SCOPE OF ACCREDITATION TO ISO/IEC 17025-2017 & KS Q ISO/IEC 17025-2017

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CALIBRATION

Valid to : Aug. 04, 2022 Accreditation No. : KC01-052 (1/15)

In recognition of the successful completion of the KOLAS evaluation process,
accreditation is granted to this laboratory to perform the following calibrations

Field Code	Item of Calibration	on-site
102.Linear dimension		
10206	Dial/Cylinder gauge testers	N
10209	End bars	N
10210	Extensometers, linear displacement transducers	Y
10211	Filler gauges	Y
10213	Gap gauges	N
10216	Height gauges/ measuring machines	Y
10220	Standard measuring machines	Y
10223	Electronic micrometers	Y
10224	Height micrometers, Riser blocks	N
10228	Cylindrical plug/pin gauges, Thread measuring wire gauges	Y
10229	Radius gauges	N
10230	Cylindrical ring gauges	N
10232	Step gauges	N
10233	Taper thickness gauges	N
10234	Ultrasonic thickness gauges	Y
10235	Ultrasonic/coating thickness specimens	N
10236	Coating thickness testers	Y
104.Form		
10401	Form testers	Y
10404	Optical flats	N
10405	Optical parallels	N
10406	Paralled blocks	N
10407	Precision surface plates	Y
10409	Roundness measurement instruments	Y
10412	Straight edges	N
10413	Straight rules	N
105.Complex geometry		
10503	Contact coordinate measuring machines	Y
10504	Non-contact coordinate measuring machines	Y
10511	Measuring microscopes, Profile projectors	Y
105.Complex geometry		
10512	Micro measuring microscopes	Y
10518	Stylus type roughness testers	Y
10525	Thread plug gauges	N
10527	Thread ring gauges	N
10529	V-blocks, Box blocks	N
106.Various dimensional		
10601	Inside/Outside/Gear tooth calipers, Caliper gauges	Y
10603	Cylinder/bore gauges	Y
10604	Depth gauges,Depth micrometers	Y
10605	Dial/Digital gauges	Y
10608	Grind gauges	N
10609	Micro indicators, Test indicators	Y
10610	Micrometer heads	N
10611	3-point micrometers	Y
10612	Inside micrometers	Y
10613	Micrometer, outside	Y
10617	Standard sieves	N
201.Mass		
20103	Auto-packer scale balances	Y
20105	Counter beam balances	Y
20109	Electric balances	Y
20112	Platform scale balances	Y
20113	Spring scale balances	Y
202.Force		
20203	Tension/Compression testing machines	Y
20204	Push-Pull Gauges	N
203.Torque		
20303	Torque wrenches/drivers	Y
204.Pressure		
20406	Absolute pressure gauges	N
20408	Compound pressure gauges	Y
20409	Differential pressure gauges	Y
20411	Gauge pressure gauges	Y
20412	Pressure transducers/ transmitters	Y
20413	Dial type vacuum gauges	Y
401.DC voltage & current		
40101	DC ammeters	Y
40104	Electrical temperature calibrators	Y
40112	DC voltmeters	Y
403.AC voltage, current & power		
40301	AC ammeters	Y
40318	AC voltmeters	Y
404.Other DC & LF Measurements		
40419	Analogue/Digital multimeters	Y
501.Contact thermometry		
50101	Temperature generators: ovens, furnaces, isothermal liquid baths, ice-point baths, dry-block calibrators	Y
50102	Temperature indicators /recorders/controllers, temperature calibrators	Y
50103	Glass thermometers; liquid-in-glass, Beckmann	N
50104	Resistance thermometers; SPRT, IPRT, thermistors, etc.	Y
50105	Thermal expansion thermometers ; bimetal, gas or liquid type	Y
50106	Thermomecoules:noble metal, base metal, pure metal, special type, etc.	Y
50107	Temperature transducers	Y
503.Humidity		
50302	Relative humidity hygrometers; polimer thinfilm, hair, etc.	N
50303	Psychrometers; assmann ventilated, PRT type, etc.	N
50304	Temperature humidity recorders;Hygrothermograph,etc	N
50305	Transducers; dew-point /relative humidity	N

Field Code	Item of Calibration	on-site	Field Code	Item of Calibration	on-site	Field Code	Item of Calibration	on-site
503.Humidity								
50306	Humidity generators; two-pressure, two-temperature,flow mixing humidity gererator, constant temperature and humidity chamber, etc.	Y						

Note

1. This laboratory provides calibration services in permanent standard laboratory and at on-site.

2. Laboratory conducts on-site calibration should meet requirements of KOLAS-SR-008.

3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.

