CERTIFICATE OF ACCREDITATION

This is to attest that

INTERNATIONAL LABORATORIES AND AL HOTY STANGER W.L.L.

BLDG NO. 397, ROAD NO. 1507, P.O. BOX 16464
HIDD - 115 INDUSTRIAL AREA, KINGDOM OF BAHRAIN

Calibration Laboratory CL-136

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.

Effective Date November 22, 2023

Expiration Date March 1, 2026

President

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SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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INTERNATIONAL LABORATORIES AND AL HOTY STANGER W.L.L.

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Accredited to ISO/IEC 17025:2017 *Effective Date November 22, 2023*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Micrometer- Outside	0 mm to 150 mm 0 mm to 300 mm 300 mm to 600 mm	2 µm 10 µm 20 µm	Gauge Blocks 0 Grade / Optical Flat / Optical Parallel BS EN 3611 2010
Micrometer - Inside	0 mm to 600 mm	10 µm	Internal Microchecker IS 2966
Caliper - Vernier, Dial & Electronic	0 mm to 600 mm	10 µm	Gauge Blocks 0 Grade, Internal Micro-checker IS 3651-2
Height Gauges - Vernier, Dial & Electronic	0 mm to 600 mm	10 µm	Gauge Blocks 0 Grade BS EN ISO 13225
Dial Indicator/ Gauge (Plunger)	0 mm to 25 mm	4 µm	Dial calibration tester IS 2092
Plain Plug Gauge (Go/No Go)	0 mm to 150 mm	3 µm	Digital Micrometer BS 1044-1:2008
Dial Thickness Gauge	0 mm to 50 mm	10 µm	Gauge Blocks 0 Grade ILS/CM/M/008
Bore Gauge (Only for Transmission)	0 mm to 2 mm	4 µm	Dial Calibration Tester ILS/CM/M/018
Feeler Gauge	0 mm to 2 mm	3.5 µm	Digital Micrometer IS 3179
Pin Gauge	0 mm to 25 mm	3 µm	Digital Micrometer IS 11103
Bevel Protector	0° to 360°	4’	Sine Bar / Gauge Blocks IS 2102-1
Combination Set	0° to 180°	45’	Sine Bar / Gauge Blocks IS 2102-1

** 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)
Dial Calibration Tester	0 mm to 25 mm	1.5 µm	Electronic Comparator with Probe ILS/CM/M/019
Test Sieve	63 µm to 2 mm	0.4 %	Master Sieves, Glass Beads & Weighing Balances BS1377-1:1990
	2 mm to 125 mm	30 µm	Digital Caliper BS ISO 3310-2:2013 BS 410-1:2000
Volumetric Glassware	5 µL to 1000 µL 1 mL to 10 mL 10 mL to 50 mL 50 mL to 100 mL 100 mL to 500 mL 500 mL to 1000 mL 1000 mL to 2000 mL	1.3 µL 3 µL 0.06 mL 0.6 mL 1 mL 3 mL 6 mL	OIML Class E2 Weighing Balances & distilled water by gravimetric method IS 8897
Mass	1 mg to 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg	0.17 mg 0.18 mg 0.18 mg 0.18 mg 0.18 mg 0.16 mg 1.7 mg 10 mg 13 mg 18 mg 160 mg 160 mg	Standard weight of E2 Class & Weighing Balances IS 9865
Weighing Scale and Balances[5]	1 mg to 200 g 200 g to 1 kg 1 kg to 4 kg 4 kg to 50 kg	1.5 mg 1.7 mg 1.0 mg 0.15 g	Standard weight of E2 Class IS 9440
Hydraulic - Pressure Gauges	1 bar to 1000 bar	0.6 %	Reference Test Gauge by comparison method BS EN 837-1:1998
Vacuum Gauge	-1 mmHg to -710 mmHg	0.5 %	Reference Test Gauge by comparison method IS 3624
Compression Testing Machine[5]	1 kN to 3000 kN	0.25 %	Load Cell BS EN ISO 376:2011 BS EN 12390-4:2000

