


CERTIFICATE OF CALIBRATION

Issued By :
Transmille Calibration, Inc
158 Brentwood Drive
Unit #4
Colchester VT 05446

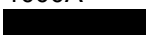
Certificate Number AC-25696
Date of Issue: 4/29/2020

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Approved Signatory


P: 802 846 7582
www.transmillecalibration.com

D. Bartlett G. Viens S. Sabourin

Customer : 

Instrument : System ID : ID01813
Description : Multifunction Calibrator
Manufacturer : Transmille
Model Number : 1000A
Serial Number : 

Calibration Info:
Date Received : 4/20/2020
Job Number : J10753-1
Order Number : S317653
Procedure Number : 535
Procedure Version : 19-1.0/N

Environmental Conditions
Temperature : 23°C ± 1°C
Relative Humidity : 29%RH ± 10%RH
Mains Voltage : 120V ± 10V
Mains Frequency : 60Hz ± 1Hz

Comments

This certificate is issued in compliance with ISO/IEC 17025:2017 and our ANAB accredited quality system. Reported measurement uncertainties are stated with a coverage factor $k=2$, corresponding to a coverage probability of 95% Instrument was allowed to stabilise for at least 12 hours before calibration.
4 Wire kelvin connections were used for ohms measurements below 10kOhms
PT100 resistance converted to temperature using BS1904 tables.

Traceability Information

Instrument Description	Serial Number	Certificate Number	Cal. Date	Period [Weeks]
4010 Advanced Multi-Product Calibrator	Y1271E18	38520	5/11/19	52
8081 Multimeter	N1510J15	34117	5/22/19	52
LCR Bridge	EL222001	1883457	5/17/19	52
8600 Frequency Reference	111178F14	38693	5/13/19	52

Calibrated By : Don Bartlett

Date of Calibration : 4/29/2020

This certificate provides traceability of measurement to recognized National standards, through units of measurement realized at the National Physical Laboratory (NPL), National Institute of Standards & Technology (NIST) or other recognized National standards laboratories to the International System of Units. Copyright of this certificate is owned by the issuing laboratory and may not be reproduced except in full, without the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
DC Voltage				
100mV Range	0.000mV	± 10uV	0.0034mV	± 0.8uV
100mV Range	20.000mV	± 11.6uV	20.0027mV	± 0.86uV
100mV Range	50.000mV	± 14uV	50.0015mV	± 0.94uV
100mV Range	100.000mV	± 18uV	100.0012mV	± 1.1uV
100mV Range	-20.000mV	± 11.6uV	-20.0048mV	± 0.86uV
100mV Range	-50.000mV	± 14uV	-50.0016mV	± 0.94uV
100mV Range	-100.000mV	± 18uV	-99.9984mV	± 1.1uV
1V Range	0.20000V	± 46uV	0.200038V	± 1.8uV
1V Range	0.50000V	± 70uV	0.500037V	± 3.3uV
1V Range	1.00000V	± 110uV	1.000031V	± 5.6uV
1V Range	-0.20000V	± 46uV	-0.200036V	± 1.8uV
1V Range	-0.50000V	± 70uV	-0.500031V	± 3.3uV
1V Range	-1.00000V	± 110uV	-1.000022V	± 5.6uV
10V Range	2.0000V	± 460uV	2.00001V	± 18uV
10V Range	5.0000V	± 700uV	5.00004V	± 34uV
10V Range	10.0000V	± 1.1mV	10.00001V	± 61uV
10V Range	-2.0000V	± 460uV	-2.00000V	± 18uV
10V Range	-5.0000V	± 700uV	-4.99998V	± 34uV
10V Range	-10.0000V	± 1.1mV	-9.99995V	± 61uV
100V Range	20.000V	± 4.6mV	19.9998V	± 0.24mV
100V Range	50.000V	± 7mV	50.0007V	± 0.46mV
100V Range	100.000V	± 11mV	100.0012V	± 0.82mV
100V Range	-100.000V	± 11mV	-100.0042V	± 0.82mV
100V Range	-50.000V	± 7mV	-50.0040V	± 0.46mV
100V Range	-20.000V	± 4.6mV	-20.0041V	± 0.24mV
1kV Range	200.00V	± 46mV	200.034V	± 2.8mV
1kV Range	500.00V	± 70mV	500.040V	± 5mV
1kV Range	1000.00V	± 110mV	1000.037V	± 8.6mV
1kV Range	-1000.00V	± 110mV	-1000.026V	± 8.6mV
1kV Range	-500.00V	± 70mV	-500.033V	± 5mV
1kV Range	-200.00V	± 46mV	-200.034V	± 2.8mV
AC Voltage				
100mV A.C. : 40Hz	20.000mV	± 46uV	19.9799mV	± 12uV
100mV A.C. : 206Hz	20.000mV	± 46uV	19.9744mV	± 12uV
100mV A.C. : 20kHz	20.000mV	± 100uV	19.9905mV	± 17uV
100mV A.C. : 206Hz	50.000mV	± 70uV	49.9683mV	± 16uV
100mV A.C. : 10Hz	100.000mV	± 110uV	99.9270mV	± 47uV
100mV A.C. : 40Hz	100.000mV	± 110uV	100.0054mV	± 21uV

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AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
100mV A.C. : 56Hz	100.000mV	± 110uV	100.0109mV	± 21uV
100mV A.C. : 206Hz	100.000mV	± 110uV	100.1322mV	± 21uV
100mV A.C. : 1kHz	100.000mV	± 110uV	100.0009mV	± 21uV
100mV A.C. : 10kHz	100.000mV	± 220uV	100.0230mV	± 28uV
100mV A.C. : 20kHz	100.000mV	± 220uV	99.9885mV	± 28uV
1V Range : 10Hz	0.20000V	± 460uV	0.200144V	± 0.11mV
1V Range : 40Hz	0.20000V	± 460uV	0.200037V	± 62uV
1V Range : 206Hz	0.20000V	± 460uV	0.200114V	± 62uV
1V Range : 20kHz	0.20000V	± 1000uV	0.200248V	± 92uV
1V Range : 206Hz	0.50000V	± 700uV	0.500038V	± 88uV
1V Range : 10Hz	1.00000V	± 1.1mV	0.996842V	± 0.34mV
1V Range : 40Hz	1.00000V	± 1.1mV	0.999950V	± 0.13mV
1V Range : 56Hz	1.00000V	± 1.1mV	1.000148V	± 0.13mV
1V Range : 206Hz	1.00000V	± 1.1mV	1.000880V	± 0.13mV
1V Range: 1kHz	1.00000V	± 1.1mV	1.000104V	± 0.13mV
1V Range : 5kHz	1.00000V	± 2.2mV	1.000244V	± 0.16mV
1V Range : 10kHz	1.00000V	± 2.2mV	1.000175V	± 0.16mV
1V Range : 20kHz	1.00000V	± 2.2mV	1.000314V	± 0.16mV
10V Range : 10Hz	2.0000V	± 4.6mV	2.00018V	± 1mV
10V Range : 40Hz	2.0000V	± 4.6mV	1.99918V	± 1mV
10V Range : 206Hz	2.0000V	± 4.6mV	2.00194V	± 0.53mV
10V Range : 20kHz	2.0000V	± 10mV	2.00040V	± 0.8mV
10V Range : 206Hz	3.0000V	± 5.4mV	2.99917V	± 0.61mV
10V Range : 206Hz	4.0000V	± 6.2mV	3.99924V	± 0.69mV
10V Range : 206Hz	6.0000V	± 7.8mV	5.99885V	± 0.85mV
10V Range : 206Hz	8.0000V	± 9.4mV	7.99895V	± 1mV
10V Range : 10Hz	10.0000V	± 11mV	10.00083V	± 3.3mV
10V Range : 40Hz	10.0000V	± 11mV	9.99749V	± 1.2mV
10V Range : 56Hz	10.0000V	± 11mV	10.00406V	± 1.2mV
10V Range : 206Hz	10.0000V	± 11mV	10.00063V	± 1.2mV
10V Range : 1kHz	10.0000V	± 11mV	9.99883V	± 1.2mV
10V Range : 5kHz	10.0000V	± 22mV	9.99909V	± 1.5mV
10V Range : 10kHz	10.0000V	± 22mV	10.00051V	± 1.5mV
10V Range : 20kHz	10.0000V	± 22mV	10.00063V	± 1.5mV
100V Range : 40Hz	20.000V	± 46mV	20.0187V	± 6.5mV
100V Range : 206Hz	20.000V	± 46mV	20.0175V	± 6.5mV
100V Range : 200Hz	50.000V	± 70mV	50.0029V	± 9mV
100V Range : 1kHz	20.000V	± 46mV	20.0133V	± 6.5mV
100V Range : 40Hz	100.000V	± 110mV	99.9951V	± 13mV
100V Range : 56Hz	100.000V	± 110mV	100.0170V	± 13mV

