

Instrument Service Log

MAP TOOLS BV, MICHIËL NIJSEN, 6584 AH MOLENHOEK, MIDDELWEG 10C.



Instrument Description	2/10/50 current clamp adapter
Model Number	EA002
Serial Number	113628J21
System ID	T00117958
Reference Number	
Used By / Location	
Date Acquired	-
Instrument Cost	-
Calibration Interval	52 weeks

<i>Date</i>	<i>Details</i>	<i>Calibration</i>
19/10/2021	New Instrument Test; UKAS Calibration; Certificate number : 44842 Parts Used : NONE Customer Order No. : P2020-111; Job No. : 77807 New Instrument All tests passed UKAS calibration.	by J. Atkinson

Issued by : Transmille Ltd., Transmille Ltd. Unit 4, Select Business Centre Lodge Road Staplehurst, Kent. TN12 0QW. TEL 01580 890700 FAX 01580 890711

Printed at 11:52 on 21/10/2021

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CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 44842

Date of Issue 19 October 2021



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Customer : MAP TOOLS BV
MICHIEL NIJSEN, MIDDELWEG 10C
6584 AH MOLENHOEK

Date Received : 19 October 2021

Instrument :	System ID :	T00117958	Job Number :	77807
	Description :	2/10/50 Current Clamp Adapter		
	Manufacturer :	Transmille		
	Model Number :	EA002		
	Serial Number :	113628J21		
	Procedure Number & Version :	3513 : 3.01/N		

Environmental Conditions

Temperature : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Relative Humidity : $40\%\text{RH} \pm 20\%\text{RH}$

Mains Voltage : $230\text{V} \pm 12\text{V}$
Mains Frequency : $50\text{Hz} \pm 1\text{Hz}$

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Tests marked # are not UKAS accredited have been included for completeness

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 : J. Atkinson

Date of Calibration : 19 October 2021

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Certificate Number
44842

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
Coil Measurements were taken by intercomparison using a clamp meter to measure current flowing in a single conductor, versus the reading obtained using the coil. The current is set to give the same reading on the clamp meter to eliminate linearity errors in the clamp meter. The clamp alignment was kept central for the single conductor and coil. This certificate confirms that the coil has the correct number of turns. and can be used up to the rated current. Note that the performance of the coil will be exactly the same at any current, as the number of turns are fixed and do not change with input current.			
2 Turn Coil			
Current in single conductor 19A/50Hz, Current in coil 9.5A/50Hz			
2 Turn Coil	19.00A	19.00A	±29mA
10 Turn Coil			
Current in single conductor 19A/50Hz, Current in coil 1.9A/50Hz			
10 Turn Coil	19.00A	19.00A	±29mA
50 Turn Coil			
Current in single conductor 19A/50Hz, Current in coil 0.38A/50Hz			
50 Turn Coil	19.00A	19.00A	±29mA
High Current readings obtained by direct comparison against a known 50 turn coil using a clamp meter. Clamp alignment was kept central			
2Amps DC #	100.0A	100.0A	±0.1A
2Amps AC @ 50Hz #	100.0A	100.0A	±0.1A
10Amps DC #	500A	500A	±1A
10Amps AC @ 50Hz #	500A	500A	±1A
20Amps AC @ 50Hz #	1000A	1000A	±1.2A
30Amps AC @ 50Hz #	1500A	1500A	±1.2A

End of results

END OF TEST DATA

Instrument Service Log

MAP TOOLS BV, MICHEL NIJSEN, 6584 AH MOLENHOEK, MIDDELWEG 10C.



Instrument Description	thermocouple simulator adapter
Model Number	EA001A
Serial Number	113627J21
System ID	T00117957
Reference Number	
Used By / Location	
Date Acquired	-
Instrument Cost	-
Calibration Interval	52 weeks

<i>Date</i>	<i>Details</i>	<i>Calibration</i>
20/10/2021	New Instrument Test; UKAS Calibration; Certificate number : 44845 Parts Used : NONE Customer Order No. : P2020-111; Job No. : 77806 New Instrument All tests passed UKAS calibration.	by J. Atkinson

Issued by : Transmille Ltd., Transmille Ltd. Unit 4, Select Business Centre Lodge Road Staplehurst, Kent. TN12 0QW. TEL 01580 890700 FAX 01580 890711

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Certificate Number 44845

Date of Issue 20 October 2021



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Customer : MAP TOOLS BV
MICHEL NIJSEN, MIDDELWEG 10C
6584 AH MOLENHOEK

Date Received : 19 October 2021

Instrument :	System ID :	T00117957	Job Number :	77806
	Description :	Thermocouple Simulator Adapter		
	Manufacturer :	Transmille		
	Model Number :	EA001A		
	Serial Number :	113627J21		
	Procedure Number & Version :	6848 : 13.00/N		

Environmental Conditions

Temperature : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Relative Humidity : $40\%\text{RH} \pm 20\%\text{RH}$

Mains Voltage : $230\text{V} \pm 12\text{V}$
Mains Frequency : $50\text{Hz} \pm 1\text{Hz}$

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Reference temperature of 0°C used for the thermocouple CJC.
Temperature Scale ITS90
Temperature reference tables EN60584-1 : 2013

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 : J. Atkinson

Date of Calibration : 20 October 2021

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44845

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
Cold Junction Compensation - Simulation (Source)			
CJC Temp Measurement	20.00°C	20.00°C	±0.12°C
Cold Junction Compensation - Measure (Readback)			
CJC Temp Measurement	20.00°C	20.00°C	±0.22°C

Figures in brackets () are the equivalent voltage for the temperature input

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

-190°C (-5.730mV)	-190.000°C	-190.00°C	±50m°C
-140°C (-4.669mV)	-140.000°C	-139.99°C	±50m°C
-100°C (-3.554mV)	-100.000°C	-100.01°C	±50m°C
-50°C (-1.889mV)	-50.000°C	-50.02°C	±50m°C
-25°C (-0.968mV)	-25.000°C	-25.04°C	±50m°C
0°C (0.000mV)	0.000°C	-0.01°C	±50m°C
100°C (4.096mV)	100.000°C	99.98°C	±50m°C
122°F (2.023mV)	122.000°F	121.97°F	±90m°F
212°F (4.096mV)	212.000°F	211.97°F	±90m°F
120°C (4.920mV)	120.000°C	119.97°C	±50m°C
200°C (8.138mV)	200.000°C	199.97°C	±50m°C
500°C (20.644mV)	500.000°C	499.95°C	±50m°C
700°C (29.129mV)	700.000°C	699.94°C	±50m°C
1000°C (41.276mV)	1000.000°C	999.93°C	±50m°C
1370°C (54.819mV)	1370.000°C	1369.93°C	±50m°C

Temperature Measure - Type J - CJC at 0°C - ITS90

-200°C (-7.890mV)	-200.000°C	-200.02°C	±50m°C
0°C (0.000mV)	0.000°C	-0.02°C	±50m°C
400°C (21.848mV)	400.000°C	399.95°C	±50m°C
1200°C (69.553mV)	1200.000°C	1199.95°C	±50m°C

