

CERTIFICATE OF CALIBRATION

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Certificate Number 00362

Date of Issue 18 March 2019



8239



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Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID31042	Job Number : J132764-1
	Description :	Precision Multimeter	
	Manufacturer :	Fluke	Site :
	Model Number :	8845A	Location :
	Serial Number :	2595008	Last Certificate Number : 00199
	Procedure Version :	1.10_15/N [V]	Last Calibration Date : 06/03/2018

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : M.Foy

Date of Calibration : 18 March 2019

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UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.000 3mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.000 1mV	3.1uV
1V D.C. Range	1.000 000V	1.000 000V	11uV
1V D.C. Range	-1.000 000V	-1.000 001V	11uV
10V D.C. Range	10.000 00V	10.000 01V	110uV
10V D.C. Range	-10.000 00V	-10.000 00V	110uV
100V D.C. Range	100.000 0V	99.999 4V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 6V	1.5mV
1000V D.C. Range	1 000.000V	999.999V	14mV
1000V D.C. Range	-1 000.000V	-1 000.002V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 01V	98uV
10V D.C. Range	-8.000 00V	-8.000 01V	90uV
10V D.C. Range	-7.000 00V	-7.000 02V	81uV
10V D.C. Range	-6.000 00V	-6.000 01V	73uV
10V D.C. Range	-5.000 00V	-5.000 01V	65uV
10V D.C. Range	-4.000 00V	-4.000 01V	58uV
10V D.C. Range	-3.000 00V	-3.000 01V	52uV
10V D.C. Range	-2.000 00V	-2.000 01V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	2.999 98V	52uV
10V D.C. Range	4.000 00V	3.999 97V	58uV
10V D.C. Range	5.000 00V	4.999 97V	65uV
10V D.C. Range	6.000 00V	5.999 99V	73uV
10V D.C. Range	7.000 00V	6.999 99V	81uV
10V D.C. Range	8.000 00V	8.000 00V	90uV
10V D.C. Range	9.000 00V	9.000 01V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.978 2mV	65uV
1V A.C. @ 60Hz	1.000 000V	1.000 042V	0.33mV
1V A.C. @ 200Hz	1.000 000V	1.000 069V	0.33mV
1V A.C. @ 400Hz	1.000 000V	1.000 046V	0.33mV
1V A.C. @ 1kHz	1.000 000V	1.000 058V	0.33mV
1V A.C. @ 10kHz	1.000 000V	1.000 025V	0.51mV
1V A.C. @ 40kHz	1.000 000V	1.000 057V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 617V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 962V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.995 92V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.996 58V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.997 62V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.999 24V	8.7mV
10V A.C. @ 75kHz	10.000 00V	10.003 41V	8.7mV

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.959 1V	33mV
100V A.C. @ 1kHz	100.000 0V	99.970 4V	33mV
750V A.C. @ 60Hz	750.000V	749.637V	200mV
750V A.C. @ 1kHz	750.000V	749.688V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.001 1uA	17nA
1mA D.C. Range	1.000 000mA	1.000 040mA	68nA
10mA D.C. Range	10.000 00mA	9.999 52mA	0.62uA
100mA D.C. Range	100.000 0mA	99.999 3mA	6.2uA
400mA D.C. Range	390.000mA	389.984mA	69uA
1A D.C. Range	1.000 000A	1.000 074A	150uA
3A D.C. Range	2.900 00A	2.900 20A	1.2mA
10A D.C. Range	9.900 00A	9.901 77A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.998 34mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.979 7mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.987 6mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.986 5mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.687mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 765A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 20A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.899 12A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.997 9Ω	99.993 6Ω	0.6mΩ
1k ohm Range	1.000 027kΩ	0.999 994kΩ	4.8mΩ
10k ohm Range	10.000 40kΩ	10.000 11kΩ	49mΩ
100k ohm Range	99.997 9kΩ	99.997 6kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	1.000 121MΩ	1.000 110MΩ	33Ω
10M ohm Range	10.000 59MΩ	10.000 70MΩ	3.1kΩ
100M ohm Range	100.313 0MΩ	100.316 7MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 9Hz	58uHz
1kHz Range	1.000 000kHz	1.000 010kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 10kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 1kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Date of Issue 19 March 2019



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Page 1 of 3 Pages

Approved Signatory

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I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID30761	Job Number :	J132761-1
	Description :	Digital Multimeter	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00200
	Serial Number :	2594012	Last Calibration Date :	06/03/2018
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : M.Foy

Date of Calibration : 19 March 2019

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AS FOUND RESULTS

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.999 7mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.999 6mV	3.1uV
1V D.C. Range	1.000 000V	0.999 993V	11uV
1V D.C. Range	-1.000 000V	-0.999 998V	11uV
10V D.C. Range	10.000 00V	10.000 06V	110uV
10V D.C. Range	-10.000 00V	-10.000 05V	110uV
100V D.C. Range	100.000 0V	100.000 2V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 8V	1.5mV
1000V D.C. Range	1 000.000V	1 000.005V	14mV
1000V D.C. Range	-1 000.000V	-1 000.008V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 05V	98uV
10V D.C. Range	-8.000 00V	-8.000 05V	90uV
10V D.C. Range	-7.000 00V	-7.000 04V	81uV
10V D.C. Range	-6.000 00V	-6.000 04V	73uV
10V D.C. Range	-5.000 00V	-5.000 03V	65uV
10V D.C. Range	-4.000 00V	-4.000 03V	58uV
10V D.C. Range	-3.000 00V	-3.000 02V	52uV
10V D.C. Range	-2.000 00V	-2.000 02V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 01V	22uV
10V D.C. Range	3.000 00V	3.000 00V	52uV
10V D.C. Range	4.000 00V	3.999 99V	58uV
10V D.C. Range	5.000 00V	5.000 00V	65uV
10V D.C. Range	6.000 00V	6.000 02V	73uV
10V D.C. Range	7.000 00V	7.000 03V	81uV
10V D.C. Range	8.000 00V	8.000 04V	90uV
10V D.C. Range	9.000 00V	9.000 05V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.975 3mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 974V	0.33mV
1V A.C. @ 200Hz	1.000 000V	1.000 003V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 981V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 986V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 961V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 984V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 417V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 548V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.997 23V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.998 06V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.998 35V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.998 62V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.992 53V	8.7mV

