE MULTIMETER	233966711	27-Oct-2020
FLUKE 749A RESISTANCE STANDARD	SV00014048	02-May-2020

Quality Manuals

This calibration has been completed in accordance with:

The Fluke Corporate Quality Manual, QSD 111.00, Revision 122, Dated June, 2018 and/or

The Fluke 17025 Quality Manual, QSD 111.41, Revision 005, Dated Sept. 2014

Measurement result deviations may be expressed with units, Measured Value (MV) - Nominal Value (NV) or as a proportion of the nominal value $((MV-NV)/NV)$, expressed without units with a scalar multiplier such as %, or as a ratio of the units (mA/A, $\mu V/V$, etc.).

No statement of compliance with specifications is made or implied on this certificate. If manufacturer's specifications are listed measured values greater than the manufacturer's specification limits are indicated by 'MV>Spec'.

The PRT measurement function is calibrated by direct measurement of the reference resistance standard. The remaining measurement functions are calibrated by comparison to the multifunction calibrator and/or long scale DMM. The reference standards are listed in the "Standards Used" table above. The calibration data is shown below.

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Test Step	Applied	Test Result	Measurement Uncertainty	Specification
1586A firmware version: 1.04+1.02+				
DC VOLTAGE				
100mV Range				
0.0000 mV	0.00000 mV	-0.0016 mV	4.1E-007 V	0.0035 mV
40.0000 mV	40.00000 mV	39.9979 mV	6.7E-007 V	0.0050 mV
100.0000 mV	100.00000 mV	99.9976 mV	1.1E-006 V	0.0072 mV
-40.0000 mV	-40.00000 mV	-40.0010 mV	6.6E-007 V	0.0050 mV
-100.0000 mV	-100.00000 mV	-100.0003 mV	1.1E-006 V	0.0072 mV
1V Range				
0.00000 V	0.0000000 V	-0.000002 V	7.0E-007 V	0.000007 V
1.00000 V	1.0000000 V	0.999998 V	4.7E-006 V	0.000032 V
-1.00000 V	-1.0000000 V	-1.000000 V	4.7E-006 V	0.000032 V
10V Range				
0.00000 V	0.000000 V	-0.00001 V	5.8E-006 V	0.00005 V
10.00000 V	10.000000 V	9.99999 V	3.3E-005 V	0.00029 V
-10.00000 V	-10.000000 V	-9.99999 V	3.3E-005 V	0.00029 V
50V Range				
0.0000 V	0.00000 V	-0.0001 V	5.9E-005 V	0.0006 V
50.0000 V	50.00000 V	49.9997 V	2.5E-004 V	0.0025 V
-50.0000 V	-50.00000 V	-50.0000 V	2.5E-004 V	0.0025 V
4-WIRE RESISTANCE ZEROS				
100 Ohm Range				
0.0000 Ω	0.00000 Ω	0.0012 Ω	5.3E-004 Ω	0.0035 Ω
1 kOhm Range				
0.0000 k Ω	0.0000000 k Ω	0.000001 k Ω	1.2E-003 Ω	0.000010 k Ω
10 kOhm Range				
0.0000 k Ω	0.000000 k Ω	0.00001 k Ω	1.2E-002 Ω	0.00010 k Ω
100 kOhm Range				
0.0000 k Ω	0.00000 k Ω	0.0000 k Ω	1.2E-001 Ω	0.0010 k Ω
1 MOhm Range				
0.0000 M Ω	0.0000000 M Ω	0.000000 M Ω	1.2E+000 Ω	0.000010 M Ω
10 MOhm Range				
0.0000 M Ω	0.000000 M Ω	0.00001 M Ω	1.2E+001 Ω	0.00010 M Ω
100 MOhm Range				
0.0000 M Ω	0.00000 M Ω	-0.0039 M Ω	1.0E+003 Ω	0.0100 M Ω
4-WIRE RESISTANCE GAIN				
100 Ohm Range				
100.0000 Ω	99.99841 Ω	99.9986 Ω	9.5E-004 Ω	0.0075 Ω
1 kOhm Range				
1.000000 k Ω	0.9999941 k Ω	0.999994 k Ω	8.0E-003 Ω	0.000040 k Ω
10 kOhm Range				
10.00000 k Ω	10.000201 k Ω	10.00018 k Ω	8.0E-002 Ω	0.00050 k Ω
100 kOhm Range				
100.0000 k Ω	99.99874 k Ω	99.9982 k Ω	1.0E-000 Ω	0.0050 k Ω