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Thermal			
RTD / Thermocouples with or without Indicators & Temperature Gauges	-25 °C to 50 °C 50 °C to 600 °C 600 °C to 1100 °C	0.96 °C 2.8 °C 2.3 °C	Temperature Baths, Reference PRT or S/K Type TC Sensor and Universal Calibrator – by Comparison Method IS 7358 / IS 6274
Digital Thermometers	-25 °C to 50 °C 50 °C to 600 °C 600 °C to 1100 °C	0.96 °C 2.8 °C 2.3 °C	
Mechanical (Dial) Thermometers	0 °C to 1200 °C	1.4 °C	Temperature Bath Reference PRT and Universal Calibrator IS 6274
Liquid in Glass Thermometers	-25 °C to 50 °C 50 °C to 250 °C	0.52 °C 0.78 °C	Temperature Bath Reference PRT and Universal Calibrator - Partial immersion only IS 6274
Resistance Thermometers	-30 °C to 50 °C 50 °C to 600 °C 250 °C to 1200 °C	0.52 °C 0.78 °C 1.3 °C	Temperature Bath, Reference PRT and Fluke 8846A Multimeter UNICAL 3100 Manufacturing Manual
Controller/Indicator of Ovens, Incubator, Muffle Furnace, Refrigerator[5]	-10 °C to 50 °C 50 °C to 600 °C 600 °C to 1200 °C	0.60 °C 0.60 °C 2.3 °C	Reference PRT/ S Type Thermocouple with Universal Calibrator by single point Calibration (at measuring location in DUC) EURAMET cg-13
Electrical – DC/LF			
DC Voltage – Source[3]	1 mV to 33 V 33 V to 1000 V	0.013 % 0.0095 %	Fluke 5500E Calibrator by Direct Method EURAMET cg-15 Fluke Manufacturing
DC Voltage -Measure[4]	10 mV to 100 V 100 V to 1000 V	0.045 % 0.06 %	Fluke 8846A DMM: NICT Journal-Vol 63 No 1-02-03
AC Voltage - Source[3] @ 50 Hz	10 mV to 330 mV 330 mV to 1000 V	0.27 % 0.09 %	Fluke 5500E Calibrator by Direct Method EURAMET cg-15, Fluke Manufacturing
AC Voltage - Measure[4] @ 50 Hz	100 mV to 1000 V	0.08 %	Fluke 8846A DMM by Direct Method NICT Journal-Vol 63 No 1-02-03