Temperature Measure - Type T - CJC at 0°C - ITS90

-240°C (-6.105mV)	-240.000°C	-240.04°C	±170m°C
0°C (0.000mV)	0.000°C	-0.01°C	±50m°C
400°C (20.872mV)	400.000°C	399.96°C	±50m°C

Temperature Measure - Type R - CJC at 0°C - ITS90

0°C (0.000mV)	0.000°C	-0.12°C	±120m°C
400°C (3.408mV)	400.000°C	399.90°C	±120m°C
1760°C (21.003mV)	1760.000°C	1759.79°C	±120m°C

Temperature Measure - Type S - CJC at 0°C - ITS90

0°C (0.000mV)	0.000°C	-0.17°C	±120m°C
400°C (3.259mV)	400.000°C	399.85°C	±120m°C
1760°C (18.609mV)	1760.000°C	1759.72°C	±120m°C

Temperature Measure - Type N - CJC at 0°C - ITS90

-190°C (-3.884mV)	-190.000°C	-190.04°C	±80m°C
-25°C (-0.646mV)	-25.000°C	-25.07°C	±80m°C
120°C (3.374mV)	120.000°C	119.95°C	±80m°C
1300°C (47.513mV)	1300.000°C	1299.92°C	±80m°C

Temperature Measure - Type B - CJC at 0°C - ITS90

600°C (1.792mV)	600.000°C	599.83°C	±110m°C
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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
600°C (1.792mV)	600.000°C	599.83°C	±110m°C
1000°C (4.834mV)	1000.000°C	999.79°C	±110m°C
1820°C (13.820mV)	1820.000°C	1819.80°C	±110m°C
Temperature Measure - Type E - CJC at 0°C - ITS90			
-240°C (-9.604mV)	-240.000°C	-240.03°C	±320m°C
-25°C (-1.432mV)	-25.000°C	-25.05°C	±40m°C
350°C (24.964mV)	350.000°C	349.96°C	±40m°C
1000°C (76.373mV)	1000.000°C	999.96°C	±40m°C
Temperature Measure - Type L - CJC at 0°C - ITS90			
-200°C (8.158mV)	-200.000°C	-200.00°C	±40m°C
0°C (0.000mV)	0.000°C	-0.02°C	±40m°C
900°C (53.154mV)	900.000°C	899.96°C	±40m°C
Temperature Measure - Type U - CJC at 0°C - ITS90			
-200°C (-5.696mV)	-200.000°C	-200.02°C	±50m°C
0°C (0.000mV)	0.000°C	-0.03°C	±50m°C
600°C (34.309mV)	600.000°C	599.96°C	±50m°C
Temperature Measure - Type C - CJC at 0°C - ITS90			
10°C (0.135mV)	10.000°C	9.92°C	±60m°C
650°C (11.583mV)	650.000°C	649.89°C	±60m°C
1000°C (18.257mV)	1000.000°C	999.85°C	±60m°C
2316°C (37.070mV)	2316.000°C	2315.63°C	±60m°C

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
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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)	-200.00°C	-199.960°C	±50m°C
-4.669mV (-140°C)	-140.00°C	-139.975°C	±50m°C
-3.554mV (-100°C)	-100.00°C	-99.979°C	±50m°C
-1.889mV (-50°C)	-50.00°C	-49.929°C	±50m°C
-0.968mV (-25°C)	-25.00°C	-24.962°C	±50m°C
0.000mV (0°C)	0.00°C	0.001°C	±50m°C
4.096mV (100°C)	100.00°C	99.998°C	±50m°C
2.023mV (122°F)	112.00°F	111.997°F	±90m°F
4.096mV (212°F)	212.00°F	211.995°F	±90m°F
4.920mV (120°C)	120.00°C	119.994°C	±50m°C
8.138mV (200°C)	200.00°C	199.987°C	±50m°C
20.644mV (500°C)	500.00°C	499.970°C	±50m°C
29.129mV (700°C)	700.00°C	699.961°C	±50m°C
41.276mV (1000°C)	1000.00°C	999.936°C	±50m°C
54.819mV (1370°C)	1370.00°C	1369.895°C	±50m°C

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

-8.095mV (-210°C)	-210.00°C	-209.976°C	±50m°C
0.000mV (0°C)	0.00°C	0.001°C	±50m°C
21.848mV (400°C)	400.00°C	399.977°C	±50m°C
69.553mV (1200°C)	1200.00°C	1199.917°C	±50m°C

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

-6.180mV (-250°C)	-250.00°C	-249.956°C	±170m°C
0.000mV (0°C)	0.00°C	0.002°C	±50m°C
20.872mV (400°C)	400.00°C	399.979°C	±50m°C

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

0.000mV (0°C)	0.00°C	0.014°C	±120m°C
3.408mV (400°C)	400.00°C	400.029°C	±120m°C
21.003mV (1760°C)	1760.00°C	1759.953°C	±120m°C

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

0.000mV (0°C)	0.00°C	0.012°C	±120m°C
3.259mV (400°C)	400.00°C	400.020°C	±120m°C
18.609mV (1760°C)	1760.00°C	1759.941°C	±120m°C

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

-3.990mV (-200°C)	-200.00°C	-199.970°C	±80m°C
-0.646mV (-25°C)	-25.00°C	-24.944°C	±80m°C
3.374mV (120°C)	120.00°C	120.006°C	±80m°C
47.513mV (1300°C)	1300.00°C	1299.931°C	±80m°C

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

1.792mV (600°C)	600.00°C	600.099°C	±110m°C
4.834mV (1000°C)	1000.00°C	1000.024°C	±110m°C
13.820mV (1820°C)	1820.00°C	1819.935°C	±110m°C

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

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
-9.718mV (-250°C)	-250.00°C	-249.976°C	±320m°C
-1.432mV (-25°C)	-25.00°C	-24.971°C	±40m°C
24.964mV (350°C)	350.00°C	349.978°C	±40m°C
76.373mV (1000°C)	1000.00°C	999.952°C	±40m°C

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

-8.158mV (-200°C)	-200.00°C	-200.199°C	±40m°C
0.000mV (0°C)	0.00°C	0.011°C	±40m°C
53.140mV (900°C)	900.00°C	899.827°C	±40m°C

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

-5.696mV (-200°C)	-200.00°C	-199.838°C	±50m°C
0.000mV (0°C)	0.00°C	0.008°C	±50m°C
34.309mV (600°C)	600.00°C	599.927°C	±50m°C

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

0.000mV (0°C)	0.00°C	0.039°C	±60m°C
11.583mV (650°C)	650.00°C	649.980°C	±60m°C
18.257mV (1000°C)	1000.00°C	999.964°C	±60m°C
37.070mV (2316°C)	2316.00°C	2315.874°C	±60m°C

End of results

END OF TEST DATA

Instrument Service Log

MAP TOOLS BV, MICHEL NIJSEN, 6584 AH MOLENHOEK, MIDDELWEG 10C.