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.968 7V	33mV
100V A.C. @ 1kHz	100.000 0V	99.984 9V	33mV
750V A.C. @ 60Hz	750.000V	749.717V	200mV
750V A.C. @ 1kHz	750.000V	749.806V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.008 5uA	17nA
1mA D.C. Range	1.000 000mA	1.000 060mA	68nA
10mA D.C. Range	10.000 00mA	9.999 88mA	0.62uA
100mA D.C. Range	100.000 0mA	99.998 3mA	6.2uA
400mA D.C. Range	390.000mA	389.974mA	69uA
1A D.C. Range	1.000 000A	1.000 043A	150uA
3A D.C. Range	2.900 00A	2.899 82A	1.2mA
10A D.C. Range	9.900 00A	9.899 44A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.997 57mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.972 1mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.980 7mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.980 3mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.725mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 733A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 06A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.897 01A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.997 9Ω	99.992 5Ω	0.6mΩ
1k ohm Range	1.000 027kΩ	1.000 002kΩ	4.8mΩ
10k ohm Range	10.000 40kΩ	10.000 01kΩ	49mΩ
100k ohm Range	99.997 9kΩ	99.995 8kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	1.000 121MΩ	1.000 101MΩ	33Ω
10M ohm Range	10.000 59MΩ	10.000 60MΩ	3.1kΩ
100M ohm Range	100.313 0MΩ	100.312 1MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.001 1Hz	58uHz
1kHz Range	1.000 000kHz	1.000 011kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 12kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 1kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Page 1 of 3 Pages

Approved Signatory

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I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID30760	Job Number :	J132757-1
	Description :	Digital Multimeter (6.5 digit)		
	Manufacturer :	Fluke	Site :	
	Model Number :	8845A	Location :	
	Serial Number :	2596009	Last Certificate Number :	00208
	Procedure Version :	1.10_15/N [V]	Last Calibration Date :	19/03/2018

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
Tests marked # are not UKAS accredited but have been included for completeness.

Calibration Information

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Calibrated By : M.Foy

Date of Calibration : 19 March 2019

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.999 2mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.000 7mV	3.1uV
1V D.C. Range	1.000 000V	1.000 004V	11uV
1V D.C. Range	-1.000 000V	-1.000 009V	11uV
10V D.C. Range	10.000 00V	10.000 03V	110uV
10V D.C. Range	-10.000 00V	-10.000 01V	110uV
100V D.C. Range	100.000 0V	99.999 9V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 5V	1.5mV
1000V D.C. Range	1 000.000V	999.997V	14mV
1000V D.C. Range	-1 000.000V	-1 000.004V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 02V	98uV
10V D.C. Range	-8.000 00V	-8.000 02V	90uV
10V D.C. Range	-7.000 00V	-7.000 02V	81uV
10V D.C. Range	-6.000 00V	-6.000 02V	73uV
10V D.C. Range	-5.000 00V	-5.000 02V	65uV
10V D.C. Range	-4.000 00V	-4.000 02V	58uV
10V D.C. Range	-3.000 00V	-3.000 01V	52uV
10V D.C. Range	-2.000 00V	-2.000 02V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	0.999 99V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	2.999 98V	52uV
10V D.C. Range	4.000 00V	3.999 98V	58uV
10V D.C. Range	5.000 00V	4.999 99V	65uV
10V D.C. Range	6.000 00V	6.000 00V	73uV
10V D.C. Range	7.000 00V	7.000 01V	81uV
10V D.C. Range	8.000 00V	8.000 02V	90uV
10V D.C. Range	9.000 00V	9.000 04V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.963 6mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 961V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 972V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 952V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 972V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 938V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 927V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 303V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 189V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.996 46V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.997 07V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.997 66V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.998 57V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.998 47V	8.7mV

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UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

Certificate Number
00365

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.955 3V	33mV
100V A.C. @ 1kHz	100.000 0V	99.968 1V	33mV
750V A.C. @ 60Hz	750.000V	749.707V	200mV
750V A.C. @ 1kHz	750.000V	749.759V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	99.990 3uA	17nA
1mA D.C. Range	1.000 000mA	1.000 022mA	68nA
10mA D.C. Range	10.000 00mA	9.998 38mA	0.62uA
100mA D.C. Range	100.000 0mA	99.993 6mA	6.2uA
400mA D.C. Range	390.000mA	389.983mA	69uA
1A D.C. Range	1.000 000A	0.999 953A	150uA
3A D.C. Range	2.900 00A	2.899 78A	1.2mA
10A D.C. Range	9.900 00A	9.898 88A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.998 24mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.984 2mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.989 1mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.990 6mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.782mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 649A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 34A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.898 48A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.997 9 Ω	99.995 7 Ω	0.6m Ω
1k ohm Range	1.000 027k Ω	0.999 976k Ω	4.8m Ω
10k ohm Range	10.000 40k Ω	9.999 85k Ω	49m Ω
100k ohm Range	99.997 9k Ω	99.997 1k Ω	0.98 Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	1.000 121M Ω	1.000 088M Ω	33 Ω
10M ohm Range	10.000 59M Ω	10.000 10M Ω	3.1k Ω
100M ohm Range	100.313 0M Ω	99.803 8M Ω	210k Ω
Frequency			
100Hz Range	100.000 0Hz	100.000 9Hz	58uHz
1kHz Range	1.000 000kHz	1.000 011kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 11kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 1kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Page 1 of 3 Pages

Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID31039	Job Number : J132762-1
	Description :	Precision Multimeter	
	Manufacturer :	Fluke	Site :
	Model Number :	8845A	Location :
	Serial Number :	2596003	Last Certificate Number : 00198
	Procedure Version :	1.10_15/N [V]	Last Calibration Date : 06/03/2018

Environmental Conditions

Temperature : 20°C +/- 3°C
Relative Humidity : 50% +/- 20%

Mains Voltage : 240V +/- 10V
Mains Frequency : 50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 19 March 2019

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UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

