



# CERTIFICATE OF ACCREDITATION

*This is to attest that*

## **ABJ ENGINEERING & CONTRACTING CO. KSC (CLOSED)**

FACILITY NO. 82, STREET MA-5, BLOCK NO. 2, SHUAIBA INDUSTRIAL AREA  
WEST SHUAIBA, 65454, STATE OF KUWAIT

### **Calibration Laboratory CL-213**

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 May 24, 2023

Expiration Date March 1, 2025



A handwritten signature in black ink that reads "Raj Nathan".

**President**

# SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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## ABJ ENGINEERING & CONTRACTING CO. KSC (CLOSED)

[www.abjengineering.com](http://www.abjengineering.com)

**Contact Name** Rajeshkumar Gunasekaran

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Accredited to ISO/IEC 17025:2017

Effective Date May 24, 2023

### CALIBRATION AND MEASUREMENT CAPABILITY (CMC)\*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY <sup>1,2</sup> (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
<b>Dimensional</b>			
External Micrometer	0.001 mm to 50 mm 50 mm to 100 mm	1.4 µm 1.7 µm	LCM-M-002 Gauge Block Set - Grade 0, Slip Gauge Set
Internal Micrometer	0.001 mm to 300 mm	5.8 µm	LCM-M-003 Gauge Block Set - Grade 0, Slip Gauge Set
Calipers	0.01 mm to 300 mm	8 µm	LCM-M-001 Gauge Block Set - Grade 0, Depth Micro Checker
Dial Gauges	0.001 mm to 5mm 5 mm to 25 mm	3 µm 6.5 µm	LCM-M-007, LCM-M-008 Metric Calibration Tester
Feeler Gauge	0.001 mm to 5 mm	4.3 µm	LCM-M-006 Digital Micrometer
<b>Mechanical</b>			
Pressure Indicating Instruments both Analog & Digital (Pneumatic) <sup>5</sup>	-1 bar to 2 bar	0.013 bar	LCM-M-023 Dead Weight Tester
	0.5 bar to 25 bar	0.01 bar	Dead Weight Tester
	0.5 bar to 120 bar	0.03 bar	Pressure Controller

\* 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.

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Pressure Indicating Instruments both Analog & Digital (Hydraulic) <sup>5</sup>	1 bar to 70 bar	0.014 bar	LCM-M-023 Dead Weight Tester
	70 bar to 200 bar	0.04 bar	
	10 bar to 700 bar	0.13 bar	Hydraulic Pressure Comparator With Pressure Gauge
	0 bar to 1000 bar	0.89 bar	
	1000 bar to 2800 bar	1.2 %	
Pressure Transmitters (Pneumatic) <sup>5</sup>	-1 bar to 25 bar	0.016 bar	LCM-M-025 Pressure Controller
Pressure Transmitters (Hydraulic) <sup>5</sup>	1 bar to 70 bar	0.05 bar	LCM-M-025 Dead Weight Tester
Torque Wrenches	0.4 N·m to 10 N·m 10 N·m to 3000 N·m	1.3 %	LCM-M-010 Torque Wrench Calibrator
		0.80 %	
Mass Calibration (F1 or Lower class)	5 mg to 20 g 50 g 100 g 200 g	0.36 mg	LCM-M-012 E2 Class Weights and Weighing Balance By comparison method
		0.44 mg	
		0.62 mg	
		1.1 mg	
Mass Calibration (F2 or Lower Class)	500 g, 1 kg 2 kg 5 kg, 10 kg 20 kg	0.03 g	LCM-M-012 F1 Class Weight Sets Weighing Balance By comparison method
		0.29 g	
		0.35 g	
		0.53 g	
Weighing Balances <sup>5</sup>	1 mg to 220 g 0.01 g to 3200 g 0.5 kg to 32 kg 100 g to 60 kg	0.38 mg	LCM-M-011 Class E2 Weights LCM-M-011 F1 Class Weights
		16 mg	
		0.15 g 3.0 g	
Piston Operated Pipettes	20 µL to 100 µL 100 µL to 200 µL 200 µL to 500 µL 500 µL to 1000 µL 1 mL to 10 mL	1.7 µL	LCM-M-028 OIML Class E2, F1 Class Weights, Weighing Balance
		1.7 µL	
		5.7 µL	
		2.8 µL	
		7.0 µL	
Laboratory Glassware, Measuring Cylinder	1 mL to 5 mL 5 mL to 50 mL 50 mL to 100 mL 100 mL to 250 mL 250 mL to 500 mL 500 mL to 2 L	7.0 µL	LCM-M-018, LCM-M-20 OIML Class E2, F1 Class Weights, Weighing Balance
		1.0 µL	
		33 µL	
		39 µL	
		0.92 mL	
		1.1 mL	

