Schedule of Accreditation

Organisation Name	Calibration Specialists Ltd
Trading As	
INAB Reg No	1C
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Accreditation Standard	EN ISO/IEC 17025 C
Standard Version	2017
Date of award of accreditation	10/03/1987
Scope Classification	Metrology

Services available to the public[1]

[1] Refer to document on interpreting INAB Scopes of Accreditation

Sites from which accredited services are delivered		
(the detail of the accredited services delivered at each site are on the Scope of Accreditation)		
	Name	**Address**
1	Head Office	The National Technological Park, Holland Rd., Castletroy, Limerick, Ireland, V94 HHR9

Scope of Accreditation

Head Office

Metrology

Category: A

Metrology field - Calibrated Device Type	Measured quantity	Calibration range	Expanded Measurement Uncertainty	Std. ref/SOP	Products	Remarks
102 Length/Distance/Angle/Area - .02 Micrometers	Distance between any 2 points	0 to 300mm	2µm	ISO3611:2023	External Micrometers	
	Length	0 to 100mm	[1+(5 x Length in m)]	ISO3611:2023	Setting Rods	
		0 to 150mm	2µm	BS6468:2008	Micrometer height and depth gauges and Extension Rods.	
		0 to 1m	2µm	BS959:2008	Internal Micrometers (Including stick mics and Extension Rods)	
102 Length/Distance/Angle/Area - .03 Vernier callipers		0 to 300mm	[10+(30 x Length in m)]	BS887:2008 and ISO 13385-1: 2011	Electronic, Dial and Vernier Calipers.	
107 Temperature measuring equipment - .09 Digital temperature indicator systems	Temperature	Type K -200°C to 1200°C TypeJ -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.

		Type K Type J Type T	-200°C to 1200°C -200°C to 1200°C -250°C to -200°C -200°C to 400°C	QMP064		
109 Ancillary temperature measuring instruments - .02 Digital voltmeters		Type K -200°C to 1200°C Type J -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.
109 Ancillary temperature measuring instruments - .04 Indicators, recorders and controllers		Type K -200°C to 1200°C TypeJ -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.
110 Electrical	Risetime/Falltime Generate	<200 ps into 50 Ω	77 pS	QMP028		
110 Electrical - .01 Indicating and recording instruments	0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V	10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz	5.9 µV to 12 µV 6.6 µV to 13 µV 10.8 µV to 56 µV 44 µV to 0.44 mV 0.44 mV to 4.4 mV 4.4 mV to 44 mV 6 µV to 98 µV 6.3 µV to 11.0 µV 9.6 µV to 44 µV 26µV to 260 µV 0.26mV to 2.6 mV 2.8 mV to 28 mV 56 mV to 0.28 V 6.3 µV to 16 µV 7 µV to 17 µV 16 µV to 0.12 mV 0.04 mV to 0.42 mV 0.44 mV to 4.4 mV 4.8 mV to 48 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Generate	
	1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz	3.3 µV to 6.6 µV 1.3 µV to 3.5 µV 1.4 µV to 4.7 µV	QMP028 QMP028 QMP028	AC Voltage Measure	

1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV	20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	2.1 µV to 13 µV 6.1 µV to 61 µV 42 µV to 0.5 mV	QMP028 QMP028 QMP028		
1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	0.5 mV to 1.3 mV 0.3 mV to 1.1mv 0.4 mV to 2 mV 0.6 mV to 3.8 mV 1.2 mV to 10 mV 5 mV to 37 mV 13 mV to 121 mV 19 mV to 181 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
10mA to 200mA 200mA to 2mA 2mA to 20mA 20mA to 200mA 200mA to 2A 6.0mA to 120.0mA 120.0mA to 1.2mA 120.0mA to 1.2mA 1.2mA to 12.0mA 1.2mA to 12.0mA 12.0mA to 120.0mA 12.0mA to 120.0mA 120.0mA to 1.0A 120.0mA to 1.0A 1.0A to 10.0A 10.0A to 30.0A	40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 45Hz to 1kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 50Hz to 2kHz 50Hz to 60Hz	7.5 nA to 150 nA 130 nA to 1.3 µA 1.2 µA to 12 µA 12 µA to 126 µA 0.18 mA to 1.8 mA 24 nA to 92 nA *** 0.3 µA to 0.9 µA *** 0.2 µA to 0.6 µA *** 2.7 µA to 9.2 µA *** 2.4 µA to 5.6 µA *** 27 µA to 92 µA*** 24 µA to 56 µA *** 0.3 mA to 1 mA *** 0.3mA to 1.2 mA *** 20 mA to 120 mA 6.6 mA to 18 mA ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Current Generate AC Current Measure	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	4.8 µV to 13 µV 4.8 µV to 13 µV 3.7 µV to 19 µV 5.6 µV to 38 µV 12 µV to 98 µV	QMP028 QMP028 QMP028 QMP028 QMP028		