Certificate Number
00366

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.999 6mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.999 5mV	3.1uV
1V D.C. Range	1.000 000V	0.999 995V	11uV
1V D.C. Range	-1.000 000V	-0.999 993V	11uV
10V D.C. Range	10.000 00V	10.000 09V	110uV
10V D.C. Range	-10.000 00V	-10.000 07V	110uV
100V D.C. Range	100.000 0V	100.000 3V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 7V	1.5mV
1000V D.C. Range	1 000.000V	1 000.002V	14mV
1000V D.C. Range	-1 000.000V	-1 000.002V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 05V	98uV
10V D.C. Range	-8.000 00V	-8.000 06V	90uV
10V D.C. Range	-7.000 00V	-7.000 06V	81uV
10V D.C. Range	-6.000 00V	-6.000 05V	73uV
10V D.C. Range	-5.000 00V	-5.000 04V	65uV
10V D.C. Range	-4.000 00V	-4.000 03V	58uV
10V D.C. Range	-3.000 00V	-3.000 03V	52uV
10V D.C. Range	-2.000 00V	-2.000 02V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	-0.000 01V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 01V	22uV
10V D.C. Range	3.000 00V	3.000 02V	52uV
10V D.C. Range	4.000 00V	4.000 03V	58uV
10V D.C. Range	5.000 00V	5.000 04V	65uV
10V D.C. Range	6.000 00V	6.000 05V	73uV
10V D.C. Range	7.000 00V	7.000 06V	81uV
10V D.C. Range	8.000 00V	8.000 07V	90uV
10V D.C. Range	9.000 00V	9.000 08V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.976 5mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 744V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 796V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 805V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 843V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 794V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 698V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 167V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 823V	0.92mV
10V A.C. @ 60Hz *	10.000 00V	9.992 54V	3.2mV
10V A.C. @ 1kHz *	10.000 00V	9.993 46V	3.2mV
10V A.C. @ 10kHz *	10.000 00V	9.993 58V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.993 44V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.993 08V	8.7mV

CERTIFICATE OF CALIBRATION

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz *	100.000 0V	99.924 8V	33mV
100V A.C. @ 1kHz *	100.000 0V	99.935 2V	33mV
750V A.C. @ 60Hz *	750.000V	749.416V	200mV
750V A.C. @ 1kHz *	750.000V	749.522V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.011 0uA	17nA
1mA D.C. Range	1.000 000mA	1.000 061mA	68nA
10mA D.C. Range	10.000 00mA	10.000 02mA	0.62uA
100mA D.C. Range	100.000 0mA	99.997 1mA	6.2uA
400mA D.C. Range	390.000mA	389.988mA	69uA
1A D.C. Range	1.000 000A	1.000 012A	150uA
3A D.C. Range	2.900 00A	2.899 87A	1.2mA
10A D.C. Range	9.900 00A	9.899 01A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.997 79mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.975 8mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.986 8mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.985 2mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.644mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 924A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.899 78A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.896 87A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8 Ω	99.996 2 Ω	0.6m Ω
1k ohm Range	0.999 950k Ω	0.999 944k Ω	4.8m Ω
10k ohm Range	9.999 80k Ω	9.999 75k Ω	49m Ω
100k ohm Range	99.998 3k Ω	99.997 3k Ω	0.98 Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953M Ω	0.999 954M Ω	33 Ω
10M ohm Range	9.998 36M Ω	9.998 58M Ω	3.1k Ω
100M ohm Range	100.001 3M Ω	100.033 6M Ω	210k Ω
Frequency			
100Hz Range	100.000 0Hz	100.000 7Hz	58uHz
1kHz Range	1.000 000kHz	1.000 007kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 08kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 8kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Page 1 of 3 Pages

Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID31039	Job Number :	J132762-1
	Description :	Precision Multimeter		
	Manufacturer :	Fluke	Site :	
	Model Number :	8845A	Location :	
	Serial Number :	2596003	Last Certificate Number :	00366
	Procedure Version :	1.10_15/N [V]	Last Calibration Date :	19/03/2019

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 19 March 2019

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AFTER ADJUSTMENT RESULTS

Certificate Number
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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.999 8mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.999 2mV	3.1uV
1V D.C. Range	1.000 000V	0.999 999V	11uV
1V D.C. Range	-1.000 000V	-0.999 998V	11uV
10V D.C. Range	10.000 00V	9.999 98V	110uV
10V D.C. Range	-10.000 00V	-9.999 99V	110uV
100V D.C. Range	100.000 0V	99.999 5V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 0V	1.5mV
1000V D.C. Range	1 000.000V	1 000.004V	14mV
1000V D.C. Range	-1 000.000V	-1 000.000V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-8.999 99V	98uV
10V D.C. Range	-8.000 00V	-8.000 00V	90uV
10V D.C. Range	-7.000 00V	-7.000 00V	81uV
10V D.C. Range	-6.000 00V	-6.000 00V	73uV
10V D.C. Range	-5.000 00V	-5.000 00V	65uV
10V D.C. Range	-4.000 00V	-4.000 00V	58uV
10V D.C. Range	-3.000 00V	-3.000 00V	52uV
10V D.C. Range	-2.000 00V	-2.000 00V	22uV
10V D.C. Range	-1.000 00V	-1.000 00V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	3.000 00V	52uV
10V D.C. Range	4.000 00V	4.000 00V	58uV
10V D.C. Range	5.000 00V	5.000 00V	65uV
10V D.C. Range	6.000 00V	6.000 00V	73uV
10V D.C. Range	7.000 00V	7.000 00V	81uV
10V D.C. Range	8.000 00V	8.000 00V	90uV
10V D.C. Range	9.000 00V	9.000 00V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.960 7mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 876V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 922V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 924V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 956V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 918V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 825V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 298V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 023V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.999 09V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.999 92V	3.2mV
10V A.C. @ 10kHz	10.000 00V	10.000 06V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.999 93V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.999 55V	8.7mV

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AFTER ADJUSTMENT RESULTS

Certificate Number
00366-A

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.990 1V	33mV
100V A.C. @ 1kHz	100.000 0V	100.000 4V	33mV
750V A.C. @ 60Hz	750.000V	749.975V	200mV
750V A.C. @ 1kHz	750.000V	750.040V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	99.997 2uA	17nA
1mA D.C. Range	1.000 000mA	0.999 998mA	68nA
10mA D.C. Range	10.000 00mA	9.999 75mA	0.62uA
100mA D.C. Range	100.000 0mA	100.000 3mA	6.2uA
400mA D.C. Range	390.000mA	389.997mA	69uA
1A D.C. Range	1.000 000A	1.000 049A	150uA
3A D.C. Range	2.900 00A	2.899 84A	1.2mA
10A D.C. Range	9.900 00A	9.899 11A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.999 63mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.995 2mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	100.003 2mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	100.001 6mA	61uA
400mA A.C. @ 60Hz	390.000mA	389.904mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 962A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 11A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.897 59A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8 Ω	99.996 0 Ω	0.6m Ω
1k ohm Range	0.999 950k Ω	0.999 950k Ω	4.8m Ω
10k ohm Range	9.999 80k Ω	9.999 79k Ω	49m Ω
100k ohm Range	99.998 3k Ω	99.996 5k Ω	0.98 Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953M Ω	0.999 938M Ω	33 Ω
10M ohm Range	9.998 36M Ω	9.998 44M Ω	3.1k Ω
100M ohm Range	100.001 3M Ω	100.003 0M Ω	210k Ω
Frequency			
100Hz Range	100.000 0Hz	100.000 8Hz	58uHz
1kHz Range	1.000 000kHz	1.000 005kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 08kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 8kHz	58mHz