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
DC Current - Source[3]	1 mA to 330 mA 330 mA to 10 A 10 A to 550 A	0.01 % 0.08 % 0.6 %	Fluke 5500E Calibrator & 50 Turn Coil by Direct method EURAMET cg-15, Fluke Manufacturing
DC Current - Measure[4]	1 µA to 100 µA 0.1 mA to 10 mA 10 mA to 3 A 3 A to 10 A	0.012 % 0.08 % 0.002 % 0.02 %	Fluke 8846A DMM by Direct Method. NICT Journal-Vol 63 No 1-02-03 Fluke Manufacturing
AC Current - Source[3] @ 50 Hz	30 µA to 330 mA 0.33 A to 10 A 10 A to 550 A	0.3 % 0.06 % 0.05 %	Fluke 5500E Calibrator & 50 Turn Coil by Direct method EURAMET cg-15, Fluke Manufacturing
AC Current - Measure[4] @ 50 Hz	30 µA to 100 µA 100 µA to 1 mA 1 mA to 10 A	0.065 % 0.019 % 0.038 %	Fluke 8846A DMM by Direct Method NICT Journal-Vol 63 No 1-02-03
DC Resistance - Source[3]	0.01 Ω to 32.999 Ω 33 Ω to 32.9999 kΩ 33 kΩ to 3.29999 MΩ 3.3 MΩ to 10.9999 MΩ 11 MΩ to 32.9999 MΩ 33 MΩ to 329.999 MΩ	0.012 % 0.009 % 0.015 % 0.06 % 0.12 % 0.5 %	Fluke 5500E Calibrator by Direct method EURAMET cg-15
Resistance Measure[4]	1 Ω to 10 Ω 10 Ω to 100 Ω 0.1 kΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ	0.04 % 0.014 % 0.011 % 0.041 % 0.8 %	Fluke 8846A DMM by Direct Method: NICT Journal-Vol 63 No 1-02-03 Fluke Manufacturing
Capacitance - Source[3,6]	0.33 nF to 11 nF 11 nF to 1.1 µF 1.1 µF to 33 µF 33 µF to 110 µF 110 µF to 330 µF 330 µF to 1.1 mF	0.5 % 0.3 % 0.4 % 0.5 % 0.7 % 1 %	Fluke 5500E Calibrator by Direct Method EURAMET cg-15, Fluke Manufacturing
Capacitance – Measure[4]	0.01 nF to 1 nF 1 nF to 10 mF 10 mF to 100 mF	4.5 % 1.5 % 4.2 %	Fluke 8846A Multimeter by Direct Method: NICT Journal-Vol 63 No 1-02-03

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Temperature Simulation Thermocouples			Fluke 5500E Calibrator by Direct Method EURAMET cg-11, Fluke Manufacturing
Type B	600 °C to 1820 °C	0.44 °C	
Type C	0 °C to 2316 °C	0.84 °C	
Type E	-250 °C to 1000 °C	0.27 °C	
Type J	-210 °C to 1200 °C	0.27 °C	
Type K	-200 °C to 1372 °C	0.40 °C	
Type L	-200 °C to 900 °C	0.37 °C	
Type N	-200 °C to 1300 °C	0.40 °C	
Type R	0 °C to 1767 °C	0.57 °C	
Type S	0 °C to 1767 °C	0.47 °C	
Type T	-250 °C to 400 °C	0.63 °C	
Type U	-200 °C to 600 °C	0.27 °C	
RTDs			
Pt 385, 100 Ω	-200 °C to 800 °C	0.23 °C	
Pt 3926, 100 Ω	-200 °C to 630 °C	0.12 °C	
Pt 3916, 100 Ω	-200 °C to 630 °C	0.25 °C	
Pt 385, 200 Ω	-200 °C to 630 °C	0.16 °C	
Pt 385, 500 Ω	-200 °C to 630 °C	0.11 °C	
Pt 385 1000 Ω	-200 °C to 630 °C	0.23 °C	
Pt 385, 120 Ω	-80 °C to 260 °C	0.14 °C	
U 427, 10 Ω	-100 °C to 260 °C	0.3 °C	
Time and Frequency			
Frequency – Source[3]	2 Hz to 1 MHz	2.9 %	Fluke 5500E Calibrator by Direct Method ILS/CM/E/022
Frequency – Measure[4]	3 Hz to 1 MHz	1.5 %	Fluke 8846A Multimeter by Direct Method ILS/CM/E/022
Stopwatches and Timers	5 s to 1 h 1 h to 24 h	1.0 s 2.1 s	Stopwatch by Comparison Method ILS/CM/E/011
Chemical			
pH meters	4.0 pH 7.0 pH 10.2 pH	0.03 pH 0.03 pH 0.03 pH	Standard Buffer Solutions ILS/CM/E/014
Conductivity Meters	3.30 mS to 100 mS	0.5 %	Using conductivity buffer solutions: Direct method ILS/CM/E/024

Notes:

[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.

[6]The actual frequency applied by the calibrator cannot be selected and may be dependent on the measurement device under calibration. Approximate frequency ranges for a given capacitance or capacitance range may be found in the calibrator's published specifications.

DUC = device under calibration