Accreditation No: LAB 365

Awarded to

Optronics & Precision Measurement Equipment Laboratory, No 107 Air Engineering Depot, Pakistan Air Force Base, Faisal Karachi, 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 **10-06-2026** 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 **09-06-2029.**

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

10-06-2026
Date

SD.
Director General

Calibration Laboratory.

Accreditation Scope of Optronics & Precision Measurement Equipment Laboratory, No 107 Air Engineering Depot, Pakistan Air Force Base, Faisal District Karachi, Pakistan

Permanent laboratory premises X

Field of measurement: Pressure Metrology				
A. Field of Calibration / Source: Gauge Pressure Mode **Medium:** (Pneumatic/Hydraulic/Liquid)				
Measured quantity	**Range**		***Expanded Uncertainty (±)**	**Technique, Reference Standard, Equipment**
Pneumatic Pressure (Direct Source Mode) (Air/Gas/Low-High Pressure)	(0.5 to 2000) psi	(0.5 to 100) psi (101 to 500) psi (501 to 1000) psi (1001 to 2000 psi)	0.01 % RD	**Standard Procedure for Calibration:** • DKDR-6-1 for PG • EURAMET PB/03 **Reference Equipment to be Used:** • King Nutronics 3666C Automatic Pressure Calibration System • King Nutronics 3689A Precision Pressure Standard using N_2 or Clean Air • Reference Pressure Gauge 2700G-BG7M **Unit Under Test Equipment for Absolute or Gauge Pressure:** • Bourdon Tube / Diaphragm Pressure Gauge • Low Pressure Transducer / Gauges / Indicator / Manometer
Pneumatic Pressure (Source Mode using Intensifier & Control Unit) (x1000 Operational Range)	(1000 to 10000) psi	(1000 to 2000) psi (2001 to 4000) psi (4001 to 6000) psi (6001 to 8000) psi (8001 to 10000) psi	0.01 % RD	

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Hydraulic / Lubricant / Liquid / Electronic Pressure (Source Mode)	(01 to 9500) psi	(01 to 500) psi (501 to 2000) psi (2001 to 5000) psi (5001 to 9500) psi	0.009 % RD	**Standard Procedure for Calibration:** • DKDR-6-1 for PG • EURAMET PB/03 **Reference Equipment to be Used:** • Fluke Electronic Dead Weight Tester (RPM4-E-DWT) • AMETEK Hydraulic Dead Weight Tester (10-10525) **Under Test Equipment for Absolute or Gauge Pressure:** • Bourdon Tube / Diaphragm Pressure Gauge / Digital (Medium/High Multimode) Pressure Transducer / Gauges / Indicator / Sensor
B. Field of Calibration / Measure: Gauge Pressure Mode **Medium:** (90 %Vacuum / Pneumatic/ Hydraulic /Liquid)				
Pneumatic / Air / Gauge Pressure (Measure Mode)	(90 % Vacuum / -12 to 9500) psi	(-12 to 100) psi (101 to 500) psi (501 to 1000) psi (1001 to 5000) psi (5001 to 9500) psi	0.01 % RD	**Standard Procedure:** • DKDR-6-1 for CPB **Reference Equipment:** • 2700G-BG7M Reference Pressure Gauge • 2700G-G70M Reference Pressure Gauge **Unit Under Test Equipment:** • Pneumatic Deadweight

				Tester • Air Data Calibrator • Vacuum / Low Pressure Pump
Hydraulic / Lubricant / Liquid / Electronic Pressure (Measure Mode)	(01 to 9500) psi	(01 to 100) psi (101 to 500) psi (501 to 1000) psi (1001 to 5000) psi (5001 to 9500) psi	0.01 % RD	**Standard Procedure:** • DKDR-6-1 for CPB & G **Reference Equipment:** • Fluke 2700G-BG7M Reference Pressure Gauge • Fluke 2700G-G70M Reference Pressure Gauge **Unit Under Test Equipment:** • Hydraulic / Lubricant / Water Dead Weight Tester / Pressure Balance / Pump / Source

Field of measurement: Electrical Metrology (Measure Mode Scope)			
Measured quantity	**Range**	***Expanded Uncertainty (±)**	**Technique, Reference Standard, Equipment**
DC Voltage	0 - 100 mV	0.000071 mV	**Reference Standards:** Multi-meter 8508A, Fluke **Unit Under Test:** Fluke-5522A, Multiproduct Calibrator (Source) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	100.00001 mV - 1 V	0.000084 V	
	1.000001 - 10 V	0.0000025 V	
	10.00001 - 100 V	0.0000086 V	
	100.0001 - 1000 V	0.00009 V	
DC Current	0 - 100 µA	0.00026 µA	**Reference Standards:**

