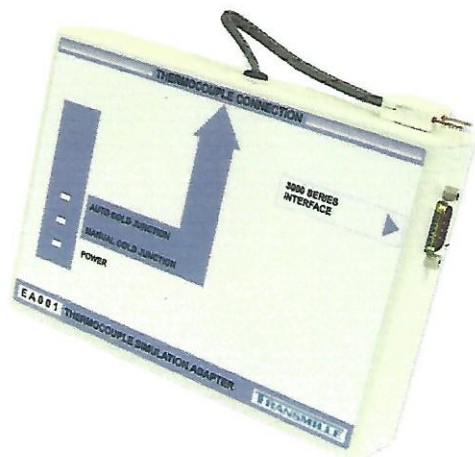


Instrument Service Log

TECNOPLUS ARGENTINA, ALDERETE 2393, NEUQUEN CP., 8300



Instrument Description	source/measure t/c adapter
Model Number	EA001A
Serial Number	112452G18
System ID	T00059977
Reference Number	
Used By / Location	
Date Acquired	
Instrument Cost	
Calibration Interval	52 weeks

<i>Date</i>	<i>Details</i>	<i>Calibration</i>
06/07/2018	New Instrument Test; UKAS Calibration; Certificate number : 36359 Parts Used :	by E. Bailey
03/11/2018	Customer Order No. : 3357TUSA; Job No. : 69680 New Instrument All tests passed UKAS calibration. Calibration Only; UKAS Calibration; Certificate number : 37266 Parts Used : NONE Customer Order No. : 3417TUSA; Job No. : 70628-2 New Instrument All tests passed UKAS calibration.	by J. O. Bain

CERTIFICATE OF CALIBRATION

Issued By Transmille Ltd.

Certificate Number 37266

Date of Issue 03 November 2018



0324



www.transmille.com

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

Page 1 of 5 Pages

Approved Signatory

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

Customer : TECNOPLUS ARGENTINA
ALDERETE 2393, NEUQUEN CP
8300

Date Received : 29 October 2018

Instrument :	System ID :	T00059977	Job Number :	70628-2
	Description :	Source/Measure T/C Adapter	Ref. Number :	
	Manufacturer :	Transmille	Site :	
	Model Number :	EA001A	Location :	
	Serial Number :	112452G18	Last Calibration Certificate :	36359
	Procedure Version :	12/N	Last Calibration Date :	06/07/2018

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.
Reference temperature of 0°C used for the thermocouple CJC.
Temperature Scale ITS90
Temperature measurement uncertainties apply to the applied mV input
(the calculated equivalent temperature at the points on the scale)

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. O. Bain

Date of Calibration : 03 November 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.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0324
AFTER ADJUSTMENT RESULTS

Certificate Number
37266

Page 2 of 5 Pages

Test Title	Applied Value	Reading	Uncertainties
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)	-190.00°C	-189.87°C	±0.20°C
-140°C (-4.669mV)	-140.00°C	-139.90°C	±0.15°C
-100°C (-3.554mV)	-100.00°C	-99.93°C	±0.10°C
-50°C (-1.889mV)	-50.00°C	-49.93°C	±0.10°C
-25°C (-0.968mV)	-25.00°C	-24.98°C	±0.10°C
0°C (0.000mV)	0.00°C	0.05°C	±0.10°C
100°C (4.096mV)	100.00°C	100.02°C	±0.10°C
122°F (2.023mV)	122.00°F	122.10°F	±0.18°F
212°F (4.096mV)	212.00°F	212.06°F	±0.18°F
120°C (4.920mV)	120.00°C	120.02°C	±0.10°C
200°C (8.138mV)	200.00°C	200.02°C	±0.10°C
500°C (20.644mV)	500.00°C	500.02°C	±0.10°C
700°C (29.129mV)	700.00°C	700.01°C	±0.10°C
1000°C (41.276mV)	1 000.00°C	1 000.04°C	±0.10°C
1370°C (54.819mV)	1 370.00°C	1 370.06°C	±0.10°C

