Scope
Industrial Technology Institute, Metrology Group

Measured Quantity, Instrument or Fauge	**Method of Calibration**	**Range**	**Readability**	**Best Measurement Capability, Ex pressed As an Expanded Uncer-tainty (k=2)**
Temperature				
Calibration of Liquid-in glass Thermometer	MM/TE/02	-60 to +35°C 35 to 250 °C 250 to 500 °C		35mK 30mK 70mK
Calibration of a dial thermometer	MM/TE/03	-60 to +35°C 35 to 250°C 250 to **550 °C**		85mK 80mK 100mK
Comparison calibration of PRT	MM/TE/04	-60 to +35°C 35 to 250°C 250 to **660 °C**		**10mK** **8 mK** **15mK**
Calibration of a digital thermometer with a sensor	MM/TE/05	-60 to +35°C 35 to 250°C 250 to **660 °C**		25mK 23mK 85mK
Calibration of a thermocouple	MM/TE/06	-60 to +35°C 35 to 250°C 250 to 500 °C 500 to 1100 °C		0.8 °C 0.7 °C 0.9 °C 1.6 °C
Calibration of temperature indicators and controllers	MM/TE/07	**100** to 1500 °C		0.01°C
Calibration of simulators Voltage Resistance Current	MM/TE/07	**100** to 1500 °C		 1.6µv 1.2mΩ 1µA
Performance test of block calibrator	MM/TE/08	-60 to +600°C		**14mK**
Performance test of laboratory oven/incubator - multi points .	MM/TE/09	50 to 250°C for ovens and 15 to 60°C for incubators		**0.2°C**

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Performance test of laboratory oven/incubator - three point	MM/TE/10	50 to 250°C for ovens and 15to 60°C for incubators		**0.2°C**
Performance test of stirred liquid bath	MM/TE/11	-60 to +600°C		24mK
Performance test of autoclave	MM/TE/12	100 to 130°C		0.4°C
Performance test of muffle furnace	MM/TE/13	250 to 1100°C		1.2°C
Performance test of water bath	MM/TE/14	5 to 95°C		0.1 °C
Mass				
Calibration of Weighing Balances	MM/MA/01	0-200g	0.01mg	0.10mg
	MM/MA/02	0-500g	0.1mg	0.27mg
	MM/MA/04	0-1kg	1mg	0.96mg
	MM/MA/07	0-5kg	10mg	8.6mg
		0-20kg	100mg	82mg

NOTE:
1. Weights are available in OIML Class E2 from 1 mg to 10 kg, Class F1 from 1 mg to 10 kg, Class F2 from 1 mg to 10 kg, Class M1 from 1 mg to 10 kg

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Measured Quantity, Instrument or Fauge	Method of Calibration	Range	Readability	Best Measurement Capability, Expressed As an Expanded Uncertainty (k=2)
Determination of the conventional mass value of weights-Direct comparison method	MM/MA/05	20000		80
		10000		9
		5000		8
		2000		2
		1000		0.51
		500		0.26
		200		0.11
		100		0.06
		50		0.04
		20		0.026
		10		0.021
		5		0.016
		2		0.013
		1		0.011
		0.5		0.009
		0.2		0.007
		0.1		0.006
		0.05		0.005
		0.02		0.004
		0.01		0.003
		0.005		0.003
		0.002		0.003
		0.001		0.003
Dimension		**Range (mm)**		
Calibration of Gauge Blocks	**MM/DI/02**	**0 to 10**		**0,06**
		10 to 25		**0,07**
		25 to 50		**0,08**
		50 to 75		**0,12**
		75 to 100		**0,17**
Calibration of Vernier Caliper	**MM/DI/03**	**0 to 150**	**0,02**	**17**
			0,05	**41**
		150 to 200	**0,02**	**17**
			0,05	**41**
		200 to 300	**0,02**	**17**
			0,05	**41**
		300 to 600	**0,02**	**17**
			0,05	**41**
		600 to 900	**0,02**	**17**
			0,05	**42**
			0,1	**82**

NOTE:
1. The best measurement capability relates to weights, hich are constructed in conformity with the requirements of OIML recommendation 111 for weights of Class F1 except for weight of 20kg.

