

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CANADIAN INSTRUMENTATION SERVICES GROUP LTD.
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CALIBRATION

Valid To: September 30, 2010

Certificate Number: 3023.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
DC Voltage – Measure ³	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	9 µV/V + 1 µV 8 µV/V + 1 µV 8 µV/V + 2 µV 10 µV/V + 30 µV 10 µV/V + 100 µV	HP 3458A
	(1 to 20) kV	0.04 % of rdg + 0.02 % of rdg + 0.1 µV/V	Vitrek 4600A
DC Voltage – Generate ³	(1 to 10) mV 10 mV to 1100 V	68 µV/V 7.3 µV/V	Fluke 5700A
DC Current – Measure ³	10 nA to 100 nA 100 nA to 1 µA 1 µA to 10 µA 10 µA to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	35 µA/A + 40 pA 25 µA/A + 40 pA 25 µA/A + 100 pA 25 µA/A + 800 pA 25 µA/A + 5 nA 25 µA/A + 50 nA 40 µA/A + 500 nA 0.015 % rdg + 10 µA	HP 3458A

Parameter/Equipment	Range	CMC ² (±)	Comments
DC Current – Generate ³	22 µA to 220 µA 220 µA to 220 mA 220 mA to 2.2 A 2.2 A to 11 A 11 A to 20.5 A	86 µA/A 54 µA/A 91 µA/A 0.055 % of rdg 0.10 % of rdg	Fluke 5520A
DC Resistance – Measure ³	1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ 1 GΩ to 10 GΩ 10 GΩ to 100 GΩ 100 GΩ to 1 TΩ	15 µΩ/Ω + 50 µΩ 12 µΩ/Ω + 500 µΩ 10 µΩ/Ω + 500 µΩ 10 µΩ/Ω + 5 mΩ 10 µΩ/Ω + 50 Ω 15 µΩ/Ω + 2 Ω 50 µΩ/Ω + 100 Ω 0.05 % of rdg + 1 kΩ 0.5 % of rdg + 10 kΩ 0.08 % of rdg 0.65 % of rdg 0.2 % of rdg	HP 3458A Guildline 9520
DC Resistance – Generate ³	1 Ω, 1.9 Ω 10 Ω, 19 Ω 100 Ω, 190 Ω 1 kΩ, 1.9 kΩ 10 kΩ, 19 kΩ 100 kΩ, 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	95 µΩ/Ω 23 µΩ/Ω 10 µΩ/Ω 8.5 µΩ/Ω 8.5 µΩ/Ω 11 µΩ/Ω 20 µΩ/Ω 21 µΩ/Ω 40 µΩ/Ω 47 µΩ/Ω 100 µΩ/Ω	Fluke 5700A
Electrical Simulation of Thermocouple Indicators ³ – Type E Type J	-250 °C to -100 °C -100 °C to -25 °C -25 °C to 350 °C 350 °C to 650 °C 650 °C to 1000 °C -210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.56 °C 0.22 °C 0.20 °C 0.22 °C 0.27 °C 0.30 °C 0.19 °C 0.17 °C 0.20 °C 0.26 °C	Fluke 5520A

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Simulation of Thermocouple Indicators ³ (cont.) –			Fluke 5520A
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.41 °C 0.26 °C 0.24 °C 0.34 °C 0.48 °C	
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.63 °C 0.24 °C 0.16 °C 0.14 °C	
Electrical Simulation of RTD Indicators ³	-200 °C to 630 °C	0.23 °C	Fluke 5520A

Parameter/ Range	Frequency	CMC ² (±)	Comments
AC Voltage – Measure ³			
1 mV to 10 mV	1 Hz to 100 kHz 100 kHz to 300 kHz	0.031 % of rdg 4.0 % of rdg	HP3458A
10 mV to 10 V	1 Hz to 300 kHz 300 kHz to 2 MHz	90 µV/V 1.0 % of rdg	
10 V to 100 V	1 Hz to 300 kHz 300 kHz to 1 MHz	0.022 % of rdg 1.5 % of rdg	
100 V to 1000 V	1 Hz to 100 kHz	0.042 % or rdg	
1 kV to 20 kV (20 kV range)	1 Hz to 100 kHz	0.2 % of rdg + 0.1 % of range + 0.2 µV/V	Vitretek 4600 (Measure)
AC Voltage – Generate ³			
1 mV to 1100 V	10 Hz to 500 kHz	78 µV/V	Fluke 5700A

Parameter/ Range	Frequency	CMC ² (±)	Comments
AC Current – Generate ³ 22 µA to 220 µA 220 µA to 2.2 A 3 A to 20.5 A	10 Hz to 5 kHz 20 Hz to 5 kHz 45 Hz to 5 kHz	0.14 % of rdg 0.067 % of rdg 3.1 % of rdg	Fluke 5700A / Fluke 5520A
AC Current – Measure ³ 10 µA to 100 µA 100 µA to 100 mA 100 mA to 1 A 100 µA to 1 A	10 Hz to 5 kHz 10 Hz to 50 kHz 10 Hz to 50 kHz 50 kHz to 100 kHz	0.09 % of rdg 0.05 % of rdg 0.12 % of rdg 0.7 % of rdg	HP 3458A
Capacitance – Generate ³ 0.19 nF to 1.1 nF 1.1 nF to 3.3 nF 3.3 nF to 330 nF 330 nF to 1.1 µF 1.1 µF to 3.3 µF 3.3 µF to 11 µF 11 µF to 33 µF 33 µF to 110 µF	10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 600 Hz 10 Hz to 300 Hz 10 Hz to 150 Hz 10 Hz to 120 Hz 10 Hz to 80 Hz	1.4 % of rdg 0.80 % of rdg 0.34 % of rdg 0.34 % of rdg 0.34 % of rdg 0.34 % of rdg 0.49 % of rdg 0.55 % of rdg	Fluke 5520A

II. Time & Frequency

Parameter/ Range	Frequency	CMC ² (±)	Comments
Frequency – Measuring Equipment	0.01 Hz to 500 kHz	2.5 µH/Hz + 5 µHz	Fluke 5520A

¹ This laboratory offers commercial calibration service and field calibration service.

² Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.



The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

CANADIAN INSTRUMENTATION SERVICES GROUP LTD.

Peterborough, Ontario, CANADA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets the requirements of any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 22nd day of January 2010.





President & CEO

For the Accreditation Council

Certificate Number 3023.01

Valid to September 30, 2010

Revised on August 27, 2010

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.