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AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
100V Range : 206Hz	100.000V	± 110mV	99.9883V	± 13mV
100V Range : 1000Hz	100.000V	± 110mV	100.0218V	± 13mV
1kV Range : 40Hz	200.00V	± 280mV	200.024V	± 40mV
1kV Range : 206Hz	200.00V	± 280mV	200.069V	± 40mV
1kV Range : 200Hz	500.00V	± 520mV	500.119V	± 68mV
1kV Range : 1kHz	200.00V	± 450mV	199.996V	± 40mV
1kV Range : 40Hz	700.00V	± 680mV	700.067V	± 86mV
1kV Range : 56Hz	700.00V	± 680mV	699.972V	± 86mV
1kV Range : 1kHz	700.00V	± 680mV	700.122V	± 86mV
1kV Range : 56Hz	1000.00V	± 1.1V	1000.731V	± 114mV
1kV Range : 1000Hz	1000.00V	± 875mV	1000.246V	± 114mV

Linearity - 10V DC Range

Linearity	9.00000V	± 1mV	8.999972V	± 55uV
Linearity	8.00000V	± 940uV	7.999992V	± 50uV
Linearity	7.00000V	± 860uV	6.999959V	± 45uV
Linearity	6.00000V	± 780uV	5.999947V	± 40uV
Linearity	5.00000V	± 700uV	5.000019V	± 34uV
Linearity	4.00000V	± 620uV	4.000020V	± 29uV
Linearity	3.00000V	± 540uV	3.000000V	± 23uV
Linearity	2.00000V	± 460uV	1.999996V	± 18uV
Linearity	1.00000V	± 380uV	0.999992V	± 5.6uV
Linearity	-9.00000V	± 1mV	-8.999941V	± 55uV
Linearity	-8.00000V	± 940uV	-7.999970V	± 50uV
Linearity	-7.00000V	± 860uV	-6.999948V	± 45uV
Linearity	-6.00000V	± 780uV	-5.999953V	± 40uV
Linearity	-5.00000V	± 700uV	-4.999986V	± 34uV
Linearity	-4.00000V	± 620uV	-4.000030V	± 29uV
Linearity	-3.00000V	± 540uV	-2.999997V	± 23uV
Linearity	-2.00000V	± 460uV	-2.000003V	± 18uV
Linearity	-1.00000V	± 380uV	-0.999986V	± 5.6uV

DC Current

100uA Range	0.000uA	± 30nA	0.0189uA	± 0.01nA
100uA Range	100.000uA	± 60nA	99.9948uA	± 1.4nA
100uA Range	50.000uA	± 45nA	50.0067uA	± 0.93nA
100uA Range	20.000uA	± 36nA	20.0134uA	± 0.65nA
100uA Range	-100.000uA	± 60nA	-99.9920uA	± 1.4nA
100uA Range	-50.000uA	± 45nA	-50.0046uA	± 0.93nA
100uA Range	-20.000uA	± 36nA	-20.0120uA	± 0.65nA
1mA Range	0.20000mA	± 160nA	0.200070mA	± 6.5nA

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AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
1mA Range	0.50000mA	± 250nA	0.500028mA	± 9.3nA
1mA Range	1.00000mA	± 400nA	0.999952mA	± 14nA
1mA Range	-0.20000mA	± 160nA	-0.200088mA	± 6.5nA
1mA Range	-0.50000mA	± 250nA	-0.500042mA	± 9.3nA
1mA Range	-1.00000mA	± 400nA	-0.999966mA	± 14nA
10mA Range	4.0000mA	± 2.2uA	4.00053mA	± 95nA
10mA Range	6.0000mA	± 2.8uA	6.00024mA	± 0.12uA
10mA Range	8.0000mA	± 3.4uA	7.99998mA	± 0.14uA
10mA Range	10.0000mA	± 4uA	9.99973mA	± 0.16uA
10mA Range	-2.0000mA	± 1.6uA	-2.00079mA	± 73nA
10mA Range	-4.0000mA	± 2.2uA	-4.00050mA	± 95nA
10mA Range	-6.0000mA	± 2.8uA	-6.00017mA	± 0.12uA
10mA Range	-8.0000mA	± 3.4uA	-7.99987mA	± 1.4uA
10mA Range	-10.0000mA	± 4uA	-9.99961mA	± 0.16uA
100mA Range	50.000mA	± 25uA	50.0027mA	± 2.5uA
100mA Range	100.000mA	± 40uA	99.9946mA	± 4.2uA
100mA Range	-20.000mA	± 16uA	-20.0081mA	± 1.4uA
100mA Range	-50.000mA	± 25uA	-50.0040mA	± 2.5uA
100mA Range	-100.000mA	± 40uA	-99.9955mA	± 4.2uA
1A Lead Check	100.00mA	± 50mA	100.10mA	± 4.2uA
1A Range	0.50000A	± 300uA	0.500054A	± 100uA
1A Range	1.00000A	± 450uA	0.999924A	± 185uA
1A Range	-0.20000A	± 210uA	-0.200142A	± 49uA
1A Range	-0.50000A	± 300uA	-0.500120A	± 100uA
1A Range	-1.00000A	± 450uA	-1.000025A	± 185uA
10A Range	2.0000A	± 3mA	2.00186A	± 0.36mA
10A Range	5.0000A	± 4.5mA	4.99965A	± 1.1mA
10A Range	10.0000A	± 7mA	9.99620A	± 2mA
10A Range	-2.0000A	± 3mA	-2.00056A	± 0.36mA
10A Range	-5.0000A	± 4.5mA	-4.99832A	± 1.1mA
10A Range	-10.0000A	± 7mA	-9.99484A	± 2mA
AC Current				
100uA Rng: 40Hz	20.000uA	± 420nA	20.047uA	± 132nA
100uA Rng: 200Hz	20.000uA	± 420nA	20.044uA	± 132nA
100uA Rng: 200Hz	50.000uA	± 450nA	49.980uA	± 135nA
100uA Rng: 2kHz	20.000uA	± 420nA	20.068uA	± 204nA
100uA Rng: 10Hz	100.000uA	± 500nA	100.009uA	± 209nA
100uA Rng: 40Hz	100.000uA	± 500nA	99.976uA	± 140nA
100uA Rng: 56Hz	100.000uA	± 500nA	99.963uA	± 140nA