End of results

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Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID31040	Job Number :	J132763-1
	Description :	Multimeter		
	Manufacturer :	Fluke	Site :	
	Model Number :	8845A	Location :	
	Serial Number :	2596004	Last Certificate Number :	00196
	Procedure Version :	1.10_15/N [V]	Last Calibration Date :	05/03/2018

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : M.Foy

Date of Calibration : 19 March 2019

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CERTIFICATE OF CALIBRATION

Certificate Number
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UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

Page 2 of 3 Pages

Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.998 5mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.000 1mV	3.1uV
1V D.C. Range	1.000 000V	0.999 997V	11uV
1V D.C. Range	-1.000 000V	-1.000 003V	11uV
10V D.C. Range	10.000 00V	10.000 02V	110uV
10V D.C. Range	-10.000 00V	-9.999 99V	110uV
100V D.C. Range	100.000 0V	99.999 3V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 5V	1.5mV
1000V D.C. Range	1 000.000V	1 000.002V	14mV
1000V D.C. Range	-1 000.000V	-1 000.005V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 01V	98uV
10V D.C. Range	-8.000 00V	-8.000 02V	90uV
10V D.C. Range	-7.000 00V	-7.000 02V	81uV
10V D.C. Range	-6.000 00V	-6.000 02V	73uV
10V D.C. Range	-5.000 00V	-5.000 02V	65uV
10V D.C. Range	-4.000 00V	-4.000 00V	58uV
10V D.C. Range	-3.000 00V	-3.000 01V	52uV
10V D.C. Range	-2.000 00V	-2.000 01V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	0.999 99V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	2.999 98V	52uV
10V D.C. Range	4.000 00V	3.999 97V	58uV
10V D.C. Range	5.000 00V	4.999 98V	65uV
10V D.C. Range	6.000 00V	5.999 99V	73uV
10V D.C. Range	7.000 00V	7.000 00V	81uV
10V D.C. Range	8.000 00V	8.000 01V	90uV
10V D.C. Range	9.000 00V	9.000 01V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.971 2mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 960V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 989V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 966V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 975V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 946V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 917V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 245V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 011V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.997 29V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.997 86V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.998 52V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.998 83V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.994 60V	8.7mV

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.968 4V	33mV
100V A.C. @ 1kHz	100.000 0V	99.979 6V	33mV
750V A.C. @ 60Hz	750.000V	749.725V	200mV
750V A.C. @ 1kHz	750.000V	749.824V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.003 8uA	17nA
1mA D.C. Range	1.000 000mA	1.000 046mA	68nA
10mA D.C. Range	10.000 00mA	9.999 37mA	0.62uA
100mA D.C. Range	100.000 0mA	99.993 8mA	6.2uA
400mA D.C. Range	390.000mA	389.970mA	69uA
1A D.C. Range	1.000 000A	0.999 994A	150uA
3A D.C. Range	2.900 00A	2.900 44A	1.2mA
10A D.C. Range	9.900 00A	9.901 02A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.997 66mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.969 5mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.975 3mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.975 4mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.694mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 704A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 14A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.897 47A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.997 9Ω	99.995 6Ω	0.6mΩ
1k ohm Range	1.000 027kΩ	1.000 014kΩ	4.8mΩ
10k ohm Range	10.000 40kΩ	10.000 29kΩ	49mΩ
100k ohm Range	99.997 9kΩ	99.997 7kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	1.000 121MΩ	1.000 111MΩ	33Ω
10M ohm Range	10.000 59MΩ	10.001 14MΩ	3.1kΩ
100M ohm Range	100.313 0MΩ	100.374 1MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 7Hz	58uHz
1kHz Range	1.000 000kHz	1.000 007kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 07kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 6kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Page 1 of 3 Pages

Approved Signatory

J.Fryer I.Ibrahim D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 06 March 2019

Instrument -	System ID :	ID68221	Job Number :	J132760-1
	Description :	Multimeter	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00197
	Serial Number :	2596006	Last Calibration Date :	06/03/2018
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 19 March 2019

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.996 5mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.002 7mV	3.1uV
1V D.C. Range	1.000 000V	0.999 992V	11uV
1V D.C. Range	-1.000 000V	-0.999 999V	11uV
10V D.C. Range	10.000 00V	9.999 99V	110uV
10V D.C. Range	-10.000 00V	-9.999 99V	110uV
100V D.C. Range	100.000 0V	99.999 8V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 0V	1.5mV
1000V D.C. Range	1 000.000V	999.998V	14mV
1000V D.C. Range	-1 000.000V	-999.999V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 01V	98uV
10V D.C. Range	-8.000 00V	-8.000 01V	90uV
10V D.C. Range	-7.000 00V	-7.000 01V	81uV
10V D.C. Range	-6.000 00V	-6.000 00V	73uV
10V D.C. Range	-5.000 00V	-5.000 01V	65uV
10V D.C. Range	-4.000 00V	-4.000 00V	58uV
10V D.C. Range	-3.000 00V	-3.000 01V	52uV
10V D.C. Range	-2.000 00V	-2.000 01V	22uV
10V D.C. Range	-1.000 00V	-1.000 00V	12uV
10V D.C. Range	0.000 00V	-0.000 01V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	1.999 99V	22uV
10V D.C. Range	3.000 00V	3.000 00V	52uV
10V D.C. Range	4.000 00V	4.000 00V	58uV
10V D.C. Range	5.000 00V	5.000 00V	65uV
10V D.C. Range	6.000 00V	6.000 00V	73uV
10V D.C. Range	7.000 00V	7.000 01V	81uV
10V D.C. Range	8.000 00V	8.000 01V	90uV
10V D.C. Range	9.000 00V	9.000 01V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.965 0mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 859V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 847V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 852V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 884V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 823V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 642V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 016V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.004 718V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.995 42V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.995 37V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.996 01V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.995 04V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.992 77V	8.7mV

