

SIGMA CALIBRATION L.L.C  
New Jersey / USA  
Contact: Metehan Yilmaz  
Phone: +1 973 760 05 10

NATIONAL  
ACCREDITATION  
CENTER

ACCREDITATION  
Certificate

TO BE ACTIVE AS CALIBRATION LABORATORY

As a result of the assessment conducted by the NAC National Accreditation Center LLC, this laboratory is accredited in accordance with the ISO/IEC 17025:2017 standard, which specifies the general requirements for the competence of testing and calibration laboratories, as detailed in the annexes.

Accreditation Number : NAC-017-CL  
Accreditation Date : 04/04/2025

This certificate is valid until 04/04/2026, provided that the above-mentioned name and address continue to comply with the relevant standards, as well as international and regional regulations, in addition to the organization's documented compliance with ISO/IEC 17025:2017 General Requirements for the competence of testing and calibration laboratories.



This certificate is given by NAC. The certificate becomes invalid in case of suspension and cancellation of accreditation. For current accreditation information, visit [www.nac-us.org](http://www.nac-us.org) or communicate with NAC on [info@nac-us.org](mailto:info@nac-us.org).



*Sayuos*  
PRESIDENT

# SIGMA CALIBRATION L.L.C

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New Jersey / USA

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
Accreditation Standard		ISO/IEC 17025:2017		
Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Mass Standard F1 Class Mass	1 mg	-	0,02 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	2 mg	-	0,02 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	5 mg	-	0,02 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	10 mg	-	0,025 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	20 mg	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory



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Mass Standard F1 Class Mass	50 mg	-	0.04 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	100 mg	-	0.05mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	200mg	-	0.06 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	500 mg	-	0.08 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	1 g	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory



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Mass Standard Class 2,3,4,5,6,7	1 g	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	2 g	-	0,04 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	2 g	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 documents. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	3 g	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	5 g	-	0,05mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory



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Mass Standard Class 2,3,4,5,6,7	5 g	-	0,03 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	10 g	-	0,06 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	10 g	-	0,05mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class	20 g	-	0,08 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Class Mass Standard Class 2,3,4,5,6,7	20 g	-	0,05mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory



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Mass Standard Class 2,3,4,5,6,7	30 g	-	0,05mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	50 g	-	0,10 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	50 g	-	0,08 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	100 g	-	0,16 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	100 g	-	0,20 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory



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Mass Standard F1 Class Mass	200 g	-	0.30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard Class 2,3,4,5,6,7	200 g	-	0.30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard Class 1,2,3,4,5,6,7	300 g	-	0.35 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory
Mass Standard F1 Class Mass	500 g	-	0,80 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is done in the laboratory
Mass Standard Class 1,2,3,4,5,6,7	500 g	-	0.5mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory



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Mass Standard F1 Class Mass	1 kg	-	1.6 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is done in the laboratory
Mass Standard Class 0,1,2,3,4,5,6,7	1 kg	-	0.5mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory
Mass Standard F1 Class Mass	2 kg	-	3 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is done in the laboratory.
Mass Standard Class 0,1,2,3,4,5,6,7	2 kg	-	1 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory.
Mass Standard Class 0,1,2,3,4,5,6,7	3 kg	-	1.5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory.



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Mass Standard F1 Class Mass	5 kg	-	8 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is done in the laboratory
Mass Standard Class 0,1,2,3,4,5,6,7	5 kg	-	2 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory
Mass Standard F1 Class Mass	10 kg	-	16 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is done in the laboratory.
Mass Standard Class 0,1,2,3,4,5,6,7	10 kg	-	4 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is done in the laboratory.
Mass Standard Class 1,2,3,4,5,6,7	20 kg	-	25 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory It is done



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Mass Standard Class 1,2,3,4,5,6,7	25 kg	-	30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory It is done
Mass Standard Class 1,2,3,4,5,6,7	30 kg	-	35 mg	Determination of conventional mass value by calibration procedure prepared in accordance with ASTM E 617 document. Calibration is performed in the laboratory It is done
Mass Standard F2 Class Mass	1 g	-	0,10 mg	Determination of conventional mass value with calibration procedure prepared in accordance with OIML R-111 document Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	2 g	-	0,12 mg	Determination of conventional mass value with calibration procedure prepared in accordance with OIML R-111 document Calibration is performed in the laboratory.



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Mass Standard F2 Class Mass	5 g	-	0,16 mg	Determination of conventional mass value with calibration procedure prepared in accordance with OIML R-111 document Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	10 g	-	0,20 mg	Determination of conventional mass value with calibration procedure prepared in accordance with OIML R-111 document Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	20 g	-	0,25 mg	Calibration is performed in the laboratory with the calibration procedure prepared in accordance with the OIML R-111 document (Determination of conventional mass value).
Mass Standard F2 Class Mass	50g	-	0,30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	100g	-	0,50 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard F2 Class Mass	200g	-	1 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	500g	-	2.5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	1 kg	-	5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	5 kg	-	25 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard F2 Class Mass	10 kg	-	50 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Mass Standard M1 Class Mass	1 g	-	0,30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	2 g	-	0,40 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	5 g	-	0,50 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	10 g	-	0,60 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	20 g	-	0,80 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M1 Class Mass	50 g	-	1 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	100 g	-	1.6 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	200 g	-	3 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	500 g	-	8 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	1 kg	-	16 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M1 Class Mass	2 kg	-	30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	5 kg	-	80 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M1 Class Mass	20 kg	-	0,30 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	1 g	-	1 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	2 g	-	1.2 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M2 Class Mass	5 g	-	1.6 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	10 g	-	2 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	20 g	-	2.5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	50 g	-	3 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	100 g	-	5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M2 Class Mass	200 g	-	10 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	500 g	-	25 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	1 kg	-	50 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	2 kg	-	0.10 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	5 kg	-	0.25 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M2 Class Mass	10 kg	-	0.50g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M2 Class Mass	20 kg	-	1.0 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	1 g	-	3 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	2 g	-	4 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	5 g	-	5 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M3 Class Mass	10 g	-	6 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. It is done in the laboratory
Mass Standard M3 Class Mass	20 g	-	8 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	50 g	-	10 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	100 g	-	16 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	200 g	-	30 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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# SIGMA CALIBRATION L.L.C

SIGMA CALIBRATION L.L.C

New Jersey / USA

Contact: Metehan Yilmaz

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
Accreditation Standard		ISO/IEC 17025:2017		
Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Mass Standard M3 Class Mass	500 g	-	80 mg	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory
Mass Standard M3 Class Mass	1 kg	-	0,16 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	2 kg	-	0,30 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	5 kg	-	0,80g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard M3 Class Mass	10 kg	-	1,6 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.



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Mass Standard M3 Class Mass	20 kg	-	3 g	Determination of conventional mass value by calibration procedure prepared in accordance with OIML R-111 document. Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	1 g < m ≤ 5 g	-	0,30 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	5 g < m ≤ 50 g	-	0,50 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	50 g < m ≤ 100 g	-	0,80 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.



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Mass Standard Non-Standard Mass	100 g < m ≤ 300g	-	1 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	300 g < m ≤ 500g	-	3 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	500g < m ≤ 1 kg	-	5 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration in the laboratory is done.
Mass Standard Non-Standard Mass	1 kg < m ≤ 6 kg	-	30 mg	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.



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Mass Standard Non-Standard Mass	6 kg < m ≤ 20 kg	-	0,30 g	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
Mass Standard Non-Standard Mass	20 kg < m ≤ 30 kg	-	0.50g	M : Measured Mass Value Calibration Instruction prepared according to OIML R 111 (Determination of conventional mass value.) Calibration is performed in the laboratory.
DC Voltage DC Voltage Sources DC Voltage Source Calibrator: DC Voltage	1 mV ≤ U < 100 mV	-	$5,2 \cdot 10^{-5} \cdot U + 4,3 \mu V$	U: VoltageDirect measurement with DMM Calibration is done in the laboratory.
DC Voltage DC Voltage Sources DC Voltage Source Calibrator: DC Voltage	0,1 V ≤ U < 1 V	-	$4,1 \cdot 10^{-5} \cdot U + 14 \mu V$	U: VoltageDirect measurement with DMM Calibration is done in the laboratory.



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DC Voltage DC Voltage Sources DC Voltage Source Calibrator: DC Voltage	1 V $\leq$ U $<$ 10 V	-	$3.5 \cdot 10^{-5} \cdot U + 0.12$ mV	U: VoltageDirect measurement with DMM Calibration is done in the laboratory.
DC Voltage DC Voltage Sources DC Voltage Source Calibrator: DC Voltage	10 V $\leq$ U $<$ 100V	-	$4.2 \cdot 10^{-5} \cdot U + 0.3$ mV	U: VoltageDirect measurement with DMM Calibration is done in the laboratory.
DC Voltage DC Voltage Sources DC Voltage Source Calibrator: DC Voltage	100 V $\leq$ U $<$ 1000 V	-	$4.1 \cdot 10^{-5} \cdot U + 12$ mV	U: VoltageDirect measurement with DMM Calibration is done in the laboratory.
DC Voltage DC Voltage Sources HV Source	0.4 kV $\leq$ U $\leq$ 40kV	-	0.01 kV	U: Voltage Using YG Probe and High voltage welding, Calibration is performed at the site and in the laboratory
DC Voltage Sources DC Voltage Source Calibrator: DC Voltage Multimeter: DC Voltage DC Voltmeter	1mV $\leq$ U $<$ 10mV	-	$5,4 \cdot 10^{-4} \cdot U + 8,2$ $\mu$ V	U: Voltage With Fluke Multifunctional Calibrator Calibration is done in the laboratory.



