

CERTIFICATE OF ACCREDITATION

Calibration-Tech Co., Ltd

Accreditation No. : KC01-064

Corporation Registration No. : 170111-0196502

Address of Laboratory : 308, Seongseogongdanbuk-ro, Dalseo-gu Daegu, Republic of Korea

Date of Initial Accreditation : Nov. 19, 2001.

Duration : Nov. 09, 2022. ~ Nov. 08, 2026.

Scope of Accreditation : Attached Annex

Date of issue : November 09, 2022.

This calibration laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to Joint ISO-ILAC-IAF Communiqué).



Sanghoon Lee

Head

Korea Laboratory Accreditation Scheme

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

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CALIBRATION

Valid To : Nov, 8, 2026

Accreditation No : KC01-064

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	Field Code	Item of Calibration	on-site	Field Code	Item of Calibration	on-site
102. Linear dimension			10511	Measuring microscopes, Profile projectors	Y	203. Torque		
10206	Dial/Cylinder gauge testers	N				20303	Torque wrenches/drivers	N
10209	End bars	N	10514	Taper plug gauges	N	210. Hardness		
10210	Extensometers, linear displacement transducers	Y	10517	Stylus type roughness testers	Y	21001	Brinell hardness testers	Y
10211	Filler gauges	N	10525	Thread plug gauges	N	21002	Rockwell hardness testers	Y
10213	Gap gauges	N	10527	Thread ring gauges	N	21003	Shore hardness testers	Y
10214	Gauge blocks, by comparison	N	10529	V-blocks, box blocks	N	21004	Vickers hardness testers	Y
10216	Height gauges/measuring machines	Y	106. Various dimensional			21005	Durometer hardness testers	N
10220	Standard measuring machines	Y	10601	Inside/Outside/Gear tooth calipers, Caliper gauges	Y	21006	Leeb hardness testers	N
10223	Electronic micrometers	N	10603	Cylinder/Bore gauges	Y	501. Contact thermometry		
10224	Height micrometers, Riser blocks	N	10604	Depth gauges, Depth micrometers	Y	50101	Temperature generators; ovens, furnaces, isothermal liquid baths, ice-point baths	Y
10228	Cylindrical plug/pin gauges, Thread measuring wire gauges	N	10605	Dial/Digital gauges	Y			
10229	Radius gauges	N	10609	Micro indicators, Test indicators	Y	50102	Temperature indicators/ recorders/controllers, temperature calibrators	Y
10230	Cylindrical ring gauges	N	10611	3-points micrometers	Y	50103	Glass thermometers; liquid-in-glass, Beckmann	N
10232	Step gauges	N	10612	Inside micrometers	Y			
10233	Taper thickness gauges	N	10613	Outside micrometers	Y	50104	Resistance thermometers; IPRT, thermistors, etc	N
10234	Ultrasonic thickness gauges	N	10617	Standard sieves	N			
10235	Ultrasonic/ Coating thickness specimens	N	10620	Welding gauges	N	50105	Thermal expansion thermometers ; bimetal gas or liquid type	N
10236	Coating thickness testers	Y	201. Mass					
104. Form			20102	Auto-hopper scale balances	Y	50106	Thermocouples; base metal	N
10401	Form testers	Y	20105	Counter beam balances	Y			
10407	Precision surface plates	Y	20107	Dial swing scale balances	Y			
10409	Roundness measurement instruments	Y	20109	Electric balances	Y			
			20112	Platform scale balances	Y			
105. Complex geometry			20113	Spring scale balances	Y			
10502	Bench centers	Y	20116	Weights	N			
10503	Contact coordinate measuring machines	Y	202. Force					
10504	Non-contact coordinate measuring machines	Y	20203	Tension/compression testing machines	Y			
			20204	Push-Pull gauges	N			

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-007.
3. On-site calibration is allowed to items with marking 'Y', not allowed to items with marking 'N'.
4. Measurement uncertainty normally is quoted as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k=2$. It expresses the lowest uncertainty of measurement that can be provided by accredited calibration laboratories in normal conditions.
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 measurement uncertainty on scope of accreditation in general.