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AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
100uA Rng: 1kHz	100.000uA	± 500nA	100.004uA	± 140nA
100uA Rng: 2kHz	100.000uA	± 500nA	100.031uA	± 219nA
1mA Rng: 40Hz	0.20000mA	± 1uA	0.20042mA	± 0.16uA
1mA Rng: 200Hz	0.20000mA	± 1uA	0.20009mA	± 0.16uA
1mA Rng: 200Hz	0.50000mA	± 1.3uA	0.49992mA	± 0.21uA
1mA Rng: 2kHz	0.20000mA	± 1uA	0.19998mA	± 0.55uA
1mA Rng: 10Hz	1.00000mA	± 1.8uA	0.99959mA	± 0.71uA
1mA Rng: 40Hz	1.00000mA	± 1.8uA	1.00022mA	± 0.28uA
1mA Rng: 56Hz	1.00000mA	± 1.8uA	1.00009mA	± 0.28uA
1mA Rng: 1kHz	1.00000mA	± 1.8uA	0.99978mA	± 0.28uA
1mA Rng: 2kHz	1.00000mA	± 1.8uA	0.99984mA	± 0.78uA
10mA Rng: 10Hz	2.0000mA	± 10uA	2.0013mA	± 2.4uA
10mA Rng: 40Hz	2.0000mA	± 10uA	2.0015mA	± 1.1uA
10mA Rng: 200Hz	2.0000mA	± 10uA	2.0008mA	± 1.1uA
10mA Rng: 200Hz	5.0000mA	± 13uA	5.0052mA	± 1.6uA
10mA Rng: 2kHz	2.0000mA	± 10uA	2.0007mA	± 1.8uA
10mA Rng: 56Hz	10.0000mA	± 18uA	9.9991mA	± 2.4uA
10mA Rng: 40Hz	10.0000mA	± 18uA	10.0021mA	± 2.4uA
10mA Rng: 1kHz	10.0000mA	± 18uA	9.9977mA	± 2.4uA
10mA Rng: 2kHz	10.0000mA	± 18uA	9.9986mA	± 1.8uA
100mA Rng: 40Hz	20.000mA	± 100uA	20.042mA	± 11uA
100mA Rng: 200Hz	20.000mA	± 100uA	20.003mA	± 11uA
100mA Rng: 200Hz	50.000mA	± 130uA	49.992mA	± 16uA
100mA Rng: 2kHz	20.000mA	± 100uA	20.003mA	± 22uA
100mA Rng: 10Hz	100.000mA	± 180uA	100.007mA	± 74uA
100mA Rng: 40Hz	100.000mA	± 180uA	100.020mA	± 24uA
100mA Rng: 56Hz	100.000mA	± 180uA	100.010mA	± 24uA
100mA Rng: 1kHz	100.000mA	± 180uA	99.986mA	± 24uA
100mA Rng: 2kHz	100.000mA	± 180uA	99.991mA	± 39uA
1A Rng: 40Hz	0.20000A	± 1000uA	0.20011A	± 121uA
1A Rng: 200Hz	0.20000A	± 1000uA	0.20038A	± 121uA
1A Rng: 200Hz	0.50000A	± 1.3mA	0.50001A	± 0.7mA
1A Rng: 2kHz	0.20000A	± 1000uA	0.20009A	± 450uA
1A Rng: 10Hz	1.00000A	± 1.8mA	0.99989A	± 0.72mA
1A Rng: 40Hz	1.00000A	± 1.8mA	0.99980A	± 0.26mA
1A Rng: 56Hz	1.00000A	± 1.8mA	1.00004A	± 0.26mA
1A Rng: 1kHz	1.00000A	± 1.8mA	0.99986A	± 0.26mA
1A Rng: 2kHz	1.00000A	± 1.8mA	0.99977A	± 1.7mA
10A Rng: 40Hz	2.0000A	± 17mA	2.0101A	± 2.7mA

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AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
10A Rng: 200Hz	2.0000A	± 17mA	2.0089A	± 4.5mA
10A Rng: 200Hz	5.0000A	± 20mA	5.0039A	± 9mA
10A Rng: 10Hz	10.0000A	± 25mA	9.9978A	± 18mA
10A Rng: 40Hz	10.0000A	± 25mA	10.0066A	± 9mA
10A Rng: 56Hz	10.0000A	± 25mA	10.0059A	± 9mA
10A Rng: 100Hz	10.0000A	± 25mA	10.0036A	± 9mA
10A Rng: 1kHz	10.0000A	± 25mA	10.0095A	± 9mA
10A Rng: 2kHz	10.0000A	± 25mA	10.0081A	± 18mA

2 Wire Resistance measured as value at terminals.

10R 2 Wire	10.7500Ω	± 55mΩ	10.75135Ω	± 0.16mΩ
100R 2 Wire	100.438Ω	± 100mΩ	100.4500Ω	± 1.3mΩ
1kR 2 Wire	1.00072kΩ	± 250mΩ	1.000778kΩ	± 12mΩ
10kR 2 Wire	9.9991kΩ	± 2.1Ω	9.99960kΩ	± 0.13Ω
100kR 2 Wire	100.054kΩ	± 20.1Ω	100.0609kΩ	± 1.4Ω
1MR 2 Wire	1.00012MΩ	± 500.1Ω	1.000195MΩ	± 17Ω
10MR 2 Wire	10.0207MΩ	± 10kΩ	10.02171MΩ	± 300Ω
100MR 2 Wire	100.33MΩ	± 210kΩ	100.360MΩ	± 18kΩ

Simulated Ohms

10 R Range	0.000Ω	± 52mΩ	-0.0647Ω	± 9uΩ
10 R Range	3.000Ω	± 52mΩ	2.9348Ω	± 94uΩ
10 R Range	10.000Ω	± 52mΩ	9.9348Ω	± 0.16mΩ
100 R Range	20.000Ω	± 70mΩ	19.9696Ω	± 0.69mΩ
100 R Range	30.000Ω	± 70mΩ	29.969Ω	± 0.77mΩ
100 R Range	100.000Ω	± 70mΩ	100.003Ω	± 1.3mΩ
1kR Range	200.00Ω	± 250mΩ	199.945Ω	± 6.7mΩ
1kR Range	300.00Ω	± 250mΩ	299.983Ω	± 7.3mΩ
1kR Range	1000.00Ω	± 250mΩ	1000.019Ω	± 12mΩ
10kR Range	1.0000kΩ	± 2.1Ω	1.00056kΩ	± 12mΩ
10kR Range	2.0000kΩ	± 2.1Ω	2.00012kΩ	± 67mΩ
10kR Range	3.000kΩ	± 2.1Ω	3.0004kΩ	± 77mΩ
10kR Range	4.000kΩ	± 2.1Ω	4.0000kΩ	± 85mΩ
10kR Range	5.000kΩ	± 2.1Ω	5.0004kΩ	± 93mΩ
10kR Range	6.000kΩ	± 2.1Ω	6.0001kΩ	± 0.10Ω
10kR Range	7.000kΩ	± 2.1Ω	6.9998kΩ	± 0.11Ω
10kR Range	8.000kΩ	± 2.1Ω	8.0003kΩ	± 0.12Ω
10kR Range	9.000kΩ	± 2.1Ω	9.0001kΩ	± 0.12Ω
10kR Range	10.000kΩ	± 2.1Ω	10.0007kΩ	± 0.13Ω
100kR Range	20.00kΩ	± 20.1Ω	19.995kΩ	± 0.71Ω
100kR Range	30.00kΩ	± 20.1Ω	29.998kΩ	± 0.79Ω
100kR Range	100.00kΩ	± 20.1Ω	100.002kΩ	± 1.4Ω
1MR Range	200.00kΩ	± 200.1Ω	199.995kΩ	± 2.3Ω

CERTIFICATE OF CALIBRATION

AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
1MR Range	300.00k Ω	$\pm 200.1\Omega$	299.985k Ω	$\pm 3.2\Omega$
1MR Range	1000.00k Ω	$\pm 200.1\Omega$	999.996k Ω	$\pm 16.7\Omega$
10MR Range	2.000M Ω	$\pm 5k\Omega$	1.9998M Ω	$\pm 0.15k\Omega$
10MR Range	3.000M Ω	$\pm 5k\Omega$	2.9998M Ω	$\pm 0.17k\Omega$
10MR Range	10.000M Ω	$\pm 5k\Omega$	10.0010M Ω	$\pm 0.3k\Omega$

Capacitance (Measured at 1kHz)

10nF	10.160nF	$\pm 110pF$	10.149nF	$\pm 6pF$
100nF	100.10nF	$\pm 1.8nF$	100.02nF	$\pm 60pF$
1uF	0.9880uF	$\pm 8.1nF$	0.9876uF	$\pm 0.6nF$

Frequency

100kHz	100.000kHz	$\pm 2Hz$	99.9992kHz	$\pm 2.6mHz$
50kHz	50.000kHz	$\pm 6Hz$	49.9996kHz	$\pm 1.3mHz$
20kHz	20.000kHz	$\pm 2.4Hz$	19.9998kHz	$\pm 0.52mHz$
10kHz	10.000kHz	$\pm 300mHz$	9.99992kHz	$\pm 0.26mHz$
1kHz	1.000kHz	$\pm 21mHz$	0.999992kHz	$\pm 26uHz$
100Hz	100.000Hz	$\pm 12mHz$	99.9994Hz	$\pm 2.6uHz$

A/D Input

10V A/D Input	---	$\pm 400uV$	FAULT	$\pm 100uV$
5V A/D Input	---	$\pm 300uV$	FAULT	$\pm 100uV$
0V A/D Input	0.0000V	$\pm 200uV$	-0.0042V	$\pm 100uV$
-5V A/D Input	---	$\pm 300uV$	FAULT	$\pm 100uV$
-10V A/D Input	---	$\pm 400uV$	FAULT	$\pm 100uV$

Thermocouple Output

Cold Junction Compensation

CJC Temp Measurement	24.3°C	$\pm 0.20^\circ C$	24.2°C	$\pm 0.03^\circ C$
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Figures in brackets () are the equivalent temperature for the mV output

