PPA10★series

COMPACT MANOMETER OPERATION MANUAL

Thank you very much for selecting **SMC** Compact manometer, PPA100・101・102series

SMC CORPORATION P 5025−16−1

Compact manometer Cautions(Read through before operation)

CAUTIONS ON HANDLING

⚠Warning

①Compact manometer of Fluids are air and anticorrosive gas

For other fluid, the accuracy can not be guaranteed. This is not intrinsically safety structure. Do not use explosive gas.

②Keep rated pressure range

Pressure over specification lead to cause malfunction.

③Do not swing the hand strap

Or the hand strap may be taken off or snapped and may hurt people or damage surrounding objects.

④Ensure the fluid of the one touch tube fitting is at atmospheric state before removing the fitting

If remove the tube being supplied with pressure to the fluid, swelling tube may hurt people or damage surrounding objects. Ensure proper mounting.

⚠Caution

①Keep foreign material and fluid in the drain apart from operating fluid

If foreign materials and fluid in the drain enter the operating fluid, it lead to cause failure or air leakage. If these materials may enter, please use the filter or the mist separator.

②Do not drop nor hit

Do not drop, hit nor apply excessive impact(1000m/s²). They cause failure.

③Perform zero−clear at atmospheric state

When performing zero−clear, release the connect tube to the atmosphere. Unless under atmospheric pressure, pressure value can not be adjusted proper.

④Tighten one−touch tube fitting in as followings

After hand tightening, rotate the one touch tube fitting approx.1/6 turn for extra tightening with a tightening tool. Too much tightening may bend the screw and deform the gasket which cause air leakage.

Screw may be loose in case of inadequate tightening and lead to cause air leakage.

OPERATING ENVIRONMENT

⚠Warning

①Never use in the atmosphere contain explosive gas

The structure of the compact manometer is not an intrinsically safety structure. Never use it in explosive environment. Otherwise it cause explosion accidents.

⚠Caution

①Don't use where exposed to moist or oil

Compact manometer is not dust proof nor drop proof. Please do not use where exposed to moist and oil. They cause failure.

MAINTENANCE, ETC.

⚠Warning

①Perform checking regularly in the maintenance

If calibration is not made and unintended operation mistake is made, proper value may not be displayed and safety is not guaranteed.

②Prohibition of disassembling and remodeling

⚠Caution

①Use manganic R6(size AA)or alkali manganized LR6(size AA)

Do not use any batteries other than batteries above. They cause failure

②Keep the dry battery direction ⊕ and ⊖ as marked direction on the body

Wrong direction of ⊕ and ⊖ may cause fluid leakage or burst and lead to cause failure.

③Don't mix new battery, old battery and different type of battery

It cause fluid leakage and lead to cause failure.

④When the manometer is not in use for long period, remove the battery.

⑤Don't use the dry battery short of voltage

If keep using these, pressure value can not be adjusted properly

⑥Don't touch the span calibration trimmer except when calibrating the span

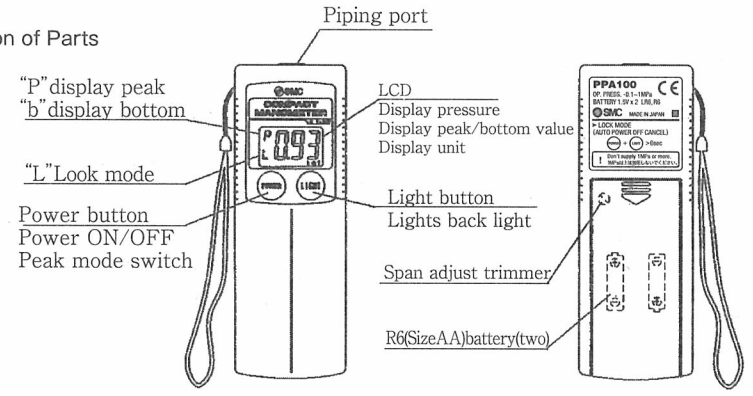
Touching the trimmer may cause error in measured pressure.

Also, don't rotate hard(0.03N・m or less)nor push hard(5N or less)

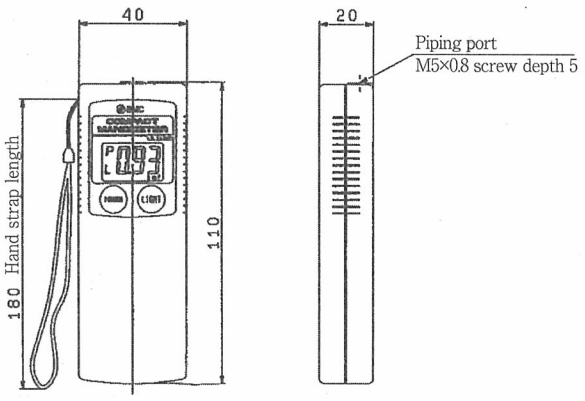
⑦Wipe off the dirt of the body with a soft cloth

To wipe off the dirt of filthy body, use a cloth soaked in neutral detergent diluted with water and squeezed. Then finish with dry cloth.

