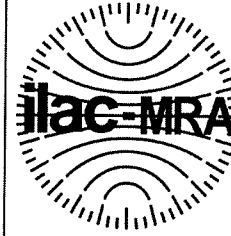


# CERTIFICATE OF CALIBRATION

Issued by: RS Components Ltd

Date Issued: 30 Jan 2017

Certificate No. 1468303



0310

## RS Calibration

Calibration and Repair Service

DPN 175, Lammas Rd,  
Weldon Industrial Est  
Corby, Northants, NN17 9RS

Tel: 01536 405545

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A handwritten signature in black ink, appearing to read 'Martyn Goodacre'.

Martyn Goodacre

Client	MED-LAB LIMITED DERBY DERBYSHIRE DE1 2PU
Instrument	Iso-Tech IDM203 Digital Multimeter
Serial No.	06401577
Client Reference	N/A
Procedure ID.	212.871 Rev. P4
Date of Calibration	30 Jan 2017

### Remarks

This certificate reports recorded values for the instrument 'As Received'.

### Uncertainties

The reported expanded uncertainties are 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.



RS Components takes its environmental responsibilities very seriously and as such has printed this double sided document in black and white, on paper from sustainable sources.

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.

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## Environment

The ambient temperature and relative humidity throughout the calibration were  $(20 \pm 2) ^\circ\text{C}$  and  $(40 \pm 20) \%RH$  respectively.

## Method

Prior to the calibration the instrument was held within the laboratory for a period of not less than 30 minutes.

The instrument was calibrated by applying nominal values to the input terminals and recording the displayed values in the tables below.

Function	Range	Applied Value		UUT Display	Measurement Uncertainties
<u>DC Voltage</u>	400 mV	350 mV		349.7 mV	$\pm (0.03\% + 1 \text{ LSD})$
		- 350 mV		- 349.5 mV	$\pm (0.03\% + 1 \text{ LSD})$
	4 V	3.5 V		3.504 V	$\pm (0.03\% + 1 \text{ LSD})$
	40 V	10 V		10.01 V	$\pm (0.12\% + 1 \text{ LSD})$
		20 V		20.02 V	$\pm (0.06\% + 1 \text{ LSD})$
		30 V		30.03 V	$\pm (0.04\% + 1 \text{ LSD})$
		35 V		35.04 V	$\pm (0.03\% + 1 \text{ LSD})$
	400 V	350 V		350.1 V	$\pm (0.03\% + 1 \text{ LSD})$
	600 V	590 V		590 V	$\pm (0.20\% + 1 \text{ LSD})$
<u>AC Voltage</u>	4 V	3.5 V	50 Hz	3.505 V	$\pm (0.04\% + 1 \text{ LSD})$
	40 V	35 V	50 Hz	35.04 V	$\pm (0.04\% + 1 \text{ LSD})$
		35 V	900 Hz	35.03 V	$\pm (0.04\% + 1 \text{ LSD})$
	400 V	350 V	50 Hz	350.1 V	$\pm (0.04\% + 1 \text{ LSD})$
	600 V	590 V	50 Hz	587 V	$\pm (0.20\% + 1 \text{ LSD})$
	<u>DC Current</u>	4 mA	3.5 mA		3.507 mA
40 mA		35 mA		35.11 mA	$\pm (0.04\% + 1 \text{ LSD})$
400 mA		350 mA		348.8 mA	$\pm (0.04\% + 1 \text{ LSD})$
10 A		2 A		1.99 A	$\pm (0.58\% + 1 \text{ LSD})$
<u>AC Current</u>	4 mA	3.5 mA	50 Hz	3.506 mA	$\pm (0.09\% + 1 \text{ LSD})$
	40 mA	35 mA	50 Hz	35.11 mA	$\pm (0.09\% + 1 \text{ LSD})$
	400 mA	350 mA	50 Hz	348.7 mA	$\pm (0.11\% + 1 \text{ LSD})$
	10 A	2 A	50 Hz	1.95 A	$\pm (0.59\% + 1 \text{ LSD})$
<u>Resistance</u>	400 $\Omega$	100 $\Omega$		100.4 $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$
	4 k $\Omega$	1 k $\Omega$		0.999 k $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$
	40 k $\Omega$	10 k $\Omega$		10.00 k $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$
	400 k $\Omega$	100 k $\Omega$		99.6 k $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$
	4 M $\Omega$	1 000 M $\Omega$		998 M $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$
	40 M $\Omega$	10 M $\Omega$		9.98 M $\Omega$	$\pm (0.12\% + 1 \text{ LSD})$

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Function	Range	Applied Value	UUT Display	Measurement Uncertainties	
<u>Frequency</u>	100 Hz	89.998 Hz	500 mV	89.98 Hz	$\pm (0.01\% + 1 \text{ LSD})$
	1 kHz	899.98 Hz	500 mV	899.8 Hz	$\pm (0.01\% + 1 \text{ LSD})$
	10 kHz	8.999 8 kHz	500 mV	8.998 kHz	$\pm (0.01\% + 1 \text{ LSD})$
	100 kHz	89.998 kHz	500 mV	89.98 kHz	$\pm (0.01\% + 1 \text{ LSD})$
	1 MHz	899.98 kHz	500 mV	899.8 kHz	$\pm (0.01\% + 1 \text{ LSD})$
<u>Capacitance</u>	400 nF	300.02 nF		302.4 nF	$\pm (0.26\% + 1 \text{ LSD})$
	4 uF	3.003 2 uF		3.008 uF	$\pm (0.26\% + 1 \text{ LSD})$
	40 uF	29.994 uF		29.66 uF	$\pm (0.25\% + 1 \text{ LSD})$

## Compliance to Specification

The specification published by the manufacturer and found in the instrument's handbook has been used to determine performance at the measured points.

## Reported values not annotated.

The instrument complies with the stated specification, due allowance having been made for the uncertainty of measurement which carries no implication regarding the long term stability of the instrument.