4. Calibration and Measurement Capability (CMC) means capabilities provided by accredited calibration laboratories. It expresses the lowest uncertainty of measurement that can be achieved during a calibration. CMC normally is quoted as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of k=2.

5.Due to the calibration environment such as reference standards or customers' facilities, it is note that uncertainty of measurement on a calibration certificate may be expressed larger than CMC on scope of accreditation in general.

102. Linear dimension

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Dial/Cylinder gauge testers	10206	(0 ~ 25) mm	$\sqrt{0.23^2+0.004\ 2^2\times l^2}$ μm (l = mm)	CP-10206
End bars	10209	(0 ~ 500) mm	$\sqrt{0.7^2+0.005\ 4^2\times l^2}$ μm (l = mm)	CP-10209
Extensometers, linear displacement tranducers	10210	(0 ~ 100) mm (100 ~ 500) mm (500 ~ 1 000) mm	5.9 μm 0.031 mm 0.12 mm	CP-10210
Filler gauges	10211	(0 ~ 10) mm	0.6 μm	CP-10211
Gap gauges	10213	(1 ~ 300) mm	$\sqrt{0.7^2+0.005\ 4^2\times l^2}$ μm (l = mm)	CP-10213
Height gauges/measuring machines	10216	(0 ~ 1 000) mm	$\sqrt{0.8^2+0.004\ 3^2\times l^2}$ μm (l = mm)	CP-10216
Standard measuring machines	10220	(0 ~ 500) mm	$\sqrt{0.2^2+0.003\ 1^2\times l^2}$ μm (l = mm)	CP-10220
Electronic micrometers	10223	(0 ~ 5) mm	0.12 μm	CP-10223
Height micrometers, Riser blocks Block calibration Head calibration	10224	 (0 ~ 600) mm 30 mm	 $\sqrt{0.8^2+0.004\ 3^2\times l^2}$ μm (l = mm) 1.0 μm	CP-10224
Cylindrical plug/pin gauges, Thread measuring wire gauges Cylindrical plug/pin gauges	10228	 (0.1 ~ 200) mm	 $\sqrt{0.6^2+0.005\ 2^2\times l^2}$ μm (l = mm)	CP-10228
Radius gauges	10229	(0.35 ~ 100) mm	1.8 μm	CP-10229
Cylindrical ring gauges	10230	(2 ~ 200) mm	$\sqrt{0.2^2+0.004\ 1^2\times l^2}$ μm (l = mm)	CP-10230
Step gauges	10232	(0 ~ 670) mm	$\sqrt{0.9^2+(0.004\ 4\times l_0)^2}$ μm (l_0 = mm)	CP-10232
Taper thickness gauges	10233	(0 ~ 50) mm	1.5 μm	CP-10233
Ultrasonic thickness gauges	10234	(0 ~ 100) mm (100 ~ 500) mm	4 μm 8 μm	CP-10234
Ultrasonic/coating thickness specimens Coating thickness specimens Ultrasonic specimens	10235	 (0 ~ 10) mm (0 ~ 500) mm	 3.5 μm $\sqrt{0.8^2+0.004\ 3^2\times l^2}$ μm (l = mm)	 CP-10235-1 CP-10235-2
Coating thickness testers	10236	(0 ~ 7.4) mm	1.6 μm	CP-10236

104. Form

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Form testers Longitudinal direction (Z-axis) Transverse direction (X-axis)	10401	 (0 ~ 100) mm (0 ~ 50) mm	 $\sqrt{0.6^2+0.004\ 4^2\times l^2}$ μm (l = mm) $\sqrt{0.0^2+0.004\ 2^2\times l^2}$ μm (l = mm)	CP-10401
Optical flats Flatness	10404	 (0 ~ 75) mm	 0.11 μm	CP-10404
Optical parallels Flatness Parallelism	10405	 (0 ~ 60) mm (0 ~ 60) mm	 0.08 μm 0.06 μm	CP-10405
Parallel blocks Flatness Parallelism Length differnce of both block	10406	 (0 ~ 1 000) mm	 1.1 μm 1.1 μm 1.5 μm	CP-10406
Precision surface plates Flatness	10407	 (1 000 × 1 000) mm (3 000 × 3 000) mm	 2.5 μm 5.3 μm	CP-10407
Roundness measurement instruments Accuracy of detector Rotating accuracy of circumferential direction	10409	 (0 ~ 30) μm 360°	 0.50 μm 0.076 μm	CP-10409
Straight edges Straightness Parallelism	10412	 (0 ~ 1 500) mm (0 ~ 1 500) mm	 1.6 μm 1.6 μm	CP-10412
Straight rules	10413	(0 ~ 2 000) mm	0.06 mm	CP-10413

