HELLENIC ACCREDITATION SYSTEM

Annex F2/13 to the Certificate No. **900**-6

SCOPE of ACCREDITATION
Of the
Calibration Laboratory
METROCAL PC

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Mass Measurements			
Standard weights			According to guide: OIML R111-1:2004 Calibration capability of standard weights up to (including) OIML class:
	1 mg	2,0 µg	E2
	2 mg	2,0 µg	E2
	5 mg	2,0 µg	E2
	10 mg	2,5 µg	E2
	20 mg	3,3 µg	E2
	50 mg	4,0 µg	E2
	100 mg	5,0 µg	E2
	200 mg	6,5 µg	E2
	500 mg	8,0 µg	E2
	1 g	10 µg	E2
	2 g	13 µg	E2
	5 g	16 µg	E2
	10 g	20 µg	E2
	20 g	26 µg	E2
	50 g	33 µg	E2
	100 g	53 µg	E2
	200 g	0,10 mg	E2
	500 g	0,26 mg	E2
	1 kg	0,53 mg	E2
	2 kg	1,0 mg	E2
	5 kg	2,6 mg	E2
	10 kg	10 mg	F1
	20 kg	41 mg	F2

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Non-automatic weighing instruments, Electronic / Mechanical	1 mg	0,6 µg	According to guide: Euramet cg18 v4.0:2015 Available standard weights OIML Class: E1 in range 1 mg ... 5 kg Total maximum available load 11,1 kg E2 in range 1 mg ... 5 kg Total maximum available load 11,7 kg F1 in range 500 g ... 10 kg Total maximum available load 30,5 kg F2 in range 1 g ... 5 kg Total maximum available load 11,1 kg M1 in range 5 kg ... 1000 kg Total maximum available load 1030 kg Calibration is performed on-site
	2 mg	0,6 µg	
	5 mg	0,6 µg	
	10 mg	0,8 µg	
	20 mg	1,0 µg	
	50 mg	1,2 µg	
	100 mg	1,5 µg	
	200 mg	2,0 µg	
	500 mg	2,5 µg	
	1 g	3,0 µg	
	2 g	4,0 µg	
	5 g	5,0 µg	
	10 g	16 µg	
	20 g	25 µg	
	50 g	30 µg	
	100 g	50 µg	
	200 g	0,10 mg	
	500 g	0,25 mg	
	1 kg	0,50 mg	
	2 kg	1,0 mg	
	5 kg	2,5 mg	
	10 kg	5,0 mg	
	20 kg	21 mg	
	(20 to 1000] kg	6×10^{-5}	
	(1000 to 10000] kg	$\sqrt{4{,}2 \times 10^{-9} \times I^2 + 4\left[\left(n-\frac{1}{2}\right)\frac{d^2}{3}\right]}$ *I*: load indication in kg *d*: resolution in kg *n*: number of substitute weights plus the reference mass m_{cl}	Using substitute weights, each approximately equal to reference mass m_{cl} Calibration is performed on-site.
Force Measurements			
Compression testing machines	[0 to 0,5] kN	3 mN + 0,012 %	Machines of class 0,5
	(0,5 to 1] kN	0,24 %	,, 1
	(1 to 10] kN	0,08 %	,, 0,5
	(10 to 50] kN	0,05 %	,, 0,5
	(50 to 120] kN	0,13 %	,, 0,5
	(120 to 300] kN	0,07 %	,, 0,5
	(300 to 700] kN	0,05 %	,, 0,5
	(700 to 2000] kN	0,07 %	,, 0,5
	(2000 to 3000] kN	0,06 %	,, 0,5
Tensile testing machines	[0 to 0,5] kN	3 mN + 0,012 %	,, 0,5
	(0,5 to 5] kN	0,07 %	,, 0,5
	(5 to 10] kN	0,15 %	,, 0,5
	(10 to 15] kN	0,11 %	,, 0,5
	(15 to 50] kN	0,07 %	,, 0,5
	(50 to 120] kN	0,17 %	,, 0,5
	(120 to 300] kN	0,08 %	,, 0,5
	(300 to 700] kN	0,06 %	,, 0,5
			According to standards: ISO 7500-1:2018, EN 12390-4:2025 Calibration is performed on-site

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Concrete compression testing machines:			According to standard: EN 12390-4:2025 Calibration is performed on-site.
- Force transfer	[200 to 2000] kN	0,01	
- Alignment of upper plate symmetry axis with machine load axis	[200 to 2000] kN	0,01	
- Machine load rate	[1 to 100] kN/s	(0,012 + 0,5 x Resolution) kN/s	
- Machine plate hardness	[27 to 66] HRC	1 HRC	
- Machine plate flatness	-	4 µm	
- Machine plate parallelism	-	6 µm	
- Machine plate roughness Ra	[0,2 to 5,8] µm	(0,2 + 0,05 x L) µm, L: µm	
Compression testing machines fitted with ring gauges and linear displacement dial indicators	[0 to 0,5] kN	3 mN + 0,012 %	According to standard: BS 1377-1:2016 Calibration is performed on-site.