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.951 7V	33mV
100V A.C. @ 1kHz	100.000 0V	99.952 7V	33mV
750V A.C. @ 60Hz	750.000V	749.651V	200mV
750V A.C. @ 1kHz	750.000V	749.702V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.000 5uA	17nA
1mA D.C. Range	1.000 000mA	1.000 025mA	68nA
10mA D.C. Range	10.000 00mA	9.999 20mA	0.62uA
100mA D.C. Range	100.000 0mA	99.993 4mA	6.2uA
400mA D.C. Range	390.000mA	389.975mA	69uA
1A D.C. Range	1.000 000A	1.000 110A	150uA
3A D.C. Range	2.900 00A	2.900 49A	1.2mA
10A D.C. Range	9.900 00A	9.901 34A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.991 45mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.975 8mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.981 1mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.978 4mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.690mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	1.000 072A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 71A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.899 75A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.992 2Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 938kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 72kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.997 4kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 955MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.998 20MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.967 3MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 5Hz	58uHz
1kHz Range	1.000 000kHz	1.000 008kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 08kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 9kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Page 1 of 3 Pages

Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID30757	Job Number :	J134564-1
	Description :	Digital Multimeter	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00195
	Serial Number :	2595009	Last Calibration Date :	05/03/2018
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 02 April 2019

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.000 5mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.999 6mV	3.1uV
1V D.C. Range	1.000 000V	0.999 996V	11uV
1V D.C. Range	-1.000 000V	-0.999 993V	11uV
10V D.C. Range	10.000 00V	10.000 08V	110uV
10V D.C. Range	-10.000 00V	-10.000 06V	110uV
100V D.C. Range	100.000 0V	100.000 0V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 8V	1.5mV
1000V D.C. Range	1 000.000V	1 000.002V	14mV
1000V D.C. Range	-1 000.000V	-1 000.004V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 05V	98uV
10V D.C. Range	-8.000 00V	-8.000 05V	90uV
10V D.C. Range	-7.000 00V	-7.000 05V	81uV
10V D.C. Range	-6.000 00V	-6.000 04V	73uV
10V D.C. Range	-5.000 00V	-5.000 03V	65uV
10V D.C. Range	-4.000 00V	-4.000 02V	58uV
10V D.C. Range	-3.000 00V	-3.000 02V	52uV
10V D.C. Range	-2.000 00V	-2.000 02V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 01V	12uV
10V D.C. Range	2.000 00V	2.000 02V	22uV
10V D.C. Range	3.000 00V	3.000 03V	52uV
10V D.C. Range	4.000 00V	4.000 03V	58uV
10V D.C. Range	5.000 00V	5.000 04V	65uV
10V D.C. Range	6.000 00V	6.000 05V	73uV
10V D.C. Range	7.000 00V	7.000 06V	81uV
10V D.C. Range	8.000 00V	8.000 07V	90uV
10V D.C. Range	9.000 00V	9.000 07V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.978 2mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 801V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 840V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 838V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 885V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 847V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 807V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 390V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 662V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.994 66V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.995 63V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.996 01V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.995 88V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.994 68V	8.7mV

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.950 2V	33mV
100V A.C. @ 1kHz	100.000 0V	99.958 1V	33mV
750V A.C. @ 60Hz	750.000V	749.645V	200mV
750V A.C. @ 1kHz	750.000V	749.711V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.007 1uA	17nA
1mA D.C. Range	1.000 000mA	1.000 075mA	68nA
10mA D.C. Range	10.000 00mA	9.999 24mA	0.62uA
100mA D.C. Range	100.000 0mA	99.996 1mA	6.2uA
400mA D.C. Range	390.000mA	389.981mA	69uA
1A D.C. Range	1.000 000A	1.000 035A	150uA
3A D.C. Range	2.900 00A	2.899 96A	1.2mA
10A D.C. Range	9.900 00A	9.899 56A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.998 20mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.977 9mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.985 0mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.988 1mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.741mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 945A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 12A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.896 86A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.992 1Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 914kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 51kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.995 8kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 926MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.997 61MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	100.002 4MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 7Hz	58uHz
1kHz Range	1.000 000kHz	1.000 008kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 09kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 9kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

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Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID30758	Job Number :	J134563-4
	Description :	Digital Multimeter (6.5 digit)		
	Manufacturer :	Fluke	Site :	
	Model Number :	8845A	Location :	
	Serial Number :	2596016	Last Certificate Number :	00211-A
	Procedure Version :	1.10_15/N [V]	Last Calibration Date :	21/03/2018

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 02 April 2019

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.000 5mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.000 7mV	3.1uV
1V D.C. Range	1.000 000V	1.000 005V	11uV
1V D.C. Range	-1.000 000V	-0.999 996V	11uV
10V D.C. Range	10.000 00V	10.000 03V	110uV
10V D.C. Range	-10.000 00V	-9.999 96V	110uV
100V D.C. Range	100.000 0V	100.000 4V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 0V	1.5mV
1000V D.C. Range	1 000.000V	1 000.001V	14mV
1000V D.C. Range	-1 000.000V	-1 000.001V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-8.999 96V	98uV
10V D.C. Range	-8.000 00V	-7.999 97V	90uV
10V D.C. Range	-7.000 00V	-6.999 98V	81uV
10V D.C. Range	-6.000 00V	-5.999 98V	73uV
10V D.C. Range	-5.000 00V	-4.999 98V	65uV
10V D.C. Range	-4.000 00V	-3.999 99V	58uV
10V D.C. Range	-3.000 00V	-2.999 99V	52uV
10V D.C. Range	-2.000 00V	-2.000 00V	22uV
10V D.C. Range	-1.000 00V	-1.000 00V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	3.000 01V	52uV
10V D.C. Range	4.000 00V	4.000 01V	58uV
10V D.C. Range	5.000 00V	5.000 01V	65uV
10V D.C. Range	6.000 00V	6.000 01V	73uV
10V D.C. Range	7.000 00V	7.000 02V	81uV
10V D.C. Range	8.000 00V	8.000 03V	90uV
10V D.C. Range	9.000 00V	9.000 03V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	100.010 6mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 889V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 952V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 953V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 977V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 919V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 700V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 029V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 549V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.997 91V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.998 69V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.998 94V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.999 68V	8.7mV
10V A.C. @ 75kHz	10.000 00V	10.005 65V	8.7mV

CERTIFICATE OF CALIBRATION

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00385

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.974 4V	33mV
100V A.C. @ 1kHz	100.000 0V	99.984 5V	33mV
750V A.C. @ 60Hz	750.000V	749.914V	200mV
750V A.C. @ 1kHz	750.000V	750.004V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	99.994 1uA	17nA
1mA D.C. Range	1.000 000mA	1.000 008mA	68nA
10mA D.C. Range	10.000 00mA	9.999 06mA	0.62uA
100mA D.C. Range	100.000 0mA	99.998 6mA	6.2uA
400mA D.C. Range	390.000mA	389.975mA	69uA
1A D.C. Range	1.000 000A	0.999 977A	150uA
3A D.C. Range	2.900 00A	2.900 39A	1.2mA
10A D.C. Range	9.900 00A	9.900 70A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	10.000 66mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	100.009 7mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	100.012 8mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	100.015 0mA	61uA
400mA A.C. @ 60Hz	390.000mA	390.009mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	1.000 155A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 19A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.897 72A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.990 1Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 935kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 65kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.997 2kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 952MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.998 18MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.929 9MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.001 2Hz	58uHz
1kHz Range	1.000 000kHz	1.000 012kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 09kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 0kHz	58mHz

End of results

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Page 1 of 3 Pages

Approved Signatory

A handwritten signature in black ink, appearing to be 'D. Kendrew', written over a horizontal line.