105. Complex geometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Contact coordinate measuring machines	10503	(0 ~ 1 000) mm	$\sqrt{0.6^2+0.004\ 6^2\times l^2}$ μm (l = mm)	CP-10503
Non-contact coordinate measuring machines	10504	(0 ~ 1 000) mm	$\sqrt{0.5^2+0.003\ 8^2\times l^2}$ μm (l = mm)	CP-10504
Measuring microscopes, Profile projectors Measuring microscopes Length Profile projectors Length Rectangular Scale Angle	10511	 (0 ~ 500) mm (0 ~ 500) mm (0 ~ 360)°	 $\sqrt{0.5^2+0.003\ 8^2\times l^2}$ μm (l = mm) $\sqrt{3^2+0.003\ 8^2\times l^2}$ μm (l = mm) 2.4 μm 6×10^{-4} 1.1'	 CP-10511-1 CP-10511-2

105. Complex geometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Micro measuring microscopes	10512	(0 ~ 30) mm	4 μm	CP-10512
Stylus type roughness testers	10517			CP-10517
Ra		(0 ~ 5) μm	0.040 μm	
Rz		(0 ~ 20) μm	0.11 μm	
H		(0 ~ 20) μm	0.040 μm	
Thread plug gauges	10525			CP-10525
Outside diameter		(0 ~ 150) mm	$\sqrt{0.6^2+0.004\ 2^2\times l^2}$ μm (l = mm)	
Pitch		(0.2 ~ 6) mm	1.2 μm	
Half angle of thread		(0 ~ 30) °	1.9'	
Thread diameter		(0 ~ 150) mm	$\sqrt{0.6^2+0.004\ 2^2\times l^2}$ μm (l = mm)	
Thread ring gauges	10527			CP-10527
Pitch diameter		(6 ~ 100) μm	1.6 μm	
Minor diameter		(6 ~ 100) μm	2.2 μm	
V-blocks, Box blocks	10529			CP-10529
Flatness		(0 ~ 150) mm	1.0 μm	
Prallelism			2.1 μm	
Gradient			0.7 μm	
Differemce of both part			2.1 μm	

106. Various dimensional

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Caliper gauges Inside/Outside/gear tooth calipers	10601			
Caliper gauges		(0 ~ 200) mm	$\sqrt{3.6^2+0.004\ 4^2\times l^2}$ μm (l = mm)	CP-10601-1
Inside/Outside calipers		(0 ~ 2 000) mm	$\sqrt{9.1^2+0.004\ 3^2\times l^2}$ μm (l = mm)	CP-10601-2
Cylinder/Bore gauges	10603	(0 ~ 800) mm	0.9 μm	CP-10603
Depth gauges, Depth micrometers	10604			
Depth gauges		(300 ~ 1 000) mm	$\sqrt{7.6^2+0.004\ 7^2\times l^2}$ μm (l = mm)	CP-10604-1
Depth micrometers		(0 ~ 300) mm	$\sqrt{1.0^2+0.004\ 6^2\times l^2}$ μm (l = mm)	CP-10604-2
Dial/Digital gauges	10605	(0 ~ 100) mm	$\sqrt{5^2+0.005\ 6^2\times l^2}$ μm (l = mm)	CP-10605
Grind gauges	10608			CP-10608
Depth of inclined plane		(0 ~ 1) mm	2.2 μm	
Straightness of scraper		(0 ~ 70) mm	1.6 μm	

106. Various dimensional

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Micro indicators, Test indicators	10609	(0 ~ 5) mm	0.4 μm	CP-10609
Micrometer head	10610	(0 ~ 50) mm	$\sqrt{.7^2+0.004\ 5^2\times l^2}$ μm (l = mm)	CP-10610
3-points micrometers	10611	(2 ~ 200) mm	$\sqrt{.4^2+0.004\ 1^2\times l^2}$ μm (l = mm)	CP-10611
Inside micrometers	10612	(5 ~ 1 000) mm	$\sqrt{.8^2+0.004\ 3^2\times l^2}$ μm (l = mm)	CP-10612
Outside micrometers	10613	(0 ~ 2 000) mm (5 ~ 25) mm	$\sqrt{.6^2+0.004\ 3^2\times l^2}$ μm (l = mm) 1.3 μm	CP-10613-1 CP-10613-2
Standard sieves Sieve Wire	10617	 (0 ~ 100) mm (0 ~ 10) mm	 4.4 μm 2.9 μm	CP-10617

