MACXA.COM.VN

Macxa.,JSC

Solution for Pressure
Measurement & Calibration

We support solution for pressure
calibration and measurement.

MACXA.COM.VN

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Macxa.,JSC

Solution for Pressure Measurement & Calibration

We support solution for pressure calibration and measurement.

PDR500

PDR1000

PHP

PCS-PC

PDPG-A

PCS-H100

MPC-L

PCS-HC

KOREA LABORATORY ACCREDITATION SCHEME
KOLAS
CALIBRATION NO. KC09-234

Pressure Calibrator Specialized Company
Pressure Field International Certificated Calibration Institute
Venture Enterprise Designate Company

Index

MACXA

MACXA., JSC

Solution for Pressure
Measurement & Calibration

01

Dead-Weight Tester

PDPG / PDPG-A

Dead-Weight Tester

Dead-Weight Tester is used as a generator of an accurately known pressure. It measures pressure as force per unit area. Therefore, Dead-Weight Tester is the most accurate pressure calibrator.

PDPG

PDPG-A

PDPG-A

Automated Dead-Weight Tester

Dead-Weight Tester is used as a generator of an accurately known pressure. It measures pressure as force per unit area. Therefore, Dead-Weight Tester is the most accurate pressure calibrator.

- Pressure ranges Oil 100 / 250 / 500 / 1000 / 2500 bar
- Automated Mass Handling Unit
- 0.008% of uncertainty
- Wing-type special designed cylinder
- Piston Cylinder Modular designed
- Quick & Easy installation of Piston/Cylinder
- 9 LED for piston float-position display
- Automatic-Intelligent piston rotation
- Separated from the main unit and the pressure regulator can be used for various purposes.
- P/C Temperature accuracy
  - better than ±0.2 ℃
- Small size for easy movement during calibration
- Easy to assemble and disassemble

Automated Dead-Weight Tester is much more convenient than normal manual Dead-Weight Tester. PDPG-A provides automated mass handling system with precision parts and high-end technology for better, easier and accurate calibration.

To install the masses, a binary mass loading tray is placed on the piston cap and a mass bell is installed over the tray. The mass set's main mass discs are hung from the mass bell. Binary masses are placed in descending sequence on the mass bell hanger and on the tray.

To load a specific mass value, the mass handling system raises the entire mass load above the piston upper end of stroke to the mass selection position. The mass is raised by two types of a pneumatically actuated lifter acting on a lifter shaft connected to the bell and binary mass spindle. Each mass that is not to be loaded is held in place by engaging three selector pins. When the mass selection is complete, the lifter moves down, placing the lifter shaft, binary spindle, bell and all the released masses onto the piston.

The PDPG-A mass handling system is designed and tested to provide years of reliable, maintenance free mass manipulation.

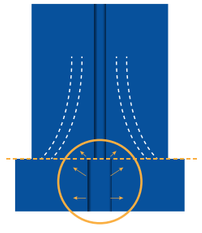
Control of the mass handling system is integrated into PDPG-A's intelligent operation. In pressure entry mode, when a target pressure command is entered from the front panel or remotely, PDPG-A calculates the mass required to achieve the target pressure. It then stops piston rotation and loads the mass value by sending a command to the PDPG-A. The true value of mass loaded and exact pressure value achieved are reported and updated real time.

This type of automated mass handling system is the fastest mass loading system in the world.

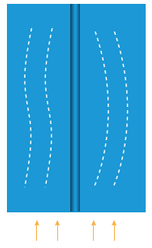
Use standard pressure controllers to automate pressure control and make fully automated piston gauge operation a reality.

Wing type P/C is the most optimized and modernized design for piston-cylinder unit. A protrusion on the cylinder face enables easy and firm installation to the mount. Unique end shape of cylinder hole assures excellent metrological characteristics.

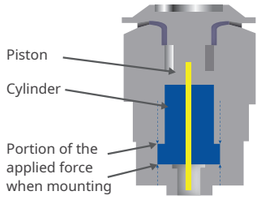
PDK Cylinder



Normal Cylinder



PDK's patented cylinder (Korea, 10-0449151) is made of tungsten carbide. PDK's piston-cylinder shows high precision and stability. The modular piston-cylinder unit can be replaced by hands very easily and quickly without special tool. It also as excellent structure which prevents environmental contamination from outside.



P/C Module

Piston - Cylinder

In order to measure the accurate temperature of the piston -cylinder, precision platinum resistance temperature sensor is equipped with uncertainty of 0.2 ℃. Incorrect measurement of the piston cylinder temperature about 1 ℃ gives pressure error around 9 ppm. PDPG temperature sensor is located at the easy place to remove for calibration.

In order to monitor the float position of piston, non-contact height sensor was developed. In total, 9 LEDs are attached on the front panel of PDK's PDPG. Each LED will be lighting at 1 mm interval according to piston movement. When green LED is shining, it indicates "measurement available."

Manual Rotation

Automatic Rotation

LED (red, yellow, green)

In order to rotate piston, two methods are available. The first one is to press the red button on the front panel of PDPG. The piston can be rotated only when you want to rotate. Second method is to press the green button. When the piston is located in a suitable operation position, the piston rotates automatically. The operation interval covers ±3 mm from reference float line. If out of range, piston stops automatically.

Pressure generator / controller is separated with PDPG. Then if valve is mounted on connection, Pressure generator / controller can be Comparator or Comparison Tester therefore it can saving the additional cost.
For Hydraulic, pressure generator / controller consists of pump priming pump and a precision spindle pump. O-ring designed for high-pressure structure of almost no internal leakage, a torque of the lowest among the same class and during long-term use, it will needs less power in high pressure up to more than 2000 bar. Available installed pressure generator / controller which is special designed by PDK.

OPS-J for Oil
Manual hydraulic pressure Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 2000 bar
· Lever type priming pump: up to 400 bar
For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

OPS-H for Oil
Manual hydraulic pressure Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 2000 bar
· Pneumatic pump priming: up to 1000 bar
For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

OPS-2 for Oil
Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 3000 bar
· Pneumatic pump priming: up to 2000 bar
For pressure generation and adjustment systems that required very precise pressure regulation joystick pressure control

MPC-70 for Gas
Manual pneumatic pressure Controller

For Dead-weight tester, Comparator and Comparison Tester (Precision control)
· Pressure control range: vacuum to 70 bar
For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

PDPG-A terminal is remote control unit for automated Dead-Weight Tester.
When user set target pressure on PDPG-A Terminal, it calculates the mass required to achieve the target pressure and the true value of mass loaded and exact pressure value achieved are reported and updated real time.

PDPG-A equipped environment temperature sensor, humidity sensor and atmosphere senor for buoyancy correction about current loaded mass by automatic air density. It also can measures the piston cylinder temperature for automatic calculation about coefficient of expansion for each temperature value then shows real-time current defined reference pressure with various pressure units. PDPG-A terminal shows piston location (Height) and current loaded mass information for help to get pressure calibration data intuitionally.

01 Specification

Maximum Pressure	Oil – up to 2500 bar
Measurement uncertainty	0.008 % of reading
Piston cylinder material	Tungsten carbide
Mass changing time	<10 sec
Drive air supply	>5 bar 'shop air'
Units	bar, MPa, kPa, kgf/cm², psi and etc.
Size	420 W x 350 D x 500 H
Mass material	Stainless Steel
Mass set	Oil - Total 50 kg (Standard)
Test port	Oil - 9/16" UNF Cone & Thread (AE F250C, HIP HF4)
Media	Oil (Sebacate Oil recommended)
Workable temperature / Storage temperature	10 °C ~ 35 °C / -20 °C ~ 70 °C
Workable Humidity / Storage Humidity	20 %RH ~ 75 %RH / 0 %RH ~ 90 %RH
Power Requirements	220 Vac, 50/60 Hz

Oil pressure P/C and pressure range

Piston \ Pressure	Min pressure	Max Pressure	Min increasement pressure(Automated)
2 bar / kg	2 bar	100 bar	200 mbar
5 bar / kg	5 bar	250 bar	500 mbar
10 bar / kg	10 bar	500 bar	1 bar
20 bar / kg	20 bar	1000 bar	2 bar
50 bar / kg	50 bar	2500 bar	5 bar

02 Order Information

Model / Description

PDPG-A - PISTON	Oil Automated Dead-Weight Tester ** User must supplied local acceleration of gravity when order.

03 Option

· Pressure generator / controller

OPS-J (Oil Standard)
OPS-2
OPS-H
MPC-70 (Gas)

· Trim Mass F1 grade (10 mg to 50 g, 1-2-2-5 Series)
· Multi test port
· KOLAS Certificated calibration report

04 Accessories

· Main unit and mass set with automated mass handling unit
· Terminal 11" Touch panel
· Piston/Cylinder
· Pressure controller
· Fitting adaptor set
· Sebacate oil
· Power cable

PDPG

Dead-Weight Tester

Dead-Weight Tester is used as a generator of an accurately known pressure. It measures pressure as force per unit area. Therefore, Dead-Weight Tester is the most accurate pressure calibrator.

·Pressure ranges
Oil - 100 / 250 / 500 / 1000 / 2000 / 5000 bar
Gas - 5 / 7 / 50 / 70 / 100 bar

·0.008% of uncertainty
·Specially designed cylinder
·Quick & Easy installation of Piston/Cylinder module
·9 LED for piston float-position display
·Automatic-Intelligent piston rotation
·Stainless Steel Mass set (True mass)
·Separated from the main unit and the pressure regulator can be used for various purposes.
·P/C Temperature accuracy - better than ±0.2 ℃

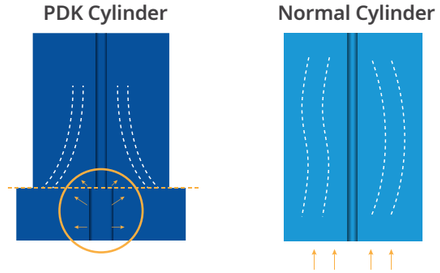
The advantages of Dead-weight tester are excellent long-term stability, small measurement uncertainty, good repeatability and excellent reproducibility. Therefore, national standard laboratories, calibration institutions, research institutes and industrial calibration laboratories have used it as the primary pressure calibrator for a long time.

PDK's Dead-Weight Tester PDPG is the result of precision machining technology and high electronic engineering technology. PDPG is proud to show an advanced concept of pressure calibrator. PDPG boasts the highest performance among equivalent models.

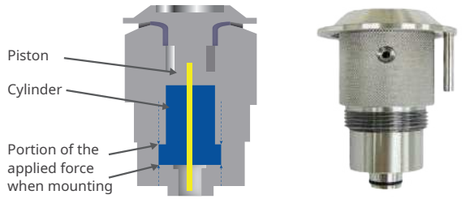
PDK's Dead-weight Tester PDPG is suitable to test and calibrate various kinds of pressure gauges including pressure transducers, digital manometers, pressure transmitters, pressure switches.

PDPG was made in accordance with the regulations of Pressure Balance International Recommendation (OIML R110, 1994(E)).

Wing type P/C is the most optimized and modernized design for piston-cylinder unit. A protrusion on the cylinder face enables easy and firm installation to the mount. Unique end shape of cylinder hole assures excellent metrological characteristics.



PDK's patented cylinder (Korea,10-0449151) is made of tungsten carbide. PDK's piston-cylinder shows high precision and stability. The modular piston-cylinder unit can be replaced by hands very easily and quickly without special tool. It also as excellent structure which prevents environmental contamination from outside.



P/C Module

Piston - Cylinder

In order to measure the accurate temperature of the piston -cylinder, precision platinum resistance temperature sensor is equipped with uncertainty of 0.2°C. Incorrect measurement of the piston cylinder temperature about 1°C gives pressure error around 9 ppm. PDPG temperature sensor is located at the easy place to remove for calibration.

In order to monitor the float position of piston, non-contact height sensor was developed. In total, 9 LEDs are attached on the front panel of PDK's PDPG. Each LED will be lighting at 1 mm interval according to piston movement. When green LED is shining, it indicates "measurement available."

Manual Rotation

Automatic Rotation

LED (red, yellow, green)

In order to rotate piston, two methods are available. The first one is to press the red button on the front panel of PDPG. The piston can be rotated only when you want to rotate. Second method is to press the green button. When the piston is located in a suitable operation position, the piston rotates automatically. The operation interval covers ±3 mm from reference float line. If out of range, piston stops automatically.

Optional mass set (and trim mass) is available.

· Accuracy of marked values: better than 10 ppm
· Integrated Mass set
· Stainless steel
· Mass set tray and hard case included

1-2-2-5 Series combination mass set
100 g – 1 ea, 200 g – 2 ea, 500 g – 1 ea
1 kg – 1 ea, 2 kg – 2 ea
4.5 kg – 1 ea (Make up mass)
5 kg – 8 ea or 18 ea (Oil) / 3 ea or 5 ea (Gas)

· Oil : 50 kg set / up to 100 kg available
· Gas : 25 kg set / up to 35 kg available
· Option : 10 mg to 50 g 1-2-2-5 series combination trim mass set
· Pressure marking available on mass surface
· Customized mass value available in case user provides the value of acceleration of gravity

Pressure generator / controller is separated with PDPG. Then if valve is mounted on connection, Pressure generator / controller can be Comparator or Comparison Tester therefore it can saving the additional cost.

OPS-J for Oil
Manual hydraulic pressure Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 2000 bar
· Lever type priming pump: up to 400 bar

For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

OPS-H for Oil
Manual hydraulic pressure Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 2000 bar
· Pneumatic pump priming: up to 1000 bar

For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

OPS-2 for Oil
Generator / Controller

For Dead-weight tester, Comparator and Comparison Tester
· Pressure control range: up to 3000 bar
· Pneumatic pump priming: up to 2000 bar

For pressure generation and adjustment systems that required very precise pressure regulation joystick pressure control

MPC-70 for Gas
Manual pneumatic pressure Controller

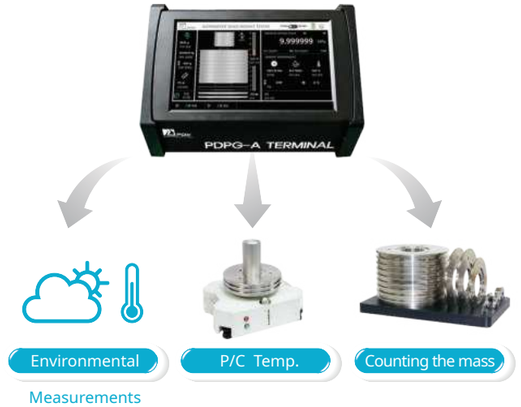
For Dead-weight tester, Comparator and Comparison Tester (Precision control)
· Pressure control range: vacuum to 70 bar

For pressure generation and adjustment systems that required very precise pressure regulation quick & easy to use.