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<b>Certification Sectors</b>				
<b>CALIBRATION AREA</b>	<b>RANGE &amp; RESOLUTION</b>	<b>MEASUREMENT REQUIREMENTS</b>	<b>CALIBRATION &amp; MEASUREMENT CAPABILITY (CMC) (±)</b>	<b>TECHNIQUE. REFERENCE STANDARD. EQUIPMENT</b>

DC Voltage DC Voltage Meters Multimeter: DC Voltage DC Voltmeter	10mV $\leq$ U $<$ 100 mV	-	$0,9 \cdot 10^{-4} \cdot U + 8,4 \mu V$	U: Voltage With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
DC Voltage DC Voltage Meters Multimeter: DC Voltage DC Voltmeter	0.1 V $\leq$ U $<$ 1 V	-	$5,2 \cdot 10^{-5} \cdot U + 12 \mu V$	U: Voltage Calibration with Fluke Multifunctional Calibrator is done in the laboratory.
DC Voltage DC Voltage Meters Multimeter: DC Voltage DC Voltmeter	1 V $\leq$ U $<$ 10 V	-	$5,6 \cdot 10^{-5} \cdot U + 54 \mu V$	U: Voltage With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
DC Voltage DC Voltage Meters Multimeter: DC Voltage DC Voltmeter	10V $\leq$ U $<$ 100V	-	$3,7 \cdot 10^{-5} \cdot U + 0,9 \text{ mV}$	U: Voltage With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
DC Voltage DC Voltage Meters Multimeter: DC Voltage DC Voltmeter	100 V $\leq$ U $\leq$ 1000 V	-	$0,8 \cdot 10^{-4} \cdot U + 5,4 \text{ mV}$	U: Voltage With Fluke Multifunctional Calibrator Calibration is done in the laboratory.



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DC Voltage DC Voltage Meters (HV Meter)	0.4 kV ≤ U ≤ 40 kV	-	0.01 kV	U: Voltage Calibration is done on site and in the laboratory using HV Probe and High voltage source
DC Voltage Meters Multimeter: DC Voltage DC Voltmeter AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	2 mV ≤ U ≤ 100 mV	10Hz ≤ f ≤ 20kHz	$1,1 \cdot 10^{-3} \cdot U + 104 \mu V$	With Calibrator Calibration is done in the laboratory. Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	0.1 V < U ≤ 1 V	10Hz ≤ f ≤ 20kHz	$6,7 \cdot 10^{-4} \cdot U + 0,38 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	1 V < U ≤ 10 V	10Hz ≤ f ≤ 20kHz	$3,7 \cdot 10^{-4} \cdot U + 12 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	10 V < U ≤ 100 V	10Hz ≤ f ≤ 20kHz	$3,7 \cdot 10^{-4} \cdot U + 0,12 \text{ V}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.



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AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	100 V < U ≤ 750 V	10Hz ≤ f ≤ 20kHz	$5.2 \cdot 10^{-4} \cdot U + 0.51 \text{ V}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	10mV < U ≤ 100 mV	20 kHz ≤ f ≤ 100 kHz	$6.4 \cdot 10^{-3} \cdot U + 0.16 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	0.1 V < U ≤ 1 V	20 kHz ≤ f ≤ 100 kHz	$6.6 \cdot 10^{-3} \cdot U + 1,4 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	1 V < U ≤ 10 V	20 kHz ≤ f ≤ 100 kHz	$6.6 \cdot 10^{-3} \cdot U + 14 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	10 V < U ≤ 100 V	20 kHz ≤ f ≤ 100 kHz	$3.3 \cdot 10^{-3} \cdot U + 0.82 \text{ mV}$	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.



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CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
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AC Voltage AC Voltage Sources AC Voltage Source Multimeter: AC Voltage, AC Voltmeter	100 V < U ≤ 750 V	20 kHz ≤ f ≤ 100 kHz	$6.7 \cdot 10^{-3} \cdot U + 0.96$ V	U: Voltage F: Frequency Direct measurement with DMM Calibration is done in the laboratory.
AC Voltage AC Voltage Sources (HV Source)	0.4kV≤U≤40kV	40 Hz ≤ f ≤ 100 kHz	0.01 kV	U: Voltage Calibration is done on site and in the laboratory using HV Probe and High voltage source
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	2 mV ≤ U ≤ 10 mV	20 Hz ≤ f ≤ 400 Hz	$2.3 \cdot 10^{-3} \cdot U + 30 \mu\text{V}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	2 mV ≤ U ≤ 10 mV	400Hz ≤ f ≤ 10kHz	$2.3 \cdot 10^{-3} \cdot U + 36 \mu\text{V}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	10 mV ≤ U ≤ 100 mV	20 Hz ≤ f ≤ 400 Hz	$1,2 \cdot 10^{-3} \cdot U + 61 \mu\text{V}$	U: Voltage F: Frequency Fluke 5100B Multifunctional Calibrator With Calibration is done in the laboratory.



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AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	$10 \text{ mV} \leq U \leq 100 \text{ mV}$	$400\text{Hz} \leq f \leq 10\text{kHz}$	$1.7 \cdot 10^{-3} \cdot U + 85.1 \text{ } \mu\text{V}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	$0.1 \text{ V} \leq U \leq 1 \text{ V}$	$20 \text{ Hz} \leq f \leq 400 \text{ Hz}$	$5.8 \cdot 10^{-4} \cdot U + 0.063 \text{ mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	$0.1 \text{ V} \leq U \leq 1 \text{ V}$	$400\text{Hz} \leq f \leq 10\text{kHz}$	$8 \cdot 10^{-4} \cdot U + 0.12\text{mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	$1 \text{ V} \leq U \leq 10 \text{ V}$	$20 \text{ Hz} \leq f \leq 400 \text{ Hz}$	$5.8 \cdot 10^{-4} \cdot U + 0.63\text{mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	$1 \text{ V} \leq U \leq 10 \text{ V}$	$400\text{Hz} \leq f \leq 10\text{kHz}$	$8.1 \cdot 10^{-4} \cdot U + 3.7\text{mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.



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AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	10 V ≤ U ≤ 100 V	20 Hz ≤ f ≤ 400 Hz	$5.6 \cdot 10^{-4} \cdot U + 2.1 \text{mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	10 V ≤ U ≤ 100 V	400Hz ≤ f ≤ 10kHz	$8.0 \cdot 10^{-4} \cdot U + 37 \text{mV}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	100 V ≤ U ≤ 1000 V	20 Hz ≤ f ≤ 400 Hz	$7.7 \cdot 10^{-4} \cdot U + 0.044 \text{V}$	U: Voltage F: Frequency With Fluke Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters Multimeter: AC Voltage AC Voltmeter	100 V ≤ U ≤ 1000 V	400Hz ≤ f ≤ 10kHz	$1.2 \cdot 10^{-3} \cdot U + 0.37 \text{V}$	U: Voltage F: Frequency With Multifunctional Calibrator Calibration is done in the laboratory.
AC Voltage AC Voltage Meters HV Meter	0.4kV ≤ U ≤ 40kV	40 Hz ≤ f ≤ 100 kHz	0.01 kV	U: Voltage Calibration is done on site and in the laboratory using HV Probe and High voltage source



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DC Current DC Current Sources DC Current Source Calibrator: DC Current	$10 \mu\text{A} \leq I \leq 100 \mu\text{A}$	-	$5.5 \cdot 10^{-4} \cdot I + 33 \text{ nA}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$0.1 \text{ mA} \leq I < 1 \text{ mA}$	-	$5.5 \cdot 10^{-4} \cdot I + 0.10 \mu\text{A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$1 \text{ mA} \leq I < 10 \text{ mA}$	-	$5.6 \cdot 10^{-4} \cdot I + 2.6 \mu\text{A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$10 \text{ mA} \leq I < 100 \text{ mA}$	-	$5.5 \cdot 10^{-4} \cdot I + 10 \mu\text{A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.



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DC Current DC Current Sources DC Current Source Calibrator: DC Current	$100 \text{ mA} \leq I < 400 \text{ mA}$	-	$4,5 \cdot 10^{-4} \cdot I + 92 \text{ } \mu\text{A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$0.1 \text{ A} \leq I < 1 \text{ A}$	-	$5,5 \cdot 10^{-4} \cdot I + 0.28 \text{ mA}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$0.3 \text{ A} \leq I < 3 \text{ A}$	-	$6,9 \cdot 10^{-3} \cdot I + 3,3 \text{ mA}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$3 \text{ A} \leq I < 10 \text{ A}$	-	$1,6 \cdot 10^{-3} \cdot I + 3 \text{ mA}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.



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DC Current DC Current Sources DC Current Source Calibrator: DC Current	$10 \text{ A} \leq I < 100 \text{ A}$	-	$2.4 \cdot 10^{-2} \cdot I + 0.6 \text{ A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Sources DC Current Source Calibrator: DC Current	$100 \text{ A} \leq I < 1000 \text{ A}$	-	$2.4 \cdot 10^{-2} \cdot I + 0.6 \text{ A}$	I: Measured Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$1 \mu\text{A} \leq I < 200 \mu\text{A}$	-	$5.5 \cdot 10^{-5} \cdot I + 24 \text{ nA}$	I: Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$0.2 \text{ mA} \leq I < 2 \text{ mA}$	-	$2.9 \cdot 10^{-4} \cdot I + 0.12 \mu\text{A}$	I: Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.



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# SIGMA CALIBRATION L.L.C

SIGMA CALIBRATION L.L.C

New Jersey / USA

Contact: Metehan Yilmaz

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
Accreditation Standard		ISO/IEC 17025:2017		
Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$2 \text{ mA} \leq I < 20 \text{ mA}$	-	$1.7 \cdot 10^{-4} \cdot I + 0.82 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$20 \text{ mA} \leq I < 200 \text{ mA}$	-	$1.7 \cdot 10^{-4} \cdot I + 8.2 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator. Performed in laboratory or at customer's site.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$0.2 \text{ A} \leq I < 2 \text{ A}$	-	$1.7 \cdot 10^{-4} \cdot I + 0.13 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator. Performed in laboratory or at customer's site.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$2 \text{ A} \leq I < 20 \text{ A}$	-	$1.2 \cdot 10^{-3} \cdot I + 3.95 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator. Performed in laboratory or at customer's site.
DC Current DC Current Meters Multimeter: DC Current Clamp Meter	$20 \text{ A} \leq I < 100 \text{ A}$	-	$3.3 \cdot 10^{-3} \cdot I + 20 \text{ mA}$	I:Applied Current Fluke with calibrator and 50 turn coil. Performed in laboratory or at customer's site.



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DC Current DC Current Meters Multimeter: DC Current Clamp Meter	100 A ≤ I < 1000 A	-	$3,3 \cdot 10^{-3} \cdot I + 20 \text{ mA}$	I: Applied CurrentFluke with calibrator and 50 turn coil Calibration is done in the laboratory.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	1 mA ≤ I < 10 mA	50 Hz ≤ f ≤ 5 kHz	$1,1 \cdot 10^{-3} \cdot I + 21 \text{ } \mu\text{A}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	10 mA ≤ I < 100 mA	50 Hz ≤ f ≤ 5 kHz	$7,3 \cdot 10^{-4} \cdot I + 0,14 \text{ mA}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	100 mA ≤ I < 400 mA	50 Hz ≤ f ≤ 5 kHz	$2,3 \cdot 10^{-3} \cdot I + 3,3 \text{ mA}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	0.4 A ≤ I < 1 A	50 Hz ≤ f ≤ 5 kHz	$1,9 \cdot 10^{-4} \cdot I + 7,8 \text{ mA}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.



