

10.15 Scope of Accreditation

Issue No: 3/ Issue Date: 16 Sep 2018
Accreditation Manager: Hamza Khan

Calibration Laboratory Accreditation No. ACL 0002

is accredited by the GCC Accreditation Center (GAC) in accordance with the recognized International Standard ISO/IEC 17025:2005, "General requirements for the competence of testing and calibration laboratories"

Metromac Automation Calibration Laboratory	
Issue No: 3	Issue Date: 16 Sep 2018
Address. Metromac Automation Calibration Laboratory – Plot #6, M32 Mussafah Industrial Area, P O Box 9270 Abu Dhabi, UAE	Contact: Mr. Sunil K S Tel: +971-2-5544949 Fax: +971-2-5544645 Email: qaqc.auh@metromac.com Web Address: www.metromac.com

Locations where calibration activities covered by the above Accreditation Standard are undertaken

1- **address:** Metromac Automation Calibration Laboratory – Plot #6, M32 Mussafah Industrial Area, P O Box 9270 Abu Dhabi, UAE

For the following scope:

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ISO/IEC 17025:2005

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Scope:

1.03 Engineering Metrology Equipment

- 1.03.22 External micrometers
- 1.03.27 Electronic and Vernier Calipers
- 1.03.99 Other measuring Instruments and Tools

1.12 Weighing Devices

- 1.12.01 Precision laboratory balances
- 1.12.02 Industrial balances

1.13 Volumetric Equipment

- 1.13.15 Piston Operated Volumetric Apparatus, pipettes (POVAS)

1.20 Pressure and Vacuum measuring devices

- 1.20.01 Pressure gauges
- 1.20.02 Vacuum gauges (bourdon tube)

1.38 Instrument Calibrators

- 1.38.01 D.C. Voltage
- 1.38.02 A.C. Voltage
- 1.38.11 D.C. Current
- 1.38.12 A.C. Current
- 1.38.51 Resistance (DC)

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1.80 Calibration of temperature measuring equipment

- 1.80.03 Digital Thermometers (RTDs and TCs)
- 1.80.11 Liquid-in-glass thermometers

1.84 Testing of Controlled enclosures

- 1.84.01 Ovens and Furnaces
- 1.84.02 Incubators
- 1.84.04 Industrial Freezers
- 1.84.06 Baths
- 1.84.07 Environmental Chambers (Temperature)

Scope details are as follows:

Calibration field 1: (Engineering Metrology Equipment)

Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
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Outside Micrometers Readability 0.001 mm	1 to 25 mm	2 μ m	Calibration Methods: BS 6468-2008, BS 1734-1951, BS 3611:2010, BS 959:2008, NABL 141 Internal Procedure MQS 03 C 53 <u>1</u> - Gauge Blocks Set Tesa, Sl. No.: 2018.320 <u>2</u> - Slip Gauge 125 mm Tesa, Sl. No.: 86717 <u>3</u> - Slip Gauge 200 mm Tesa, Sl. No.: 87350 <u>4</u> - Slip Gauge 300 mm Tesa, Sl. No.: 87143 <u>5</u> - Set of Slip Gauges Aditya, Sl. No.: 2898 <u>6</u> - Gauge blocks, 25 mm, 50 mm, 75 mm, 100 mm, Make: Tesa, Sl. No.: 15.30066, 1.30075, 16.30069, 2.30065	P
	25 to 50 mm	2 μ m		
	50 to 75 mm	2 μ m		
	75 to 100 mm	2 μ m		
Outside Micrometers Readability 0.01 mm	1 mm to 150 mm	20 μ m		
	150 mm to 300 mm	20 μ m		
Vernier Calipers Readability 0.01 mm	0 mm to 300 mm	30 μ m	Comparison Method Internal Procedure MQS 03 C 53 VDI/VDE/DGQ 2618 Blatt 9.1 / Part 9. 1-Special Gauge Blocks, Koba, 41.3 mm, 131.4 mm, 243.5 mm, 281.2 mm 2- Ring Gauge, 10mm, 25mm, 40mm, 87 mm 3: Slip Gauges - 25 mm, 50 mm, 75 mm, 100 mm, 0-Gauge blocks, Make: Tesa, Sl. No.: 15.30066, 1.30075, 16.30069, 2.30065	P

*: Put only 'P', 'S' or 'P and S'

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Calibration field 2: (Weighing Devices)