For Hydraulic, pressure generator / controller consists of pump priming pump and a precision spindle pump. O-ring designed for high-pressure structure of almost no internal leakage, a torque of the lowest among the same class and during long-term use, it will needs less power in high pressure up to more than 5000 bar. Available installed pressure generator / controller which is special designed by PDK.

Optional automatic standard pressure calculation unit is equipped with a device developed by PDK. The unit has built-in an external temperature, humidity, barometric pressure sensor to automatically calculate the density for the buoyancy correction to the mass.

Also when mass lift up and place from mass tray, it automatically calculate loading mass on the piston by load cell and micro switch. This device can be equipped with all of pressure dead weight tester to calculate standard errors for the pressure can be minimized.



[Actual installed photo]

01 Specification

Maximum Pressure	Oil - up to 5000 bar
	Gas - up to 100 bar
Measurement uncertainty	0.008 % of reading
Piston cylinder material	Tungsten carbide
Mass material	Stainless Steel
Mass set	Oil - 50 kg set / up to 100 kg available
	Gas - 25 kg set / up to 35 kg available
Test port	Oil - 9/16" UNF Cone & Thread (AE F250C, HIP HF4)
	Gas - 1/4" BSPP
Weight	12 kg
Media	Hydraulic - Oil (Sebacate Oil recommended)
	Pneumatic - Dry Air, N_2

Oil pressure P/C and pressure range

Piston \ Mass	Piston 0.1 kg	Piston+Bell 0.5 kg	50 kg	100 kg
2 bar / kg	200 mbar	1 bar	100 bar	200 bar
5 bar / kg	500 mbar	2.5 bar	250 bar	500 bar
10 bar / kg	1 bar	5 bar	500 bar	1000 bar
20 bar / kg	2 bar	10 bar	1000 bar	2000 bar
50 bar / kg	5 bar	25 bar	2500 bar	5000 bar

Gas pressure P/C and pressure range

Piston \ Mass	Piston 0.1 kg	Piston+Bell 0.5 kg	25 kg	35 kg	50 kg
200 mbar / kg	20 mbar	100 mbar	5 bar		
2 bar / kg	200 mbar	1 bar	50 bar	70 bar	100 bar

02 Order Information

Model / Description

PDPG-H - PISTON - MASS	Oil Dead-Weight Tester
PDPG-P - PISTON - MASS	Gas Dead-Weight Tester

03 Option

· Pressure generator / controller

OPS-J (Oil Standard)	OPS-H
OPS-2	MPC-70 (Gas)

· Trim Mass F1 grade (10 mg to 50 g, 1-2-2-5 Series)
· Automatic standard pressure calculation unit
· KOLAS Certificated calibration report
· Multi test port
· Piston temperature indicator
· INTENSIFIER 6:1 (Max 5000 bar)

04 Accessories

· Main unit and mass set
· P/C case and mass set case
· Mass tray
· Pressure controller
· Fitting adaptor set
· Sebacate oil
· Power cable

PDPG-HI

Dead-Weight Tester

Dead-Weight Tester is used as a generator of an accurately known pressure. It measures pressure as force per unit area. Therefore, Dead-Weight Tester is the most accurate pressure calibrator.

- Pressure ranges Oil 100, 140, 200, 250, 350, 500, 700, 1000, 1200, 1400 bar
- 0.01 % of reading uncertainty (0.008% Optional)
- Specially designed Wing type cylinder
- Quick & Easy installation of Piston/Cylinder module
- Using mirror for piston float-position detect
- 9 LED for piston float-position display (Optional)
- Automatic-Intelligent piston rotation (Optional)
- MPa, bar, kgf/cm^2 and psi ranges available
- Built-in hand pumps standard
- Trimmed mass set for local gravity and pressure deformation coefficient at no extra cost

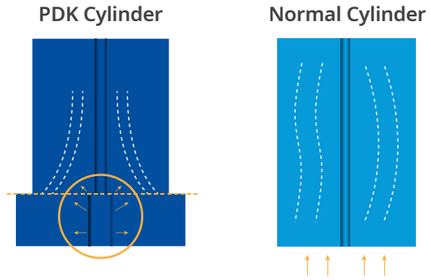
The advantages of Dead-weight tester are excellent long-term stability, small measurement uncertainty, good repeatability and excellent reproducibility. Therefore, national standard laboratories, calibration institutions, research institutes and industrial calibration laboratories have used it as the primary pressure calibrator for a long time.

PDK's Dead-Weight Tester PDPG-HI is the result of precision machining technology and high electronic engineering technology. PDPG-HI is proud to show an advanced concept of pressure calibrator. PDPG-HI boasts the highest performance among equivalent models.

PDPG-HI is suitable to test and calibrate various kinds of pressure gauges including pressure transducers, digital manometers, pressure transmitters, pressure switches.

PDPG was made in accordance with the regulations of Pressure Balance International Recommendation (OIML R110, 1994(E)).

Wing type P/C is the most optimized and modernized design for piston-cylinder unit. A protrusion on the cylinder face enables easy and firm installation to the mount. Unique end shape of cylinder hole assures excellent metrological characteristics.



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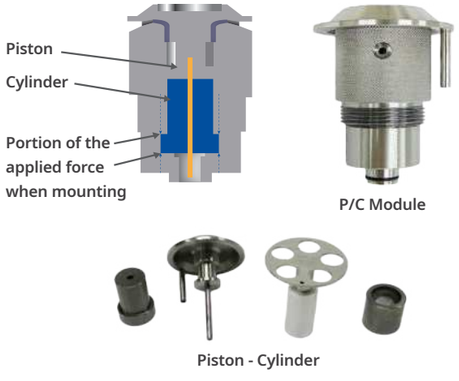
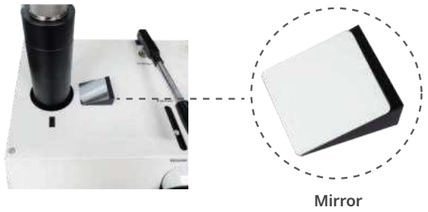
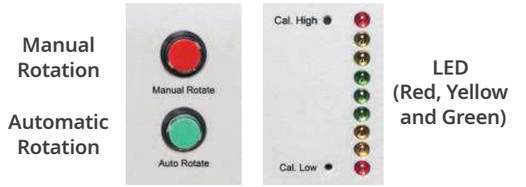


Standard version of PDPG-HI has built-in mirror for easy to identify piston float position.



In order to monitor the float position of piston, non-contact height sensor was developed. In total, 9 LEDs are attached on the front panel of PDPG-HI. Each LED will be lighting at 1 mm interval according to piston movement. When green LED is shining, it indicates 'measurement available.' (Optonal function)



In order to rotate piston, two methods are available. The first one is to press the red button on the front panel of PDPG-HI. The piston can be rotated only when you want to rotate. Second method is to press the green button. When the piston is located in a suitable operation position, the piston rotates automatically. The operation interval covers ±3 mm from reference float line.
If out of range, piston stops automatically.

Pressure values are marked in Stainless steel mass set and trip mass set is available as optional item.

- Intergrated Mass set
- Stainless steel
- Mass set tray included
- Hard case included

- Trimmed mass set for local gravity and pressure deformation coefficient at no extra cost
- If unspecified, instruments will be calibrated to Standard Gravity at 9.80665 m/s^2

01 Specification

Maximum Pressure	200 mbar to 100 bar / 200 mbar to 140 bar / 500 mbar to 200 bar / 500 mbar to 250 bar
	1 to 350 bar / 1 to 500 bar / 1 to 700 bar / 2 to 700 bar
	2 to 1000 bar / 2 to 1200 bar / 2 to 1400 bar
Measurement uncertainty	0.01 % of reading (optional : 0.008%)
Piston cylinder material	Tungsten carbide
Mass material	Stainless Steel
Test port	1/4" BSPP
Media	Oil (Tellus Oil)

02 Order Information

Model PDPG-HI	I-01002		I-01402		I-02005		I-02505		I-03510		I-05010	
Min Pressure	200 mbar		200 mbar		500 mbar		500 mbar		1 bar		1 bar	
Max Pressure	100 bar		140 bar		200 bar		250 bar		350 bar		500 bar	
Piston	200 mbar		200 mbar		500 mbar		500 mbar		1 bar		1 bar	
Bell	800 mbar		800 mbar		2 bar		2 bar		4 bar		4 bar	
Make-up	9 bar		9 bar		22.5 bar		22.5 bar		45 bar		45 bar	
Main Mass 1	10 bar	8 ea	10 bar	12 ea	25 bar	6 ea	25 bar	8 ea	50 bar	5 ea	50 bar	8 ea
Sub Mass 1	5 bar	1 ea	5 bar	1 ea	10 bar	1 ea	10 bar	1 ea	25 bar	1 ea	25 bar	1 ea
Sub Mass 2	2 bar	2 ea	2 bar	2 ea	5 bar	2 ea	5 bar	2 ea	10 bar	2 ea	10 bar	2 ea
Sub Mass 3	1 bar	1 ea	1 bar	1 ea	2.5 bar	1 ea	2.5 bar	1 ea	5 bar	1 ea	5 bar	1 ea
Sub Mass 4	500 mbar	1 ea	500 mbar	1 ea	2 bar	1 ea	2 bar	1 ea	2.5 bar	1 ea	2.5 bar	1 ea
Sub Mass 5	200 mbar	2 ea	200 mbar	2 ea	1 bar	2 ea	1 bar	2 ea	1 bar	2 ea	1 bar	2 ea
Sub Mass 6	100 mbar	1 ea	100 mbar	1 ea	500 mbar	1 ea	500 mbar	1 ea	500 mbar	1 ea	500 mbar	1 ea
Fine Increment Masses(Option)	20 mbar	5 ea	20 mbar	5 ea	100 mbar	5 ea	100 mbar	5 ea	100 mbar	5 ea	100 mbar	5 ea
Total Mass(kg)	50 kg		70 kg		40 kg		50 kg		35 kg		50 kg	

Model PDPG-HI	I-07010		I-07020		I-10020		I-12020		I-14020	
Min Pressure	1 bar		2 bar		2 bar		2 bar		2 bar	
Max Pressure	700 bar		700 bar		1000 bar		1200 bar		1400 bar	
Piston	1 bar		2 bar		2 bar		2 bar		2 bar	
Bell	4 bar		8 bar		8 bar		8 bar		8 bar	
Make-up	45 bar		90 bar		90 bar		90 bar		90 bar	
Main Mass 1	50 bar	12 ea	100 bar	5 ea	100 bar	8 ea	100 bar	10 ea	100 bar	12 ea
Sub Mass 1	25 bar	1 ea	50 bar	1 ea	50 bar	1 ea	50 bar	1 ea	50 bar	1 ea
Sub Mass 2	10 bar	2 ea	20 bar	2 ea	20 bar	2 ea	20 bar	2 ea	20 bar	2 ea
Sub Mass 3	5 bar	1 ea	10 bar	1 ea	10 bar	1 ea	10 bar	1 ea	10 bar	1 ea
Sub Mass 4	2.5 bar	1 ea	5 bar	1 ea	5 bar	1 ea	5 bar	1 ea	5 bar	1 ea
Sub Mass 5	1 bar	2 ea	2 bar	2 ea	2 bar	2 ea	2 bar	2 ea	2 bar	2 ea
Sub Mass 6	500 mbar	1 ea	1 bar	1 ea	1 bar	1 ea	1 bar	1 ea	1 bar	1 ea
Fine Increment Masses(Option)	100 mbar	5 ea	200 mbar	5 ea	200 mbar	5 ea	200 mbar	5 ea	200 mbar	5 ea
Total Mass(kg)	70 kg		35 kg		50 kg		60 kg		75 kg	

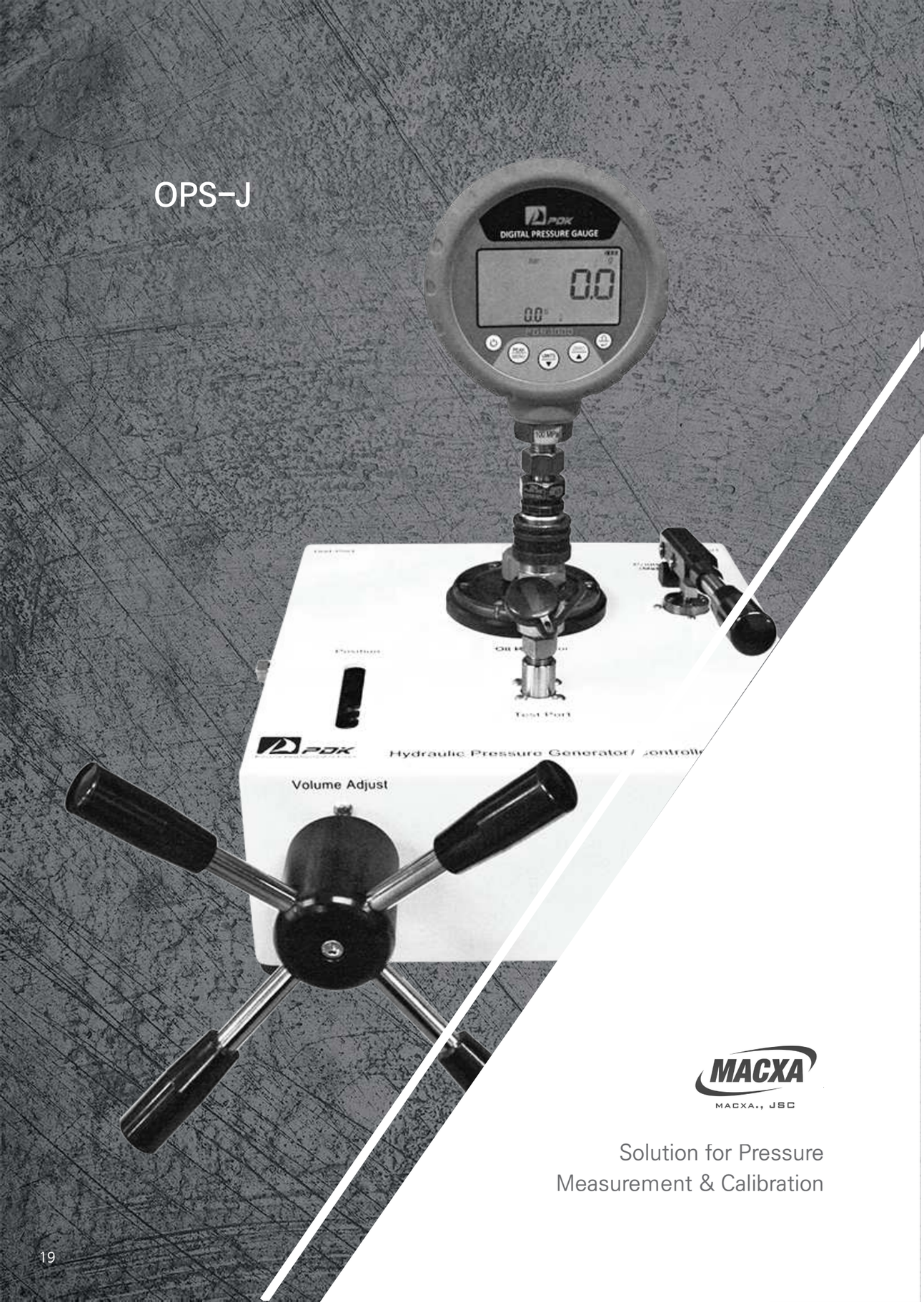
03 Option

- 0.008% of reading
- Piston position LED indicator with automatic piston rotation
- Trim Mass
- KOLAS Certificated calibration report
- Liquid to Liquid Separator
- Sebacate Oil

04 Accessories

- Main unit and mass set
- P/C case and mass set case
- Mass tray
- Fitting adaptor set
- Tellus Oil

OPS-J



MACXA
MACXA., JSC

Solution for Pressure
Measurement & Calibration

02

Manual Precision Pressure Controller

MPC-70 / OPS-J / OPS-2
OPS-H / MPC-L

OPS-J

OPS-J is for up to 200 MPa pressure generation and adjustment systems that required very accurate precise pressure regulation.

