

Schedule of Accreditation



Organisation Name	Lotus Automation (Ireland) Ltd Trading As LotusWorks
INAB Reg No	277C
Contact Name	Noel Molloy
Address	Building 3, Finisklin Business Park, Sligo
Contact Phone No	071 916 9783
Email	nmolloy@lotusworks.com
Website	
Accreditation Standard	ISO 17025 C
Date Initially Awarded	07/12/2010
Scope Classification	Metrology
Services available to the public ¹	Yes

¹ Refer to document on interpreting INAB Scopes of Accreditation

Sites from which accredited services are delivered	
(the detail of the accredited services delivered at each site are on the Scope of Accreditation)	
Name	Address
1 Head Office	Building 3, Finisklin Business Park, Sligo

Scope of Accreditation

Head Office

Metrology

Category: A

Metrology field - Calibrated Device Type	Measured quantity	Calibration range	Calibration and measurement capability (CMC)	Std. ref/SOP	Products	Remarks
101 Mass - .01 Precision laboratory balances	Precision laboratory balances	1 mg to 5 g 5 g to 20 g 20 g to 200 g	0.032 mg 0.071 mg 0.19 mg	QLP 128 A+B		
101 Mass - .02 Industrial balances	Industrial balances	20 g to 1 kg 1 kg to 20 kg	1.3 mg 25 mg	QLP 128 A+B		
101 Mass - .03 Industrial weighing appliances	Industrial weighing appliances	20 kg to 100 kg 100.kg to 320 kg	2.0 g 6.0g	QLP 128 A+B		
104 Volume - .02 Special laboratory volumetric apparatus	Single channel pipettes	1µL to 10 µL 10µL to 20 µL 20µL to 100 µL 100µL to 200 µL 200µL to 500 µL 500µL to 1000 µL 1000µL to 2000 µL 2000µL to 5000 µL 5000µL to 10000 µL	0.15 µL 0.20 µL 0.35 µL 0.80 µL 2.5 µL 4.5 µL 12 µL 22 µL 51 µL	QLP 127 based on ISO 8655:2002		Category A Calibration: Environmental Temperature 21 ±3°C.
107 Temperature measuring equipment - .09 Digital temperature indicator systems	DTI Calibration and temperature element calibration	- 80°C to + 30°C + 30°C to + 150 °C +150°C to + 660 °C	0.011°C to 0.028 °C 0.014°C to 0.028°C 0.028°C to 0.18°C	QLP 103 A+B		
108 Temperature controlled enclosures - .01 Ovens, furnaces, baths	Ovens	0°C to 140°C	0.25°C to 0.5°C	QLP-129 Category A+B		
	Temperature bath calibration	+145°C to + 660°C	0.04°C to 0.20 °C	QLP 105		
108 Temperature controlled enclosures - .02 Incubators	Incubators	0°C to 140°C	0.25°C to 0.5°C	QLP-129 Category A+B		
108 Temperature controlled enclosures - .04 Industrial freezers	Industrial freezers	-90°C to 0°C	0.5°C to 0.25°C	QLP-129 Category A+B		
108 Temperature controlled enclosures - .99 Other	Testing of temperature controlled enclosures	-100°C to + 30 °C + 30°C to + 140°C	0.04°C to 0.036°C 0.036°C to 0.040 °C	QLP 105		
110 Electrical - .01 Indicating and recording instruments	AC Current Turn Coil 30 A 100 A 30 A 500 A	- 95 Hz 95 Hz 440 Hz 440 Hz	- 0.14 A 0.5 A 0.33 A 1.1 A	QLP 114		
	AC Current	-	-	QLP 114		