102. Linear dimension

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Dial/Cylinder gauge testers	10206	(0 ~ 100) mm	$\sqrt{0.80^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A001
End bars	10209	(1 ~ 1 500) mm	$\sqrt{1.02^2 + (0.002 \times l)^2}$ μm (l = mm)	Electronic micrometers/ CT-02-A042
Extensometers, linear displacement transducers	10210	(0 ~ 500) mm	$\sqrt{0.72^2 + (0.002 \times l)^2}$ μm (l = mm)	Dial/Cylinder gauge testers CT-02-A040
Filler gauges	10211	(0 ~ 10) mm	0.32 μm	Standard measuring machines/ CT-02-A002
Gap gauges	10213	(2 ~ 300) mm	$\sqrt{0.94^2 + (0.002 \times l)^2}$ μm (l = mm)	Standard measuring machines/ CT-02-A003
Gauge blocks, by comparison	10214	(0.5 ~ 100) mm	$\sqrt{76^2 + (1.05 \times l)^2}$ nm (l = mm)	Gauge block comparator/ CT-02-A004
Height gauges/measuring machines	10216	(0 ~ 1 500) mm	$\sqrt{0.81^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A005
Standard measuring machines	10220	(0 ~ 1 000) mm	$\sqrt{0.24^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A006
Electronic micrometers	10223	(0 ~ 5) mm	0.19 μm	Gauge blocks/ CT-02-A007
Height micrometers, Riser blocks Height micrometers head Height micrometers blocks	10224	(0 ~ 30) mm (0 ~ 1 010) mm	$\sqrt{1.25^2 + (0.002 \times l)^2}$ μm $\sqrt{1.11^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A008
Cylindrical plug/pin gauges, Thread measuring wire gauges Cylindrical plug/pin gauges	10228	(0.01 ~ 150) mm	$\sqrt{0.39^2 + (0.002 \times l)^2}$ μm (l = mm)	Standard measuring machines/ CT-02-A009
Radius gauges	10229	(0.01 ~ 100) mm	1.3 μm	Measuring microscopes/ CT-02-A010
Cylindrical ring gauges	10230	(2 ~ 200) mm	$\sqrt{1.2^2 + (0.002 \times l)^2}$ μm (l = mm)	Standard measuring machines/ CT-02-A011
Step gauges	10232	(0 ~ 1 010) mm	$\sqrt{0.82^2 + (0.004 \times l)^2}$ μm (l = mm)	Electronic micrometers/ CT-02-A012
Taper thickness gauges	10233	(1 ~ 100) mm	5.9 μm	Measuring microscopes/ CT-02-A044
Ultrasonic thickness gauges	10234	(0 ~ 200) mm	5.3 μm	thickness specimens; Ultrasonic/ CT-02-A013
thickness specimens; Coating thickness specimens/ Ultrasonic Coating thickness specimens Ultrasonic thickness specimens	10235	(0.01 ~ 2) mm (0.1 ~ 200) mm	0.63 μm 2.3 μm	Standard measuring machines/ CT-02-A015 CT-02-A041
Coating thickness testers	10236	(0 ~ 2) mm	3.9 μm	thickness specimens; Coating/ CT-02-A014

104. Form

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Form testers Height Horizontal Curvature	10401	(0 ~ 50) mm (0 ~ 50) mm (0 ~ 20) mm	0.26 μm 0.94 μm 0.47 μm	Form standard specimens/ CT-02-A016
Precision surface plates Diagonal length	10407	(100 ~ 1 000) mm (1 000 ~ 2 000) mm (2 000 ~ 5 000) mm	2.8 μm 4.6 μm 7.0 μm	Electric levels/ CT-02-A018
Roundness measurement instruments Detect accuracy Circumferential rotation accuracy Axial rotation accuracy	10409	(0 ~ 1.5) mm 360 ° 360 °	0.42 μm 0.11 μm 0.12 μm	Roundness standard specimens/ CT-02-A019