	(0,5 to 1] kN	0,24 %	
	(1 to 10] kN	0,08 %	
	(10 to 50] kN	0,05 %	
	(50 to 120] kN	0,13 %	
	(120 to 300] kN	0,07 %	
	(300 to 700] kN	0,05 %	
Tensile testing machines fitted with ring gauges and linear displacement dial indicators	[0 to 0,5] kN	3 mN + 0,012 %	
	(0,5 to 5] kN	0,07 %	
	(5 to 10] kN	0,15 %	
	(10 to 15] kN	0,11 %	
	(15 to 50] kN	0,07 %	
	(50 to 120] kN	0,17 %	
	(120 to 300] kN	0,08 %	
	(300 to 700] kN	0,06 %	
Hardness Measurements			
Hardness testers Rockwell C	[27 to 66] HRC	0,5 HRC	Internal method HLCP-01 using standard hardness blocks. Calibration can also be performed on-site.
Hardness testers Leeb D	[550 to 850] HLD	9 HLD	
Torque Measurements			
Torque wrenches, Torque tools, Torque meters	[0,4 to 1] Nm	1,5 %	According to standards: ISO 6789-1:2017 ISO 6789-2:2017 using torque calibrators Calibration can also be performed on-site.
	(1 to 2] Nm	0,8 %	
	(2 to 1100] Nm	0,7 %	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Impact Measurements			
Pendulum impact testers, Impact test systems	[0,2 to 900] J	Force: 0,12 % Pendulum length: 0,2 mm Leveling: 0,2/1000 Angle: 0,03° Time: 0,02 s Length ~100 mm: 0,005 mm	Direct method Measurement uncertainty is calculated for: 1. Position of centre of percussion, 2. Potential energy, 3. Absorbed energy indication error
	Potential energy	0,12 %	Calibration according to standards: Metals: - ISO 148-2:2016, - ASTM E23-25, - DIN 51222:2017-2, - GOST 9454-78, Plastics: - ISO 13802:2025, - ASTM D6110-18, - ISO 179-1:2026, - ASTM D256-26, - ISO 180:2023, - ASTM D1822-21, - ISO 8256:2023 - ISO 9854-1:2023, ISO 9854-2:2023 - ISO 7628:2010
	Absorbed energy indication	0,12 %	
	Absorbed energy [10 to 250] J	$1{,}5 \cdot U_{CRM}$ U_{CRM} : reference material uncertainty	Indirect method: Calibration according to standards: Metals: - ISO 148-2:2016 - ASTM E23-25
			Calibration is performed on-site.
Temperature Measurements			
Dry block calibrators	[-80 to 0) °C	0,12 °C	According to guide: Euramet cg13 v4.0:2017
	[0 to 270] °C	0,045 °C	
	(270 to 1100] °C	1,6 °C	
Self-indicating thermometers with analog or digital reading / Analog or digital temperature data loggers	[-40 to 0) °C	0,24 °C	Internal method TLCP-03 using bath and platinum resistance thermometer. Devices under calibration must be equipped with external sensor.
	[0 to 140] °C	0,19 °C	
	[-40 to 0) °C	0,12 °C	Internal method TLCP-03 using temperature calibrator and platinum resistance thermometer. Devices under calibration must be equipped with external sensor. Calibration can also be performed on-site.
	[0 to 140] °C	0,08 °C	
	(140 to 270] °C	0,33 °C	
	[250 to 1100] °C	2,0 °C	Internal method TLCP-03 using temperature calibrator and type R thermocouple. Devices under calibration must be equipped with external sensor. Calibration can also be performed on-site.
	[-40 to 0) °C	0,23 °C	Internal method TLCP-03 using

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Self-indicating thermometers with analog or digital reading / Analog or digital temperature			temperature calibrator.
	[0 to 140] °C	0,11 °C	Devices under calibration must be equipped with external sensor. Calibration can also be performed on-site.
	[-40 to 0) °C	0,19 °C	Internal method TLCP-04 using environmental chamber.
	[0 to 75) °C	0,12 °C	
	[75 to 100] °C	0,14 °C	
Climatic chambers, Furnaces, Ovens, Incubators, Autoclaves, Refrigerators, of any volume	[-80 to -40] °C	0,15 °C	Using platinum resistance thermometer, positioned at one point within the chamber.
	(-40 to 110] °C	0,20 °C	Using platinum resistance thermometer, covering the volume of the chamber.
	[-40 to 140] °C	0,30 °C	Using type K thermocouples, covering the volume of the chamber.
	(140 to 250] °C	0,45 °C	
	(250 to 350] °C	1,2 °C	
	(350 to 550] °C	2,5 °C	Using type K thermocouples, positioned at one point within the chamber.
	[-30 to 0) °C	0,32 °C	Using temperature data loggers, covering the volume of the chamber.
	[0 to 70] °C	0,30 °C	
			Calibration according to standards: Euramet cg20 v5.0:2017 DKD-R 5-7:2018 Calibration can also be performed on-site.
Furnaces, Ovens	[550 to 1200] °C	2,5 °C	Internal method TLCP-02 based on guide DKD-R 5-7:2018 using type K thermocouples. Calibration is performed at one point within the chamber. Calibration can also be performed on-site.
Baths	[-80 to 0) °C	0,040 °C	Internal method TLCP-02 βασισμένη στην οδηγία DKD-R 5-7:2018 με τη χρήση θερμομέτρων αντίστασης λευκοχρύσου. Η διακρίβωση μπορεί να εκτελεστεί και επί τόπου.
	[0 to 270] °C	0,037 °C	
Humidity Measurements			
Environmental chambers	[20 to 50] %rh at 20, 25, 30, 40 °C	1,0 %rh	According to guide: Euramet cg20 v.5.0:2017 Calibration is performed on-site.