Temperature Simulation - Type K - CJC at 0°C - ITS90

-5.891mV (-200°C)	-5.891mV	$\pm 9.2uV$	-5.8905mV	$\pm 0.8uV$
-4.669mV (-140°C)	-4.669mV	$\pm 8.9uV$	-4.6687mV	$\pm 0.8uV$
-3.554mV (-100°C)	-3.554mV	$\pm 8.7uV$	-3.5534mV	$\pm 0.8uV$
-1.889mV (-50°C)	-1.889mV	$\pm 8.4uV$	-1.8882mV	$\pm 0.8uV$
-0.968mV (-25°C)	-0.968mV	$\pm 8.2uV$	-0.9662mV	$\pm 0.8uV$
0.000mV (0°C)	0.000mV	$\pm 8uV$	0.0012mV	$\pm 0.8uV$
4.096mV (100°C)	4.096mV	$\pm 8.8uV$	4.0974mV	$\pm 0.8uV$
2.023mV (122°F)	2.023mV	$\pm 8.4uV$	2.0243mV	$\pm 0.8uV$
4.096mV (212°F)	4.096mV	$\pm 8.8uV$	4.0973mV	$\pm 0.8uV$
4.920mV (120°C)	4.920mV	$\pm 9uV$	4.9215mV	$\pm 0.8uV$
8.138mV (200°C)	8.138mV	$\pm 9.6uV$	8.1399mV	$\pm 0.8uV$

CERTIFICATE OF CALIBRATION

AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
20.644mV (500°C)	20.644mV	± 12.1uV	20.6478mV	± 0.9uV
29.129mV (700°C)	29.129mV	± 13.8uV	29.1341mV	± 0.9uV
41.276mV (1000°C)	41.276mV	± 16.3uV	41.2822mV	± 0.9uV
54.819mV (1370°C)	54.819mV	± 19uV	54.8267mV	± 1.0uV
Temperature Simulation - Type J - CJC at 0°C - ITS90				
-8.095mV (-210°C)	-8.095mV	± 9.6uV	-8.0945mV	± 0.8uV
0.000mV (0°C)	0.000mV	± 8uV	0.0013mV	± 0.8uV
21.848mV (400°C)	21.848mV	± 12.4uV	21.8519mV	± 0.9uV
69.553mV (1200°C)	69.553mV	± 21.9uV	69.5613mV	± 1.0uV
Temperature Simulation - Type T - CJC at 0°C - ITS90				
-6.180mV (-250°C)	-6.180mV	± 9.2uV	-6.1793mV	± 0.8uV
0.000mV (0°C)	0.000mV	± 8uV	0.0013mV	± 0.8uV
20.872mV (400°C)	20.872mV	± 12.2uV	20.8757mV	± 0.9uV
Temperature Simulation - Type R - CJC at 0°C - ITS90				
0.000mV (0°C)	0.000mV	± 8uV	0.0012mV	± 0.8uV
3.408mV (400°C)	3.408mV	± 8.7uV	3.4094mV	± 0.8uV
21.003mV (1760°C)	21.003mV	± 12.2uV	21.0067mV	± 0.9uV
Temperature Simulation - Type S - CJC at 0°C - ITS90				
0.000mV (0°C)	0.000mV	± 8uV	0.0014mV	± 0.8uV
3.259mV (400°C)	3.259mV	± 8.7uV	3.2602mV	± 0.8uV
18.609mV (1760°C)	18.609mV	± 11.7uV	18.6125mV	± 0.9uV
Temperature Simulation - Type N - CJC at 0°C - ITS90				
-3.990mV (-200°C)	-3.990mV	± 8.8uV	-3.9892mV	± 0.8uV
-0.646mV (-25°C)	-0.646mV	± 8.1uV	-0.6439mV	± 0.8uV
3.374mV (120°C)	3.374mV	± 8.7uV	3.3753mV	± 0.8uV
47.513mV (1300°C)	47.513mV	± 17.5uV	47.5199mV	± 0.9uV
Temperature Simulation - Type B - CJC at 0°C - ITS90				
1.792mV (600°C)	1.792mV	± 8.4uV	1.7935mV	± 0.8uV
4.834mV (1000°C)	4.834mV	± 9uV	4.8356mV	± 0.8uV
13.820mV (1820°C)	13.820mV	± 10.8uV	13.8230mV	± 0.8uV
Temperature Simulation - Type E - CJC at 0°C - ITS90				
-9.718mV (-250°C)	-9.718mV	± 9.9uV	-9.7180mV	± 0.8uV
-1.432mV (-25°C)	-1.432mV	± 8.3uV	-1.4295mV	± 0.8uV
24.964mV (350°C)	24.964mV	± 13uV	24.9682mV	± 0.9uV
76.373mV (1000°C)	76.373mV	± 23.3uV	76.3811mV	± 1.0uV
Temperature Simulation - Type L - CJC at 0°C - ITS90				
-8.158mV (-200°C)	-8.158mV	± 17.6uV	-8.1664mV	± 0.8uV

CERTIFICATE OF CALIBRATION

AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
0.000mV (0°C)	0.000mV	± 28uV	0.0015mV	± 0.8uV
53.140mV (900°C)	53.140mV	± 46.6uV	53.1414mV	± 0.9uV

Temperature Simulation - Type U - CJC at 0°C - ITS90

-5.696mV (-200°C)	-5.696mV	± 17.1uV	-5.6913mV	± 0.8uV
0.000mV (0°C)	0.000mV	± 24uV	0.0013mV	± 0.8uV
34.309mV (600°C)	34.309mV	± 28.9uV	34.3121mV	± 0.9uV

Temperature Simulation - Type C - CJC at 0°C - ITS90

0.000mV (0°C)	0.000mV	± 8uV	0.0014mV	± 0.8uV
11.583mV (650°C)	11.583mV	± 10.3uV	11.5855mV	± 0.8uV
18.257mV (1000°C)	18.257mV	± 11.7uV	18.2604mV	± 0.9uV
37.070mV (2316°C)	37.070mV	± 15.4uV	37.0760mV	± 0.9uV

Simulated PRT

-100°C	-100.00°C	± 0.30°C	-100.02°C	± 0.023°C
0°C	0.000°C	± 0.30°C	0.001°C	± 0.020°C
30°C	30.000°C	± 0.50°C	30.003°C	± 0.021°C
100°C	100.00°C	± 0.50°C	99.99°C	± 0.023°C
200°C	200.00°C	± 0.50°C	199.97°C	± 0.029°C
400°C	400.00°C	± 0.50°C	399.96°C	± 0.036°C
800°C	800.00°C	± 0.50°C	799.93°C	± 0.083°C

Continuity Resistance

10 R Range	0.000Ω	± 45mΩ	-0.0654Ω	± 300uΩ
10 R Range	3.000Ω	± 45mΩ	2.9352Ω	± 300uΩ
10 R Range	10.000Ω	± 45mΩ	9.9341Ω	± 610uΩ
50 R Range	20.000Ω	± 125mΩ	20.7125Ω	± 610uΩ
50 R Range	30.000Ω	± 125mΩ	29.9542Ω	± 610uΩ
50 R Range	50.000Ω	± 125mΩ	48.4481Ω	± 610uΩ
500 R Range	100.000Ω	± 1Ω	109.7730Ω	± 610uΩ
500 R Range	200.000Ω	± 1Ω	203.4728Ω	± 610uΩ
500 R Range	500.000Ω	± 1Ω	484.6313Ω	± 610uΩ
5000 R Range	1000.0Ω	± 10Ω	1131.02Ω	± 610uΩ
5000 R Range	2000.0Ω	± 10Ω	2058.64Ω	± 610uΩ
5000 R Range	5000.0Ω	± 10Ω	4841.83Ω	± 610uΩ

Continuity Current

50mA	50.0mA	± 1.4mA	50.2mA	± 0.2mA
100mA	100.0mA	± 1.4mA	100.1mA	± 0.2mA
200mA	200.0mA	± 1.4mA	199.9mA	± 0.2mA
300mA	300.0mA	± 1.4mA	299.8mA	± 0.2mA

Insulation Test Function

100V - 250kohms	0.2500MΩ	± 1.3kΩ	0.2511MΩ	± 250Ω
100V - 500kohms	0.5000MΩ	± 2.5kΩ	0.5007MΩ	± 250Ω