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Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
Non-Automatic Weighing Instruments	0-21 g, Readability 0.001 mg 0-220 g, Readability 0.01 mg 0-1000 g, Readability 0.001 g	0.09 mg 0.24 mg 0.0016 g	Calibration Methods: UKAS Lab-14 , R-76-1-E , ASTM E-898-88 (Reapproved 2005) ,Euramet Cg-18 Internal Procedures MQS03 C 83 Comparison by using E2 Class Weights	S
Non-Automatic Weighing Instruments	0-6200 g, Readability 0.01 g 0-30 kg, Readability 0.5 g	0.03 g 0.64 g	Calibration Methods: UKAS Lab-14 , R-76-1-E , ASTM E-898-88 (Reapproved 2005) ,Euramet Cg-18 Internal Procedures MQS03 C 83 Comparison method by using F1 Class weights	S
Non-Automatic Weighing Instruments	0-300 kg, Readability 10 g 0-500 kg, Readability 50 g	18 g 71 g	Calibration Methods: UKAS Lab-14 , R-76-1-E , ASTM E-898-88 (Reapproved 2005) ,Euramet Cg-18 Internal Procedures MQS03 C 83 Comparison method by M1 class weights	S

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Calibration field 3 (Volumetric Equipment)

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Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
Micropipettes	10 µl – 100 µl	0.09 µl	Calibration Methods: ISO 8655 & Internal Procedure MQ S03 C82 By using Automatic Pipette station having ambient conditions monitor measuring module (Microbalance 1 µg for all ranges)	P
Micropipettes	100 µl – 1000 µl	0.39 µl		P
Micropipettes	1000 µl – 10000 µl	3.8 µl		P

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Calibration field 4 (Pressure and Vacuum measuring devices)

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Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
Hydraulic Pressure Gauges Low Ranges	1 to 60 bar	0.03 bar	Calibration Methods: DKD-R 6-1 , NABL-122- 12 , NABL-122-13 Internal procedure MQS03 C50 Direct comparison with pressure balanced by standard weights applying force on a piston cylinder assembly. Equipment used-Dead Weight Tester DH BUDENBERG 580HXA Piston Cylinder S/N 374H	P
Hydraulic Pressure Gauges High Range	60 to 700 bar 700 to 1200 bar	0.18 bar 0.4 bar	Calibration Methods: DKD-R 6-1 , NABL-122- 12 , NABL-122-13 Internal procedure MQS03 C50 Direct comparison with pressure balanced by standard weights applying force on a piston cylinder assembly. Equipment used-Dead Weight Tester DH BUDENBERG 580HXA Piston Cylinder S/N 374H	P

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Pneumatic Pressure Gauges	0 bar to 20 bar	0.012 bar	<p>Calibration Methods :BS EN 837 – 1: 1998 and DKD R 6-1 Internal procedure MQS03 C 52</p> <p>Direct comparison with pneumatic pressure calibrator. Equipment used- Pressure calibrator DRUCK DPI601 S/N 9469/93-3 & PACE 1003</p>	P
Vacuum Gauges	-0.8 bar to 0 bar	0.021 bar	<p>Calibration Methods : BS ISO 3567:2011 Internal procedure MQS03 C72 DKD-R 6-1</p> <p>Direct comparison using vacuum source and a standard pressure indicator. Equipment used-Precision Pressure Indicator DRUCK DPI 705 S/N 70532796 & PACE 1003</p>	P

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Calibration field 5 (Instrument Calibrator)

Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
DC Voltage (Measuring Instruments)	10 μ V to 330 mV	0.003 %U	Calibration Method: Internal Procedure MQ S03 C51	P
	0.33 V to 3.3 V	0.003 %U	Direct comparison of generated DC voltage from calibrator using METROMAC standard Calibration procedure.	
	3.3 V to 33 V	0.003 %U	Equipment Used: Multi-product Calibrator FLUKE 5520A	
	33 V to 330 V	0.003 %U	U=Measured Voltage	
	330 V to 1000 V	0.003 %U		

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AC Voltage (Measuring Instruments)	1 mV to 33 mV			Calibration Method: Internal Procedure MQ S03 C51 Direct comparison of generated AC voltage from calibrator using METROMAC standard Calibration procedure. Equipment Used: Multi-product Calibrator FLUKE 5520A U=Measured Voltage	P
	50 Hz to 10 kHz	0.84 %U			
	10 kHz to 100 kHz	0.84 %U			
	33 mV to 330 mV				
	50 Hz to 10 kHz	0.03 %U			
	10 kHz to 100 kHz	0.1 %U			
	0.33 V to 3.3 V				
	50 Hz to 10 kHz	0.03 %U			
	10 kHz to 100 kHz	0.08 %U			
	3.3 V to 33 V				
	50 Hz to 10 kHz	0.03 %U			
	10 kHz to 100 kHz	0.08 %U			
	33 V to 330 V				
	50 Hz to 10 kHz	0.03 %U			
10 kHz to 100 kHz	0.08 %U				
330 V to 1020 V					
50 Hz to 100 kHz	0.04 %U				