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AC Current AC Current Sources AC Current Source Calibrator: AC Current	$1 \text{ A} \leq I < 3 \text{ A}$	$50 \text{ Hz} \leq f \leq 5 \text{ kHz}$	$1,4 \cdot 10^{-3} \cdot I + 4 \text{ mA}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	$3 \text{ A} \leq I < 10 \text{ A}$	$50 \text{ Hz} \leq f \leq 5 \text{ kHz}$	$1,5 \cdot 10^{-3} \cdot I + 12 \text{ mA}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	$10 \text{ A} \leq I < 100 \text{ A}$	50 Hz	$2,4 \cdot 10^{-2} \cdot I + 0,6 \text{ A}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Sources AC Current Source Calibrator: AC Current	$100 \text{ A} \leq I < 1000 \text{ A}$	50 Hz	$2,4 \cdot 10^{-2} \cdot I + 0,6 \text{ A}$	I: Current Direct measurement with Fluke8845A DMM Direct measurement with Fluke376 Clamp meter. Performed in laboratory or at customer's site.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$100 \mu\text{A} < I \leq 200 \mu\text{A}$	$20 \text{ Hz} \leq f \leq 200 \text{ Hz}$	$5,5 \cdot 10^{-4} \cdot I + 6 \text{ nA}$	I: Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.



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AC Current AC Current Meters Multimeter: AC Current Clamp Meter	100 $\mu$ A < I ≤ 200 $\mu$ A	200Hz ≤ f ≤ 1kHz	$2 \cdot 10^{-3} \cdot I + 65 \text{ nA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	0.2 mA < I ≤ 2 mA	20 Hz ≤ f ≤ 200 Hz	$2.9 \cdot 10^{-4} \cdot I + 0.12 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	0.2 mA < I ≤ 2 mA	200Hz ≤ f ≤ 1kHz	$1.1 \cdot 10^{-3} \cdot I + 0.7 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	2 mA < I ≤ 20 mA	20 Hz ≤ f ≤ 200 Hz	$8 \cdot 10^{-4} \cdot I + 1,3 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	2 mA < I ≤ 20 mA	200Hz ≤ f ≤ 1kHz	$1.1 \cdot 10^{-3} \cdot I + 7 \mu\text{A}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.



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AC Current AC Current Meters Multimeter: AC Current Clamp Meter	20 mA < I ≤ 200 mA	20 Hz ≤ f ≤ 200 Hz	8· 10 <sup>-4</sup> · I + 13 µA	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	20 mA < I ≤ 200 mA	200Hz ≤ f ≤ 1kHz	1.1· 10 <sup>-3</sup> · I + 70 µA	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	0.2 A < I ≤ 2 A	20 Hz ≤ f ≤ 200 Hz	1,2· 10 <sup>-3</sup> · I + 0.13 mA	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	0.2 A < I ≤ 2 A	200Hz ≤ f ≤ 1kHz	1.6· 10 <sup>-3</sup> · I + 1.7 mA	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	2 A < I ≤ 20 A	20 Hz ≤ f ≤ 200 Hz	1,2· 10 <sup>-3</sup> · I + 0.6 mA	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.



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AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$2 \text{ A} < I \leq 20 \text{ A}$	$200\text{Hz} \leq f \leq 1\text{kHz}$	$2.4 \cdot 10^{-3} \cdot I + 11 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$20 \text{ A} < I \leq 100 \text{ A}$	$20 \text{ Hz} \leq f \leq 200 \text{ Hz}$	$4.4 \cdot 10^{-3} \cdot I + 12 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$20 \text{ A} < I \leq 100 \text{ A}$	$200\text{Hz} \leq f \leq 1\text{kHz}$	$4.3 \cdot 10^{-3} \cdot I + 26 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$100 \text{ A} < I \leq 1000 \text{ A}$	$20 \text{ Hz} \leq f \leq 200 \text{ Hz}$	$4.4 \cdot 10^{-3} \cdot I + 12 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.
AC Current AC Current Meters Multimeter: AC Current Clamp Meter	$100 \text{ A} < I \leq 1000 \text{ A}$	$200\text{Hz} \leq f \leq 1\text{kHz}$	$4.3 \cdot 10^{-3} \cdot I + 26 \text{ mA}$	I:Applied Current Fluke with multi-function calibrator Calibration is done in the laboratory.



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AC Power Meter and Sources DC Power Meter and Sources	0.01mW < P ≤ 20 kW 0.01mW < P ≤ 20 kW	200Hz ≤ f ≤ 1kHz	0.01 mW 0.02 mW	Fluke And Fluke with multi-function calibrator. Performed in laboratory or on-site.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	10 Ω	2 Tips	3,3 . 10 <sup>-3</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	100 Ω	2 Tips	5,8 . 10 <sup>-4</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	1 kΩ	2 Tips	2,4 . 10 <sup>-4</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	10 kΩ	2 Tips	2,4 . 10 <sup>-4</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	100 kΩ	-	2,4 . 10 <sup>-4</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	1 MΩ	0	5,8 . 10 <sup>-4</sup> R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	10 MΩ	0	5,8 . 10 <sup>-4</sup> . R	With Fluke R: Is The Measured Resistance.Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter	100 MΩ	0	5,9 . 10 <sup>-3</sup> . R	With Fluke R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter High Current Resistance Meter Meger Earth Resistance Meter	1 Ω ≤ R ≤ 20 GΩ	2-pointed	6,3 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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<b>CALIBRATION AREA</b>	<b>RANGE &amp; RESOLUTION</b>	<b>MEASUREMENT REQUIREMENTS</b>	<b>CALIBRATION &amp; MEASUREMENT CAPABILITY (CMC) (±)</b>	<b>TECHNIQUE. REFERENCE STANDARD. EQUIPMENT</b>

DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 kΩ	250 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 kΩ	250 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 MΩ	250 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 MΩ	250 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 MΩ	250 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 GΩ	250 V	7 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 GΩ	250 V	7,7 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	20 GΩ	250 V	9 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 kΩ	500 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 kΩ	500 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 MΩ	500 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 MΩ	500 V	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 MΩ	500 V	6,6 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 GΩ	500 V	8,1 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 GΩ	500 V	9,2 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	20 GΩ	500 V	1,3 . 10 <sup>-2</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 kΩ	1kV	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 kΩ	1kV	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 MΩ	1kV	6,5 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 MΩ	1kV	6,6 . 10 <sup>-3</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 MΩ	1kV	$6,9 \cdot 10^{-3} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 GΩ	1kV	$1,1 \cdot 10^{-2} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 GΩ	1kV	$1,4 \cdot 10^{-2} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	20 GΩ	1kV	$2,4 \cdot 10^{-2} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 kΩ	5kV	$6,5 \cdot 10^{-3} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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# SIGMA CALIBRATION L.L.C

SIGMA CALIBRATION L.L.C

New Jersey / USA

Contact: Metehan Yilmaz

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<b>Accreditation Area</b>	<b>General requirements for the competence of testing and calibration laboratories</b>			
<b>Accreditation Standard</b>	<b>ISO/IEC 17025:2017</b>			

<b>Certification Sectors</b>				
<b>CALIBRATION AREA</b>	<b>RANGE &amp; RESOLUTION</b>	<b>MEASUREMENT REQUIREMENTS</b>	<b>CALIBRATION &amp; MEASUREMENT CAPABILITY (CMC) (±)</b>	<b>TECHNIQUE. REFERENCE STANDARD. EQUIPMENT</b>

DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 kΩ	5kV	$6,5 \cdot 10^{-3} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 MΩ	5kV	$6,5 \cdot 10^{-3} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 MΩ	5kV	$8,7 \cdot 10^{-3} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	100 MΩ	5kV	$1,3 \cdot 10^{-2} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	1 GΩ	5kV	$4,7 \cdot 10^{-2} \cdot R$	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.



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DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	10 GΩ	5kV	5,8 . 10 <sup>-2</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Meters Multimeter Resistance Ohmmeter Insulation Tester High Voltage Resistance Meters Insulation Resistance Meters	20 GΩ	5kV	1,2 . 10 <sup>-1</sup> . R	Resistance Boxes R: Measured Resistance Calibration is done in the laboratory.
DC Resistor DC Resistance Source Resistance	1mΩ ≤ R ≤ 20 GΩ	2 x4 tips	6,3 10 <sup>-3</sup> . R	Resistance Meter R: Measured Resistance Calibration is done in the laboratory.
Signal and Pulse Characteristics Osiloscope Vertical Deviation Rma (Gain), Horizontal Deflection (Time), Bandwidth	1 mV ≤ U ≤ 130 V 50 ms ≤ t < 5 s 50 kHz ≤ Δf < 600 MHz	-	U: 1.8 · 10 <sup>-2</sup> t: 5.2 · 10 <sup>-3</sup> · t f. %4.2	U: Applied Rectangle Voltage 1 kHz Calibration is performed on-site and in the laboratory.
Material Testing Machines Tensile and Compression Testing Machine	0,1N ≤ F ≤ 1000 N	In the direction of pulling with hanging mass	%0,16	F: Applied force (N) Calibration procedure prepared in accordance with ISO 7500-1 and DAKKS DKD-R3-3 documents. Calibration is performed on-site and in the laboratory.



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Material Testing Machines Extensometer	0.025 mm ≤ L ≤ 25 mm	Length Measurement System	0.5 + 1,4.10 <sup>-3</sup> . L μm	L : Measured Value [m] According to the calibration procedure prepared in accordance with the TS EN ISO 9513 document Calibration is performed at the Customer's Site.
Material Testing Machines Extensometer	25 mm < L ≤ 600mm	Length Measurement System	2.2 + 3.5.10 <sup>-3</sup> . L μm	L : Measured Value [m] According to the calibration procedure prepared in accordance with the TS EN ISO 9513 document Calibration is performed at the Customer's Site.
Material Testing Machines Tensile and Compression Testing Machine	0,1 kN ≤ F ≤ 100 kN	In the Pulling and Pushing Direction with 0.5 Class Load Cell	0,16%	F: Applied force (N) Calibration procedure prepared in accordance with ISO 7500-1 and ASTM E4 standards. Calibration is performed on-site.
Material Testing Machines Tensile and Compression Testing Machine	40 kN ≤ F ≤ 400 kN	In the direction of pulling with class 0.5 load cell	0,16%	F: Applied force (N) Calibration procedure prepared in accordance with ISO 7500-1 and ASTM E4 standards. Calibration is performed on-site.