12.0 mV to 120.0 mV	100 kHz to 300 kHz	46 µV to 0.37 mV	QMP028		
12.0 mV to 120.0 mV	300 kHz to 1 MHz	0.2 mV to 1.2 mV	QMP028		
12.0 mV to 120.0 mV	1 MHz to 2 MHz	0.2 mV to 1.8 mV	QMP028		
12.0 V to 120.0 V	1 Hz to 40 Hz	6.4 mV to 28 mV	QMP028		
12.0 V to 120.0 V	40 Hz to 1 kHz	4.4 mV to 26 mV	QMP028		
12.0 V to 120.0 V	1kHz to 20 kHz	4.4 mV to 26 mV	QMP028		
12.0 V to 120.0 V	20 kHz to 50 kHz	6.2 mV to 146 mV	QMP028		
12.0 V to 120.0 V	50 kHz to 100 kHz	6.4 mV to 146 mV	QMP028		
120.0 mV to 1.2 V	1 Hz to 40 Hz	47 µV to 114 µV	QMP028		
120.0 mV to 1.2 V	40 Hz to 1 kHz	29 µV to 109 µV	QMP028		
120.0 mV to 1.2 V	1kHz to 20 kHz	37 µV to 193 µV	QMP028		
120.0 mV to 1.2 V	20 kHz to 50 kHz	56 µV to 0.4 mV	QMP028		
120.0 mV to 1.2 V	50 kHz to 100 kHz	0.12 mV to 1 mV	QMP028		
120.0 mV to 1.2 V	100 kHz to 300 kHz	0.5 mV to 4 mV	QMP028		
120.0 mV to 1.2 V	300 kHz to 1 MHz	1.2 mV to 12 mV	QMP028		
120.0 mV to 1.2 V	1 MHz to 2 MHz	1.9 mV to 18 mV	QMP028		
120.0 V to 1000 V	1 Hz to 40 Hz	44 mV to 88 mV	QMP028		
120.0 V to 1000 V	40 Hz to 1 kHz	42 mV to 68 mV	QMP028		
120.0 V to 1000 V	1kHz to 20 kHz	620 mV to 92 mV	QMP028		
1kV to 2kV	30Hz - 200Hz	7V	QMP028		
2kV to 10kV	30Hz - 200Hz	16V	QMP028		
DC Current Generate	10uA to 200uA	750 pA to 15 nA	QMP028		
	200uA to 2mA	13.6 nA to 136 nA	QMP028		
	2mA to 20mA	0.13 µA to 1.3 µA	QMP028		
	20mA to 200mA	1.3 µA to 13.4 µA	QMP028		
	200mA to 2A	26 µA to 0.26 mA	QMP028		
DC Current Measure	12nA to 120nA	0.05 nA	QMP028		
	120nA to 1.2uA	0.05 nA to 0.08 nA	QMP028		
	1.2uA to 12uA	0.2 nA to 0.4 nA	QMP028		
	12uA to 120uA	1.3 nA to 4 nA	QMP028		
	120uA to 1.2mA	9 nA to 35 nA	QMP028		
	1.2mA to 12mA	89 nA to 248 nA	QMP028		
	12mA to 120mA	0.06 µA to 5.0 µA	QMP028		
	120mA to 1.0A	27.2 µA to 139 µA	QMP028		
	1.0A to 30.0A	0.4 mA to 9.1 mA	QMP028		
	30.0A to 100.0A	12 mA to 21 mA	QMP028		

DC Voltage Generate	0 to 2V 2V to 20V 20V to 200V 200V to 1200V	1.3µV to 27µV 16µV to 160µV 0.26mV to 3mV 3mV to 17mv	QMP028 QMP028 QMP028 QMP028		
DC Voltage Measure	1.2mV to 120mV 120mV to 1.2V 1.2V to 12V 12V to 120V 120V to 1000V 1kV to 4kV 4kV to 10kV	1.6uV to 3.0uV 3.0 uV to 13.0uV 15uV to 123uV 0.2mV to 1.5mV 2.9mV to 23mV 2V 4V	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
Frequency Generate (Discrete Values)	1 MHz 5 MHz 10 MHz 0.2 Hz 0.5 Hz 1.0 Hz to 100 kHz (in discreet steps: 1,2,5 10 etc) 100 kHz to 10 MHz 10 MHz to 20 GHz	2mHz 0.01 Hz 0.02 Hz 1.2 µHz 3.0 µHz 4 µHz to 4 Hz *** 0.07 Hz to 0.25 Hz *** 0.2 Hz to 2.4 kHz ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		(With External reference) (With External reference) (With External reference) (within 12 months of last calibration of internal reference standard) *** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
Frequency Measure	0.1Hz to 1.0Hz 1.0Hz to 10.0Hz 10.0Hz to 100.0Hz	50 µHz to 500 µHz 50 µHz to 500 µHz 52 µHz to 0.52 mHz	QMP028		For a characteristic signal of 20 mV (p-p) with a 10mV(p-p)