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<i>Thermal</i>			
Liquid in Glass Thermometer	-40 °C to 100 °C 100 °C to 250 °C	0.06 °C 0.58 °C	LCM-T-001 Digital Thermometer with SPRT Probe
Digital Thermometer, Temp. Gauge, Thermocouple Probe, RTD Probe <sup>5</sup>	-40 °C to 500 °C 500 °C to 660 °C	0.08 °C 0.16 °C	LCM-T-002, LCM-T-004, LCM-T-005 Digital Thermometer with SPRT Probe
Digital Thermometer, Temp. Gauge, Thermocouple Probe <sup>5</sup>	660 °C to 1200 °C	4.5 °C	LCM-T-002, LCM-T-004, LCM-T-005 Digital Thermometer with Thermocouple
Non-Contact thermometers, IR Thermometer	50 °C to 100 °C 100 °C to 200 °C 200 °C to 500 °C	0.75 °C 1.6 °C 2.1 °C	LCM-T-006 Infrared Calibrator
Calibration Bath, Dry Block Calibrators, Furnace, Chillers, Ovens <sup>5</sup>	-38 °C to 140 °C 140 °C to 300 °C 300 °C to 660 °C 660 °C to 1200 °C	0.02 °C 0.09 °C 0.16 °C 4.5 °C	LCM-T-007, LCM-T-012 Digital Thermometer with SPRT Probe / Thermocouple
Temperature & Humidity Indicating / Recording Instruments	10 %RH to 95 %RH 18 °C to 28 °C	1.3 %RH 0.25 °C	LCM-T-008 Humidity Generator
Temperature Transmitter  Pt100  TC-K Type  TC-J Type	  -150 °C to 600 °C  -150 °C to 1200 °C  -150 °C to 1200 °C	  0.23 °C  0.40 °C  0.28 °C	LCM-T-010 Digital Thermometer with SPRT Probe, Digital Multimeter
Temperature Generate by Electrical Simulation  Pt100	  -200 °C to 800 °C	  0.23 °C	LCM-T-003 Multi Product Calibrator,
Temperature Calibrator Electrical Simulation Measurement  Pt100  TC-K Type  TC-J Type	  -150 °C to 800 °C  -150 °C to 1200 °C  -150 °C to 1200 °C	  0.23 °C  0.41 °C  0.28 °C	LCM-T-003 Multi Product Calibrator, Digital Multimeter