Instrument Description	multi product calibrator
Model Number	3050A
Serial Number	K1373H21
System ID	T00117688
Reference Number	
Used By / Location	
Date Acquired	-
Instrument Cost	-
Calibration Interval	52 weeks

Date	Details	Calibration
18/10/2021	New Instrument Test; UKAS Calibration; Certificate number : 44830 Parts Used : NONE Customer Order No. : P2020-111; Job No. : 77446 New Instrument All tests passed UKAS calibration.	by J. Atkinson

CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 44830

Date of Issue 18 October 2021



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Customer : MAP TOOLS BV
MICHIEL NIJSEN, MIDDELWEG 10C
6584 AH MOLENHOEK

Date Received : 31 August 2021

Instrument :	System ID :	T00117688	Job Number :	77446
	Description :	Multi Product Calibrator		
	Manufacturer :	Transmille		
	Model Number :	3050A		
	Serial Number :	K1373H21		
	Procedure Number & Version :	6001 : 13.91.01/N		

Environmental Conditions

Temperature : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Relative Humidity : $40\%\text{RH} \pm 20\%\text{RH}$

Mains Voltage : $230\text{V} \pm 12\text{V}$
Mains Frequency : $50\text{Hz} \pm 1\text{Hz}$

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
4 Wire kelvin connections were used for ohms measurements below 10kOhms
The instrument RS232 interface was used during calibration
PT100 resistance converted to temperature using BS EN60751:2008 tables.
Tests marked # are not UKAS accredited but have been included for completeness.

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 : J. Atkinson

Date of Calibration : 18 October 2021

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44830

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
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Firmware Version : 13.1.07

DC Voltage

200mV Range	0.0000mV	-0.0006mV	±0.6uV
200mV Range	100.0000mV	100.0001mV	±0.8uV
200mV Range	200.0000mV	200.0002mV	±0.9uV
200mV Range	-100.0000mV	-100.0004mV	±0.8uV
200mV Range	-200.0000mV	-199.9999mV	±0.9uV

2V Range	0.2200000V	0.2200000V	±0.9uV
2V Range	1.0000000V	1.0000033V	±2.5uV
2V Range	2.0000000V	1.9999993V	±7uV
2V Range	-0.2200000V	-0.2199989V	±0.9uV
2V Range	-1.0000000V	-1.0000024V	±2.5uV
2V Range	-2.0000000V	-2.0000027V	±7uV

20V Range	2.200000V	2.199984V	±7uV
20V Range	10.000000V	9.999975V	±33uV
20V Range	20.000000V	20.000060V	±66uV
20V Range	-2.200000V	-2.199988V	±7uV
20V Range	-10.000000V	-9.999982V	±33uV
20V Range	-20.000000V	-20.000070V	±66uV

200V Range	100.00000V	100.00001V	±330uV
200V Range	200.00000V	199.99950V	±660uV
200V Range	-200.00000V	-199.99980V	±660uV
200V Range	-100.00000V	-99.99989V	±330uV

1kV Range	220.0000V	219.9990V	±0.8mV
1kV Range	1000.0000V	999.9971V	±3.3mV
1kV Range	-1000.0000V	-999.9992V	±3.3mV
1kV Range	-220.0000V	-220.0015V	±0.8mV

AC Voltage Output Frequency Tests

10kHz at 2V	10.00000kHz	9.99999kHz	±0.01Hz
100kHz at 2V	100.0000kHz	100.0000kHz	±0.1Hz

AC Voltage

200mV A.C. : 40Hz	20.000mV	20.002mV	±18uV
200mV A.C. : 206Hz	20.000mV	20.003mV	±18uV
200mV A.C. : 20kHz	20.000mV	20.007mV	±70uV
200mV A.C. : 10Hz	200.000mV	200.075mV	±60uV
200mV A.C. : 40Hz	200.000mV	199.991mV	±34uV
200mV A.C. : 56Hz	200.000mV	200.006mV	±34uV
200mV A.C. : 206Hz	200.000mV	200.009mV	±34uV
200mV A.C. : 1kHz	200.000mV	200.017mV	±46uV
200mV A.C. : 10kHz	200.000mV	200.054mV	±46uV
200mV A.C. : 20kHz	200.000mV	200.070mV	±70uV

2V Range : 40Hz	0.21000V	0.20999V	±49uV
2V Range : 206Hz	0.21000V	0.21000V	±49uV
2V Range : 100kHz	0.21000V	0.21024V	±580uV
2V Range. : 206Hz	1.00000V	1.00025V	±120uV
2V Range : 206Hz	1.50000V	1.50024V	±180uV

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
2V Range : 206Hz	1.50000V	1.50024V	±180uV
2V Range : 10Hz	2.00000V	2.00006V	±600uV
2V Range : 40Hz	2.00000V	1.99996V	±240uV
2V Range : 56Hz	2.00000V	1.99995V	±240uV
2V Range : 206Hz	2.00000V	2.00001V	±240uV
2V Range : 1kHz	2.00000V	1.99998V	±240uV
2V Range : 5kHz	2.00000V	1.99998V	±400uV
2V Range : 10kHz	2.00000V	1.99999V	±400uV
2V Range : 20kHz	2.00000V	2.00027V	±400uV
2V Range : 50kHz	2.00000V	2.00035V	±400uV
2V Range : 100kHz	2.00000V	2.00044V	±610uV
20V Range : 40Hz	2.1000V	2.1000V	±260uV
20V Range : 206Hz	2.1000V	2.1002V	±260uV
20V Range : 100kHz	2.1000V	2.1003V	±640uV
20V Range : 206Hz	10.0000V	10.0011V	±1.2mV
20V Range : 206Hz	15.0000V	15.0011V	±1.8mV
20V Range : 10Hz	20.0000V	20.0016V	±4.2mV
20V Range : 40Hz	20.0000V	19.9994V	±2.4mV
20V Range : 56Hz	20.0000V	19.9995V	±2.4mV
20V Range : 206Hz	20.0000V	20.0001V	±2.4mV
20V Range : 1kHz	20.0000V	20.0000V	±2.4mV
20V Range : 5kHz	20.0000V	19.9997V	±4mV
20V Range : 10kHz	20.0000V	20.0000V	±4mV
20V Range : 20kHz	20.0000V	20.0061V	±4mV
20V Range : 100kHz	20.0000V	20.0032V	±6mV
200V Range : 40Hz	21.000V	21.005V	±2.6mV
200V Range : 206Hz	21.000V	21.001V	±2.6mV
200V Range : 20kHz	21.000V	21.002V	±4.2mV
200V Range : 206Hz	100.000V	100.011V	±12mV
200V Range : 40Hz	200.000V	200.017V	±24mV
200V Range : 56Hz	200.000V	200.019V	±24mV
200V Range : 206Hz	200.000V	199.993V	±24mV
200V Range : 1000Hz	200.000V	199.987V	±24mV
200V Range : 10kHz	200.000V	199.997V	±40mV
200V Range : 20kHz	200.000V	199.981V	±40mV
1kV Range : 40Hz	210.000V	210.079V	±45mV
1kV Range : 206Hz	210.000V	210.026V	±45mV
1kV Range : 10kHz	210.000V	210.039V	±45mV
1kV Range : 40Hz	700.000V	700.176V	±91mV
1kV Range : 56Hz	700.000V	700.005V	±91mV
1kV Range : 1kHz	700.000V	699.965V	±91mV
1kV Range : 5kHz	700.000V	700.013V	±148mV
1kV Range : 10kHz	700.000V	700.035V	±148mV
1kV Range : 56Hz	1000.000V	999.826V	±130mV
1kV Range : 1kHz	1000.000V	999.761V	±130mV
Linearity - 20V DC Range			
Linearity	19.000000V	19.000000V	±63uV
Linearity	18.000000V	18.000010V	±60uV