201. Mass

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Auto-packer scale balances	20103	(0 ~ 5) kg (5 ~ 10) kg (10 ~ 50) kg (50 ~ 200) kg	1.2 g 2.3 g 12 g 0.12 kg	CP-20103
Counter beam balances	20105	(0 ~ 311) g (311 ~ 2 610) g (2.61 ~ 20) kg	9.1 mg 91 mg 0.91 g	CP-20105
Electric balancers	20109	(0 ~ 5) g (5 ~ 30) g (30 ~ 200) g (200 ~ 2 500) g (2.5 ~ 5) kg (5 ~ 20) kg (20 ~ 100) kg (100 ~ 300) kg (300 ~ 1 000) kg	40 μg 63 μg 0.20 mg 1.8 mg 5.3 mg 11 mg 1.4 g 2.0 g 7.9 g	CP-20109
Platform scale balances	20112	(0 ~ 50) kg (50 ~ 100) kg (100 ~ 200) kg (200 ~ 500) kg	19 g 46 g 91 g 0.19 kg	CP-20112

202. Force

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Spring scale balances	20113	(0 ~ 1) kg (1 ~ 50) kg (50 ~ 100) kg	1.9 g 91 g 0.16 kg	CP-20113
Tension/Compression testing machine	20203			CP-20203
Pull		(10 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (5 ~ 10) kN	8.2×10^{-4} 7.0×10^{-4} 7.6×10^{-4} 8.2×10^{-4} 7.0×10^{-4} 1.1×10^{-3} 1.2×10^{-3}	
Push		(10 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (5 ~ 10) kN (10 ~ 30) kN (30 ~ 50) kN (50 ~ 100) kN (100 ~ 300) kN (300 ~ 500) kN (500 ~ 1 000) kN	1.3×10^{-3} 1.1×10^{-3} 9.0×10^{-4} 7.6×10^{-4} 4.6×10^{-4} 4.2×10^{-4} 9.6×10^{-4} 1.2×10^{-3} 1.1×10^{-3} 1.1×10^{-3} 1.3×10^{-3} 1.4×10^{-3} 1.2×10^{-3}	
Push-pull gauges	20204	(1 ~ 500) N	1.2×10^{-3}	CP-20204

203. Torque

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Torque wrenches/drivers	20303			CP-20303
		(0.001 ~ 0.009) N · m	4.2×10^{-2}	
		(0.009 ~ 0.06) N · m	2.4×10^{-2}	
		(0.06 ~ 0.1) N · m	7.8×10^{-3}	
		(0.1 ~ 1) N · m	1.2×10^{-2}	
		(1 ~ 5) N · m	9.1×10^{-3}	
		(5 ~ 50) N · m	3.5×10^{-3}	
		(50 ~ 200) N · m	4.2×10^{-3}	
		(200 ~ 1 000) N · m	6.8×10^{-3}	

204. Pressure

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Absolute pressure gauges	20406	(80 ~ 110) kPa	1.9×10^{-4}	CP-20406
Compound pressure gauges	20408	(-100 ~ 0) kPa (0 ~ 2) kPa (2 ~ 200) kPa (0.2 ~ 2) MPa (2 ~ 5) MPa	8.9×10^{-4} 6.0×10^{-4} 7.9×10^{-5} 7.8×10^{-5} 7.8×10^{-5}	CP-20408
Differential presure gauges	20409	(0 ~ 2) kPa (2 ~ 200) kPa (0.2 ~ 2) MPa	6.0×10^{-4} 7.4×10^{-5} 7.2×10^{-5}	CP-20409
Gauge pressure gauges	20411	(0 ~ 2) kPa (2 ~ 200) kPa (0.2 ~ 2) MPa (2 ~ 7) MPa (7 ~ 100) MPa	6.0×10^{-3} 8.5×10^{-5} 8.5×10^{-5} 1.7×10^{-4} 2.0×10^{-4}	CP-20411
Pressure transducers/ transmitters	20412	(0 ~ 2) kPa (2 ~ 200) kPa (0.2 ~ 2) MPa (2 ~ 7) MPa (7 ~ 100) MPa	2.5×10^{-3} 3.7×10^{-4} 4.0×10^{-4} 3.7×10^{-4} 3.8×10^{-4}	CP-20412
Dial type vacuum gauges	20413	(-100 ~ 0) kPa	8.9×10^{-4}	CP-20413