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Electrical Simulation of Thermocouples Type –K	-150 °C to -100 °C -100 °C to 0 °C 0 °C to 500 °C 100 °C to 1300 °C	0.34 °C 0.17 °C 0.27 °C 0.41 °C	LCM-T-003 Multi Product Calibrator
Type –J	-150 °C to 1200 °C	0.28 °C	
Type –T	-150 °C to 400 °C	0.25 °C	
<b>Electrical – DC/LF</b>			
DC Voltage – Generate <sup>3</sup>	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	2.6 µV 19 µV 0.29 mV 2.8 mV 28 mV	LCM-E-002, LCM-E-023 Multi Product Calibrator
AC Voltage – Generate <sup>3</sup>	(50 Hz) 1 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V  (1 kHz) 1 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V  (10 kHz) 1 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V  (100 kHz) 1 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V	20 µV 287 µV 3.1 mV 28 mV 423 mV  19 µV 287 µV 3 mV 36 mV 423 mV  19 µV 350 µV 4.1 mV 41 mV 428 mV  110 µV 1200 µV 15 mV 336 mV	LCM-E-002, LCM-E-023 Multi Product Calibrator

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DC Current - Generate <sup>3</sup>	0 µA to 100 µA 100 µA to 1mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A 10 A to 20 A	46 nA 67 nA 1.3 µA 13 µA 326 µA 430 µA 3.9 mA 20 mA	LCM-E-003, LCM-E-023 Multi Product Calibrator
AC Current – Generate <sup>3</sup>	(50 Hz) 0 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A 10 A to 20 A  (1 kHz) 0 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A  (10 kHz) 0 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A	0.47 µA 4.8 µA 46 µA 0.7 mA 1.3 mA 9 mA 0.29 A  0.48 µA 4.8 µA 57 µA 1.1 mA 1.2 mA 9 mA  0.51 µA 5.1 µA 88 µA 4 mA 4.1 mA	LCM-E-003, LCM-E-023 Multi Product Calibrator
DC Resistance - Generate <sup>3</sup>	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 1000 MΩ	1.1 mΩ 3.4 mΩ 30 mΩ 300 mΩ 3 Ω 28 Ω 1.1 kΩ 53 kΩ 12 MΩ	LCM-E-004, LCM-E-023 Multi Product Calibrator



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Capacitance - Generate <sup>3</sup>	(50 Hz) 0 nF to 1 nF 1 nF to 10 nF 10 nF to 100 nF 100 nF to 1 µF 1 µF to 10 µF 10 µF to 100 µF 100 µF to 1 mF 1 mF to 10 mF 10 mF to 100 mF	15 pF 36 pF 360 pF 3.6 nF 36 nF 550 nF 5.5 µF 55 µF 1.2 mF	LCM-E-006, LCM-E-023 Multi Product Calibrator
DC Current Clamp	0 A to 10 A 0 A to 500 A 0 A to 1000 A	110 mA 2.3 A 4 A	LCM-E-003 Multi Product Calibrator
AC Current Clamp	(50 Hz) 0 A to 10 A 0 A to 500 A 0 A to 1000 A  (440 Hz) 0 A to 300 A	89 mA 2.9 A 4.7 A  4 A	LCM-E-003 Multi Product Calibrator
DC Voltage – Measure <sup>4</sup>	0 mV to 330 mV 0 V to 3.3 V 0 V to 33 V 33 V to 1000 V	3.2 µV 33 µV 410 µV 8.5 mV	LCM-E-007 Digital Multimeter
AC Voltage – Measure <sup>4</sup>	(50 Hz) 0 mV to 30 mV 30 mV to 300 mV 300 mV to 3 V 3 V to 30 V 30 V to 300 V 300 V to 1000 V  (1 kHz) 0 mV to 30 mV 30 mV to 300 mV 300 mV to 3 V 3 V to 30 V 30 V to 300 V 300 V to 1000 V  (10 kHz) 0 mV to 30 mV 30 mV to 300 mV 300 mV to 3 V	39 µV 64 µV 640 µV 6.3 mV 93 mV 250 mV  7.4 µV 57 µV 570 µV 5.7 mV 114 mV 202 mV  9.8 µV 63 µV 630 µV	LCM-E-007 Digital Multimeter