30.000 uA to 3.0000 mA 03.0001 mA to 30.000 mA 030.001 mA to 300.000 mA 0.3001 A to 3.0000 A 0.3001 A to 3.0000 A 03.001 A to 10.000 A 03.001 A to 10.000 A	10 Hz to 3 kHz 10 Hz to 3 kHz 10 Hz to 3 kHz 40 Hz to 3 kHz 3 kHz to 10 kHz 40 Hz to 3 kHz 3 kHz to 10 kHz	920nA to 2.4µA 2.4µA to 24µA 24µA to 270µA 270µA to 3.5mA 350µA to 1mA 3.5mA to 23mA 10mA to 60mA			
AC Voltage 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V	- 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	- 46mV to 48mV 68mV to 71mV 96mV to 100mV 180mV to 190mV 46mV to 47mV	QLP 114		
AC Voltage 105.001 V to 300.000 V 105.001 V to 300.000 V 105.001 V to 300.000 V 105.001 V to 300.000 V 105.001 V to 300.000 V	- 40 Hz to 100 Hz 100 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz	- 72mV to 170mV 72mV to 260mV 120mV to 270mV 120mV to 5100mV	QLP 114		
AC Voltage 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V	- 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	- 1.5mV to 14mV 1.6mV to 21mV 2.4mV to 29mV 3.7mV to 55mV 8.6mV to 140mV	QLP 114		
AC Voltage 30.0000 mV to 3.000V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001mV to 3.000 V		- 110µV to 1.5mV 150µV to 1.6mV 230µV to 2.4mV 370µV to 3.7mV 860µV to 8.6mV	QLP 114		
AC Voltage 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V		- 14mV to 46mV 21mV to 68mV 29mV to 96mV 55mV to 180mV 0.140mV to 0.460mV	QLP 114		
AC Voltage 330.001 V to 750.000 V 330.001 V to	- 40 Hz to 100 Hz 100 Hz to 3 kHz 3 kHz to 10 kHz	- 230mV to 440mV 230mV to 660mV 330mV to 710mV	QLP 114		

750.000 V 330.001 V to 750.000 V 750.001 V to 1 kV	40 Hz to 10 kHz	0.44 V to 1 V			
Capacitance 0.5000 nF to 4.0000 nF 4.0001 nF to 40.000 nF 40.001 nF to 400.00 nF 400.01 nF to 4.0000 µF 4.0001 µF to 40.000 µF 40.001 µF to 400.00 µF 400.01 µF to 4.0000 mF 4.0001 mF to 40.000 mF		- 17pF to 28pF 28pF to 160pF 160pF to 1.5nF 1.5nF to 19nF 19nF to 220nF 220nF to 2.2µF 2.2µF to 22µF 22µF to 460µF	QLP 114		
DC Current 000.000 A to 300.000 uA 0.30001 mA to 3.0000 mA 03.0001 mA to 30.0000 mA 030.0001 mA to 300.000 mA 300.001 mA to 3.0000 A 03.0001 A to 10.000 A		- 53nA to 510nA 510nA to 5.1µA 5.1µA to 58µA 58µA to 1.9mA 1.9mA to 6.5mA	QLP 114		
DC Voltage 0.000 mV to 300.000 mV 0.30001 V to 3.00000 V 3.00001 V to 30.0000 V 30.0001 V to 300.000 V 300.01 V to 1000.00 V		- 4.2 µV to 22µV 22µV to 220µV 220µV to 2.4 mV 2.4 mV to 24mV 24mV to 80mV	QLP 114		
Frequency 250.000 Hz @ 1V 100.0000 KHz @ 1V		- 6.3mHz 2.5 Hz	QLP 114		
Negative DC Voltage 0.000 mV to - 300.000 mV 0.30001 mV to - 3.00000 V 3.00001 V to - 30.0000 V 30.0001 V to - 300.000 V 300.01 V to - 1000.00 V		- 4.2 µV to 22µV 23µV to 220µV 220µV to 2.4 mV 2.4 mV to 24mV 24mV to 80mV	QLP 114		
Resistance 00.0000 Ω to 40.0000 Ω 040.001 Ω to 380.000 Ω 0.38001 K Ω to		- 10mΩ to 20mΩ 29mΩ to 96mΩ 77mΩ to 650mΩ 650mΩ to 8.4 Ω 8.4 Ω to 76 Ω	QLP 114		

	3.80000 K Ω 03.8001 K Ω to 38.0000 K Ω 038.0001 K Ω to 380.000 K Ω 0.38001 M Ω to 38.000 M Ω 38.001 M Ω to 80.000 M Ω 80.001 M Ω to 100.000 M Ω		76 Ω to 21KΩ 21KΩ to 88KΩ 88KΩ to 100KΩ			
--	---	--	---	--	--	--

1. In accordance with INAB policy, uncertainties are calculated for an estimated confidence level of not less than 95%.
2. Best measurement capability expressed as an uncertainty (\pm) to be reported in compliance with EA-4/02, "Expression of the Uncertainty of Measurement in Calibration".