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Test Title	Applied Value	Reading	Uncertainty
Linearity	17.000000V	17.000000V	±57uV
Linearity	16.000000V	15.999960V	±53uV
Linearity	15.000000V	15.000000V	±50uV
Linearity	14.000000V	13.999990V	±47uV
Linearity	13.000000V	12.999990V	±43uV
Linearity	12.000000V	11.999990V	±40uV
Linearity	11.000000V	10.999960V	±37uV
Linearity	9.000000V	8.999988V	±30uV
Linearity	8.000000V	7.999983V	±27uV
Linearity	7.000000V	6.999986V	±24uV
Linearity	6.000000V	5.999987V	±20uV
Linearity	5.000000V	4.999991V	±17uV
Linearity	4.000000V	3.999987V	±14uV
Linearity	3.000000V	2.999987V	±10uV
Linearity	2.100000V	2.099984V	±7uV
Linearity	-19.000000V	-19.000090V	±63uV
Linearity	-18.000000V	-18.000090V	±60uV
Linearity	-17.000000V	-17.000120V	±57uV
Linearity	-16.000000V	-16.000100V	±53uV
Linearity	-15.000000V	-15.000150V	±50uV
Linearity	-14.000000V	-14.000110V	±47uV
Linearity	-13.000000V	-13.000110V	±43uV
Linearity	-12.000000V	-12.000080V	±40uV
Linearity	-11.000000V	-11.000120V	±37uV
Linearity	-9.000000V	-9.000000V	±30uV
Linearity	-8.000000V	-8.000002V	±27uV
Linearity	-7.000000V	-7.000007V	±24uV
Linearity	-6.000000V	-6.000003V	±20uV
Linearity	-5.000000V	-5.000013V	±17uV
Linearity	-4.000000V	-4.000006V	±14uV
Linearity	-3.000000V	-3.000007V	±10uV
Linearity	-2.100000V	-2.100006V	±7uV
DC Current			
200uA Range	0.0000uA	0.0000uA	±0.2nA
200uA Range	100.0000uA	99.9991uA	±600pA
200uA Range	200.0000uA	199.9996uA	±2nA
200uA Range	-100.0000uA	-99.9990uA	±600pA
200uA Range	-200.0000uA	-199.9998uA	±2nA
2mA Range	0.210000mA	0.209997mA	±2nA
2mA Range	1.000000mA	0.999999mA	±6nA
2mA Range	2.000000mA	1.999999mA	±30nA
2mA Range	-1.000000mA	-0.999997mA	±6nA
2mA Range	-2.000000mA	-2.000002mA	±30nA
20mA Range	5.00000mA	4.99989mA	±40nA
20mA Range	10.00000mA	9.99980mA	±60nA
20mA Range	15.00000mA	14.99992mA	±170nA
20mA Range	20.00000mA	19.99997mA	±190nA
20mA Range	-5.00000mA	-4.99985mA	±40nA

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Test Title	Applied Value	Reading	Uncertainty
20mA Range	-10.00000mA	-9.99973mA	±60nA
20mA Range	-15.00000mA	-15.00003mA	±170nA
20mA Range	-20.00000mA	-20.00001mA	±190nA
200mA Range	100.0000mA	99.9996mA	±600nA
200mA Range	200.0000mA	200.0004mA	±2.3uA
200mA Range	-100.0000mA	-99.9970mA	±600nA
200mA Range	-200.0000mA	-199.9996mA	±2.3uA
2A Range	1.000000A	0.999995A	±8.7uA
2A Range	2.000000A	1.999933A	±120uA
2A Range	-1.000000A	-1.000005A	±8.7uA
2A Range	-2.000000A	-1.999961A	±120uA
22A Range	11.00000A	11.00029A	±700uA
22A Range	22.00000A	21.99995A	±1.4mA
22A Range	-22.00000A	-21.99986A	±1.4mA
22A Range	-11.00000A	-11.00006A	±700uA
AC Current			
200uA Rng: 40Hz	25.000uA	24.983uA	±15nA
200uA Rng: 206Hz	25.000uA	24.981uA	±15nA
200uA Rng: 10kHz #	25.000uA	25.025uA	±49nA
200uA Rng: 10Hz #	200.000uA	200.013uA	±260nA
200uA Rng: 40Hz	200.000uA	199.985uA	±49nA
200uA Rng: 56Hz	200.000uA	199.975uA	±49nA
200uA Rng: 1kHz	200.000uA	200.000uA	±49nA
200uA Rng: 10kHz #	200.000uA	199.986uA	±247nA
2mA Rng: 40Hz	0.21000mA	0.20997mA	±55nA
2mA Rng: 206Hz	0.21000mA	0.21002mA	±55nA
2mA Rng: 10kHz #	0.21000mA	0.21006mA	±0.19uA
2mA Rng: 10Hz #	2.00000mA	2.00013mA	±1uA
2mA Rng: 40Hz	2.00000mA	2.00001mA	±400nA
2mA Rng: 56Hz	2.00000mA	2.00001mA	±400nA
2mA Rng: 1kHz	2.00000mA	2.00000mA	±400nA
2mA Rng: 10kHz #	2.00000mA	1.99995mA	±1.8uA
20mA Rng: 40Hz	2.1000mA	2.1001mA	±430nA
20mA Rng: 206Hz	2.1000mA	2.1001mA	±430nA
20mA Rng: 10kHz #	2.1000mA	2.1000mA	±1.9uA
20mA Rng: 56Hz	10.0000mA	10.0015mA	±2uA
20mA Rng: 10Hz	20.0000mA	20.0017mA	±26uA
20mA Rng: 40Hz	20.0000mA	20.0001mA	±4uA
20mA Rng: 1kHz	20.0000mA	19.9995mA	±4uA
20mA Rng: 10kHz	20.0000mA	19.9996mA	±20uA
200mA Rng: 40Hz	21.000mA	20.998mA	±4.2uA
200mA Rng: 206Hz	21.000mA	21.001mA	±4.2uA
200mA Rng: 10kHz	21.000mA	21.001mA	±19uA
200mA Rng: 10Hz	200.000mA	200.013mA	±75uA
200mA Rng: 40Hz	200.000mA	200.001mA	±40uA
200mA Rng: 56Hz	200.000mA	200.000mA	±40uA

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Test Title	Applied Value	Reading	Uncertainty
200mA Rng: 56Hz	200.000mA	200.000mA	±40uA
200mA Rng: 1kHz	200.000mA	200.019mA	±40uA
200mA Rng: 10kHz	200.000mA	199.996mA	±180uA
2A Rng: 40Hz	0.21000A	0.21004A	±42uA
2A Rng: 206Hz	0.21000A	0.21002A	±42uA
2A Rng: 2kHz	0.21000A	0.20999A	±0.19mA
2A Rng: 10Hz #	2.00000A	2.00012A	±0.9mA
2A Rng: 40Hz	2.00000A	2.00000A	±0.5mA
2A Rng: 56Hz	2.00000A	1.99999A	±0.5mA
2A Rng: 1kHz	2.00000A	2.00005A	±0.5mA
2A Rng: 2kHz #	2.00000A	1.99981A	±1.8mA
22A Rng: 40Hz	2.10000A	2.09884A	±530uA
22A Rng: 206Hz	2.10000A	2.09862A	±530uA
22A Rng: 10Hz	22.00000A	22.00110A	±26mA
22A Rng: 40Hz	22.00000A	22.00260A	±5mA
22A Rng: 56Hz	22.00000A	21.99890A	±5mA
22A Rng: 100Hz	22.00000A	21.99740A	±5mA
22A Rng: 1kHz	22.00000A	22.00070A	±5mA