CERTIFICATE OF CALIBRATION

AS FOUND RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
100V - 1Mohms	1.0000MΩ	± 5kΩ	1.0014MΩ	± 500Ω
100V - 2Mohms	2.000MΩ	± 10kΩ	1.997MΩ	± 1kΩ
100V - 5Mohms	5.000MΩ	± 25kΩ	5.001MΩ	± 2.5kΩ
100V - 10Mohms	10.00MΩ	± 50kΩ	9.98MΩ	± 5kΩ
100V - 50Mohms	50.00MΩ	± 250kΩ	49.83MΩ	± 2.5kΩ
100V - 100Mohms	100.00MΩ	± 500kΩ	100.54MΩ	± 50kΩ
250V - 250kohms	0.2500MΩ	± 1.3kΩ	0.2506MΩ	± 130Ω
250V - 1Mohms	1.0000MΩ	± 5kΩ	1.0002MΩ	± 500Ω
250V - 10Mohms	10.000MΩ	± 50kΩ	10.024MΩ	± 5kΩ
250V - 100Mohms	100.00MΩ	± 500kΩ	100.01MΩ	± 50kΩ
250V - 250Mohms	250.00MΩ	± 1.3MΩ	250.52MΩ	± 130kΩ
500V - 500kohms	0.5000MΩ	± 2.5kΩ	0.5008MΩ	± 250Ω
500V - 1Mohms	1.0000MΩ	± 5kΩ	1.0000MΩ	± 500Ω
500V - 10Mohms	10.000MΩ	± 50kΩ	9.999MΩ	± 5kΩ
500V - 500Mohms	500.0MΩ	± 2.5MΩ	499.7MΩ	± 250kΩ
1000V - 1Mohms	1.0000MΩ	± 5kΩ	1.0009MΩ	± 500Ω
1000V - 10Mohms	10.000MΩ	± 50kΩ	9.998MΩ	± 5kΩ
1000V - 100Mohms	100.00MΩ	± 500kΩ	100.41MΩ	± 50kΩ
1000V - 1Gohms	1000.0MΩ	± 5MΩ	1000.0MΩ	± 500kΩ

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
DC Voltage				
100mV Range	0.000mV	± 10uV	0.0034mV	0.8uV
100mV Range	20.000mV	± 11.6uV	20.0027mV	0.86uV
100mV Range	50.000mV	± 14uV	50.0015mV	0.94uV
100mV Range	100.000mV	± 18uV	100.0012mV	1.1uV
100mV Range	-20.000mV	± 11.6uV	-20.0048mV	0.86uV
100mV Range	-50.000mV	± 14uV	-50.0016mV	0.94uV
100mV Range	-100.000mV	± 18uV	-99.9984mV	1.1uV
1V Range	0.20000V	± 46uV	0.200038V	1.8uV
1V Range	0.50000V	± 70uV	0.500037V	3.3uV
1V Range	1.00000V	± 110uV	1.000031V	5.6uV
1V Range	-0.20000V	± 46uV	-0.200036V	1.8uV
1V Range	-0.50000V	± 70uV	-0.500031V	3.3uV
1V Range	-1.00000V	± 110uV	-1.000022V	5.6uV
10V Range	2.0000V	± 460uV	2.00001V	18uV
10V Range	5.0000V	± 700uV	5.00004V	34uV
10V Range	10.0000V	± 1.1mV	10.00001V	61uV
10V Range	-2.0000V	± 460uV	-2.00000V	18uV
10V Range	-5.0000V	± 700uV	-4.99998V	34uV
10V Range	-10.0000V	± 1.1mV	-9.99995V	61uV
100V Range	20.000V	± 4.6mV	19.9998V	0.24mV
100V Range	50.000V	± 7mV	50.0007V	0.46mV
100V Range	100.000V	± 11mV	100.0012V	0.82mV
100V Range	-100.000V	± 11mV	-100.0042V	0.82mV
100V Range	-50.000V	± 7mV	-50.0040V	0.46mV
100V Range	-20.000V	± 4.6mV	-20.0041V	0.24mV
1kV Range	200.00V	± 46mV	200.034V	2.8mV
1kV Range	500.00V	± 70mV	500.040V	5mV
1kV Range	1000.00V	± 110mV	1000.037V	8.6mV
1kV Range	-1000.00V	± 110mV	-1000.026V	8.6mV
1kV Range	-500.00V	± 70mV	-500.033V	5mV
1kV Range	-200.00V	± 46mV	-200.034V	2.8mV
AC Voltage				
100mV A.C. : 40Hz	20.000mV	± 46uV	19.9799mV	12uV
100mV A.C. : 206Hz	20.000mV	± 46uV	19.9744mV	12uV
100mV A.C. : 20kHz	20.000mV	± 100uV	19.9905mV	17uV
100mV A.C. : 206Hz	50.000mV	± 70uV	49.9683mV	16uV
100mV A.C. : 10Hz	100.000mV	± 110uV	99.9270mV	47uV
100mV A.C. : 40Hz	100.000mV	± 110uV	100.0054mV	21uV
100mV A.C. : 56Hz	100.000mV	± 110uV	100.0109mV	21uV

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
100mV A.C. : 206Hz	100.000mV	± 110uV	100.0091mV	21uV
100mV A.C. : 1kHz	100.000mV	± 110uV	100.0009mV	21uV
100mV A.C. : 10kHz	100.000mV	± 220uV	100.0230mV	28uV
100mV A.C. : 20kHz	100.000mV	± 220uV	99.9885mV	28uV
1V Range : 10Hz	0.20000V	± 460uV	0.200144V	0.11mV
1V Range : 40Hz	0.20000V	± 460uV	0.200037V	62uV
1V Range : 206Hz	0.20000V	± 460uV	0.200114V	62uV
1V Range : 20kHz	0.20000V	± 1000uV	0.200248V	92uV
1V Range : 206Hz	0.50000V	± 700uV	0.500038V	88uV
1V Range : 10Hz	1.00000V	± 1.1mV	1.000088V	0.34mV
1V Range : 40Hz	1.00000V	± 1.1mV	0.999950V	0.13mV
1V Range : 56Hz	1.00000V	± 1.1mV	1.000148V	0.13mV
1V Range : 206Hz	1.00000V	± 1.1mV	1.000880V	0.13mV
1V Range: 1kHz	1.00000V	± 1.1mV	1.000104V	0.13mV
1V Range : 5kHz	1.00000V	± 2.2mV	1.000244V	0.16mV
1V Range : 10kHz	1.00000V	± 2.2mV	1.000175V	0.16mV
1V Range : 20kHz	1.00000V	± 2.2mV	1.000314V	0.16mV
10V Range : 10Hz	2.0000V	± 4.6mV	2.00018V	1mV
10V Range : 40Hz	2.0000V	± 4.6mV	1.99918V	1mV
10V Range : 206Hz	2.0000V	± 4.6mV	2.00194V	0.53mV
10V Range : 20kHz	2.0000V	± 10mV	2.00040V	0.8mV
10V Range : 206Hz	3.0000V	± 5.4mV	2.99917V	0.61mV
10V Range : 206Hz	4.0000V	± 6.2mV	3.99924V	0.69mV
10V Range : 206Hz	6.0000V	± 7.8mV	5.99885V	0.85mV
10V Range : 206Hz	8.0000V	± 9.4mV	7.99895V	1mV
10V Range : 10Hz	10.0000V	± 11mV	10.00083V	3.3mV
10V Range : 40Hz	10.0000V	± 11mV	9.99749V	1.2mV
10V Range : 56Hz	10.0000V	± 11mV	10.00406V	1.2mV
10V Range : 206Hz	10.0000V	± 11mV	10.00063V	1.2mV
10V Range : 1kHz	10.0000V	± 11mV	9.99883V	1.2mV
10V Range : 5kHz	10.0000V	± 22mV	9.99909V	1.5mV
10V Range : 10kHz	10.0000V	± 22mV	10.00051V	1.5mV
10V Range : 20kHz	10.0000V	± 22mV	10.00063V	1.5mV
100V Range : 40Hz	20.000V	± 46mV	20.0187V	6.5mV
100V Range : 206Hz	20.000V	± 46mV	20.0175V	6.5mV
100V Range : 200Hz	50.000V	± 70mV	50.0029V	9mV
100V Range : 1kHz	20.000V	± 46mV	20.0133V	6.5mV
100V Range : 40Hz	100.000V	± 110mV	99.9951V	13mV
100V Range : 56Hz	100.000V	± 110mV	100.0170V	13mV
100V Range : 206Hz	100.000V	± 110mV	99.9883V	13mV
100V Range : 1000Hz	100.000V	± 110mV	100.0218V	13mV

