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Emirates National Accreditation System

UNITED ARAB EMIRATES

Certificate of Accreditation

مختبر متروماك اوتوميشن للمعايرة (NAL 004)

مصفح. م 1/ 32- ق 6 - أبوظبي. الإمارات العربية المتحدة

حاصل على الإعتماد في طرق المعايرة المذكورة في وثيقة المجال المرفقة وفقاً للمواصفة الدولية ISO/IEC 17025،

Metromac Automation Calibration Lab (NAL 004)

Plot No. 6, M32, Mussafah Industrial Area - Abu Dhabi, UAE

Accredited according to the ISO/IEC 17025 Standard to undertake calibrations as specified in the attached Accreditation Scope.

الدكتورة رحاب فرج العامري

مـديـــر إدارة الإعتمـــاد الوطـــني

Accredited on	2019/09/02	تاريخ منح الإعتماد
Expires on	2022/09/01	تاريخ الإنتـهاء

Accreditation in accordance to the ISO/IEC 17025:2017 Standard "General requirements for the competence of testing and calibration laboratories" and the relevant ENAS and ILAC requirements.

This certificate is invalid without the attached scope of accreditation, which subjected to annual surveillances as per ENAS procedure. Certificate can be updated or re-issued until the expiry date defined above. The validity of the certificate is subjected to continuous compliance with the requirements of the accreditation system. The lab is responsible for the results of its calibrations.

Initial Accreditation Date: 08/06/2008

ACF 11-21; Rev 3;

1 وفقا لمتطلبات المواصفة الدولية ISO/IEC 17025:2017 "المتطلبات العامة لكفاءة مختبرات الفحص والمعايرة" والمتطلبات ذات العلاقة الخاصة بنظام الإعتماد الوطني الاماراتي ENAS والمنظمة الدولية لاعتماد المختبرات ILAC .

مجال الاعتماد جزء أساسي من هذه الشهادة حيث تخضع مجالات الاعتماد المذكورة في الوثيقة المرفقة لعمليات متابعة لاحقة من قبل نظام الإعتماد الوطني الإماراتي ENAS. وتعتبر هذه الشهادة صالحة وقابلة للتحديث واعادة الاصدار حتى تاريخ الانتهاء المدون اعلاه شريطة استمرار المختبر المذكور أعلاه في تطبيق متطلبات نظام الاعتماد سالفة الذكر. يتحمل المختبر مسؤولية نتائج المعايرة الصادرة عنه.

تاريخ منح الإعتماد لأول مرة: 2008/06/08

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Metromac Automation, NAL 004

Calibration Laboratory (ISO/IEC 17025:2017)

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Issue Date: 02-09-2019 **Expiry Date: 01-09-2022**

Issue No.: 07

Calibration Field/ Quantity/ Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	DC Voltage (Measuring Instruments)	10 µV to 330 mV	0.003 % .U	Direct comparison of generated DC voltage from calibrator using METROMAC standard Calibration procedure. Internal Procedure MQ S03 C51 Equipment Used: Multi-product Calibrator FLUKE 5520A U=Measured Voltage	P
		(0.33 to 3.3) V	0.003 % .U		
		(3.3 to 33) V	0.003 % .U		
		(33 to 330) V	0.003 % .U		
		(330 to 1000) V	0.003 % .U		
	AC Voltage (Measuring Instruments)	(1 to 33) mV 50 Hz to 10 kHz 10 kHz to 100 kHz	0.84 % .U 0.84 % .U	Direct comparison of generated DC voltage from calibrator using METROMAC standard Calibration procedure. Internal Procedure MQ S03 C51 Equipment Used: Multi-product Calibrator FLUKE 5520A U=Measured Voltage	P
		(33 to 330) mV 50 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % .U 0.1 % .U		
		(0.33 to 3.3) V 50 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % .U 0.08 % .U		
		(3.3 to 33) V 50 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % .U 0.08 % .U		
		(33 to 330) V 50 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % .U 0.08 % .U		
		(330 to 1020) V 50 Hz to 100 kHz	0.04 % .U		