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Test Title	Applied Value	Reading	Uncertainty
2 Wire Resistance measured as value at terminals.			
0R 2 Wire	0.1810Ω	0.1815Ω	±0.8mΩ
10R 2 Wire	10.194Ω	10.194Ω	±1mΩ
100R 2 Wire	100.215Ω	100.215Ω	±1.3mΩ
1kR 2 Wire	1.000233kΩ	1.000233kΩ	±3.8mΩ
10kR 2 Wire	10.00040kΩ	10.00040kΩ	±21mΩ
100kR 2 Wire	100.0085kΩ	100.0084kΩ	±620mΩ
1MR 2 Wire	1.000000MΩ	0.999998MΩ	±14Ω
10MR 2 Wire	10.00104MΩ	10.00105MΩ	±150Ω
100MR 2 Wire	99.5590MΩ	99.5270MΩ	±4.5kΩ
4 Wire Ohms Measured relative to Zero			
10R 4 Wire	10.011620Ω	10.011468Ω	±150uΩ
100R 4 Wire	100.00786Ω	100.00775Ω	±0.4mΩ
1kR 4 Wire	1.0000208kΩ	1.0000207kΩ	±3mΩ
10kR 4 Wire	10.000195kΩ	10.000202kΩ	±12mΩ
100kR 4 Wire	100.00850kΩ	100.00804kΩ	±800mΩ
Capacitance @ 1kHz Measured Cp up to 1uF, Cs above			
10nF	10.133nF	10.131nF	±12pF
20nF	20.098nF	20.096nF	±28pF
50nF	50.121nF	50.120nF	±35pF
100nF	99.94nF	99.94nF	±60pF
1uF	1.0081uF	1.0080uF	±0.52nF
Reference Frequency Output			
Frequency	10.000000MHz	9.999988MHz	±2Hz
Frequency	1.0000000MHz	0.9999999MHz	±0.2Hz
Frequency	100.00000kHz	99.99998kHz	±0.02Hz
Frequency	50.000000kHz	49.999993kHz	±0.01Hz
Frequency	20.000000kHz	19.999997kHz	±0.004Hz
Frequency	10.000000kHz	9.999999kHz	±2mHz
Frequency	1.0000000kHz	0.9999999kHz	±0.2mHz
Frequency	100.00000Hz	99.99998Hz	±0.02mHz
A/D Input			
10V A/D Input	10.0000V	10.0001V	±100uV
5V A/D Input	5.0000V	4.9999V	±100uV
0V A/D Input	0.0000V	0.0000V	±100uV
-5V A/D Input	-5.0000V	-4.9999V	±100uV
-10V A/D Input	-10.0000V	-10.0000V	±100uV
Power Option: AC Voltage (Short Current Terminals)			
20V Range : 56Hz	20.000V	19.999V	±2.4mV
200V Range : 60Hz	50.000V	50.019V	±6mV
200V Range : 60Hz	100.000V	100.021V	±12mV
200V Range : 45Hz	200.000V	200.038V	±24mV
200V Range : 60Hz	200.000V	200.022V	±24mV
200V Range : 400Hz	200.000V	199.985V	±24mV
1000V Range : 60Hz	500.000V	500.035V	±105mV
Power Option: AC Current (Disconnect Voltage Leads)			
2A Rng / 20V / 56Hz	0.30000A	0.29973A	±0.8mA
2A Rng / 20V / 400Hz	0.30000A	0.29965A	±0.8mA
2A Rng / 110V / 56Hz	0.30000A	0.29972A	±0.8mA

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Test Title	Applied Value	Reading	Uncertainty
2A Rng / 110V /400Hz	0.30000A	0.29964A	±0.8mA
2A Rng / 220V / 56Hz	0.30000A	0.29972A	±0.8mA
2A Rng/20V/56Hz	1.00000A	1.00009A	±0.8mA
2A Rng/20V/60Hz	2.00000A	1.99998A	±1.8mA
2A Rng/20V/56Hz	2.00000A	2.00000A	±1.8mA
2A Rng/20V/400Hz	2.00000A	1.99959A	±1.8mA
2A Rng/110V/56Hz	2.00000A	1.99999A	±1.8mA
2A Rng/110V/400Hz	2.00000A	1.99959A	±1.8mA
2A Rng/220V/56Hz	2.00000A	1.99996A	±1.8mA
2A Rng/220V/400Hz	2.00000A	1.99958A	±1.8mA
2A Rng/500V/56Hz	2.00000A	1.99994A	±1.8mA
2A Rng/500V/400Hz	2.00000A	1.99954A	±1.8mA
2A Rng/1000V/56Hz	2.00000A	1.99997A	±1.8mA
2A Rng/1000V/400Hz	2.00000A	1.99954A	±1.8mA
20A Rng/20V/56Hz	3.00000A	2.99994A	±2.2mA
20A Rng/20V/400Hz	3.00000A	2.99947A	±2.2mA
20A Rng/110V/56Hz	3.00000A	2.99976A	±2.2mA
20A Rng/110V/400Hz	3.00000A	2.99932A	±2.2mA
20A Rng/220V/56Hz	3.00000A	2.99972A	±2.2mA
20A Rng/220V/400Hz	3.00000A	2.99928A	±2.2mA
20A Rng/20V/40Hz	10.00000A	10.00326A	±5mA
20A Rng/20V/56Hz	10.00000A	10.00112A	±5mA
20A Rng/20V/400Hz	10.00000A	10.00034A	±5mA
20A Rng/110V/56Hz	10.00000A	10.00118A	±5mA
20A Rng/110V/400Hz	10.00000A	10.00041A	±5mA
20A Rng/220V/56Hz	10.00000A	10.00121A	±5mA
20A Rng/220V/400Hz	10.00000A	10.00035A	±5mA
20A Rng/20V/56Hz	15.00000A	14.99895A	±7mA
20A Rng/20V/56Hz	20.00000A	19.99840A	±9mA
20A Rng/20V/400Hz	20.00000A	19.99560A	±9mA
20A Rng/110V/56Hz	20.00000A	19.99850A	±9mA
20A Rng/110V/400Hz	20.00000A	19.99555A	±9mA
20A Rng/220V/56Hz	20.00000A	19.99820A	±9mA
20A Rng/220V/400Hz	20.00000A	19.99565A	±9mA
20A Rng/500V/56Hz	20.00000A	19.99840A	±9mA
20A Rng/500V/400Hz	20.00000A	19.99535A	±9mA
20A Rng/1000V/56Hz	20.00000A	19.99765A	±9mA
20A Rng/1000V/400Hz	20.00000A	19.99520A	±9mA