Nominal temperature for in-house calibration work: $21\pm 3^{\circ}\text{C}$
Nominal temperature for Category B (customer site) calibration work: $21\pm 5^{\circ}\text{C}$

Metrology

Category: B

Metrology field - Calibrated Device Type	Measured quantity	Calibration range	Calibration and measurement capability (CMC)	Std. ref/SOP	Products	Remarks
101 Mass - .01 Precision laboratory balances	Precision laboratory balances	1 mg to 5 g 5 g to 20 g 20 g to 200 g	0.032 mg 0.071 mg 0.19 mg	QLP 128 A+B		
101 Mass - .02 Industrial balances	Industrial balances	20 g to 1 kg 1 kg to 20 kg	1.3 mg 25 mg	QLP 128 A+B		
101 Mass - .03 Industrial weighing appliances	Industrial weighing appliances	20 kg to 100 kg 100.kg to 320 kg	2.0 g 6.0g	QLP 128 A+B		
104 Volume - .02 Special laboratory volumetric apparatus	Single channel pipettes	1µL to 10 µL 10µL to 20 µL 20µL to 100 µL 100µL to 200 µL 200µL to 500 µL 500µL to 1000 µL 1000µL to 2000 µL 2000µL to 5000 µL 5000µL to 10000 µL	0.15 µL 0.20 µL 0.35 µL 0.80 µL 2.5 µL 4.5 µL 12 µL 22 µL 51 µL	QLP 127 based on ISO 8655:2002		Category B Calibration: Environmental Temperature 21±5°C
107 Temperature measuring equipment - .09 Digital temperature indicator systems	DTI Calibration and temperature element calibration	- 80°C to + 30°C + 30°C to + 150 °C +150°C to + 660°C	0.011°C to 0.028 °C 0.014°C to 0.028°C 0.028°C to 0.18°C	QLP 103 A+B		
108 Temperature controlled enclosures - .01 Ovens, furnaces, baths	Ovens	0°C to 140°C	0.25°C to 0.5°C	QLP-129 Category A+B		
	Temperature bath calibration	+145°C to + 660°C	0.04°C to 0.20 °C	QLP 105		
108 Temperature controlled enclosures - .02 Incubators	Incubators	0°C to 140°C	0.25°C to 0.5°C	QLP-129 Category A+B		
108 Temperature controlled enclosures - .04 Industrial freezers	Industrial freezers	-90°C to 0°C	0.5°C to 0.25°C	QLP-129 Category A+B		
108 Temperature controlled enclosures - .99 Other	Testing of temperature controlled enclosures	-100°C to + 30 °C + 30°C to + 140°C	0.04°C to 0.036°C 0.036°C to 0.040 °C	QLP 105		
110 Electrical - .01 Indicating and recording instruments	AC Current Turn Coil 30 A 100 A 30 A 500 A	- 95 Hz 95 Hz 440 Hz 440 Hz	- 0.14 A 0.5 A 0.33 A 1.1 A	QLP 114		
	AC Current 30.000 uA to 3.0000 mA 03.0001 mA to 30.000 mA 030.001 mA to 300.000 mA 0.3001 A to 3.0000 A 0.3001 A to 3.0000 A	- 10 Hz to 3 kHz 10 Hz to 3 kHz 10 Hz to 3 kHz 40 Hz to 3 kHz 3 kHz to 10 kHz 40 Hz to 3 kHz 3 kHz to 10 kHz	- 920nA to 2.4µA 2.4µA to 24µA 24µA to 270µA 270µA to 3.5mA 350µA to 1mA 3.5mA to 23mA 10mA to 60mA	QLP 114		