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID31038	Job Number :	J134563-2
	Description :	Digital Multimeter (6.5 digit)	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00212-A
	Serial Number :	2596002	Last Calibration Date :	20/03/2018
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 02 April 2019

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.000 6mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.002 2mV	3.1uV
1V D.C. Range	1.000 000V	1.000 008V	11uV
1V D.C. Range	-1.000 000V	-1.000 005V	11uV
10V D.C. Range	10.000 00V	10.000 04V	110uV
10V D.C. Range	-10.000 00V	-10.000 01V	110uV
100V D.C. Range	100.000 0V	100.001 4V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 5V	1.5mV
1000V D.C. Range	1 000.000V	1 000.003V	14mV
1000V D.C. Range	-1 000.000V	-1 000.002V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 00V	98uV
10V D.C. Range	-8.000 00V	-8.000 00V	90uV
10V D.C. Range	-7.000 00V	-7.000 00V	81uV
10V D.C. Range	-6.000 00V	-6.000 01V	73uV
10V D.C. Range	-5.000 00V	-5.000 01V	65uV
10V D.C. Range	-4.000 00V	-4.000 01V	58uV
10V D.C. Range	-3.000 00V	-3.000 01V	52uV
10V D.C. Range	-2.000 00V	-2.000 01V	22uV
10V D.C. Range	-1.000 00V	-1.000 00V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	3.000 01V	52uV
10V D.C. Range	4.000 00V	4.000 01V	58uV
10V D.C. Range	5.000 00V	5.000 02V	65uV
10V D.C. Range	6.000 00V	6.000 03V	73uV
10V D.C. Range	7.000 00V	7.000 04V	81uV
10V D.C. Range	8.000 00V	8.000 04V	90uV
10V D.C. Range	9.000 00V	9.000 04V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.994 1mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 926V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 923V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 931V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 931V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 912V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 816V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 387V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 593V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.997 78V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.998 58V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.998 36V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.997 73V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.994 58V	8.7mV

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.972 8V	33mV
100V A.C. @ 1kHz	100.000 0V	99.978 8V	33mV
750V A.C. @ 60Hz	750.000V	749.920V	200mV
750V A.C. @ 1kHz	750.000V	749.978V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	99.998 6uA	17nA
1mA D.C. Range	1.000 000mA	0.999 999mA	68nA
10mA D.C. Range	10.000 00mA	9.999 69mA	0.62uA
100mA D.C. Range	100.000 0mA	100.002 4mA	6.2uA
400mA D.C. Range	390.000mA	390.014mA	69uA
1A D.C. Range	1.000 000A	1.000 045A	150uA
3A D.C. Range	2.900 00A	2.900 46A	1.2mA
10A D.C. Range	9.900 00A	9.901 22A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	10.000 47mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	100.011 5mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	100.017 8mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	100.014 2mA	61uA
400mA A.C. @ 60Hz	390.000mA	389.971mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	1.000 128A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 72A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.900 22A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.999 9Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 948kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 82kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.994 2kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 897MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.998 96MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.967 0MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.001 2Hz	58uHz
1kHz Range	1.000 000kHz	1.000 007kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 09kHz	5.8mHz
100kHz Range	100.000 0kHz	100.000 9kHz	58mHz

End of results

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Page 1 of 3 Pages

Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID31037	Job Number :	J134563-3
	Description :	Digital Multimeter (6.5 digit)		
	Manufacturer :	Fluke	Site :	
	Model Number :	8845A	Location :	
	Serial Number :	2596001	Last Certificate Number :	00209
	Procedure Version :	1.10_15/N [V]	Last Calibration Date :	19/03/2018

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 03 April 2019

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.000 9mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.999 1mV	3.1uV
1V D.C. Range	1.000 000V	0.999 999V	11uV
1V D.C. Range	-1.000 000V	-0.999 995V	11uV
10V D.C. Range	10.000 00V	10.000 09V	110uV
10V D.C. Range	-10.000 00V	-10.000 09V	110uV
100V D.C. Range	100.000 0V	100.000 1V	1.5mV
100V D.C. Range	-100.000 0V	-100.001 2V	1.5mV
1000V D.C. Range	1 000.000V	1 000.004V	14mV
1000V D.C. Range	-1 000.000V	-1 000.004V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 07V	98uV
10V D.C. Range	-8.000 00V	-8.000 07V	90uV
10V D.C. Range	-7.000 00V	-7.000 06V	81uV
10V D.C. Range	-6.000 00V	-6.000 05V	73uV
10V D.C. Range	-5.000 00V	-5.000 04V	65uV
10V D.C. Range	-4.000 00V	-4.000 04V	58uV
10V D.C. Range	-3.000 00V	-3.000 02V	52uV
10V D.C. Range	-2.000 00V	-2.000 02V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 01V	12uV
10V D.C. Range	2.000 00V	2.000 01V	22uV
10V D.C. Range	3.000 00V	3.000 03V	52uV
10V D.C. Range	4.000 00V	4.000 04V	58uV
10V D.C. Range	5.000 00V	5.000 05V	65uV
10V D.C. Range	6.000 00V	6.000 06V	73uV
10V D.C. Range	7.000 00V	7.000 07V	81uV
10V D.C. Range	8.000 00V	8.000 09V	90uV
10V D.C. Range	9.000 00V	9.000 10V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.984 1mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 844V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 900V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 901V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 918V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 863V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 722V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 187V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 452V	0.92mV
10V A.C. @ 60Hz *	10.000 00V	9.993 03V	3.2mV
10V A.C. @ 1kHz *	10.000 00V	9.993 67V	3.2mV
10V A.C. @ 10kHz *	10.000 00V	9.993 76V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.993 34V	8.7mV
10V A.C. @ 75kHz	10.000 00V	9.992 52V	8.7mV

