

# Accreditation Scope

**CALTROLS Middle East LLC, NAL 151**  
**Calibration Laboratory, (ISO/IEC 17025:2017)**

**M36 - Mussafah, Abu Dhabi, UAE**

**Issue Date: 24-01-2021**

**Expiry Date: 23-01-2024**

**Issue No: 01**

Calibration Field/ Quantity/ Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical (Source)	DC Voltage	(1 to 100) mV	(5 to 6) $\mu$ V	CME/CP/E/01:2019	P
		(> 0.1 to 10) V	(0.006 to 2) mV		
		(> 10 to 1000) V	(2 to 31) mV		
	AC Voltage @ 10 Hz	(10 to 100) mV	(16 to 68) $\mu$ V		
		(> 0.1 to 10) V	(0.068 to 6) mV		
		(> 10 to 30) V	(6 to 28) mV		
	AC Voltage @ 50 Hz	(10 to 100) mV	(18 to 73) $\mu$ V		
		(> 0.1 to 100) V	(0.073 to 6) mV		
		(> 100 to 1000) V	(6 to 420) mV		
	DC Current	(0.1 to 330) mA	(0.08 to 300) $\mu$ A		
		(> 0.33 to 1) A	(0.3 to 0.7) mA		
		(> 1 to 3) A	(0.7 to 2.3) mA		
		(> 3 to 20) A	(2.3 to 108) mA		
		(> 20 to 100) A	(108 to 156) mA		
		(> 100 to 1000) A	(156 to 606) mA		

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Electrical (Source)	AC Current @ 10 Hz	(1 to 100) mA	(3.4 to 264) $\mu$ A	CME/CP/E/01:2019	P
		(> 0.1 to 2) A	(0.264 to 4.3) mA		
	AC Current @ 50 Hz	(1 to 100) mA	(0.024 to 1.22) mA		
		(> 0.1 to 3) A	(1.22 to 8.0) mA		
		(> 3 to 10) A	(8.0 to 16) mA		
		(> 10 to 20) A	(16 to 124) mA		
		(> 20 to 1000) A	(124 to 505) mA		
	Resistance	(1 to 100) $\Omega$	(1.5 to 6) m $\Omega$		
		(> 0.1 to 1) k $\Omega$	(6 to 40) m $\Omega$		
		(> 1 to 100) k $\Omega$	(0.04 to 5) $\Omega$		
		(> 0.1 to 1) M $\Omega$	(5 to 60) $\Omega$		
		(> 1 to 10) M $\Omega$	(0.06 to 2.1) k $\Omega$		
		(> 10 to 100) M $\Omega$	(2.1 to 69) k $\Omega$		
	Capacitance	(0.5 to 1) nF	(18 to 19) pF		
		(> 1 to 100) nF	(19 to 420) pF		
		(> 0.1 to 30) $\mu$ F	(0.42 to 180) nF		
		(> 30 to 1000) $\mu$ F	(0.18 to 6.6) $\mu$ F		
		(> 1 to 100) mF	(0.007 to 4.1) mF		
	Frequency	(0.1 to 1) kHz	(0.7 to 5.4) mHz		
		(> 1 to 10) kHz	(5.4 to 50) mHz		
(> 10 to 100) kHz		(50 to 500) mHz			
(> 0.1 to 1) MHz		(0.5 to 3.1) Hz			

