Compact Manometer

Series PPA

Pressure measurements can easily be taken any time, anywhere.

Compact and lightweight
Portable type with a lightweight of only about 100 g (unit 50 g, battery 50 g) can also be held in the palm of the hand.

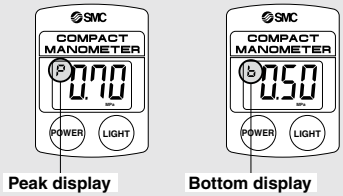
Back light for easy viewing in dark locations

Long service life of 12 months continuous operation
One year of continuous operation is possible with 2 type AA batteries (3 V).

Convenient hand strap for carrying
Keeping practical use in mind, the hand strap is a standard feature.

Zero/span calibration is possible
Offset adjustment with the zero clear function, and span calibration with the trimmer can be performed.

Peak/Bottom hold function
With pressure being displayed, variations in supply pressure can be grasped instantly with one touch switching of the display from peak value to bottom value.



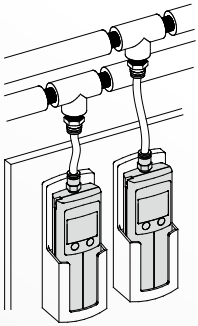
Auto power off function to save batteries
Power turns off automatically if not operated for more than 5 minutes.

Case holder is available
The case holder is provided as an option to allow for situations where portability is not required.

Pressure measurements can easily be taken any time, anywhere.

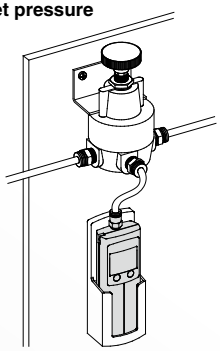
Application Example

Confirmation of air line source pressure



Human reading error is eliminated by the ability to confirm line pressure on the digital display.
It is also possible to check pulsation in the source pressure using the peak/bottom display funcion.

Confirmation of regulator set pressure



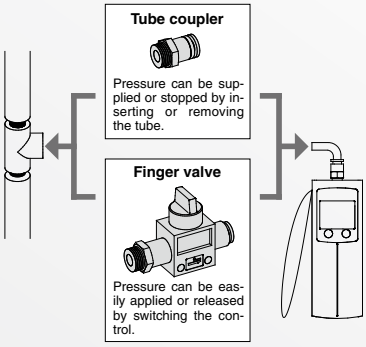
Setting a regulator can be performed more precisely than with a dial gauge by viewing the digital display while making the setting.
Furthermore, power lines are not needed for this battery operated unit.

Compact Manometer

Series PPA

Related products for line pressure measurement

Convenient for easy line pressure measurement without removing piping or stopping supply pressure, etc.



For specifications, refer to page 751.

Can also be used as an energy saving related device

■ **Measures the total pressure received by an air blown workpiece**

Used in combination with the pressure probe (KNP-1), total pressure can be easily measured.

Compact Manometer

Series PPA

PPA100/101/102

How to Order

PPA10 0 — □ — □ — M

Pressure specifications

0	–0.1 to 1 MPa (For high pressure)
1	–101 to 10 kPa (For vacuum)
2	–10 to 100 kPa (For low pressure)

Option/Case holder

Nil	None
B	With PPA-B

Unit specifications

Nil	With the unit switching function
M	Fixed in SI unit Note)

Note) Fixed unit
For vacuum/compound pressure: kPa
For positive pressure: MPa

One-touch fitting type

Symbol	Applicable tubing size	One-touch fitting	Applicable tubing material
Nil	None	None	None
04	ø4 (mm size)	KJH04-M5	Nylon Soft nylon Polyurethane
06	ø6 (mm size)	KJH06-M5	

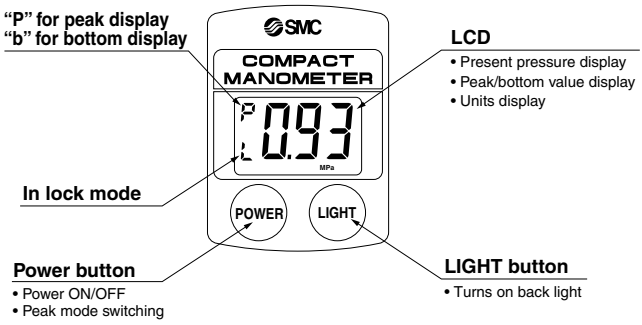
For details about the Pressure Switch Precautions, refer to pages 763 and 764. For details about the Specific Product Precautions, refer to the Operation Manual at SMC website.

