

Hellenic Accreditation System



Annex F2/18 to the Certificate No. **90-7**

SCOPE of ACCREDITATION

of the

Calibration Laboratory

of the

Innovation Hub (DKK) of PPC S.A.

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
DC Voltage (Measurement)/ Voltage Standards, Voltage Calibrators and Sources		parts per 10⁶ output + μV	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	[1 μV to 100 μV]	0 + 0.029	
	(100 μV to 1 mV)	0 + 0.042	
	(1 mV to 10 mV)	0 + 0.25	
	(10 mV to 120 mV)	5.0 + 0.3	
	(120 mV to 1.2 V)	4.0 + 0.8	
	1.018 V	0 + 0.74	
	(1.2 V to 12 V)	4.0 + 0.5	
	10 V	0 + 0.38	
	(12 V to 120 V)	6.0 + 30	
(120 V to 1050 V)	6.0 + 100		
[1 kV to 10 kV]	136.0 + 0		
DC Voltage (Generation)/ Voltage Measuring Equipment	[1 μV to 100 μV]	0 + 0.01	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	(100 μV to 1 mV)	0 + 0.04	
	(1 mV to 5 mV)	0 + 0.17	
	(5 mV to 10 mV)	0 + 0.34	
	(10 mV to 220 mV)	6.5 + 0.8	
	(220 mV to 2.2 V)	4.0 + 0.8	
	1.018 V	0 + 0.74	
	(2.2 V to 12 V)	3.0 + 2.5	
	10 V	0 + 0.38	
	(12 V to 22 V)	3.0 + 4	
(22 V to 220 V)	4.0 + 40		
(220 V to 1100 V)	6.0 + 400		

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
AC Voltage (Measurement)/ Voltage Standards, Voltage Calibrators and Sources	(12 mV to 12 V) [1 Hz to 40 Hz]	0.007 + 0.004	Calibration according to (i) EURAMET 1 eg 15, (ii) standards of lab, (iii) lab internal procedures
	(40 Hz to 1 kHz)	0.007 + 0.002	
	(1 kHz to 20 kHz)	0.014 + 0.002	
	(20 kHz to 50 kHz)	0.03 + 0.002	
	(50 kHz to 100 kHz)	0.08 + 0.002	
	(100 kHz to 300 kHz)	0.3 + 0.01	
	(300 kHz to 1 MHz)	1 + 0.01	
	(1 MHz to 2 MHz)	1.5 + 0.01	
	(2 MHz to 4 MHz)	4 + 0.07	
	(4 MHz to 8 MHz)	4 + 0.08	
	(8 MHz to 10 MHz)	15 + 0.1	
	(12 V to 120 V) [1 Hz to 40 Hz]	0.02 + 0.004	
	(40 Hz to 1 kHz)	0.02 + 0.002	
	(1 kHz to 20 kHz)	0.02 + 0.002	
	(20 kHz to 50 kHz)	0.035 + 0.002	
(50 kHz to 100 kHz)	0.12 + 0.002		
(100 kHz to 300 kHz)	0.4 + 0.01		
(300 kHz to 1 MHz)	1.5 + 0.01		
(120 V to 700 V) [1 Hz to 40 Hz]	0.04 + 0.004		
(40 Hz to 1 kHz)	0.04 + 0.002		
(1 kHz to 20 kHz)	0.06 + 0.002		
(20 kHz to 50 kHz)	0.12 + 0.002		
(50 kHz to 100 kHz)	0.3 + 0.002		
		% Reading + V	
[0.7 kV to 3 kV]	[50 Hz to 60Hz]	0.577 + 0	
[3 kV to 7 kV]	[50 Hz to 60Hz]	0.211 + 0	