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
1kV Range : 40Hz	200.00V	± 280mV	200.024V	40mV
1kV Range : 206Hz	200.00V	± 280mV	200.069V	40mV
1kV Range : 200Hz	500.00V	± 520mV	500.119V	68mV
1kV Range : 1kHz	200.00V	± 450mV	199.996V	40mV
1kV Range : 40Hz	700.00V	± 680mV	700.067V	86mV
1kV Range : 56Hz	700.00V	± 680mV	699.972V	86mV
1kV Range : 1kHz	700.00V	± 680mV	700.122V	86mV
1kV Range : 56Hz	1000.00V	± 1.1V	1000.731V	114mV
1kV Range : 1000Hz	1000.00V	± 875mV	1000.246V	114mV

Linearity - 10V DC Range

Linearity	9.00000V	± 1mV	8.999972V	55uV
Linearity	8.00000V	± 940uV	7.999992V	50uV
Linearity	7.00000V	± 860uV	6.999959V	45uV
Linearity	6.00000V	± 780uV	5.999947V	40uV
Linearity	5.00000V	± 700uV	5.000019V	34uV
Linearity	4.00000V	± 620uV	4.000020V	29uV
Linearity	3.00000V	± 540uV	3.000000V	23uV
Linearity	2.00000V	± 460uV	1.999996V	18uV
Linearity	1.00000V	± 380uV	0.999992V	5.6uV
Linearity	-9.00000V	± 1mV	-8.999941V	55uV
Linearity	-8.00000V	± 940uV	-7.999970V	50uV
Linearity	-7.00000V	± 860uV	-6.999948V	45uV
Linearity	-6.00000V	± 780uV	-5.999953V	40uV
Linearity	-5.00000V	± 700uV	-4.999986V	34uV
Linearity	-4.00000V	± 620uV	-4.000030V	29uV
Linearity	-3.00000V	± 540uV	-2.999997V	23uV
Linearity	-2.00000V	± 460uV	-2.000003V	18uV
Linearity	-1.00000V	± 380uV	-0.999986V	5.6uV

DC Current

100uA Range	0.000uA	± 30nA	0.0189uA	0.01nA
100uA Range	100.000uA	± 60nA	99.9948uA	1.4nA
100uA Range	50.000uA	± 45nA	50.0067uA	0.93nA
100uA Range	20.000uA	± 36nA	20.0134uA	0.65nA
100uA Range	-100.000uA	± 60nA	-99.9920uA	1.4nA
100uA Range	-50.000uA	± 45nA	-50.0046uA	0.93nA
100uA Range	-20.000uA	± 36nA	-20.0120uA	0.65nA
1mA Range	0.20000mA	± 160nA	0.200070mA	6.5nA
1mA Range	0.50000mA	± 250nA	0.500028mA	9.3nA
1mA Range	1.00000mA	± 400nA	0.999952mA	14nA
1mA Range	-0.20000mA	± 160nA	-0.200088mA	6.5nA

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
1mA Range	-0.50000mA	± 250nA	-0.500042mA	9.3nA
1mA Range	-1.00000mA	± 400nA	-0.999966mA	14nA
10mA Range	4.0000mA	± 2.2uA	4.00053mA	95nA
10mA Range	6.0000mA	± 2.8uA	6.00024mA	0.12uA
10mA Range	8.0000mA	± 3.4uA	7.99998mA	0.14uA
10mA Range	10.0000mA	± 4uA	9.99973mA	0.16uA
10mA Range	-2.0000mA	± 1.6uA	-2.00079mA	73nA
10mA Range	-4.0000mA	± 2.2uA	-4.00050mA	95nA
10mA Range	-6.0000mA	± 2.8uA	-6.00017mA	0.12uA
10mA Range	-8.0000mA	± 3.4uA	-7.99987mA	1.4uA
10mA Range	-10.0000mA	± 4uA	-9.99961mA	0.16uA
100mA Range	50.0000mA	± 25uA	50.0027mA	2.5uA
100mA Range	100.0000mA	± 40uA	99.9946mA	4.2uA
100mA Range	-20.0000mA	± 16uA	-20.0081mA	1.4uA
100mA Range	-50.0000mA	± 25uA	-50.0040mA	2.5uA
100mA Range	-100.0000mA	± 40uA	-99.9955mA	4.2uA
1A Lead Check	100.00mA	± 50mA	100.10mA	4.2uA
1A Range	0.50000A	± 300uA	0.500054A	100uA
1A Range	1.00000A	± 450uA	0.999924A	185uA
1A Range	-0.20000A	± 210uA	-0.200142A	49uA
1A Range	-0.50000A	± 300uA	-0.500120A	100uA
1A Range	-1.00000A	± 450uA	-1.000025A	185uA
10A Range	2.0000A	± 3mA	2.00186A	0.36mA
10A Range	5.0000A	± 4.5mA	4.99965A	1.1mA
10A Range	10.0000A	± 7mA	9.99620A	2mA
10A Range	-2.0000A	± 3mA	-2.00056A	0.36mA
10A Range	-5.0000A	± 4.5mA	-4.99832A	1.1mA
10A Range	-10.0000A	± 7mA	-9.99484A	2mA
AC Current				
100uA Rng: 40Hz	20.000uA	± 420nA	20.047uA	132nA
100uA Rng: 200Hz	20.000uA	± 420nA	20.044uA	132nA
100uA Rng: 200Hz	50.000uA	± 450nA	49.980uA	135nA
100uA Rng: 2kHz	20.000uA	± 420nA	20.068uA	204nA
100uA Rng: 10Hz	100.000uA	± 500nA	100.009uA	209nA
100uA Rng: 40Hz	100.000uA	± 500nA	99.976uA	140nA
100uA Rng: 56Hz	100.000uA	± 500nA	99.963uA	140nA
100uA Rng: 1kHz	100.000uA	± 500nA	100.004uA	140nA
100uA Rng: 2kHz	100.000uA	± 500nA	100.031uA	219nA
1mA Rng: 40Hz	0.20000mA	± 1uA	0.20042mA	0.16uA

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
1mA Rng: 200Hz	0.20000mA	± 1uA	0.20009mA	0.16uA
1mA Rng: 200Hz	0.50000mA	± 1.3uA	0.49992mA	0.21uA
1mA Rng: 2kHz	0.20000mA	± 1uA	0.19998mA	0.55uA
1mA Rng: 10Hz	1.00000mA	± 1.8uA	0.99959mA	0.71uA
1mA Rng: 40Hz	1.00000mA	± 1.8uA	1.00022mA	0.28uA
1mA Rng: 56Hz	1.00000mA	± 1.8uA	1.00009mA	0.28uA
1mA Rng: 1kHz	1.00000mA	± 1.8uA	0.99978mA	0.28uA
1mA Rng: 2kHz	1.00000mA	± 1.8uA	0.99984mA	0.78uA
10mA Rng: 10Hz	2.0000mA	± 10uA	2.0013mA	2.4uA
10mA Rng: 40Hz	2.0000mA	± 10uA	2.0015mA	1.1uA
10mA Rng: 200Hz	2.0000mA	± 10uA	2.0008mA	1.1uA
10mA Rng: 200Hz	5.0000mA	± 13uA	5.0052mA	1.6uA
10mA Rng: 2kHz	2.0000mA	± 10uA	2.0007mA	1.8uA
10mA Rng: 56Hz	10.0000mA	± 18uA	9.9991mA	2.4uA
10mA Rng: 40Hz	10.0000mA	± 18uA	10.0021mA	2.4uA
10mA Rng: 1kHz	10.0000mA	± 18uA	9.9977mA	2.4uA
10mA Rng: 2kHz	10.0000mA	± 18uA	9.9986mA	1.8uA
100mA Rng: 40Hz	20.000mA	± 100uA	20.042mA	11uA
100mA Rng: 200Hz	20.000mA	± 100uA	20.003mA	11uA
100mA Rng: 200Hz	50.000mA	± 130uA	49.992mA	16uA
100mA Rng: 2kHz	20.000mA	± 100uA	20.003mA	22uA
100mA Rng: 10Hz	100.000mA	± 180uA	100.007mA	74uA
100mA Rng: 40Hz	100.000mA	± 180uA	100.020mA	24uA
100mA Rng: 56Hz	100.000mA	± 180uA	100.010mA	24uA
100mA Rng: 1kHz	100.000mA	± 180uA	99.986mA	24uA
100mA Rng: 2kHz	100.000mA	± 180uA	99.991mA	39uA
1A Rng: 40Hz	0.20000A	± 1000uA	0.20011A	121uA
1A Rng: 200Hz	0.20000A	± 1000uA	0.20038A	121uA
1A Rng: 200Hz	0.50000A	± 1.3mA	0.50001A	0.7mA
1A Rng: 2kHz	0.20000A	± 1000uA	0.20009A	450uA
1A Rng: 10Hz	1.00000A	± 1.8mA	0.99989A	0.72mA
1A Rng: 40Hz	1.00000A	± 1.8mA	0.99980A	0.26mA
1A Rng: 56Hz	1.00000A	± 1.8mA	1.00004A	0.26mA
1A Rng: 1kHz	1.00000A	± 1.8mA	0.99986A	0.26mA
1A Rng: 2kHz	1.00000A	± 1.8mA	0.99977A	1.7mA
10A Rng: 40Hz	2.0000A	± 17mA	2.0101A	2.7mA
10A Rng: 200Hz	2.0000A	± 17mA	2.0089A	4.5mA
10A Rng: 200Hz	5.0000A	± 20mA	5.0039A	9mA
10A Rng: 10Hz	10.0000A	± 25mA	9.9978A	18mA
10A Rng: 40Hz	10.0000A	± 25mA	10.0066A	9mA