OPS-H

MPC-L

MPC-70

Manual Precision Gas Pressure Controller

MPC-70 Manual High Gas Pressure Controller can control high gas pressure Vaccum to 70 bar.

Very easy and fast pressure control.

Used w/ Piston Gauge and Reference Pressure Gauge for calibration and test.

To use Manual High Gas Pressure (Vaccum) Controller MPC-70, a pressure supply is connected to the supply port.

The system into which pressures are to be controlled is connected to the test port.

Inlet and outlet needle valves are used to admit or exhaust for pressure control.

Fine pressure control designed high precision vernier and high pressure.

Gas Piston Gauge (PDPG-P) & Manual Precision Gas Pressure Controller (MPC-70)

01 Specification

Pressure Range	Vacuum to 70 bar
Priming Pressure	20 cc
Test Port	Two 1/8" NPT Female (Rear side)
Supply Port	One 1/8" NPT Female (Rear side)
Out-Let(Vacuum) Port	One 1/8" NPT Female (Rear side)
Wight	7.5 kg
Size	300 mmW x 450 mmD x 140 mmH

02 Order Information

Model(MPC-70) / Description(Manual Precision Gas Pressure Controller)

OPS-J

Hydraulic Manual Pressure Generator / Controller

OPS-J is for up to 2000 bar pressure generation and adjustment systems that required very accurate precise pressure regulation.

OPS-J is pressure comparator and comparison tester that using analog pressure gauge and digital pressure gauge for standard comparator.
It can control precise pressure and dead-weight tester's pressure generate and precise pressure control.

OPS-J using priming pump for primary pressure then screw type hand pump control the precise pressure. Priming pump generates pressure by lever type handle and screw type hand pump control the main pressure.

A torque of the lowest among the same class and during long-term use, it will need less power in high pressure up to more than 2000 bar. OPS-J has 3 of test port for various purposes.

01 Specification

Maximum Pressure	Up to 2000 bar or more
Variable Volume	4 cc
Oil Reserver Volume	300 cc
Test Port	9/16" UNF Cone & Thread (AE F250C, HIP HF4)
Weight	11.5 kg
Size	300 mmW x 330 mmD x 140 mmH
Media	Oil , Water

02 Order Information

Model(OPS-J) / Description(Manual Hydraulic Pressure Generator / Controller)

03 Option

Sebacate Oil - 1 Liter

OPS-2

Hydraulic Manual Pressure Generator / Controller

OPS-2 is for up to 1500 bar pressure generation and adjustment systems that required very accurate precise repeated pressure regulation.

OPS-2 is pressure comparator and comparison tester that using analog pressure gauge and digital pressure gauge for standard comparator.
It can control precise pressure and dead-weight tester's pressure generate and precise pressure control.

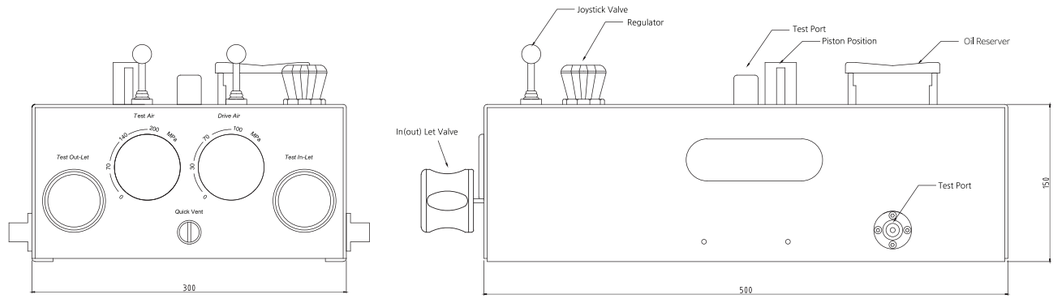
If OPS-2 is using with Intensifier, it can generate and control up to 5000 bar.

OPS-2 manufactured for perfect suitable with repeated pressure generates and control with less power in high pressure.

Also OPS-2's pressure stabilization is very fast and it reduces pressure calibration time and test time because it using the principle that when the pressure applied, pressure gives the load on the piston.

Using In-let valve can control primary pressure or fill the pressure and two of joystick controllers can pressure control fast & slow. Compare with OPS-1, OPS-2 is much better for the durability and flexibility.

Also OPS-2 can control bigger volume than OPS-1. If OPS-2 is using with intensifier manufactured by PDK, it can generate and control up to 5000 bar and can be best system.



[DIMENSIONS]

01 Specification

Maximum Pressure	Up to 1500 bar or more
Priming Pressure	Max 1000 bar
Variable Volume	5 cc
Oil Reserver Volume	300 cc
Test Port	3 EA, 9/16" UNF Cone & Thread (AE F250C, HIP HF4)
Weight	25 kg
Size	300 mmW x 500 mmD x 150 mmH
Media	Oil
Working Pressure	Pneumatic Max 10 bar (1500 bar @7 bar)

02 Order Information

Model(OPS-2) / Description(Manual Hydraulic Pressure Generator / Controller)

03 Option

· Sebacate Oil - 1 Liter
· Intensifier - 6 : 1 Pressure intensifier, Max 5000 bar

OPS-H

Hydraulic Manual Pressure Generator / Controller

OPS-H is for up to 2000 bar pressure generation and adjustment systems that required very accurate precise pressure regulation.

OPS-H is pressure comparator and comparison tester that using analog pressure gauge and digital pressure gauge for standard comparator.
It can control precise pressure and dead-weight tester's pressure generate and precise pressure control.

OPS-H using priming pump for primary pressure (about up to 1000 bar) then screw type hand pump control the precise pressure (up to 2000 bar or more).

Priming pump generate pressure that using hydraulic pressure booster powered by Pneumatic pressure and screw type hand pump control precise pressure.

A torque of the lowest among the same class and during long-term use, it will needs less power in high pressure up to more than 2000 bar. OPS-H has 3 of test port for various purposes.

01 Specification

Maximum Pressure	Up to 2000 bar or more
Variable Volume	4.5 cc
Drive Air Pressure	7 bar g
Drive Air Pressure Port	1/4" Union
Oil Reserver Volume	300 cc
Test Port	9/16" UNF Cone & Thread (AE F250C, HIP HF4)
Weight	15 kg
Size	300 mmW x 550 mmD x 160 mmH
Media	Oil

02 Order Information

Model(OPS-H) / Description(Manual Hydraulic Pressure Generator / Controller)

03 Option

Sebacate Oil - 1 Liter

MPC-L

Very Low Pressure Calibrator

- Field and laboratory calibration of the differential and very low pressure gauge
- Designed less affected by environmental temperature bellows-separated type's very low pressure controller
- Satisfied with large volume UUT calibration
- Long battery life for long-term field calibration
- Included various accessories for pressure calibration

MPC-L equipped PDR1000 manufactured by the PDK as the very low and differential pressure standard. MPC-L provides the best performance for calibration of very low and differential pressures from 1 mbar to up to 350 mbar in field and laboratory based on unique pressure generation and control functions.
In addition, the PDR1000, which is a very low and differential pressure standard, can be easily replaced in laboratory and field to meet the scope of the device being calibrated, can cover almost all of the very low and differential pressure, providing maximum effectiveness at a low cost. Save time by performing work on the micro pressure gauge, very low pressure switch, and safety valve and simplifying maintenance and calibration.
With 0.05% accuracy, 5 digit, pressure unit conversion, and various functions, quick and precision calibration is possible without external power in the laboratory or any location.

· Highly stable pressure controller
· Durable material used without long-term failure
· Range : ±1 mbar to up to 350 mbar d
· Accuracy : ±0.05% F.S (-10 to 50 ℃)
· Convenient to read and large 5-digit display
· Quick and easy to change the 10 of pressure units

Using bellows that separated from external case to reduce the effects of environmental temperature changed. Also, the failure rate is significantly low due to its high durability.

· Peak function
· External Hold function
· Min/Max function
· Alarm electronic contact function
· Pressure switch test function (NO/NC Cable option)
· Data logging function
· Auto-Off function
· RS232 Communication (Default 19200 bps set)
· Calibration function (Zero, Span)
· Analog output function (Use external power)
· Backlight On/Off
· Auto-Zero function
· Available to use external power (Power supply adaptor option)
· Indicate Overpressure function

01 Specification

Pressure Range	-1 mbar ~ 1 mbar ... -350 mbar ~ 350 mbar (Differential) / 0 Pa ~ 0.35 mbar ... 0 kPa ~ 350 mbar (Differential)
Accuracy	±0.05% F.S (Included Nonlinearity, Hysteresis, Repeatability, errors for -10 ~ 50 ℃ Temperature range)
Over Pressure limit	500 % of full scale
Bust Pressure	Over 500 % of full scale
Pressure Unit	mbar, bar, kPa, MPa, kgf/cm^2, psi, inHg, inH_2O, mmH_2O, mmHg
Workable Temperature Range	-20 ~ 70 ℃
Storage Temperature Range	-30 ~ 80 ℃
Temperature Compensated Range	-10 ~ 50 ℃
RS232 Communication	Provided Commands in manual, Available to use private communication cable (Option)
Power Requirement	AA Alkaline battery 3 ea, External power supply(Option), Hours of battery use approximately 1000 hours
Media of Use	Gas
Display	5 Digits, Backlight On/Off, Auto Off
Display Speed	3 times / Second (10 times automatic change if use Peak function)
Analog Output	1 - 5 VDC (Must use external power supply), 0.1% Accuracy (Option : 4-20mA , 0-5VDC , 0-10VDC)
Pressure Port	1/4" NPT 2ea
Data Logging	1 time / 1, 3, 5, 30, 60 second, Store Max 3000 data
Size	Dia. 165 mm W × 320 mm D × 230 mm H
Weight	2.8 kg

Carrying Case

UUT Stand

02 Option

· Additional PDR1000 · External Power Adaptor & Multifunctional Cable
· Accessories for very low and differential pressure calibration
· Carrying Case · UUT Stand

03 Order Information

Model(MPC-L-Range) / Description(Low Pressure Calibrator) Ex) MPC-L-±0.1K ⟶ Range ±1 mbar

Differential Pressure					
Part No.	Pressure Range		Accuracy of Full Scale	Media	Burst Pressure
	SI Unit	mbar			
±0.1KD	±100 Pa	±1 mbar	0.05 %	gas	200 times
±0.25KD	±250 Pa	±2.5 mbar	0.05 %	gas	100 times
±1KD	±1 kPa	±10 mbar	0.05 %	gas	50 times
±2.5KD	±2.5 kPa	±25 mbar	0.05 %	gas	30 times
±7.5KD	±7.5 kPa	±75 mbar	0.05 %	gas	15 times
±15KD	±15 kPa	±150 mbar	0.05 %	gas	15 times
±35KD	±35 kPa	±350 mbar	0.05 %	gas	5 times
0.1KD	100 Pa	1 mbar	0.05 %	gas	200 times
0.25KD	250 Pa	2.5 mbar	0.05 %	gas	100 times
1KD	1 kPa	10 mbar	0.05 %	gas	50 times
2.5KD	2.5 kPa	25 mbar	0.05 %	gas	30 times
7.5KD	7.5 kPa	75 mbar	0.05 %	gas	15 times
15KD	15 kPa	150 mbar	0.05 %	gas	15 times
35KD	35 kPa	350 mbar	0.05 %	gas	5 times

MACXA
MACXA., JSC

Solution for Pressure
Measurement & Calibration

03

Portable Pressure Calibrator

PCS-P100 / PCS-H100

PCS-H100

PCS-H100 is Portable pressure calibrator
for Hydraulic pressure calibration up to 100 MPa
with pressure generation and precise control.

PCS-P100

PCS-H100

PCS-P100

Portable Pneumatic Pressure Calibrator

PCS-P100 is Portable pressure calibrator for Pneumatic pressure calibration up to 100 bar with pressure generation and precise control.
An independent pressure calibration system combining electrical signal measuring and loop power to quickly and easily calibrate for a large amount of on-site calibration.

Using Dual-Stage lever type hand pump to generate up to 100 bar and quickly and easily, and then use the built-in volume controller to precisely adjust the pressure with the secondary fine pressure control.

PCS-P100 also has Pressure/vacuum switching valve to generate up to -970 mbar in vacuum mode which has the best degree of a vacuum in its class.

Full-graphic touchscreen display with intuitive menu selection makes it high visibility and operability.

Upper side of PCS-P100 can equipped quick connectors and adaptors for quick and easy to connect UUT.