●Description of Parts



●Exterior Dimension



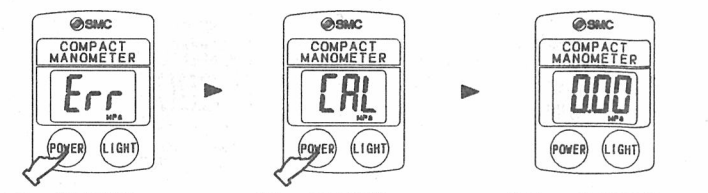
●Specification

Type	For high pressure PPA100	For vacuum PPA101	For low pressure PPA102
Rated voltage range	−0.1～1MPa	−101～10kPa	−10～100kPa
Pressure display style	Back light equipped LCD 3 digits		
Pressure display resolution	1/100		
Display unit change	MPa, kgf/cm² PSI, bar	kPa, kgf/cm² mmHg, inHg, PSI, bar	kPa, kgf/cm² PSI, bar
Error display	Excessive pressure , memory data error, battery change sign		
Function	Peak/bottom display, back light , auto power off, zero-clear and unit display change		
Proof pressure	1.5MPa	200kPa	200kPa
operating fluid	Air anticorrosive gas		
Power source	3V(DC) , R6(Size AA) battery × 2		
Battery life	Continous operation, 12 months, (Not lights back light)		
Response time	250mS		
Display accuracy	±2%F. S. or less(When 25℃)		
Repeatability	±1%F. S. or less(When 25℃)		
Temp characteristic	±3%F. S. or less(0～50℃ originating 25℃)		
Piping port	M5×0.8		
Operating ambient temp	0～50℃ (No dew drop)		
Operating ambient humidity	35～85%RH(No dew drop)		
Proof impact	100G X, Y, Z direction 3 times for each		
Protection structure	IP40 (IEC standard)		
Exterior dimension	40(W) × 20(D) × 110(H) (mm)		
Weight	About 100g(body : 50g, battery : 50g)		
Standards	CE marking (The variation of pressure display value is ±15% F.S. or less), RoHS		

●HOW TO OPERATE・FUNCTIONS

INITIAL SETTING "Err"is displayed at first operation and replacing battery. Please perform initial setting.

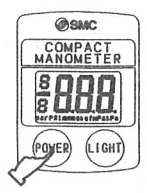
①"Err"is displayed on LCD. Turn off the power.
②Keep pressing 6 seconds or more to perform zero−clear. "CAL"is displayed on LCD.
③Zero−clear is completed and operation become possible.



①Press"POWER"button for 3 seconds or more ②Press"POWER"button for 6 seconds or more ③Release "POWER" button

POWER ON

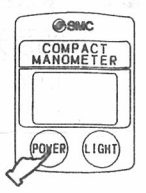
The power is turned on as soon as pressing "POWER" button.
Keep pressing 6 seconds or more to perform zero−clear.



Press "POWER"button

POWER OFF

The power is turned off when pressing "POWER" button for 3 seconds or more
If button is left untouched for 5 minutes, the power is turned off. (AUTO POWER OFF FUNCTION)



Press"POWER"button for 3 seconds or more

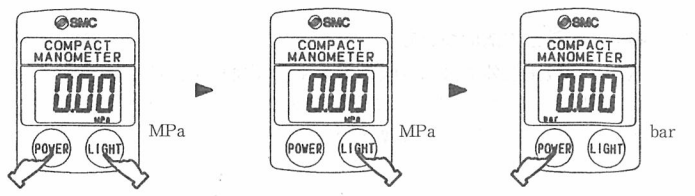
UNIT DISPLAY CHANGE

①The unit on display blinks ON and OFF when pressing buttons for 3 seconds or more.
②Change the unit.

For high pressure (PPA100)	For vacuum (PPA101)	For low pressure (PPA102)
MPa→bar→ PSI→kgf	kPa→bar→ PSI→inHg →mmHg	kPa→bar→ PSI→kgf

Note)inHg unit is not displayed

③Set the unit and complete unit change.