		100.0Hz to 1.0kHz 1.0kHz to 1.2GHz	6.2 µHz to 0.62 mHz 0.21 mHz to 252 Hz			signal noise level. Input impedence 1M Ω/35 pf.
	Generate Resistance	0.1Ω 1Ω 10Ω 100Ω 1kΩ 10kΩ 100kΩ 1MΩ 10MΩ 100MΩ 1GΩ 5GΩ	0.65mΩ 53mΩ 0.29mΩ 2.2mΩ 11Ω 0.11Ω 1.5Ω 30Ω 590Ω 56MΩ 1MΩ 13MΩ	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Galvanometers and null detectors Electricity meters Graphic recoring instruments Digital storage recorders Instrumentation tape records Electric field strength meters Precision resistors,resistance boxes and conductance boxes Volt ratio boxes and potential dividers DC shunts AC shunts	
	Period Generate	10.0 Ns to 1.0 S 2.0 S 5.0 S	0.004 pS to 4 µS 8.0 µS 30 µS	QMP028		
	Resistance Measure	0.1Ω 0.1Ω to 12.0Ω 12.0Ω to 120.0Ω 120.0Ω to 1.2kΩ 1.2kΩ to 12.0kΩ 12.0kΩ to 120.0kΩ 120.0kΩ to 1.2MΩ 1.2MΩ to 12.0MΩ 12.0MΩ to 120.0MΩ 120.0MΩ to 1.2GΩ	0.5 mΩ*** 32 µΩ to 0.25 mΩ 0.5 mΩ to 2 mΩ 1.8 mΩ to 15 mΩ 18 mΩ to 147 mv 0.2 mΩ to 1.5 Ω 3.4 Ω to 23 Ω 165 Ω to 748 Ω*** 8.2 kΩ to 73 kΩ*** 610 kΩ to 6 MΩ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	D.C. Voltmeters A.C. Voltmeters D.C. ammeters A.C. ammeters Wattmeters Varimeters Phase angle indicators Power factor meters Ohmmeters LCR meters	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
110 Electrical - .04 Resistors	0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 0.09 mV to 2 mV	10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 40 Hz to 10 kHz	5.9 µV to 12 µV 6.6 µV to 13 µV 10.8 µV to 56 µV 44 µV to 0.44 mV 0.44 mV to 4.4 mV 4.4 mV to 44 mV 6 µV to 98 µV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Generate	

	2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V	40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz	6.3 µV to 11.0 µV 9.6 µV to 44 µV 26µV to 260 µV 0.26mV to 2.6 mV 2.8 mV to 28 mV 56 mV to 0.28 V 6.3 µV to 16 µV 7 µV to 17 µV 16 µV to 0.12 mV 0.04 mV to 0.42 mV 0.44 mV to 4.4 mV 4.8 mV to 48 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
	1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV 1.0 mV to 12.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	3.3 µV to 6.6 µV 1.3 µV to 3.5 µV 1.4 µV to 4.7 µV 2.1 µV to 13 µV 6.1 µV to 61 µV 42 µV to 0.5 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Measure	
	1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V 1.2 V to 12.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	0.5 mV to 1.3 mV 0.3 mV to 1.1mv 0.4 mV to 2 mV 0.6 mV to 3.8 mV 1.2 mV to 10 mV 5 mV to 37 mV 13 mV to 121 mV 19 mV to 181 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
	10mA to 200mA 200mA to 2mA 2mA to 20mA 20mA to 200mA 200mA to 2A 6.0mA to 120.0mA 120.0mA to 1.2mA 120.0mA to 1.2mA 1.2mA to 12.0mA 1.2mA to 12.0mA 12.0mA to 120.0mA 12.0mA to 120.0mA 120.0mA to 1.0A	40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 45Hz to 1kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz	7.5 nA to 150 nA 130 nA to 1.3 µA 1.2 µA to 12 µA 12 µA to 126 µA 0.18 mA to 1.8 mA 24 nA to 92 nA *** 0.3 µA to 0.9 µA *** 0.2 µA to 0.6 µA *** 2.7 µA to 9.2 µA *** 2.4 µA to 5.6 µA *** 27 µA to 92 µA*** 24 µA to 56 µA *** 0.3 mA to 1 mA ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Current Generate AC Current Measure	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.

120.0mA to 1.0A 1.0A to 10.0A 10.0A to 30.0A	100 Hz to 5 kHz 50Hz to 2kHz 50Hz to 60Hz	0.3mA to 1.2 mA *** 20 mA to 120 mA 6.6 mA to 18 mA ***	QMP028 QMP028 QMP028		
12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV 12.0 mV to 120.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	4.8 µV to 13 µV 4.8 µV to 13 µV 3.7 µV to 19 µV 5.6 µV to 38 µV 12 µV to 98 µV 46 µV to 0.37 mV 0.2 mV to 1.2 mV 0.2 mV to 1.8 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
12.0 V to 120.0 V 12.0 V to 120.0 V 12.0 V to 120.0 V 12.0 V to 120.0 V 12.0 V to 120.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	6.4 mV to 28 mV 4.4 mV to 26 mV 4.4 mV to 26 mV 6.2 mV to 146 mV 6.4 mV to 146 mV	QMP028 QMP028 QMP028 QMP028 QMP028		
120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V 120.0 mV to 1.2 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	47 µV to 114 µV 29 µV to 109 µV 37 µV to 193 µV 56 µV to 0.4 mV 0.12 mV to 1 mV 0.5 mV to 4 mV 1.2 mV to 12 mV 1.9 mV to 18 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
120.0 V to 1000 V 120.0 V to 1000 V 120.0 V to 1000 V 1kV to 2kV 2kV to 10kV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 30Hz - 200Hz 30Hz - 200Hz	44 mV to 88 mV 42 mV to 68 mV 620 mV to 92 mV 7V 16V	QMP028 QMP028 QMP028 QMP028 QMP028		
DC Current Generate	10uA to 200uA 200uA to 2mA 2mA to 20mA	750 pA to 15 nA 13.6 nA to 136 nA 0.13 µA to 1.3 µA	QMP028 QMP028 QMP028		