Power Option: DC Current (Disconnect Voltage Leads)

3A DC +FS Adj	2.00000A	2.00079A	±0.8mA
20A Range / 20V DC	20.00000A	19.99777A	±1mA
20A Range / 110V DC	20.00000A	19.99768A	±1mA
20A Range / 220V DC	20.00000A	19.99770A	±1mA
20A Range / 500V DC	20.00000A	19.99750A	±1mA
20A Range / 1000V DC	20.00000A	19.99736A	±1mA
20A Range / 20V DC	3.00000A	3.00088A	±1mA
20A Range / 110V DC	3.00000A	3.00088A	±1mA
20A Range / 220V DC	3.00000A	3.00082A	±1mA
20A Range / 500V DC	3.00000A	3.00080A	±1mA
2A Range / 20V DC	2.00000A	2.00079A	±96uA
2A Range / 110V DC	2.00000A	2.00079A	±96uA

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Test Title	Applied Value	Reading	Uncertainty
2A Range / 110V DC	2.00000A	2.00079A	±96uA
2A Range / 220V DC	2.00000A	2.00078A	±96uA
2A Range / 500V DC	2.00000A	2.00077A	±96uA
2A Range / 20V DC	0.30000A	0.30030A	±10uA
2A Range / 110V DC	0.30000A	0.30030A	±10uA
2A Range / 220V DC	0.30000A	0.30029A	±10uA
2A Range / 500V DC	0.30000A	0.30029A	±10uA

Power Option: DC Voltage (Short Current Terminals)

20V Range DC	10.0000V	9.9999V	±66uV
20V Range DC	20.0000V	19.9999V	±66uV
200V Range DC	200.000V	200.000V	±660uV
1000V Range DC	500.000V	500.003V	±2.5mV
1000V Range DC	1000.000V	1000.002V	±4.5mV

Phase Angle, Measured at 150V/5A 50Hz AC

0° Phase Angle	0.00°	0.01°	±0.17°
60° Phase Angle	60.00°	60.01°	±0.17°
90° Phase Angle	90.00°	90.01°	±0.17°

Phase Angle Full Range

0°:20V:0.3A: 50Hz	0.00°	-0.01°	±0.17°
0°:20V:2A: 50Hz	0.00°	0.01°	±0.17°
0°:220V:2A: 50Hz	0.00°	0.06°	±0.17°
60°:220V:2A: 50Hz	60.00°	60.05°	±0.17°
90°:220V:2A: 50Hz	90.00°	89.98°	±0.17°
0°:220V:2A: 400Hz#	0.00°	-0.05°	±0.2°
0°:220V:3A: 50Hz	0.00°	0.00°	±0.17°
90°:220V:20A: 50Hz	90.00°	90.03°	±0.17°
0°:220V:5A: 400Hz#	0.00°	0.20°	±0.2°

End Of Test Results

END OF TEST DATA

Instrument Service Log

MAP TOOLS BV, MICHEL NIJSEN, 6584 AH MOLENHOEK, MIDDELWEG 10C.



Instrument Description	electrical test calibrator
Model Number	3200B
Serial Number	M1572J21
System ID	T00117947
Reference Number	
Used By / Location	
Date Acquired	
Instrument Cost	
Calibration Interval	52 weeks

<i>Date</i>	<i>Details</i>	<i>Calibration</i>
21/10/2021	New Instrument Test; UKAS Calibration; Certificate number : 44854 Parts Used : NONE Customer Order No. : P2020-111; Job No. : 77792 New Instrument All tests passed UKAS calibration.	by G.A. Shapland

Issued by : Transmille Ltd., Transmille Ltd. Unit 4, Select Business Centre Lodge Road Staplehurst, Kent. TN12 0QW. TEL 01580 890700 FAX 01580 890711

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Issued By Transmille Ltd.

Certificate Number 44854

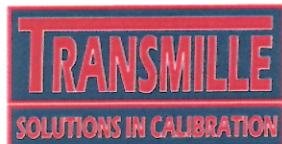
Date of Issue 21 October 2021



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Customer : MAP TOOLS BV
MICHIEL NIJSEN, MIDDELWEG 10C
6584 AH MOLENHOEK

Date Received : 18 October 2021

Instrument :	System ID :	T00117947	Job Number :	77792
	Description :	Electrical Test Calibrator		
	Manufacturer :	Transmille		
	Model Number :	3200B		
	Serial Number :	M1572J21		
	Procedure Number & Version :	8208 : 5.0AT/N		

Environmental Conditions

Temperature : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Relative Humidity : $40\%\text{RH} \pm 20\%\text{RH}$

Mains Voltage : $230\text{V} \pm 12\text{V}$
Mains Frequency : $50\text{Hz} \pm 1\text{Hz}$

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Instrument calibrated with Bond lead supplied
4 Wire kelvin connections were used for ohms measurements below 10kOhms

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 : G.A. Shapland

Date of Calibration : 21 October 2021

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0324

Certificate Number
44854

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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
Download Cal Factors	---	Pass	
3200B Version 10.4.4			
Insulation Resistance (0.01M Ohms to 2000M Ohms)			
10kR	10.0000k Ω	9.9951k Ω	$\pm 430\text{m}\Omega$
20kR	20.0000k Ω	20.0098k Ω	$\pm 610\text{m}\Omega$
30kR	30.0000k Ω	29.9972k Ω	$\pm 610\text{m}\Omega$
40kR	40.0000k Ω	40.0079k Ω	$\pm 610\text{m}\Omega$
60kR	60.0000k Ω	60.0055k Ω	$\pm 800\text{m}\Omega$
100kR	100.000k Ω	100.029k Ω	$\pm 2\Omega$
200kR	200.000k Ω	200.047k Ω	$\pm 6\Omega$
400kR	400.000k Ω	400.089k Ω	$\pm 10\Omega$
600kR	600.000k Ω	600.132k Ω	$\pm 14\Omega$
1MR	1.00000M Ω	1.00008M Ω	$\pm 22\Omega$
2MR	2.00000M Ω	2.00035M Ω	$\pm 250\Omega$
3MR	3.00000M Ω	3.00041M Ω	$\pm 310\Omega$
4MR	4.00000M Ω	4.00033M Ω	$\pm 370\Omega$
5MR	5.00000M Ω	4.99962M Ω	$\pm 430\Omega$
6MR	6.00000M Ω	6.00014M Ω	$\pm 500\Omega$
7MR	7.00000M Ω	7.00037M Ω	$\pm 580\Omega$
8MR	8.00000M Ω	8.00031M Ω	$\pm 660\Omega$
9MR	9.00000M Ω	9.00016M Ω	$\pm 740\Omega$
10MR	10.0000M Ω	9.9753M Ω	$\pm 830\Omega$
20MR	20.0000M Ω	20.0122M Ω	$\pm 14\text{k}\Omega$
30MR	30.0000M Ω	29.9860M Ω	$\pm 20\text{k}\Omega$
40MR	40.0000M Ω	40.0731M Ω	$\pm 25\text{k}\Omega$
50MR	50.0000M Ω	49.9577M Ω	$\pm 32\text{k}\Omega$
60MR	60.0000M Ω	59.9373M Ω	$\pm 38\text{k}\Omega$
70MR	70.0000M Ω	69.9742M Ω	$\pm 44\text{k}\Omega$
80MR	80.0000M Ω	79.9520M Ω	$\pm 51\text{k}\Omega$
90MR	90.0000M Ω	90.0379M Ω	$\pm 57\text{k}\Omega$
100MR	100.000M Ω	100.050M Ω	$\pm 64\text{k}\Omega$
200MR	200.000M Ω	199.965M Ω	$\pm 1.6\text{M}\Omega$
400MR	400.000M Ω	400.047M Ω	$\pm 3.2\text{M}\Omega$
600MR	600.000M Ω	598.107M Ω	$\pm 4.9\text{M}\Omega$
800MR	800.000M Ω	798.088M Ω	$\pm 6.5\text{M}\Omega$
1000MR	1000.0M Ω	993.3M Ω	$\pm 8.1\text{M}\Omega$
2000MR	2000.0M Ω	1991.5M Ω	$\pm 8.9\text{M}\Omega$

