



ORIGINAL INSTRUCTIONS



Refer to Declaration of Conformity for relevant Directives

Instruction Manual
Compact Manometer
Series PPA100/PPA101/PPA102



The intended use of this product is pressure measurement.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)¹⁾, and other safety regulations.

- ¹⁾ ISO 4414: Pneumatic fluid power - General rules relating to systems.
- ISO 4413: Hydraulic fluid power - General rules relating to systems.
- IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots -Safety. etc.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	Caution Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	Warning Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Danger Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

- **Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

Caution

- **The product is provided for use in manufacturing industries.** This product may cause interference if used in residential premises.

2 Specifications

Model	PPA100 for high pressure	PPA101 for vacuum	PPA102 for low pressure
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		

2 Specifications - continued

Min. display units ^{*1}	kPa	—	1	1
	MPa	0.01	—	—
	mmHg	—	5	—
	kgf/cm ²	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. (Temperature conditions: at 25°C) ^{*2}			
Repeatability	±1% F.S. (Temperature conditions: at 25°C)			
Temperature characteristics	±3% F.S. (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 marked (EMC directive/RoHS directive)			

*: 2 pcs. of type AA dry batteries (manganese R6 or alkaline LR6) are not included.

*1: For the unit switching function (Types without the unit switching function is fixed in SI unit (kPa or MPa)).

*2: In regards to the compatibility condition of the EMC directives, the pressure display value variation is ±15% F.S. or less.

3 Installation

3.1 Installation

Warning

Do not install the product unless the safety instructions have been read and understood.

3.2 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- Do not mount in a location exposed to radiant heat.

3.3 Piping

Caution

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

3.4 Lubrication

Caution

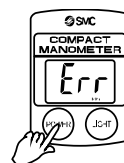
- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.

4 Settings

Operation and Functions

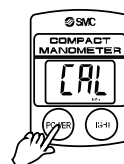
• Initial Setting

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.

When power is applied, if there is nothing on the LCD display, proceed to step 2. If "Err" is displayed on the LCD, switch the power off and on again. Then the display should be clear. Proceed to step 2.



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

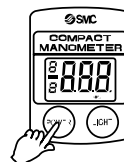
Press and hold for 6 seconds or more. The unit will go into zero clear. When this happens "CAL" will appear on the LCD.



3. Release the POWER button.

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

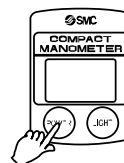
• Power ON



Press the POWER button.

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

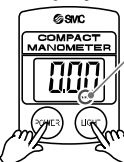
• Power OFF



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

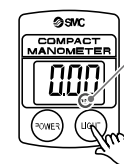
- When pressed and held for 3 seconds or more, the power turns OFF.
- When there is no button operation for more than 5 minutes, the power turns OFF. (auto power OFF function)

• Unit Display Switching



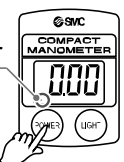
1. Press and hold the POWER and LIGHT buttons for 3 seconds or more.

When pressed continuously for 3 seconds or more, the units on the LCD will flash.



2. Press the LIGHT button.

The units will change. (See the table below.)



3. Press the POWER button.

The units are set, and the unit display switching is completed.

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

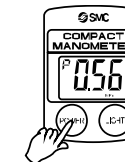
4 Settings - continued

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

*: The "inHg" unit cannot be displayed.

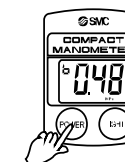
• Peak/Bottom Display

Do this when pressure is being displayed.



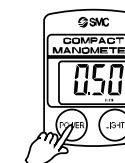
Press the POWER button.

•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.



Press the POWER button.

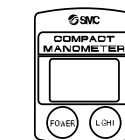
•Bottom display
Displays the minimum pressure value and "b" appears on the LCD. The display will change if pressure falls below the pressure value that is being held. (These modes are useful for confirming pressure fluctuations.)



Press the POWER button.

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

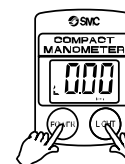
• Auto Power OFF Function



When the power is turned ON and there is no button operation for more than 5 minutes, the power will turn OFF.

*: For cancelling this function, refer to the 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 cancelled by activating the lock mode (auto power OFF cancel).

When continuously pressed for 6 seconds or more, "L" is displayed on the LCD. When the power is turned OFF, the lock mode is released.

• Turning on the Backlight



Press the LIGHT button.

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

4 Settings - continued

•Zero Clear



Press the **POWER** button for 6 seconds or more.

The zero point displayed at atmospheric pressure can be automatically adjusted. 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.

5 How to Order

Refer to catalogue for 'How to Order'.

6 Outline Dimensions (mm)

Refer to catalogue for outline dimensions.

7 Maintenance

7.1 General Maintenance

⚠ Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.

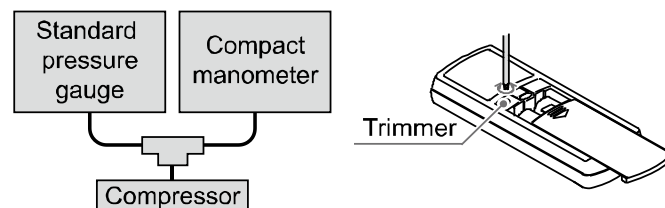
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

7.2 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.



7.3 Replacing the batteries

When battery voltage becomes low the entire LCD will flash. When the LCD flashes replace the batteries. Use 2 x 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.

8 Limitations of Use

8.1 Limited warranty and Disclaimer/Compliance Requirements

- **The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.**
- **Limited warranty and Disclaimer**
 - 1) The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first ⁽¹⁾. Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
 - 2) For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
 - 3) Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

⁽¹⁾ Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.
- **Compliance Requirements**
 - 1) The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
 - 2) The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

- **SMC products are not intended for use as instruments for legal metrology.** Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

9 Disposal

This product is classed as Waste Electrical or Electronic Equipment according to the WEEE Directive 2012/19/EU and should not be disposed of as municipal waste, in order to reduce the impact on human health and the environment.

Remove and dispose of old batteries and the remaining electrical or electronic equipment according to local environmental regulations.

10 Contacts

Refer to Declaration of Conformity and www.smworld.com for contacts.

SMC Corporation

URL : <http://www.smworld.com> (Global) <http://www.smceu.com> (Europe)
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