2. For 20kg weight the best measurement capability relates to weights of OIML Class M1.

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Calibration of Micrometer(Extl)	**MM/DI/04**	**0 to 25**	**0,01**	**7**
			0,001	**3**
		25 to 75	**0,01**	**7**
			0,001	**3**
		75 to 200	**0,01**	**7**
			0,001	**3**
		200 to 300	**0,01**	**7**
			0,001	**4**
		300 to 500	**0,01**	**7**
			0,001	**4**
Calibration of Steel rule	**MM/DI/05**	**0 to 150**	**1**	**400**
		150 to 300	**1**	**400**
		300 to 500	**1**	**400**
		500 to 1000	**1**	**400**
Calibration of Dial Gauges	**MM/DI/06**	**0 to 25**	**0,01**	**5**
			0,001	**2**
Calibration of Micrometer(Int)	**MM/DI/07**	**50 to 75**	**0,01**	**7**
		75 to 100	**0,01**	**7**
		100 to 125	**0,01**	**7**
		125 to 150	**0,01**	**7**
		150 to 175	**0,01**	**7**
		175 to 200	**0,01**	**7**

Volume

Calibration of volumetric glassware by gravimetric method		**Range(ml)**	
One mark pipette	**MM/VO/01**	**0 to 200**	**0,001**
Graduated pipette	**MM/VO/01**	**0 to 25**	**0,001**
Burette	**MM/VO/01**	**0 to 100**	**0,001**
Volumetric flask	**MM/VO/01**	**0 to 200**	**0,001**
		0 to 2000	**0,01**
Graduated measuring cylinder	**MM/VO/01**	**0 to 200**	**0,001**
		0 to 2000	**0,01**

Electricity

Calibration of Digital Multimeters		**Value**	**Frequency**

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Measured Quantity, Instrument or Fauge	Method of Calibration	Range	Readability	Best Measurement Capability, Expressed As an Expanded Uncertainty (k=2)
DC Voltage	**MM/EL/01**	**100 mV**		**4 µV/V**
		1 V		**4 µV/V**
		10 V		**4 µV/V**
		100 V		**4 µV/V**
		1000 V		**5 µV/V**
AC Voltage	**MM/EL/01**	**100 mV**	**40 Hz-20 kHz**	**46 µV/V**
		1 V	**40 Hz-20 kHz**	**47 µV/V**
		10 V	**40 Hz-20 kHz**	**42 µV/V**
		100 V	**40 Hz-20 kHz**	**43 µV/V**
		1000 V	**50 Hz-10 kHz**	**48 µV/V**
DC Current	**MM/EL/01**	**100 µA**		**14 µA/A**
		1 mA		**14 µA/A**
		10 mA		**13 µA/A**
		100 mA		**13 µA/A**
		1 A		**27 µA/A**
		10 A		**19 µA/A**
		20 A		**110 µA/A**
AC Current	**MM/EL/01**	**100 uA**	**40 Hz-10 kHz**	**203 µA/A**
		1 mA	**40 Hz-10 kHz**	**68 µA/A**
		10 mA	**40 Hz-10 kHz**	**77 µA/A**
		100 mA	**40 Hz-10 kHz**	**98 µA/A**
		1 A	**40 Hz-10 kHz**	**133 µA/A**
		10 A	**40 Hz-10 kHz**	**122 µA/A**
		20 A	**40 Hz-1 kHz**	**485 µA/A**
Recistance	**MM/EL/01**	**1 ohm**		**182 µohm/ohm**
		10 ohm		**29 µohm/ohm**
		100 ohm		**13 µohm/ohm**
		1000 ohm		**11 µohm/ohm**
		10000 ohm		**11 µohm/ohm**
		100000 ohm		**101 µohm/ohm**
		1000000 ohm		**71 µohm/ohm**
		10000000 ohm		**122 µohm/ohm**
		100000000 ohm		**195 µohm/ohm**