03.001 A to 10.000 A					
03.001 A to 10.000 A					
AC Voltage 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V 100.001 V to 105.000 V	- 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	- 46mV to 48mV 68mV to 71mV 96mV to 100mV 180mV to 190mV 46mV to 47mV	QLP 114		
AC Voltage 105.001 V to 300.000 V 105.001 V to 300.000 V 105.001 V to 300.000 V 105.001 V to 300.000 V	- 40 Hz to 100 Hz 100 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz	- 72mV to 170mV 72mV to 260mV 120mV to 270mV 120mV to 5100mV	QLP 114		
AC Voltage 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V 3.001 V to 30.000 V	- 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	- 1.5mV to 14mV 1.6mV to 21mV 2.4mV to 29mV 3.7mV to 55mV 8.6mV to 140mV	QLP 114		
AC Voltage 30.0000 mV to 3.000V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001 mV to 3.000 V 300.001mV to 3.000 V		- 110µV V to 1.5mV 150µV to 1.6mV 230µV to 2.4mV 370µV to 3.7mV 860µV to 8.6mV	QLP 114		
AC Voltage 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V 30.001 V to 100.000 V		- 14mV to 46mV 21mV to 68mV 29mV to 96mV 55mV to 180mV 0.140mV to 0.460mV	QLP 114		
AC Voltage 330.001 V to 750.000 V 330.001 V to 750.000 V 330.001 V to 750.000 V 330.001 V to 750.000 V	- 40 Hz to 100 Hz 100 Hz to 3 kHz 3 kHz to 10 kHz 40 Hz to 10 kHz	- 230mV to 440mV 230mV to 660mV 330mV to 710mV 0.44 V to 1 V	QLP 114		
Capacitance 0.5000 nF to 4.0000 nF 4.0001 nF to 40.000 nF		- 17pF to 28pF 28pF to 160pF 160pF to 1.5nF 1.5nF to 19nF	QLP 114		

<p>40.001 nF to 400.00 nF 400.01 nF to 4.0000 μF 4.0001 μF to 40.000 μF 40.001 μF to 400.00 μF 400.01 μF to 4.0000 mF 4.0001 mF to 40.000 mF</p>	<p>19nF to 220nF 220nF to 2.2μF 2.2μF to 22μF 22μF to 460μF</p>			
<p>DC Current 000.000 A to 300.000 μA 0.30001 mA to 3.0000 mA 03.0001 mA to 30.0000 mA 030.0001 mA to 300.000 mA 300.001 mA to 3.0000 A 03.0001 A to 10.000 A</p>	<p>- 53nA to 510nA 510nA to 5.1μA 5.1μA to 58μA 58μA to 1.9mA 1.9mA to 6.5mA</p>	<p>QLP 114</p>		
<p>DC Voltage 0.000 mV to 300.000 mV 0.30001 V to 3.00000 V 3.00001 V to 30.0000 V 30.0001 V to 300.000 V 300.01 V to 1000.00 V</p>	<p>- 4.2 μV to 22μV 22μV to 220μV 220μV to 2.4 mV 2.4 mV to 24mV 24mV to 80mV</p>	<p>QLP 114</p>		
<p>Frequency 250.000 Hz @ 1V 100.0000 KHz @ 1V</p>	<p>- 6.3mHz 2.5 Hz</p>	<p>QLP 114</p>		
<p>Negative DC Voltage 0.000 mV to -300.000 mV 0.30001 mV to -3.00000 V 3.00001 V to -30.0000 V 30.0001 V to -300.000 V 300.01 V to -1000.00 V</p>	<p>- 4.2 μV to 22μV 23μV to 220μV 220μV to 2.4 mV 2.4 mV to 24mV 24mV to 80mV</p>	<p>QLP 114</p>		
<p>Resistance 00.0000 Ω to 40.0000 Ω 040.001 Ω to 380.000 Ω 0.38001 K Ω to 3.80000 K Ω 03.8001 K Ω to 38.0000 K Ω 038.0001 K Ω to 380.000 K Ω 0.38001 M Ω to 38.000 M Ω 38.001 M Ω to 80.000 M Ω</p>	<p>- 10mΩ to 20mΩ 29mΩ to 96mΩ 77mΩ to 650mΩ 650mΩ to 8.4 Ω 8.4 Ω to 76 Ω 76 Ω to 21KΩ 21KΩ to 88KΩ 88KΩ to 100KΩ</p>	<p>QLP 114</p>		

80.001 M Ω to 100.000 M Ω					
--	--	--	--	--	--

1. In accordance with INAB policy, uncertainties are calculated for an estimated confidence level of not less than 95%.
2. Best measurement capability expressed as an uncertainty (\pm) to be reported in compliance with EA-4/02, "Expression of the Uncertainty of Measurement in Calibration".

Nominal temperature for in-house calibration work: $21\pm 3^{\circ}\text{C}$

Nominal temperature for Category B (customer site) calibration work: $21\pm 5^{\circ}\text{C}$