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Force Measuring Devices Dynamometer Handheld Force Meter	0,1 N ≤ F ≤ 1000 N	Pull-Pressing with Dead Weight	0.16 %	F : Applied force (N) Calibration procedure prepared in accordance with DKD R 3-3 guidelines. Calibration is performed at customer's site and in the laboratory.
Force Measuring Devices Notch-Impact Tester Izod Impact Tester	0.5 J < Ap < 750 J	-	Force: 0,12 % Pendulum Length: 0,2 mm Angle: 0,05° Time: 0.1 s	Ap : Potential energy (Joule) Calibration procedure prepared in accordance with EN ISO 148-2, EN ISO 13802 and DIN 51222 standards. Measurement uncertainty is calculated for the following parameters: 1- Pulse center 2- Potential energy 3- Indicator deviation. Calibration is performed at the customer site.
Hydrometer (Density measuring device) Density Hydrometer Densimeter	650 kg/m³ ≤ ρ ≤ 2000 kg/m³	Hydrostatic Weighing Method (Cuckow Method)	0.5 kg/m³	NIST SP 250-78 TS 2460 BL.1 and 2 ISO 649 BL.1 and 2 Documentp:Measured Density (kg/m³) . Performed in laboratory.
Hydrometer (Density measurement Device) Bomehydrometer	(0-70) °Be	Hydrostatic Weighing Method (Cuckow Method)	0.6 °Be	NIST SP 250-78 TS 2460 BL.1 and 2 ISO 649 BL.1 and 2 Calibration is performed in the Laboratory in accordance with the documents.



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Hydrometer (Density measuring device) Alcoholimeter (%) Hydrometers,Butirometer)	(0-100) %	Hydrostatic Weighing Method (Cuckow Method)	0,12 %	NIST SP 250-78 TS 2460 BL.1 and 2 ISO 649 BL.1 and 2 Calibration is performed in the Laboratory in accordance with the documents.
Sensitivity, Ultraviolet, Broadband Radiation Level UV Radiometer ,Energy Meter	1 $\mu$ W/cm <sup>2</sup> ≤ Ee ≤ 20000 $\mu$ W/cm <sup>2</sup> 0.1 J/cm <sup>2</sup> ≤ Ee ≤ 2000 J/cm <sup>2</sup>	UV-VIS-NIR Radiometer	1,2% 1,1%	Ee : Radiation Level Calibration procedure prepared according to CIE 220 document. Performed at customer site or in the laboratory.
Reflection, Messy, Spectrum Microscope Magnification Calibration	1 $\mu$ m ≤ L ≤ 10mm	Enlarge at different rates	1,00%	L : Length Calibration procedure prepared in accordance with ASTM E1951-02. Performed at customer site or in the laboratory.
Luminous Sensitivity ,Luxmeter , Luminancemeter	0,1 lux ≤ E ≤ 400000 Lux 0,1 cd/m <sup>2</sup> ≤ L ≤ 300000 cd/m <sup>2</sup>	At 2856 K color temperature	0,9%	Calibration procedure prepared in accordance with ISO/CIE 19476 documents. Performed at customer site or in the laboratory.
Colorimeter	0 ≤ DE ≤ 4	D:8° (8°:d) 0°:45° (45°:0°) (-15°≤D≤110° )	0,2	DE: Color Difference Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.



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Color, Surface, x,y,Y Color Plate	0 ≤ xy ≤ 1	D:8°(8°:d) 0°:45°(45°:0°) (-15°≤D≤110°) Observer Angle: 2°/10°	0,12%	X : Color Coordinate y : Color Coordinate Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.
Color, Surface, x,y,Y Color Plate	0 ≤ Y ≤ 100	D:8°(8°:d) 0°:45°(45°:0°) (-15°≤D≤110°) Observer Angle: 2°/10°	1.2%	Y : Trichromatic Color Value Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.
Color, Surface, L*a*b* Color Plate	-270 ≤ a* ≤ 270	D:8°(8°:d) 0°:45°(45°:0°) (-15°≤D≤110°) Observer Angle: 2°/10°	0,12%	A* : Color Coordinate Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.
Color, Surface, L*a*b* Color Plate	-100 ≤ b* ≤ 100	D:8°(8°:d) 0°:45°(45°:0°) (-15°≤D≤110°) Observer Angle: 2°/10°	0,12%	B* : Color Coordinate Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.
Absorption UV/VIS Spectrophotometer, Elisa reader	0.1 Abs ≤ Aλ ≤ 4.0 Abs	UV/VIS Spectrophotometers Absorption and Transmittance Bandwidth 1 nm, 2 nm and 5 nm	0.5 %	Aλ: Absorption Calibration procedure prepared in accordance with ASTM E 275. Performed at customer site or in the laboratory.



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Absorption UV/VIS Spectrophotometer, Elisa reader	$0 \leq T \leq 100$	Bandwidth 1 nm, 2 nm and 5 nm	0,10 T %	T: Permeability Calibration procedure prepared in accordance with ASTM E 275. Performed at customer site or in the laboratory.
Wavelength UV/VIS Spectrophotometer, Elisa Reader ,Flame Photometer	$190 \text{ nm} \leq \lambda \leq 1100 \text{ nm}$	Band Width: 1 nm ,2 nm And 5 nm	0,20 nm	$\Delta$ : Wavelength Calibration procedure prepared in accordance with ASTM E958 document. Performed at customer site or in the laboratory.
Flame Photometer	$0 \text{ ppm} \leq C \leq 4000 \text{ ppm}$	Na,Ca,K,Li,Ba	0,2 ppm	The procedure prepared in accordance with ISO 9964 standard.
Absorption Spectrum Uniform Permeability Calibration	$0.001 \text{ Abs} \leq A\lambda \leq 4.0 \text{ Abs}$	Spectrophotometric filters 200 nm $\leq \lambda \leq$ 1200 nm Bandwidth 1nm 2 nm and 5 nm	0.5 %	$A\lambda$ : Absorption Calibration procedure prepared in accordance with ASTM E 958. Performed at customer site or in the laboratory.
Transmittance Spectrum Uniform Permeability Calibration	$0.001 \leq T \leq 100$	Spectrophotometric filters and all Transmittance measures devices 200 nm $\leq \lambda \leq$ 1200 nm Bandwidth 1 nm 2 nm and 5 nm	0.1 %	$A\lambda$ : Absorption Calibration procedure prepared In accordance with ASTM E 958 . Performed at customer site or in the laboratory.



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Color, Surface, L*a*b* Color Plate	0 ≤ L* ≤ 100	D:8°(8°:d) 0°:45°(45°:0°) Observer Angle: 2°/10°	0,12%	L* : Color Lightness Calibration procedure prepared in accordance with ISO 11664-1,2,3,4 document. Performed at customer site or in the laboratory.
Gloss Meer	0.1 GU < G ≤ 1000 GU	20° 60° 45° 75° 85°	1.2%	G: Brightness Calibration procedure prepared in accordance with ASTM D 523 document. Performed at customer site or in the laboratory.
Gloss Plate	0.1 GU < G ≤ 1000 GU	20° 45° 60° 75° 85°	1.2%	G: Brightness Calibration procedure prepared in accordance with ASTM D 523 document. Performed at customer site or in the laboratory.
Absorption Diffused Permeability Calibration	0 ≤ OD ≤ 4	Densitometer Devices and Stepped density strip films	0.2%	OD :Optical Intensity Calibration procedure prepared in accordance with ASTM D 1003 document. Performed at customer site or in the laboratory.
Reflection, Messy, Spectrum Spectrum Smooth Reflection Calibration	0% ≤ R ≤ 200% 0 ≤ R ≤ 4000 (mcd·m-2·lx-1)	200 nm - 1200 nm wavelength in the range Haze Meter,DOI,Opacity Meter,Opacity Meter, Retro reflectometer and Plates	0.4 %	R : Reflection Calibration procedure prepared in accordance with ASTM E 179 document. Performed at customer site or in the laboratory.



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Radiation Level, Spectrum Tungsten Lamp Deuterium Lamp Solar Meter Pyranometer	0 W/m <sup>2</sup> ≤ E (λ) ≤ 2000 E W/m <sup>2</sup>	All radiating lamps (Light Cabinet Lamps, LED, Halogen, Zenon, etc.), Radiation Meter, Detectors	0,70%	Ee(λ): Radiation Level Calibration procedure prepared in accordance with CIE 220, ISO 11664 and EN 60601-2- 41 documents. Performed at customer site or in the laboratory.
Color, Spreading General Source Color Coordinates	0.0001 ≤ x,y ≤ 1,0	All radiating lamps (Light Booth Lamps, LED, Halogen, Zenon etc.)	X,y: 0.001	X : Color Coordinate y : Color Coordinate Calibration procedure prepared in accordance with ISO 11664 and EN 60601-2-41. Performed at customer site or in the laboratory.
Associated Color Temperature General Source Color Temperature	2000 K ≤ T ≤ 10000 K	All radiating lamps (Light Booth Lamps, LED, Halogen, Zenon etc.)	5K	T: Associated Color Temperature Calibration procedure prepared in accordance with ISO 11664 and EN 60601-2-41. Performed at customer site or in the laboratory.
Color, Spreading General Source Color Aperture	0 ≤ L ≤ 100	All radiating lamps (Light Cabinet Lamps, Led, Halogen, Zeno n etc.)	L: 0.2%	L* : Color Lightness Calibration procedure prepared in accordance with ISO 11664 document. Performed at customer site or in the laboratory.