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
DC ammeters	40101	1 μA (1 ~ 10) μA (10 ~ 100) μA (0.1 ~ 1) mA (1 ~ 10) mA (10 ~ 100) mA (0.1 ~ 1) A (1 ~ 10) A (10 ~ 100) A	6.1 nA 6.1×10^{-3} 6.5×10^{-4} 3.4×10^{-4} 3.4×10^{-4} 3.2×10^{-4} 3.6×10^{-4} 7.7×10^{-4} 2.3×10^{-3}	CP-40101

401. DC voltage & current

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Electrical temperature calibrators	40104			CP-40104
Resistance(Source) PT 100 Ω		(18.49 ~ 375.52) Ω	3.6×10^{-4}	
JPT 100 Ω		(17.14 ~ 317.11) Ω	5.8×10^{-4}	
PT 1000 Ω		(185.21 ~ 3 137.08) Ω	4.3×10^{-5}	
Temperature(Source) TC E		(-8.825 ~ 76.371) mV	7.3×10^{-4}	
J		(-7.890 ~ 69.553) mV	7.0×10^{-4}	
K		(-5.891 ~ 54.817) mV	2.9×10^{-4}	
N		(-3.990 ~ 47.514) mV	4.3×10^{-4}	
R		(0 ~ 20.877) mV	3.1×10^{-4}	
S		(0 ~ 18.503) mV	1.1×10^{-4}	
B		(1.792 ~ 13.820) mV	5.8×10^{-4}	
T		(-5.602 ~ 20.871) mV	5.7×10^{-4}	
Resistance(Measure) PT 100 Ω		(18.49 ~ 375.52) Ω	3.4×10^{-4}	
JPT 100 Ω		(17.14 ~ 317.11) Ω	3.6×10^{-4}	
Temperature(Measure) TC E		(-8.825 ~ 76.371) mV	5.9×10^{-4}	
J		(-7.890 ~ 69.553) mV	5.7×10^{-4}	
K		(-5.891 ~ 54.817) mV	2.4×10^{-4}	
N		(-3.990 ~ 47.514) mV	3.5×10^{-4}	
R		(0 ~ 20.877) mV	2.5×10^{-4}	
S		(0 ~ 18.503) mV	9.2×10^{-5}	
B		(1.792 ~ 13.820) mV	4.7×10^{-4}	
T		(-5.602 ~ 20.871) mV	4.6×10^{-4}	
DC voltmeters	40112	(0.1 ~ 1) mV	4.5×10^{-3}	CP-40112
		(1 ~ 10) mV	2.3×10^{-4}	
		(10 ~ 100) mV	4.1×10^{-5}	
		(0.1 ~ 1) V	4.5×10^{-5}	
		(1 ~ 10) V	3.9×10^{-5}	
		(10 ~ 100) V	4.5×10^{-5}	
		(100 ~ 1 000) V	5.0×10^{-5}	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC ammeters	40301			CP-40301
AC Current		40 Hz ~ 1 kHz		
		(0.1 ~ 1) mA	4.4×10^{-3}	
		(1 ~ 10) mA	5.0×10^{-3}	
		(10 ~ 100) mA	6.0×10^{-3}	
		(0.1 ~ 1) A	8.0×10^{-3}	
		(1 ~ 10) A	1.3×10^{-3}	
		1 kHz ~ 10 kHz		
		(1 ~ 10) mA	3.7×10^{-3}	
		(10 ~ 100) mA	1.7×10^{-3}	
		(0.1 ~ 1) A	7.9×10^{-3}	
		40 Hz ~ 400 Hz		
		(10 ~ 100) A	7.8×10^{-3}	
AC voltmeters	40318			CP-40318
AC Voltage		10 Hz ~ 40 Hz		
		(1 ~ 10) mV	2.0×10^{-2}	
		(10 ~ 100) mV	1.9×10^{-4}	
		(0.1 ~ 1) V	1.5×10^{-4}	
		(1 ~ 10) V	1.5×10^{-4}	
		(10 ~ 100) V	1.5×10^{-4}	
		40 Hz ~ 20 kHz		
		(1 ~ 10) mV	1.2×10^{-2}	
		(10 ~ 100) mV	1.8×10^{-4}	
		(0.1 ~ 1) V	1.2×10^{-4}	
		(1 ~ 10) V	1.1×10^{-4}	
		(10 ~ 100) V	1.2×10^{-4}	
		20 kHz ~ 50 kHz		
		(1 ~ 10) mV	1.4×10^{-2}	
		(10 ~ 100) mV	3.0×10^{-4}	
		(0.1 ~ 1) V	2.4×10^{-4}	
		(1 ~ 10) V	1.3×10^{-4}	
		(10 ~ 100) V	1.4×10^{-4}	
		50 kHz ~ 100 kHz		
		(1 ~ 10) mV	2.1×10^{-2}	
		(10 ~ 100) mV	6.5×10^{-3}	
		(0.1 ~ 1) V	1.8×10^{-4}	
		(1 ~ 10) V	1.6×10^{-4}	
		(10 ~ 100) V	2.1×10^{-4}	
		100 kHz ~ 200 kHz		
		(1 ~ 10) mV	6.1×10^{-2}	
		(10 ~ 100) mV	3.2×10^{-3}	
		(0.1 ~ 1) V	2.1×10^{-4}	
		(1 ~ 10) V	1.9×10^{-4}	