Specifications

Model		**PPA100** for high press.	**PPA101** for vacuum	**PPA102** for low press.
Rated pressure range		–0.1 to 1 MPa	–101 to 10 kPa	–10 to 100 kPa
Display method		3 digit LCD back light		
Pressure display discrimination		1/100		
Min. display units (1)	**kPa**	—	1	1
	MPa	0.01	—	—
	mmHg	—	5	—
	kgf/cm²	0.1	0.01	0.01
	inHg	—	0.2	—
	psi	1	0.1	0.1
	bar	0.1	0.01	0.01
Error display		Over pressure, Memory data error, Change battery sign		
Function		Peak/bottom display, Backlight, Auto power OFF Zero clear, Units display switching		
Withstanding pressure		1.5 MPa	200 kPa	200 kPa
Applicable fluid		Air, Non-corrosive gases, Nonflammable gas		
Power supply voltage		3 VDC, Type AA dry cell x 2 pcs.		
Battery life		12 months continuous operation (Without backlighting, temperature conditions: at 25°C)		
Response speed		250 ms		
Display accuracy		±2% F.S. or less (Temperatue conditions: at 25°C) (2)		
Repeatability		±1% F.S. or less (Temperatue conditions: at 25°C)		
Temperature characteristics		±3% F.S. or less (0 to 50°C with 25°C standard)		
Connection port size		M5 x 0.8		
Operating temperature range		0 to 50°C (With no condensation)		
Operating humidity range		35 to 85% RH (With no condensation)		
Enclosure		IP40		
Weight		Approx. 100 g (Unit 50 g, batteries 50 g)		
Standard		CE/RoHS		

∗ 2 pcs. of type AA dry batteries (manganese R6 or alkaline LR6) are not included.
Note 1) For the unit switching function (Types without the unit switching function is fixed in SI unit (kPa or MPa).)
Note 2) In regards to the compatibility condition of the EMC directives, the pressure display value variation is ±15% F.S. or less.

Description of Operating Parts



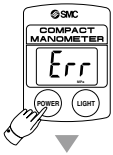
Operation and Functions

(PPA100 shown, Unit: MPa)

Initial Setting

Be certain to perform initial setting when using for the first time and after changing batteries, as the unit will indicate memory data error.

1. Confirmation of display



2. Press and hold the POWER button for 6 seconds or more.

3. Release the POWER button.

1. When the power is applied, and "Err" is displayed on LCD, cut the power off for a time. After turning OFF (i.e. the state in which nothing is displayed on LCD), then proceed to 2. Besides, in the case that nothing is displayed on LCD, proceed to 2 with doing nothing.

2. Press and hold for 6 seconds or more. The unit will go into zero clear. When this happens "CAL" will appear on the LCD.

3. When zero clear is finished, the unit can be operated.

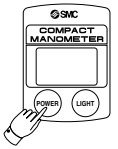
Power ON

Press the POWER button.

- The power comes ON as it is pressed.
- When pressed and held for 6 seconds or more, the unit goes into zero clear.

Power OFF

Press and hold the POWER button for 3 seconds or more.



- When pressed and held for 3 seconds or more, the power turns OFF.
- When there is no button operation for more than 5 minutes, the power turns OFF. (auto power OFF function)

Operation and Functions

(PPA100 shown, Unit: MPa)

Unit Display Switching

Note) This operation cannot be done for the type which does not have the unit switching function.

1. Press and hold the POWER and LIGHT buttons for 3 seconds or more.

2. Press the LIGHT button.

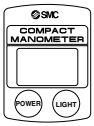
3. Press the POWER button.

1. When pressed continuously for 3 seconds or more, the unit on the LCD will flash.
2. The unit will change. (See the table below.)
3. The unit is set, and switching is finished.

High pressure **(PPA100)**	Vacuum **(PPA101)**	Low pressure **(PPA102)**
MPa → bar → psi → kgf	kPa → bar → psi → inHg → mmHg	kPa → bar → psi → kgf

Note) The "inHg" unit cannot be displayed.