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AC Voltage – Measure <sup>4</sup> (cont'd.)	3 V to 30 V 30 V to 300 V 300 V to 1000 V	6.3 mV 93 mV 170 mV	
DC Current - Measure <sup>4</sup>	0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 2.2 A 2.2 A to 11 A 11 A to 20 A	0.61 µA 6.6 µA 110 µA 1.5 mA 5.5 mA 9.6 mA	LCM-E-009 Digital Multimeter
AC Current – Measure <sup>4</sup>	(50 Hz) 0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 2.2 A 2.2 A to 11 A 11 A to 20 A  (1 kHz) 0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 2.2 A 2.2 A to 11 A 11 A to 20 A  (5 kHz) 0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 2.2 A	8.9 µA 36 µA 490 µA 4.5 mA 12 mA 21 mA  6.8 µA 36 µA 490 µA 4.5 mA 12 mA 21 mA  6.8 µA 36 µA 530 µA 8 mA	LCM-E-009 Digital Multimeter
High DC Voltage Measure <sup>5</sup>	1 kV to 5 kV 4 kV to 40 kV 40 kV to 150 kV	0.06 kV 0.29 kV 0.83 kV	LCM-E-008 High Voltage Divider, DMM
High AC Voltage Measure <sup>5</sup>	(50 Hz) 1 kV to 5 kV 4 kV to 28 kV 28 kV to 100 kV	0.06 kV 0.29 kV 1.2 kV	LCM-E-008 High Voltage Divider, DMM
DC Resistance Measure <sup>4</sup>	0 Ω to 9 Ω 9 Ω to 90 Ω 90 Ω to 900 Ω 900 Ω to 9 kΩ 9 kΩ to 90 kΩ 90 kΩ to 900 kΩ 900 kΩ to 9 MΩ 9 MΩ to 90 MΩ	1.5 mΩ 6.7 mΩ 9.2 mΩ 200 mΩ 2 Ω 24 Ω 400 Ω 20 kΩ	LCM-E-010 Digital Multimeter



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Capacitance Measure <sup>4</sup>	0 pF to 900 pF 900 pF to 9 nF 9 nF to 90 nF 90 nF to 900 nF 900 nF to 3 µF	9.2 nF 0.59 nF 1.5 nF 9 nF 580 nF	LCM-E-011 Digital Multimeter
Insulation Resistance	0 MΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ 10 GΩ 100 GΩ	0.006 MΩ 0.007 MΩ 0.059 MΩ 0.007 GΩ 0.058 GΩ 1.2 GΩ	LCM-E-012 Digital Multimeter VRS 100 High Resistance Standard / Fluke 5320A
<b>Time and Frequency</b>			
Frequency Generate <sup>3</sup>	0 Hz to 10 Hz 10 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 1 MHz 1 MHz to 50 MHz 10 MHz to 100 MHz	15 mHz 18 mHz 0.038 Hz 0.95 Hz 13 Hz 42 Hz 130 Hz 250 Hz	LCM-E-025 Multi Product Calibrator
Frequency Measure <sup>4</sup>	1 Hz to 10 kHz 10 kHz to 1 MHz 1 MHz to 10 MHz	47 mHz 58 mHz 0.3 Hz	LCM-E-018 Universal Counter
Tachometer Non-Contact Type	60 rpm to 999.9 rpm 1000 rpm to 99999 rpm	0.81 rpm 0.58 rpm	LCM-E-015 Multi Product Calibrator
Stopwatches, Timers	0 s to 36000 s	37 ms	LCM-E-001 Universal Counter
<b>Chemical/Gas</b>			
pH Meter <sup>5</sup>	4 pH 7 pH 10 pH	0.04 pH	LCM-C-002 Standard Reference Material
Conductivity Meter <sup>5</sup>	1.413 mS/cm	0.04 mS/cm	LCM-C-003 Standard Reference Material

<sup>1</sup>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.

<sup>2</sup>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.

<sup>3</sup>Capability is suitable for the calibration of measuring devices in the stated ranges.

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<sup>4</sup>Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

<sup>5</sup>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.