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
10A Rng: 56Hz	10.0000A	± 25mA	10.0059A	9mA
10A Rng: 100Hz	10.0000A	± 25mA	10.0036A	9mA
10A Rng: 1kHz	10.0000A	± 25mA	10.0095A	9mA
10A Rng: 2kHz	10.0000A	± 25mA	10.0081A	18mA

2 Wire Resistance measured as value at terminals.

10R 2 Wire	10.7500Ω	± 55mΩ	10.75135Ω	0.16mΩ
100R 2 Wire	100.438Ω	± 100mΩ	100.4500Ω	1.3mΩ
1kR 2 Wire	1.00072kΩ	± 250mΩ	1.000778kΩ	12mΩ
10kR 2 Wire	9.9991kΩ	± 2.1Ω	9.99960kΩ	0.13Ω
100kR 2 Wire	100.054kΩ	± 20.1Ω	100.0609kΩ	1.4Ω
1MR 2 Wire	1.00012MΩ	± 500.1Ω	1.000195MΩ	17Ω
10MR 2 Wire	10.0207MΩ	± 10kΩ	10.02171MΩ	300Ω
100MR 2 Wire	100.33MΩ	± 210kΩ	100.360MΩ	18kΩ

Simulated Ohms

10 R Range	0.000Ω	± 52mΩ	-0.0012Ω	9uΩ
10 R Range	3.000Ω	± 52mΩ	2.9972Ω	94uΩ
10 R Range	10.000Ω	± 52mΩ	9.9954Ω	0.16mΩ
100 R Range	20.000Ω	± 70mΩ	19.9696Ω	0.69mΩ
100 R Range	30.0000Ω	± 70mΩ	29.969Ω	0.77mΩ
100 R Range	100.0000Ω	± 70mΩ	100.003Ω	1.3mΩ
1kR Range	200.00Ω	± 250mΩ	199.945Ω	6.7mΩ
1kR Range	300.00Ω	± 250mΩ	299.983Ω	7.3mΩ
1kR Range	1000.00Ω	± 250mΩ	1000.019Ω	12mΩ
10kR Range	1.0000kΩ	± 2.1Ω	1.00056kΩ	12mΩ
10kR Range	2.0000kΩ	± 2.1Ω	2.00012kΩ	67mΩ
10kR Range	3.000kΩ	± 2.1Ω	3.0004kΩ	77mΩ
10kR Range	4.000kΩ	± 2.1Ω	4.0000kΩ	85mΩ
10kR Range	5.000kΩ	± 2.1Ω	5.0004kΩ	93mΩ
10kR Range	6.000kΩ	± 2.1Ω	6.0001kΩ	0.10Ω
10kR Range	7.000kΩ	± 2.1Ω	6.9998kΩ	0.11Ω
10kR Range	8.000kΩ	± 2.1Ω	8.0003kΩ	0.12Ω
10kR Range	9.000kΩ	± 2.1Ω	9.0001kΩ	0.12Ω
10kR Range	10.000kΩ	± 2.1Ω	10.0007kΩ	0.13Ω
100kR Range	20.00kΩ	± 20.1Ω	19.995kΩ	0.71Ω
100kR Range	30.00kΩ	± 20.1Ω	29.998kΩ	0.79Ω
100kR Range	100.00kΩ	± 20.1Ω	100.002kΩ	1.4Ω
1MR Range	200.00kΩ	± 200.1Ω	199.995kΩ	2.3Ω
1MR Range	300.00kΩ	± 200.1Ω	299.985kΩ	3.2Ω
1MR Range	1000.00kΩ	± 200.1Ω	999.996kΩ	16.7Ω
10MR Range	2.000MΩ	± 5kΩ	1.9998MΩ	0.15kΩ
10MR Range	3.000MΩ	± 5kΩ	2.9998MΩ	0.17kΩ
10MR Range	10.000MΩ	± 5kΩ	10.0010MΩ	0.3kΩ

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
Capacitance (Measured at 1kHz)				
10nF	10.160nF	± 110pF	10.149nF	6pF
100nF	100.10nF	± 1.8nF	100.02nF	60pF
1uF	0.9880uF	± 8.1nF	0.9876uF	0.6nF
Frequency				
100kHz	100.000kHz	± 2Hz	99.9992kHz	2.6mHz
50kHz	50.000kHz	± 6Hz	49.9996kHz	1.3mHz
20kHz	20.000kHz	± 2.4Hz	19.9998kHz	0.52mHz
10kHz	10.000kHz	± 300mHz	9.99992kHz	0.26mHz
1kHz	1.000kHz	± 21mHz	0.999992kHz	26uHz
100Hz	100.000Hz	± 12mHz	99.9994Hz	2.6uHz
A/D Input				
10V A/D Input	10.0000V	± 400uV	9.9999V	100uV
5V A/D Input	5.0000V	± 300uV	4.9999V	100uV
0V A/D Input	0.0000V	± 200uV	0.0000V	100uV
-5V A/D Input	-5.0000V	± 300uV	-4.9999V	100uV
-10V A/D Input	-10.0000V	± 400uV	-9.9999V	100uV
Thermocouple Output				
Cold Junction Compensation				
CJC Temp Measurement	24.3°C	± 0.20°C	24.2°C	0.03°C
Figures in brackets () are the equivalent temperature for the mV output				
Temperature Simulation - Type K - CJC at 0°C - ITS90				
-5.891mV (-200°C)	-5.891mV	± 9.2uV	-5.8905mV	0.8uV
-4.669mV (-140°C)	-4.669mV	± 8.9uV	-4.6687mV	0.8uV
-3.554mV (-100°C)	-3.554mV	± 8.7uV	-3.5534mV	0.8uV
-1.889mV (-50°C)	-1.889mV	± 8.4uV	-1.8882mV	0.8uV
-0.968mV (-25°C)	-0.968mV	± 8.2uV	-0.9662mV	0.8uV
0.000mV (0°C)	0.000mV	± 8uV	0.0012mV	0.8uV
4.096mV (100°C)	4.096mV	± 8.8uV	4.0974mV	0.8uV
2.023mV (122°F)	2.023mV	± 8.4uV	2.0243mV	0.8uV
4.096mV (212°F)	4.096mV	± 8.8uV	4.0973mV	0.8uV
4.920mV (120°C)	4.920mV	± 9uV	4.9215mV	0.8uV
8.138mV (200°C)	8.138mV	± 9.6uV	8.1399mV	0.8uV
20.644mV (500°C)	20.644mV	± 12.1uV	20.6478mV	0.9uV
29.129mV (700°C)	29.129mV	± 13.8uV	29.1341mV	0.9uV
41.276mV (1000°C)	41.276mV	± 16.3uV	41.2822mV	0.9uV
54.819mV (1370°C)	54.819mV	± 19uV	54.8267mV	1.0uV
Temperature Simulation - Type J - CJC at 0°C - ITS90				
-8.095mV (-210°C)	-8.095mV	± 9.6uV	-8.0945mV	0.8uV

