

# Accreditation Scope

**Metromac Automation Calibration Lab, NAL 004**  
**Calibration Laboratory, (ISO/IEC 17025:2017)**

**M32, Mussafah Industrial Area, Abu Dhabi, UAE**

Issue Date: 13-12-2020

Expiry Date: 01-09-2022

Issue No: 08

Calibration Field/ Quantity/ Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical (Calibration)	Capacitance	0.2 nF to 100 mF	0.1 %	W.I.MQS-C51:2018	P
	Frequency	100 Hz to 2 MHz	0.1 %		
	Temperature simulation	RTD (-200 to 800) °C	0.1 °C		
		Type K (-200 to 1370) °C	0.2 °C		
		Type J (-210 to 1200) °C	1 °C		
	DC Voltage	10 μV to 1 kV	0.003 %		
	AC Voltage	(1 to 33) mV 50 Hz to 10 kHz > 10 kHz to 100 kHz	0.9 % 0.9 %		
		33mV to 1020 V 50 Hz to 10 kHz > 10 kHz to 100 kHz	0.04 % 0.1 %		
	AC Current	50 μA - 3.3 mA (45 Hz - 1 kHz)	0.2 %		
		> 3.3 mA - 3 A (45 Hz - 10 kHz)	0.1 %		
		(> 3 to 10) A (45 Hz - 1 kHz)	0.1 %		
		(> 10 – 150) A (45 Hz - 65 Hz)	0.6 % + 0.3 A		
		(>150 - 1000) A (45 Hz - 65 Hz)	0.6 % + 1 A		

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Electrical (Measurement)	DC Current	10 $\mu$ A – 330 mA	0.03 %	W.I.MQS-C51:2018	P
		(> 0.33 - 3.3) A	0.05 %		
		(> 3.3 - 10) A	0.08 %		
		(> 10 - 150) A	0.5 % + 0.2 A		
		(> 150 - 1000) A	0.5 % + 0.5 A		
	Resistance	1 $\Omega$ to 1 k $\Omega$	0.05 %	W.I.MQS-C128:2019	P
		> 1 k $\Omega$ - 1 M $\Omega$	0.006 %		
		> 1 M $\Omega$ - 1 G $\Omega$	0.06 %		
	Insulation testers	1 M $\Omega$ - 2 G $\Omega$	0.3 %	W.I.MQS-C128:2019	P
	Fixed Values 10 M $\Omega$ , 100 M $\Omega$ , 1 G $\Omega$ , 10 G $\Omega$	0.5 %			
	Capacitance	0.9 nF to 90 mF	0.1 %	W.I.MQS-C51:2018	P / S
	Frequency	5 Hz to 900 kHz	0.1 %		
	AC Voltage	10 mV - 1 kV	0.02 %		
	DC Voltage	(0 - 1) kV	0.02 %		
	Resistance	10 $\Omega$ - 1 G $\Omega$	0.1 %		
AC / DC Current	100 $\mu$ A to 20 A	0.1 %			
	(> 20 - 1000) A	1 %			
Temperature simulation	RTD (-200 to 800) $^{\circ}$ C	0.1 $^{\circ}$ C			
	Type K (-200 to 1370) $^{\circ}$ C	0.2 $^{\circ}$ C			
	Type J (-210 to 1200) $^{\circ}$ C	1 $^{\circ}$ C			
Dimensional	Outside Micrometers	(1 - 100) mm	2 $\mu$ m	W.I.MQS-C53:2019	P
		(> 100 - 300) mm	20 $\mu$ m		
	Dial Gauges	(0 - 10) mm	3 $\mu$ m	W.I.MQS-C126:2019	P
		(> 10 - 25) mm	12 $\mu$ m		

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Dimensional	Measuring Tape Steel Ruler	(0 to 50) m	(0.3 + 0.2 L) mm Where L in meter	W.I.MQS-C148:2020	P
	Vernier Calipers	(0 to 300) mm	30 µm	W.I.MQS-C08:2016	P
Volume	Micropipettes	(10 to 100) µl	0.09 µl	W.I.MQS-C82:2014	P
		(0.1 to 1) ml	0.39 µl		
		(1 to 10) ml	3.8 µl		
Weighing Balance	Digital Weighing Balance	(0 to 21) g	0.09 mg	W.I.MQS-C83:2017	S
		(> 21 to 220) g	0.24 mg		
		(> 0.220 to 1) kg	1.6 mg		
		(> 1 to 6.2) kg	0.03 g		
		(> 6.2 to 30) kg	0.64 g		
		(> 30 to 300) kg	18 g		
		(> 300 to 500) kg	71 g		
Mass	Standard Weights Class M	(1 to 20) kg	Class F1	W.I.MQS-C150:2018, based on OIML R 111-1:2004	P
Pressure	Hydraulic Pressure Gauges Pressure Transducer/ Transmitter	(0 to 60) bar	0.03 bar	W.I.MQS-C50:2019	P / S
		(> 60 to 700) bar	0.2 bar		
		(> 700 to 1200) bar	0.4 bar		
		(> 1200 to 4000) bar	2 bar		
	Pneumatic Pressure Gauges Pressure Transducer/ Transmitter	(0 to 70) bar	0.03 bar	W.I.MQS-C52:2019	P / S
Vacuum Gauges	(-0.8 to 0) bar	0.021 bar	W.I.MQS-C72:2019	P / S	

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Temperature	IR Thermometer	(-30 to 500) °C	1 %	W.I.MQS-C147:2019	P
	Thermometer Transmitter Thermo-couple with Indicator	(-40 to 100) °C	0.2 °C	W.I.MQS-C68:2014	P / S
		(> 100 to 250) °C	0.3 °C		
		(> 250 to 420) °C	0.4 °C		
	Glass Thermometer	(-40 to 150) °C	0.2 °C	W.I.MQS-C88:2016	P
	9 points measurement – Oven – Freezer – Chiller – Incubator	(-30 to 250) °C	2 °C	W.I.MQS-C81:2014	S
5 points measurements – Water Bath	(30 to 100) °C	2 °C	W.I.MQS-C100:2016	S	
Force	Tension - Load Cell Tension - Force Gauge	(0 - 200) kN	2 %	W.I.MQS-C69:2020	P
Torque	Torque Wrenches	(1.2 - 1500) Nm	1.5 %	W.I.MQS-C127:2019	P
Rotational speed	Tachometer (Non-contact)	(60 - 100000) rpm	1 rpm + 0.015%	W.I.MQS-C149:2020	P
	Tachometer (Direct contact)	(60 – 7000) rpm	1 rpm + 0.045%		
Time	Stop Watch	(0 - 24) h	0.5 s	W.I.MQS-C138:2020	P
<b>END</b>					