CERTIFICATE OF ACCREDITATION

This is to attest

UNIVERSAL LABORATORIES (BAHRAIN) W.L.L.

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Calibration Laboratory CL-161

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Expiration Date June 1, 2026
Effective Date December 4, 2025

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UNIVERSAL LABORATORIES (BAHRAIN) W.L.L.

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Accredited to ISO/IEC 17025:2017 *Effective Date December 4, 2025*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Micrometers	0 mm to 100 mm 100 mm to 800 mm	1.5 µm 6.3 µm	Using Gauge Blocks – Grade '0' & by Direct method
Vernier Calipers	0 mm to 150 mm 150 mm to 800 mm 800 mm to 1000 mm	6 µm 7 µm 18 µm	Using Gauge Blocks & Long Gauge Block Grade '0' & Gauge Block Accessories by Direct method
Height Gauges	0 mm to 600 mm	6 µm	Using Gauge Blocks – Grade '0' & accessories by Direct Method
Dial Gauges (P)	0 mm to 25 mm	6.3 µm	Using Gauge Blocks – Grade '0' by Direct Method
Mechanical			
Mass – Standard Weights (Classes F1, F2 and M)	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg	0.008 mg 0.008 mg 0.008 mg 0.008 mg 0.009 mg 0.009 mg 0.01 mg 0.01 mg 0.01 mg	Using Class E2 Weights & Analytical Balance by comparison method (ABBA)

** If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Mass – Standard Weights (Classes F1, F2 and M) (cont'd.)	1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.013 mg 0.015 mg 0.018 mg 0.022 mg 0.027 mg 0.030 mg 0.10 mg 0.13 mg	Using Class E2 Weights & Analytical Balance by comparison method (ABBA) (cont'd/)
Mass – Standard Weights (Classes F2 and M)	500 g 1 kg 2 kg 5 kg 10 kg 20 kg	0.9 mg 1.8 mg 3.1 mg 42 mg 44 mg 0.05 g	Using Class F1 and F2 Weights & Precision Balance by comparison method (ABBA)
Analytical Balances, Precision Balances, Digital Balances, Platform Balances, etc.[5]	1 mg to 500 mg 500 mg to 50 g 50 g to 220 g	0.009 mg 0.01 mg to 0.04 mg 0.09 mg to 0.13 mg	Using Class E2 Weights by Direct Method
	200 g to 2000 g 2 kg to 15 kg	1.1 mg to 3.3 mg 0.01 g to 0.03 g	Using Class F1 Weights by Direct Method
	15 kg to 30 kg	0.46 g	Using Class F1, F2 Weights by Direct Method
	30 kg to 150 kg 150 kg to 300 kg 300 kg to 1600 kg	0.02 kg 0.09 kg 0.8 kg	Using Class F1, F2 and M Weights by Direct Method
Pressure (Pressure Gauges/ Indicators, Switches, Recorders, Transmitters with or without indicator, Manometer etc.)[5]	0 Pa to 10000 Pa (Diff) 0 bar to 20 bar 20 bar to 40 bar	4 Pa 7 mbar 13 mbar	Using Pressure Test Gauge - Air by comparison method
	40 bar to 70 bar 70 bar to 1000 bar	0.12 bar 0.33 bar	Using Pressure Test Gauge-Hydraulic by comparison method
Vacuum (Gauges/Indicators, Switches, Recorders, Transmitters with or without indicator, etc.)[5]	- 0.9 bar to 0 bar	11 mbar	Using Pressure Test Gauge by Comparison method
Pressure Relief Valves[5]	1 bar to 20 bar 20 bar to 200 bar 200 bar to 500 bar	2 % 0.9 % 0.18 %	Using Pressure Test Gauge–Hydraulic by Comparison Method (UL-CP-54)
Torque Wrenches	2 N m to 500 N m 500 N m to 1000 N m 1000 N m to 1500 N m	0.3 % 0.7 % 1 %	Using Torque Wrench Calibration by Direct method