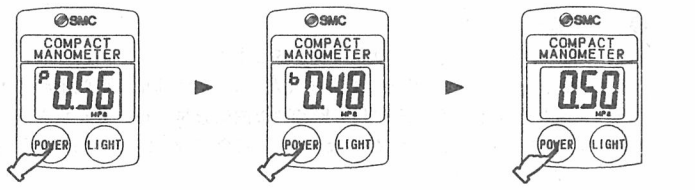


①Press"POWER"+"LIGHT" buttons for 3 seconds or more ②Press"LIGHT"button ③Press"POWER"button

PEAK/BOTTOM DISPLAY

Perform when pressure is indicated
Peak indication : The max, pressure is displayed and"P"is displayed on LCD The display changes when pressure more than held one is applied.
Bottom indication : The min pressure is displayed and "b"is displayed on LCD. The display changes when pressure less than held one is applied.
(These modes are useful to confirm fluctuation of pressure)

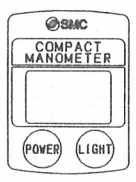
NOTE)This mode is used both as peak/bottoms and as power off.Release the button when"P"or"b"is displayed.



Press"POWER"button Press"POWER"button Press"POWER"button

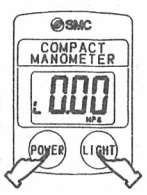
AUTO POWER OFF FUNCTION

If the button is left untouched for 5 seconds or more, the power is turned off.
Note) Please refer the instruction on Lock mode function/operation(right)for cancellation operation.



LOCK MODE(CANCELLING AUTO POWER OFF)

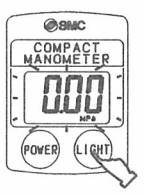
Auto power off function is cancelled by setting at lock mode.



Press"POWER"+"LIGHT" buttons for 6 seconds or more

LIGHTS THE BACK LIGHT

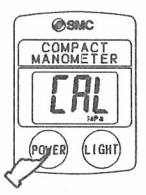
The back light lights during pressing"LIGHT"button At lock mode, the back light lights by pressing the button. And it puts out by pressing the button again. But The max lighting time is about 1 minute.



Press"LIGHT"button

ZERO−CLEAR

Automatic zero−point adjsutmet is available in atomopheric pressure. This eliminates the pressure difference when displayed in atomospheric pressure.
Turn off the power
Release supply pressure to the atomosphere.
Press"POWER"button for 6 seconds or more for zero−clear"CAL"is displayed on LCD.



Press "POWER" button for 6 seconds or more

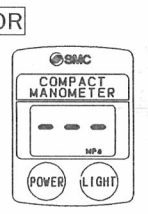
●ERROR AND REMEDIES

EXCESSIVE PRESSURE ERROR

"−" is displayed on LCD.

Cause Pressure more than rated pressure is applied.

Countermeasures Keep rated pressure.

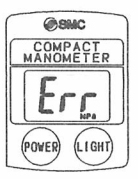


MEMORY DATA ERROR

"Err"is displayed on LCD.

Cause Memory data is destroyed due to the shortage of the battery voltage or other effect.

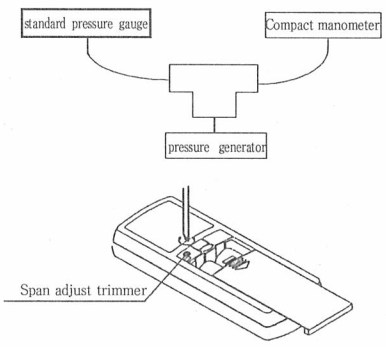
Countermeasures Necessary to newly write in the memory data.
Perform zero clear.



●Span calibration

⚠Never touch the span calibration trimmer except when calibrating span!

①Perform zero−clear under atmospheric pressure
②Apply rated maximum pressure, and calibrate the span comparing with the standard pressure gauge.
③Calibration is completed if compact manometer displays value "0"under atmospheric pressure.
When the display value is not 0, perform by the procedure of ② from ①



●Battery change

Whole LCD starts to blink when battery is short of voltage.
Replace the battery when LCD blinks. Two R6(size AA) batteries are necessary.

⚠Replace the battery within 30 minutes after turning off the power. If you can not, "Err" is displayed. Please perform zero−clear in this case.

If the manometer has gone out of control, leave it alone removing the battery for a minute or more, then place the battery again, perform zero−clear.

●Pressure unit convension table(the rough estimate)

	bar	kgf/cm²	mmHg	PSI	Pa	inHg
1bar	1	1.020	750.062	14.50	1×10^{5}	29.530
1kgf/cm²	0.981	1	735.559	14.217	9.807×10^{4}	28.959
1mmHg	1.333×10^{-3}	1.359×10^{-3}	1	1.933×10^{-2}	1.333×10^{2}	3.937×10^{-2}
1PSI	0.069	0.070	51.715	1	6.895×10^{3}	2.037
1Pa	1×10^{-5}	1.019×10^{-5}	7.501×10^{-3}	1.45×10^{-4}	1	2.953×10^{-5}
1inHg	3.388×10^{-2}	3.453×10^{-2}	2.540×10^{1}	4.909×10^{-1}	3.385×10^{3}	1