	(50 to 80] %rh at 20, 25, 30, 40 °C	1,2 %rh	
	(80 to 98] %rh at 20, 25, 30, 40 °C	1,5 %rh	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Concrete specimen conditioning chambers	[20 to 98] %rh at 20 °C	1,5 %rh	According to guide: Euramet cg20 v.5.0:2017 at one point within chamber Calibration is performed on-site.
Analog and digital relative humidity measuring instruments, Relative humidity recorders	[20 to 50] %rh at 20, 25, 30, 40 °C	1,0 %rh	Internal method HRLCP-02 using environmental chamber and humidity sensor.
	(50 to 80] %rh at 20, 25, 30, 40 °C	1,6 %rh	
	(80 to 98] %rh at 20, 25, 30, 40 °C	1,8 %rh	
Volume Measurements			
Piston-operated pipettes	[0,1 to 1] µL	0,008 µL + 1 %	According to standard: ISO 8655-6:2022
	(1 to 2,5] µL	0,008 µL + 0,6 %	
	(2,5 to 10] µL	0,008 µL + 0,3 %	
	(10 to 25] µL	0,010 µL + 0,15 %	
	(0,025 to 10] mL	0,12 %	
Piston-operated dispensers	[0,1 to 1] µL	0,008 µL + 1 %	
	(1 to 2,5] µL	0,008 µL + 0,6 %	
	(2,5 to 10] µL	0,008 µL + 0,3 %	
	(10 to 25] µL	0,010 µL + 0,15 %	
	(0,025 to 200] mL	0,12 %	
Piston-operated burettes &	[0,1 to 100] mL	0,12 %	
Piston-operated dilutors	[0,5 to 1] µL	0,008 µL + 1 %	
	(1 to 2,5] µL	0,008 µL + 0,6 %	
	(2,5 to 10] µL	0,008 µL + 0,3 %	
	(10 to 25] µL	0,010 µL + 0,15 %	
	(0,025 to 100] mL	0,12 %	
Volumetric flasks	[1 to 5] mL	0,50 µL + 0,04 %	According to guide: Euramet cg19 v4.1:2025
	(5 to 50] mL	0,04 %	
	(50 to 100] mL	0,02 %	
	(100 to 10000] mL	0,01 %	
Graduated cylinders	[0,5 to 10] mL	1 µL + 0,06 %	
	(10 to 50] mL	0,04 %	
	(50 to 5000] mL	0,03 %	
Glass pipettes and burettes, syringes	[0,1 to 1] µL	0,008 µL + 1 %	According to guide Euramet cg19 v4.1:2025
	(1 to 2,5] µL	0,008 µL + 0,6 %	
	(2,5 to 10] µL	0,008 µL + 0,3 %	
	(10 to 25] µL	0,010 µL + 0,15 %	
	(25 to 500] µL	0,10 %	
	(0,5 to 5] mL	0,06 %	
	(5 to 10] mL	0,04 %	
	(10 to 100] mL	0,02 %	
	(100 to 2000] mL	0,01 %	
Standard volume vessels	[0,1 to 1] L	0,05 %	
	(1 to 5] L	0,03 %	
	(5 to 20] L	0,01 %	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Pressure Measurements			
Negative gauge pressure measuring instruments (gaseous media), of direct indication, pressure recorders, analog / digital	[-95 to 0] kPa	20 Pa	According to guide: Euramet cg17 v.4.1:2022 Calibration can also be performed on-site.
Gauge pressure measuring instruments (gaseous media), of direct indication, pressure recorders, analog / digital	[0 to 60] kPa	20 Pa	
	(0,06 to 4] MPa	(0,0003 + 0,003 x P) MPa P: in MPa	
	(4 to 14] MPa	(0,001 + 1,5 x 10^{-6} x P) MPa P: in MPa	
Gauge pressure measuring instruments (liquid media), of direct indication, pressure recorders, analog / digital	[0 to 60] kPa	20 Pa	
	(0,06 to 4] MPa	(0,0003 + 0,003 x P) MPa P: in MPa	
	(4 to 70] MPa	(0,001 + 3,0 x 10^{-6} x P) MPa P: in MPa	
Absolute pressure measuring instruments (gaseous media), pressure recorders, of direct indication, analog / digital	[5 to 160] kPa abs	20 Pa	
	(0,16 to 4] MPa abs	(0,0003 + 0,003 x P) MPa P: in MPa	
Barometric pressure measuring instruments, of direct indication, pressure recording devices, analog / digital	[600 to 1300] hPa	0,20 hPa	According to guide: Euramet cg17 v.4.1:2022 using a pressure chamber Calibration can also be performed on-site.