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Optical Power Fiberoptic Power Meter	10 dBm ≤ P ≤ 70 dBm	1310 nm and 1550 nm at wavelengths	0,15 dBm	P: Optical Power Calibration procedure prepared in accordance with EN 61315 document. Performed at customer site or in the laboratory.
Permeability Regular Polarimeter,Polaroscope,Goniophotometer	0 < T ≤ 100 0° < α ≤ 360°	Spectrophotometric filters ,Polarized Filters 200 nm ≤ λ ≤ 1200 nm Bandwidth 1 nm, 2 nm and 5 nm	0,20 % 0,01°	T: Permeability α: angle . Performed at customer site or in the laboratory.
Turbidy Meter And NTU Reference Liquid	0,01 < NTU ≤ 1000	Spectrophotometric Measurement	0,12%	NTU:Reference Device. Performed at customer site or in the laboratory.
Spectrum Publication of Sources Features Radiation Level, SpectrumTungsten Lamp Deuterium Lamp	200 nm ≤ λ ≤ 1100 nm	All radiating lamps (LED, Halogen, Zenon, etc.)	0.2 nm	A: Wavelength Calibration procedure prepared in accordance with ISO 11664, CIE69 and EN 60601-2-41 documents. Performed at customer site or in the laboratory.
Torque Measuring Devices Torque Hand Tools	0,01 N·m ≤ M ≤ 820 N·m	Clockwise and vice versa	1.0%	M : Measured Torque (N·m) Calibration procedure prepared in accordance with ISO 6789-2 document. Calibration is done in the laboratory.



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Volumetric Flask	1mL ≤ V < 25 mL	Filling	0,005 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	25 mL	Filling	0,01 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	50 mL	Filling	0,015 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Volumetric Flask	100 mL	Filling	0,025 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	200 mL	Filling	0,04 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	250 mL	Filling	0,05 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Volumetric Flask	500 mL	Filling	0,10 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	1000 mL	Filling	0,15 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volumetric Flask	2000mL	Filling	0,20 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with TS 1491, EN ISO 1042, EN ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Graduated Cylinder	5 mL	Filling	0,02 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	10 mL	Filling	0,03 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	25 mL	Filling	0,11 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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# SIGMA CALIBRATION L.L.C

## SIGMA CALIBRATION L.L.C

New Jersey / USA

Contact: Metehan Yilmaz

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Accreditation Area	General requirements for the competence of testing and calibration laboratories
Accreditation Standard	ISO/IEC 17025:2017

Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT

Graduated Cylinder	50 mL	Filling	0,15 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	100 mL	Filling	0,25 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	250 mL	Filling	0,35 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Graduated Cylinder	500 mL	Filling	0,64 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	1000 mL	Filling	1.1 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Graduated Cylinder	2000mL	Filling	2,1 mL	The values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with EN ISO 4788, ISO 4787 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Dispenser	1 ml	Piston movable hand made or engine Driven.( Digital and Analog Display)	0.8 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Dispenser	2 mL	Piston movable hand made or engine Driven.( Digital and Analog Display)	1,3 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Dispenser	5 mL	Piston movable hand made or engine Driven.( Digital and Analog Display)	6.4 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Dispenser	10 ml	Piston movable manual or motor driven.( Digital and Analog Display)	7.8 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents.



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				Calibration is performed in the laboratory.
Dispenser	25 ml	Piston movable manual or motor driven.( Digital and Analog Display)	17 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Dispenser	50 ml	Piston movable manual or motor driven.( Digital and Analog Display)	24 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Dispenser	100 ml	Piston movable manual or motor driven.( Digital and Analog Display)	70 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents.



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				Calibration is performed in the laboratory.
Dispenser	200 ml	Piston movable manual or motor driven.( Digital and Analog Display)	104 µl	V : Nominal Volume Calibration procedure prepared in accordance with EN ISO 8655-3, EN ISO 8655-5 and Complies with ISO/TR 20461 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	0.5 mL	Emptying	2.0 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	1 mL	Emptying	4.0 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO



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				648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	2 mL	Emptying	5,0 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	5 mL	Emptying	7,0 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	10 mL	Emptying	12 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19



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				documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	20 mL	Emptying	15 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	25 mL	Emptying	18 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	50 mL	Emptying	25 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19



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				documents. Calibration is performed in the laboratory.
Pipette (Single Dimension)	100 mL	Emptying	41 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, TS 1489, ISO 648 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	0.2 mL	Emptying	3,4 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	0.5 mL	Emptying	3,4 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19



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				documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	1 mL	Emptying	4.0 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	2 mL	Emptying	5 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	5 mL	Emptying	11 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19



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				documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	10 mL	Emptying	18 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	20 mL	Emptying	35 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19 documents. Calibration is performed in the laboratory.
Pipette (Adjustable Volume) Single Channel and Multi-channel	25 mL	Emptying	38 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with EN ISO 4787, EN ISO 835 and Euramet/cg-19



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				documents. Calibration is performed in the laboratory.
Pycnometer	5 mL	Gay Lussac	3.0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	10 mL	Gay Lussac	3.0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Pycnometer	25 mL	Gay Lussac	9,0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	50 mL	Gay Lussac	9,0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	100 mL	Gay Lussac	9,0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Pycnometer	25 mL	Hubbard	14 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	50 mL	Hubbard	14 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	10 mL	Reischauer	2.0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Pycnometer	25 mL	Reischauer	9,0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	50 mL	Reischauer	9,0 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Pycnometer	100 mL	Reischauer	10 µL	Values given in the measurement range column are the nominal volume. Calibration procedure prepared in accordance with DIN EN ISO 2811, TS ISO 3507, TS ISO 4787, ISO TR 20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
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Repeating Pipette	1 $\mu$ L $\leq$ V $\leq$ 100 $\mu$ L	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	0.2 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	200 $\mu$ L	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	0.55 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	500 $\mu$ L	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	1,3 $\mu$ L	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Repeating Pipette	1000 µL	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	3.0 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	2000 µL ≤ V ≤ 5000 µL	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	5 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	10000 µL	Single Channel and Multi-Channel Piston movement is done manually or motor tahRikli strawettes (Type A and Type D1 pipettes, with digital and analog display)	10 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-2, ISO TR-20461 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Repeating Pipette	2 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	10 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	5 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	10 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	10 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	12 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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Repeating Pipette	20 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	15 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	25 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	15 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	50 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	20 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.



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# SIGMA CALIBRATION L.L.C

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New Jersey / USA

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
Accreditation Standard		ISO/IEC 17025:2017		
Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Repeating Pipette	100 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	120 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Repeating Pipette	200 mL	Piston moving hand or motor driven (Digital and Analog Indicator)	130 µL	Values given in the measurement range column is the rated volume of the device. Calibration procedure prepared in accordance with ISO 8655-6, ISO 8655-3 and Euramet cg-19 documents. Calibration is performed in the laboratory.
Volume Containers, Sample Containers	1 mL ≤ V ≤ 1000 L	-Volume Control Height Width Depth	0.01 mL	On-site or in the laboratory Volume calibration by comparing with Reference Device
Relative Pressure Analog Manometer, Dijital Manometer	-0.85 bar ≤ p ≤ -0.1 bar	Pneumatic-Negative Pressure	$1,2 \cdot 10^{-4} \cdot p + 1,6 \cdot 10^{-3}$ bar	P: Relative Pressure, (bar) Calibration procedure prepared according to basic and standard methods in accordance with the EURAMET/cg-17 document. (*) Calibration is performed at



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				the customer's site and in the laboratory.
Relative Pressure Analog Manometer, Dijital Manometer	0.02 bar ≤ p ≤ 20 bar	Pneumatic	$4,5 \cdot 10^{-4} \cdot p + 0.002$ bar	P: Relative Pressure, (bar) Calibration procedure prepared according to basic and standard methods in accordance with the EURAMET/cg-17 document. (*) Calibration is performed at the customer's site and in the laboratory.
Relative Pressure Analog Manometer, Dijital Manometer	20 bar ≤ p ≤ 700 bar	Hydraulic	$5 \cdot 10^{-4} \cdot P + 0.02$ bar	P: Relative Pressure, (bar) Calibration procedure prepared according to basic and standard methods in accordance with the EURAMET/cg-17 document. (*) Calibration is performed at the customer's site and in the laboratory.
Relative Pressure Differential Pressure Gauge	20 Pa ≤ p ≤ 1250 Pa	Pneumatic	5,5 Pa	P: Relative Pressure, (Pa) Calibration procedure prepared according to basic and standard methods in accordance with the EURAMET/cg-17 document. (*) Calibration is performed at



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				the customer's site and in the laboratory.
Relative Pressure Differential Pressure Gauge	1250 Pa < p ≤ 9900 Pa	Pneumatic	5•10 <sup>-4</sup> • p + 8 Pa	P: Relative Pressure, (Pa) Calibration procedure prepared according to basic and standard methods in accordance with EURAMET/cg-17 document (*) Calibration is performed at the customer's site and in the laboratory.
Absolute Pressure Analog Barometer Numerical Barometer	700 hPa ≤ p ≤ 1200 hPa	In the Vacuum Room	0,12 hPa	P : Absolute Pressure hPa Calibration procedure prepared in accordance with EURAMET cg -17 document. Performed in the laboratory.
Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Sinking Depth	2 μm	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.



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Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Thickness	2 µm	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.
Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Strength	0,18%	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.
Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Bore	2 µm	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.
Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Angle	2,2'	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.
Shore Hardness Tester	ISO (Shore A, D,AO, AM) ASTM E (Shore A, B,E,O, C, D,DO, OO, OOO,OO,OO-S)	Hardness	1,0 Shore	With calibration procedure prepared in accordance with ISO 48-9 ASTM E 2240 standard. Calibration is performed in the laboratory.



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IRHD Hardness Tester	Method M,N,H,L	Stinging depth Force Diameter	Stinging depth: 1 µm Force : 0,4 % Diameter : 0,5 µm	Calibration procedure prepared in accordance with ISO 18898 standard
2 -Size 3-Dimension Measurement Devices Three Dimensional Measuring Device (CMM)	X and Y Axes $1 < L \leq 1200$ mm	Block infinige	Axis: $(2 + 13 \cdot L)$ µm	On-site calibration in accordance with the calibration procedure prepared in accordance with EN ISO 10360-2 DocumentL: Measured Length[m] Calibration is performed at the customer's site and in the laboratory.
2 -Size 3-Dimension Measurement Devices Surface Roughness Measurement Device	$0.1 \mu\text{m} \leq Ra \leq 100 \mu\text{m}$	With depth standard and roughness standard	$0.06 \cdot Ra$	Ra,Rz: Measured roughness, [µm] Calibration procedure prepared in accordance with DAkkS DKD-R 4-2 document Calibration is performed at the customer's site and in the laboratory.
2 -Size 3-Dimension Measurement Devices Surface Roughness Measurement Device	$0.9 \mu\text{m} \leq Rz \leq 200 \mu\text{m}$	With depth standard and roughness standard	$0.06 \cdot Rz$	Ra,Rz: Measured roughness, [µm] Calibration procedure prepared in accordance with DAkkS DKD-R 4-2 document Calibration is performed at the customer's site and in the laboratory.