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
AC Voltage (Generation)/ Voltage Measuring Equipment		parts per 10⁶ output + μV	
	[220 μV to 2.2 mV] [10 Hz to 20 Hz]	230 + 4	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	(20 Hz to 40 Hz)	87 + 4	
	(40 Hz to 20 kHz)	77 + 4	
	(20 kHz to 50 kHz)	190 + 4	
	(50 kHz to 100 kHz)	480 + 5	
	(100 kHz to 300 kHz)	1000 + 10	
	(300 kHz to 500 kHz)	1300 + 20	
	(500 kHz to 1 MHz)	2600 + 20	
	[2.2 mV to 22 mV] [10 Hz to 20 Hz]	230 + 4	
	(20 Hz to 40 Hz)	87 + 4	
	(40 Hz to 20 kHz)	77 + 4	
	(20 kHz to 50 kHz)	190 + 4	
	(50 kHz to 100 kHz)	480 + 5	
	(100 kHz to 300 kHz)	1000 + 10	
	(300 kHz to 500 kHz)	1300 + 20	
(500 kHz to 1 MHz)	2600 + 20		
[22 mV to 220 mV] [10 Hz to 20 Hz]	230 + 12		
(20 Hz to 40 Hz)	87 + 7		
(40 Hz to 20 kHz)	77 + 7		
(20 kHz to 50 kHz)	190 + 7		
(50 kHz to 100 kHz)	440 + 17		
(100 kHz to 300 kHz)	800 + 20		
(300 kHz to 500 kHz)	1300 + 25		
(500 kHz to 1 MHz)	2600 + 45		
(220 mV to 2.2 V) [10 Hz to 20 Hz]	230 + 40		
(20 Hz to 40 Hz)	85 + 15		
(40 Hz to 20 kHz)	42 + 8		
(20 kHz to 50 kHz)	73 + 10		
(50 kHz to 100 kHz)	107 + 30		
(100 kHz to 300 kHz)	380 + 80		
(300 kHz to 500 kHz)	950 + 200		
(500 kHz to 1 MHz)	1600 + 300		