Dimensional Measurements			
Calipers, analog / digital	[0 to 300] mm		According to standard: ISO 13385-1:2019
	d: 0,005 mm	(3 + 0,02 x L) µm, L: mm	
	d: 0,01 mm	(7 + 0,02 x L) µm, L: mm	
	d: 0,02 mm	(10 + 0,02 x L) µm, L: mm	
	d: 0,05 mm	(24 + 0,02 x L) µm, L: mm	
	d: 0,1 mm	(48 + 0,01 x L) µm, L: mm	
	(300 to 1000] mm		
	d: 0,01 mm	(7 + 0,03 x L) µm, L: mm	
	d: 0,02 mm	(10 + 0,03 x L) µm, L: mm	
	d: 0,05 mm	(24 + 0,03 x L) µm, L: mm	
	d: 0,1 mm	(48 + 0,02 x L) µm, L: mm	
Depth calipers, analog / digital	[0 to 300] mm		According to standard: ISO 13385-2:2020
	d: 0,005 mm	(3 + 0,02 x L) µm, L: mm	
	d: 0,01 mm	(7 + 0,02 x L) µm, L: mm	
	d: 0,02 mm	(10 + 0,02 x L) µm, L: mm	
	d: 0,05 mm	(24 + 0,02 x L) µm, L: mm	
	d: 0,1 mm	(48 + 0,01 x L) µm, L: mm	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
External micrometers, analog / digital	[0 to 25] mm		According to standard: ISO 3611:2023
	d: 0,0001 mm	0,8 µm	
	[0 to 300] mm		
	d: 0,001 mm	(1,0 + 0,02 x L) µm, L: mm	
	d: 0,01 mm	(4,8 + 0,02 x L) µm, L: mm	
	(300 to 1000] mm		
	d: 0,001 mm	(1,0 + 0,02 x L) µm, L: mm	
	d: 0,01 mm	(4,8 + 0,02 x L) µm, L: mm	
Micrometer heads, analog	[0 to 50] mm		Internal method DLCP-05 using gauge blocks & linear displacement sensor.
	d: 0,001 mm	(0,45 + 0,008 x L)µm, L: mm	
	d: 0,002 mm	(0,6 + 0,006 x L)µm, L: mm	
	d: 0,005 mm	(0,92 + 0,007 x L)µm, L: mm	
	d: 0,01 mm	(1,6 + 0,004 x L)µm, L: mm	
Micrometer heads, digital	[0 to 50] mm		
	d: 0,001 mm	(0,92 + 0,007 x L)µm, L: mm	
	d: 0,002 mm	(1,6 + 0,004 x L)µm, L: mm	
	d: 0,005 mm	(3,9 + 0,002 x L)µm, L: mm	
	d: 0,01 mm	(7,8 + 0,001 x L)µm, L: mm	
Digital indicators, digital Extensometers, LVDT, of lever / plung type	[0 to 100] mm		Internal method DLCP-02 using micrometer head.
	d: 0,001 mm	(1,2 + 0,05 x L) µm, L: mm	
	d: 0,002 mm	(1,9 + 0,04 x L) µm, L: mm	
	d: 0,005 mm	(4,0 + 0,04 x L) µm, L: mm	
	d: 0,01 mm	(7,8 + 0,03 x L) µm, L: mm	
	d: 0,02 mm	(16 + 0,02 x L) µm, L: mm	
	d: 0,05 mm	(39 + 0,01 x L) µm, L: mm	
	d: 0,1 mm	(78 + 0,01 x L) µm, L: mm	
	[0 to 100] mm		Internal method DLCP-02 using micrometer head. Calibration is performed on-site.
	d: 0,001 mm	(1,2 + 0,06 x L) µm, L: mm	
	d: 0,002 mm	(1,9 + 0,06 x L) µm, L: mm	
	d: 0,005 mm	(4,0 + 0,04 x L) µm, L: mm	
	d: 0,01 mm	(7,8 + 0,03 x L) µm, L: mm	
	d: 0,02 mm	(16 + 0,02 x L) µm, L: mm	
	d: 0,05 mm	(39 + 0,01 x L) µm, L: mm	
	d: 0,1 mm	(78 + 0,01 x L) µm, L: mm	
	[0 to 10] mm		Internal method DLCP-02 using gauge blocks.
	d: 0,0001 mm	(0,22 + 0,013 x L)µm, L: mm	
	d: 0,0002 mm	(0,26 + 0,011 x L)µm, L: mm	
	d: 0,0005 mm	(0,46 + 0,007 x L)µm, L: mm	
Digital indicators, digital Extensometers, LVDT, of lever / plung type	[0 to 100] mm		Internal method DLCP-02 using gauge blocks.
	d: 0,001 mm	(0,8 + 0,02 x L) µm, L: mm	
	d: 0,002 mm	(1,6 + 0,02 x L) µm, L: mm	
	d: 0,005 mm	(3,9 + 0,01 x L) µm, L: mm	
	d: 0,01 mm	(7,8 + 0,01 x L) µm, L: mm	
	d: 0,02 mm	(16 + 0,01 x L) µm, L: mm	
	d: 0,05 mm	(39 + 0,01 x L) µm, L: mm	
	d: 0,1 mm	(78 + 0,01 x L) µm, L: mm	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Digital indicators, digital Extensometers, LVDT, of lever /	[0 to 100] mm		Internal method DLCP-02 using gauge blocks. Calibration is performed on-site.
	d: 0,001 mm	(0,8 + 0,04 x L) µm, L: mm	
	d: 0,002 mm	(1,6 + 0,04 x L) µm, L: mm	
	d: 0,005 mm	(3,9 + 0,03 x L) µm, L: mm	
	d: 0,01 mm	(7,8 + 0,02 x L) µm, L: mm	
	d: 0,02 mm	(16 + 0,01 x L) µm, L: mm	
	d: 0,05 mm	(39 + 0,01 x L) µm, L: mm	
	d: 0,1 mm	(78 + 0,01 x L) µm, L: mm	
Dial indicators, dial Extensometers, LVDT, of lever / plug type	[0 to 100] mm		Internal method DLCP-02 using micrometer head.
