

Compact manometer Cautions(Read through before operation)

CAUTIONS ON HANDLING

△Warning

- ① Compact 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.
- ② Keep rated pressure range
Pressure over specification lead to cause malfunction.
- ③ Do not swing the hand strap
Or the hand strap may be taken off or snapped and may hurt people or damage surrounding objects.
- ④ Ensure 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

- ① Keep 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.
- ② Do not drop nor hit
Do not drop, hit nor apply excessive impact(1000m/s²). They cause failure.
- ③ Perform 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.
- ④ Tighten 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

- ① Never 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

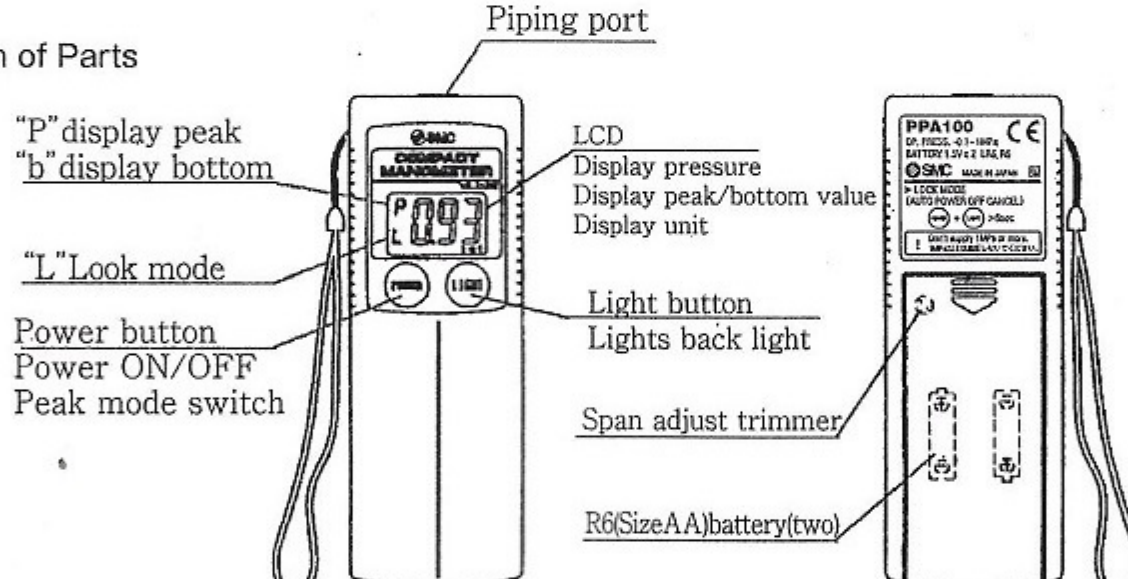
- ① Don't use where exposed to moist or oil
Compact manometer is not dust proof nor drop proof. Please do not use where exposed to moist and oil. They cause failure.

MAINTENANCE, ETC.