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
		parts per 10⁶ output + μV	
	(2.2 V to 22 V) [10 Hz to 20 Hz] (20 Hz to 40 Hz) (40 Hz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 500 kHz) (500 kHz to 1 MHz)	230 + 400 85 + 150 42 + 50 73 + 100 97 + 200 270 + 600 900 + 2000 1400 + 3200	
(continued) AC Voltage (Generation) / Voltage Measuring Equipment	(22 V to 220 V) [10 Hz to 20 Hz] (20 Hz to 40 Hz) (40 Hz to 20 kHz) (20 kHz to 50 kHz) (50 kHz to 100 kHz) (100 kHz to 300 kHz) (300 kHz to 500 kHz) (500 kHz to 1 MHz)	230 + 4000 85 + 1500 50 + 600 77 + 1000 140 + 2500 850 + 16000 4300 + 40000 7500 + 80000	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	(220 V to 1100 V) [50 Hz to 1 kHz] (1 kHz to 20 kHz) (20 kHz to 30 kHz) to 750 V) (30 kHz to 50 kHz) (50 kHz to 100 kHz)	65 + 3500 135 + 6000 440 + 11000 440 + 11000 1600 + 45000	
		parts per 10⁶ Reading + parts per 10⁶ Range	
DC Current (Measurement) / Current Calibrators and Sources	[10 nA to 120 nA] [0.12 μ A to 1.2 μ A] [1.2 μ A to 12 μ A] [12 μ A to 120 μ A] [0.12 mA to 1.2 mA] [1.2 mA to 12 mA] [12 mA to 120 mA] [0.12 A to 1.05 A] [1.05 A to 200 A]	30 + 400 20 + 40 20 + 10 20 + 8 20 + 5 20 + 5 35 + 5 110 + 10 240 + 0	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
DC Current (Generation)/ Current Measuring Equipment		parts per 10⁶ output + nA	
	[10 μ A to 220 μ A] [0.22 mA to 2.2 mA] [2.2 mA to 22 mA] [22 mA to 220 mA] [0.22 A to 2.2 A] [2.2 A to 11 A]	37 + 6 33 + 7 33 + 40 42 + 700 70 + 12000 350 + 480000	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks		
Current Clamp Type Measuring Equipment		% Reading + mA			
	[10 A to 1000 A]	0.326 + 0			
AC Current (Measurement)/ Current Calibrators and Sources		% Reading + % Range	Calibration according to (i) EURAMET cg-15, (ii) standards of lab, (iii) lab internal procedures		
	[10 µA to 120 µA]	[10 Hz to 20 Hz) [20 Hz to 45 Hz) [45 Hz to 1 kHz]		0.4 + 0.03 0.15 + 0.03 0.06 + 0.03	
	[0.12 mA to 120 mA]	[10 Hz to 20 Hz) [20 Hz to 45 Hz) [45 Hz to 100 Hz) [100 Hz to 5 kHz) [5 kHz to 20 kHz) [20 kHz to 50 kHz) [50 kHz to 100 kHz]		0.4 + 0.02 0.15 + 0.02 0.06 + 0.02 0.03 + 0.02 0.06 + 0.02 0.4 + 0.04 0.55 + 0.15	
	[120 mA to 1.05 A]	[10 Hz to 20 Hz) [20 Hz to 45 Hz) [45 Hz to 100 Hz) [100 Hz to 5 kHz) [5 kHz to 20 kHz) [20 kHz to 50 kHz]		0.4 + 0.02 0.16 + 0.02 0.08 + 0.02 0.1 + 0.02 0.3 + 0.02 1 + 0.04	
	[20 A to 100 A]	50 Hz		3.5 + 0	
	[100 A to 700 A]	50 Hz		0.76 + 0	
	(700 A to 1000 A)	50 Hz		1.89 + 0	
	[1 kA to 10 kA]	[50 to 60 Hz]		1.10 + 0	
	AC Current (Generation)/ Current Measuring Equipment			parts per 10⁶ output + nA	Calibration according to (i) EURAMET cg-15, (ii) standards of lab, (iii) lab internal procedures
		[0.22 mA to 2.2 mA]		[10 Hz to 20 Hz) [20 Hz to 40 Hz) [40 Hz to 1 kHz) [1 kHz to 5 kHz) [5 kHz to 10 kHz]	
[2.2 mA to 22 mA]		[10 Hz to 20 Hz) [20 Hz to 40 Hz) [40 Hz to 1 kHz) [1 kHz to 5 kHz) [5 kHz to 10 kHz]	240 + 40 150 + 35 115 + 35 190 + 110 1000 + 650		
[0.22 mA to 2.2 mA]		[10 Hz to 20 Hz) [20 Hz to 40 Hz) [40 Hz to 1 kHz) [1 kHz to 5 kHz) [5 kHz to 10 kHz]	240 + 400 150 + 350 115 + 350 190 + 550 1000 + 5000		