	d: 0,001 mm	(0,9 + 0,04 x L) µm, L: mm	
	d: 0,002 mm	(1,1 + 0,05 x L) µm, L: mm	
	d: 0,005 mm	(1,8 + 0,04 x L) µm, L: mm	
	d: 0,01 mm	(3,3 + 0,03 x L) µm, L: mm	
	d: 0,02 mm	(6,0 + 0,03 x L) µm, L: mm	
	d: 0,05 mm	(14 + 0,03 x L) µm, L: mm	
	d: 0,1 mm	(28 + 0,01 x L) µm, L: mm	
	[0 to 100] mm		Internal method DLCP-02 using micrometer head. Calibration is performed on-site.
	d: 0,001 mm	(0,9 + 0,11 x L) µm, L: mm	
	d: 0,002 mm	(1,1 + 0,06 x L) µm, L: mm	
	d: 0,005 mm	(1,8 + 0,06 x L) µm, L: mm	
	d: 0,01 mm	(3,3 + 0,05 x L) µm, L: mm	
	d: 0,02 mm	(6,0 + 0,04 x L) µm, L: mm	
	d: 0,05 mm	(14 + 0,04 x L) µm, L: mm	
	d: 0,1 mm	(28 + 0,01 x L) µm, L: mm	
	[0 to 100] mm		Internal method DLCP-02 using gauge blocks.
	d: 0,001 mm	(0,33 + 0,02 x L) µm, L: mm	
	d: 0,002 mm	(0,6 + 0,02 x L) µm, L: mm	
	d: 0,005 mm	(1,4 + 0,02 x L) µm, L: mm	
	d: 0,01 mm	(2,8 + 0,02 x L) µm, L: mm	
	d: 0,02 mm	(5,6 + 0,02 x L) µm, L: mm	
	d: 0,05 mm	(12 + 0,01 x L) µm, L: mm	
	d: 0,1 mm	(28 + 0,01 x L) µm, L: mm	
Dial indicators, dial extensiometers, LVDT, of lever / plug type	[0 to 100] mm		Internal method DLCP-02 using gauge blocks. Calibration is performed on-site.
	d: 0,001 mm	(0,33 + 0,04 x L) µm, L: mm	
	d: 0,002 mm	(0,6 + 0,04 x L) µm, L: mm	
	d: 0,005 mm	(1,4 + 0,04 x L) µm, L: mm	
	d: 0,01 mm	(2,8 + 0,03 x L) µm, L: mm	
	d: 0,02 mm	(5,6 + 0,03 x L) µm, L: mm	
	d: 0,05 mm	(12 + 0,02 x L) µm, L: mm	
	d: 0,1 mm	(28 + 0,01 x L) µm, L: mm	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Sieves: wire cloth, perforated plate with rectangular / circular holes, bar sieves	Nominal opening		According to standards: ISO 5223:1995 / Amd 1:1999 ASTM E11:2024 / ASTM E161:2017 ASTM E323:2011 / ASTM E454:2012 ASTM E2016:2022 EN 933-3:2012 BS 812-105.1:1989
	[0,02 to 0,5] mm	1,4 µm	
	(0,5 to 1,0] mm	1,6 µm	
	(1 to 30] mm	2,5 µm	
	(30 to 50] mm	4,1 µm	
	(50 to 125] mm	12 µm	
Profile projectors, micrometers with scales, optical measuring instruments with scales, analog / digital (axis and angle measurements)	[0 to 5] mm magnification ≥ x30		Internal method DLCP-03 using glass microscales. Calibration can also be performed on-site.
	d: 0,0005 mm	(0,69 + 0,004 x L)µm, L: mm	
	d: 0,001 mm	(1,3 + 0,003 x L)µm, L: mm	
	d: 0,002 mm	(2,5 + 0,001 x L)µm, L: mm	
	d: 0,005 mm	(3,9 + 0,001 x L)µm, L: mm	
	d: 0,01 mm	(7,8 + 0,001 x L)µm, L: mm	
	(5 to 50] mm magnification ≥ x10		
	d: 0,0005 mm	(0,89 + 0,019 x L)µm, L: mm	
	d: 0,001 mm	(1,3 + 0,016 x L)µm, L: mm	
	d: 0,002 mm	(2,6 + 0,010 x L)µm, L: mm	
	d: 0,005 mm	(4,0 + 0,011 x L)µm, L: mm	
	d: 0,01 mm	(7,8 + 0,003 x L)µm, L: mm	
	(50 to 300] mm magnification ≥ x3		
	d: 0,0005 mm	(2,2 + 0,030 x L) µm, L: mm	
	d: 0,001 mm	(2,1 + 0,031 x L) µm, L: mm	
	d: 0,002 mm	(3,1 + 0,029 x L) µm, L: mm	
	d: 0,005 mm	(4,6 + 0,025 x L) µm, L: mm	
	d: 0,01 mm	(8,0 + 0,020 x L) µm, L: mm	
	(300 to 1000] mm magnification ≥ 30		
	d: 0,001 mm	(16 + 0,014 x L) µm, L: mm	
	[0° to 360°]	1'	
Concrete moulds, cubic, prismatic, cylindrical			According to standard: EN 12390-1: 2021
- External, internal and depth dimensions	(0 to 300] mm	0,02 mm	
- Perpendicularity	-	5 µm	
- Flatness	-	4 µm	
Cylindrical moulds PROCTOR (standard & modified)			According to standards: EN 13286-2:2010 ASTM D698-12, ASTM D1557-12
- External, internal and depth dimensions	(0 to 250] mm	0,02 mm	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Cylindrical moulds CBR			According to standards: EN 13286-47:2021, ASTM D1883-21
- External, internal and depth dimensions	(0 to 200] mm	0,02 mm	
Cylindrical moulds MARSHALL			According to standards: EN 12697-30:2018 ASTM D6926-20, ASTM D5581-25
- External, internal and depth dimensions	(0 to 200] mm	0,02 mm	
Graduated rules, tank level bars	[0 to 3] m	(N x 0,07) mm N: length in integral m	Internal method DLCP-10 based on guide: OIML R35-1:2007, Amendment 2014 Calibration in 1 m steps.