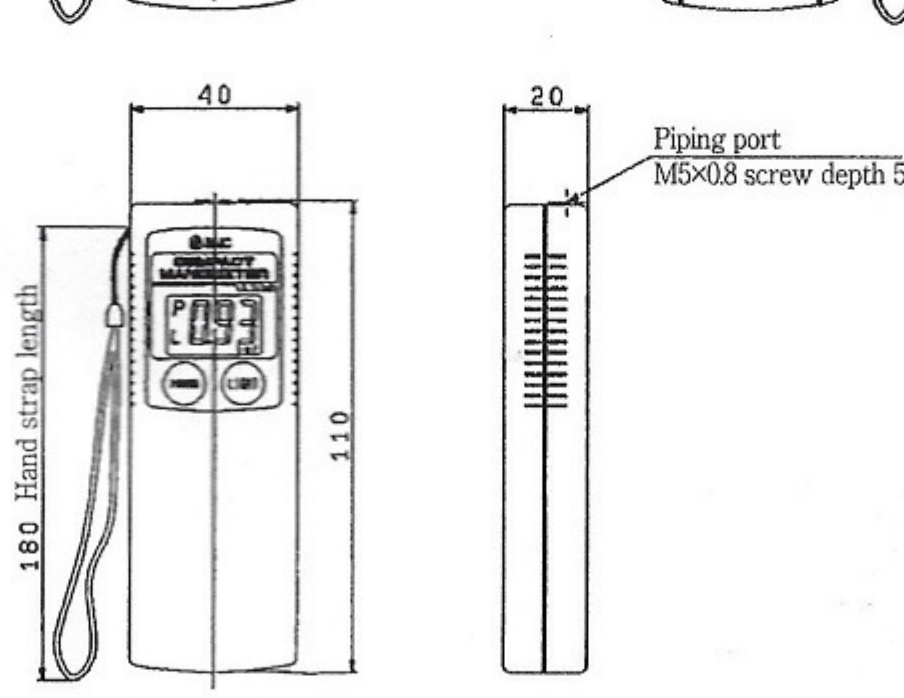
△Warning

- ① Perform 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.
- ② Prohibition of disassembling and remodeling
△Caution
① Use manganic R6(size AA)or alkali manganized LR6(size AA)
Do not use any batteries other than batteries above. They cause failure
② Keep 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.
③ Don't mix new battery, old battery and different type of battery
It cause fluid leakage and lead to cause failure.
④ When the manometer is not in use for long period, remove the battery.
⑤ Don't use the dry battery short of voltage
If keep using these, pressure value can not be adjusted properly
⑥ Don'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)
⑦ Wipe 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



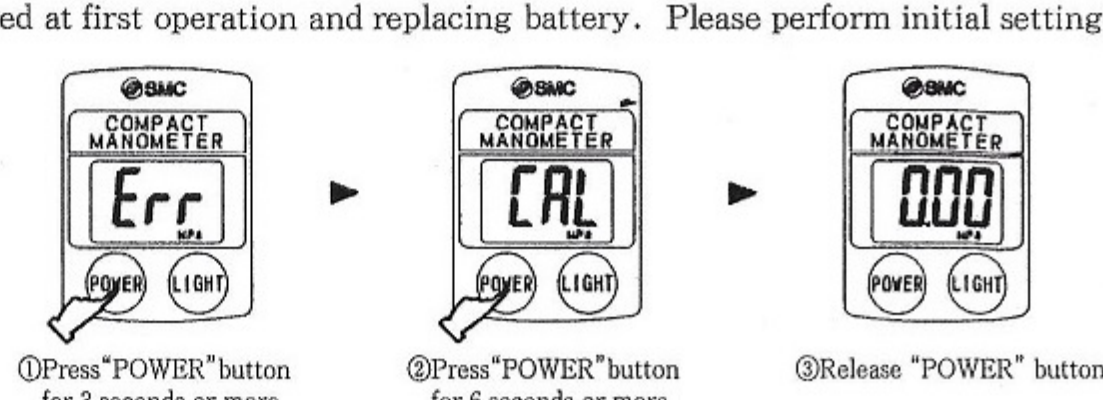
●Specification

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/cm ² , PSI, bar	kPa, kgf/cm ² , mmHg, inHg, PSI, bar	kPa, kgf/cm ² , 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	Continuous 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	M5x0.8		
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		

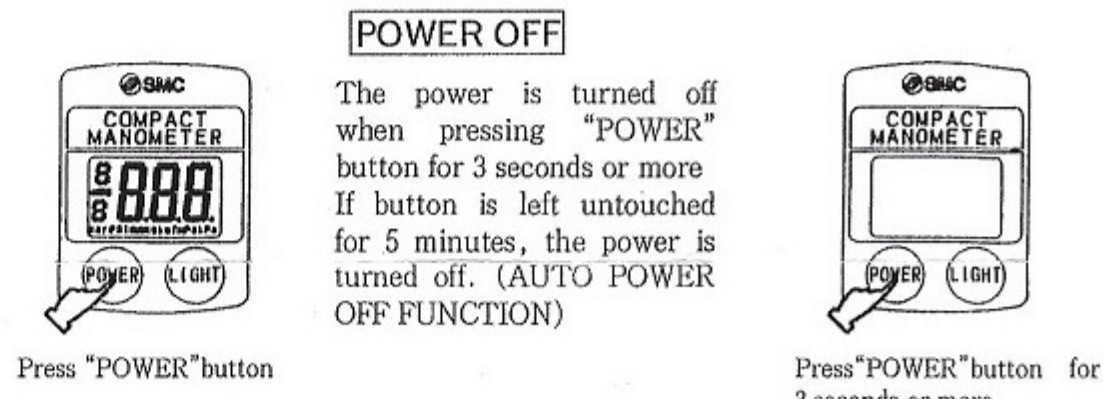
●HOW TO OPERATE·FUNCTIONS

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.
- ② Keep pressing 6 seconds or more to perform zero-clear.
"CAL" is displayed on LCD.
- ③ Zero-clear is completed and operation become possible.