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Electrical (Measure)	DC Voltage	(0.1 to 1) V	(9.5 to 49) $\mu$ V	CME/CP/E/02:2019	P
		(> 1 to 10) V	(0.049 to 0.47) mV		
		(> 10 to 100) V	(0.47 to 6.1) mV		
		(> 0.1 to 1) kV	(6.1 to 61) mV		
	AC Voltage @ 10 Hz	(0.1 to 1) V	(0.15 to 1.4) mV		
		(> 1 to 10) V	(1.4 to 11) mV		
		(> 10 to 100) V	(11 to 110) mV		
		(> 100 to 1000) V	(0.11 to 1.07) V		
	AC Voltage @ 50 Hz	(0.1 to 1) V	(0.108 to 1.1) mV		
		(> 1 to 10) V	(1.1 to 11.1) mV		
		(> 10 to 100) V	(11.1 to 112) mV		
		(> 100 to 1000) V	(0.112 to 1.05) V		
	DC Current	(0.1 to 400) mA	(0.08 to 0.3) mA		
		(> 0.4 to 1) A	(0.3 to 2.2) mA		
		(> 1 to 10) A	(2.2 to 9.4) mA		
	AC Current @ 10 Hz	(0.1 to 100) mA	(1.5 to 1400) $\mu$ A		
		(> 100 to 329) mA	(1.4 to 3.3) mA		
		(> 0.329 to 1) A	(3.3 to 13) mA		
		(> 1 to 10) A	(13 A to 121) mA		
	AC Current @ 50 Hz	(0.1 to 100) mA	(0.51 to 1360) $\mu$ A		
(> 100 to 329) mA		(1.36 to 0.5) mA			
(> 0.329 to 1) A		(0.5 to 2) mA			
(> 1 to 10) A		(2 A to 29) mA			

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Electrical (Measure)	Resistance	(0.01 to 100) k $\Omega$	(0.0013 to 13) $\Omega$	CME/CP/E/02:2019	P
		(> 0.1 to 1) M $\Omega$	(13 to 133) $\Omega$		
		(> 1 to 10) M $\Omega$	(0.133 to 1.22) k $\Omega$		
		(> 10 to 100) M $\Omega$	(1.22 to 55) k $\Omega$		
	Capacitance	(1 to 100) nF	(0.067 to 2.3) nF		
		(> 0.1 to 1) $\mu$ F	(2.3 to 18) nF		
		(> 1 to 100) $\mu$ F	(0.018 to 1.77) $\mu$ F		
		(> 0.1 to 1) mF	(1.77 to 17.7) $\mu$ F		
		(> 1 to 100) mF	(0.018 to 6.8) mF		
	Frequency	(0.1 to 1) kHz	(0.96 to 130) Hz		
		(> 1 to 10) kHz	(130 to 2) Hz		
		(> 10 to 100) kHz	(2 to 10) Hz		
		(> 0.1 to 1) MHz	(10 to 129) Hz		

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Electrical - Temperature Simulation (Source, Measure)	RTD	(-200 to 800) °C	(0.10 to 0.16) °C	CME/CP/E/03:2019	P
	K-Type	(-200 to 1370) °C	(0.39 to 0.46) °C		
	J-Type	(-210 to 1200) °C	(0.31 to 0.27) °C		
	R-Type	(-5 to 1760) °C	(0.70 to 0.60) °C		
	S-Type	(0 to 1760) °C	(0.70 to 0.54) °C		
	T - Type	(-260 to 400) °C	(0.73 to 0.17) °C		
	N-Type	(-200 to 1300) °C	(0.23 to 0.32) °C		
Temperature	<ul style="list-style-type: none"> <li>• Thermometers</li> <li>• Thermocouple</li> <li>• Temperature Sensors and recorders</li> <li>• Dry block calibrator</li> <li>• Liquid Bath (1 point)</li> </ul>	(-20 to 100) °C	0.45 °C	For Thermometers: CME/CP/T/02 For thermocouple: CME/CP/T/03 For temperature sensors: CME/CP/T/05 For Dry block calibrator CME/CP/T/01:2019 For liquid bath: CME/CP/T/08:2019 For temperature chart records: CME/CP/T/07:2019	P/S
		(> 100 to 400) °C	1.3 °C		
		(> 400 to 600) °C	1.8 °C		
	Liquid in Glass Thermometer	50 to 200) °C	1.3 °C		CME/CP/T/04:2019

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Vacuum Pressure	Pressure Gauge Pressure Transducer, Pressure Transmitter, Pressure Chart Recorder	(-0.90 to 0) Bar	1 mBar	CME/CP/P/01 & 02	P/S
Pneumatic Pressure		(0 to 20) Bar	5 mBar		
Hydraulic Pressure		(0 to 200) Bar	20 mBar		
		(> 200 to 700) Bar	60 mBar		
		(>700 to 1000) Bar	100 mBar		
		(>1000 to 1400) Bar	180 mBar		
<b>END</b>					