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Force (Compression Machines & Tensile Machines)[5]	Compression 60 kN to 3000 kN Tension 0 kN to 50 kN	 5.8 kN 0.18 %	Using Load Cells with Indicator by Direct method
Volume (Micropipettes, Syringes, Pipettes, Burettes, etc.)	10 µL to 100 µL 100 µL to 1 mL 1 mL to 10 mL 10 mL to 50 mL	0.1 µL 0.6 µL 2.5 µL 3.0 µL	Using Analytical Balance and Distilled water by Gravimetric method
Glass Wares (Volumetric Cylinders, Beakers, Flasks, etc.)	1 mL to 10 mL 10 mL to 100 mL 100 mL to 500 mL 500 mL to 2000 mL	5 µL 20 µL 30 µL 50 µL	Using Precision Balance and Distilled water by Gravimetric method
Non-contact Tachometer	60 rpm to 6000 rpm 6000 rpm to 60000 rpm	0.7 rpm 1.2 rpm	Using Multiproduct Calibrator & Optical Tachometer Adapter by Direct method
Centrifuge, Stirrer, (Rotating Equipment[5] etc.)	60 rpm to 6000 rpm 6000 rpm to 10000 rpm	6 rpm 60 rpm	Using Non-Contact Tachometer by Direct Method
Sound Level Meter	94 dB & 114 dB (1 kHz)	0.6 dB	Using Sound Calibrator by Direct method
Spectrophotometer[5] Photometrical Accuracy Wavelength Accuracy Transmittance	 0.000 Abs to 3.500 Abs >2.00Abs 280 nm to 880 nm 0 % to 100 %	 0.005 Abs 0.003 Abs 0.003 Abs 0.11Abs 0.13 nm 0.12 nm 0.07% 0.16% 0.31%	Using Standard Test Filters by Direct method NG9/1 NG5/2 NG11/2 KV450/3 BG20/2 HO NG9/1 NG5/2 NG11/2
Thermal			
Thermometers (Digital and Glass Type), Temperature Sensors, Transmitters (RTD/Thermocouple) with or without Indicator, etc.[5]	-20 °C to 200 °C 200 °C to 650 °C	0.07 °C 0.08 °C	Using Digital Temperature Indicator with SSPRT by Comparison method
Oven, Incubator, Water Bath, Temperature Dry	-75 °C to 30 °C 30 °C to 200 °C 200 °C to 600 °C	0.17 °C 0.19 °C 0.41 °C	Using Temperature Indicator with Probe by Direct method

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Block or Bath, Furnace, Chiller, Freezer, Autoclave[5] (Single Sensor method)	600 °C to 850 °C 850 °C to 1100 °C	1.5 °C 4.3 °C	
Oven, Incubator, Water Bath, Temperature Dry Block or Bath, Furnace, Chiller, Freezer, Autoclave[5] (9 Sensor method - Mapping)	-20 °C to 300 °C	0.82 °C	Using 12 channel Temperature data logger & Temperature Probes by Direct method
Hot Plate / Thermo-Cyclers[5]	50 °C to 550 ºC	0.77 ºC	Using Thermocouple 'K Type' with Temperature Indicator by Direct method
Relative Humidity (Thermo-Hygrometers)	20 %RH to 80 %RH (15 °C to 45 °C)	0.53 %RH	Using Master Thermo-Hygrometer & Humidity Chamber by Comparison method
Electrical – DC/LF			
DC Voltage Generate[3]	0 mV to 200 mV 0.2 V to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1020 V	1.9 µV 5.5 µV 53 µV 0.78 mV 7.2 mV	Using Multi-Product Electrical Calibrator by Direct method
DC Current Generate[3]	0 µA to 200 µA 0.2 mA to 2 mA 2 mA to 20 mA 20 mA to 200 mA 0.2 A to 2 A 2 A to 20 A	0.02 µA 0.26 µA 0.98 µA 5.1 µA 0.01 mA 0.06 mA	Using Multi-Product Electrical Calibrator by Direct method
	20 A to 300 A 300 A to 1000 A	3.9 A 6.7 A	Using Multi-Product Electrical Calibrator and Clamp coil adaptor by Direct
Resistance Generate[3] (Fixed Values)	0.1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	0.8 mΩ 1.1 mΩ 1.4 mΩ 3.9 mΩ 0.02 Ω 0.64 Ω 14 Ω 0.19 kΩ 5.2 kΩ	Using Multi-Product Electrical Calibrator by Direct method
AC Voltage Generate[3] @ 40 Hz to 10 kHz	20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1020 V	0.07 mV 0.36 mV 3.6 mV 0.17 V 0.51 V	Using Multi-Product Electrical Calibrator by Direct method

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Current Generate[3] @ 40 Hz to 500 kHz	25 uA to 200 uA 200 µA to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 20 A	0.25 uA 5.8 µA 0.06 mA 0.6 mA 0.47 mA 9.5 mA	Using Multi-Product Electrical Calibrator by Direct method
AC Current Generate[3] @ 50 Hz	20 A to 300 A 300 A to 1000 A	0.6 A 1.2 A	Using Multi-Product Calibrator and Clamp coil adaptor by Direct method
Capacitance Generate[3] @ 1 kHz (Fixed Values)	10 nF 20 nF 50 nF 100 nF 1 µF	0.01 nF 0.03 nF 0.04 nF 0.08 nF 0.78 nF	Using Multi-Product Electrical Calibrator by Direct method
DC Voltage Measure[4]	0 mV to 100 mV 0.1 V to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	6 uV 55 uV 0.56 mV 7 mV 73 mV	Using 6½ Digital Multimeter by Direct method
AC Voltage Measure[4]	(50 Hz) 0 mV to 100 mV 0.1 V to 1 V 1 V to 10 V 10 V to 100 V 100 V to 750 V 750 V to 1000 V	 0.16 mV 0.36 mV 3.6 mV 0.17 V 0.51 V 3.8 V	Using 6½ Digital Multimeter by Direct method
Resistance Measure[4]	0 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	0.01 Ω 2.9 mΩ 12 mΩ 0.12 Ω 2.0 Ω 21 Ω 0.7 kΩ 0.71 kΩ 1.1 kΩ	Using 6½ Digital Multimeter by Direct method
Capacitance Measure[4]	10 nF 1 µF	0.01 nF 0.82 nF	Using 6½ Digital Multimeter by Direct method
DC Current Measure[4]	0 µA to 100 µA 0.1 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA	0.02 µA 0.03 µA 0.98 µA 5.1 µA	Using 6½ Digital Multimeter by Direct method