	20mA to 200mA 200mA to 2A	1.3 µA to 13.4 µA 26 µA to 0.26 mA	QMP028 QMP028		
DC Current Measure	12nA to 120nA 120nA to 1.2uA 1.2uA to 12uA 12uA to 120uA 120uA to 1.2mA 1.2mA to 12mA 12mA to 120mA 120mA to 1.0A 1.0A to 30.0A 30.0A to 100.0A	0.05 nA 0.05 nA to 0.08 nA 0.2 nA to 0.4 nA 1.3 nA to 4 nA 9 nA to 35 nA 89 nA to 248 nA 0.06 µA to 5.0 µA 27.2 µA to 139 µA 0.4 mA to 9.1 mA 12 mA to 21 mA	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
DC Voltage Generate	0 to 2V 2V to 20V 20V to 200V 200V to 1200V	1.3µV to 27µV 16µV to 160µV 0.26mV to 3mV 3mV to 17mv	QMP028 QMP028 QMP028 QMP028		
DC Voltage Measure	1.2mV to 120mV 120mV to 1.2V 1.2V to 12V 12V to 120V 120V to 1000V 1kV to 4kV 4kV to 10kV	1.6uV to 3.0uV 3.0 uV to 13.0uV 15uV to 123uV 0.2mV to 1.5mV 2.9mV to 23mV 2V 4V	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
Frequency Generate (Discrete Values)	1 MHz 5 MHz 10 MHz 0.2 Hz 0.5 Hz 1.0 Hz to 100 kHz (in discreet steps: 1,2,5 10 etc) 100 kHz to 10 MHz 10 MHz to 20 GHz	2mHz 0.01 Hz 0.02 Hz 1.2 µHz 3.0 µHz 4 µHz to 4 Hz *** 0.07 Hz to 0.25 Hz *** 0.2 Hz to 2.4 kHz ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		(With External reference) (With External reference) (With External reference) (within 12 months of last calibration of internal reference standard)

					*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
Frequency Measure	0.1Hz to 1.0Hz 1.0Hz to 10.0Hz 10.0Hz to 100.0Hz 100.0Hz to 1.0kHz 1.0kHz to 1.2GHz	50 µHz to 500 µHz 50 µHz to 500 µHz 52 µHz to 0.52 mHz 6.2 µHz to 0.62 mHz 0.21 mHz to 252 Hz	QMP028		For a characteristic signal of 20 mV (p-p) with a 10mV(p-p) signal noise level. Input impedence 1M Ω/35 pf.
Generate Resistance	0.1Ω 1Ω 10Ω 100Ω 1kΩ 10kΩ 100kΩ 1MΩ 10MΩ 100MΩ 1GΩ 5GΩ	0.65mΩ 53mΩ 0.29mΩ 2.2mΩ 11Ω 0.11Ω 1.5Ω 30Ω 590Ω 56MΩ 1MΩ 13MΩ	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Galvanometers and null detectors Electricity meters Graphic recoring instruments Digital storage recorders Instrumentation tape records Electric field strength meters Precision resistors,resistance boxes and conductance boxes Volt ratio boxes and potential dividers DC shunts AC shunts	
Period Generate	10.0 Ns to 1.0 S 2.0 S 5.0 S	0.004 pS to 4 µS 8.0 µS 30 µS	QMP028		
Resistance Measure	0.1Ω 0.1Ω to 12.0Ω 12.0Ω to 120.0Ω 120.0Ω to 1.2kΩ	0.5 mΩ*** 32 µΩ to 0.25 mΩ 0.5 mΩ to 2 mΩ 1.8 mΩ to 15 mΩ	QMP028 QMP028 QMP028 QMP028	D.C. Voltmeters A.C. Voltmeters D.C. ammeters A.C. ammeters	*** These Uncertainties are dominated by the accuracy of the

		1.2kΩ to 12.0kΩ 12.0kΩ to 120.0kΩ 120.0kΩ to 1.2MΩ 1.2MΩ to 12.0MΩ 12.0MΩ to 120.0MΩ 120.0MΩ to 1.2GΩ	18 mΩ to 147 mv 0.2 mΩ to 1.5 Ω 3.4 Ω to 23 Ω 165 Ω to 748 Ω*** 8.2 kΩ to 73 kΩ*** 610 kΩ to 6 MΩ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Wattmeters Varimeters Phase angle indicators Power factor meters Ohmmeters LCR meters	reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
110 Electrical - .99 Other	AC Current Generate	10µA to 2A	7.5nA to 150nA	QMP028		
	AC Current Measure	6µA to 30A	24nA to 18mA	QMP028		
	AC Voltage Generate	0.09mV to 1kV	5.9µV to 0.28V	QMP028		
	AC Voltage Measure	1.0mV to 7kV	3.3µV to 189V	QMP028		
	DC Current Generate	10µA to 2A	750pA to 0.26mA	QMP028		
	DC Current Measure	12nA to 100A	0.005nA to 21mA	QMP028		
	DC Voltage Generate	0 to 1.2kV	1.3µ to 17mV	QMP028		
	DC Voltage Measure	1.2mV to 10kV	1.61µV to 100V	QMP028		
	Frequency Generate	0.5Hz to 20GHz	4µHz to 2.4kHz	QMP028	with external reference	
	Frequency Measure	0.1Hz to 1.2GHz	50µHz to 252Hz	QMP028		
	Measure Resistance	0.1Ω to 1.2GΩ	0.5mΩ to 6MΩ	QMP028		
	Period Generate	10ns to 5s	0.004ps to 30µs	QMP028		
	Risetime/Fall Time Generate	<200ps	77ps	QMP028	nominal 200ps int 50Ω	
113 Time - .02 Clocks and stopwatches	Time	24Hrs	40mS	QMP063		
			40ms	QMP063		
114 Torque - .01 Torque wrenches	Torque	3N·m to 1000N·m	1.60%	ISO6789:2017, Part 2	Torque Wrenches excludes Torque Screwdrivers	
		50N·m to 600N·m	1.60%	ISO6789:2017, Part 2	Torque Wrenches excludes Torque Screwdrivers	
		600N·m to 1000N·m	1.60%	ISO6789:2017, Part 2	Torque Wrenches excludes Torque Screwdrivers	