105. Complex geometry

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Bench centers Parallelism between centers Plan view and parallelism of the bed surface Center height difference tea	10502	(5 ~ 500) mm (5 ~ 500) mm (5 ~ 500) mm	2.1 μm 1.4 μm 2.1 μm	Electronic micrometers/ CT-02-A046
Contact coordinate measuring machines Right angle	10503	(0 ~ 1 500) mm 90 °	$\sqrt{1.2^2 + (0.002 \times l)^2}$ μm (l = mm) 0.72'	Step gauges/ CT-02-A021
Non-contact coordinate measuring machines Right angle Straightness	10504	(0 ~ 300) mm 90 ° 90 °	$\sqrt{0.69^2 + (0.002 \times l)^2}$ μm (l = mm) 2.6 μm 2.6 μm	Standard scales/ CT-02-A017
Measuring microscopes, Profile projectors Measuring microscopes Right angle Profile projectors Length Magnification Orthogonal Angle divide	10511	(0 ~ 300) mm 90 ° (0 ~ 300) mm 90 ° (0 ~ 360) °	$\sqrt{0.60^2 + (0.002 \times l)^2}$ μm (l = mm) 1.9 μm $\sqrt{1.4^2 + (0.002 \times l)^2}$ μm 0.03 % 2.1 μm 1.2'	Standard scales/ CT-02-A022 CT-02-A024
Taper plug gauges Angle Small end Diameter Part end Diameter Height	10514	(0 ~ 90) ° (1 ~ 50) mm (1 ~ 50) mm (1 ~ 50) mm	0.01 ° 4.5 μm 3.6 μm 2.7 μm	Standard measuring machines/ CT-02-A023
Stylus type roughness testers Ra Rz H	10517	(0 ~ 10) μm (0 ~ 10) μm (0 ~ 10) μm	0.10 μm 0.43 μm 0.21 μm	Roughness standard specimens/ CT-02-A020
Thread plug gauges Outside diameter Effective diameter Pitch Angle	10525	(1 ~ 80) mm (1 ~ 80) mm (0.3 ~ 5) mm (0.5 ~ 90) °	0.4 μm 2.6 μm 2.3 μm 3.0'	Standard measuring machines/ CT-02-A026
Thread ring gauges Inside diameter Effective diameter Pitch	10527	(5 ~ 50) mm (5 ~ 50) mm (0.3 ~ 5) mm	2.4 μm 1.2 μm 0.6 μm	Standard measuring machines/ CT-02-A027
V-blocks, box blocks V-blocks Floor plan Parallelism Inclination Height Interchange Box blocks Right angle Parallelism	10529	(5 ~ 100) mm (5 ~ 100) mm	2.6 μm 3.9 μm 0.8 μm 3.8 μm 3.1 μm 3.1 μm	Electronic micrometers/ CT-02-A045

106. Various dimensional

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Inside/Outside/Gear tooth calipers, Caliper gauges Inside/Outside/Gear tooth calipers Caliper gauges	10601	(0 ~ 2 000) mm (0 ~ 300) mm	$\sqrt{8.2^2 + (0.002 \times l)^2}$ μm $\sqrt{1.2^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A029 CT-02-A028
Cylinder/Bore gauges	10603	(0 ~ 800) mm	1.1 μm	Dial/Cylinder gauge testers CT-02-A030
Depth gauges, Depth micrometers Depth gauges Depth micrometers	10604	(0 ~ 1 000) mm (0 ~ 300) mm	$\sqrt{8.2^2 + (0.002 \times l)^2}$ μm $\sqrt{0.82^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A031 CT-02-A034
Dial/Digital gauges	10605	(0 ~ 100) mm	$\sqrt{0.7^2 + (0.002 \times l)^2}$ μm (l = mm)	Dial/Cylinder gauge testers CT-02-A032
Micro indicators, Test indicators Micro indicators Test indicators	10609	(0 ~ 3) mm (0 ~ 2) mm	1.2 μm 1.1 μm	Dial/Cylinder gauge testers CT-02-A033 CT-02-A037
3-points micrometers	10611	(2 ~ 200) mm	$\sqrt{2.1^2 + (0.002 \times l)^2}$ μm (l = mm)	Cylindrical ring gauges/ CT-02-A038
Inside micrometers Inside micrometers Bar type Micrometers	10612	(5 ~ 300) mm (20 ~ 1 500) mm	$\sqrt{1.7^2 + (0.002 \times l)^2}$ μm $\sqrt{1.4^2 + (0.002 \times l)^2}$ μm (l = mm)	Gauge blocks/ CT-02-A035 CT-02-A039
Outside micrometers Outside micrometers V-anvil micrometers	10613	(0 ~ 25) mm (25 ~ 2 000) mm (1 ~ 100) mm	$\sqrt{0.2^2 + (0.002 \times l)^2}$ μm $\sqrt{1.1^2 + (0.002 \times l)^2}$ μm (l = mm) 1.4 μm	Gauge blocks/ CT-02-A036 CT-02-A043
Standard sieves Wire rod diameter Sieve opening	10617	(0 ~ 10) mm (0 ~ 100) mm	4.5 μm 6.4 μm	Measuring microscopes/ CT-02-A048
Welding gauges Height Depth Neck thickness Ruler Angle Tapered Niche Gauge	10620	(0 ~ 100) mm (0 ~ 100) mm (0 ~ 100) mm (0 ~ 100) mm (0 ~ 60) ° (0 ~ 100) mm	11 μm 11 μm 11 μm 11 μm 0.11 ° 11 μm	Gauge blocks/ CT-02-A047