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Caliper (External Diameter, Internal Diameter, Depth, Step Measurements)	$L \leq 2000\text{mm}$	0.005 mm	$(3 + 22 \cdot L) \mu\text{m}$	Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Chapter 9.1 document. L: Measured Length [m] Calibration is performed in the laboratory.
Handheld Basic Measuring Devices Depth Gauge	$L \leq 1000\text{mm}$	0,01 mm	$(11 + 8 \cdot L) \mu\text{m}$	Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Chapter 9.2 document L: Measured Length [m] Calibration is performed in the laboratory.
Length Measuring Devices Height Measuring Device (Height Gauge)	$L \leq 1500\text{mm}$	0,01 mm	$(11 + 9 \cdot L) \mu\text{m}$	L:Measured value VDI/VDE/DGQ 2618 Section 9.3. Calibration is performed at the customer's site and in the laboratory.
Diameter Micrometer	$L \leq 1000 \text{ mm}$	0,001 mm	$(2 + 25 \cdot L) \mu\text{m}$	Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Section 10.1 document L: Measured Length [m]



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Depth Micrometer	$L \leq 500 \text{ mm}$	0,001 mm	$(3,1 + 4,8 \cdot L) \mu\text{m}$	Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Chapter 10.5 document. L: Measured Length [m] Calibration is performed in the laboratory.
Inner Diameter Micrometer	$1 \text{ mm} \leq L \leq 100 \text{ mm}$	0,001 mm	$(0,4 + 3,1 \cdot L) \mu\text{m}$	Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Chapter 10.7 document L: Measured Length [m] Calibration is performed in the laboratory.
Glass Ruler	$L \leq 300 \text{ mm}$	Optical reading method	$(1,0 + 5 \cdot L) \mu\text{m}$	L : Measured value Calibration is performed in the laboratory with the optical measurement system.
Precision Line Scale	$L \leq 300 \text{ mm}$	Optical reading method	$(2,0 + 4 \cdot L) \mu\text{m}$	L : Measured value Calibration is performed in the laboratory with the optical measurement system.



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<b>CALIBRATION AREA</b>	<b>RANGE &amp; RESOLUTION</b>	<b>MEASUREMENT REQUIREMENTS</b>	<b>CALIBRATION &amp; MEASUREMENT CAPABILITY (CMC) (±)</b>	<b>TECHNIQUE. REFERENCE STANDARD. EQUIPMENT</b>

Triangle Ruler	$L \leq 100$ mm	Optical reading method	7 $\mu\text{m}$	L : Measured value Calibration is performed in the laboratory with the optical measurement system.
Steel Ruler, Workshop or Mechanical Work Scales	$L \leq 300$ mm	Optical reading method	7 $\mu\text{m}$	L : Measured value Calibration is performed in the laboratory with the optical measurement system.
Optical Angle Scale	$A \leq 360^\circ$	Optical reading method	1'	With Optical Measurement System . Calibration is performed in the laboratory.
Total Station Level	$\pm 60''$	Correction Error	10" 0.27 mm	Using optical collimator System . Calibration is performed in the laboratory.
Steel Ruler (Measuring Tape – Custom Production, Linear Scale, Laser Tracker)	$L \leq 2000$ mm	One Dimensional Optical Measuring Direct Measurement with Workbench	$(20 + 18 \cdot L) \mu\text{m}$	L : Measured value (m) Calibration procedure prepared in accordance with the VDI/2FVDE/2FDGQ/2FDKD 2618 Part 8-2 document.



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				Calibration is performed in the laboratory.
Band Meter (Pi Meter-Mira)	$L \leq 50000 \text{ mm}$	One Dimensional Optical Measuring Direct Measurement with Workbench	$(30 + 13 \cdot L) \mu\text{m}$	L : Measured value (m) Calibration procedure prepared in accordance with the VDI/2FVDE/2FDGQ/2FDKD 2618 Part 8-2 document. Calibration is performed in the laboratory.
Thickness Gauge (Sentil etc. (Feeler gauge))	$0.01 \text{ mm} \leq L \leq 2 \text{ mm}$	Thickness Measurement Diameter Measurement	$1,1 \mu\text{m}$	L : Measured value. DIN 2275. Calibration is performed in the laboratory.
Thickness Gauge (Sentil etc. (Feeler gauge))	$0.1 \text{ mm} \leq L \leq 25 \text{ mm}$	Thickness Measurement Diameter Measurement	$3 \mu\text{m}$	L : Measured value. DIN 2275. Calibration is performed in the laboratory.



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<b>Certification Sectors</b>				
<b>CALIBRATION AREA</b>	<b>RANGE &amp; RESOLUTION</b>	<b>MEASUREMENT REQUIREMENTS</b>	<b>CALIBRATION &amp; MEASUREMENT CAPABILITY (CMC) (±)</b>	<b>TECHNIQUE. REFERENCE STANDARD. EQUIPMENT</b>

Profile Projector	$L \leq 300 \text{ mm}$	X and Y axes length Measurements	$(2 + 6 \cdot L) \mu\text{m}$	L: Measured Length [m] Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2617 Part 6 document. Calibration is performed at the customer's site. On-site calibration
Microscope	$L \leq 300 \text{ mm}$	X and Y axes length Measurements 0,001 mm	$1,0 \mu\text{m}$	L: Measured Length [m] Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2617 Part 6 document. Calibration is performed at the customer's site. On-site calibration
Microscope	5X-1000X	Magnification Rate	1%	L: Measured Length [m] Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2617 Part 6 document. Calibration is performed at the customer's site. On-site calibration



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Thickness Gauge (Puncrue Arm Comparator)	3 mm ≤ L ≤ 100 mm Inner and External arm pollers	0,001 mm	(1.5 + 24 · L) µm	L: Measured Length [m] Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Section 12.1 and 13.1 document *With greater uncertainty, it can also be done at the customer's site, in their temporary facilities. Calibration is performed in the laboratory.
Measurement Hours (Comparator)	L ≤ 200 mm	0,001 mm	(2,5 + 8 · L) µm	L: Measured Length [m] VDI/VDE/DGQ 2618 Section 11.1 and VDI/VDE/DGQ 2618 Chapter 11.4. Calibration is performed in the laboratory.
Measurement Clock Tester (Measurement Clock calibrator, Comparator Calibrator, Micrometer Head, etc.)	L ≤ 200 mm	0,001 mm	0,4 µm	L : Measured value Calibration procedure prepared in accordance with VDI/VDE/DGQ 2618 Part 10.4.Comparison method with electronic measurement probe · Calibration is performed in the laboratory.
Precision Comparator	L ≤ 2 mm	0,01 mm	(2,6 + 20 · L) µm	L: Measured Length [m] VDI/VDE/DGQ 2618 Chapter 11.3. Calibration is performed in the laboratory.



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Angle Measuring Devices Spirit Level	Base Length 0 mm < L ≤ 500 mm	Parallelism	14 µm/m	L: Measured Length [m] DIN 877. Calibration is performed in the laboratory.
Angle Measuring Devices Spirit Level	Base Length 0 mm < L ≤ 500 mm	Planarity	3.3 µm	L: Measured Length [m] DIN 877. Calibration is performed in the laboratory.
Angle Measuring Devices Incline Meter	α ≤ 90°	Parallelism	0,015°	L: Measured Length [m] DIN 877. Calibration is performed in the laboratory.
Coating Thickness Coating Thickness Standard (Thickness Foils)	7 µm ≤ L ≤ 5 mm	Thickness measurement	2 µm	Calibration Procedure prepared in accordance with DIN EN ISO 2178, DIN EN ISO 2360 documents. Calibration is performed in the laboratory.
Coating Thickness Measuring Device	5 µm ≤ L ≤ 5000 µm	0,001 mm	2 µm	Calibration Procedure prepared in accordance with DIN EN ISO 2178, DIN EN ISO 2360 documents. Calibration is performed in the laboratory.



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Coating Thickness Measuring Device	5 $\mu\text{m}$ $\leq$ L $\leq$ 5000 $\mu\text{m}$	0.0001 mm	1 $\mu\text{m}$	Calibration Procedure prepared in accordance with DIN EN ISO 2178, DIN EN ISO 2360 documents. Calibration is performed in the laboratory.
Ultrasonic Thickness Gauge	L $\leq$ 300mm	0,001 mm	10 $\mu\text{m}$	L: Measured Length [m] Measurement method with Gauge Block. Calibration is performed in the laboratory.
Ultrasonic Test Blocks	0.1mm $\leq$ L $\leq$ 50 mm	0,001 mm	2 $\mu\text{m}$	L: Measured Length [m] DIN EN ISO 2400 Direct measurement. Calibration is performed in the laboratory.
Laser Distance Meter	0.1 m $\leq$ L $\leq$ 70 m	-	1.5 mm	L : Measured value Comparison method with Reference Laser distance meter. Calibration is performed in the laboratory.
Angle Measuring Devices	A $\leq$ 360°	Angular	0.05°	A: Measured Value Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Section 7.2 document. Calibration is performed in the laboratory.



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Angle Artifacts(Standards) 90° (Steel, Granite) Perpendicular Standard (Engineer's square)	$L \leq 500\text{mm}$	Diklik	3.0 $\mu\text{m}$	L: Measured value Calibration procedure prepared in accordance with the VDI/VDE/DGQ 2618 Section 7.1 document. Calibration is performed in the laboratory.
Welder Calipers (Boden Type)	0mm < $L \leq 30\text{mm}$	With profile projection	0,60 mm	Calibration procedure prepared in accordance with BS EN ISO 17637. Calibration is performed in the laboratory.
Welder Calipers (Boden Type)	0mm < $L \leq 100\text{mm}$	Height ruler	0,60 mm	Calibration procedure prepared in accordance with BS EN ISO 17637. Calibration is performed in the laboratory.
Welder Calipers (Boden Type)	0mm < $L \leq 45\text{mm}$	Height	0,12 mm	Calibration procedure prepared in accordance with BS EN ISO 17637. Calibration is performed in the laboratory.
Welder Calipers (Boden Type)	0mm < $D \leq 3\text{mm}$	Bore	0,12 mm	Calibration procedure prepared in accordance with BS EN ISO 17637. Calibration is performed in the laboratory.