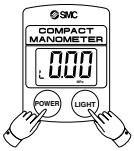
Auto Power OFF Function



When the power is turned ON and there is no button operation for more tham 5 minutes, the power will turn OFF. Note) For cancelling this function, refer to the functions and operation of the lock mode (below).

Lock Mode (Auto power OFF cancel)

Press and hold the POWER and LIGHT buttons for 6 seconds or more.



The auto power OFF function is canceled by activating the lock mode (auto power OFF cancel).
When continuously pressed for 6 seconds or more, "L" is displayed on the LCD.
Moreover, when the power is turned OFF, the lock mode is released.

Peak/Bottom Display

Note) Since this is combined with power OFF operation, the button should be released at the point when "P" or "b" is displayed.

Press the POWER button.

Press the POWER button.

Press the POWER button.

Do this when pressure is being displayed.
Peak display
Displays the maximum pressure value and "P" appears on the LCD. The display will change if pressure increases beyond the pressure value that is being held.
Bottom display
Displays the minimum pressure value and "b" appears on the LCD. The display will change if pressure falls below the pressure value that is being held.
(These modes are convenient for confirming pressure fluctuations.)

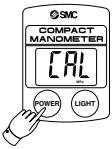
Turning on the Backlight

Press the LIGHT button.

It normally lights up while the button is being pressed. In the lock mode, it lights up when pressed and turns off when pressed and turns off when pressed again. However, the maximum lighting time is approximately one minute.

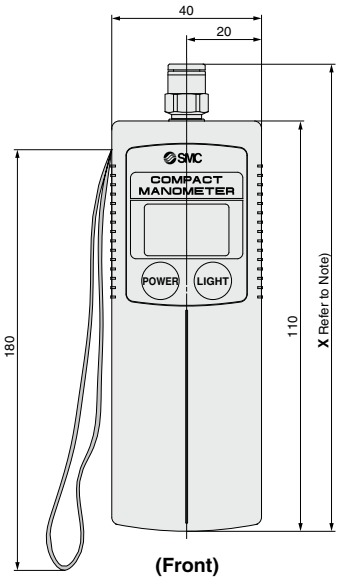
Zero Clear

Press the POWER button for 6 seconds or more.

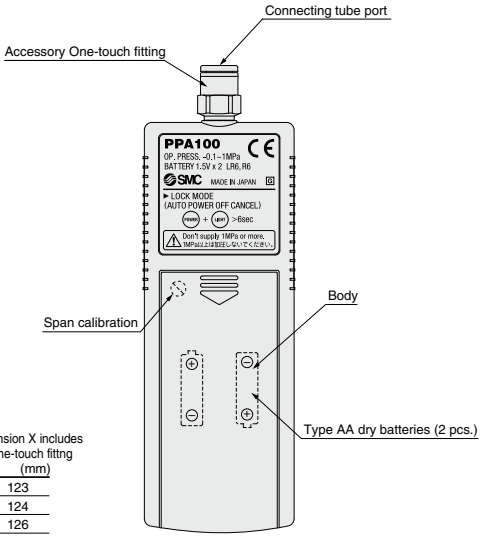


The zero point displayed at atmospheric pressure can be automatically adjusted. By this means it is possible to eliminate a display discrepancy at atmospheric pressure.
- Turn the power OFF.
- Release the supply pressure to the atmosphere.
- When continuously pressed for 6 seconds or more, zero clear is performed and "CAL" is displayed on the LCD.

Dimensions



(Front)

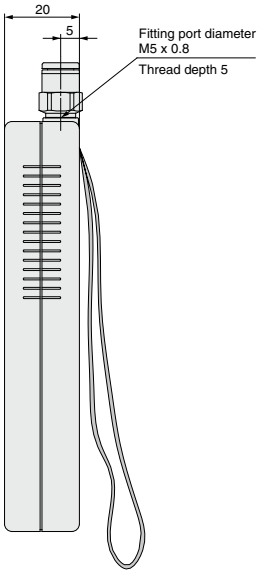


(Back)