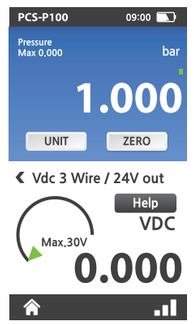
- Dual-Stage lever type hand pump to generate and control up to 100 bar pneumatic
- Dual-Stage lever type hand pump to generate and control up to –970 mbar for vacuum
- 0.02% F.S Accuracy
- Electrical connection for Transmitter
  - -Measure up to ±15 V, ±24 mA
  - -Power 24 VDC
  - -Loop Power
- Pressure switch test, Help functions
- Included carrying case
- Pneumatic Quick adaptor set (Optional)

01 Use

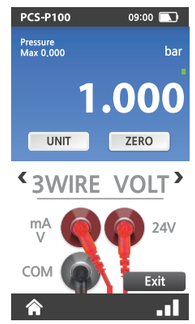
- Portable pressure calibration
- Simple calibration for common calibration lab
- Calibrate pressure gauge for pressure measuring instruments retail business
- Pressure generating and controlling for pressure test lab
- Pressure calibration for laboratory
- Pneumatic high pressure calibration
- Easy & quick calibration for pressure transmitter, analog pressure gauge, digital pressure gauge, pressure switch test

02 Easy calibration task settings (Touch Screen)

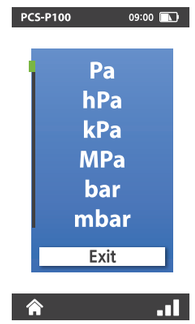
Main Screen



Pressure/Electrical Measurement Screen

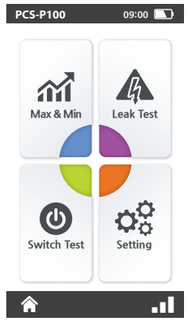


Help Screen
Application connection diagram display function

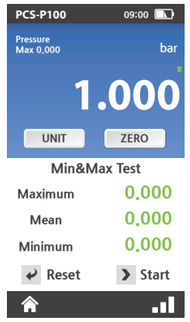


Pressure Units Selection
Available to select 13ea of pressure units

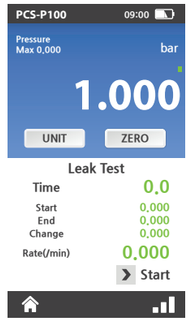
03 TASK menu (Advanced features)



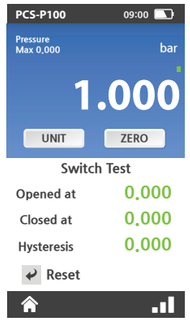
Task Menu



Min/Max Test



Leak Test



Switch Test

04 General Specifications

Pressure range	-970 mbar to 2 bar...100 bar
Accuracy	±0.02% F.S
Electronic measurement	±15 V.dc, ±24 mA.dc, Accuracy ±(0.01% of Reading + 1digit), Loop Power
Sensor supply power	Power 24 VDC
Display	Full color touch screen LCD, 110 mm(4.3inch) diagonal. 480 x 272 pixels.
Power	Lithium-ion rechargeable battery, Charger 9V, 6A (use 30 hours on a 5 hours charge)
Operating Temperature Range	0 to 70 °C
Storage Temperature Range	-30 to 80 °C
Temperature Compensated Range	0 to 50 °C
Pressure units	bar, mbar, Pa, hPa, kPa, MPa, kg/cm^2 , psi, mmH_20, cmH_20, inH_20, mmHg, inHg, mSW, fSW (mSW and fSW units are applied on a water temperature of 15°C with reference to U.S. Navy Dividing Manual, Revision 7, Table 2-10. Pressure Equivalent.)
Test Port	1/8" PF Female
Weight	4.2 kg including batteries
Size	210 mm(W) × 360 mm(D) × 110 mm(H)

05 Ordering Information

Model(PCS-P100_Range) / Description(Portable Pneumatic Pressure Calibrator)

· 2 bar	-970 mbar to 2 bar
· 3.5 bar	-970 mbar to 3.5 bar
· 7 bar	-970 mbar to 7 bar
· 20 bar	-970 mbar to 20 bar
· 35 bar	-970 mbar to 35 bar
· 70 bar	-970 mbar to 70 bar
· 100 bar	-970 mbar to 100 bar

06 Accessories

Carrying case

Rechargeable battery

Battery charger

Test lead set

07 Optional items

Dirt / Moisture Trap
Up to 10 MPa

Pneumatic Quick adaptor set
CA-P Series
(1/8, 1/4, 3/8, 1/2 PT | PF, NPT)

Flexible tubes
FTH Series
(30 cm to 300 cm)

Traceable calibration report with data (KOLAS) pressure

External Pressure Manifold

PCS-H100

Portable Hydraulic Pressure Calibrator

PCS-H100 is Portable pressure calibrator for Hydraulic pressure calibration up to 1000 bar with pressure generation and precise control. An independent pressure calibration system combining electrical signal measuring and loop power to quickly and easily calibrate for a large amount of on-site calibration.

Using lever type hand pump to generate up to 1000 bar and quickly and easily, and then use the built-in volume controller to precisely adjust the pressure with the secondary fine pressure control.

Full-graphic touchscreen display with intuitive menu selection makes it high visibility and operability.

Upper side of PCS-H100 can equipped quick connectors and adaptors for quick and easy to connect DUT.

- Lever type hand pump to generate and control up to 1000 bar Hydraulic
- 0.02% F.S Accuracy
- Electrical connection for Transmitter
  - -Measure up to ±15 V, ±24 mA
  - -Power 24 VDC
  - -Loop Power
- Pressure switch test, Help functions
- Included carrying case
- Hydraulic Quick adaptor set (Optional)

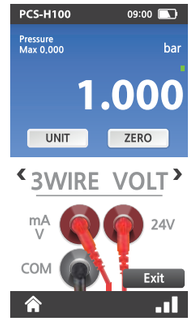
01 Use

- Portable pressure calibration
- Simple calibration for common calibration lab
- Calibrate pressure gauge for pressure measuring instruments retail business
- Pressure generating and controlling for pressure test lab
- Pressure calibration for laboratory
- Hydraulic high pressure calibration
- Easy & quick calibration for pressure transmitter, analog pressure gauge, digital pressure gauge, pressure switch test

02 Easy calibration task settings (Touch Screen)

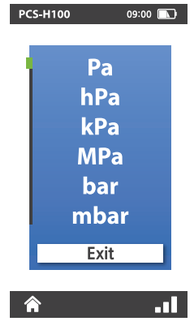
Main Screen

Pressure/Electrical Measurement Screen



Help Screen

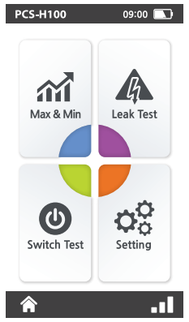
Application connection diagram display function



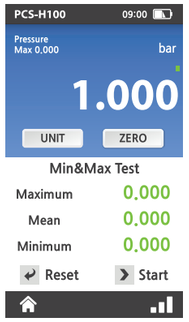
Pressure Units Selection

Available to select 13ea of pressure units

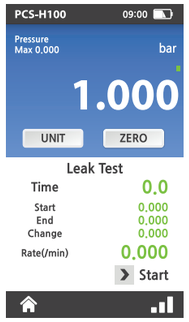
03 TASK menu (Advanced features)



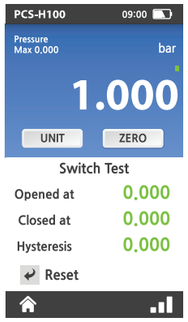
Task Menu



Min/Max Test



Leak Test



Switch Test

04 General Specifications

Pressure range	0 to 200 bar...1000 bar
Accuracy	±0.02% F.S
Electronic measurement	±15 V.dc, ±24 mA.dc, Accuracy ±(0.01% of Reading + 1digit), Loop Power
Sensor supply power	Power 24 VDC
Display	Full color touch screen LCD, 110 mm(4.3inch) diagonal. 480 x 272 pixels.
Power	Lithium-ion rechargeable battery, Charger 9V, 6A (use 30 hours on a 5 hours charge)
Operating Temperature Range	0 to 70 °C (5 to 75 °C with water)
Storage Temperature Range	-30 to 80 °C (5 to 75 °C with water)
Temperature Compensated Range	0 to 50 °C (5 to 75 °C with water)
Pressure units	bar, mbar, Pa, hPa, kPa, MPa, kg/cm^2 , psi, mmH_20, cmH_20, inH_20, mmHg, inHg, mSW, fSW (mSW and fSW units are applied on a water temperature of 15°C with reference to U.S. Navy Dividing Manual, Revision 7, Table 2-10. Pressure Equivalent.)
Test Port	1/4" PF Female
Weight	4.2 kg including batteries
Size	210 mm(W) × 360 mm(D) × 110 mm(H)
Oil Reserver Volume	100 cc
Media	Water or Mineral Oil

05 Ordering Information

Model(PCS-H100_Range) / Description(Portable Hydraulic Pressure Calibrator)

200 bar	0 bar to 200 bar
350 bar	0 bar to 350 bar
700 bar	0 bar to 700 bar
1000 bar	0 bar to 1000 bar

06 Accessories

Carrying case

Rechargeable battery

Battery charger

Test lead set

07 Optional items

Hydraulic Quick adaptor set (up to 2,000bar)
CA-H Series
(1/8, 1/4, 3/8, 1/2 PT | PF, NPT)

Flexible tubes (up to 630bar)
FT Series
(30 cm to 300 cm)

Traceable calibration report with data (KOLAS)
Pressure

External Pressure Manifold

PCS-PC

MACXA

MACXA., JSC

Solution for Pressure
Measurement & Calibration

04

Portable Pressure Generator / Controller

PCS-PC / PCS-HC

PCS-PC

PCS-PC is pneumatic pressure generator and controller
or vacuum to 10 MPa pneumatic pressure calibration.

PCS-HC

PCS-PC

PCS-PC

Portable Pneumatic Pressure Generator / Controller

PCS-PC is pneumatic pressure generator and controller or vacuum to 10 MPa pneumatic pressure calibration.

PCS-PC has a built-in 2 liters gas reserve cylinder and regulating primary pressure control and volume controller precise control a secondary pressure which has equalize function.

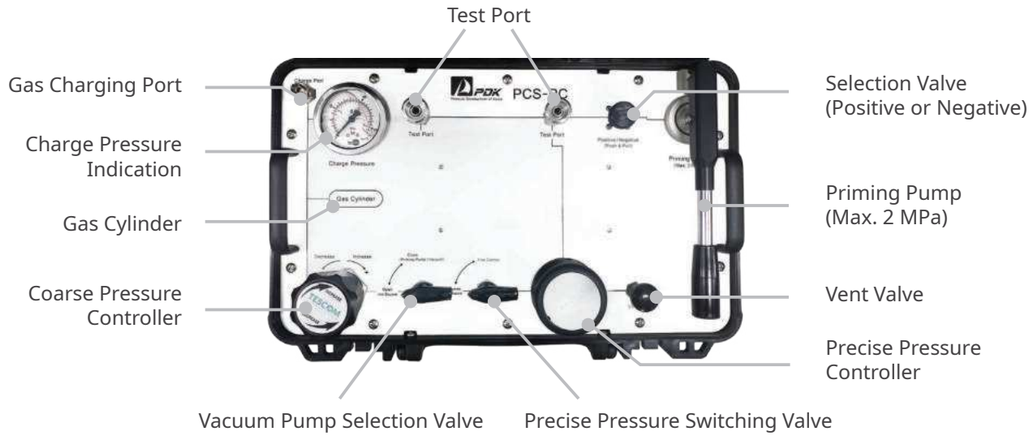
At high pressure, PCS-PC can control high pressure with less effort. Therefore PCS-PC is best portable pneumatic pressure generator/controller in the world.

Using priming hand pump and push or pull type selection valve, PSC-PC can generates 2 MPa for positive pressure and -0.95 bar (-713 mmHg) for negative pressure without gas supply which has the best degree of a vacuum in its class.

Upper side of PCS-PC equipped quick connectors and adaptors for quick and easy to connect DUT. It has 2 m of high pressure flexible tubing for quick and easy charging pressure on 2 litersgas cylinder.

- Potable pressure calibration
- Simple calibration for common calibration lab
- Calibrate pressure gauge for pressure measuring instruments retail business
- Pressure generating and controlling for pressure test lab
- Pressure calibration for laboratory
- For pneumatic high pressure calibration

- Built-in 2 liters gas cylinder (charge up to 150 bar)
- Up to 100 bar pressure generate and control
- Generate positive & negative pressure with priming hand pump
- Built-in equalize function volume controller
- Include fitting adaptor set



01 Specification

Pressure Range	- 0.95 bar ~ 100 bar
Control Accuracy	0.1 mbar
Built-in Gas Cylinder	2 liter
Vacuum Pump	Double acting type manual vacuum generation pump 0.95 bar (-713 mmHg)
Volume Controller	Equalize function volume controller
Pressure Port	1/4" SWG Quick Connector Body
Weight	11.4 kg
Size	450 mmW × 260 mmD × 225 mmH

02 Order Information

Model(PCS - PC - Range) / Description(Portable Pneumatic Pressure Generator / Controller)

20 bar	−0.95 to 20 bar
50 bar	−0.95 to 50 bar
100 bar	−0.95 to 100 bar

03 Option

Test Gauge / 0.05 %, 20 bar

PCS-HC

Portable Hydraulic Pressure Generator / Controller

PCS-HC is hydraulic pressure generator and controller for up to 1000 bar hydraulic pressure calibration.

PCS-HC has a built-in lever type pump for internal deaeration and priming. Lever type priming pump can generate primary pressure up to 200 bar and screw type hand pump can generate and precise pressure control easily and quickly up to 1000 bar use with very small torque.

PCS-HC is portable instrument that can generate up to 1000 bar which is the best portable hydraulic pressure generator/controller in the world. Upper side of PCS-HC equipped quick connectors and adaptors for quick and easy to connect DUT.
PCS-HC using special O-Ring by PDK's own high pressure technology, therefore it can be used semi-permanently without failure.

- Potable pressure calibration
- Simple calibration for common calibration lab
- Calibrate pressure gauge for pressure measuring instruments retail business
- Pressure generating and controlling for pressure test lab
- Pressure calibration for laboratory
- For hydraulic high pressure calibration

- Built-in lever type priming pump
- Up to 1000 bar pressure generate and control
- High pressure generate and control with very small torque
- Excellent stabilization of the pressure
- Include fitting adaptor set

01 Specification

Pressure Range	0 ~ 1000 bar
Control Accuracy	100 mbar
Oil Reserver Volume	270 cc
Variable Volume	1.5 cc
Maximum Priming	0 ~ 200 bar
Pressure Port	Quick connector adaptor supplied
Weight	7.5 kg
Size	450 mmW × 260 mmD × 225 mmH

02 Order Information

Model(PCS - HC) / Description(Portable Pressure Generator / Controller)

03 Option

Test Gauge / 0.05 %, 700 bar

PCS-GA

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Solution for Pressure
Measurement & Calibration

05

Portable Gas Amplifier / Controller

PCS-GA

PCS-GA

PCS-GA is pneumatic pressure amplifier and controller
for up to 70 MPa (10,000 psi) pneumatic pressure calibration.

PCS-GA

PCS-GA

Portable Gas Amplifier / Controller

PCS-GA is pneumatic pressure amplifier and controller for up to 700 bar pneumatic pressure calibration.

