Accreditation No: LAB 103

Awarded to

ADVANCE ENGINEERING & RESEARCH ORGANIZATION (AERO) CALIBRATION LAB. LUB THATTO, HASSAN ABDAL, PAKISTAN.

The scope of accreditation is in accordance with the standard specifications outlined in the following page(s) of this document. The accredited scope shall be visible and legible in areas such as customer service, sample-receiving section etc and shall not mislead its users.

The accreditation was first time granted on **15-03-2016** by Pakistan National Accreditation Council.

The laboratory complies with the requirements of **ISO/IEC 17025:2017.**

The accreditation requires regular surveillance, and is valid until **14-03-2028.**

The decision of accreditation made by Pakistan National Accreditation Council implies that the organization has been found to fulfill the requirements for accreditation within the scope.

The organization however, itself is responsible for the results of performed measurements/tests.

PAKISTAN NATIONAL ACCREDITATION COUNCIL

22-04-2025
Date

SD
Director General

Calibration Laboratory.

Advance Engineering & Research Organization(AERO)Calibration Lab.

Permanent laboratory premises X

Field of Measurement:

Measured Quantity	Range		*Expanded Uncertainty (±)	Technique, Reference Standard, Equipment
DC Voltage (Source Mode)	0 to 329.9999 mV		2.7E-03 mV to 6.5E-03 mV	Fluke Warranted METCAL Procedures, Fluke 5522A Multi Product Calibrator
	330 mV to 3.299999 V		6.5E-03 mV to 1.7E-03 V	
	3.3 V to 32.99999 V		1.7E-03 V to 1.9E-03 V	
	33 V to 329.9999 V		1.8E-03 V to 2.8E-03 V	
	330 V to 1020 V		2.0E-03 V to 2.9E-03 V	
DC Current (Source Mode)	0 to 329.999 µA		5.6E-03 µA to 2.1E-02 µA	
	330 µA to 3.29999 mA		9.7E-03 µA to 3.9E-03 mA	
	3.3 mA to 32.9999 mA		3.9E-03 mA to 4.0E-03 mA	
	33 mA to 329.999 mA		4.6E-03 mA to 2.5E-02 mA	
	330 mA to 1.09999 A		5.5E-02 mA to 8.8E-04 A	
	1.1 A to 2.99999 A		8.8E-04 A to 1.0E-03 A	
	3 A to 10.9999 A		9.7E-04 A to 1.6E-03 A	
	11 A to 20.5 A		1.6E-03 A to 1.7E-03 A	
AC Current (Source Mode)	29.00 µA to 329.99 µA	10 Hz to 30 KHz	2.5E-01 µA to 8.9E-01 µA	
	0.33 mA to 3.29999 mA		3.0E-01 mA to 3.2E-01 mA	

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AC Current (Source Mode)	3.3 mA to 32.9999 mA	10 Hz to 30 kHz	3.0E-01 mA to 3.2E-01 mA	Fluke Warranted METCAL Procedures, Fluke 5522A Multi Product Calibrator
	33 mA to 329.9999 mA		3.0E-01 mA to 3.6E-01 mA	
	0.33 A to 1.09999 A		4.8E-03 A to 8.1E-03 A	
	1.1 A to 2.99999 A		4.8E-03 A to 8.1E-03 A	
	3 A to 10.9999 A		4.8E-03 A to 8.1E-03 A	
	11 A to 20.5 A		4.8E-03 A to 8.1E-03 A	
AC Voltage (Source Mode)	1.0 mV to 32.999 mV	10 Hz to 500 KHz	3.1E-02 mV to 5.7E-02 mV	
	33 mV to 329.999 mV		3.1E-02 mV to 5.5E-02 mV	
	0.33 V to 3.29999 V		5.5E-05 V to 8.3E-02 V	
	3.3 V to 32.9999 V		8.3E-02 V to 9.5E-02 V	
	33 V to 329.999 V		8.3E-02 V to 9.5E-02 V	
	330 V to 1020 V		8.3E-02 V to 1.6E-01 V	
Resistance (Source Mode)	0 Ω to 10.9999 Ω		7.0E-02 Ω to 7.7E-02 Ω	
	11 Ω to 32.9999 Ω		7.0E-02 Ω to 7.7E-02 Ω	
	33 Ω to 109.9999 Ω		7.0E-02 Ω to 7.7E-02 Ω	
	110 Ω to 329.9999 Ω		7.0E-02 Ω to 7.7E-02 Ω	
	330 Ω to 1.09999 kΩ		7.0E-02 Ω to 1.2E-03 kΩ	
	1.1 kΩ to 3.29999 kΩ		1.0E-03 kΩ to 1.2E-03 kΩ	
	3.3 kΩ to 10.9999 kΩ		1.0E-03 kΩ to 1.2E-03 kΩ	
	11 kΩ to 32.9999 kΩ		1.0E-03 kΩ to 1.2E-03 kΩ	
	33 kΩ to 109.9999 kΩ		1.0E-03 kΩ to 1.2E-03 kΩ	