Measuring tapes, circometers	[0 to 200] m		
Extensometers	[0 to 50] mm	(0,3 + 0,8 x L) µm L: mm	According to standards: ISO 9513:2012 / Cor 1:2013 ASTM E83-23 Calibration can also be performed on-site.
Crosshead displacement rate applicable to: - Tension and compression testing machines - Testing and measurement systems	[0,015 to 2] mm/min	2×10^{-5} mm/min + 0,1%	Internal method FLCP-01-4 using a reference displacement-rate measurement system. Calibration can also be performed on-site.
	(2 to 50] mm/min	0,05 %	
	(50 to 500] mm/min	0,03 %	
	(500 to 3000] mm/min	0,02 %	
Electrical measurements			
Voltage DC (Generating) / Voltmeters DC	[0,00001 to 120] mV	1,06 µV + 11,5 x 10^{-6} V	According to guide: Euramet cg-15 v.3.0:2015 using standard multifunction calibrator. Calibration can also be performed on-site.
	[0,00001 to 120] mV	1,8 µV + 8,1 x 10^{-6} V	
	(1,2 to 12] V	13 µV + 8,3 x 10^{-6} V	
	(12 to 120] V	0,17 mV + 12 x 10^{-6} V	
	(120 to 1020] V	1,6 mV + 12 x 10^{-6} V	
Voltage DC (Measuring) / Voltage sources DC	[0,001 to 100] mV	0,94 µV + 6 x 10^{-6} V	Internal method ELCP-04 using standard multimeter. Calibration can also be performed on-site.
	(0,1 to 1] V	3,1 µV + 6,1 x 10^{-6} V	
	(1 to 10] V	16 µV + 7 x 10^{-6} V	
	(10 to 100] V	0,25 mV + 8,3 x 10^{-6} V	
	(100 to 1000] V	3,5 mV + 7,9 x 10^{-6} V	
	[0,001 to 100] mV	8,3 µV + 180 x 10^{-6} V	
	(0,1 to 1] V	52 µV + 150 x 10^{-6} V	
	(1 to 10] V	0,52 mV + 150 x 10^{-6} V	
	(10 to 100] V	5,2 mV + 150 x 10^{-6} V	
	(100 to 1000] V	53 mV + 150 x 10^{-6} V	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Voltage AC (Generating) / Voltmeters AC	[0,00001 to 12] mV (0,01 to 20] kHz	7,15 µV + 117 x 10^{-6} V	According to guide: Euramet cg-15 v.3.0:2015 using standard multifunction calibrator. Calibration can also be performed on-site.
	(12 to 120] mV (0,01 to 20] kHz	8,3 µV + 113 x 10^{-6} V	
	(0,12 to 1,2] V (0,04 to 20] kHz	27 µV + 107 x 10^{-6} V	
	(1,2 to 12] V (0,04 to 20] kHz	0,25 mV + 106 x 10^{-6} V	
	(12 to 120] V (0,04 to 20] kHz	2,7 mV + 105 x 10^{-6} V	
	(120 to 330] V (0,01 to 20] kHz	14 mV + 139 x 10^{-6} V	
	(330 to 1020] V (0,01 to 10] kHz	93 mV + 198 x 10^{-6} V	
Voltage AC (Measuring) / Voltage sources AC	[0,001 to 10] mV [45 to 1000] Hz	5,1 µV + 83 x 10^{-6} V	Internal method ELCP-04 using standard multimeter.
	(10 to 100] mV [45 to 1000] Hz	21 µV + 20 x 10^{-6} V	
	(0,1 to 1] V [45 to 1000] Hz	0,045 mV + 56 x 10^{-6} V	
	(1 to 10] V [45 to 1000] Hz	0,22 mV + 69 x 10^{-6} V	
	(10 to 100] V [45 to 1000] Hz	4 mV + 190 x 10^{-6} V	
	(100 to 1000] V [45 to 1000] Hz	32 mV + 390 x 10^{-6} V	
	[10 to 100] mV [45 to 1000] Hz	100 µV + 2000 x 10^{-6} V	Internal method ELCP-04 using standard multimeter. Calibration can also be performed on-site.
	(0,1 to 1] V [45 to 1000] Hz	1,0 mV + 2000 x 10^{-6} V	
	(1 to 10] V [45 to 1000] Hz	10 mV + 2000 x 10^{-6} V	
	(10 to 100] V [45 to 1000] Hz	100 mV + 2000 x 10^{-6} V	
	(100 to 1000] V [45 to 1000] Hz	0,78 V + 2000 x 10^{-6} V	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Current DC (Generating) / Ammeters DC Current DC (Generating) / Clamp meters DC	[0,0001 to 120] µA	7,3 nA + 109 x 10^{-6} I	According to guide: Euramet cg-15 v.3.0:2015 using standard multifunction calibrator. Calibration can also be performed on-site.