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
	0.1 A to 1 A 1 A to 10 A	0.01 mA 0.06 mA	
	10 A to 1000 A	1.2 A	Using Digital Clamp Meter by Direct method
AC Current Measure[4]	(50 Hz) 10 µA to 100 µA 0.1 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 0.1 A to 1 A 1 A to 10 A	 0.59 µA 5.8 µA 0.06 mA 0.60 mA 1.0 mA 9.5 mA	Using 6½ Digital Multimeter by Direct method
	(50 Hz) 10 A to 1000 A	 1.3 A	Using Digital Clamp Meter by Direct method
RCD Tester	150 mA/ 30 ms 30 mA/ 150 ms 10 mA/150 ms	1.4 ms 1.4 ms 1.4 ms	Using Electrical Test Box by Direct method
High Voltage Measure[4] (HV Tester, Cable Test Set)	DC: 0 kV to 40 kV AC: 0 kV to 28 kV (50 Hz)	0.1 kV 0.1 kV	Using High Volt Test Probe and Multimeter by direct method
Loop Tester (Fixed Value)	Loop + 1 Ω	0.07 Ω	Using Electrical Test Box by Direct method
Insulation Tester (Fixed Values)	1 MΩ 9.9 MΩ 99 MΩ	1.4 kΩ 5.9 kΩ 0.8 MΩ	Using Electrical Test Box by Direct method
Simulated Temperature Generate Thermocouples B-Type E Type J Type K Type N Type R Type S Type T Type	 0 °C to 1800 °C 0 °C to 800 °C -180 °C to 750 °C -140 °C to 1250 °C -270 °C to 1300 °C -50 °C to 1700 °C -50 °C to 1700 °C -200 °C to 400 °C	 0.15 °C 0.15 °C 0.15 °C 0.15 °C 0.15 °C 0.15 °C 0.15 °C 0.15 °C	Using Multi-Product Electrical Calibrator and Thermocouple Adapter by Direct method
Simulated Temperature Measure Thermocouples B-Type E Type J Type K Type N Type R Type S Type	 400 °C to 1820 °C -200 °C to 1000 °C -200 °C to 1200 °C -100 °C to 1370 °C -200 °C to 1300 °C 0 °C to 1760 °C 0 °C to 1760 °C	 0.88 °C 0.23 °C 0.29 °C 0.37 °C 0.44 °C 0.86 °C 0.86 °C	Using Process Calibrator by Direct method

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
T Type	-200 °C to 400 °C	0.63 °C	
Simulated Temperature Generate & Measure RTD Pt-100	-200 °C to 850 °C	0.16 °C	Using Process Calibrator by Direct method
Time and Frequency			
Timers / Stop watches	120 s to 3600 s 3600 s to 5400 s	1 s 2.1 s	Using Reference Timer-Comparison method
Chemical/Gas			
Conductivity Meter	147 µS/cm 1413 µS/cm 12.88 mS/cm	5 µS/cm 12 µS/cm 0.11 mS/cm	Using Standard Buffer Solution by Direct method
pH Meter	4.01 pH 7.00 pH 10.01 pH	0.01 pH 0.01 pH 0.01 pH	Using Standard Buffer Solution by Direct method
TDS Meter	300 ppm 3000 ppm	3.0 parts in 10^6 30 parts in 10^6	Using Standard Buffer Solution by ~~Comparison~~ Direct method
Dissolved Oxygen Meter	0 mg/L	0.06 mg/L	Using Standard Solution by Direct method
Gas Detectors Oxygen - O2 Methane - CH_4 Hydrogen sulfide – H_2S Carbon Monoxide – CO	 18 %Vol 19.0 %Vol 20.9 %Vol 50 %LEL 25 ppm 50 ppm 100 ppm 500 ppm	 0.55 %Vol 0.57 %Vol 0.63 %Vol 1.6 %LEL 0.9 parts in 10^6 1.7 parts in 10^6 3.1 parts in 10^6 15 parts in 10^6	Using Calibration Gas by Direct Method
Other			
Flow Meters[5]	15 m^3/h to 800 m^3/h	1.2 %	Using Ultrasonic Flowmeter – by Direct Method

[1]The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

[2]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

[3]Capability is suitable for the calibration of measuring devices in the stated ranges.

[4]Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

[5]Also available as site calibration. Note that actual measurement uncertainties achievable at a customer's site can normally be expected to be larger than the uncertainties listed on this Scope of Accreditation.

Notes:
ppm = parts per million
Abs = absorbance
T = transmittance
d = digit
LEL= Lower Explosive Limit
Vol = Volume