Measurements International
Standards Calibration Laboratory

Certificate of Calibration

CERTIFICATE NO.: C1210610

CUSTOMER NAME:
xDevs.com

CUSTOMER ADDRESS:
[redacted]

MEASURAND:
MODEL NO.: SR104 S/N.: G206098830104
MFG.: ESI DESCRIPTION: 10K Ohm Standard Air Resistor

CALIBRATION RANGE(S) OR POINTS COVERED BY THIS CERTIFICATE:
The measurement was performed with a test current of 100 µA.

CALIBRATION PROCEDURE
CAL-11-010-04

REFERENCE STANDARD(S):

MFG.	DESCRIPTION	MODEL NO.	S/N.	CALIBRATED DATE	CERTIFICATE NO.
IET	10K Ohm Standard Air Resistor	SR104	J1-0934618	September 27, 2020	ES-2020-0023-01

ENVIRONMENTAL CONDITIONS:

AMBIENT:		OF MEASURAND:	
TEMPERATURE:	23 °C ± 2 °C	TEMPERATURE:	23.0 °C ± 0.05 °C
HUMIDITY:	36 % ± 10 %	HUMIDITY:	36 % ± 10 %
BAROMETRIC PRESSURE:	101 kPa		

UNCERTAINTY OF MEASUREMENT

THE UNCERTAINTY OF MEASUREMENT IS ESTIMATED TO BE:

THE REPORTED UNCERTAINTY OF MEASUREMENT IS STATED AS THE COMBINED STANDARD UNCERTAINTY MULTIPLIED BY A COVERAGE FACTOR OF k = 2. THE MEASURED VALUE (y) AND THE ASSOCIATED UNCERTAINTY (U) REPRESENT THE INTERVAL (y ± U) WHICH CONTAINS THE MEASURED QUANTITY WITH A PROBABILITY OF APPROXIMATELTY 95%. THE UNCERTAINTY WAS ESTIMATED USING ISO GUIDE TO THE EXPRESSION OF UNCERTAINTY IN MEASUREMENT (GUM) GUIDELINES. THE ESTIMATED UNCERTAINTY CONTAINS CONTRIBUTIONS ORIGINATING FROM THE MEASUREMENT STANDARD CALIBRATED BY A NATIONAL LABORATORY, FROM THE CALIBRATION METHOD, FROM THE ENVIRONMENTAL CONDITIONS AND FROM THE MEASURAND BEING CALIBRATED. THE LONG-TERM BEHAVIOUR OF THE MEASURAND IS NOT INCLUDED.

AMENDMENTS (IF APPLICABLE):
CERTIFICATE NO. AMENDED: _____ REASON FOR AMENDMENT: _____

CALIBRATED BY (SIGNATURE)	DATE OF CALIBRATION	AUTHORIZING SIGNATURE
	June 10, 2021	DATE OF ISSUE: 21/06/11

The reported measurements contained within this report relate only to the measurands calibrated. These measurements are traceable to national standards and thus to the International System of Units (SI).

The Calibration Laboratory Assessment Services (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program.

This Certificate of Calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation (ISO/IEC 17025:2017), granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

SCC Accredited Laboratory No. 536

CLAS 2004-01

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TEST RESULTS:

The resistor (UUT) was calibrated by using a Direct Current Comparator Resistance Bridge, Model 6010, to compare it with a calibrated 10,000Ω resistor in an air bath maintained at 23.000°C +/- 50mk using a 1000 Ω transfer resistor maintained at 25.000°C +/- 10mk in an oil bath.

The UUT was allowed to stabilize for a minimum of 48 hours prior to any measurements. The measurement current was 100 µA with a reversal rate of 12 seconds. 35 measurements with 25 measurements for statistics were taken. This was repeated 3 times, the type A uncertainty for the standard deviation of each measurement and the spread of values being inserted into the Uncertainty Analysis worksheet. The type B uncertainty for the measurement comes from the uncertainty of the 10,000Ω resistor. The type B and type A uncertainties are root sum squared and doubled to give expanded uncertainty.

The reported value of resistance is based on the results found when the UUT was in circulating air at 23.000°C +/- 50mk.

10,000 Ohm Standard Resistor

Resistance (Ohms)	Uncertainty (µΩ/Ω)
10000.0003	0.10

10,000 Ohm Temperature Sensor

Resistance (Ohms)	Uncertainty (µΩ/Ω)
9998.8561	0.75

****Note: Temperature sensor gave unstable and unrepeatable readings. Value given is from 1 set of data points.**

MEAN DATE OF MEASUREMENT: June 10, 2021