APROVADO

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Padrão: I001A035C

Data: 15/01/2021

Validade: 18/03/2022

Test Step	Applied	Test Result	Measurement Uncertainty	Specification
1 MOhm Range 1.000000 MΩ	0.9999658 MΩ	0.999953 MΩ	1.7E+001 Ω	0.000070 MΩ
10 MOhm Range 10.00000 MΩ	9.999260 MΩ	9.99868 MΩ	3.4E+002 Ω	0.00160 MΩ
100 MOhm Range 100.0000 MΩ	99.99829 MΩ	99.9721 MΩ	1.0E+004 Ω	0.8100 MΩ
PRT RESISTANCE				
400 Ohm Range				
0.0000 Ω	0.00000 Ω	0.0001 Ω	1.2E-004 Ω	0.0008 Ω
25.0000 Ω	25.00010 Ω	25.0005 Ω	1.0E-004 Ω	0.0008 Ω
100.0000 Ω	100.00335 Ω	100.0044 Ω	2.5E-004 Ω	0.0020 Ω
200.0000 Ω	200.00309 Ω	200.0050 Ω	5.3E-004 Ω	0.0040 Ω
400.0000 Ω	399.99213 Ω	399.9958 Ω	1.1E-003 Ω	0.0080 Ω
4 kOhm Range				
1.000000 kΩ	0.9999941 kΩ	0.999996 kΩ	8.1E-003 Ω	0.000060 kΩ
4.000000 kΩ	3.9998763 kΩ	3.999872 kΩ	8.5E-003 Ω	0.000160 kΩ
THERMISTOR				
2.2 kOhm Range				
0.0000 kΩ	0.0000000 kΩ	0.000102 kΩ	9.0E-002 Ω	0.000200 kΩ
1.900000 kΩ	1.8999818 kΩ	1.900060 kΩ	1.6E-002 Ω	0.000276 kΩ
98 kOhm Range				
90.0000 kΩ	90.000000 kΩ	89.99964 kΩ	2.1E+000 Ω	0.00410 kΩ
1 MOhm Range				
0.900000 MΩ	0.9000000 MΩ	0.900034 MΩ	2.7E+001 Ω	0.000140 MΩ
DC CURRENT				
100uA Range				
0.0000 μA	0.00000 μA	-0.0004 μA	4.2E-010 A	0.0035 μA
100.0000 μA	100.00011 μA	100.0004 μA	1.6E-009 A	0.0185 μA
-100.0000 μA	-100.00095 μA	-100.0021 μA	1.6E-009 A	0.0185 μA
1mA Range				
0.0000 mA	0.0000000 mA	-0.000005 mA	1.2E-009 A	0.000011 mA
1.0000 mA	1.0000210 mA	1.000023 mA	1.6E-008 A	0.000161 mA
-1.0000 mA	-0.9999773 mA	-0.999991 mA	1.6E-008 A	0.000161 mA
10mA Range				
0.0000 mA	0.000000 mA	-0.00000 mA	1.0E-007 A	0.00035 mA
10.0000 mA	9.999902 mA	9.99996 mA	1.8E-007 A	0.00185 mA
-10.0000 mA	-9.999932 mA	-9.99999 mA	1.8E-007 A	0.00185 mA
100mA Range				
0.0000 mA	0.00000 mA	-0.0003 mA	1.2E-007 A	0.0035 mA
100.0000 mA	100.00000 mA	99.9989 mA	5.6E-006 A	0.0185 mA
-100.0000 mA	-99.99994 mA	-100.0000 mA	5.6E-006 A	0.0185 mA

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