	(0,12 to 1,2] mA	21 nA + 83 x 10^{-6} I	
	(1,2 to 12] mA	0,12 µA + 83 x 10^{-6} I	
	(12 to 120] mA	1,2 µA + 83 x 10^{-6} I	
	(0,12 to 1,2] A	17 µA + 136 x 10^{-6} I	
	(1,2 to 3,1] A	0,20 mA + 286 x 10^{-6} I	
	(3,1 to 12] A	0,47 mA + 347 x 10^{-6} I	
	(12 to 30,2] A	1,3 mA + 826 x 10^{-6} I	
Current DC (Generating) / Ammeters DC	[1 to 60] A	6500 x 10^{-6} I	Internal method ELCP-12 using standard current source. Calibration can also be performed on-site.
	(60 to 155] A	1,2 mA + 6500 x 10^{-6} I	
	(155 to 600] A	2,1 mA + 6500 x 10^{-6} I	
	(600 to 1510] A	10,3 mA + 6600 x 10^{-6} I	
Current DC (Measuring) / Current sources DC	[1 to 100] nA	6 nA + 60 x 10^{-6} I	Internal method ELCP-05 using standard multimeter.
	(0,1 to 1] µA	6 nA + 20 x 10^{-6} I	
	(1 to 10] µA	6,3 nA + 20 x 10^{-6} I	
	(10 to 100] µA	9,2 nA + 4,5 x 10^{-6} I	
	(0,1 to 1] mA	33 nA + 9 x 10^{-6} I	
	(1 to 10] mA	0,3 µA + 9,4 x 10^{-6} I	
	(10 to 100] mA	4,1 µA + 18 x 10^{-6} I	
	(0,1 to 1] A	0,055 mA + 85 x 10^{-6} I	
	[0,1 to 100] µA	16 nA + 500 x 10^{-6} I	Internal method ELCP-05 using standard multimeter. Calibration can also be performed on-site.
	(0,1 to 1] mA	0,10 µA + 480 x 10^{-6} I	
	(1 to 10] mA	1,7 µA + 490 x 10^{-6} I	
	(10 to 100] mA	9,5 µA + 480 x 10^{-6} I	
	(0,1 to 1] A	0,18 mA + 970 x 10^{-6} I	
	(1 to 10] A	2,0 mA + 2400 x 10^{-6} I	
	[1 to 250] A	14 mA + 450 x 10^{-6} I	Internal method ELCP-23 using standard ammeter. Calibration can also be performed on-site.
	(250 to 1000] A	92 mA + 980 x 10^{-6} I	
	(1000 to 6000] A	66 mA + 3500 x 10^{-6} I	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Current AC (Generating) / Ammeters AC	[10 to 120] µA [3 to 1000] Hz	16 nA + 772 x 10^{-6} I	According to guide: Euramet cg-15 v.3.0:2015 using standard multifunction calibrator. Calibration can also be performed on-site.
	(0,12 to 1,2] mA [3 to 1000] Hz	159 nA + 774 x 10^{-6} I	
	(1,2 to 12] mA [3 to 1000] Hz	1,6 µA + 613 x 10^{-6} I	
	(12 to 120] mA [3 to 1000] Hz	12 µA + 617 x 10^{-6} I	
	(0,12 to 1,2] A [3 to 1000] Hz	0,10 mA + 620 x 10^{-6} I	
	(1,2 to 3,1] A [3 to 1000] Hz	0,53 mA + 992 x 10^{-6} I	
	(3,1 to 12] A [3 to 1000] Hz	1,3 mA + 1192 x 10^{-6} I	
	(12 to 30,2] A [3 to 1000] Hz	14 mA + 745 x 10^{-6} I	
Current AC (Generating) / Clamp meters AC	[1 to 60] A [3 to 440] Hz	0,3 mA + 6500 x 10^{-6} I	Internal method ELCP-12 using standard current source. Calibration can also be performed on-site.
	(60 to 155] A [3 to 440] Hz	4,6 mA + 6500 x 10^{-6} I	
	(155 to 600] A [3 to 440] Hz	7 mA + 6600 x 10^{-6} I	
	(600 to 1510] A [3 to 440] Hz	0,13 A + 6500 x 10^{-6} I	
Current AC (Measuring) / Current sources AC	[10 to 100] µA [45 to 100] Hz	34 nA + 580 x 10^{-6} I	Internal method ELCP-05 using standard multimeter.
	(0,1 to 1] mA [45 to 100] Hz	0,23 µA + 580 x 10^{-6} I	
	(1 to 10] mA [45 to 100] Hz	2,3 µA + 580 x 10^{-6} I	
	(10 to 100] mA [45 to 100] Hz	23 µA + 580 x 10^{-6} I	
	(0,1 to 1] A [45 to 100] Hz	0,33 mA + 700 x 10^{-6} I	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Current AC (Measuring) / Current sources AC	[0,1 to 10] mA	11 µA + 4900 x 10^{-6} I	Internal method ELCP-05 using standard multimeter. Calibration can also be performed on-site.