Calibration Measurement Capability (CMC) is expressed in terms of the following parameters:

- *Measurand or reference material*
- *Calibration or measurement method or procedure and type of instrument or material calibrated/measured*
- *Measurement range and additional parameters where applicable*
- *Measurement uncertainty.*

Measurement uncertainty shall be reported in compliance with EA 4/02 "Evaluation of the Uncertainty of Measurement in Calibration".
In accordance with INAB policy, uncertainties are calculated for an estimated confidence level of not less than 95%.

Metrology

Category: B

Metrology field - Calibrated Device Type	Measured quantity	Calibration range	Expanded Measurement Uncertainty	Std. ref/SOP	Products	Remarks
107 Temperature measuring equipment - .09 Digital temperature indicator systems	Temperature	Type K -200°C to 1200°C TypeJ -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.
		Type K Type J Type T	-200°C to 1200°C -200°C to 1200°C -250°C to -200°C -200°C to 400°C	QMP064		
109 Ancillary temperature measuring instruments - .02 Digital voltmeters		Type K -200°C to 1200°C Type J -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.
109 Ancillary temperature measuring instruments - .04 Indicators, recorders and controllers		Type K -200°C to 1200°C TypeJ -200°C to 1200°C Type T -200°C to 400°C	0.5°C 0.5°C 0.5°C	QMP064		Calibration of Thermocouple Digital Temperature Indicators by emf Simulation.
110 Electrical - .01 Indicating and recording instruments	0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V	10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz	5.9 µV to 12 µV 6.6 µV to 13 µV 10.8 µV to 56 µV 44 µV to 0.44 mV 0.44 mV to 4.4 mV 4.4 mV to 44 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Generate	

	0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V	40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz	6 µV to 98 µV 6.3 µV to 11.0 µV 9.6 µV to 44 µV 26µV to 260 µV 0.26mV to 2.6 mV 2.8 mV to 28 mV 56 mV to 0.28 V 6.3 µV to 16 µV 7 µV to 17 µV 16 µV to 0.12 mV 0.04 mV to 0.42 mV 0.44 mV to 4.4 mV 4.8 mV to 48 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
	1.0 mV to 12.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	3.3 µV to 6.6 µV 1.3 µV to 3.5 µV 1.4 µV to 4.7 µV 2.1 µV to 13 µV 6.1 µV to 61 µV 42 µV to 0.5 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Measure	
	1.2 V to 12.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	0.5 mV to 1.3 mV 0.3 mV to 1.1mv 0.4 mV to 2 mV 0.6 mV to 3.8 mV 1.2 mV to 10 mV 5 mV to 37 mV 13 mV to 121 mV 19 mV to 181 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
	10mA to 200mA 200mA to 2mA 2mA to 20mA 20mA to 200mA 200mA to 2A 6.0mA to 120.0mA 120.0mA to 1.2mA 120.0mA to 1.2mA 1.2mA to 12.0mA 1.2mA to 12.0mA 12.0mA to 120.0mA 12.0mA to 120.0mA	40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 45Hz to 1kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz	7.5 nA to 150 nA 130 nA to 1.3 µA 1.2 µA to 12 µA 12 µA to 126 µA 0.18 mA to 1.8 mA 24 nA to 92 nA *** 0.3 µA to 0.9 µA *** 0.2 µA to 0.6 µA *** 2.7 µA to 9.2 µA *** 2.4 µA to 5.6 µA *** 27 µA to 92 µA*** 24 µA to 56 µA ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Current Generate AC Current Measure	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.