PCS-GA has a built-in 10:1 amplify module and it amplified the pressure up to 10 times from external pressure source. Regulator controlled primary amplified pressure and volume controller precise control a secondary pressure.

At high pressure, PCS-GA can control high pressure with less effort. Therefore PCS-GA is best portable pressure generator/controller in the world.

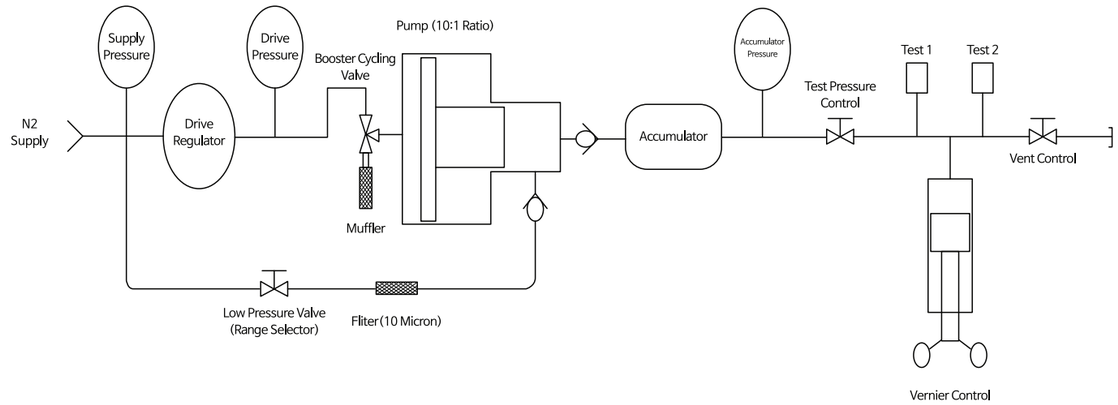
Calibrate and compare DUT with Standard test gauge on upper side of PCS-GA and we used 0.05% accuracy standard test gauge.

Upper side of PCS-GA equipped quick connectors and adaptors for quick and easy to connect DUT.
It has 2m of high pressure flexible tubing for quick and easy supplying pressure.

- Potable pneumatic high pressure calibration
- Pneumatic high pressure calibration for common calibration lab
- Pressure generating and controlling for pressure test lab
- Pressure calibration for laboratory
- Calibrate high gas pressure gauge for military

- Built-in 10 : 1 amplifier module
- Up to 700 bar pressure amplify and control
- Primary pressure control by regulator
- Built-in secondary precise pressure manual controller
- Control accuracy : 1 mbar
  (Depending on the control skill of the user)

- 0.05% standard digital test gauge application
- Include quick connect fitting adaptor set for calibration
- Include external portable gas cylinder
- Safety : available to use up to 2000 bar for all of parts in PCS-GA



[System Diagram]

01 Specification

Media	Gas source (Nitrogen and compressed gas)
Maximum compression pressure	700 bar
Compression ratio	10 : 1
Pressure range	0 bar to 700 bar
Maximum supply pressure	206 bar g
Built-in supply cylinder	7.1 scf @155 bar g
Compression reserver volume	50 cc
Size	430 mmD × 510 mmW × 240 mmH
Wight	19 kg
Color	Outside – black, Inside – white

02 Specification

Pressure Control	Primary : precise regulator
	Secondary : precise volume controller
	Compression volume : 100 cc
	Maximum rotation count : 28 turn
	Material : All stainless-steel
Low pressure tubing (for supply pressure)	Outside diameter : 1/4"
	Length : 1500 mm
	Working pressure : 689 bar
	Test pressure : 1034 bar
	Destruction pressure : 2757 bar
	Material : Inner tube of polyamide (PA),
	2 spiral layers of high tensile steel wire,
	2 open spiral synthetic fiber, outer sheath of polyurethane
	Fitting : High-pressure quick disconnect
	(Male probe one end ; Female socket at opposite end)
High pressure tubing (for test pressure)	Inside diameter : 2 mm
	Length : 1500 mm
	Working pressure : 689 bar
	Test pressure : 1034 bar
	Destruction pressure : 2757 bar
	Material : Inner tube of polyamide (PA),
	2 spiral layers of high tensile steel wire,
	2 open spiral synthetic fiber, outer sheath of polyurethane
	Fitting : High-pressure quick-disconnect (female both ends)
Portable Cylinder	Type : 10.5 liters Aluminum cylinder
	Working pressure : 152 bar g
	Capacity : 60 standard cubic feet @152 bar g
	Pressure port : Low-pressure quick-disconnect (male)
	Size : Dia.184 × 586 mmH
	Weight : 10 kg
Portable Case Test Gauge & Accessory	Test gauge : refer to order information
	Probes :
	- Material : Stainless steel & steel
	- Fitting : Male quick-disconnect male probe one end
	Female socket at opposite end
	Case
	- Size : 430 mmD × 510 mmW × 240 mmH
	- Material : Special super fiber reinforced plastic
	- Inside material : Polyurethane foam
	- Color : black
	- Weight : 9 kg

03 Order Information

PCS - GA / Model(PCS - GA - Range) / Description(Portable Pressure Generator / Controller)

Test Gauge Range
- 0.05% Accuracy
- Digital 5 digits
- Include calibration certification (KOLAS)
- Quick connector probe
- Case

2 bar
20 bar
70 bar
200 bar
700 bar

04 Standard Accessories

- Built-in regulator for primary pressure control (Max 689 bar)
- Built-in precise pressure volume controller
- Portable gas cylinder (Aluminum)
- High pressure flexible tubing for amplify
- High pressure flexible tubing for test
- One-touch type quick-connector
- Test adaptor (1/8", 1/4", 3/8", 1/2" Female adaptor)
- Case for adaptor

PCS-TC

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Measurement & Calibration

06

Automated Tire Pressure Gauge Calibrator

PCS-TC

PCS-TC

PCS-TC is exclusive automated pressure controller / calibrator instrument for tire pressure gauge and tire pressure compressor calibration.

PCS-TC

PCS-TC

Tire Pressure Gauge Automated Calibrator

PCS-TC is exclusive automated pressure controller / calibrator instrument for tire pressure gauge and tire pressure compressor calibration.

PCS-TC has two functions. First, automated pressure control function for calibrate tire pressure gauge and second, pressure measurement function for tire pressure compressor calibration. Especially, automated pressure control function can dynamic pressure control with 0.025% accuracy and built-in 2 liters gas cylinder for tire pressure gauge calibration and tire pressure compressor measurement.

When tire pressure gauge calibration, connect to compressed air and use built-in pressure controller to precision pressure compress and control. All of function can set and control in touch screen with user interface.

PCS-TC does not need additional pressure adaptors because PCS-TC has Schrader ports (Tire pressure port) on upper and side. All of above function are in PCS-TC with durable case for suitable to field calibration works.

- Analog / Digital Tire Pressure Gauge Calibration
- Manual / Automatic Tire Pressure Compressor Calibration
- Use to Pressure Compressor and measuring Instrument
- Pressure Control / Generate up to 7 bar
- Precision pressure measurement (0.025% of F.S)
- Installed Pressure Ports for Tire only - 3 ports (Available to produce custom-made port)

01 Specification

Pressure Range	0 ~ 7 bar
Accuracy	±0.025% of F.S
Pressure Supply	7 bar
Display	Graphic User Interface Touch Screen
Power Requirement	220 VAC
Pressure Port	Schrader Valve Ports
	Compressor Quick Connector
	1/4" SWG Quick Connector (Reference Pressure Sensor Calibration Port)
Weight	11 kg
Size	450 mmW × 260 mmD × 225 mmH

PHP

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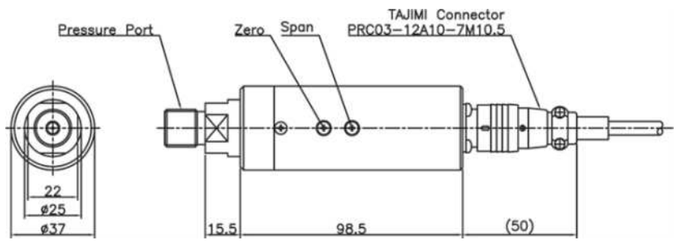
07

Pressure Transmitter for Precision Measurements

PHP

PHP

The PHP digital pressure transducer is a high accuracy and performance for precision pressure measurement componentthat uses either RS-232 to communicatewith host computer and analog output.



PHP

PHP

Pressure Transmitter for Precision Measurements

The **PHP** digital pressure transducer is a high accuracy and performance for precision pressure measurement componentthat uses either RS-232 to communicatewith host computer and analog output.
The PHP have a excellent small temperature error below 0.035% in the range of -10 ~ 50℃.
The communication S/W is included in delivery.

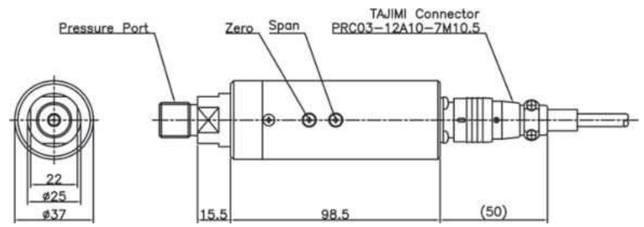
- VDC, mA Analog output
- RS232 Digital output
- Measuring range 0 ~ 1500 bar
- 0.035%FS accuracy
- Gauge and absolute measurement
- Stainless steel media-wetted materials
- CE Certified
- Measurement and test benches
- Calibration technology
- Laboratories
- Plant construction and machine building

01 Specification

Range	Gauge Pressure	0 ~ 150, 350 mbar / 1, 2, 3.5, 7 bar
		0 ~ 20, 35, 70, 100, 200, 250, 350, 400, 600, 1000, 1500 bar
	Absolute Pressure	0 ~ 1, 2, 3.5, 7 bar / 0 ~ 20, 35, 70 bar
	Compound Pressure	-1 ~ 1, 2, 3.5, 7 bar / -1 ~ 20, 35 bar
Performance	Accuracy	±0.035% FS (Gauge pressure)
		±0.05% FS (Compound, Absolute pressure)
	Thermal Effect on Zero	±0.035% FS
	Thermal Effect on Span	±0.035% FS
	Long-term Stability	±0.05% FS/year
	Compensated Temp. Range	-10 ~ 50 ℃
	Operating Temp. Range	-20 ~ 80 ℃
Electrical	Excitation	11 ~ 32 VDC
	Analog Output	0 ~ 5 VDC, 1 ~ 5 VDC, 0 ~ 10 VDC, 4 ~ 20 mA (3, 4 wire)
	Digital Output	RS232 (19200, 8, n, 1)
	Electrical Connection	TAJIMI PRC03-21A10-7F / PRC03-12A10-7M10.5 + 3m cable
Physical	Proof Pressure	≤1000 bar : 150%FS Max. / >1000 bar : 110%FS Max.
	Burst Pressure	≤1000 bar : 200%FS Min. / >1000 bar : 110%FS Min.
	Vibration	49.1 m/s²{5G}, 10~500Hz
	Shock	490 m/s²{50G}
	Pressure port	1/8" BSPT, 1/8" BSPP, 1/4" BSPT, 1/4" BSPP, 3/8" BSPT, 3/8" BSPP, 1/4" NPT
	Media-Wetted Materials	Stainless Steel 316L, Viton (>350 bar : Stainless Steel 303, Titanium 87% Alloy)
	Weight	Connector type : Approx. 270g (Sensor Only)

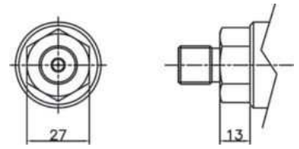
02 DIMENSIONS

≤ 35 bar



Pin No.	Wire Color	Connections
A	White	GND
B	Red	Excitation ⊕
C	Shield	FG
D	Green	Analog Output ⊕
E	Yellow	TXD
F	Black	GND
G	Blue	RXD

> 35 bar



03 Order Information

PHP C 0100 R D T G-P

Model Name

Output
C : 0~5V, RS232
E : 1~5V, RS232
J : 0~10V, RS232
G : 4~20mA(3Wire), RS232

Pressure Range
XXXX : Pressure

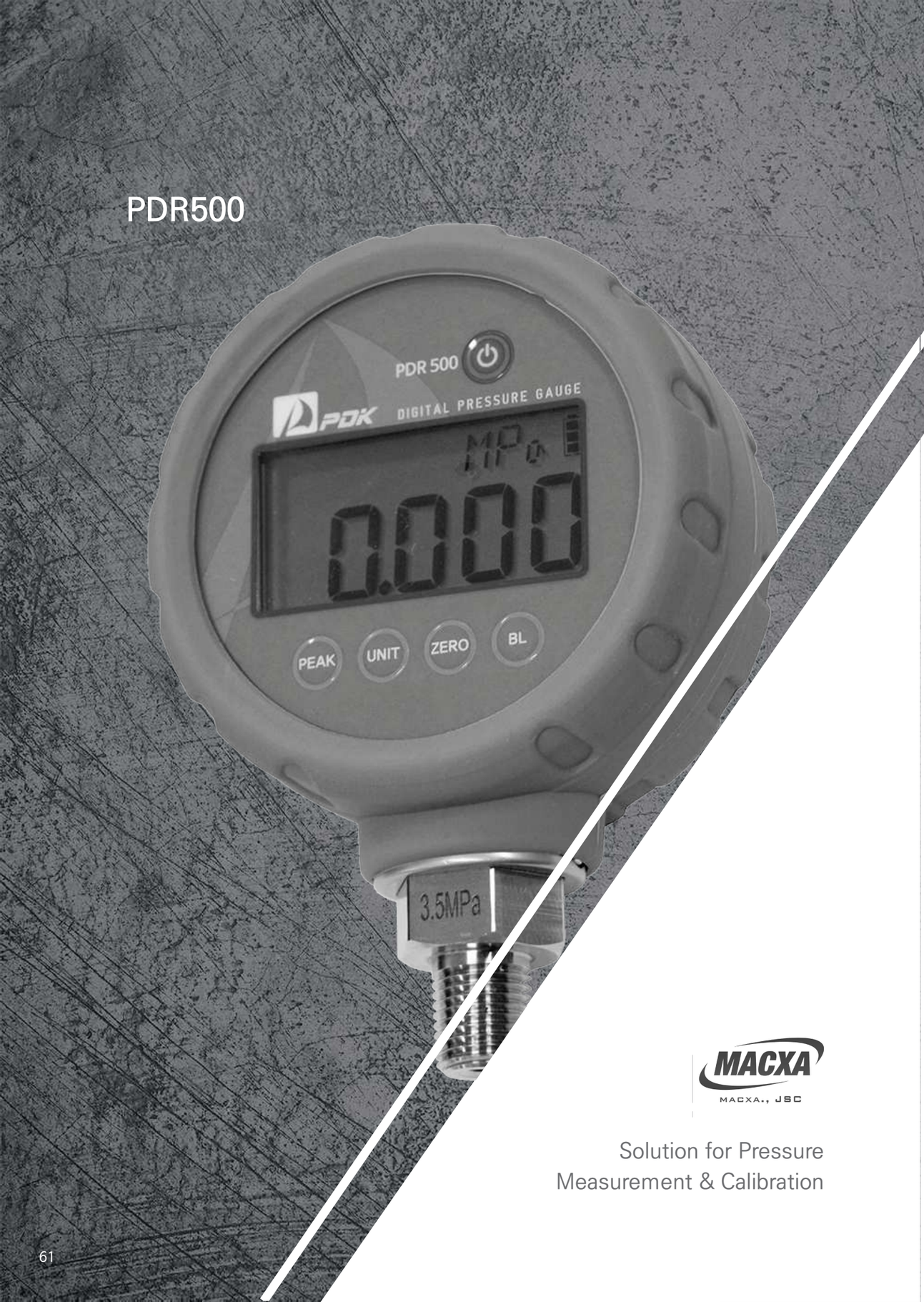
Pressure Unit
R : kPa
B : bar
P : psi
I : inchHg
D : mmH_2O
N : $inchH_2O$
M : MPa
K : kgf/cm^2
H : mmHg
T : Torr
C : cmH2O