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Electrical	DC Current (Measuring Instruments)	(0 to 0.33) mA	0.03 % .I	Direct comparison of generated DC current From calibrator using METROMAC standard calibration procedure. Internal Procedure MQ S03 C51 Equipment Used: Multi-product Calibrator FLUKE 5520A I=Measured Current	P
		(0.33 to 3.3) mA	0.03 % .I		
		(3.3 to 33) mA	0.03 % .I		
		(33 to 330) mA	0.03 % .I		
		(0.33 to 3.3) A	0.05 % .I		
		(3.3 to 20) A	0.08 % .I		
	DC Current Clamp (Measuring Instruments)	(15 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 to 1000) A	0.51 % .I + 0.5 A		
	AC Current (Measuring Instruments)	20 to 330 µA (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 to 3.3 mA (45 Hz to 10 kHz)	0.2 % .I		
		3.3 to 33 mA (45 Hz to 10 kHz)	0.06 % .I		
		0.033 to 3 A (45 Hz to 1 kHz)	0.08 % .I		
		3 to 11 A (45 Hz to 1 kHz)	0.1 % .I		
		11 to 20 A (45 Hz to 1 kHz)	0.2 %.I		

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Electrical	AC Current Clamp (Measuring Instruments)	15 A to 150 A	0.57 % .I + 0.25 A	Comparison to Calibrator 5520 passing current through 50 turn current coil Internal Procedure MQ S03 C51 I=Measured Current	P
		150 A to 1000 A (45 Hz to 65 Hz)	0.58 % .I + 0.93 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 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		
	Resistance	1 MΩ to 10 MΩ	0.2 %.R	Electrical Tester Calibrator TE 5030, Insulation Tester Box: Megger CB101 Internal Procedure MQ S03 C128 R=Measured Resistance	P
		10 MΩ to 100 MΩ	0.2 %.R		
		100 MΩ to 1 GΩ	0.3 %.R		
		1 GΩ to 2 GΩ	0.3 %.R		
		Fixed Value of 10 G	0.5 %. R		

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Calibration Field/ Quantity/ Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Dimensional	Outside Micrometers (Readability 0.001 mm)	(1 to 25) mm	2 µm	Comparison Method Calibration Methods: BS 6468-2008, BS 1734-1951, BS 3611:2010, BS 959:2008, NABL 141 Internal Procedure MQS 03 C 53 1- Gauge Blocks Set Tesa, Sl. No.: 2018.320 2 - Slip Gauge 125 mm Tesa, Sl. No.: 86717 3 - Slip Gauge 200 mm Tesa, Sl. No.: 87350 4- Slip Gauge 300 mm Tesa, Sl. No.: 87143 5- Set of Slip Gauges Aditya, Sl. No.:2898 6- 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 µm		
		(50 to 75) mm	2 µm		
		(75 to 100) mm	2 µm		
	Outside Micrometers (Readability 0.01 mm)	(1 to 150) mm	20 µm		
		(150 to 300) mm	20 µm		
	Dial Gauges	(0 to 10) mm	3 µm	Dial Calibration Tester,Make:KIPL, Sl No: 789/17 Internal Procedure MQ S03 C126	P
		(10 to 25) mm	12 µm		

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Dimensional	Vernier Calipers (Readability 0.01 mm)	(0 to 300) mm	30 µm	Comparison Method: Internal Procedure MQS 03 C 08 VDI/VDE/DGQ 2618 Blatt 9.1 / Part 9. 1-Special Gauge Blocks, Koba, 41.3 mm , 131.4 mm ,243.5 mm,281.2mm 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
Volume	Micropipettes	(10 to 100) µl	0.09 µl	By using Automatic Pipette station having ambient conditions monitor measuring module (Microbalance 1 µg for all ranges) Calibration Methods: ISO 8655 & Internal Procedure MQ S03 C82	P
		(100 to 1000) µl	0.39 µl		
		(1000 to 10000) µl	3.8 µl		

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Mass	Digital Weighing Balance	(0 to 21) g, Readability 0.001 mg	0.09 mg	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 Set	S
		(0 to 220) g, Readability 0.01 mg	0.24 mg		
		(0 to 1000) g, Readability 0.001 g	1.6 mg		
		(0 to 6200) g, Readability 0.01 g	0.03 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 E2 Class weights set & F1 Class weight	S
		(0 to 30) kg, Readability 0.5 g	0.64 g		
		(0 to 300) kg, Readability 10 g	18 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 E2 class weights set, F1 class weights & M1 class weights	S
		(0 to 500) kg, Readability 50 g	71 g		