403. AC voltage, current & power

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
AC voltmeters	40318			CP-40318
AC Voltage				
		200 kHz ~ 500 kHz		
		(1 ~ 10) mV	6.1×10^{-2}	
		(10 ~ 100) mV	3.2×10^{-3}	
		(0.1 ~ 1) V	2.1×10^{-4}	
		(1 ~ 10) V	1.9×10^{-4}	
		500 kHz ~ 1 MHz		
		(1 ~ 10) mV	6.1×10^{-2}	
		(1 ~ 100) mV	3.2×10^{-3}	
		(0.1 ~ 1) V	3.2×10^{-3}	
		(1 ~ 10) V	1.9×10^{-3}	
		10 Hz ~ 40 Hz		
		(0.1 ~ 1.0) kV	1.9×10^{-4}	
		40 Hz ~ 1 kHz		
		(0.1 ~ 1.0) kV	1.8×10^{-4}	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Analoque/Digital multimeters	40419	(±)		CP-40419
DC Voltage		0 mV	0.60 μV	
		0 mV ~ 100 mV	1.2×10^{-5}	
		100 mV ~ 1 V	5.9×10^{-6}	
		1 V ~ 10 V	4.0×10^{-6}	
		10 V ~ 100 V	5.9×10^{-6}	
		100 V ~ 1 000 V	7.3×10^{-6}	
AC Voltage		10 Hz		
		0.1 mV ~ 100 mV	37 μV	
		100 mV ~ 1 V	0.29 mV	
		1 V ~ 10 V	2.9 mV	
		10 V ~ 100 V	29 mV	
		10 Hz ~ 40 Hz		
		0.1 mV ~ 100 mV	1.7×10^{-4}	
		100 mV ~ 1 V	1.2×10^{-4}	
		1 V ~ 10 V	1.2×10^{-4}	
		10 V ~ 100 V	1.2×10^{-4}	
		40 Hz ~ 1 kHz		
		0.1 mV ~ 100 mV	1.6×10^{-4}	
		100 mV ~ 1 V	7.0×10^{-5}	
		1 V ~ 10 V	7.0×10^{-5}	
		10 V ~ 100 V	8.0×10^{-5}	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Analoque/Digital multimeters	40419	(±)		CP-40419
AC Voltage		1 kHz ~ 20 kHz		
		0.1 mV ~ 100 mV	1.6×10^{-4}	
		100 mV ~ 1 V	7.0×10^{-5}	
		1 V ~ 10 V	7.0×10^{-5}	
		10 V ~ 100 V	8.0×10^{-5}	
		20 kHz ~ 50 kHz		
		0.1 mV ~ 100 mV	2.8×10^{-4}	
		100 mV ~ 1 V	1.0×10^{-4}	
		1 V ~ 10 V	1.0×10^{-4}	
		10 V ~ 100 V	1.1×10^{-4}	
		50 kHz ~ 100 kHz		
		0.1 mV ~ 100 mV	6.4×10^{-4}	
		100 mV ~ 1 V	1.5×10^{-4}	
		1 V ~ 10 V	1.4×10^{-4}	
		10 V ~ 100 V	1.9×10^{-4}	
		50 Hz		
		100 V ~ 1 000 V	3.2×10^{-4}	
		50 Hz ~ 1 kHz		
		100 V ~ 1 000 V	9.0×10^{-5}	
DC Current		0 μA	6.2 nA	
		0 μA ~ 100 μA	1.1×10^{-4}	
		100 μA ~ 1 mA	4.4×10^{-5}	
		1 mA ~ 10 mA	4.1×10^{-5}	
		10 mA ~ 100 mA	5.3×10^{-5}	
		100 mA ~ 1 A	9.3×10^{-5}	
		1 A ~ 10 A	4.1×10^{-4}	
AC Current		10 Hz		
		0.1 μA ~ 100 μA	96 nA	
		100 μA ~ 1 mA	0.30 μA	
		1 mA ~ 10 mA	3.0 μA	
		10 mA ~ 100 mA	30 μA	
		100 mA ~ 1 A	0.32 mA	
		40 Hz		
		1 A ~ 10 A	5.3×10^{-4}	
		10 Hz ~ 40 Hz		
		0.1 μA ~ 100 μA	8.7×10^{-4}	
		100 μA ~ 1 mA	2.1×10^{-4}	
		1 mA ~ 10 mA	2.1×10^{-4}	
		10 mA ~ 100 mA	2.2×10^{-4}	
		100 mA ~ 1 A	3.2×10^{-4}	
		1 A ~ 10 A	5.3×10^{-4}	