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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
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Continuity Resistance

Connection to the 3200 insulation test terminals was made using 4 wire ohms with the system nulled when shorted at the terminals. The readings recorded are the resistance measured at the terminals and include any residual resistance of the 3200.

50mR	50.0mΩ	49.5mΩ	± 270uΩ
100mR	100.0mΩ	99.5mΩ	± 270uΩ
200mR	200.0mΩ	200.0mΩ	± 270uΩ
210mR	210.0mΩ	209.9mΩ	± 270uΩ
220mR	220.0mΩ	219.7mΩ	± 270uΩ
230mR	230.0mΩ	229.6mΩ	± 270uΩ
240mR	240.0mΩ	240.2mΩ	± 270uΩ
250mR	250.0mΩ	250.0mΩ	± 270uΩ
260mR	260.0mΩ	259.9mΩ	± 270uΩ
270mR	270.0mΩ	269.8mΩ	± 270uΩ
280mR	280.0mΩ	279.7mΩ	± 270uΩ
290mR	290.0mΩ	290.2mΩ	± 270uΩ
300mR	300.0mΩ	300.0mΩ	± 270uΩ
400mR	400.0mΩ	400.0mΩ	± 270uΩ
500mR	500.0mΩ	499.8mΩ	± 270uΩ
600mR	600.0mΩ	600.3mΩ	± 270uΩ
700mR	700.0mΩ	700.1mΩ	± 270uΩ
800mR	800.0mΩ	800.1mΩ	± 270uΩ
900mR	900.0mΩ	899.9mΩ	± 270uΩ
1R	1.0000Ω	1.0005Ω	± 270uΩ
2R	2.0000Ω	2.0007Ω	± 270uΩ
4R	4.0000Ω	4.0007Ω	± 290uΩ
6R	6.0000Ω	6.0015Ω	± 310uΩ
8R	8.0000Ω	8.0015Ω	± 330uΩ
10R	10.0000Ω	10.0013Ω	± 350uΩ
20R	20.0000Ω	20.0027Ω	± 890uΩ
50R	50.0000Ω	50.0051Ω	± 1.7mΩ
100R	100.000Ω	100.020Ω	± 2.3mΩ
500R	500.000Ω	499.970Ω	± 8mΩ
1kR	1.00000kΩ	1.00062kΩ	± 17mΩ
5kR	5.0000kΩ	5.0003kΩ	± 93mΩ
10kR	10.0000kΩ	10.0005kΩ	± 430mΩ
20kR	20.0000kΩ	19.9993kΩ	± 610mΩ
40kR	40.0000kΩ	40.0002kΩ	± 860mΩ
50kR	50.0000kΩ	50.0018kΩ	± 860mΩ

Continuity Current (Range 0 to 320mA D.C.)

10mA	10.00mA	10.0mA	± 0.4mA
50mA	50.00mA	50.1mA	± 0.4mA
100mA	100.00mA	100.0mA	± 0.4mA
200mA	200.00mA	200.0mA	± 0.4mA
300mA	300.00mA	300.0mA	± 0.4mA

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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
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AC Voltage Output (100V - 200V - Line - 300V - 400V)

100 Volts Nom @ 50Hz	99.85V	99.9V	± 140mV
200 Volts Nom @ 50Hz	199.86V	200.0V	± 150mV
Line Volts @ 50Hz	239.56V	239.6V	± 160mV
300 Volts Nom @ 50Hz	299.57V	299.6V	± 190mV
400 Volts Nom @ 50Hz	399.68V	399.8V	± 230mV

Insulation Resistance Voltage Measurement

Insulation Resistance Voltage Measurement -16th Edition (D.C. Voltage)

50V	50.00V	50.0V	± 120mV
100V	100.00V	100.0V	± 120mV
250V	150.00V	150.0V	± 300mV
250V	200.00V	200.0V	± 300mV
250V	250.00V	250.0V	± 300mV
500V	500.00V	500.0V	± 520mV
1000V	1000.00V	999.9V	± 1.2V

Insulation Resistance D.C. Current Measurement -16th Edition 500V / 1000V Ranges

1.0mA @ 500V	1.0000mA	1.000mA	± 4uA
1.0mA @ 1000V	1.0000mA	1.000mA	± 4uA

Insulation Resistance Voltage Measurement -17th Edition (D.C. Voltage)

50V	50.00V	50.0V	± 120mV
100V	100.00V	100.0V	± 120mV
250V	150.00V	150.1V	± 300mV
250V	200.00V	200.0V	± 300mV
250V	250.00V	250.1V	± 300mV
500V	500.00V	499.9V	± 520mV
1000V	1000.00V	1000.1V	± 1.2V

Insulation Resistance D.C. Current Measurement -17th Edition 500V / 1000V Range

0.5mA @ 500V	0.5000mA	0.500mA	± 4uA
1.0mA @ 1000V	1.0000mA	1.000mA	± 4uA

Loop Resistance

Loop impedance was measured using 4 wire ohms connections between the earth pin of the 3200 loop test socket and the earth pin of the 3200 mains supply lead. The supply loop impedance was manually entered as zero and the measurement system was nulled. The recorded readings are the differences recorded from the zero value.

