Measurements International
Standards Calibration Laboratory

Certificate of Calibration

CERTIFICATE NO.: **C1240520**

CUSTOMER NAME: **xDevs.com**

CUSTOMER ADDRESS:

MEASURAND:

MODEL NO.: **SR104** S/N.: **948019**

MFG.: **ESI** DESCRIPTION: **10 kΩ Standard Air Resistor**

CALIBRATION RANGE(S) OR POINTS COVERED BY THIS CERTIFICATE:

The measurement was performed with a test current of 0.316 mA.

CALIBRATION PROCEDURE: **CAL-11-010-04**

REFERENCE STANDARD(S):

MFG.	DESCRIPTION	MODEL NO.	S/N.	CALIBRATED DATE	CERTIFICATE NO.
ESI	10 kΩ Standard Resistor	SR104	J1-0934618	November 10, 2022	ES-2022-0046-01

ENVIRONMENTAL CONDITIONS:

	AMBIENT:		OF MEASURAND:	
TEMPERATURE:	23 °C ± 2 °C	TEMPERATURE:	23.00 °C ± 0.05 °C	
HUMIDITY:	32 % ± 10 %	HUMIDITY:	32 % ± 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
	May 25, 2024	DATE OF ISSUE: 2024-MAY-27

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).

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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 10,000 Ω 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 0.316 mA 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 10,000 Ω 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.

Resistance (Ω)	Uncertainty (μΩ/Ω)
10000.0281	0.10

MEAN DATE OF MEASUREMENT: **May 25, 2024**