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Resistance (Source Mode)	110 kΩ to 329.9999 kΩ		1.0E-03 kΩ to 1.3E-03 kΩ	Fluke Warranted METCAL Procedures, Fluke 5522A Multi Product Calibrator
	330 kΩ to 1.09999 MΩ		1.3E-03 kΩ to 3.3E-02 MΩ	
	1.1 MΩ to 3.29999 MΩ		3.3E-02 MΩ to 3.6E-02 MΩ	
	3.3 MΩ to 10.9999 MΩ		3.3E-02 MΩ to 3.6E-02 MΩ	
	11 MΩ to 32.9999 MΩ		3.3E-02 MΩ to 3.6E-02 MΩ	
	33 MΩ to 109.9999 MΩ		3.3E-02 MΩ to 3.7E-02 MΩ	
	110 MΩ to 329.9999 MΩ		3.6E-02 MΩ to 3.9E-02 MΩ	
	330 MΩ to 1100 MΩ		3.8E-02 MΩ to 1.4E-01 MΩ	
Temperature (Source Mode)	K Type	-200 ºC to -100 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-100 ºC to -25 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-25 ºC to 120 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		120 ºC to 1000 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		1000 ºC to 1372 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	J Type	-210 ºC to -100 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-100 ºC to -30 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-30 ºC to 150 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		150 ºC to 760 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		760 ºC to 1200 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	E Type	-250 ºC to -100 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-100 ºC to -25 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-25 ºC to 350 ºC	5.3E-01 ºC to 5.5E-01 ºC	

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Temperature (Source Mode)		350 ºC to 650 ºC	5.3E-01 ºC to 5.5E-01 ºC	Fluke Warranted METCAL Procedures, Fluke 5522A Multi Product Calibrator
		650 ºC to 1000 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	N Type	-200 ºC to -100 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-100 ºC to -25 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-25 ºC to 120 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		120 ºC to 410 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		410 ºC to 1300 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	R Type	0 ºC to 250 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		250 ºC to 400 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		400 ºC to 1000 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		1000 ºC to 1767 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	S Type	0 ºC to 250 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		250 ºC to 1000 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		1000 ºC to 1400 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		1400 ºC to 1757 ºC	5.3E-01 ºC to 5.5E-01 ºC	
	T Type	-250 ºC to -150 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		-150 ºC to 0 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		0 ºC to 120 ºC	5.3E-01 ºC to 5.5E-01 ºC	
		120 ºC to 400 ºC	5.3E-01 ºC to 5.5E-01 ºC	
Frequency (Source Mode)	0.01 Hz to 119.99 Hz		2.3E-03 Hz to 6.5E-03 Hz	
	120 Hz to 1199.9 Hz		3.0E-03 Hz to 6.1E-03 Hz	

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Frequency (Source Mode)	1.200 KHz to 11.999 KHz	2.1E-03 KHz to 2.2E-03 KHz	Fluke Warranted METCAL Procedures, Fluke 5522A Multi Product Calibrator
	12.00 KHz to 119.99 KHz	2.1E-03 KHz to 6.2E-03 KHz	
	120.0 KHz to 1199.9 KHz	2.1E-03 KHz to 6.2E-03 KHz	
	1.20 MHz	2.7E-06 MHz	

* **Expanded Uncertainty:**

- Expanded Uncertainty is the measurement uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of k = 2. This measurement uncertainty is a value for which the laboratory has been accredited using the procedure that was the subject of assessment. In certificates issued under its accreditation scope an accredited laboratory is not permitted to quote an uncertainty that is smaller than the published uncertainty for respective ranges as given above.

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