

**Accreditation No: LAB 036**

**Awarded to**

**Applied Physics Computers & Instrumentation Centre (APCIC),  
Pakistan Council of Scientific & Industrial Research (PCSIR)  
Labs. Complex. Lahore 54600, 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 **24-08-2006** 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 **16-06-2025**.

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**

13-12-2022  
Date

SD  
Director General

	<b>ACCREDITATION DOCUMENT</b>	<b>F-06/02</b> <b>Issue Date: 18/08/2020</b> <b>Rev. No: 09</b> <b>LAB 036</b>
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**Calibration Laboratory.**

Accreditation scope of Applied Physics Computers & Instrumentation Centre (APCIC), Pakistan Council of Scientific & Industrial Research (PCSIR) Laboratories Complex, Lahore 54600, Pakistan.

Permanent laboratory premises

<b>Field of Measurement: Volume Measurement</b>			
Measured Quantity	Range	*Expanded Uncertainty (+)	Technique, Reference Standard, Equipment
Glassware & Volume Dispensers	1 MI	0.0010 mL	<b>SOP: ASTM E-542</b>  F2 Class Mass Weighing Scale
	2 MI	0.0016 mL	
	5 MI	0.0050 mL	
	10 ml	0.0080 mL	
	25 mL	0.020 mL	
	25.1 mL to 100.0 mL	0.0078 mL	
	100.1 mL to 500.0 mL	1.1 mL	
	500.0 to 1000.0 mL	6.0 mL	
	1.0 L to 5.0 L	0.0050 L	
Digital Pipettes	2 µL to 1000 µL	0.025 µL	
<b>Field of Measurement: Masses and Weighing Balances</b>			
<b>Weighing Scales</b> Class I & Below	0.0010 g to 220.0000 g 0.0001kg to 20.0000 kg 0.10 kg to 260.0 kg	0.00010 g 0.00010 kg 0.10 kg	<b>SOP: OIML R111-1 R111-2 NIMT CP-301</b>
<b>Masses</b> F1 Class & Below	1.0 mg to 500.0 mg 1.0000 g to 200.0000 g 0.5000 kg to 20.0000 kg 30.000 kg to 50.000 kg	0.05 mg 0.000060 g 0.000080 kg 0.0046 kg	
<b>Field of Measurement: Temperature Measurement</b>			
Digital Thermometer	-50.00°C to 50.00°C  50.10°C to 400.0 °C  400.1 °C to 800.0 °C	0.050°C  0.20 °C  0.30°C	<b>SOP: EURAMET cg-13 &amp; cg-8</b> EA-10/11 & 13 Reference Thermometer with RTD Probe ,

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Liquid in glass Thermometer	-50.0°C to 100.0°C	0.20 °C	Precision k-type Thermocouple , Temperature Controllers , Dry Well Calibrator
	100.1 °C to 350 °C	0.28 °C	

**Field of Measurement: Temperature Source**

Dry Block Calibrator / Temperature Calibrator	-50.0°C to 100.0°C	0.18°C	<b>SOP: EURAMET cg-13, cg-8 &amp; EA-10/08</b> Reference Thermometer with RTD Probe Precision Thermometer with k-type Thermocouple, Temperature Controllers
	100.1 °C to 350.0 °C	0.20 °C	
	350.1 °C to 600 °C	0.24 °C	
Environmental Chambers / Oven	-40.0°C to 100.0°C	0.18 °C	
	100.1 °C to 300.0 °C	0.22 °C	
Muffle Furnace	200 °C to 1000 °C	0.65 °C	

**Temperature Measurement by Simulation Method**

RTD Pt 100	-100 °C to 800 °C	0.20 °C	<b>SOP: EURAMET cg-11</b> Portable Calibrator, Fluke 8508A Reference Multimeter
Thermocouple Type “k”	-200 °C to 1200 °C	0.24 °C	
Thermocouple Type “J”	-200 °C to 1200 °C	0.24 °C	

**Field of Measurement: Temperature & Humidity Measurement**

Source	10.0 °C to 40.0 °C 30 %RH to 80 %RH	0.54 °C 2.9 %RH	<b>SOP:005 California</b> Humidity Chamber, Thermo-hygrometer
Measurement	10 °C to 40 °C 30 %RH to 80 %RH	0.54 °C 2.9 %RH	

**Field of Measurement: Pressure Measurement**

Pressure	0.01 to 10.00 psi 10.01 to 50.00 psi 50.01 to 100.00 psi 100.01 to 250.00 psi	0.31 psi 0.36 psi 0.37 psi 0.38 psi	<b>SOP: DKD-R 6-1</b> Pressure Calibrator Dead Weight Tester & Pressure Calibrator/Gauge Vacuum Gauge
	50 psi to 500 psi 550 psi to 1000 psi 2000 psi to 5000 psi 5000 psi to 8000 psi	1.40 psi 1.90 psi 5.71 psi 8.81 psi	

