

MILLER INSTRUMENTS LTD.

#1 - 3871 North Fraser Way Burnaby, B.C. V5J 5G6 Telephone (604) 431-8882 Fax (604) 431-8714 web: www.miller.bc.ca email: miller@miller.bc.ca





CERTIFICATE OF CALIBRATION

Page 1 of 2

Certificate No.:

38181

Date of issue:

March 11, 2015

Manufacturer:

Eurotherm Chessell (Sure Controls)

Model No:

6100A

Serial No:

LJ380169G

Description:

Graphic recorder

Customer:

Red-D-Arc Ltd.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of Miller Instruments Ltd. and its traceability to the International System of Units (SI) or to the standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS, Certification number 94-03, and the conditions of accreditation granted by the Standards Council of Canada (SCC), Accreditation number No. 156. The ISO/IEC 17025:2005 Standard was used in the above assessment carried out by CLAS.

Temperature: 23±1 °C Relative humidity: 27±10 %RH

Instrument returned: within tolerance

Instrument received: within tolerance

Calibration date: March 10, 2015

Calibration due date: March 10, 2016 (as requested by the customer)

For measurement results associated with the conformance to a tolerance, the uncertainty in the measurement system did not exceed 25% (4:1 test uncertainty ratio) of the acceptable tolerance for each characteristic calibrated, unless otherwise noted in the report.

Calibrated by:

(Mahkameh Mohsenin, B.Sc.)

Authorized by:

(S. Nishie, P.Eng., Calibration Manager)

Calibration Procedure: CP-SP23439

Calibration Equipment Used:

ID # Model

Description

Serial Number

Calibration Due Date

009

Fluke 5500A

Multi-product calibrator

n. Nobseun

6460006

Sep 12, 2015

022

Agilent 3458A

DMM

US28031059

Jul 9, 2015

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Calibration data (as found and as returned)

	Applied	Expected		Measurement	Tolerance	
Channel No.	Voltage (VDC)	DUT Reading (°F)	DUT Reading (°F)	Uncertainty (±)(°F)	Limits $(\pm)(^{\circ}F)$	Pass/fail
1	0.000	-50	-50	1	5	p
1	2.787	382	382	1	5	p
1	6.013	882	882	1	5	p
1	9.239	1382	1383	1	5	p
2	0.000	-50	-50	1	5	p
2	2.787	382	382	1	5	p
2	6.013	882	883	1	5	p
2	9.239	1382	1383	1	5	p
3	0.000	-50	-50	1	5	p
3	2.787	382	382	1	5	p
3	6.013	882	882	1	5	p
3	9.239	1382	1383	1	5	p
4	0.000	-50	-50	1	5	p
4	2.787	382	382	1	5	p
4	6.013	882	882	1	5	р
4	9.239	1382	1383	1	5	p
5	0.000	-50	-50	1	5	р
5	2.787	382	382	1	5	p
5	6.013	882	883	1	5	p
5	9.239	1382	1383	1	5	p
6	0.000	-50	-50	1	5	p
6	2.787	382	382	1	5	p
6	6.013	882	882	1	5	p
6	9.239	1382	1383	1	5	р

Note 1: DUT: Device under test.

Note 2: The DUT was powered by a 120 V AC (60 Hz) line and was calibrated after a 30-minute warm-up period.

Note 3: The measurement uncertainty of this calibration, assuming normally distributed data, was derived from effective standard deviations and has been expanded to obtain a coverage factor of k=2 at a level of confidence of approximately 95%.

Note 4: The memory battery was replaced before the above calibration.

Note 5: The tolerance limits were assigned by the customer.

Note 6: The expected DUT readings were calculated using the following equation:

T = 155V - 50

Where V is in volts and

T is in °F

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