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
0.000mV (0°C)	0.000mV	± 8uV	0.0013mV	0.8uV
21.848mV (400°C)	21.848mV	± 12.4uV	21.8519mV	0.9uV
69.553mV (1200°C)	69.553mV	± 21.9uV	69.5613mV	1.0uV
Temperature Simulation - Type T - CJC at 0°C - ITS90				
-6.180mV (-250°C)	-6.180mV	± 9.2uV	-6.1793mV	0.8uV
0.000mV (0°C)	0.000mV	± 8uV	0.0013mV	0.8uV
20.872mV (400°C)	20.872mV	± 12.2uV	20.8757mV	0.9uV
Temperature Simulation - Type R - CJC at 0°C - ITS90				
0.000mV (0°C)	0.000mV	± 8uV	0.0012mV	0.8uV
3.408mV (400°C)	3.408mV	± 8.7uV	3.4094mV	0.8uV
21.003mV (1760°C)	21.003mV	± 12.2uV	21.0067mV	0.9uV
Temperature Simulation - Type S - CJC at 0°C - ITS90				
0.000mV (0°C)	0.000mV	± 8uV	0.0014mV	0.8uV
3.259mV (400°C)	3.259mV	± 8.7uV	3.2602mV	0.8uV
18.609mV (1760°C)	18.609mV	± 11.7uV	18.6125mV	0.9uV
Temperature Simulation - Type N - CJC at 0°C - ITS90				
-3.990mV (-200°C)	-3.990mV	± 8.8uV	-3.9892mV	0.8uV
-0.646mV (-25°C)	-0.646mV	± 8.1uV	-0.6439mV	0.8uV
3.374mV (120°C)	3.374mV	± 8.7uV	3.3753mV	0.8uV
47.513mV (1300°C)	47.513mV	± 17.5uV	47.5199mV	0.9uV
Temperature Simulation - Type B - CJC at 0°C - ITS90				
1.792mV (600°C)	1.792mV	± 8.4uV	1.7935mV	0.8uV
4.834mV (1000°C)	4.834mV	± 9uV	4.8356mV	0.8uV
13.820mV (1820°C)	13.820mV	± 10.8uV	13.8230mV	0.8uV
Temperature Simulation - Type E - CJC at 0°C - ITS90				
-9.718mV (-250°C)	-9.718mV	± 9.9uV	-9.7180mV	0.8uV
-1.432mV (-25°C)	-1.432mV	± 8.3uV	-1.4295mV	0.8uV
24.964mV (350°C)	24.964mV	± 13uV	24.9682mV	0.9uV
76.373mV (1000°C)	76.373mV	± 23.3uV	76.3811mV	1.0uV
Temperature Simulation - Type L - CJC at 0°C - ITS90				
-8.158mV (-200°C)	-8.158mV	± 17.6uV	-8.1664mV	0.8uV
0.000mV (0°C)	0.000mV	± 28uV	0.0015mV	0.8uV
53.140mV (900°C)	53.140mV	± 46.6uV	53.1414mV	0.9uV
Temperature Simulation - Type U - CJC at 0°C - ITS90				
-5.696mV (-200°C)	-5.696mV	± 17.1uV	-5.6913mV	0.8uV
0.000mV (0°C)	0.000mV	± 24uV	0.0013mV	0.8uV
34.309mV (600°C)	34.309mV	± 28.9uV	34.3121mV	0.9uV

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
Temperature Simulation - Type C - CJC at 0°C - ITS90				
0.000mV (0°C)	0.000mV	± 8uV	0.0014mV	0.8uV
11.583mV (650°C)	11.583mV	± 10.3uV	11.5855mV	0.8uV
18.257mV (1000°C)	18.257mV	± 11.7uV	18.2604mV	0.9uV
37.070mV (2316°C)	37.070mV	± 15.4uV	37.0760mV	0.9uV
Simulated PRT				
-100°C	-100.00°C	± 0.30°C	-100.02°C	0.023°C
0°C	0.000°C	± 0.30°C	0.001°C	0.020°C
30°C	30.000°C	± 0.50°C	30.003°C	0.021°C
100°C	100.00°C	± 0.50°C	99.99°C	0.023°C
200°C	200.00°C	± 0.50°C	199.97°C	0.029°C
400°C	400.00°C	± 0.50°C	399.96°C	0.036°C
800°C	800.00°C	± 0.50°C	799.93°C	0.083°C
Continuity Resistance				
10 R Range	0.000Ω	± 45mΩ	-0.0022Ω	300uΩ
10 R Range	3.000Ω	± 45mΩ	2.9978Ω	300uΩ
10 R Range	10.000Ω	± 45mΩ	9.9964Ω	610uΩ
50 R Range	20.000Ω	± 125mΩ	20.0082Ω	610uΩ
50 R Range	30.000Ω	± 125mΩ	30.0044Ω	610uΩ
50 R Range	50.000Ω	± 125mΩ	50.0017Ω	610uΩ
500 R Range	100.000Ω	± 1Ω	100.0821Ω	610uΩ
500 R Range	200.000Ω	± 1Ω	200.0125Ω	610uΩ
500 R Range	500.000Ω	± 1Ω	500.0170Ω	610uΩ
5000 R Range	1000.0Ω	± 10Ω	999.25Ω	610uΩ
5000 R Range	2000.0Ω	± 10Ω	1999.19Ω	610uΩ
5000 R Range	5000.0Ω	± 10Ω	5000.13Ω	610uΩ
Continuity Current				
50mA	50.0mA	± 1.4mA	50.2mA	0.2mA
100mA	100.0mA	± 1.4mA	100.1mA	0.2mA
200mA	200.0mA	± 1.4mA	199.9mA	0.2mA
300mA	300.0mA	± 1.4mA	299.8mA	0.2mA
Insulation Test Function				
100V - 250kohms	0.2500MΩ	± 1.3kΩ	0.2511MΩ	250Ω
100V - 500kohms	0.5000MΩ	± 2.5kΩ	0.5007MΩ	250Ω
100V - 1Mohms	1.0000MΩ	± 5kΩ	1.0014MΩ	500Ω
100V - 2Mohms	2.000MΩ	± 10kΩ	1.997MΩ	1kΩ
100V - 5Mohms	5.000MΩ	± 25kΩ	5.001MΩ	2.5kΩ
100V - 10Mohms	10.00MΩ	± 50kΩ	9.98MΩ	5kΩ
100V - 50Mohms	50.00MΩ	± 250kΩ	49.83MΩ	2.5kΩ
100V - 100Mohms	100.00MΩ	± 500kΩ	100.14MΩ	50kΩ
250V - 250kohms	0.2500MΩ	± 1.3kΩ	0.2506MΩ	130Ω
250V - 1Mohms	1.0000MΩ	± 5kΩ	1.0002MΩ	500Ω

CERTIFICATE OF CALIBRATION

AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Tolerance	Reading	Uncertainty
250V - 10Mohms	10.000M Ω	$\pm 50\text{k}\Omega$	10.024M Ω	5k Ω
250V - 100Mohms	100.00M Ω	$\pm 500\text{k}\Omega$	100.01M Ω	50k Ω
250V - 250Mohms	250.00M Ω	$\pm 1.3\text{M}\Omega$	250.52M Ω	130k Ω
500V - 500kohms	0.5000M Ω	$\pm 2.5\text{k}\Omega$	0.5008M Ω	250 Ω
500V - 1Mohms	1.0000M Ω	$\pm 5\text{k}\Omega$	1.0000M Ω	500 Ω
500V - 10Mohms	10.000M Ω	$\pm 50\text{k}\Omega$	9.999M Ω	5k Ω
500V - 500Mohms	500.0M Ω	$\pm 2.5\text{M}\Omega$	499.7M Ω	250k Ω
1000V - 1Mohms	1.0000M Ω	$\pm 5\text{k}\Omega$	1.0009M Ω	500 Ω
1000V - 10Mohms	10.000M Ω	$\pm 50\text{k}\Omega$	9.998M Ω	5k Ω
1000V - 100Mohms	100.00M Ω	$\pm 500\text{k}\Omega$	100.41M Ω	50k Ω
1000V - 1Gohms	1000.0M Ω	$\pm 5\text{M}\Omega$	1000.0M Ω	500k Ω

END OF TEST DATA