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	100 mm of Hg to 200 mm of Hg 220 mm of Hg to 500 mm of Hg 520 mm of Hg to 600 mm of Hg	12.31 mm of Hg 12.33 mm of Hg 12.35 mm of Hg	
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<b>Field of Measurement: Dimensional Measure</b>			
General Dimension measurements  Length, Diameter, Thickness and Depth of Industrial Artifacts	0.5 mm to 25.000 mm	0.40 $\mu$ m	<b>SOP: EAL-G 21 SOP # 10 &amp; 12 (NIST)</b> Gauge Block Set, Micrometer, Vernier Caliper, Line Length Standard, Measuring Tape
	25.10 mm to 100.00 mm	0.0010 mm	
	100.01 mm to 300.00 mm	0.010 mm	
	1.0 cm to 100.0 cm	0.10 cm	
	100.1 cm to 500.0 cm	0.10 cm	
<b>Field of Measurement: Frequency</b>			
Frequency Generation	10.0 Hz to 100.0 Hz	0.010 Hz	<b>SOP: EURAMET cg-7</b> Function Generator Universal Frequency Counter, Frequency Counter, Digital Oscilloscope
	1.000 kHz to 100.00 kHz	0.000039 kHz	
	1.00 MHz to 100.0 MHz	0.0000060 Hz	
Frequency Measurement	10.0 Hz to 100.0 Hz	0.010 Hz	
	1.000 KHz to 100.00 KHz	0.000080 KHz	
	1.00 MHz to 100.00 MHz	0.000060 MHz	
<b>Field of Measurement: RPM Measurement</b>			
Tachometers / RPM Measurement	30.0 RPM to 300.0 RPM 300.1 RPM to 6000.0 RPM 6000.1 RPM to 15000.0 RPM 15000.1 RPM to 30000.0 RPM	0.50 RPM 0.72 RPM 1.0 RPM 2.5 RPM	<b>SOP: EURAMET cg-7</b> Function Generator, Universal Frequency Counter, Digital Tachometers
<b>Field of Measurement: Time Interval Measurement</b>			
Stop Watch	10 s to 3600 s	0.49 s	<b>SOP: NIST Guide</b> Function Generator, Frequency Counter, Stop Watches,
	3601s to 7200 s	0.75 s	
Timer	10 s to 7200 s	0.75 s	
<b>Field of Measurement: Electrical Parameters</b>			
DC Voltage	1.00 mV to 100.00 mV	0.00061 mV	<b>SOP: EURAMET cg-15</b>
	1.000 V to 10.000 V	0.000011 V	

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	10.001 V to 100.00 V 100.01 V to 1000.0 V	0.00011 V 0.056 V	Reference Multimeter Fluke 8508A Inmel Calibrator Clamp Meter Standard Resistors
AC Voltage @ 50 Hz	0.1000 V to 1.000 V 1.001 V to 10.000 V 10.001 V to 100.00 V 100.01 V to 500.0 V 500.1 V to 1000 V	0.00046 V 0.00011 V 0.0026 V 0.011 V 0.051 V	
AC Current @ 50 Hz	1.00 mA to 10.00 mA 10.01 mA to 100.0 mA 1.000 A to 10.000 A	0.00076 mA 0.036 mA 0.0048 A	
AC Current (Clamp on) @ 50 Hz	5.0 A to 10.0 A 10.1 A to 100.0 A 100.1 A to 500.0 A 500.1 A to 800 A	0.20 A 0.52 A 1.1 A 2.2 A	
DC Current	1.00 mA to 10.00 mA 10.01 mA to 100.0 mA 1.000 A to 10.000 A	0.00022 mA 0.0056 mA 0.0044 A	
DC Current (Clamp on)	5.0 A to 10.0 A 10.1 A to 100.0 A 100.1 A to 500.0 A 500.1 A to 800 A	0.30 A 0.33 A 1.3 A 2.0 A	
Resistance	1.00 Ω to 10.00 Ω	0.013 Ω	
	10.01 Ω to 100.00 Ω	0.015Ω	
	100.00 Ω to 1.000 kΩ	0.015Ω	
	1.001 kΩ to 10.00 kΩ	0.00010kΩ	
	10.01 kΩ to 100.00 KΩ	0.0047kΩ	
	100.01 kΩ to 1.000 MΩ	0.54KΩ	
	1.001 MΩ to 10.00 MΩ	0.0087 MΩ	
10.01 MΩ to 100.0 MΩ	0.015 MΩ		
Insulation Resistance @ 250 V to 1000 V	100.1 MΩ to 1.000 GΩ	0.005 GΩ	
Low Resistance Measurement	10.0 mΩ to 100.0 mΩ	0.14 mΩ	
<b>Field of Measurement: AC Power (Single Phase)</b>			
AC Power @ 50 Hz	10.00 W to 100.0 W 100.1 W to 500.0 W 500.1 W to 1000.0 W 1000.1 W to 5000.0 W	0.12 W 0.24 W 0.42 W 1.0 W	<b>SOP: EURAMET cg-15</b> Reference Multimeter Fluke 8508A Power Meter Clamp Meter Inmel 33 Calibrator
<b>Field of Measurement: Spectrophotometer</b>			
Wavelength Accuracy	525.5 nm	0.78 nm	<b>SOP: Thermo Scientific, USA</b>

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Transmittance @ 590nm& 412 nm	6.13%T to 10.4 %T	0.011%T	SS-1 Spectronic Standard Filters
Absorbance @ 590nm& 412 nm	0.990 A to 1.209 A	0.043 A	Thermo Spectronics USA

<b>Field of Measurement: pH Measurement</b>			
pH Meter	4.00 pH to 10.00 pH @ 25 °C	0.010 pH	<b>SOP: ASTM, D 1293-12</b>  HANNA pH Buffers, pH Meter

\* **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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