

Certificate of Calibration

ISSUED BY: Southern Calibration Laboratories Limited

DATE OF ISSUE: 09/03/12

CERTIFICATE NUMBER: 08670E



0080



UNIT 7
SOLENT INDUSTRIAL ESTATE
HEDGE END
SOUTHAMPTON
SO30 2FX
TEL: 01489 790296
FAX: 01489 790294
www.southcal.co.uk
info@southcal.co.uk

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APPROVED SIGNATORY
S.SPARKS

SIGNATURE

Calibrated For:- Keynes Controls Limited
Pakenham House
Riseley Business Park
Riseley
Berkshire
RG7 1NW

Reference:- 12030316

Equipment Calibrated:- True RMS Multimeter

Manufacturer:- Fluke

Model No:- 287

Serial No. (Plant No.):- 98080287

Date Received:- 05 March 2012

Date of Calibration:- 09 March 2012

Laboratory Ambient Conditions:- Temperature $20 \pm 1^{\circ}\text{C}$
Relative Humidity $50 \pm 10\%RH$

Condition Received:- Satisfactory.

(Procedure Reference VP53)

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The instrument was allowed to stabilise in the laboratory for at least 24 hours prior to calibration, which was performed by applying known stable inputs and noting the instrument indications. The relative function has been used, where applicable, to eliminate any zero offsets.

Table I
DC Voltage

<u>Range</u>	<u>Applied Input</u>	<u>Instrument Reading</u>
50 mV	50.000 mV	50.007 mV
	- 50.000	- 50.003
500	500.00	500.01
	- 500.00	- 500.09
5 V	5.000 0 V	5.000 3 V
	- 5.000 0	- 5.000 4
50	10.000	10.001
	20.000	20.002
	30.000	30.003
	40.000	40.004
	50.000	50.004
	- 50.000	- 50.005
500	500.00	500.04
	- 500.00	- 500.04
1000	1 000.00	1 000.0
	- 1 000.00	- 1 000.0

The uncertainty in the measured values for Table I was $:-< \pm(0.01\% + 1 \text{ LSD})$

Table II
Frequency (10V RMS Sinewave)

<u>Range</u>	<u>Applied Input</u>	<u>Instrument Reading</u>
99.999 Hz	90.000 Hz	90.001 Hz
	900.00	900.01
9.999 9 kHz	9.000 0 kHz	9.000 1 kHz
	90.000	90.001
	900.00	900.01

The uncertainty in the measured values for Table II was $:-< \pm(0.01\% + 1 \text{ LSD})$

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Table III
AC Voltage

<u>Range</u>	<u>Applied Input</u>		<u>Instrument Reading</u>
50 mV	50.000 mV	400 Hz	50.019 mV
500	500.00		500.10
5 V	5.000 0 V	30 Hz	4.998 8 V
	5.000 0	50	5.002 0
	1.000 0	400	1.000 8
	2.000 0		2.001 7
	3.000 0		3.002 7
	4.000 0		4.003 6
	5.000 0		5.004 5
	5.000 0	5 kHz	5.000 5
	5.000 0	15	4.973 4
	5.000 0	50	4.976 2
50	50.000	400 Hz	50.038
500	500.00		500.35
1000	1 000.0		1 000.6

The uncertainty in the measured values for Table III was: $-\lt\pm (0.05\% + 1 \text{ LSD})$

Table IV
Current

<u>Range</u>	<u>Applied Input</u>		<u>Instrument Reading</u>
500 μA	500.00 μA	DC	500.08 μA
	500.00	400 Hz	500.38
5000	5 000.0	DC	5 001.1
	5 000.0	400 Hz	5 005.0
50 mA	50.000 mA	DC	50.013 mA
	50.000	400 Hz	50.046
400	400.00	DC	400.09
	400.00	400 Hz	400.40
5 A	5.000 0 A	DC	4.999 1 A
	5.000 0	400 Hz	5.000 7
10	10.000	DC	10.000
	10.000	400 Hz	9.998

The uncertainties in the measured values for Table IV were:

DCI <1A $\pm (0.01\% + 1 \text{ L.S.D})$; DCI >1A $\pm (0.10\% + 1 \text{ L.S.D})$

ACI <1A $\pm (0.05\% + 1 \text{ L.S.D})$; ACI >1A $\pm (0.15\% + 1 \text{ L.S.D})$

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Table V
DC Resistance

<u>Range</u>	<u>Applied Input</u>	<u>Instrument Reading</u>
500 Ω	0.00 Ω	0.00 Ω
	100.00	100.00
5 k Ω	1.000 0 k Ω	1.000 1 k Ω
50	10.000	10.005
500	100.00	100.05
5 M Ω	1.000 0 M Ω	1.000 3 M Ω
30	10.000	10.008
50	10.000	10.01
500	100.00	100.4

The uncertainty in the measured values for Table V was: - $\pm (0.01\% + 1 \text{ L.S.D})$

All other functions were checked and found to be operating in a satisfactory manner.

The uncertainties quoted refer to the measured values only and not to the ability of the instrument to maintain its calibration.

End of Certificate

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.