120.0mA to 1.0A 120.0mA to 1.0A 1.0A to 10.0A 10.0A to 30.0A	45Hz to 100Hz 100 Hz to 5 kHz 50Hz to 2kHz 50Hz to 60Hz	0.3 mA to 1 mA *** 0.3mA to 1.2 mA *** 20 mA to 120 mA 6.6 mA to 18 mA ***	QMP028 QMP028 QMP028 QMP028		
12.0 mV to 120.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	4.8 µV to 13 µV 4.8 µV to 13 µV 3.7 µV to 19 µV 5.6 µV to 38 µV 12 µV to 98 µV 46 µV to 0.37 mV 0.2 mV to 1.2 mV 0.2 mV to 1.8 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
12.0 V to 120.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	6.4 mV to 28 mV 4.4 mV to 26 mV 4.4 mV to 26 mV 6.2 mV to 146 mV 6.4 mV to 146 mV	QMP028 QMP028 QMP028 QMP028 QMP028		
120.0 mV to 1.2 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	47 µV to 114 µV 29 µV to 109 µV 37 µV to 193 µV 56 µV to 0.4 mV 0.12 mV to 1 mV 0.5 mV to 4 mV 1.2 mV to 12 mV 1.9 mV to 18 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
120.0 V to 1000 V 120.0 V to 1000 V 120.0 V to 1000 V 1kV to 2kV 2kV to 10kV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 30Hz - 200Hz 30Hz - 200Hz	44 mV to 88 mV 42 mV to 68 mV 620 mV to 92 mV 7V 16V	QMP028 QMP028 QMP028 QMP028 QMP028		
DC Current Generate	10uA to 200uA 200uA to 2mA 2mA to 20mA	750 pA to 15 nA 13.6 nA to 136 nA 0.13 µA to 1.3 µA	QMP028 QMP028 QMP028		

	20mA to 200mA 200mA to 2A	1.3 µA to 13.4 µA 26 µA to 0.26 mA	QMP028 QMP028		
DC Current Measure	12nA to 120nA 120nA to 1.2uA 1.2uA to 12uA 12uA to 120uA 120uA to 1.2mA 1.2mA to 12mA 12mA to 120mA 120mA to 1.0A 1.0A to 30.0A 30.0A to 100.0A	0.05 nA 0.05 nA to 0.08 nA 0.2 nA to 0.4 nA 1.3 nA to 4 nA 9 nA to 35 nA 89 nA to 248 nA 0.06 µA to 5.0 µA 27.2 µA to 139 µA 0.4 mA to 9.1 mA 12 mA to 21 mA	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
DC Voltage Generate	0 to 2V 2V to 20V 20V to 200V 200V to 1200V	1.3µV to 27µV 16µV to 160µV 0.26mV to 3mV 3mV to 17mv	QMP028 QMP028 QMP028 QMP028		
DC Voltage Measure	1.2mV to 120mV 120mV to 1.2V 1.2V to 12V 12V to 120V 120V to 1000V 1kV to 4kV 4kV to 10kV	1.6uV to 3.0uV 3.0 uV to 13.0uV 15uV to 123uV 0.2mV to 1.5mV 2.9mV to 23mV 2V 4V	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
Frequency Generate (Discrete Values)	1 MHz 5 MHz 10 MHz 0.2 Hz 0.5 Hz 1.0 Hz to 100 kHz (in discreet steps: 1,2,5 10 etc) 100 kHz to 10 MHz 10 MHz to 20 GHz	2mHz 0.01 Hz 0.02 Hz 1.2 µHz 3.0 µHz 4 µHz to 4 Hz *** 0.07 Hz to 0.25 Hz *** 0.2 Hz to 2.4 kHz ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		(With External reference) (With External reference) (With External reference) (within 12 months of last calibration of internal reference standard)

					*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
Frequency Measure	0.1Hz to 1.0Hz 1.0Hz to 10.0Hz 10.0Hz to 100.0Hz 100.0Hz to 1.0kHz 1.0kHz to 1.2GHz	50 µHz to 500 µHz 50 µHz to 500 µHz 52 µHz to 0.52 mHz 6.2 µHz to 0.62 mHz 0.21 mHz to 252 Hz	QMP028		For a characteristic signal of 20 mV (p-p) with a 10mV(p-p) signal noise level. Input impedence 1M Ω/35 pf.
Generate Resistance	0.1Ω 1Ω 10Ω 100Ω 1kΩ 10kΩ 100kΩ 1MΩ 10MΩ 100MΩ 1GΩ 5GΩ	0.65mΩ 53mΩ 0.29mΩ 2.2mΩ 11Ω 0.11Ω 1.5Ω 30Ω 590Ω 56MΩ 1MΩ 13MΩ	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Galvanometers and null detectors Electricity meters Graphic recoring instruments Digital storage recorders Instrumentation tape records Electric field strength meters Precision resistors,resistance boxes and conductance boxes Volt ratio boxes and potential dividers DC shunts AC shunts	
Period Generate	10.0 Ns to 1.0 S 2.0 S 5.0 S	0.004 pS to 4 µS 8.0 µS 30 µS	QMP028		
Resistance Measure	0.1Ω 0.1Ω to 12.0Ω 12.0Ω to 120.0Ω 120.0Ω to 1.2kΩ	0.5 mΩ*** 32 µΩ to 0.25 mΩ 0.5 mΩ to 2 mΩ 1.8 mΩ to 15 mΩ	QMP028 QMP028 QMP028 QMP028	D.C. Voltmeters A.C. Voltmeters D.C. ammeters A.C. ammeters	*** These Uncertainties are dominated by the accuracy of the

