

# CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 35886

Date of Issue 01 May 2018



0324



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Approved Signatory

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

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

Date Received : 26 April 2018

<b>Instrument :</b>	System ID :	A1A050872	Job Number :	69037-1
	Description :	Digital Multimeter (6.5 digit)	Ref. Number :	CE026
	Manufacturer :	Agilent	Site :	
	Model Number :	34401A	Location :	
	Serial Number :	MY41050872	Last Calibration Certificate :	33295
	Procedure Version :	3.02/N	Last Calibration Date :	27/04/2017

## Environmental Conditions

Temperature : 20°C +/- 1°C  
Relative Humidity : 40% +/- 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 : 01 May 2018

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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UKAS Accredited Calibration Laboratory No. 0324  
**AS FOUND RESULTS**

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Test Title	Applied Value	Reading	Uncertainties
<b>DC Voltage</b>			
100mV D.C. Range	100.000 0mV	100.002 1mV	±590nV
1V D.C. Range	1.000 000V	1.000 002V	±3.4uV
10V D.C. Range	10.000 00V	10.000 03V	±40uV
100V D.C. Range	100.000 0V	99.998 3V	±400uV
1000V D.C. Range	1 000.000V	999.978V	±4mV
<b>AC Voltage</b>			
100mV A.C. @ 200Hz	100.000 0mV	99.999 4mV	±38uV
1V A.C. @ 200Hz	1.000 000V	0.999 497V	±121uV
10V A.C. @ 40Hz	10.000 00V	9.999 79V	±1.2mV
10V A.C. @ 200Hz	10.000 00V	9.994 36V	±1.2mV
10V A.C. @ 1kHz	10.000 00V	9.996 12V	±1.2mV
10V A.C. @ 10kHz	10.000 00V	9.996 24V	±2.7mV
100V A.C. @ 200Hz	100.000 0V	99.986 3V	±30mV
750V A.C. @ 200Hz	700.000 0V	699.614 0V	±350mV
<b>DC Current</b>			
10mA D.C. Range	10.000 00mA	9.999 93mA	±95nA
100mA D.C. Range	100.000 0mA	99.997 7mA	±875nA
1A D.C. Range	1.000 000A	0.999 761A	±64uA
3A D.C. Range	2.000 00A	1.999 53A	±520uA
<b>AC Current @ 60Hz</b>			
1A A.C. Rng @ 60Hz	0.100 00A	0.099 89A	±70uA
1A A.C. Rng @ 60Hz	0.500 00A	0.499 47A	±180uA
1A A.C. Rng @ 1kHz	1.000 00A	0.999 15A	±310uA
3A A.C. Rng @ 60Hz	2.000 00A	1.997 99A	±1.7mA
<b>Resistance</b>			
100Ω Range	99.998 7Ω	100.004 2Ω	±170uΩ
1kΩ Range	1.000 024kΩ	1.000 078kΩ	±1.7mΩ
10kΩ Range	10.000 04kΩ	10.000 55kΩ	±20mΩ
100kΩ Range	100.004 0kΩ	100.004 8kΩ	±240mΩ
1MΩ Range	1.000 081MΩ	1.000 151MΩ	±5.2Ω
10MΩ Range	10.000 69MΩ	10.000 09MΩ	±180Ω
100MΩ Range	100.002 9MΩ	100.427 4MΩ	±1.6kΩ

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Test Title	Applied Value	Reading	Uncertainties
<b>Linearity</b>			
10V Linearity	-9.00000V	-9.00005V	±37uV
10V Linearity	-8.00000V	-8.00000V	±34uV
10V Linearity	-7.00000V	-7.00002V	±31uV
10V Linearity	-6.00000V	-6.00004V	±28uV
10V Linearity	-5.00000V	-4.99999V	±25uV
10V Linearity	-4.00000V	-4.00001V	±22uV
10V Linearity	-3.00000V	-3.00002V	±20uV
10V Linearity	-2.00000V	-2.00002V	±20uV
10V Linearity	-1.00000V	-1.00001V	±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 01V	±20uV
10V Linearity	3.000 00V	3.000 02V	±20uV
10V Linearity	4.000 00V	4.000 01V	±22uV
10V Linearity	5.000 00V	4.999 98V	±25uV
10V Linearity	6.000 00V	6.000 04V	±28uV
10V Linearity	7.000 00V	7.000 01V	±31uV
10V Linearity	8.000 00V	8.000 00V	±34uV
10V Linearity	9.000 00V	9.000 05V	±37uV
<b>Frequency</b>			
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