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AS FOUND RESULTS

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz *	100.000 0V	99.929 1V	33mV
100V A.C. @ 1kHz *	100.000 0V	99.936 9V	33mV
750V A.C. @ 60Hz *	750.000V	749.473V	200mV
750V A.C. @ 1kHz	750.000V	749.553V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.007 3uA	17nA
1mA D.C. Range	1.000 000mA	1.000 046mA	68nA
10mA D.C. Range	10.000 00mA	9.999 62mA	0.62uA
100mA D.C. Range	100.000 0mA	99.995 5mA	6.2uA
400mA D.C. Range	390.000mA	389.990mA	69uA
1A D.C. Range	1.000 000A	1.000 092A	150uA
3A D.C. Range	2.900 00A	2.900 22A	1.2mA
10A D.C. Range	9.900 00A	9.900 05A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.998 33mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.982 7mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.992 8mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.989 4mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.642mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	1.000 019A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 38A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.898 09A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.992 0Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 923kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 58kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.994 8kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 930MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.998 02MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.993 4MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 5Hz	58uHz
1kHz Range	1.000 000kHz	1.000 007kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 10kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 0kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.

CERTIFICATE OF CALIBRATION

Issued By PASS Ltd - www.calibrate.co.uk

Certificate Number 00387-A

Date of Issue 03 April 2019



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Thornaby
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Page 1 of 3 Pages

Approved Signatory

J.Fryer

I.Ibrahim

D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID31037	Job Number :	J134563-3
	Description :	Digital Multimeter (6.5 digit)	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00387
	Serial Number :	2596001	Last Calibration Date :	03/04/2019
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 03 April 2019

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AFTER ADJUSTMENT RESULTS

Certificate Number
00387-A

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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	100.001 3mV	3.1uV
100mV D.C. Range	-100.000 0mV	-99.997 4mV	3.1uV
1V D.C. Range	1.000 000V	1.000 008V	11uV
1V D.C. Range	-1.000 000V	-0.999 993V	11uV
10V D.C. Range	10.000 00V	10.000 05V	110uV
10V D.C. Range	-10.000 00V	-9.999 96V	110uV
100V D.C. Range	100.000 0V	99.999 5V	1.5mV
100V D.C. Range	-100.000 0V	-99.999 9V	1.5mV
1000V D.C. Range	1 000.000V	999.997V	14mV
1000V D.C. Range	-1 000.000V	-999.998V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-8.999 99V	98uV
10V D.C. Range	-8.000 00V	-7.999 99V	90uV
10V D.C. Range	-7.000 00V	-7.000 00V	81uV
10V D.C. Range	-6.000 00V	-6.000 00V	73uV
10V D.C. Range	-5.000 00V	-5.000 00V	65uV
10V D.C. Range	-4.000 00V	-3.999 99V	58uV
10V D.C. Range	-3.000 00V	-3.000 00V	52uV
10V D.C. Range	-2.000 00V	-2.000 00V	22uV
10V D.C. Range	-1.000 00V	-1.000 00V	12uV
10V D.C. Range	0.000 00V	0.000 00V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 01V	22uV
10V D.C. Range	3.000 00V	3.000 02V	52uV
10V D.C. Range	4.000 00V	4.000 02V	58uV
10V D.C. Range	5.000 00V	5.000 02V	65uV
10V D.C. Range	6.000 00V	6.000 04V	73uV
10V D.C. Range	7.000 00V	7.000 04V	81uV
10V D.C. Range	8.000 00V	8.000 05V	90uV
10V D.C. Range	9.000 00V	9.000 06V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.992 7mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 922V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 968V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 975V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 995V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 940V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 803V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 266V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.006 552V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.999 22V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.999 67V	3.2mV
10V A.C. @ 10kHz	10.000 00V	10.000 06V	5.0mV
10V A.C. @ 30kHz	10.000 00V	10.000 28V	8.7mV
10V A.C. @ 75kHz	10.000 00V	10.003 17V	8.7mV

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AFTER ADJUSTMENT RESULTS

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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.993 0V	33mV
100V A.C. @ 1kHz	100.000 0V	100.000 3V	33mV
750V A.C. @ 60Hz	750.000V	749.973V	200mV
750V A.C. @ 1kHz	750.000V	750.048V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.012 9uA	17nA
1mA D.C. Range	1.000 000mA	1.000 011mA	68nA
10mA D.C. Range	10.000 00mA	10.001 07mA	0.62uA
100mA D.C. Range	100.000 0mA	100.001 5mA	6.2uA
400mA D.C. Range	390.000mA	390.017mA	69uA
1A D.C. Range	1.000 000A	1.000 317A	150uA
3A D.C. Range	2.900 00A	2.900 10A	1.2mA
10A D.C. Range	9.900 00A	9.900 21A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.999 39mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.992 5mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	100.002 2mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.999 5mA	61uA
400mA A.C. @ 60Hz	390.000mA	389.930mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	0.999 979A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 30A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.898 17A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.999 5Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 954kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 86kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.998 0kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 880MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.997 91MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.976 4MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 0Hz	58uHz
1kHz Range	1.000 000kHz	1.000 008kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 09kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 0kHz	58mHz

End of results

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Page 1 of 3 Pages

Approved Signatory

J.Fryer I.Ibrahim D.Kendrew

Customer : L C M Systems Ltd
Unit 15, Barry Way
Newport, ISLE OF WIGHT PO30 5GY

Date Received : 02 April 2019

Instrument -	System ID :	ID30759	Job Number :	J134563-1
	Description :	Digital Multimeter (6.5 digit)	Site :	
	Manufacturer :	Fluke	Location :	
	Model Number :	8845A	Last Certificate Number :	00210
	Serial Number :	2596014	Last Calibration Date :	19/03/2018
	Procedure Version :	1.10_15/N [V]		

Environmental Conditions

Temperature :	20°C +/- 3°C	Mains Voltage :	240V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

Instrument was allowed to stabilise for at least 12 hours before calibration.
Specification Reference: 8845A/8846A, July 2006, Rev. 3, 3/11, Users Manual.
4 Wire kelvin connections were used for ohms measurements below 100kOhms
Front Panel Terminals were used for calibration.
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 : D.Kendrew

