

CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 27936

Date of Issue 27 February 2015



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Approved Signatory

A handwritten signature in black ink, appearing to be 'M.A. Bailey'.

G.A. Shapland M.A. Bailey S.A. Hawkins J.A. Bailey

Customer : SIGNATROL LTD
UNIT E2, GREEN LANE BUSINESS PARK
TEWKESBURY GLOUCESTERSHIRE GL20 8SJ.

Date Received : 26 February 2015

Instrument :	System ID :	A1A050872	Job Number :	55315-1
	Description :	Digital Multimeter (6.5 digit)	Ref. Number :	CE026
	Manufacturer :	Agilent	Site :	
	Model Number :	34401A	Location :	
	Serial Number :	MY41050872		
	Procedure Version :	3.02/N		

Environmental Conditions

Temperature : 20°C +/- 1°C
Relative Humidity : 50% +/- 20%

Mains Voltage : 230V +/- 12V
Mains Frequency : 50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
4 Wire kelvin connections were used for ohms measurements below 10kOhms
Front Panel Terminals were used for calibration.

Calibration Information

The instrument was calibrated against laboratory standards whose values are traceable to recognised National Standards. The uncertainty limits quoted refer to the measured values only, with no account being taken of the instruments ability to maintain its calibration.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrated By : M. Nelson

Date of Calibration : 27 February 2015

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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AS FOUND RESULTS

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Test Title	Applied Value	Reading	Uncertainties
DC Voltage			
100mV D.C. Range	100.000 0mV	100.002 2mV	±590nV
1V D.C. Range	1.000 000V	1.000 003V	±3.4uV
10V D.C. Range	10.000 00V	10.000 01V	±40uV
100V D.C. Range	100.000 0V	99.998 2V	±40uV
1000V D.C. Range	1 000.000V	999.981V	±4mV
AC Voltage			
100mV A.C. @ 200Hz	100.000 0mV	99.961 5mV	±38uV
1V A.C. @ 200Hz	1.000 000V	0.999 741V	±121uV
10V A.C. @ 40Hz	10.000 00V	9.991 95V	±1.2mV
10V A.C. @ 200Hz	10.000 00V	9.997 31V	±1.2mV
10V A.C. @ 1kHz	10.000 00V	9.998 79V	±1.2mV
10V A.C. @ 10kHz	10.000 00V	9.998 95V	±2.7mV
100V A.C. @ 200Hz	100.000 0V	100.010 6V	±12mV
750V A.C. @ 200Hz	700.000 0V	699.735 0V	±13mV
DC Current			
10mA D.C. Range	10.000 00mA	9.999 98mA	±95nA
100mA D.C. Range	100.000 0mA	99.999 3mA	±875nA
1A D.C. Range	1.000 000A	0.999 766A	±64uA
3A D.C. Range	2.000 00A	1.999 58A	±110uA
AC Current @ 60Hz			
1A A.C. Rng @ 60Hz	0.100 00A	0.099 91A	±70uA
1A A.C. Rng @ 60Hz	0.500 00A	0.499 58A	±180uA
1A A.C. Rng @ 1kHz	1.000 00A	0.999 38A	±310uA
3A A.C. Rng @ 60Hz	2.000 00A	1.997 95A	±600uA
Resistance			
100Ω Range	100.006 5Ω	100.011 2Ω	±170uΩ
1kΩ Range	0.999 963kΩ	1.000 007kΩ	±1.7mΩ
10kΩ Range	10.000 40kΩ	10.000 79kΩ	±20mΩ
100kΩ Range	99.995 5kΩ	100.001 5kΩ	±240mΩ
1MΩ Range	1.000 023MΩ	1.000 084MΩ	±5.2Ω
10MΩ Range	10.001 93MΩ	10.001 84MΩ	±180Ω
100MΩ Range	99.874 0MΩ	100.306 6MΩ	±1.6kΩ

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Test Title	Applied Value	Reading	Uncertainties
Linearity			
10V Linearity	-9.00000V	-9.00004V	±37uV
10V Linearity	-8.00000V	-8.00002V	±34uV
10V Linearity	-7.00000V	-7.00002V	±31uV
10V Linearity	-6.00000V	-6.00003V	±28uV
10V Linearity	-5.00000V	-5.00000V	±25uV
10V Linearity	-4.00000V	-4.00002V	±22uV
10V Linearity	-3.00000V	-3.00002V	±20uV
10V Linearity	-2.00000V	-2.00001V	±20uV
10V Linearity	-1.00000V	-1.00000V	±20uV
10V Linearity	0.000 00V	0.000 00V	±20uV
10V Linearity	1.000 00V	1.000 00V	±20uV
10V Linearity	2.000 00V	2.000 00V	±20uV
10V Linearity	3.000 00V	3.000 00V	±20uV
10V Linearity	4.000 00V	4.000 00V	±22uV
10V Linearity	5.000 00V	4.999 98V	±25uV
10V Linearity	6.000 00V	6.000 01V	±28uV
10V Linearity	7.000 00V	7.000 00V	±31uV
10V Linearity	8.000 00V	7.999 99V	±34uV
10V Linearity	9.000 00V	9.000 03V	±37uV
Frequency			
10Hz	10.000 0Hz	10.000 0Hz	±310uHz
100Hz	100.000Hz	100.000Hz	±3.1mHz
1kHz	1.000 00kHz	1.000 00kHz	±31mHz
10kHz	10.000 0kHz	10.000 0kHz	±310mHz
100kHz	100.000kHz	100.000kHz	±3.1Hz