Type of Pressure Measurement
G : Gauge
J : Absolute
C : Compound

Connecting Methods
T : TAJIMI PRC03-21A10-7F

Pressure port
A : 3/8" BSPT
B : 3/8" BSPP
C : 1/4" BSPT
L : 1/4" NPT
D : 1/4" BSPP
G : 1/8" BSPT
H : 1/8" BSPP

PDR500



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08

Digital Pressure Gauge

PDR1000 / PDR500
PDR250 / PDR100

PDR500

Digital Pressure Gauge PDR500 maintains 0.1% of accuracy within −10 to 50 ℃.
PDR500 is reliables that can measure precision pressure without a separate external power supply in anytime any place, including on−site and laboratory. PDR500 can check and record the pressure in smart phone with Bluetooth wireless communication.

PDR500

PDR1000

PDR1000

Digital Pressure Gauge

' Digital Pressure Test Gauge of Best Performance '

- Field and laboratory calibration of the pressure gauge
- Process precision pressure measurement for outdoors and plant.
- Over pressure and explosion test
- Pressure safety valve(PSV) test
- Pressure valve and Regulator test
- Pipeline static pressure test
- Substitute Chart Recorder
- Filter performance test & Leaks test
- Available to use Analog output when external power use
- RS232 Communication
- 3 years Warranty
- CE Certificated

PDK produced **PDR1000** with PDK's unique pressure calibration technology and production that has best performance in its class.
PDR1000 is digital pressure gauge for precise pressure measurement and test with Built-in various features. QR code has been applied for traceability of the product.

- Simple button touch for various function setting change and unit change
- Durable die-cast outer case
- Range: 0 to 150 mbar ~ Max 5000 bar
- Accuracy: ±0.025% F.S (-10 to 50 ℃ Temperature)
- Convenient to read and large 5-digit display
- Quick and easy to change the 10 of pressure unit
- RS232 Communication, Analog Output
- Pressure switch test, Peak, Min/Max, Alarm and etc functions

Combine Pressure comparator or hand pump for using pressure calibrator in field and calibration lab for simple pressure measurement and calibration provides an excellent solution.

- Peak function
- External Hold function
- Min/Max function
- Alarm electronic contact function
- Pressure switch test function (NO/NC Cable option)
- Data logging function
- Auto-Off function
- RS232 Communication (Default 19200 bps set)
- Calibration function (Zero, Span)
- Analog output function (Use external power)
- Backlight On/Off
- Auto-Zero function
- Available to use external power (Power supply adaptor option)
- Indicate Overpressure function
- Use QR code for traceability management for product

01 Specification

Pressure Range	0 ~ 150 mbar ... 5000 bar (Gauge)
	0 ~ 1 bar ... 70 bar (Absolute)
	±150 mbar, -1 bar ~ 1 ... 35 bar (Compound)
	±1 mbar ... ±1 bar (Differential)
Accuracy	Gauge : ±0.025% F.S or ±0.1% of reading
	Absolute, Compound, Differential: ±0.05% F.S
	(Included Nonlinearity, Hysteresis, Repeatability, errors for -10 ~ 50 ℃ Temperature range)
Over Pressure limit	Refer to below range table
Burst Pressure	
Pressure Unit	mbar, bar, kPa, MPa, kgf/cm², psi, inHg, inH_2O, mmH_2O, mmHg
Workable Temperature Range	-20 ~ 70 ℃
Storage Temperature Range	-30 ~ 80 ℃
Temperature Compensated Range	-10 ~ 50 ℃
RS232 Communication	Provided Commands in manual, Available to use communication cable (Option)
Power Requirement	AA Alkaline battery 3 ea, External power supply(Option), Hours of battery use approximately 1000 hours
Media of Use	Gas & Liquid (Use Gas only under 1 bar Range)
Display	5 Digits, Backlight On/Off, Auto Off
Display Speed	3 times / Second (10 times automatic change if use Peak function)
Analog Output	1 - 5 VDC (Must use external power supply), 0.1% Accuracy
	(Option : 4 - 20 mA , 0 - 5 VDC , 0 - 10 VDC)
Pressure Port	1/4" PF, 1/4" PT, 1/4" NPT
	9/16" UNF Cone Threaded (HF4/AF250C, Only ≥ 1000 bar)
	1/8" PF Female (Differential)
Data Logging	1 time / 1, 3, 5, 30, 60 second, Store Max 3000 data
Size	Dia. 110 mm x 38 mm , 150 mm Included Pressure Port
Weight	530 g

02 Order Information

PDR1000 - Range _ 1 _ 2 - Port

Pressure Range
Reference Part No.3

1. Pressure Unit
K = kPa
M = MPa

Pressure Port
N = 1/4" NPT Male
P = 1/4" PF Male
C = 1/4" PT Male
H = 9/16" UNF Cone Threaded female (Only ≥ 1000 bar)
L = 1/8" PF Female (Differential Pressure)

2. Pressure Type
G = Gauge
A = Absolute
C = Compound
D = Differential

Ex) PDR1000-70MG-N Range 700 bar, Gauge Pressure, 1/4" NPT
** Available to customized for Pressure Range, Pressure Unit, Pressure Port.

03 Pressure Type & Range

Gauge Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale	of Reading			
15KG	15 kPa	150 mbar	0.025 %	0.1 %	gas	3 times	4 times
35KG	35 kPa	350 mbar	0.025 %	0.1 %	gas	3 times	4 times
100KG	100 kPa	1 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
200KG	200 kPa	2 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
350KG	350 kPa	3.5 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
700KG	700 kPa	7 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
2MG	2 MPa	20 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
3.5MG	3.5 MPa	35 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
7MG	7 MPa	70 bar	0.025 %	0.1 %	gas / liquid	3 times	4 times
10MG	10 MPa	100 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
20MG	20 MPa	200 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
25MG	25 MPa	250 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
35MG	35 MPa	350 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
40MG	40 MPa	400 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
60MG	60 MPa	600 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
70MG	70 MPa	700 bar	0.025 %	0.1 %	gas / liquid	2 times	4 times
100MG	100 MPa	1000 bar	0.025 %	0.1 %	gas / liquid	1.5 times	2 times
150MG	150 MPa	1500 bar	0.025 %	0.1 %	gas / liquid	1.1 times	1.5 times
250MG	250 MPa	2500 bar	0.05 %	0.1 %	gas / liquid	1.1 times	1.2 times
400MG	400 MPa	4000 bar	0.1 %	n/a	gas / liquid	1.1 times	1.2 times
500MG	500 MPa	5000 bar	0.1 %	n/a	gas / liquid	1.1 times	1.2 times

Absolute Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale	of Reading			
100KA	100 kPa a	1 bar	0.05 %	n/a	gas / liquid	3 times	4 times
200KA	200 kPa a	2 bar	0.05 %	n/a	gas / liquid	3 times	4 times
350KA	350 kPa a	3.5 bar	0.05 %	n/a	gas / liquid	3 times	4 times
700KA	700 kPa a	7 bar	0.05 %	n/a	gas / liquid	3 times	4 times
2MA	2 MPa a	20 bar	0.05 %	n/a	gas / liquid	3 times	4 times
3.5MA	3.5 MPa a	35 bar	0.05 %	n/a	gas / liquid	3 times	4 times
7MA	7 MPa a	70 bar	0.05 %	n/a	gas / liquid	2 times	4 times

Compound Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale	of Reading			
15KC	±15 kPa	±150 mbar	0.05 %	0.1 %	gas	3 times	4 times
35KC	±35 kPa	±350 mbar	0.05 %	0.1 %	gas	3 times	4 times
100KC	±100 kPa	±1 bar	0.05 %	n/a	gas / liquid	3 times	4 times
200KC	-100 to 200 kPa	-1 to 2 bar	0.05 %	n/a	gas / liquid	3 times	4 times
350KC	-100 to 350 kPa	-1 to 3.5 bar	0.05 %	n/a	gas / liquid	3 times	4 times
700KC	-100 to 700 kPa	-1 to 7 bar	0.05 %	n/a	gas / liquid	3 times	4 times
2MC	-0.1 to 2 MPa	-1 to 20 bar	0.05 %	n/a	gas / liquid	3 times	4 times
3.5MC	-0.1 to 3.5 MPa	-1 to 35 bar	0.05 %	n/a	gas / liquid	3 times	4 times

03 Pressure Type & Range

Differential Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	mbar	of Full Scale	of Reading			
±0.1KD	±100 Pa	±1 mbar	0.05 %	n/a	gas	200 times	400 times
±0.25KD	±250 Pa	±2.5 mbar	0.05 %	n/a	gas	100 times	200 times
±1KD	±1 kPa	±10 mbar	0.05 %	n/a	gas	40 times	60 times
±2.5KD	±2.5 kPa	±25 mbar	0.05 %	n/a	gas	20 times	30 times
±7.5KD	±7.5 kPa	±75 mbar	0.05 %	n/a	gas	6 times	25 times
±15KD	±15 kPa	±150 mbar	0.05 %	n/a	gas	3 times	15 times
±35KD	±35 kPa	±350 mbar	0.05 %	n/a	gas	3 times	5 times
±100KD	±100 kPa	±1000 mbar	0.05 %	n/a	gas	3 times	5 times
0.1KD	100 Pa	1 mbar	0.05 %	n/a	gas	200 times	400 times
0.25KD	250 Pa	2.5 mbar	0.05 %	n/a	gas	100 times	200 times
1KD	1 kPa	10 mbar	0.05 %	n/a	gas	40 times	60 times
2.5KD	2.5 kPa	25 mbar	0.05 %	n/a	gas	20 times	30 times
7.5KD	7.5 kPa	75 mbar	0.05 %	n/a	gas	6 times	25 times
15KD	15 kPa	150 mbar	0.05 %	n/a	gas	3 times	15 times
35KD	35 kPa	350 mbar	0.05 %	n/a	gas	3 times	5 times
100KD	100 kPa	1000 mbar	0.05 %	n/a	gas	3 times	5 times

04 Option

External Power Adaptor

RS232C + Power Adaptor (RS232 Only)

Multifunctional Cable

Panel Mounted Bracket

Software

Pneumatic Hand Pump (Model : 700PTP-1)

Low Pressure Hand Pump (Model : 700LTP-1)

Hydraulic Hand Pump (Model : 700HTP-2)

Portable Hydraulic Pressure Generator / controller (Model : PCS-HC)

Portable Pneumatic Pressure Generator / controller (Model : PCS-PC)

** Specifications subject to change

PDR500

Digital Pressure Gauge

' 0.1 % Accuracy portable Digital Pressure Gauge '

Digital Pressure Gauge **PDR500** maintains 0.1% of accuracy within –10 to 50 ℃. PDR500 is reliables that can measure precision pressure without a separate external power supply in anytime any place, including on-site and laboratory. PDR500 can check and record the pressure in smart phone with Bluetooth wireless communication.

PDK produced **PDR500** with PDK's unique pressure calibration technology and production that has excellent performance of Micro-processor technologies.
PDR500 has best economic feasibility in its class with precision pressure measure, variable function and wireless communication.

- Range : 0 to 350 mbar ~ Max 5000 bar
- Accuracy : ±0.1% or ±0.3% or ±0.5% F.S (-10 to 50 ℃ Temperature)
- Convenient to read and large 4 1/2 digit display
- Brightness adjustment Display
- Simple button touch for various function setting change and unit change
- Durable die-cast outer case
- Quick and easy to change the pressure unit
- Small size for easy install
- Silicon protection cover included
- Long time battery life
- Class IP 66 Water-proof
- CE Certificated
- Min/Max function
- Data logging function
- Auto-Off function
- Calibration function (Zero, Span)
- Backlight On/Off & Brightness adjustment

01 Options

- RS232 Communication(19200 bps Factory set)
- Analog Output function (External Power Required)
- Wireless communication (Bluetooth) / Free App download (Android only)
- Available to use external power (Power Adaptor Option)

02 Specification

Pressure Range	0 ~ 350 mbar to 0 ~ 2500 bar	0 ~ 4000 ... 5000 bar
Accuracy	±0.1% F.S	±0.3% F.S (4000 bar) / ±0.5% F.S (5000 bar)
	(Included Nonlinearity, Hysteresis, Repeatability, Errors for –10 ~ 50 ℃)	
Over Pressure Limit	Refer to below range table	
Burst Pressure		
Pressure Unit	mbar, bar, kPa, MPa, kgf/cm^2, psi, inHg, inH_2O, mmH_2O, mmHg	
Workable Range	-20 ~ 70 ℃	
Storage Range	-30 ~ 80 ℃	
Compensation range	-10 ~ 50 ℃	
Power Requirement	AAA Alkaline battery 3 ea, Hours of battery use approximately 500 hours (Lithium Battery – 2000 hours)	
Media of Use	Gas & Liquid	
Display	4 1/2 Digits, Backlight On/Off, Automatic Off	
Display Speed	3 times / second (10 times automatic change if use Peak function)	
Pressure Port	1/4" NPT, 1/4" BSPP, 1/4" BSPT, 9/16" UNF Cone Threaded female (Over 1000 bar) (Optional)	
Weight	350 g	
Waterproof	Class IP 66	
Size	Dia. 80 mm x 38 mm , 120 mm (Included Pressure Port)	
Options		
Data logging	1 time / 1, 3, 5, 30, 60 second, Store Max 10,000 data	
Analog output	1 - 5 VDC (Must use external power supply), 0.1% accuracy	
RS232 communication	Provide commands in manual, Available to use communication cable (Option)	
External Power	Power adaptor (12 ~ 32 VDC)	
Bracket	Panel mounted Bracket	
Wireless Communication	Bluetooth, Free App download (Android only)	

03 Order Information

PDR500 _ 1 - Range _ 2 _ 3 - Port

1. Analog Output & RS232C
N = None (Battery type)
A = 1~5 VDC
C = 1~5 VDC & RS232C

Pressure Range
Reference
Part No.4

2. Pressure Unit
K = kPa
M = MPa

Pressure Port
N = 1/4" NPT
P = 1/4" PF
C = 1/4" PT
H = 9/16" UNF Cone Threaded female (Only ≥ 1000 bar)
L = 1/8" PF (Differential Pressure)

3. Pressure Type
G = Gauge
A = Absolute
C = Compound
D = Differential

Ex) PDR500N-70MG-N None(Battery type), Range 700 bar, Gauge Pressure, 1/4" NPT
** Available to customized for Pressure Range, Pressure Unit, Pressure Port.

