CERTIFICATE OF ACCREDITATION

This is to attest that

MAGNUM INDUSTRIAL LABORATORIES W.L.L

BLOCK NO 951, ROAD NO 5136, BUILDING NO 1284
ASKAR, KINGDOM OF BAHRAIN

Calibration Laboratory CL-144

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 February 17, 2022

Expiration Date September 1, 2025

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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MAGNUM INDUSTRIAL LABORATORIES W.L.L

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Accredited to ISO/IEC 17025:2017 *Effective Date February 17, 2022*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Calipers, Vernier Dial Digital	0 mm to 300 mm	9 µm	Using Slip Gauge Set & Slip Gauge Accessories as per IS: 3651-1-1982, IS: 3651 (Part 2)-1985, IS: 3651 (Part 3)-1988
Outside Micrometer	0 mm to 25 mm 25 mm to 300 mm	4.5 µm 12 µm	Using Slip Gauge Set & Slip Gauge Accessories as per IS:2967-1983
Inside Micrometer	0 mm to 300 mm	12 µm	Using Slip Gauge Set & Slip Gauge Accessories as per IS:2966-1964
Depth Micrometer	0 mm to 300 mm	12 µm	Using Slip Gauge Set & Slip Gauge Accessories as per BS 6468:2008
Depth gage Vernier Dial Digital	 0 mm to 300 mm 0 mm to 300 mm 0 mm to 300 mm	 12 µm 12 µm 9 µm	Using Gr '0' gage block set As per IS: 4213-1991
Height Gage Vernier Dial Digital	 0 mm to 300 mm 0 mm to 300 mm 0 mm to 300 mm	 12 µm 7.2 µm 7.2 µm	Using Gr '0' gage block set As per IS: 2921-1988
Dial Thickness Gauge	0.5 mm to 50 mm	1.5 µm	Using Gr '0' gage block set Based on IS: 2092-1983
Feeler gauge	0 mm to 2 mm	3.1 µm	Using Digital Micrometer As per IS: 3179-1990
Dial gauge (Dial Indicator)	0 mm to 25 mm	6.5 µm	Using Dial Calibration Tester, as per IS: 2092-1983

** 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)
Mechanical			
Pressure (Gauges, Recorders, Safety Valves, Pressure Transmitters, Pressure Switches)	–0.85 bar to 60 bar 60 bar to 650 bar 650 bar to 1000 bar	0.03 bar 0.45 bar 6.2 bar	Using digital pressure indicator and comparator As per DKD-R 6-1, EURAMET-cg-17(Version 2.0), API 576
	10 bar to 700 bar	0.62 %	Using Dead weight Tester As per DKD-R 6-1
Mass – Weighing Balance	0 g to 300 g	0.6 mg	Using E2 Class Weights As per OIML R76-1 & 2, OIML R 111-1 & 2, CP-M-01
	0 kg to 20 kg	25 mg	Using F1 Class Weights As per OIML R76-1 & 2, OIML R 111-1 & 2
	0 kg to 500 kg	150 g	Using M1 Class Weights As per OIML R76-1 & 2, OIML R 111-1 & 2
Volume - Glassware (In Laboratory only)	100 µL to 500 µL 500 µL to 1000 µL 1 mL to 10 mL 10 mL to 50 mL 50 mL to 100 mL 100 mL to 500 mL	8.5 µL 11 µL 20 µL 90 µL 0.8 mL 40 mL	Gravimetric Method Using Weighing Balance and E2 Class Weights As per ISO 8655-6 :2022
Torque Wrench	0 N·m to 500 N·m	6 N·m	Torque Tester As per ISO 6789-1: 2017, ISO 6789-2: 2017
Tachometer (Non-Contact Type)	0 rpm to 1000 rpm 1000 rpm to 100000 rpm	1 rpm 6 rpm	5025 Multifunction Calibrator with LED light As per Sanas TR 45-02: 2017
Centrifuge, Stirrer, Rotating Equipment	100 rpm to 10000 rpm	0.37 %	Using Tachometer As per Sanas TR 45-02: 2017
Sound Level Meter (at 1 kHz)	94 dB 114 dB	0.6 dB 0.8 dB	Using Sound level Calibrator As per OIML R 58: 1998
Thermal			
Temperature Indicator/ Controller with Sensor/ Thermocouples/ RTDs /Temperature Gauge (Analog /Digital) / Thermometer (Stick Type / Glass/Digital)	-10 °C to 150 °C 30 °C to 650 °C	0.52 °C 1.9 °C	Using Temperature Bath and multi-function calibrator As per EURAMET cg-8, EURAMET cg-11, EURAMET cg-13, DKD R 5-1

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Simulated Temperature			Using Multi-function calibrator (Beta MC-1210) As per EURAMET cg-11
RTD – PT 100	0 °C to 630 °C	Generate: 1.5 °C Measure: 1.4 °C	
Thermocouple			
Type E	-250 °C to 1000 °C	Generate: 0.77 °C Measure: 0.71 °C	
Type J	-200 °C to 1200 °C	Generate: 0.9 °C Measure: 0.87 °C	
Type K	-200 °C to 1370 °C	Generate: 0.98 °C Measure 0.96 °C	
Type R	0 °C to 1750 °C	Generate 1.6 °C Measure: 1.6 °C	
Type S	0 °C to 1750 °C	Generate: 1.5 °C Measure 1.6 °C	
Type T	-250 °C to 400 °C	Generate 0.98 °C Measure 0.94 °C	
Electrical – DC/LF			
DC Voltage Generate[3]	1 mV to 1000 V	0.5 %	Using Time Electronics 5025 Multi Product Calibrator As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)
AC Voltage Generate[3] at 50 Hz	1 mV to 1000 V	0.5 %	
DC Current Generate[3]	1 mA to 1000 A	0.35 %	Using Time Electronics 5025 multi Product calibrator and 50 Turns coil As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)
AC Current Generate[3] at 50 Hz	1 mA to 1000 A	0.35 %	
DC Resistance Generate[3]	1 Ω to 100 MΩ	1 %	Using Time Electronics 5025 Multi Product Calibrator As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)
	1 Ω to 1 GΩ	0.6 %	Using Time Electronics INS CAL-5068 Insulation Resistance calibrator As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)
DC Resistance Measure[4]	1 Ω to 100 MΩ	1.1 %	Using Fluke 8845A 6½ Digit Multimeter As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
DC Voltage Measure [4]	1 mV to 1000 V	0.45 %	Using Fluke 8845A 6½ Digit Multimeter As per EURAMET cg-15, IS 1248: 2003 (Part 1 to 9)
AC Voltage Measure[4] at 50 Hz	1 mV to 1000 V	0.45 %	
DC Current Measure[4]	1 mA to 10 A	0.65 %	
AC Current Measure[4] at 50 Hz	1 mA to 10 A	0.65 %	
Chemical/Gas			
Multi-Gas Detector	Hydrogen Sulfide: 25 ppm Carbon Monoxide: 100 ppm Methane: 2.5 % Oxygen: 18 %	0.8 parts in 10^6 2.1 parts in 10^6 2 % 2 %	Using Standard Span Calibration Gases As per manufacturer's Specification
pH Meter	4.01 pH 7.00 pH 10.01 pH	0.03 pH 0.03 pH 0.03 pH	Using Standard Buffer Solution As per manufacturer's Specification

[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.

ppm = parts in 10^6