404. Other DC & LF Measurements

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Analoque/Digital multimeters	40419			CP-40419
AC Current		40 Hz ~ 1 kHz		
		0.1 μA ~ 100 μA	8.5×10^{-4}	
		100 μA ~ 1 mA	1.7×10^{-4}	
		1 mA ~ 10 mA	1.7×10^{-4}	
		10 mA ~ 100 mA	2.5×10^{-4}	
		100 mA ~ 1 A	3.2×10^{-4}	
		1 A ~ 10 A	5.3×10^{-4}	
		1 kHz ~ 10 kHz		
		0.1 μA ~ 100 μA	7.6×10^{-3}	
		100 μA ~ 1 mA	1.8×10^{-3}	
		1 mA ~ 10 mA	1.6×10^{-3}	
		10 mA ~ 100 mA	1.2×10^{-3}	
		100 mA ~ 1 A	7.2×10^{-3}	
		1 A ~ 10 A	5.3×10^{-4}	
Resistance		0.1 Ω ~ 10 Ω	3.0×10^{-5}	
		10 Ω ~ 100 Ω	1.2×10^{-5}	
		100 Ω ~ 1 kΩ	1.0×10^{-5}	
		1 kΩ ~ 10 kΩ	1.0×10^{-5}	
		10 kΩ ~ 100 kΩ	1.5×10^{-5}	
		100 kΩ ~ 1 MΩ	2.3×10^{-5}	
		1 MΩ ~ 10 MΩ	4.5×10^{-5}	
		10 MΩ ~ 100 MΩ	1.1×10^{-4}	

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Temperature generators ; ovens, furnaces, isothermal liquid baths, ice-point baths, dry-block calibrators	50101			
ovens		(-80 ~ 250) ℃	0.64 ℃	CP-50101-1
Dry-Block Calibrators		(-80 ~ 550) ℃	0.02 ℃	CP-50101-2
		(550 ~ 1 100) ℃	0.76 ℃	
Furnace		(100 ℃ ~ 550) ℃	0.02 ℃	CP-50101-3
		(550 ~ 1 100) ℃	0.76 ℃	
Isothermal liquid baths		(-80 ~ 550) ℃	0.02 ℃	CP-50101-4
Temperature indicators/recorders /controllers, temperature calibrators	50102			
Include Sensor		(-80 ~ 550) ℃	0.08 ℃	CP-50102
		(550 ~ 1 100) ℃	0.84 ℃	
Exclude Sensor(Resistance)		(-80 ~ 550) ℃	0.12 ℃	
(Thermocouple)		(-80 ~ 1 100) ℃	0.25 ℃	

