

# CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 18944

Date of Issue 02 November 2010



0324



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Approved Signatory

M.A. Bailey     S.A. Hawkins     J.A. Bailey

**Customer :** SIGNATROL LTD  
105 CHURCH STREET, TEWKESBURY  
GL20 5AB

Date Received : 29 October 2010

<b>Instrument :</b>	System ID :	A1A050872	Job Number :	38942-1
	Description :	Digital Multimeter (6.5 digit)	Ref. Number :	CE026
	Manufacturer :	Agilent		
	Model Number :	34401A		
	Serial Number :	MY41050872		
	Procedure Version :	3.02/N		

## Environmental Conditions

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

Mains Voltage : 220V +/- 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.A. Bailey

Date of Calibration : 02 November 2010

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. 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	100.000 6mV	590nV
1V D.C. Range	1.000 000V	1.000 002V	14uV
10V D.C. Range	10.000 00V	10.000 04V	130uV
100V D.C. Range	100.000 0V	99.998 6V	1.7mV
1000V D.C. Range	1 000.000V	999.988V	17mV
<b>AC Voltage</b>			
100mV A.C. @ 200Hz	100.000 0mV	99.958 1mV	43uV
1V A.C. @ 200Hz	1.000 000V	0.999 726V	350uV
10V A.C. @ 40Hz	10.000 00V	9.992 18V	7.8mV
10V A.C. @ 200Hz	10.000 00V	9.997 31V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.998 23V	4.7mV
10V A.C. @ 10kHz	10.000 00V	9.998 55V	4.7mV
100V A.C. @ 200Hz	100.000 0V	100.012 0V	33mV
750V A.C. @ 200Hz	700.000 0V	699.749 0V	250mV
<b>DC Current</b>			
10mA D.C. Range	10.000 00mA	10.000 08mA	1uA
100mA D.C. Range	100.000 0mA	100.000 3mA	14uA
1A D.C. Range	1.000 000A	0.999 832A	330uA
3A D.C. Range	2.000 00A	1.999 75A	430uA
<b>AC Current @ 60Hz</b>			
1A A.C. Rng @ 60Hz	0.100 00A	0.099 90A	130uA
1A A.C. Rng @ 60Hz	0.500 00A	0.499 53A	760uA
1A A.C. Rng @ 1kHz	1.000 00A	0.999 45A	6.3mA
3A A.C. Rng @ 60Hz	2.000 00A	1.997 98A	2.4mA
<b>Resistance</b>			
100 $\Omega$ Range	99.998 7 $\Omega$	100.002 1 $\Omega$	170u $\Omega$
1k $\Omega$ Range	1.000 005k $\Omega$	1.000 040k $\Omega$	1.7m $\Omega$
10k $\Omega$ Range	10.000 05k $\Omega$	10.000 37k $\Omega$	20m $\Omega$
100k $\Omega$ Range	100.004 1k $\Omega$	100.007 1k $\Omega$	240m $\Omega$
1M $\Omega$ Range	1.000 080M $\Omega$	1.000 121M $\Omega$	5.2 $\Omega$
10M $\Omega$ Range	10.000 83M $\Omega$	10.000 51M $\Omega$	180 $\Omega$
100M $\Omega$ Range	99.997 6M $\Omega$	100.288 2M $\Omega$	1.6k $\Omega$

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<b>Linearity</b>			
10V Linearity	-9.00000V	-9.00005V	120uV
10V Linearity	-8.00000V	-8.00004V	110uV
10V Linearity	-7.00000V	-7.00004V	96uV
10V Linearity	-6.00000V	-6.00002V	86uV
10V Linearity	-5.00000V	-5.00002V	77uV
10V Linearity	-4.00000V	-4.00001V	67uV
10V Linearity	-3.00000V	-3.00001V	58uV
10V Linearity	-2.00000V	-2.00001V	27uV
10V Linearity	-1.00000V	-1.00000V	18uV
10V Linearity	0.000 00V	0.000 00V	12uV
10V Linearity	1.000 00V	1.000 00V	18uV
10V Linearity	2.000 00V	2.000 00V	27uV
10V Linearity	3.000 00V	3.000 02V	58uV
10V Linearity	4.000 00V	4.000 02V	67uV
10V Linearity	5.000 00V	5.000 03V	77uV
10V Linearity	6.000 00V	6.000 03V	86uV
10V Linearity	7.000 00V	7.000 02V	96uV
10V Linearity	8.000 00V	8.000 04V	110uV
10V Linearity	9.000 00V	9.000 05V	120uV
<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