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Pressure	Hydraulic Pressure Gauges- Low Ranges	(1 to 60) bar	0.03 bar	Calibration Methods: DKD-R6-1 - 2003, NABL-122-12, UKAS M3003, 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 Digital Pressure Calibrator, Druck DPI 610,	P
	Hydraulic Pressure Gauges- High Range	(60 to 700) bar	0.18 bar		
		(700 to 1200) bar	0.4 bar		
	Hydraulic Pressure Gauges	(0 to 200) bar	0.08 bar		
		(200 to 400) bar	0.16 bar		
	Pneumatic Pressure Gauges	(0 to 20) bar	0.012 bar	Calibration Methods: BS EN 837-1:1998, EA and DKD R 6-1 2003 Internal procedure MQS03 C 52 Direct comparison with pneumatic pressure calibrator. Equipment used-Pressure calibrator DRUCK DPI601 S/N 9469/93-3 & PACE 1003	P
	Vacuum Gauges	(-0.8 to 0) bar	0.021 bar	Calibration Methods: UKAS M 3003, BS ISO 3567:2011 & DKD-R 6-1 Internal Procedure MQS03 C7 Direct comparison using vacuum source and a standard pressure indicator. Equipment used-Precision Pressure Indicator DRUCK DPI 705 S/N 70532796 & PACE 1003	P

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Pressure	Pneumatic Pressure Gauges	(0 to 20) bar	0.05 bar	Digital Pressure Calibrator, Druck, DPI 601 & DPI 705 Calibration Methods: DKD-R 6-1 - 2014 Internal Procedure MQ S03 C52	S
	Hydraulic Pressure Gauges	(0 to 200) bar	0.08 bar	Digital Pressure Calibrator, Sika, Sl No: 1901217 & MM-SK-01. Digital Pressure Calibrator, Druck DPI 610 Calibration Methods: DKD-R 6-1 - 2014 Internal Procedure MQ S03 C50	S
		(200 to 400) bar	0.16 bar		
		(400 to 700) bar	0.28 bar		
	High Pressure Hydraulic Gauges	(0 to 1000) bar	0.4 bar	Digital Pressure Gauge with Pump, Additel, Calibration Methods: DKD-R6-1 - 2014 Internal Procedure MQ S03 C129	P
		(1000 to 2000) bar	0.8 bar		
		(2000 to 3000) bar	1.2 bar		
		(3000 to 4000) bar	1.6 bar		

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Temperature	Digital Thermometer (RTD with Indicator)	(-40 to 100) °C	0.2 °C	Comparison Method by using: 1- Temperature Calibrator, Ametek, Sl. No.: 541928-00743 2- Calibration Bath, Sl. No.: B33455 3- SPRT Probe, Pt 100, Sl. No.: 860771 4- Digital Multimeter, FLUKE, Sl. No.: 9422016 5- PRT Probe with Indicator, Pt 100, Sl. No.: 10226 Calibration Method: Internal Procedure MQ S03 C68 Calibration Method: Internal Procedure MQ S03 C88	P
		(100 to 250) °C	0.3 °C		
		(250 to 420) °C	0.4 °C		
	Digital Thermometer (Thermo-couple Sensors with Indicator	(-40 to 100) °C	0.4 °C		
		(100 to 250) °C	0.6 °C		
		(250 to 420) °C	0.8 °C		
	Glass Thermometer	(-40 to 150) °C	0.2 °C		
	Oven	(30 to 250) °C	1 °C	Comparison Method by using 1- Digital temperature Data logger Yokogawa 2- Flexible PRT Probes pt 100 3- Multifunction Calibrator Druck, TRX Calibration Method: Internal Procedure MQ S03 C8	S
	Freezer / Chiller	(-30 to 50) °C	0.8 °C		
	Incubator	(-30 to 100) °C	0.8 °C		
	Water Bath	(30 to 100) °C	0.8 °C	Comparison Method by using 1- Digital Temperature Data logger Yokogawa 2- Flexible PRT Probes PT 100 3- Multifunction Calibrator Druck, TRX Calibration Method: Internal Procedure MQ S03 C100	S

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Torque Devices	Torque Wrenches	(1.2 to 20) Nm	1.5 % rdg	Calibration Method: ISO 6789:2017 Torque Calibrator: Norbar, 60 Nm, Sl No: 90340 & Norbar, 1500 Nm, Sl No: 51944 Internal Procedure MQ S03 C127	P
		(20 to 60) Nm	1 % rdg		
		(60 to 100) Nm	1 % rdg		
		(100 to 500) Nm	0.8 % rdg		
		(500 to 1500) Nm	0.5 % rdg		
END					

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