04 Pressure Type & Range

Gauge Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
35KG	35 kPa	350 mbar	0.1 %	gas	3 times	4 times
100KG	100 kPa	1 bar	0.1 %	gas / liquid	3 times	4 times
200KG	200 kPa	2 bar	0.1 %	gas / liquid	3 times	4 times
350KG	350 kPa	3.5 bar	0.1 %	gas / liquid	3 times	4 times
700KG	700 kPa	7 bar	0.1 %	gas / liquid	3 times	4 times
2MG	2 MPa	20 bar	0.1 %	gas / liquid	3 times	4 times
3.5MG	3.5 MPa	35 bar	0.1 %	gas / liquid	3 times	4 times
7MG	7 MPa	70 bar	0.1 %	gas / liquid	3 times	4 times
20MG	20 MPa	200 bar	0.1 %	gas / liquid	2 times	4 times
35MG	35 MPa	350 bar	0.1 %	gas / liquid	2 times	4 times
70MG	70 MPa	700 bar	0.1 %	gas / liquid	2 times	4 times
100MG	100 MPa	1000 bar	0.1 %	gas / liquid	1.5 times	2 times
150MG	150 MPa	1500 bar	0.1 %	gas / liquid	1.1 times	1.5 times
250MG	250 MPa	2500 bar	0.1 %	gas / liquid	1.1 times	1.2 times
400MG	400 MPa	4000 bar	0.3 %	gas / liquid	1.1 times	1.2 times
500MG	500 MPa	5000 bar	0.5 %	gas / liquid	1.1 times	1.2 times

Absolute Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
100KA	100 kPa a	1 bar	0.1 %	gas / liquid	3 times	4 times
200KA	200 kPa a	2 bar	0.1 %	gas / liquid	3 times	4 times
350KA	350 kPa a	3.5 bar	0.1 %	gas / liquid	3 times	4 times
700KA	700 kPa a	7 bar	0.1 %	gas / liquid	3 times	4 times
2MA	2 MPa a	20 bar	0.1 %	gas / liquid	3 times	4 times
3.5MA	3.5 MPa a	35 bar	0.1 %	gas / liquid	3 times	4 times
7MA	7 MPa a	70 bar	0.1 %	gas / liquid	3 times	4 times
20MA	20 MPa a	200 bar	0.1 %	gas / liquid	2 times	4 times
35MA	35 MPa a	350 bar	0.1 %	gas / liquid	2 times	4 times
70MA	70 MPa a	700 bar	0.1 %	gas / liquid	2 times	4 times

Compound Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
35KC	±35 kPa	±350 mbar	0.1 %	gas	3 times	4 times
100KC	±100 kPa	±1 bar	0.1 %	gas / liquid	3 times	4 times
200KC	-100 to 200 kPa	-1 to 2 bar	0.1 %	gas / liquid	3 times	4 times
350KC	-100 to 350 kPa	-1 to 3.5 bar	0.1 %	gas / liquid	3 times	4 times
700KC	-100 to 700 kPa	-1 to 7 bar	0.1 %	gas / liquid	3 times	4 times
2MC	-0.1 to 2 MPa	-1 to 20 bar	0.1 %	gas / liquid	3 times	4 times
3.5MC	-0.1 to 3.5 MPa	-1 to 35 bar	0.1 %	gas / liquid	3 times	4 times

04 Pressure Type & Range

Differential Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	mbar	of Full Scale	of Reading			
±0.1KD	±100 Pa	±1 mbar	0.1 %	n/a	gas	200 times	400 times
±0.25KD	±250 Pa	±2.5 mbar	0.1 %	n/a	gas	100 times	200 times
±1KD	±1 kPa	±10 mbar	0.1 %	n/a	gas	40 times	60 times
±2.5KD	±2.5 kPa	±25 mbar	0.1 %	n/a	gas	20 times	30 times
±7.5KD	±7.5 kPa	±75 mbar	0.1 %	n/a	gas	6 times	25 times
±15KD	±15 kPa	±150 mbar	0.1 %	n/a	gas	3 times	15 times
±35KD	±35 kPa	±350 mbar	0.1 %	n/a	gas	3 times	5 times
±100KD	±100 kPa	±1000 mbar	0.1 %	n/a	gas	3 times	5 times
0.1KD	100 Pa	1 mbar	0.1 %	n/a	gas	200 times	400 times
0.25KD	250 Pa	2.5 mbar	0.1 %	n/a	gas	100 times	200 times
1KD	1 kPa	10 mbar	0.1 %	n/a	gas	40 times	60 times
2.5KD	2.5 kPa	25 mbar	0.1 %	n/a	gas	20 times	30 times
7.5KD	7.5 kPa	75 mbar	0.1 %	n/a	gas	6 times	25 times
15KD	15 kPa	150 mbar	0.1 %	n/a	gas	3 times	15 times
35KD	35 kPa	350 mbar	0.1 %	n/a	gas	3 times	5 times
100KD	100 kPa	1000 mbar	0.1 %	n/a	gas	3 times	5 times

05 Option

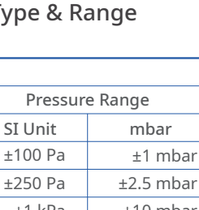
External Power Adaptor

Analog Output & Power Adaptor

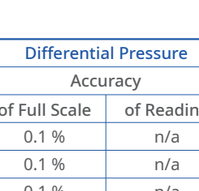
Analog Output & RS232C & Power Adaptor

Panel mounted Bracket

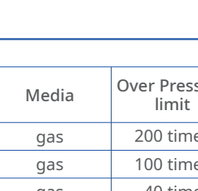
Pneumatic Hand Pump (Model : 700PTP-1)



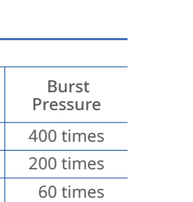
Low Pressure Hand Pump (Model : 700LTP-1)



Hydraulic Hand Pump (Model : 700HTP-2)



Portable Hydraulic Pressure Generator / controller (Model : PCS-HC)



Portable Pneumatic Pressure Generator / controller (Model : PCS-PC)

** Specifications subject to change

PDR250

Digital Pressure Gauge

' 0.25 % Accuracy Portable Pressure Gauge '

Portable digital pressure gauge **PDR250** has 0.25% FS accuracy, using battery for measuring pressure. It has multiple functions are equipped and using for precision pressure measurement and test purpose.

PDR250 can uses any liquid or gas for media that compatible with 316L Stainless Steel and it has durable aluminum die-cast outer case with Class IP65 water proof for suitable to various measurement environment.

- Range : 0 to 5000 bar
- Accuracy : ±0.25% or ±0.5% F.S
- Convenient to read and large display
- Back Light Display
- Durable die-cast outer case
- Quick and easy to change the pressure unit
- Min / Max Measurements
- Small size for easy install
- Class IP65 Water-proof

- Peak function
- Auto-Off function
- Factory Initialization function
- Backlight On/Off
- Calibration function

- Field and Test laboratory Calibration of the pressure gauge
- Process precision pressure measurement for outdoors and plant.
- Pressure valve and Regulator test
- Leaks test

01 Specification

Pressure Range	0 ~ 350 mbar ... 700 bar (Gauge)	0 ~ 710 ... 5000 bar (Gauge)
	-1 bar ~ 1 ... 35 bar (Compound)	
	0 ~ 350 mbar ... 700 bar (Absolute)	
	±1000 mbar ... 1000 mbar (Differential)	
Accuracy	±0.25 % F.S ± 1 digit	±0.5 % F.S ± 1 digit
Thermal Effect on Zero	±0.03% F.S / ℃	±0.05% F.S / ℃
Thermal Effect on Span	±0.03% F.S / ℃	±0.05% F.S / ℃
Workable Range	-20 ~ 70 ℃	
Display	4 1/2 Digits Backlight LCD	
Power Requirement	1.5V (AAA size) Alkaline battery 3 ea	
Display Speed	1, 2, 5, 7, 10 times / second	
Special Function	Unit Conversion, Peak, Auto power off, Auto Zero	
Over Pressure Limit	Refer to below range table	
Burst Pressure		
Pressure Port	1/4" BSPP, 1/4" BSPT, 1/4" NPT, 9/16" UNF Female (Only > 1500 bar)	
Material of Pressure Port	SS316L	SS316L, Ti 87%
Waterproof	IP 65	
Size	Dia. 80 mm x 38 mm , 120 mm Included Pressure Port	
Weight	350 g	

02 Order Information

PDR250 - Range _1 _ 2 - Port

Pressure Range
Reference Part No.3

1. Pressure Unit
K = kPa
M = MPa

2. Pressure Type
G = Gauge
A = Absolute
C = Compound
D = Differential

Pressure Port
N = 1/4" NPT
P = 1/4" PF
C = 1/4" PT
H = 9/16" UNF Cone Threaded female (Only ≥ 1000 bar)
L = 1/8" PF (Differential Pressure)

Ex) PDR250-70MG-N ⟶ Range 700 bar, Gauge Pressure, 1/4" NPT

03 Pressure Type & Range

Gauge Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
35KG	35 kPa	350 mbar	0.25 %	gas	3 times	4 times
100KG	100 kPa	1 bar	0.25 %	gas / liquid	3 times	4 times
200KG	200 kPa	2 bar	0.25 %	gas / liquid	3 times	4 times
350KG	350 kPa	3.5 bar	0.25 %	gas / liquid	3 times	4 times
700KG	700 kPa	7 bar	0.25 %	gas / liquid	3 times	4 times
2MG	2 MPa	20 bar	0.25 %	gas / liquid	3 times	4 times
3.5MG	3.5 MPa	35 bar	0.25 %	gas / liquid	3 times	4 times
7MG	7 MPa	70 bar	0.25 %	gas / liquid	3 times	4 times
20MG	20 MPa	200 bar	0.25 %	gas / liquid	2 times	4 times
35MG	35 MPa	350 bar	0.25 %	gas / liquid	2 times	4 times
70MG	70 MPa	700 bar	0.25 %	gas / liquid	2 times	4 times
100MG	100 MPa	1000 bar	0.5 %	gas / liquid	1.5 times	2 times
150MG	150 MPa	1500 bar	0.5 %	gas / liquid	1.1 times	1.5 times
250MG	250 MPa	2500 bar	0.5 %	gas / liquid	1.1 times	1.2 times
400MG	400 MPa	4000 bar	0.5 %	gas / liquid	1.1 times	1.2 times
500MG	500 MPa	5000 bar	0.5 %	gas / liquid	1.1 times	1.2 times

Absolute Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
100KA	100 kPa a	1 bar	0.25 %	gas / liquid	3 times	4 times
200KA	200 kPa a	2 bar	0.25 %	gas / liquid	3 times	4 times
350KA	350 kPa a	3.5 bar	0.25 %	gas / liquid	3 times	4 times
700KA	700 kPa a	7 bar	0.25 %	gas / liquid	3 times	4 times
2MA	2 MPa a	20 bar	0.25 %	gas / liquid	3 times	4 times
3.5MA	3.5 MPa a	35 bar	0.25 %	gas / liquid	3 times	4 times
7MA	7 MPa a	70 bar	0.25 %	gas / liquid	3 times	4 times
20MA	20 MPa a	200 bar	0.25 %	gas / liquid	2 times	4 times
35MA	35 MPa a	350 bar	0.25 %	gas / liquid	2 times	4 times
70MA	70 MPa a	700 bar	0.25 %	gas / liquid	2 times	4 times

Compound Pressure

Part No.	Pressure Range		Accuracy	Media	Over Pressure limit	Burst Pressure
	SI Unit	bar	of Full Scale			
35KC	±35 kPa	±350 mbar	0.25 %	gas	3 times	4 times
100KC	±100 kPa	±1 bar	0.25 %	gas / liquid	3 times	4 times
200KC	-100 to 200 kPa	-1 to 2 bar	0.25 %	gas / liquid	3 times	4 times
350KC	-100 to 350 kPa	-1 to 3.5 bar	0.25 %	gas / liquid	3 times	4 times
700KC	-100 to 700 kPa	-1 to 7 bar	0.25 %	gas / liquid	3 times	4 times
2MC	-0.1 to 2 MPa	-1 to 20 bar	0.25 %	gas / liquid	3 times	4 times
3.5MC	-0.1 to 3.5 MPa	-1 to 35 bar	0.25 %	gas / liquid	3 times	4 times

04 Pressure Type & Range

Differential Pressure

Part No.	Pressure Range		Accuracy		Media	Over Pressure limit	Burst Pressure
	SI Unit	mbar	of Full Scale	of Reading			
±0.1KD	±100 Pa	±1 mbar	0.25 %	n/a	gas	200 times	400 times
±0.25KD	±250 Pa	±2.5 mbar	0.25 %	n/a	gas	100 times	200 times
±1KD	±1 kPa	±10 mbar	0.25 %	n/a	gas	40 times	60 times
±2.5KD	±2.5 kPa	±25 mbar	0.25 %	n/a	gas	20 times	30 times
±7.5KD	±7.5 kPa	±75 mbar	0.25 %	n/a	gas	6 times	25 times
±15KD	±15 kPa	±150 mbar	0.25 %	n/a	gas	3 times	15 times
±35KD	±35 kPa	±350 mbar	0.25 %	n/a	gas	3 times	5 times
±100KD	±100 kPa	±1000 mbar	0.25 %	n/a	gas	3 times	5 times
0.1KD	100 Pa	1 mbar	0.25 %	n/a	gas	200 times	400 times
0.25KD	250 Pa	2.5 mbar	0.25 %	n/a	gas	100 times	200 times
1KD	1 kPa	10 mbar	0.25 %	n/a	gas	40 times	60 times
2.5KD	2.5 kPa	25 mbar	0.25 %	n/a	gas	20 times	30 times
7.5KD	7.5 kPa	75 mbar	0.25 %	n/a	gas	6 times	25 times
15KD	15 kPa	150 mbar	0.25 %	n/a	gas	3 times	15 times
35KD	35 kPa	350 mbar	0.25 %	n/a	gas	3 times	5 times
100KD	100 kPa	1000 mbar	0.25 %	n/a	gas	3 times	5 times

PDR100

Digital Pressure Gauge

'0.5 % Accuracy Portable Pressure Gauge'

Portable digital pressure gauge **PDR100** has 0.5% FS accuracy, using battery for measuring pressure. It has multiple functions are equipped and using for pressure measurement and test purpose.