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Welder Calipers (Boden Type)	$A \leq 90^\circ$	Angle	0,02°	Calibration procedure prepared in accordance with BS EN ISO 17637. Calibration is performed in the laboratory.
Radius Gauges	$1\text{mm} \leq L \leq 50\text{mm}$	With Measurement Microscope	$(2,2+7\cdot L) \mu\text{m}$	L : Measured value. Calibration is performed in the laboratory with the optical measurement system.
Reference Materials Concrete Sample Mold (Cube, prism, cylinder)	$5\text{mm} \leq L \leq 500\text{mm}$	Dimension control (Distance, Parallelism, Perpendicularity, Linearity)	15 $\mu\text{m}$	Calibration procedure prepared in accordance with EN 12390-1 document L: Measured Length [m] . Calibration is performed in the laboratory.
Screw Tooth Combs	$L \leq 10\text{mm}$	With Measurement Microscope	5 $\mu\text{m}$	L : Measured value Calibration is performed in the laboratory with the optical measurement system.
Reference Materials [Sieve, Network] Opening(Aperture)	$20 \mu\text{m} \leq L \leq 63 \mu\text{m}$	Eye opening and wire diameter Fixing	3 $\mu\text{m}$	L: Measured Length Calibration procedure prepared in accordance with ISO 3310-1, ISO 3310-2, EN 933-3 documents. Calibration is performed in the laboratory.



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# SIGMA CALIBRATION L.L.C

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
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CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Reference Materials [Sieve, Network] Opening(Aperture)	63 $\mu$ m < L $\leq$ 5 mm	Eye opening and wire diameter Fixing	5 $\mu$ m	L: Measured Length Calibration procedure prepared in accordance with ISO 3310-1, ISO 3310-2, EN 933-3 documents. Calibration is performed in the laboratory.
Reference Materials [Sieve, Network] Opening(Aperture)	5mm < L $\leq$ 125mm	Eye opening and wire diameter Fixing	30 $\mu$ m	L: Measured Length Calibration procedure prepared in accordance with ISO 3310-1, ISO 3310-2, EN 933-3 documents. Calibration is performed in the laboratory.
Paint Adhesion Test Comb (Cross-Cut) EN ISO 2409	1mm $\leq$ L $\leq$ 10mm	Step	5 $\mu$ m	L : Measured value Calibration procedure prepared in accordance with ISO 2409 document. Calibration is performed in the laboratory.
Paint Adhesion Test Comb (Cross-Cut) EN ISO 2409	A $\leq$ 90°	Angle	0,10°	Calibration procedure prepared in accordance with ISO 2409 document. Calibration is performed in the laboratory.
Handheld Basic Measuring Devices Applicator Grindometer Wet film thickness gauge	L $\leq$ 500 $\mu$ m	Depth	3 $\mu$ m	Calibration procedure prepared in accordance with ISO 2808 and EN ISO 1524 documents. Calibration is performed in the laboratory.



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Angle Artifacts(Standards) V-Block	$L \leq 200\text{mm}$	Verticality Planarity Parallelism	4 $\mu\text{m}$	L: Measured Length [m] According to the calibration procedure prepared in accordance with the DIN 2274 document. Calibration is performed in the laboratory.
Small-Angle Manufacturers Sine (Bar, Table)	$L \leq 500\text{mm}$	Reach	$(1 + 3 \cdot L) \mu\text{m}$	L: Measured Length [m] According to the calibration procedure prepared in accordance with the DIN 2274 document. Calibration is performed in the laboratory.
Small-Angle Manufacturers Sine (Bar, Table)	$L \leq 500\text{mm}$	Parallelism	$(1.7 + 16 \cdot L) \mu\text{m}$	L: Measured Length [m] According to the calibration procedure prepared in accordance with the DIN 2273 document. Calibration is performed in the laboratory.
Vicat and Penetration Device	up to 2 kg	Weight	0.1 g	Comparison with Reference Devices. Calibration is performed in the laboratory.
Vicat and Penetration Device	Up to 100 mm	Depth	10 $\mu\text{m}$	Comparison with Reference Devices. Calibration is performed in the laboratory.



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Vicat and Penetration Device	Up to 360° degree	Angle	0,1°	Comparison with Reference Devices. Calibration is performed in the laboratory.
Vicat and Penetration Device	Up to 100 mm	Bore	10 µm	Comparison with Reference Devices. Calibration is performed in the laboratory.
Vicat and Penetration Device	Up to 10 mm	Thickness	10 µm	Comparison with Reference Devices. Calibration is performed in the laboratory.
Vicat and Penetration Device	Up to 200 mm	Length	10 µm	Comparison with Reference Devices. Calibration is performed in the laboratory.



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Gauge Block (Short 0,5 mm - 100 mm)	0.5mm $\leq$ L $\leq$ 100 mm	Measurement of the deviation of the center point from the nominal value with the comparative measurement method for Steel Gauge Blocks (in the nominal dimensions of references)	0.06 + 0.33 · L) $\mu$ m	L : Measured value (m) Calibration procedure prepared in accordance with ISO 3650 and VDI/VDE/DGQ 2618 Section 3.1 · Calibration is performed in the laboratory.
Gauge Block (Long 125 mm - 500 mm)	125mm $\leq$ L $\leq$ 500 mm	Measurement of the deviation of the center point from the nominal value with the comparative measurement method for Steel Gauge Blocks (in the nominal dimensions of references)	(0.32+1·L) $\mu$ m	L : Measured value (m) Calibration procedure prepared in accordance with ISO 3650 and VDI/VDE/DGQ 2618 Section 3.1 documents. · Calibration is performed in the laboratory.
Planarity Standards Optical Flat (Optical Planarity) Glass Optical Flat (Optical Parallel Glass)	D $\leq$ 60mm	Center of Planarity Thickness Parallelity	0.04 $\mu$	Calibration procedure prepared in accordance with VDI/VDE/DGQ 2618 Section 6.1 · Calibration is performed in the laboratory.



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Pleyt	200 mm $\leq$ L $\leq$ 8000 mm	Planarity Measurement	(2+ 2,2 · L) $\mu$ m	L: Measured Length [m] DIN 876-1, DIN 876-2. Calibration is performed at the customer-site.
Standards Surface Roughness Standard (E.g. ISO 5436-1 Type D)	0.2 $\mu$ m $<$ Ra $\leq$ 200 $\mu$ m	Surface Roughness Measurement With the device	0.05 · Ra	Calibration procedure prepared In accordance with DKD-R 4.2 Part 1 document. Calibration is performed in the laboratory and at the customer site.
Standards Surface Roughness Standard (E.g. ISO 5436-1 Type D)	0.8 $\mu$ m $<$ Rz $\leq$ 300 $\mu$ m	Surface Roughness Measurement With the device	0.05 · Rz	Calibration procedure prepared in accordance with DKD-R 4.2 Part 1 document. Calibration is performed in the laboratory and at the customer site.
Three-Point Inner Diameter Micrometer	L $\leq$ 100 mm	0,001 mm	3.8 $\mu$ m	L: Measured Length [m] Calibration procedure prepared in accordance with VDI/VDE/DGQ 2618 Section 10.8, DIN 863-4 document. Calibration is performed in the laboratory.
Micrometer Adjustment Bar	L $\leq$ 600 mm	-	(0.8 + 2.1 · L) $\mu$ m	L: Measured Length [m] Calibration procedure prepared in accordance with VDI/VDE/DGQ 2618 Chapter 4.4 document. Calibration is performed in the laboratory.



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Bore gauge (Bore Gauge etc.) Inner Diameter Comparator Hole gauge	$0.95 \text{ mm} \leq L \leq 150 \text{ mm}$	With universal measuring device	$(0.85 + 4 \cdot L) \mu\text{m}$	L : Measured Value (m) Calibration procedure prepared in accordance with VDI/VDE/DGQ 2618 Section 13.2 · Calibration is performed in the laboratory.
Outer Cylinder (Buffer Gauge (Ref, Pass-Pass, etc.), Piston, Pin (Screw Measuring Pins), Wire, Setting Gauge) BUFFER MASTER	$D \leq 600 \text{ mm}$	Outer diameter measurement	$(0.22 + 5.0 \cdot D) \mu\text{m}$	D: Measured Value (m) According to VDI/VDE/DGQ 2618 Section 4.2 · Calibration is performed in the laboratory.
Inner Cylinder (Ring Gauge (Ref, Passes-Does not pass etc.))	$1 \text{ mm} \leq L \leq 400 \text{ mm}$	Inner diameter measurement	$(0.36 + 4.1 \cdot D) \mu\text{m}$	D: Measured Value (m) According to EURAMET cg-6 and VDI/VDE/DGQ 2618 Section 4.1 · Calibration is performed in the laboratory.
Fork Gauge (inside, outside)	$1 \text{ mm} \leq L \leq 400 \text{ mm}$	Internal and external measurement	$(0.4 + 5.1 \cdot L) \mu\text{m}$	D: Measured Value (m) According to VDI/VDE/DGQ 2618 Section 4.7 · Calibration is performed in the laboratory.
Roundness Standards Sphere - Semispherical Globe Gauge, Sphere	$0.1\text{mm} \leq D \leq 25\text{mm}$	-	$(0.25 + 10.4 \cdot D) \mu\text{m}$	D: Measured Value (m) With a one-dimensional measuring device · Calibration is performed in the laboratory.



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Flat Screw Buffer Gauge	Section Circle Diameter 1 mm ≤ d ≤ 300 mm	Step 0.20mm -12mm Between	2,25 μm	D: Measured Value (m) According to EURAMET cg-10 and VDI/VDE/DGQ 2618 Section 4.8 · Calibration is performed in the laboratory.
Flat Screw Ring Gauge	Section Circle Diameter: 2 mm ≤ D ≤ 200 mm	Step Between 0.35mm - 8mm	2 μm	D: Measured Value (m) According to EURAMET cg-10 and VDI/VDE/DGQ 2618 Section 4.9 · Calibration is performed in the laboratory.
Viscosity Flow Vessels	20 mm <sup>2</sup> /s ≤ v ≤ 2000mm <sup>2</sup> /s	Ford ISO Shell Zahn Cap DIN Afnor	0.6 %	Calibration procedure prepared in accordance with the ISO 2431, ASTM D 1200, ASTM D4212 documents. Measurement method with reference oils. Calibration is performed in the laboratory.
Rotational Viscometer (Brookfield, Stormer Type)	100 cp ≤ V ≤ 5000 cp 46 g ≤ V ≤ 1004 g 46 KU ≤ V ≤ 140 KU	-	0.6% 1% 1%	e.V: Kinematic Viscosity Calibration procedure prepared in accordance with the ASTM D 2196, ASTM D 562 standard.