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Temperature indicators/recorders /controllers, temperature calibrators	50102			CP-50102
Temperature Calibrators				
Resistance(Source)		(-40 ~ 250) ℃	0.08 ℃	
TC E		(-40 ~ 800) ℃	0.68 ℃	
J		(-40 ~ 750) ℃	0.47 ℃	
K		(-40 ~ 1 100) ℃	0.59 ℃	
N		(-40 ~ 1 100) ℃	0.59 ℃	
R		(0 ~ 1 100) ℃	0.75 ℃	
S		(0 ~ 1 100) ℃	0.74 ℃	
B		(0 ~ 1 100) ℃	0.64 ℃	
T		(-40 ~ 350) ℃	0.81 ℃	
Resistance(Input)		(-40 ~ 250) ℃	0.12 ℃	
TC E		(-40 ~ 800) ℃	0.57 ℃	
J		(-40 ~ 750) ℃	0.43 ℃	
K		(-40 ~ 1 100) ℃	0.50 ℃	
N		(-40 ~ 1 100) ℃	0.53 ℃	
R		(0 ~ 1 100) ℃	0.76 ℃	
S		(0 ~ 1 100) ℃	0.74 ℃	
B		(0 ~ 1 100) ℃	0.63 ℃	
T		(-40 ~ 350) ℃	0.69 ℃	
Glass thermometers ; liquid-in-glass, Beckmann	50103			
liquid-in-glass		(-80 ~ 550) ℃	0.09 ℃	CP-50103
Resistance thermometers ; SPRT, IPRT, thermistors, etc	50104			
IPRT(Temperature)		(-80 ~ 550) ℃	0.06 ℃	CP-50104
Thermal expansion thermometers ; bimetal, gas or liquid type	50105			
bimetal		(-80 ~ 100) ℃	0.36 ℃	CP-50105
		(100 ~ 250) ℃	0.61 ℃	
		(250 ~ 550) ℃	1.48 ℃	
Thermomecouples ; noble metal, base metal, pure metal, special type, etc.	50106			
		(-80 ~ 550) ℃	0.60 ℃	
Base metal		(550 ~ 1 100) ℃	0.93 ℃	CP-50106-1
		(0 ~ 550) ℃	0.59 ℃	
Noble metal		(550 ~ 1 100) ℃	0.94 ℃	CP-50106-2
Temperature transducers	50107			
Temperature		(-80 ~ 550) ℃	0.18 ℃	CP-50107
		(550 ~ 1 100) ℃	1.20 ℃	

503. Humidity

Measured Quantity Instrument or Gauge	Field code	Range	CMC (The Confidence Level is about 95 %)	Comments
Relative humidity hygrometers ; polimer thinfilm, hair, etc.	50302			
Hair				
(Relative Humidity)		(5 ~ 20) % R.H.	2.0 % R.H.	CP-50302-1
		(20 ~ 50) % R.H.	2.4 % R.H.	
		(50 ~ 70) % R.H.	2.6 % R.H.	
		(70 ~ 90) % R.H.	3.1 % R.H.	
		(90 ~ 95) % R.H.	3.3 % R.H.	
Polimer thinfilm(Digital hygro meter)		(5 ~ 20) % R.H.	2.0 % R.H.	CP-50302-2
(Relative humidity)		(20 ~ 50) % R.H.	2.4 % R.H.	
		(50 ~ 70) % R.H.	2.6 % R.H.	
		(70 ~ 90) % R.H.	3.1 % R.H.	
		(90 ~ 95) % R.H.	3.3 % R.H.	
(Temperature)		(-40 ~ 120) ℃	0.46 ℃	
Psychrometers ; assmann ventilated, PRT type, etc.	50303			
PRT type(Relative humidity)		(5 ~ 20) % R.H.	2.0 % R.H.	CP-50303
		(20 ~ 50) % R.H.	2.2 % R.H.	
		(50 ~ 70) % R.H.	2.3 % R.H.	
		(70 ~ 90) % R.H.	2.9 % R.H.	
		(90 ~ 95) % R.H.	3.2 % R.H.	
Temperature humidity recorders ; Hygrothermograph, etc.	50304			
Relative humidity		(10 ~ 20) % R.H.	2.0 % R.H.	CP-50304
		(20 ~ 50) % R.H.	2.4 % R.H.	
		(50 ~ 70) % R.H.	2.6 % R.H.	
		(70 ~ 90) % R.H.	3.1 % R.H.	
		(90 ~ 95) % R.H.	3.3 % R.H.	
Temperature		(-20 ~ 100) ℃	0.46 ℃	
Transducers ; dew-point/ relative humidity	50305			
Relative humidity		(5 ~ 20) % R.H.	1.5 % R.H.	CP-50305
		(20 ~ 50) % R.H.	1.7 % R.H.	
		(50 ~ 70) % R.H.	1.9 % R.H.	
		(70 ~ 90) % R.H.	2.6 % R.H.	
		(90 ~ 95) % R.H.	2.9 % R.H.	
Humidity generators ; two-pressure, two-temperature, flow mixing humidity generator, constant temperature and humidity chamber, etc.	50306			
Constant Temperature and humidity chamber		(5 ~ 50) % R.H.	2.6 % R.H.	CP-50306
(Relative humidity)		(50 ~ 70) % R.H.	3.4 % R.H.	
		(70 ~ 95) % R.H.	4.4 % R.H.	
(Temperature)		(-80 ~ 250) ℃	0.64 ℃	