

CERTIFICATE OF ACCREDITATION

PDK CO., LTD

Accreditation No. : KC09-234

Corporation Registration No. : 160111-0156152

Address of Laboratory : 10-6, Expo-ro 339beon-gil, Yuseong-gu, Daejeon,
Republic of Korea

Date of Initial Accreditation : June 18, 2009.

Validity of Accreditation : July 05, 2021. ~ July 04, 2025.

Scope of Accreditation : Attached Annex

Date of issue : September 14, 2023.

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).



CHIN CHONGWOOK

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 : July. 04. 2025

Accreditation No : KC09-234

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
201. Mass								
20109	Electric balance	Y						
20116	Weights	Y						
204. Pressure								
20401	Altimeters	Y						
20402	Manometers	Y						
20403	Pneumatic pressure balances	N						
20404	Hydraulic pressure balances	N						
20405	Pitot static testers	N						
20406	Absolute pressure gauges	Y						
20408	Compound pressure gauges	Y						
20409	Differential pressure gauges	Y						
20411	Gauge pressure gauges	Y						
20412	Pressure transducer/ transmitters	Y						
20413	Dial type vacuum gauges	Y						
205. Vacuum								
20501	Capacitance diaphragm gauges	Y						
20504	Thermal conductivity gauges; Pirani, thermocouple, convectron, etc	Y						
20505	Helium leak detectors	Y						
209. Fluid flow								
20908	Gas flowmeters; differential pressure	Y						
20911	Gas flowmeters; thermal mass, etc.	Y						
20914	Gas flowmeters; positive displacement	Y						
20920	Gas flowmeters; variable area	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-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.

201. Mass

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Electric balances	20109	(0 ~ 5) g (5 ~ 60) g (60 ~ 200) g (200 ~ 3 000) g (3 ~ 5) kg (5 ~ 35) kg	54 µg 0.13 mg 0.3 mg 2.3 mg 4.7 mg 20 mg	Weights / PDK-CCP-M01
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 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg	(F 1 Class) 5.6 µg 5.6 µg 5.6 µg 7.2 µg 8.6 µg 11 µg 16 µg 18 µg 20 µg 25 µg 32 µg 45 µg 58 µg 68 µg 84 µg 0.16 mg 0.30 mg 0.70 mg 1.4 mg 2.9 mg 7.4 mg 15 mg 29 mg	E2 Class Weights, Electric balances / PDK-CCP-M02

204. Pressure

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Altimeters	20401	(-4 ~ 28) km	4.4×10^{-5}	Gas Piston Gauge/ PDK-CCP-P01
Manometers	20402	(0 ~ 200) kPa	1.5×10^{-4}	Gas Piston Gauge/ PDK-CCP-P02
Pneumatic pressure balances	20403	(0 ~ 1 750) kPa (1 750 ~ 7 000) kPa (7 ~ 100) MPa	3.0×10^{-5} 3.4×10^{-5} 5.1×10^{-5}	Gas Piston Gauge/ PDK-CCP-P03
Hydraulic pressure balances	20404	(0.2 ~ 20) MPa (20 ~ 200) MPa (200 ~ 500) MPa	3.1×10^{-5} 4.0×10^{-5} 8.0×10^{-5}	Oil Piston Gauge/ PDK-CCP-P04
Pitot static tester	20405	(1.4 ~ 350) kPa abs	4.6×10^{-5}	Gas Piston Gauge/ PDK-CCP-P05
Absolute pressure gauges	20406	(1.4 ~ 7 000) kPa abs (7 ~ 200) MPa abs	3.2×10^{-5} 4.0×10^{-5}	Gas & Oil Piston Gauge/ PDK-CCP-P06
Compound pressure gauges	20408	(-100 ~ 7 000) kPa	3.2×10^{-5}	Gas Piston Gauge/ PDK-CCP-P08
Differential pressure gauges	20409	(0 ~ 2 000) Pa (2 ~ 7 000) kPa	5.0×10^{-5} 3.2×10^{-5}	Gas Piston Gauge/ PDK-CCP-P09
Gauge pressure gauges	20411	(0 ~ 7 000) kPa (7 ~ 200) MPa (200 ~ 500) MPa	3.2×10^{-5} 6.8×10^{-5} 1.0×10^{-4}	Gas & Oil Piston Gauge/ PDK-CCP-P11
Pressure transducers/transmitters Gauge Absolute differential	20412	(0 ~ 7 000) kPa (7 ~ 200) MPa (200 ~ 500) MPa (1.4 ~ 7 000) kPa abs (7 ~ 200) MPa abs (0 ~ 2 500) Pa (2.5 ~ 7 000) kPa	7.6×10^{-5} 8.2×10^{-5} 1.1×10^{-4} 7.6×10^{-5} 8.2×10^{-5} 8.0×10^{-5} 7.6×10^{-5}	Gas & Oil Piston Gauge/ PDK-CCP-P12
Dial type vacuum gauges	20413	(-100 ~ 0) kPa	2.5×10^{-5}	Gas Piston Gauge/ PDK-CCP-P13