Date of Calibration : 03 April 2019

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
AS FOUND RESULTS

Certificate Number
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Test Title	Applied Value	Reading	Uncertainties
General Operation Tests #			
Controls & Display #	---	Pass	
Continuity Beeper #	---	Pass	
Diode Test #	---	Pass	
D.C. Voltage, Resolution 6 Digit 100 PLC			
100mV D.C. Range	100.000 0mV	99.997 8mV	3.1uV
100mV D.C. Range	-100.000 0mV	-100.002 1mV	3.1uV
1V D.C. Range	1.000 000V	1.000 003V	11uV
1V D.C. Range	-1.000 000V	-1.000 000V	11uV
10V D.C. Range	10.000 00V	10.000 05V	110uV
10V D.C. Range	-10.000 00V	-10.000 03V	110uV
100V D.C. Range	100.000 0V	100.000 1V	1.5mV
100V D.C. Range	-100.000 0V	-100.000 5V	1.5mV
1000V D.C. Range	1 000.000V	1 000.004V	14mV
1000V D.C. Range	-1 000.000V	-1 000.004V	14mV
D.C. Linearity, Resolution 6 Digit 100 PLC			
10V D.C. Range	-9.000 00V	-9.000 03V	98uV
10V D.C. Range	-8.000 00V	-8.000 03V	90uV
10V D.C. Range	-7.000 00V	-7.000 03V	81uV
10V D.C. Range	-6.000 00V	-6.000 03V	73uV
10V D.C. Range	-5.000 00V	-5.000 02V	65uV
10V D.C. Range	-4.000 00V	-4.000 02V	58uV
10V D.C. Range	-3.000 00V	-3.000 02V	52uV
10V D.C. Range	-2.000 00V	-2.000 01V	22uV
10V D.C. Range	-1.000 00V	-1.000 01V	12uV
10V D.C. Range	0.000 00V	-0.000 01V	6.3uV
10V D.C. Range	1.000 00V	1.000 00V	12uV
10V D.C. Range	2.000 00V	2.000 00V	22uV
10V D.C. Range	3.000 00V	3.000 01V	52uV
10V D.C. Range	4.000 00V	4.000 01V	58uV
10V D.C. Range	5.000 00V	5.000 02V	65uV
10V D.C. Range	6.000 00V	6.000 02V	73uV
10V D.C. Range	7.000 00V	7.000 03V	81uV
10V D.C. Range	8.000 00V	8.000 04V	90uV
10V D.C. Range	9.000 00V	9.000 04V	98uV
A.C. Voltage, Resolution High, Signal Filter 3Hz			
100mV A.C. @ 60Hz	100.000 0mV	99.980 3mV	65uV
1V A.C. @ 60Hz	1.000 000V	0.999 788V	0.33mV
1V A.C. @ 200Hz	1.000 000V	0.999 843V	0.33mV
1V A.C. @ 400Hz	1.000 000V	0.999 844V	0.33mV
1V A.C. @ 1kHz	1.000 000V	0.999 893V	0.33mV
1V A.C. @ 10kHz	1.000 000V	0.999 842V	0.51mV
1V A.C. @ 40kHz	1.000 000V	0.999 716V	0.92mV
1V A.C. @ 75kHz	1.000 000V	1.000 128V	0.92mV
1V A.C. @ 200kHz #	1.000 000V	1.005 659V	0.92mV
10V A.C. @ 60Hz	10.000 00V	9.995 96V	3.2mV
10V A.C. @ 1kHz	10.000 00V	9.996 50V	3.2mV
10V A.C. @ 10kHz	10.000 00V	9.996 94V	5.0mV
10V A.C. @ 30kHz	10.000 00V	9.997 71V	8.7mV
10V A.C. @ 75kHz	10.000 00V	10.001 45V	8.7mV

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 8239
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Test Title	Applied Value	Reading	Uncertainties
100V A.C. @ 60Hz	100.000 0V	99.955 1V	33mV
100V A.C. @ 1kHz	100.000 0V	99.965 8V	33mV
750V A.C. @ 60Hz	750.000V	749.671V	200mV
750V A.C. @ 1kHz	750.000V	749.809V	200mV
D.C. Current, Resolution 6 Digit 100 PLC			
100uA D.C. Range	100.000 0uA	100.004 0uA	17nA
1mA D.C. Range	1.000 000mA	1.000 054mA	68nA
10mA D.C. Range	10.000 00mA	9.999 37mA	0.62uA
100mA D.C. Range	100.000 0mA	99.998 3mA	6.2uA
400mA D.C. Range	390.000mA	390.004mA	69uA
1A D.C. Range	1.000 000A	1.000 135A	150uA
3A D.C. Range	2.900 00A	2.900 59A	1.2mA
10A D.C. Range	9.900 00A	9.902 15A	3.5mA
A.C. Current, Resolution High, Signal Filter 3Hz			
10mA A.C. @ 60Hz	10.000 00mA	9.998 12mA	6.1uA
100mA A.C. @ 60Hz	100.000 0mA	99.983 4mA	61uA
100mA A.C. @ 400Hz	100.000 0mA	99.987 6mA	61uA
100mA A.C. @ 1kHz	100.000 0mA	99.991 1mA	61uA
400mA A.C. @ 60Hz *	390.000mA	389.775mA	0.58mA
1A A.C. @ 60Hz	1.000 000A	1.000 012A	0.72mA
3A A.C. @ 60Hz	2.900 00A	2.900 83A	1.4mA
10A A.C. @ 60Hz	9.900 00A	9.898 50A	8.8mA
D.C. Resistance 4-wire, Resolution 6 Digit 100 PLC			
100 ohm Range	99.996 8Ω	99.992 1Ω	0.6mΩ
1k ohm Range	0.999 950kΩ	0.999 938kΩ	4.8mΩ
10k ohm Range	9.999 80kΩ	9.999 70kΩ	49mΩ
100k ohm Range	99.998 3kΩ	99.996 9kΩ	0.98Ω
D.C. Resistance 2-wire, Resolution 6 Digit 100 PLC			
1M ohm Range	0.999 953MΩ	0.999 945MΩ	33Ω
10M ohm Range	9.998 36MΩ	9.997 87MΩ	3.1kΩ
100M ohm Range	100.001 3MΩ	99.942 7MΩ	210kΩ
Frequency			
100Hz Range	100.000 0Hz	100.000 9Hz	58uHz
1kHz Range	1.000 000kHz	1.000 008kHz	0.58mHz
10kHz Range	10.000 00kHz	10.000 11kHz	5.8mHz
100kHz Range	100.000 0kHz	100.001 1kHz	58mHz

End of results

All tests marked with * No firm compliance conclusion can be made "Neither compliance nor non-compliance". Even though the UUT reading are within the manufacturers specification with out including the uncertainty.