		1.2kΩ to 12.0kΩ 12.0kΩ to 120.0kΩ 120.0kΩ to 1.2MΩ 1.2MΩ to 12.0MΩ 12.0MΩ to 120.0MΩ 120.0MΩ to 1.2GΩ	18 mΩ to 147 mv 0.2 mΩ to 1.5 Ω 3.4 Ω to 23 Ω 165 Ω to 748 Ω*** 8.2 kΩ to 73 kΩ*** 610 kΩ to 6 MΩ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Wattmeters Varimeters Phase angle indicators Power factor meters Ohmmeters LCR meters	reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
	Risetime/Falltime Generate	<200 ps into 50 Ω	77 pS	QMP028		
110 Electrical - .04 Resistors	0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV 0.09 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V	10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 10 Hz to 40 Hz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 40 Hz to 10 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz 10 kHz to 100 kHz	5.9 µV to 12 µV 6.6 µV to 13 µV 10.8 µV to 56 µV 44 µV to 0.44 mV 0.44 mV to 4.4 mV 4.4 mV to 44 mV 6 µV to 98 µV 6.3 µV to 11.0 µV 9.6 µV to 44 µV 26µV to 260 µV 0.26mV to 2.6 mV 2.8 mV to 28 mV 56 mV to 0.28 V 6.3 µV to 16 µV 7 µV to 17 µV 16 µV to 0.12 mV 0.04 mV to 0.42 mV 0.44 mV to 4.4 mV 4.8 mV to 48 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Generate	
	1.0 mV to 12.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	3.3 µV to 6.6 µV 1.3 µV to 3.5 µV 1.4 µV to 4.7 µV 2.1 µV to 13 µV 6.1 µV to 61 µV 42 µV to 0.5 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Voltage Measure	
	1.2 V to 12.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	0.5 mV to 1.3 mV 0.3 mV to 1.1mv 0.4 mV to 2 mV 0.6 mV to 3.8 mV 1.2 mV to 10 mV 5 mV to 37 mV 13 mV to 121 mV 19 mV to 181 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		

10mA to 200mA 200mA to 2mA 2mA to 20mA 20mA to 200mA 200mA to 2A 6.0mA to 120.0mA 120.0mA to 1.2mA 120.0mA to 1.2mA 1.2mA to 12.0mA 1.2mA to 12.0mA 12.0mA to 120.0mA 12.0mA to 120.0mA 120.0mA to 1.0A 120.0mA to 1.0A 1.0A to 10.0A 10.0A to 30.0A	40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 40Hz to 5kHz 45Hz to 1kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 45Hz to 100Hz 100 Hz to 5 kHz 50Hz to 2kHz 50Hz to 60Hz	7.5 nA to 150 nA 130 nA to 1.3 µA 1.2 µA to 12 µA 12 µA to 126 µA 0.18 mA to 1.8 mA 24 nA to 92 nA *** 0.3 µA to 0.9 µA *** 0.2 µA to 0.6 µA *** 2.7 µA to 9.2 µA *** 2.4 µA to 5.6 µA *** 27 µA to 92 µA*** 24 µA to 56 µA *** 0.3 mA to 1 mA *** 0.3mA to 1.2 mA *** 20 mA to 120 mA 6.6 mA to 18 mA ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	AC Current Generate AC Current Measure	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
12.0 mV to 120.0 mV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	4.8 µV to 13 µV 4.8 µV to 13 µV 3.7 µV to 19 µV 5.6 µV to 38 µV 12 µV to 98 µV 46 µV to 0.37 mV 0.2 mV to 1.2 mV 0.2 mV to 1.8 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
12.0 V to 120.0 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	6.4 mV to 28 mV 4.4 mV to 26 mV 4.4 mV to 26 mV 6.2 mV to 146 mV 6.4 mV to 146 mV	QMP028 QMP028 QMP028 QMP028 QMP028		
120.0 mV to 1.2 V	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz 1 MHz to 2 MHz	47 µV to 114 µV 29 µV to 109 µV 37 µV to 193 µV 56 µV to 0.4 mV 0.12 mV to 1 mV 0.5 mV to 4 mV 1.2 mV to 12 mV 1.9 mV to 18 mV	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		

120.0 V to 1000 V 120.0 V to 1000 V 120.0 V to 1000 V 1kV to 2kV 2kV to 10kV	1 Hz to 40 Hz 40 Hz to 1 kHz 1kHz to 20 kHz 30Hz - 200Hz 30Hz - 200Hz	44 mV to 88 mV 42 mV to 68 mV 620 mV to 92 mV 7V 16V	QMP028 QMP028 QMP028 QMP028 QMP028		
DC Current Generate	10uA to 200uA 200uA to 2mA 2mA to 20mA 20mA to 200mA 200mA to 2A	750 pA to 15 nA 13.6 nA to 136 nA 0.13 µA to 1.3 µA 1.3 µA to 13.4 µA 26 µA to 0.26 mA	QMP028 QMP028 QMP028 QMP028 QMP028		
DC Current Measure	12nA to 120nA 120nA to 1.2uA 1.2uA to 12uA 12uA to 120uA 120uA to 1.2mA 1.2mA to 12mA 12mA to 120mA 120mA to 1.0A 1.0A to 30.0A 30.0A to 100.0A	0.05 nA 0.05 nA to 0.08 nA 0.2 nA to 0.4 nA 1.3 nA to 4 nA 9 nA to 35 nA 89 nA to 248 nA 0.06 µA to 5.0 µA 27.2 µA to 139 µA 0.4 mA to 9.1 mA 12 mA to 21 mA	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
DC Voltage Generate	0 to 2V 2V to 20V 20V to 200V 200V to 1200V	1.3µV to 27µV 16µV to 160µV 0.26mV to 3mV 3mV to 17mv	QMP028 QMP028 QMP028 QMP028		
DC Voltage Measure	1.2mV to 120mV 120mV to 1.2V 1.2V to 12V 12V to 120V 120V to 1000V 1kV to 4kV 4kV to 10kV	1.6uV to 3.0uV 3.0 uV to 13.0uV 15uV to 123uV 0.2mV to 1.5mV 2.9mV to 23mV 2V 4V	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		
Frequency Generate (Discrete Values)	1 MHz 5 MHz 10 MHz 0.2 Hz 0.5 Hz 1.0 Hz to 100 kHz (in discreet steps: 1,2,5 10 etc) 100 kHz to 10 MHz	2mHz 0.01 Hz 0.02 Hz 1.2 µHz 3.0 µHz 4 µHz to 4 Hz *** 0.07 Hz to 0.25 Hz ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028		(With External reference) (With External reference)