205. Vacuum

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Capacitance diaphragm gauges	20501	(0.133 ~ 13.3) Pa (13.3 ~ 133) Pa 133 Pa ~ 1.33 kPa (1.33 ~ 13.3) kPa (13.3 ~ 133.3) kPa	(0.023 + 0.001 7 × Ps) Pa (0.17 + 0.000 08 × Ps) Pa (0.21 + 0.000 19 × Ps) Pa (1.6 + 0.000 22 × Ps) Pa (11.4 + 0.000 028 × Ps) Pa	Capacitance diaphragm gauges, Absolute Piston Gauge / PDK-CCP-V01
Thermal conductivity gauges; Pirani, thermocouple, convectron, etc	20504	(0.133 ~ 13.3) Pa (13.3 ~ 133) Pa 133 Pa ~ 1.33 kPa (1.33 ~ 13.3) kPa (13.3 ~ 133.3) kPa	(0.023 + 0.001 7 × Ps) Pa (0.19 + 0.000 57 × Ps) Pa (0.27 + 0.000 14 × Ps) Pa (1.7 + 0.000 21 × Ps) Pa (12.3 + 0.000 026 × Ps) Pa	Capacitance diaphragm gauges, Absolute Piston Gauge / PDK-CCP-V02
Helium leak detectors	20505	72 nPa m ³ /s 3.00 nPa m ³ /s 0.48 nPa m ³ /s	16 nPa m ³ /s 0.64 nPa m ³ /s 0.11 nPa m ³ /s	Helium leak / PDK-CCP-V03

209. Fluid flow

Measured Quantity Instrument or Gauge	Field Code	Range	Measurement uncertainty (The Confidence Level is about 95 %)	Standard/Method of Measurement etc.
Gas flowmeters; defferential pressure	20908	(1 ~ 10 000) cm ³ /min	1.4×10^{-3}	GFS system/PDK-CCP-F01 MOLBLOC/PDK-CCP-F02
		(10 000 ~ 50 000) cm ³ /min	1.6×10^{-3}	
		(50 000 ~ 100 000) cm ³ /min	2.3×10^{-3}	
Gas flowmeters; thermal mass, etc.	20911	(1 ~ 10 000) cm ³ /min	1.4×10^{-3}	GFS system/PDK-CCP-F01 MOLBLOC/PDK-CCP-F02
		(10 000 ~ 50 000) cm ³ /min	1.6×10^{-3}	
		(50 000 ~ 100 000) cm ³ /min	2.3×10^{-3}	
Gas flowmeters; positive displacement	20914	(1 ~ 10 000) cm ³ /min	1.4×10^{-3}	GFS system/PDK-CCP-F01 MOLBLOC/PDK-CCP-F02
		(10 000 ~ 50 000) cm ³ /min	1.6×10^{-3}	
		(50 000 ~ 100 000) cm ³ /min	2.3×10^{-3}	
Gas flowmeters; variable area	20920	(1 ~ 10 000) cm ³ /min	1.4×10^{-3}	GFS system/PDK-CCP-F01 MOLBLOC/PDK-CCP-F02
		(10 000 ~ 50 000) cm ³ /min	1.6×10^{-3}	
		(50 000 ~ 100 000) cm ³ /min	2.3×10^{-3}	