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	100.0001 µA - 1 mA	0.00077 mA	Multi-meter 8508A, Fluke **Unit Under Test:** Fluke-5522A, Multiproduct Calibrator (Source) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	1.000001 - 10 mA	0.000025 mA	
	10.00001 - 100 mA	0.000048 mA	
	100.01 mA - 3 A	0.000031 A	
	3.00001 - 20 A	0.00077 A	
AC Voltage	0 - 10 mV at 50Hz to 300 Hz	0.00055 mV	**Reference Standards:** Multi-meter 8508A, Fluke **Unit Under Test:** Fluke-5522A, Multiproduct Calibrator (Source) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	10.0001 - 100 mV at 50Hz to 300 Hz	0.00055 mV	
	100.00001 mV - 1 V at 50 to 500 Hz	0.00019 V	
	1.00001 - 10 V at 50 Hz to 10 kHz	0.000084 V	
	10.00001 - 100 V at 50 Hz to 10 kHz	0.00048 V	
	100.0001 - 1000 V at 50 Hz to 10 kHz	0.0036 V	
AC Current	0 - 200 µA at 10 Hz to 1 kHz	0.0024 µA	**Reference Standards:** Multi-meter 8508A, Fluke **Unit Under Test:** Fluke-5522A, Multiproduct Calibrator (Source) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	200.001 µA - 10 mA at 10 Hz to 1 kHz	0.0016 mA	
	10.0001 - 100 mA at 10 Hz to 1 kHz	0.00020 mA	
	100.001 mA - 3 A at 10 Hz to 1 kHz	0.00017 A	
	3.00001 - 20 A at 10 Hz to 1 kHz	0.0022 A	
Resistance	0 - 10 Ω	0.000014 Ω	**Reference Standards:** Multi-meter 8508A, Fluke **Unit Under Test:** Fluke-5522A, Multiproduct Calibrator (Source) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	10.00001 - 100 Ω	0.000019 Ω	
	100.0001 Ω - 450 Ω	0.0000078 kΩ	

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Field of measurement: Electrical Metrology (Source Generation Scope)			
Measured quantity	**Range**	***Expanded Uncertainty (±)**	**Technique, Reference Standard, Equipment**
DC Voltage	1.018 V	0.24 µV	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** Reference Multi-meter Fluke-177, 1241A – Agilent, 34401A – Agilent (Measure) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	10 V	0.48 µV	
	220 mV	0.00024 mV	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** All Types of Digital / Analog Multi-meter, Fluke-177, Fluke-89, Fluke-287, 34401 – Agilent etc. **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	2.2 V	0.0000012 V	
	11 V	0.000013 V	
	22 V	0.000024 V	
	220 V	0.00024 V	
	1000 V	0.0024 V	
DC Current	220 µA	0.18 µA	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** All Types of Digital / Analog Multi-meter, Fluke-177, Fluke-89, Fluke-287, 34401 – Agilent, Clamp meter etc. (Measure) **Method Used:** AFCAV 2020 (T.O
	1.2 mA	0.0000072 mA	
	22 mA	0.000072 mA	
	220 mA	0.00072 mA	
	2.2 A	0.000016 A	
	20 A	0.0049 A	

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			Reference: 33K-1-100-2)
AC Voltage	2.2 mV, at 10 Hz to 100 kHz	0.000050 mV	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** All Types of Digital / Analog Multi-meter, Fluke-177, Fluke-89, Fluke-287, 34401 – Agilent etc. **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	22 mV, at 10 Hz to 100 kHz	0.00048 mV	
	220 mV, at 10 Hz to 100 kHz	0.00041 mV	
	2.2 V, at 10 Hz to 100 kHz	0.0000024 V	
	22 V, at 10 Hz to 100 kHz	0.00003V	
	220 V, at 10 Hz to 100 kHz	0.00026 V	
	750 V, at 40 Hz to 10 kHz	0.00026 V	
	1000 V, at 40 Hz to 10 kHz	0.003 V	
AC Current	220 µA, at 10 Hz to 10 kHz	0.00040 µA	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** All Types of Digital / Analog Multi-meter, Fluke-177, Fluke-89, Fluke-287, 34401 – Agilent, Clamp meter etc. (Measure) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)
	2.2 mA, at 10 Hz to 10 kHz	0.0000026 mA	
	22 mA, at 10 Hz to 10 kHz	0.00003 mA	
	220 mA, at 10 Hz to 10 kHz	0.00029 mA	
	2.2 A, at 20 Hz to 10 kHz	0.0000044 A	
	20 A, at 40 Hz to 10 kHz	0.000018 A	
Resistance	1 Ω	0.00000088 Ω	**Reference Standard:** Fluke-5522A / 5520A, Multiproduct Calibrator (Source) **Unit Under Test:** All Types of Digital / Analog Multi-meter, Fluke-177, Fluke-89, Fluke-287, 34401 – Agilent, Clamp meter
	10 Ω	0.00032 Ω	
	100 Ω	0.00011 Ω	

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	450 Ω	0.0000022 kΩ	etc. (Measure) **Method Used:** AFCAV 2020 (T.O Reference: 33K-1-100-2)

* **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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Date Director