	10 MHz to 20 GHz	0.2 Hz to 2.4 kHz ***	QMP028		(With External reference) (within 12 months of last calibration of internal reference standard) *** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
Frequency Measure	0.1Hz to 1.0Hz 1.0Hz to 10.0Hz 10.0Hz to 100.0Hz 100.0Hz to 1.0kHz 1.0kHz to 1.2GHz	50 µHz to 500 µHz 50 µHz to 500 µHz 52 µHz to 0.52 mHz 6.2 µHz to 0.62 mHz 0.21 mHz to 252 Hz	QMP028		For a characteristic signal of 20 mV (p-p) with a 10mV(p-p) signal noise level. Input impedence 1M Ω/35 pf.
Generate Resistance	0.1Ω 1Ω 10Ω 100Ω 1kΩ 10kΩ 100kΩ 1MΩ 10MΩ 100MΩ 1GΩ 5GΩ	0.65mΩ 53mΩ 0.29mΩ 2.2mΩ 11Ω 0.11Ω 1.5Ω 30Ω 590Ω 56MΩ 1MΩ 13MΩ	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	Galvanometers and null detectors Electricity meters Graphic recoring instruments Digital storage recorders Instrumentation tape records Electric field strength meters Precision resistors,resistance boxes and conductance boxes Volt ratio boxes and potential dividers DC shunts AC shunts	

	Period Generate	10.0 Ns to 1.0 S 2.0 S 5.0 S	0.004 pS to 4 µS 8.0 µS 30 µS	QMP028		
	Resistance Measure	0.1Ω 0.1Ω to 12.0Ω 12.0Ω to 120.0Ω 120.0Ω to 1.2kΩ 1.2kΩ to 12.0kΩ 12.0kΩ to 120.0kΩ 120.0kΩ to 1.2MΩ 1.2MΩ to 12.0MΩ 12.0MΩ to 120.0MΩ 120.0MΩ to 1.2GΩ	0.5 mΩ*** 32 µΩ to 0.25 mΩ 0.5 mΩ to 2 mΩ 1.8 mΩ to 15 mΩ 18 mΩ to 147 mv 0.2 mΩ to 1.5 Ω 3.4 Ω to 23 Ω 165 Ω to 748 Ω*** 8.2 kΩ to 73 kΩ*** 610 kΩ to 6 MΩ***	QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028 QMP028	D.C. Voltmeters A.C. Voltmeters D.C. ammeters A.C. ammeters Wattmeters Varimeters Phase angle indicators Power factor meters Ohmmeters LCR meters	*** These Uncertainties are dominated by the accuracy of the reference standard for which a rectangular distribution has been assumed with a coverage factor, k = √3.
110 Electrical - .99 Other	AC Current Generate	10µA to 2A	7.5nA to 150nA	QMP028		
	AC Current Measure	6µA to 30A	24nA to 18mA	QMP028		
	AC Voltage Generate	0.09mV to 1kV	5.9µV to 0.28V	QMP028		
	AC Voltage Measure	1.0mV to 7kV	3.3µV to 189V	QMP028		
	DC Current Generate	10µA to 2A	750pA to 0.26mA	QMP028		
	DC Current Measure	12nA to 100A	0.005nA to 21mA	QMP028		
	DC Voltage Generate	0 to 1.2kV	1.3µ to 17mV	QMP028		
	DC Voltage Measure	1.2mV to 10kV	1.61µV to 100V	QMP028		
	Frequency Generate	0.5Hz to 20GHz	4µHz to 2.4kHz	QMP028	with external reference	
	Frequency Measure	0.1Hz to 1.2GHz	50µHz to 252Hz	QMP028		
	Generate Resistance	0.1Ω to 5GΩ	0.5mΩ to 6MΩ	QMP028	Discrete values in steps of x10	
	Period Generate	10ns to 5s	0.004ps to 30µs	QMP028		
	Risetime/Fall Time Generate	<200ps	77ps	QMP028	nominal 200ps int 50Ω	
113 Time - .02 Clocks and stopwatches	Time	24Hrs	40mS	QMP063		

Calibration Measurement Capability (CMC) is expressed in terms of the following parameters:

- *Measurand or reference material*
- *Calibration or measurement method or procedure and type of instrument or material calibrated/measured*
- *Measurement range and additional parameters where applicable*
- *Measurement uncertainty.*

Measurement uncertainty shall be reported in compliance with EA 4/02 “Evaluation of the Uncertainty of Measurement in Calibration”.
In accordance with INAB policy, uncertainties are calculated for an estimated confidence level of not less than 95%.