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

-200°C (-7.890mV)	-200.00°C	-199.90°C	±0.20°C
0°C (0.000mV)	0.00°C	0.04°C	±0.10°C
400°C (21.848mV)	400.00°C	400.01°C	±0.10°C
1200°C (69.553mV)	1 200.00°C	1 200.04°C	±0.10°C

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

-240°C (-6.105mV)	-240.00°C	-239.75°C	±0.40°C
0°C (0.000mV)	0.00°C	0.04°C	±0.10°C
400°C (20.872mV)	400.00°C	400.02°C	±0.10°C

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

0°C (0.000mV)	0.00°C	0.24°C	±0.55°C
400°C (3.408mV)	400.00°C	400.17°C	±0.30°C
1760°C (21.003mV)	1 760.00°C	1 760.06°C	±0.25°C

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

0°C (0.000mV)	0.00°C	0.30°C	±0.55°C
400°C (3.259mV)	400.00°C	400.14°C	±0.30°C
1760°C (18.609mV)	1 760.00°C	1 760.08°C	±0.25°C

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

-190°C (-3.884mV)	-190.00°C	-189.86°C	±0.30°C
-25°C (-0.646mV)	-25.00°C	-24.97°C	±0.15°C
120°C (3.374mV)	120.00°C	120.02°C	±0.10°C
1300°C (47.513mV)	1 300.00°C	1 300.02°C	±0.10°C

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

600°C (1.792mV)	600.00°C	600.24°C	±0.45°C
-----------------	----------	----------	---------

CERTIFICATE OF CALIBRATION

Certificate Number
37266

Page 3 of 5 Pages

UKAS Accredited Calibration Laboratory No. 0324
AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainties
1000°C (4.834mV)	1 000.00°C	1 000.14°C	±0.30°C
1820°C (13.820mV)	1 820.00°C	1 820.10°C	±0.25°C
Temperature Measure - Type E - CJC at 0°C - ITS90			
-240°C (-9.604mV)	-240.00°C	-239.87°C	±0.30°C
-25°C (-1.432mV)	-25.00°C	-24.98°C	±0.10°C
350°C (24.964mV)	350.00°C	350.00°C	±0.03°C
1000°C (76.373mV)	1 000.00°C	1 000.04°C	±0.10°C
Temperature Measure - Type L - CJC at 0°C - ITS90			
-200°C (8.158mV)	-200.00°C	-199.95°C	±0.10°C
0°C (0.000mV)	0.00°C	0.04°C	±0.10°C
900°C (53.154mV)	900.00°C	900.04°C	±0.10°C
Temperature Measure - Type U - CJC at 0°C - ITS90			
-200°C (-5.696mV)	-200.00°C	-199.89°C	±0.15°C
0°C (0.000mV)	0.00°C	0.07°C	±0.10°C
600°C (34.309mV)	600.00°C	600.01°C	±0.10°C
Temperature Measure - Type C - CJC at 0°C - ITS90			
10°C (0.135mV)	10.00°C	10.12°C	±0.25°C
650°C (11.583mV)	650.00°C	650.04°C	±0.15°C
1000°C (18.257mV)	1 000.00°C	1 000.06°C	±0.15°C
2316°C (37.070mV)	2 316.00°C	2 316.06°C	±0.35°C

CERTIFICATE OF CALIBRATION

Certificate Number
37266

UKAS Accredited Calibration Laboratory No. 0324
AFTER ADJUSTMENT RESULTS

Page 4 of 5 Pages

Test Title	Applied Value	Reading	Uncertainties
------------	---------------	---------	---------------