201. Mass

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Auto-hopper scale balances	20102	(0 ~ 20) kg (20 ~ 50) kg (50 ~ 100) kg (100 ~ 200) kg (200 ~ 500) kg (500 ~ 1 000) kg	3.0 g 6.0 g 12 g 24 g 58 g 0.12 kg	Weights/ CT-02-D007
Counter beam balances	20105	(0 ~ 311) g (311 ~ 2 610) g (2.61 ~ 20) kg	8.8 mg 86 mg 0.86 g	Weights/ CT-02-D001
Dial swing scale balances	20107	(0 ~ 10) kg (10 ~ 20) kg (20 ~ 50) kg (50 ~ 100) kg (100 ~ 300) kg (300 ~ 500) kg (500 ~ 1 000) kg	1.7 g 4.3 g 8.5 g 17 g 43 g 85 g 0.17 kg	Weights/ CT-02-D002
Electric balances	20109	(0 ~ 60) g (60 ~ 200) g (200 ~ 500) g (500 ~ 1 000) g (1 ~ 4) kg (4 ~ 10) kg (10 ~ 30) kg (30 ~ 60) kg (60 ~ 100) kg (100 ~ 200) kg (200 ~ 500) kg (500 ~ 1 000) kg	0.13 mg 0.21 mg 1.1 mg 1.4 mg 13 mg 88 mg 0.14 g 5.8 g 5.9 g 12 g 30 g 59 g	Weights/ CT-02-D003
Platform scale balances	20112	(0 ~ 10) kg (10 ~ 20) kg (20 ~ 50) kg (50 ~ 100) kg (100 ~ 300) kg (300 ~ 500) kg (500 ~ 1 000) kg	1.9 g 4.6 g 9.1 g 19 g 46 g 91 g 0.19 kg	Weights/ CT-02-D004
Spring scale balances	20113	(0 ~ 500) g (0.5 ~ 1) kg (1 ~ 2) kg (2 ~ 5) kg (5 ~ 10) kg (10 ~ 20) kg (20 ~ 50) kg	91 mg 0.19 g 0.46 g 0.91 g 1.9 g 4.6 g 9.1 g	Weights/ CT-02-D005
Weights	20116	1 mg ~ 20 kg 1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g	M1 Class 15 µg 15 µg 17 µg 17 µg 18 µg 18 µg 18 µg 20 µg 20 µg 20 µg 22 µg 22 µg 27 µg 27 µg 32 µg 38 µg	Weights, Electric balances/ CT-02-D006

201. Mass

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Weights	20116	100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg	0.15 mg 0.20 mg 1.5 mg 1.6 mg 15 mg 15 mg 0.12 g 0.14 g	Weights, Electric balances/ CT-02-D006