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DC Current (Measuring Instruments)	0 A to 0.33 mA	0.03 % . I	Calibration Method: Internal Procedure MQ S03 C51 Direct comparison of generated DC current From calibrator using METROMAC standard calibration procedure. Equipment Used: Multi-product Calibrator FLUKE 5520A	P
	0.33 mA to 3.3 mA	0.03 % . I		
	3.3 mA to 33 mA	0.03 % . I		
	33 mA to 330 mA	0.03 % . I		
	0.33 A to 3.3 A	0.05 % . I		
	3.3 A to 11 A	0.08 % . I		
DC Current Clamp (Measuring Instruments)	15 A to 150 A	0.5 % . I + 0.14 A	Comparison to calibrator 5520A passing current through 50 turn current coil Internal Procedure MQ S03 C51 I=Measured Current	P
	150 A to 1000 A	0.51 % . I + 0.5 A		
Resistance (Measuring Instruments)	1 Ω to 100 Ω	0.05 % . R	Direct comparison of stepped resistance from calibrator using METROMAC standard Calibration procedure. Internal Procedure MQ S03 C51 Equipment used: Multi-product Calibrator FLUKE 5520A R=Measured Resistance	P
	1 kΩ to 10 kΩ	0.006 % . R		
	10 kΩ to 100 kΩ	0.005 % . R		
	0.1 MΩ to 1 MΩ	0.005 % . R		
	1 MΩ to 10 MΩ	0.06 % . R		
10 MΩ to 300 MΩ	0.06 % . R			

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AC Current (Measuring Instruments)	20 μ A to 330 μ A 45 Hz to 1 kHz	0.2 % . I	Direct comparison of generated AC current from calibrator using METROMAC standard Calibration procedure. Equipment Used: Multi-Product Calibrator FLUKE 5520A Internal Procedure MQ S03 C51 I=Measured Current	P
	0.33 mA to 3.3 mA 45 Hz to 10 kHz	0.2 % . I		
	3.3 mA to 33 mA 45 Hz to 10 kHz	0.06 % . I		
	0.033 A to 3 A 45 Hz to 1 kHz	0.08 % . I		
	3 A to 11 A 45 Hz to 1 kHz	0.1 % . I		
	11 A to 20 A 45 Hz to 1 kHz	0.2 % . I		
	15 A to 150 A 150 A to 1000 A (45 Hz to 65 Hz)	0.57 % . I + 0.25 A 0.58 % . I + 0.93 A		

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Calibration field 6 (Calibration of Temperature measuring equipment)

Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
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Digital Thermometers (RTD with Indicator)	-40 °C to 100 °C	0.2 °C	Calibration Methods: Internal Procedure MQ S03 C68	P
Digital Thermometers (RTD with Indicator)	100 °C to 250 °C	0.3 °C	Internal Procedure MQ S03 C88	
Digital Thermometers (RTD with Indicator)	250 °C to 420 °C	0.4°C	Comparison Method by using:	
Digital Thermometers (Thermocouple Sensors with Indicator)	-40 °C to 100 °C	0.4°C	1- Temperature Calibrator, Ametek, Sl. No.: 541928-00743	
Digital Thermometers (Thermocouple Sensors with Indicator)	100 °C to 250 °C	0.6°C	2-Calibration Bath, Sl. No.: B33455	
Digital Thermometers (Thermocouple Sensors with Indicator)	250 °C to 420 °C	0.8°C	3-SPRT Probe, Pt 100, Sl. No.: 860771	
Digital Thermometers (Thermocouple Sensors with Indicator)	250 °C to 420 °C	0.8°C	4- Digital Multimeter, FLUKE, Sl. No.: 9422016	
Glass Thermometer	- 40 °C to 150 °C	0.2°C	5 -PRT Probe with Indicator , Pt 100, Sl. No.: 10226	

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Calibration field 7 (Testing of Controlled Enclosures)

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Measurand / Equipment	Measuring Range	CMC (k=2)	Method (standard/guide + internal procedure)	Permanent lab (P) / Client-site (S) *
Oven	30 °C to 250 °C	1 °C	Calibration Method: Internal Procedure MQ S03 C81 Comparison Method by using	S
Incubator/Freezer / Chiller	- 30 °C to 50 °C	0.8 °C	1- Digital temperature Data logger Yokogawa 2- Flexible PRT Probes pt 100 3- Multifunction Calibrator Druck, TRX	S
Liquid Bath	-30 °C to 250 °C	0.8 °C	Internal Procedure MQ S03 C100 Comparison Method by using 1- Digital Temperature Data logger Yokogawa 2- Flexible PRT Probes PT 100 3- Multifunction Calibrator Druck, TRX Calibration Method:	S

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END

This conformity assessment body (CAB) is recorded as issuing GAC accredited certificates to organizations in the countries listed below. This list is current at the time of issue of this schedule.

United Arab Emirates	Bahrain	Saudi Arabia	Oman	Qatar	Kuwait	Yemen