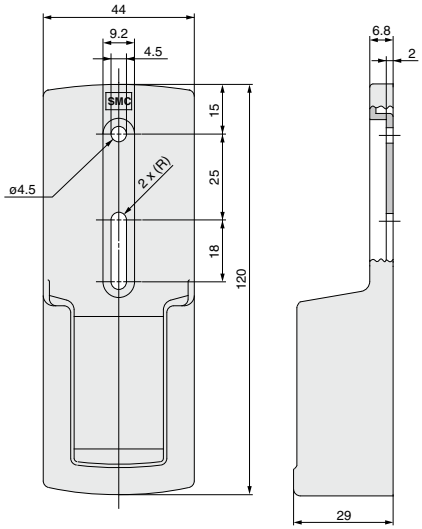
Note) Dimension X includes the One-touch fittng

(mm)

ø4	123
ø6	124
ø1/4"	126



Option/Case holder



Error Correction

When errors occur, they should be corrected as shown below.

Display	Contents	Corrective action
- - -	Pressure being applied is above the rating.	Operate within the rated pressure range.
Err	Memory data has probably been corrupted in some way.	Perform zero clear.
Entire display flashes	Battery voltage is low.	Replace the batteries.

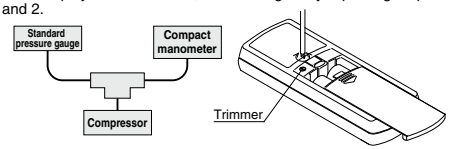
Maintenance

● **Span calibration method**

⚠ **Caution**

Do not touch the span calibration trimmer except when performing span calibration.

1. Perform zero clear at atmospheric pressure.
2. Apply the maximum rated pressure, and calibrate the span while comparing with a standard pressure gauge.
3. If the display value of the compact manometer is "0" after returning to atmospheric pressure, then calibration is complete.
   If the display value is not "0", calibrate again by repeating steps 1 and 2.



● **Replacing the batteries**

When battery voltage becomes low the entire LCD will flash.
When the LCD flashes replace the batteries. Use 2 pcs. of type AA dry batteries.

⚠ **Caution**

To replace the batteries, turn the power OFF and replace them within approximately 30 seconds.
When not completed within 30 seconds, "Err" will be displayed. In that case, perform zero clear once again.
In the event that the display runs out of control, remove the batteries for one minute or longer, and then perform zero clear again for inserting the batteries and turning on the power.

Related Products Useful for Measuring Line Pressure

These products are convenient for measuring line pressure easily without the need to remove piping or stop supply pressure, etc.

Switching between pressurization and atmospheric release can be easily performed by switching the control.

Finger valve

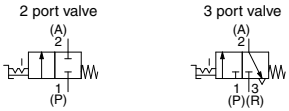
Series VHK

Specifications

Valve type	2 port valve, 3 port valve
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure Note 1)	1.0 MPa
Operating vacuum pressure∗	–100 kPa
Ambient and fluid temperature	0 to 60°C
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane
Option	Bracket

Note 1) Please note that when the valve is used at micro pressures of 0.1 MPa or less, valve leakage may be more than the standard value (5 cm³/min).
Note 2) Use caution with soft nylon and polyurethane at the maximum operating pressure. (For details, refer to pages 411 and 412.)
∗ For a vacuum application, use VHK2 (2 way valve).

Symbol



Refer to Best Pneumatics No. 1 for details.

Pressure can be supplied or stopped by inserting or removing a tube.

Self-seal fittings

Series KC

Applicable Tubing

Tubing material	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Specifications

Fluid		Air
Maximum operating pressure		1 MPa
Proof pressure		3 MPa
Ambient and fluid temperature		–5 to 60°C (No freezing)
Thread	**Mounting section**	JIS B 0203 (Taper threads for piping) JIS B 0205 (Metric coarse thread)
	Nut section	JIS B 0205 (Metric fine thread)
Seal on the threads (Standard)		With sealant
Copper-free (Standard)		Brass parts are all electroless nickel plated.

Principal Parts Material

Body	C3604, PBT
Stud	C3604 (Thread portion)
Chuck spring	Stainless steel 304
Guide	Stainless steel 304, PBT
Collet release bushing	POM
Valve retainer	POM
Stopper	C3604, POM
Seal O-ring	NBR
Gasket	Stainless steel 304, NBR

For details, refer to page 161.