202. Force

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Tension/compression testing machines Tension Compression	20203	(10 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (10 ~ 100) N (100 ~ 200) N (200 ~ 500) N (500 ~ 1 000) N (1 ~ 2) kN (2 ~ 5) kN (5 ~ 10) kN (10 ~ 20) kN (20 ~ 50) kN (50 ~ 100) kN (100 ~ 200) kN (200 ~ 500) kN (500 ~ 1 000) kN (1 000 ~ 2 000) kN	1.7×10^{-3} 1.8×10^{-3} 1.6×10^{-3} 1.7×10^{-3} 1.6×10^{-3} 1.7×10^{-3} 1.8×10^{-3} 1.7×10^{-3} 1.6×10^{-3} 1.7×10^{-3} 1.6×10^{-3} 1.7×10^{-3} 1.5×10^{-3} 1.6×10^{-3} 1.8×10^{-3} 2.2×10^{-3} 1.9×10^{-3} 1.9×10^{-3} 1.8×10^{-3} 1.8×10^{-3}	Force measuring devices/ CT-02-E003
Push-pull gauges Tension/compression	20204	(2 ~ 1 000) N	1.6×10^{-3}	Weights/ CT-02-E002

203. Torque

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Torque wrenches/drivers	20303	(1 ~ 10) N · m (10 ~ 25) N · m (25 ~ 50) N · m (50 ~ 100) N · m (100 ~ 250) N · m (250 ~ 500) N · m (500 ~ 1 000) N · m	5.8×10^{-3} 4.4×10^{-3} 8.1×10^{-3} 5.9×10^{-3} 4.2×10^{-3} 4.0×10^{-3} 6.0×10^{-3}	Torque measuring devices/ CT-02-E001

210. Hardness

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Brinell hardness testers	21001	(100 ~ 200) HBW 10/3 000 (200 ~ 400) HBW 10/3 000	2.8 HBW 10/3 000 4.7 HBW 10/3 000	Hardness test blocks/ CT-02-B001
Rockwell hardness testers	21002	(20 ~ 70) HRC (20 ~ 100) HRBW	0.44 HRC 0.79 HRBW	Hardness test blocks/ CT-02-B002
Shore hardness testers	21003	(20 ~ 100) HS	1.5 HS	Hardness test blocks/ CT-02-B003
Vickers hardness testers	21004	≤ 225 HV 0.2 (400 ~ 600) HV 0.2 > 700 HV 0.2	6.0 HV 0.2 13 HV 0.2 21 HV 0.2	Hardness test blocks/ CT-02-B004
Durometer hardness testers	21005	(0 ~ 100) HDA (0 ~ 100) HDD	0.9 HDA 0.9 HDD	Force measuring devices/ CT-02-B005
Leeb hardness testers	21006	≤ 500 HLD (500 ~ 700) HLD > 700 HLD	5 HLD 5 HLD 5 HLD	Hardness test blocks/ CT-02-B006

501. Contact thermometry

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Temperature generators Ovens Furnaces Isothermal liquid baths Ice-point baths	50101	(-40 ~ 150) °C (150 ~ 250) °C (250 ~ 1 100) °C (-40 ~ 50) °C (50 ~ 250) °C 0 °C	0.66 °C 0.66 °C 1.9 °C 0.064 °C 0.064 °C 0.011 °C	Data logger/ Noble metal thermocouple/ SPRT/ CT-02-C003 CT-02-C004 CT-02-C008 CT-02-C009
Temperature indicators/ recorders/controllers ,temperature calibrators Include sensor Exclude sensor RTD TC TC	50102	(-40 ~ 50) °C (50 ~ 250) °C (250 ~ 1 100) °C (-40 ~ 250) °C (-40 ~ 250) °C (250 ~ 1 100) °C	0.05 °C 0.06 °C 2.40 °C 0.36 °C 0.36 °C 0.38 °C	SPRT/ Calibrator/ CT-02-C001
Glass thermometers liquid-in-glass, Beckmann	50103	(-40 ~ 250) °C	0.039 °C	SPRT/ CT-02-C007
Resistance thermometers IPRT, etc.	50104	(-40 ~ 250) °C	0.08 °C	SPRT/ CT-02-C005
Thermal expansion thermometers ; bimetal gas or liquid type	50105	(-40 ~ 250) °C	0.58 °C	SPRT/ CT-02-C002
Thermocouples Base metal thermocouples	50106	(-40 ~ 250) °C (250 ~ 1 100) °C	0.3 °C 1.9 °C	SPRT/ Noble metal thermocouple/ CT-02-C006