Loop Res.	0.0570Ω	0.0568Ω	± 1mΩ
Loop Res.	0.1249Ω	0.1248Ω	± 1.1mΩ
Loop Res.	0.2308Ω	0.2307Ω	± 1.1mΩ
Loop Res.	0.3537Ω	0.3538Ω	± 1.2mΩ
Loop Res.	0.4927Ω	0.4931Ω	± 1.3mΩ
Loop Res.	0.9667Ω	0.9671Ω	± 1.5mΩ
Loop Res.	4.9648Ω	4.9650Ω	± 1.5mΩ
Loop Res.	9.0511Ω	9.0505Ω	± 6mΩ
Loop Res.	90.830Ω	90.816Ω	± 18mΩ
Loop Res.	901.458Ω	901.486Ω	± 35mΩ
Auto Loop Res.	0.5100Ω	0.5031Ω	± 24mΩ

RCD Current

10mA @ 50Hz	2.000mA	2.00mA	± 20uA
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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
10mA @ 50Hz	2.000mA	2.00mA	± 20uA
10mA @ 50Hz	10.000mA	10.00mA	± 20uA
30mA @ 50Hz	6.000mA	6.01mA	± 80uA
30mA @ 50Hz	30.000mA	30.01mA	± 80uA
100mA @ 50Hz	20.000mA	20.00mA	± 150uA
100mA @ 50Hz	90.000mA	90.03mA	± 160uA
100mA @ 50Hz	100.000mA	100.02mA	± 160uA
100mA @ 50Hz	110.000mA	110.03mA	± 170uA
300mA @ 50Hz	60.000mA	60.06mA	± 240uA
300mA @ 50Hz	150.000mA	150.04mA	± 240uA
300mA @ 50Hz	300.000mA	300.04mA	± 840uA
1000mA @ 50Hz	200.00mA	200.2mA	± 1.7mA
1000mA @ 50Hz	1000.00mA	1000.0mA	± 1.7mA
3000mA @ 50Hz	400.00mA	402.0mA	± 3mA
3000mA @ 50Hz	2000.00mA	1999.3mA	± 3mA

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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
RCD Trip time - 0°			
20ms	20.0ms	20.0ms	± 0.5ms
30ms	30.0ms	30.0ms	± 0.5ms
40ms	40.0ms	40.0ms	± 0.5ms
100ms	100.0ms	100.0ms	± 0.5ms
200ms	200.0ms	199.9ms	± 0.5ms
390ms	390.0ms	390.0ms	± 0.5ms
900ms	900.0ms	899.9ms	± 8.1ms

RCD Trip time - 180°

30ms	30.0ms	30.0ms	± 0.5ms
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PAT : Insulation Resistance

The PAT Insulation Resistance is produced from the same decade resistance arm as used for the Insulation Resistance output. The following Tests are only to confirm the operation of the output switching. For the Full range of values, use the Insulation measurements on this certificate.

1MR	1.00008MΩ	1.00011MΩ	± 22Ω
2MR	2.00035MΩ	2.00016MΩ	± 170Ω
4MR	4.00033MΩ	3.99955MΩ	± 330Ω
6MR	6.00014MΩ	5.99850MΩ	± 500Ω
8MR	8.00031MΩ	7.99696MΩ	± 660Ω
10MR	9.9753MΩ	9.9703MΩ	± 830Ω

PAT : Earth Bond Resistance

The resistances recorded include the resistance of the PAT test mains lead (approx 25milliohms)

PAT Lead No	1000a	4878a	
PAT Lead Resistance	25.0mΩ	20.9mΩ	± 260uΩ
Bond Res.	0.0554Ω	0.0550Ω	± 1mΩ
Bond Res.	0.1121Ω	0.1123Ω	± 1mΩ
Bond Res.	0.1807Ω	0.1810Ω	± 1.1mΩ
Bond Res.	0.2878Ω	0.2882Ω	± 1.1mΩ
Bond Res.	0.4112Ω	0.4117Ω	± 1.2mΩ
Bond Res.	0.5500Ω	0.5506Ω	± 1.3mΩ
Bond Res.	1.0260Ω	1.0257Ω	± 1.5mΩ
Bond Res.	5.0194Ω	5.0195Ω	± 3.5mΩ
Bond Res.	9.1081Ω	9.1081Ω	± 6mΩ
Bond Res.	90.892Ω	90.8941Ω	± 18mΩ
Bond Res.	901.426Ω	901.4380Ω	± 35mΩ

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AS FOUND RESULTS

Test Title	Applied Value	Reading	Uncertainty
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PAT : Earth Bond Current Measurement at 0.1 Ohm load

500mA Rng @ 50Hz	100.0mA	100mA	± 1.2mA
500mA Rng @ 50Hz	200.0mA	201mA	± 1.2mA
500mA Rng @ 50Hz	400.0mA	400mA	± 1.2mA
10A Rng @ 50Hz	4.000A	4.01A	± 15mA
10A Rng @ 50Hz	8.000A	8.01A	± 15mA
10A Rng @ 50Hz	10.000A	10.00A	± 16mA
30A Rng @ 50Hz	12.000A	12.06A	± 22mA
30A Rng @ 50Hz	20.000A	20.03A	± 22mA
30A Rng @ 50Hz	25.000A	25.00A	± 22mA

PAT : Earth Bond Current Measurement at 0.02 Ohm load

10A Rng @ 50Hz	4.000A	4.01A	± 15mA
30A Rng @ 50Hz	25.000A	25.05A	± 22mA

PAT: Load Testing

S/C Test	0.00Ω	0.27Ω	± 10mΩ
O/C test	---	Pass	
0.13kVA Test	440Ω	434.9Ω	± 0.1Ω

PAT: Leakage Current

Leakage @ 240V	2.000mA	2.001mA	± 9.3uA
Leakage @ 240V	4.700mA	4.706mA	± 9.3uA
Leakage @ 240V	7.700mA	7.680mA	± 9.3uA

End of results

END OF TEST DATA

Instrument Service Log

MAP TOOLS BV, MICHEL NIJSEN, 6584 AH MOLENHOEK, MIDDELWEG 10C,



Instrument Description

hv
insulation tester adapter

Model Number

EXTHV

Serial Number

113626J21

System ID

T00117948

Reference Number

Used By / Location

Date Acquired

-

Instrument Cost

-

Calibration Interval

52 weeks

Date	Details	Calibration
20/10/2021	New Instrument Test; UKAS Calibration; Certificate number : 44858 Parts Used : NONE Customer Order No. : P2020-111; Job No. : 77793 New Instrument All tests passed UKAS calibration.	by G.A. Shapland

CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 44858

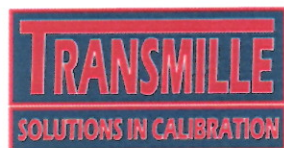
Date of Issue 20 October 2021



0324

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Approved Signatory



www.transmille.com

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G.A. Shapland ☒

M.A. Bailey ☐

S.A. Hawkins ☐

J.J. Bailey ☐

Customer : MAP TOOLS BV
MICHIEL NIJSEN, MIDDELWEG 10C
6584 AH MOLENHOEK

Date Received : 18 October 2021

Instrument :	System ID :	T00117948	Job Number :	77793
	Description :	HV Insulation Tester Adapter		
	Manufacturer :	Transmille		
	Model Number :	EXTHV		
	Serial Number :	113626J21		
	Procedure Number & Version :	4921 : 5.00/N		

Environmental Conditions

Temperature : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$
Relative Humidity : $40\%\text{RH} \pm 20\%\text{RH}$

Mains Voltage : $230\text{V} \pm 12\text{V}$
Mains Frequency : $50\text{Hz} \pm 1\text{Hz}$

Comments

Instrument was allowed to stabilise for at least 12 hours before 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 : G.A. Shapland

Date of Calibration : 20 October 2021

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AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainty
Neon	---	Pass	
-ve output to guard	101.500k Ω	101.500k Ω	$\pm 2.4\Omega$
-ve O/P to pos I/P	10.000M Ω	9.986M Ω	$\pm 1.3k\Omega$
Voltage Division Test			
1000V DC	10.048V	10.062V	$\pm 1.2mV$

End of results

END OF TEST DATA