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	-5.8882mV	±1.4uV
-4.669mV (-140°C)	-4.669mV	-4.6663mV	±1.4uV
-3.554mV (-100°C)	-3.554mV	-3.5512mV	±1.4uV
-1.889mV (-50°C)	-1.889mV	-1.8863mV	±1.4uV
-0.968mV (-25°C)	-0.968mV	-0.9654mV	±1.4uV
0.000mV (0°C)	0.000mV	0.002 6mV	±1.4uV
4.096mV (100°C)	4.096mV	4.097 8mV	±1.4uV
2.023mV (122°F)	2.023mV	2.024 9mV	±1.4uV
4.096mV (212°F)	4.096mV	4.097 9mV	±1.4uV
4.920mV (120°C)	4.920mV	4.921 9mV	±1.4uV
8.138mV (200°C)	8.138mV	8.139 7mV	±1.4uV
20.644mV (500°C)	20.644mV	20.644 7mV	±1.5uV
29.129mV (700°C)	29.129mV	29.129 0mV	±1.5uV
41.276mV (1000°C)	41.276mV	41.274 9mV	±1.6uV
54.819mV (1370°C)	54.819mV	54.817 3mV	±1.7uV

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

-8.095mV (-210°C)	-8.095mV	-8.0930mV	±1.4uV
0.000mV (0°C)	0.000mV	0.001 4mV	±1.4uV
21.848mV (400°C)	21.848mV	21.848 8mV	±1.5uV
69.553mV (1200°C)	69.553mV	69.551 4mV	±1.8uV

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

-6.180mV (-250°C)	-6.180mV	-6.1782mV	±1.4uV
0.000mV (0°C)	0.000mV	0.001 3mV	±1.4uV
20.872mV (400°C)	20.872mV	20.872 7mV	±1.5uV

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

0.000mV (0°C)	0.000mV	0.001 3mV	±1.4uV
3.408mV (400°C)	3.408mV	3.410 2mV	±1.4uV
21.003mV (1760°C)	21.003mV	21.003 5mV	±1.5uV

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

0.000mV (0°C)	0.000mV	0.001 3mV	±1.4uV
3.259mV (400°C)	3.259mV	3.261 1mV	±1.4uV
18.609mV (1760°C)	18.609mV	18.609 6mV	±1.5uV

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

-3.990mV (-200°C)	-3.990mV	-3.9884mV	±1.4uV
-0.646mV (-25°C)	-0.646mV	-0.6437mV	±1.4uV
3.374mV (120°C)	3.374mV	3.376 1mV	±1.4uV
47.513mV (1300°C)	47.513mV	47.510 9mV	±1.7uV

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

1.792mV (600°C)	1.792mV	1.794 5mV	±1.4uV
4.834mV (1000°C)	4.834mV	4.836 2mV	±1.4uV
13.820mV (1820°C)	13.820mV	13.821 3mV	±1.4uV

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

CERTIFICATE OF CALIBRATION

Certificate Number
37266

Page 5 of 5 Pages

UKAS Accredited Calibration Laboratory No. 0324
AFTER ADJUSTMENT RESULTS

Test Title	Applied Value	Reading	Uncertainties
-9.718mV (-250°C)	-9.718mV	-9.7161mV	±1.4uV
-1.432mV (-25°C)	-1.432mV	-1.4291mV	±1.4uV
24.964mV (350°C)	24.964mV	24.964 5mV	±1.5uV
76.373mV (1000°C)	76.373mV	76.372 1mV	±2.2uV
Temperature Simulation - Type L - CJC at 0°C - ITS90			
-8.158mV (-200°C)	-8.158mV	-8.1631mV	±1.4uV
0.000mV (0°C)	0.000mV	0.003 2mV	±1.4uV
53.140mV (900°C)	53.140mV	53.132 7mV	±1.7uV
Temperature Simulation - Type U - CJC at 0°C - ITS90			
-5.696mV (-200°C)	-5.696mV	-5.6905mV	±1.4uV
0.000mV (0°C)	0.000mV	0.003 1mV	±1.4uV
34.309mV (600°C)	34.309mV	34.306 4mV	±1.6uV
Temperature Simulation - Type C - CJC at 0°C - ITS90			
0.000mV (0°C)	0.000mV	0.001 1mV	±1.4uV
11.583mV (650°C)	11.583mV	11.584 7mV	±1.4uV
18.257mV (1000°C)	18.257mV	18.258 2mV	±1.5uV
37.070mV (2316°C)	37.070mV	37.069 7mV	±1.6uV

Thermocouple Reference Tables

EN60584-1 : 2013

Replaces EN60584-1 : 1996, IEC 60584-1 : 1995

End of results