Parameters/ Calibration Item	Range of measurement	Expanded measurement uncertainty (k=2)*	Remarks
(continued) AC Current (Generation)/ Current Measuring Equipment		parts per 10⁶ output + μA	Calibration according to (i) EURAMET cg-15, (ii) standards of lab, (iii) lab internal procedures
	[22 mA to 220 mA) [10 Hz to 20 Hz)	240 + 4	
	[20 Hz to 40 Hz)	150 + 3.5	
	[40 Hz to 1 kHz)	115 + 2.5	
	[1 kHz to 5 kHz)	190 + 3.5	
	[5 kHz to 10 kHz]	1000 + 10	
	[220 mA to 2.2 A) [20 Hz to 1 kHz)	250 + 35	
	[1 kHz to 5 kHz)	420 + 80	
	[5 kHz to 10 kHz]	6500 + 160	
	[2.2 A to 11 A] [40 Hz to 1 kHz)	440 + 170	
[1 kHz to 5 kHz)	900 + 380		
[5 kHz to 10 kHz]	3500 + 750		
Current Clamp Type Measuring Equipment		% Reading + A	
	[10 A to 100 A) 50 Hz	3.2 + 0	
	(50 Hz to 400 Hz]	8.4 + 0	
	[100 A to 400 A] 50 Hz	0.32 + 0	
	(50 Hz to 400 Hz]	0.86 + 0	
(400 A to 1000 A] 50 Hz	0.083 + 0		
Resistance DC (Generation)/ Resistance Measuring Equipment		parts per 10⁶	Calibration according to (i) EURAMET cg-15, (ii) standards of lab, (iii) lab internal procedures
	0 Ω	40 $\mu\Omega$	
	10 $\mu\Omega$	42	
	100 $\mu\Omega$	23	
	1 m Ω	19	
	10 m Ω	13	
	100 m Ω	13	
	1 Ω	85	
	1.9 Ω	85	
	10 Ω	22	
	19 Ω	22	
	100 Ω	9.5	
	190 Ω	9.5	
	1 k Ω	8.0	
	1.9 k Ω	8.0	
	10 k Ω	85	
	19 k Ω	8.0	
	100 k Ω	10	
	190 k Ω	10	
	1 M Ω	17	
1.9 M Ω	18		
10 M Ω	34		
19 M Ω	42		
100 M Ω	100		

Parameters/ Calibration Item	Range of measurement		Expanded measurement uncertainty (k=2)*	Remarks	
Resistance DC (Measurement)/ Standard Resistors			parts per 10⁶	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures	
	[1 μΩ to 10 μΩ)		3000		
	[10 μΩ to 100 μΩ)		380		
	[100 μΩ to 1 mΩ)		180		
	[1 mΩ to 10 mΩ)		60		
	[10 mΩ to 100 mΩ)		10		
	[100 mΩ to 1 Ω]		7.3		
	(1 Ω to 10 Ω]		7.3		
	(10 Ω to 100 Ω)		11		
	[100 Ω to 1 kΩ)		11		
	[1 kΩ to 10 kΩ]		11		
	(10 kΩ to 100 kΩ]		11		
	(100 kΩ to 1 MΩ]		10		
	(1 MΩ to 10 MΩ]		38		
(10 MΩ to 100 MΩ]		79			
(100 MΩ to 1 GΩ]		5900			
Resistance AC (Measurement)/ Standard Resistors	10 Ω	[220 μA to 2.2 mA]	[50 Hz to 125 Hz]	290	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	[100 Ω to 10 kΩ]			180	
	1 Ω	[2.2 mA to 22 mA]		290	
	[10 Ω to 1 kΩ]			180	
	100 mΩ	[22 mA to 220 mA]		240	
	[1 Ω to 100 Ω]			180	
	10 mΩ	[220 mA to 2.2 A]		340	
[100 mΩ to 10 Ω]		300			
	[10 mΩ to 100 mΩ]	[2.2 A to 11 A]		470	
Resistance AC (Generation)/ Resistance Measuring Equipment	10 mΩ	10 A	[50 Hz to 125 Hz]	1600	Calibration according to (i) EURAMET cg- 15, (ii) standards of lab, (iii) lab internal procedures
	100 mΩ	3 A		840	
	1 Ω	1.4 A		12000	
	10 Ω	100 mA		1300	
	100 Ω	20 mA		680	
	1 kΩ	10 mA		680	
	10 kΩ	3 mA		790	

* Where the expanded uncertainty (with 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, the measurement range and the measurement uncertainty, expressing the minimum measurement uncertainty which can be achieved in a calibration.

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This Scope of Accreditation replaces the previous one dated 14.03.2023.

The Accreditation Certificate No. **90-7**, to ELOT EN ISO/IEC 17025:2017, is valid until 02.07.2027.

Athens, 07.09.2023

Christos Nestoras
CEO of ESYD