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Frequency Frequency Meters Tachometer Optics(Non-contact)	60 rpm $\leq \omega \leq$ 60000 rpm 1hz $< f \leq$ 1.5 Ghz	R:0,01rpm F:0,1hz	$1,2 \cdot 10^{-5} \cdot \omega + 0,035$ rpm $1,6 \cdot 10^{-5} \cdot f + 0,035$ hz	$\omega$ :Measured Speed (rpm) r: Resolution Using adjustable speed motor and Frequency welding, comparison using optical mechanical transducer. Calibration in the laboratory/on-site.
Frequency Frequency Sources Frequency Generator (Centrifuge- Mixer Devices) (Rotary Machine, Stroboscope etc.)	60 rpm $< \omega \leq$ 60000 Rpm 1hz $< f \leq$ 1.5 Ghz	R:0,1rpm F:0,1hz	$6,0 \cdot 10^{-4} \cdot \omega + 0,2$ rpm $3,0 \cdot 10^{-4} \cdot f + 0,2$ hz	$\Omega$ : Measured Cycle (rpm) r: Resolution Comparative measurement using reference tachometer. Calibration in the laboratory/on-site.
Frequency Frequency Meters Tachometer Optics(Non-contact)	60000 rpm $\leq \omega \leq$ 120000 rpm	R:0,01rpm	$6,3 \cdot 10^{-6} \cdot \omega + 0,35$ Rpm	$\omega$ :Measured Speed (rpm) r: Resolution Using adjustable speed motor and Frequency welding, comparison using optical mechanical transducer. Calibration in the laboratory/on-site.
Scales	0,001 g $< m \leq$ 4000 g	With E2 class mass	$1,5 \cdot 10^{-6}$	M : applied load (g) Calibration procedure prepared in accordance with the EURAMET cg-18 document. Customer site



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Scales	1g < m ≤ 40000 g	With F1 class mass	7·10 <sup>-6</sup>	M : applied load (g) Calibration procedure prepared in accordance with the EURAMET cg-18 document. Customer site
Scales	10 kg < m ≤ 1000 kg	M1 class with mass	8·10 <sup>-5</sup>	M : applied load (g) Calibration procedure prepared in accordance with the EURAMET cg-18 document. Customer site
Scales	1000 kg < m ≤ 10000 kg	With M1 class mass and Substitution masses	3.2· 10 <sup>-4</sup>	M : applied load (g) Calibration procedure prepared in accordance with the EURAMET cg-18 document. Customer site
Controlled Volumes (Temperature Distribution) Ash Oven	250°C ≤ T < 1100 °C	Axial Temperature Distribution	1 °C	T: Measured Temperature. Customer site
Controlled Volumes (Temperature Distribution) Drying ove, Incubator, Cold Room (freezer, etc.), Climatic Chamber, Liquid Bath, Autoclave	-80°C ≤ T ≤ 270 °C	Temperature in volume Distribution	0.5 °C	T: Measured Temperature. Euramet cg-20, EN 60068-3-5, EN 60068-3-11, DAkkS-DKD-R5-7 Guide documents. With a portable calibration system. Customer site.



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Resistance Thermometers Platinum Resistance Thermometers (PRT) Industrial Platinum Resistance Thermometers (PRT) Thermistor	-80 °C ≤ T < 200 °C	Liquid In The Bathroom	0,12 °C	Comparison method with reference PRT100Ω resistance thermometer. Calibration in laboratory and onsite T: Measured Temperature [°C]
Resistance Thermometers Platinum Resistance Thermometers (PRT) Industrial Platinum Resistance Thermometers (PRT) Thermistor	200 °C ≤ T ≤ 400 °C	Dry Block in calibrator	0,14 °C	Comparison method with reference PRT100Ω resistance thermometer. Calibration in laboratory and onsite T: Measured Temperature [°C]
Thermal Couples Industrial Thermocouples All types	-80 °C ≤ T ≤ 200°C	Liquid In The Bathroom	0,15 °C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]
Thermal Couples Industrial Thermocouples All types	200 °C ≤ T ≤ 400°C	Block in Calibrator	0,3 °C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]



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Thermal Couples Industrial Thermocouples All types	400 °C < T ≤ 1100°C	Block in Calibrator	1.5 °C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]
Indicator Temperature Gauges Thermistor Resistance Thermal double sensor	-40°C ≤ T < 200 °C	Liquid In The Bathroom	0,12 °C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]
Indicator Temperature Gauges Thermistor Resistance Thermal double sensor	200°C ≤ T ≤ 400 °C	Dry block in calibrator	0.2°C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]



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Indicator Temperature Gauges Thermistor Resistance Thermal double sensor	400°C < T ≤ 1100 °C	Dry block in calibrator	1,5 °C	Reference PRT 100 Ω resistance, comparison method for all types using a thermometer and S-type thermocouples. Calibration performed in the laboratory and on-site. T: Measured Temperature [°C]
Liquid Glass Thermometers	-40 °C ≤ T < 10 °C	Liquid in the bathroom	0.2 °C	Reference PRT100Ω resistance thermometer using a comparative calibration method T: Temperature
Liquid Glass Thermometers	10°C ≤ T ≤ 200 °C	Liquid in the bathroom	0.2 °C	Reference PRT100Ω resistance thermometer using a comparative calibration method T: Temperature
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-100°C ≤ T ≤ 1820 °C	Type B	0.3 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory



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Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-270°C ≤ T ≤ 1000 °C	E type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-210°C ≤ T ≤ 1200 °C	J type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-270°C ≤ T ≤ 1372°C	K type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-270°C ≤ T ≤ 1300°C	N type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-50°C ≤ T ≤ 1760°C	R type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory



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Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-50°C ≤ T ≤ 1760°C	S type	0.3 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-270°C ≤ T ≤ 400°C	T type	0.2 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Temperature Indicators and Calibrators Temperature Indicator Cold Joint ON	-200°C ≤ T ≤ 800°C	PT385 100Ω type	0.3 °C	Calibration procedure prepared in accordance with EURAMET cg-11. Electrical simulation method T: Measured Temperature. Customer on-site laboratory
Radiation Temperature Fixed Point Cells Industrial Radiation Thermometers and Thermal Camera	-40°C ≤ T ≤ 250 °C	Black Body $\varepsilon=0.95$	0.2 °C	Comparison Method. T:Temperature. Calibration is performed in the laboratory and at customer's site.
Radiation Temperature Fixed Point Cells Industrial Radiation Thermometers and Thermal Camera	250°C < T ≤ 500 °C	Black Body $\varepsilon=0.95$	0.3 °C	Comparison Method. T:Temperature



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Hygrometers Wall Table Type Data Logger Ambient Temperature Meter	10 °C T ≤ 40 °C	On-Site Mobile Calibration in Stabilized Temperature Cabinet	0.3 °C	Comparison Method. T:Temperature. Calibration is performed in the laboratory and at customer's site.
Hygrometers Hygrometer Relative Humidity Meter (Datalogger) Relative Humidity Meter (Digital/Analog) Wall Table Type Data Logger	10 %rh ≤ RH ≤ 90 %rh	Comparison Method in Humidity Temperature Cabinet	2.1 %rh	RH: Relative Humidity T:temperature Comparison Method with the Moisture Cabinet. Calibration is performed in the laboratory and at customer's site.
Flow Rate Anemometer Air Speed; Air Flow Rate Measurement Devices (Pitot Tube, Hot Wire, Thermal, etc.) Air Flow Sensor (Transducer) and Pitot Tube Anemometers	0.2 m/s < V < 25 m/s	At Atmospheric Pressure	0.5 %	V: Measured air velocity Reference Anemometer in Wind Tunnel Using the comparison method . Calibration is performed in the laboratory
Flow Meter Gas Meter Air Flow;Flowmeters, Counters and Rotameters with Indicators	0,003 Slpm < Q < 50 Slpm	At Atmospheric Pressure	0.45 %	Q: Volumetric Flow Comparison Method with Piston Prover. Calibration is performed in the laboratory.
Sound Level MeterSound Pressure Response Level	30-130 Db Range	Multifunctional Acoustic With Calibrator	0.12 dB	IEC 61672-3 ·Calibration is performed in the laboratory.



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# SIGMA CALIBRATION L.L.C

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New Jersey / USA

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Accreditation Area		General requirements for the competence of testing and calibration laboratories		
Accreditation Standard		ISO/IEC 17025:2017		
Certification Sectors				
CALIBRATION AREA	RANGE & RESOLUTION	MEASUREMENT REQUIREMENTS	CALIBRATION & MEASUREMENT CAPABILITY (CMC) (±)	TECHNIQUE. REFERENCE STANDARD. EQUIPMENT
Gas Analyzer/Detector Carbon dioxide CO <sub>2</sub> Carbon monoxide CO Methane CH <sub>4</sub> Hydrogen Sulfide H <sub>2</sub> S Oxygen O <sub>2</sub>	0 ≤ CO <sub>2</sub> ≤ 99.9% 0 ≤ H <sub>2</sub> S ≤ 1000 ppm 0 ≤ CH <sub>4</sub> ≤ 1000 ppm 0 ≤ CO ≤ 99.9% 0 ≤ O <sub>2</sub> ≤ 99.9% 0 ≤ LEL ≤ 85%	Using traceable calibration gas mixtures with matrix nitrogen gas	1%	Traceable calibration gas with matrix nitrogen gas using mixtures. Calibration is performed in the laboratory and on-site.
pH Meter	Between 4 and 14 pH	Reference Ph Liquids	0.1 pH	Comparison method with reference liquids. Calibration in the laboratory and on-site.
Conductivity Meter	1 µs/cm ≤ c ≤ 20000 µs/cm	Reference Conductivity Fluids	1%	Comparison method with reference liquids. Calibration in the laboratory and on-site.
Magnetic Field Intensity Calibration,Gauss Meter	1 ≤ W ≤ 40000	-	2 G	Comparison with reference Guss Meter Comparison method. Calibration in the laboratory and on-site.
Refractometer	0 < Bx ≤ 85	-	0,2 brix	Comparison method with reference liquids. Calibration in the laboratory and on-site.



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