PDR100 has 0.5% F.S with various pressure unit selection and backlight provides improved visibility under poor lightning conditions.

- Range : 0 ~ 1, 5, 10, 20, 30, 50, 100 bar (Gauge)
  -1 ~ 1, 2, 5, 10, 20 bar (Compound)
- Accuracy : ±0.5% F.S
- Simple button touch for various function setting
- Convenient to read and large display
- Back Light Display
- Durable die-cast outer case
- Quick and easy to change the pressure unit (mbar, bar, MPa, mmH_2O, inHg, mmHg, kgf/cm^2, atm, psi, kPa)
- Peak function
- Auto-off function
- Backlight On/Off
- Calibration function (Zero, Span)

- Field and Test laboratory Calibration of the pressure gauge
- Process pressure measurement & monitoring for outdoors and plant.
- Pressure valve and Regulator test
- Leaks test

01 Specification

Pressure Range	0 ~ 1, 5, 10, 20, 30, 50, 100 bar (Gauge)
	-1 ~ 1, 2, 5, 10, 20 bar (Compound)
Accuracy	±0.5 % FS ± 1 digit
Thermal Effect on Zero	±0.05% FS / ℃
Thermal Effect on Span	±0.05% FS / ℃
Compensation Range	-10 ~ 50 ℃
Workable Range	-20 ~ 70 ℃
Display	±2000 Backlight LCD
Power Requirement	9V Battery 1 ea
Display Speed	1, 2, 5, 7, 10 times / second
Special Function	Peak, Auto power off, Auto Zero
Allowable Pressure	X1.5
Burst pressure	X2
Pressure Port	1/4" BSPT, 1/4" BSPP
Material of Pressure Port	SS316L, VITON
Size	Dia. 68 mm × 35 mm , 103 mm Included Pressure Port
Weight	160 g

02 Order Information

Model(PDR100-Range_1_2-Port) / Description(Digital Pressure Gauge)

Range	0 to 100 bar (User-defined Range)
1	K = kPa, M = MPa
2	G = Gauge
Port	C = 1/4" BSPT , P = 1/4" BSPP

Ex) PDR100-10MG-C ⟶ Range 100 bar, Gauge Pressure, 1/4" BSPT

03 Pressure Type & Range

Gauge Pressure				
Part No.	Pressure Range		Accuracy	Burst Pressure
	SI Unit	bar	of Full Scale	
100KG	100 kPa	1 bar	0.5 %	2 times
500KG	500 kPa	5 bar	0.5 %	2 times
1MG	1 MPa	10 bar	0.5 %	2 times
2MG	2 MPa	20 bar	0.5 %	2 times
3MG	3 MPa	30 bar	0.5 %	2 times
5MG	5 MPa	50 bar	0.5 %	2 times
10MG	10 MPa	100 bar	0.5 %	2 times

03 Pressure Type & Range

Compound Pressure				
Part No.	Pressure Range		Accuracy	Burst Pressure
	SI Unit	bar	of Full Scale	
100KC	-100 to 100 kPa	-1 to 1 bar	0.5 %	2 times
200KC	-100 to 200 kPa	-1 to 2 bar	0.5 %	2 times
500KC	-100 to 500 kPa	-1 to 5 bar	0.5 %	2 times
1MC	-0.1 to 1 MPa	-1 to 10 bar	0.5 %	2 times
2MC	-0.1 to 2 MPa	-1 to 20 bar	0.5 %	2 times

MACXA

MACXA., JSC

Solution for Pressure
Measurement & Calibration

09

Pressure · Force Sensor Accessory

PSR®/ Accessory

PSR®

PSR® is a pressure/force sensing sensor.
A product that measures the change in resistance of the resistor depending on the increase and decrease of pressure applied to the surface of the PSR sensor.

PSR®

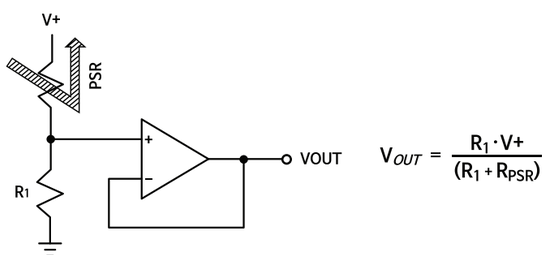
Accessory
(TP-P Series)

PSR® Pressure · Force Sensor

Pressure Sensitive Resister

PSR® is a pressure/force sensing sensor.
A product that measures the change in resistance of the resistor depending on the increase and decrease of pressure applied to the surface of the PSR sensor.
It is designed to be controlled by people such as automotive electronics, robots applications, and electronic music equipment.

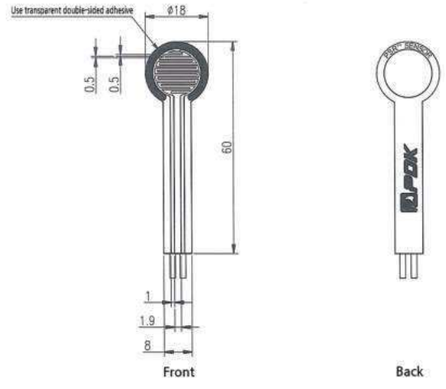
The PS R is available to manufactured from various shapes and lengths with durability and can also be adjusted to suit the customer's specifications. In addition, unlike existing products that can only be used with the ON / OFF switch, the PSR has excellent linearity and excellent measurement over a certain range.

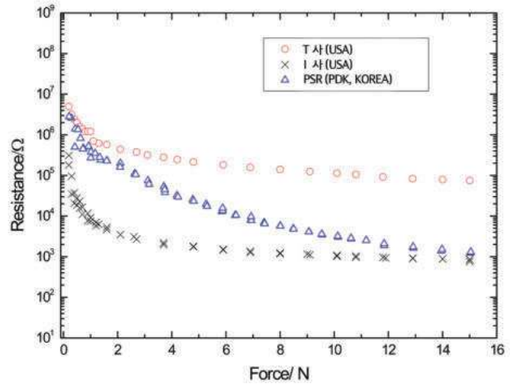


$$V_{OUT} = \frac{R_1 \cdot V+}{(R_1 + R_{PSR})}$$

01 Use and Application

- HMI Solution
- Tactile Sensing Solution
- Robot, Analog Data Collection (Feedback)
- Sports Measurement Applications
- Foot Pressure Distribution Measurement
- IoT (Internet of Things)
- Carrier drones
- Invasion / Security Field
- Automotive Seat Pressure Distribution
- Medical Treatment Distribution
- Arduino Education





02 Specification and information

Actuation Force	0.5 N minimum
Force Sensitivity Range	0.5 N ~ 20 N
Non-Actuated Resistance	10 MΩ or more
Long-Term Stability	4.4 kg Load, 100,000 times
International application and patent	PCT/KR2013/002315
	10-1390706
	10-1326238
	10-1390708
	10-1452743
	10-1435075

03 Order Information

Model(PSR - 1 - SIZE) / Description(PSR Pressure Sensitive Resistor)

1	C = Circle R = Rectangle
SIZE	Circle ø8 , ø18 Rectangle 17.7 mm or Customize

01 Low Pressure Dirt / Moisture Trap

Pressure Range	0 to 35 bar
Body Material	Stainless steel
Chamber Material	Acrylic
O-Rings	Nitrile
Test Port Connection	1/8" NPT or BSPP
Calibrator Connection	1/8" NPT or BSPP

Dirt/moisture traps provide an effective barrier against the transfer of moisture and dirt from an instrument under test to the sensitive piston/cylinder assembly of a pneumatic deadweight tester. Unexpected particle contamination or fluid inside the device under test will be prevented from entering the deadweight system, avoiding downtime for maintenance or repair. Designed for operation in the vertical position these traps are simple to dismantle and easy to clean.Designed to mount directly on the deadweight tester and featuring an acrylic chamber for visibility of contaminates this unit utilizes the standard test port adapters for easy instrument connections.

02 High Pressure Dirt / Moisture Trap

Pressure Range	0 to 210 bar
Body & Chamber Material	Stainless steel
Test Port Connection	1/4" Lok
Calibrator Connection	1/4" Lok

Dirt/moisture traps provide an effective barrier against the transfer of moisture and dirt from an instrument under test to the sensitive piston/cylinder assembly of a pneumatic deadweight tester. Unexpected particle contamination or fluid inside the device under test will be prevented from entering the deadweight system, avoiding downtime for maintenance or repair. Designed for operation in the vertical position these traps are simple to dismantle and easy to clean. This high pressure version is provided with an aluminum central chamber for safety and utilizes the standard test port adapters.

03 Liquid to Liquid Separator

Pressure Range	700 bar
Test Port Adapter	1/4" BSPP or NPT
Body Material	SUS 304L
Diaphragm	Ethylene Propylene

These liquid-to-liquid separators connect directly to the test port of a hydraulic deadweight tester or comparison test pump. A flexible diaphragm separates the fluids, protecting the calibrator from contamination, and allows calibration of the device in its specific working fluid.

04 Pneumatic Multi-Test Port (TP-P Series)

Use not Tool	
Use not plug	
Test Port Channel	1,2,3,5 Ports_Standard
	(4,6,7,8,9,10 Ports_Custom)
Pressure Range	210 bar

Multi-Test ports are designed for expanding pressure test ports during pressure calibration. Pressure test port is used for pneumatic pressure calibration up to 210bar. There are hand-tight quick connectors pre-installed on each Test Port.

05 Hydraulic Multi-Test Port (TP-H Series)

Use not Tool	
Use not plug	
Test Port Channel	1,2,3,5 Ports_Standard
	(4,6,7,8,9,10 Ports_Custom)
Pressure Range	2000 bar

Multi-Test ports are designed for expanding pressure test ports during pressure calibration. Pressure test port is used for pneumatic pressure calibration up to 2000bar. There are hand-tight quick connectors pre-installed on each Test Port.

06 Pneumatic Quick-Connection Adaptor Set (CA-P Series)

Pressure Range	210 bar
Pressure Port	1/4", 3/8", 1/2" NPT 1/4", 3/8", 1/2" BSPT / BSPP

Quick Connection to various female hand-tight quick connectors

07 Hydraulic Quick-Connection Adaptor Set (CA-H Series)

Pressure Range	2000 bar
Pressure Port	1/4", 3/8", 1/2" NPT 1/4", 3/8", 1/2" BSPT / BSPP

Quick Connection to various female hand-tight quick connectors

08 Barometer Calibration Chamber (BCC-1200)

Calibration range	0 ~ 1.2 bar a
Inside Size	350 mmW × 250 mmD × 350 mmH
Out Size	380 mmW × 291 mmD × 405 mmH
Weight	30 kg

BCC-1200 is chamber for barometer calibration. It can be calibrated very quickly by simple opening and closing and easy to identify the internal pressure gauge value by LED light in BCC-1200. It equipped relief valve and passed pressurized and vacuum test for safe and robust using.

09 High Pressure Flex Tubes (FT Series)

length	30 to 300 cm
Working pressure	High up to 630 bar
	Low up to 50 bar
Burst pressure	High 2000 bar
	Low 100 bar
Connection	
A	High 1/4" Lok (Compatible with Swagelok)
B	High 1/4" Quick (Compatible with Swagelok)
C	High 3/8" Quick (Compatible with Swagelok)
D	High 1/2" Quick (Compatible with Swagelok)
E	High AN4 (7/16" UNF, 37° Flare)
H	High 9/16" UNF Cone & Threaded (Collar & Gland included)
F	Low 1/4" Quick (Compatible with Swagelok)

10 High pressure nipple (HN-6 Series)

Length	6 to 100 cm
Working Pressure	4136 bar (Max)
Connection	1/4" Left Screw End 9/16" UNF Cone & Threaded

11 Pointer Remover

This tool is designed to quickly remove and consistently refit the pointer of a pressure gauge.

14 Medium Pressure Inspection Facility

Used for intermediate check of pneumatic and hydraulic pressure gauge
Provides software that displays the piston drop rate as a yes
Laser distance sensor height adjustment

15 Intercomparison Calibration

Used for calibrating pneumatic and hydraulic pressure gauge	
Range	Up to 20 MPa with pneumatic
	Up to 500 MPa with hydraulic
Software for data collection	
Can also be used for intermediate inspection of pressure fields	
Laser distance sensor height adjustment and pressure piping provided	

Table of pressure unit conversion

unit	atm	MPa	hPa	bar	psi	kgf/cm²	mmHg	mmH_2O
atm	1	0.101 325	1 013.250	1.013 250	14.695 94	1.0332 27	760.000 0	10 332.27
MPa	9.869 239	1	10 000.00	10.000 00	145.037 7	10.197 16	7 500.622	101 971.6
hPa	0.000 987	0.000 100	1	0.0010 00	0.014 504	0.001 020	0.750 062	10.197 16
bar	0.986 923	0.100 000	1 000.000	1	14.503 77	1.019 716	750.062 2	10 197.16
psi	0.068 046	0.006 895	68.947 57	0.068 948	1	0.070 307	51.714 97	703.069 6
kgf/cm²	0.967 841	0.098 067	980.665 0	0.980 665	14.223 34	1	735.559 7	10 000.00
mmHg	0.001 316	0.133 322	1.333 223	0.001 333	0.019 337	0.001 360	1	13.595 09
mmH_2O	9.67842E-05	9.80665E-06	0.098 067	9.80665E-05	0.001 422	0.000 100	51.714 97	1

1 MPa = 1 000 kPa = 10 000 hPa
1 bar = 1 000 mbar
1 inHg = 25.4 mmHg (Torr)
1 inH2O = 2.54 cmH_2O = 25.4 mmH_2O
1 mmH2O of 4 ℃ = 1 ÷ 0.998 23 mmH_2O of 20 ℃
= 1.001 771 mmH_2O of 20 ℃

Density of water is 1.000 00 at 4 ℃, at 20 ℃ is 0.998 23.