	[45 to 100] Hz		
	(10 to 100] mA	110 µA + 4900 x 10^{-6} I	
	[45 to 100] Hz		
	(0,1 to 1] A	1,1 mA + 4900 x 10^{-6} I	
	[45 to 100] Hz		
	(1 to 10] A	14 mA + 4700 x 10^{-6} I	
	[45 to 100] Hz		
	[1 to 250] A	250 mA + 2000 x 10^{-6} I	Internal method ELCP-23 using standard ammeter. Calibration can also be performed on-site.
	[45 to 100] Hz		
	(250 to 1000] A	2,0 A + 2100 x 10^{-6} I	
	[45 to 100] Hz		
	(1000 to 6000] A	4,9 A + 3800 x 10^{-6} I	
	[45 to 100] Hz		
Resistance DC (Generating) / Resistance meters	[0,0001 to 12] Ω	1,0 mΩ + 30,8 x 10^{-6} R	According to guide: Euramet cg-15 v.3.0:2015 using standard multifunction calibrator 2 or 4 wires. Calibration can also be performed on-site.
	(12 to 120] Ω	1,1 mΩ + 22,2 x 10^{-6} R	
	(0,12 to 1,2] kΩ	7,6 mΩ + 18,1 x 10^{-6} R	
	(1,2 to 12] kΩ	98 mΩ + 17 x 10^{-6} R	
	(12 to 120] kΩ	0,79 Ω + 18 x 10^{-6} R	
	(0,12 to 1,2] MΩ	7,6 Ω + 21 x 10^{-6} R	
	(1,2 to 12] MΩ	78 Ω + 39,4 x 10^{-6} R	
	(12 to 120] MΩ	6,8 kΩ + 357 x 10^{-6} R	
	(0,12 to 1,2] GΩ	0,59 MΩ + 4600 x 10^{-6} R	
	[0,01 to 0,1] Ω	0,50 mΩ	According to guide: Euramet cg-15 v.3.0:2015 using standard decade box.
	[0,1 to 1] Ω	0,53 mΩ	
	(1 to 10] Ω	0,50 mΩ + 23 x 10^{-6} R	
	(10 to 100] Ω	0,62 mΩ + 23 x 10^{-6} R	
	(0,1 to 1] kΩ	0,80 mΩ + 22 x 10^{-6} R	
	(1 to 10] kΩ	2,1 mΩ + 13 x 10^{-6} R	
	(10 to 100] kΩ	23 mΩ + 13 x 10^{-6} R	
	(0,1 to 1] MΩ	0,94 Ω + 17 x 10^{-6} R	
Resistance / Insulation resistance meters	[1 to 10] MΩ	1,5 x 10^{-3} R	Internal method ELCP-17 using standard decade box. Calibration can also be performed on-site.
	(10 to 100] MΩ	1,5 x 10^{-3} R	
	(0,1 to 1] GΩ	2,3 x 10^{-3} R	
	(1 to 10] GΩ	5,2 x 10^{-3} R	
	(10 to 100] GΩ	10,7 x 10^{-3} R	

Calibration item / Parameters	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
Resistance (4 wire Measuring) / Instruments of nominal resistance	[0,001 to 10] Ω	0,21 mΩ + 8 x 10^{-6} R	Internal method ELCP-06 using standard multimeter.
	(10 to 100] Ω	0,92 mΩ + 10 x 10^{-6} R	
	(0,1 to 1] kΩ	6,6 mΩ + 6,3 x 10^{-6} R	
	(1 to 10] kΩ	65 mΩ + 6,4 x 10^{-6} R	
	(10 to 100] kΩ	0,81 Ω + 6 x 10^{-6} R	
	(0,1 to 1] MΩ	14 Ω + 9 x 10^{-6} R	
	(1 to 10] MΩ	290 Ω + 39 x 10^{-6} R	
	(10 to 100] MΩ	9 kΩ + 440 x 10^{-6} R	
	(0,1 to 1] GΩ	0,015 MΩ + 5000 x 10^{-6} R	
Time / Frequency measurements			
Timers	(0 s to 20 h]	0,07 s	Internal method ELCP-07 using standard timer. Calibration can also be performed on-site.
Optical tachometers	[10 to 120 000] rpm	0,13 rpm	Internal method ELCP-09 using standard function generator and standard frequency meter.
Rotation frequency / Reciprocating movement frequency Centrifuges, Mixers, Shakers, Vibrating tables	(0 to 1000] rpm	0,01 rpm + 0,1 % x f	Internal method ELCP-14 using standard optical tachometer. Calibration can also be performed on-site.
	(1000 to 3000] rpm	0,1 rpm + 0,1 % x f	
	(3000 to 60000] rpm	1 rpm + 0,1 % x f	

** Where expanded uncertainty (with a probability of 95% coverage) is accompanied by the corresponding unit, it is absolute, while where it is not accompanied by a unit, it is relative.*

The Calibration & Measurement Capability (CMC), includes the measured quantity, measurement range and measurement uncertainty and expresses the smallest measurement uncertainty that can be achieved during a calibration.

Address of permanent laboratory premises: **1 Lesvou str., 171 23, N. Smirni, Athens, Greece**
Approved Signatories: **K. Konstantinou, D. Grigoriou, P. Damigos, A Skandalis, E. Cherouvim, G. Aspirtakis, D. Filippopoulos, Ch. Kapsis**

This scope of Accreditation replaces the previous one dated 13.01.2026.
The Accreditation Certificate No. **900**-6, to ELOT EN ISO/IEC 17025:2017, is valid until 27.01.2031.

Athens, 14.07.2026

Konstantinou Evangelos Apostolos CEO of ESYD