**POWER ON**

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

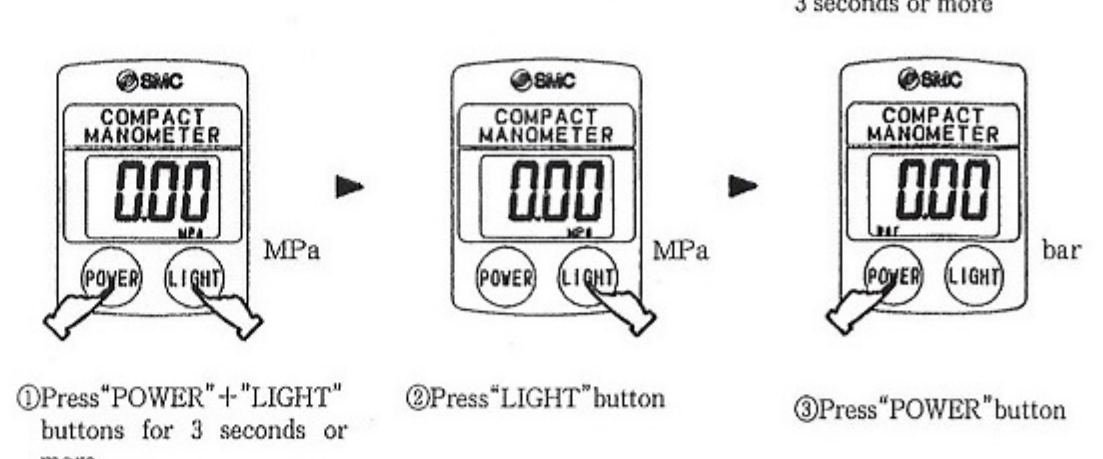
**UNIT DISPLAY CHANGE**

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

- ③ Set the unit and complete unit change.

**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.

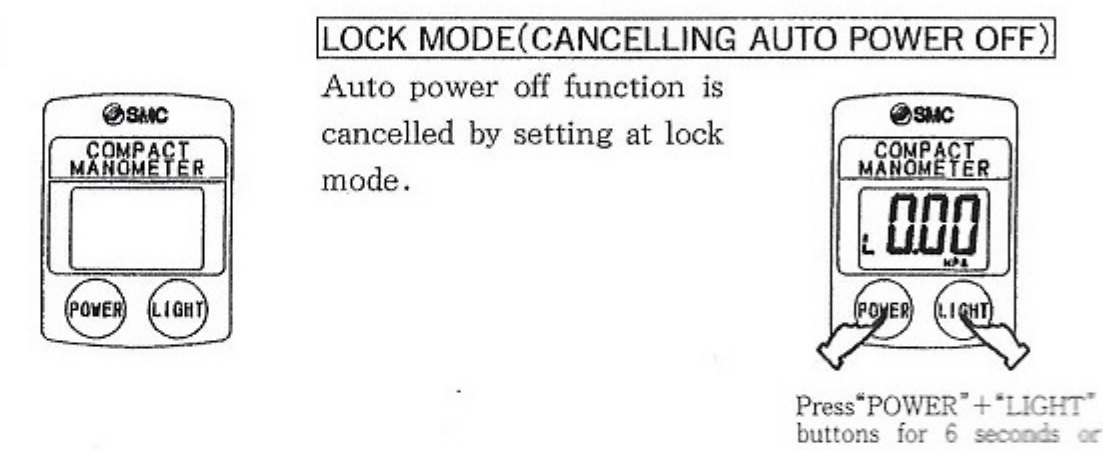
(These modes are useful to confirm fluctuation of pressure)

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

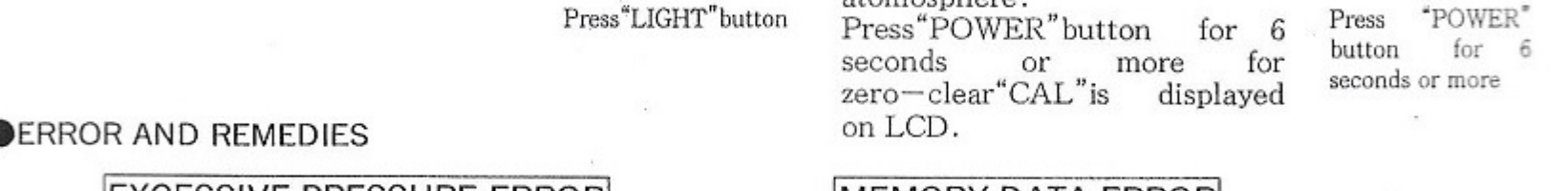
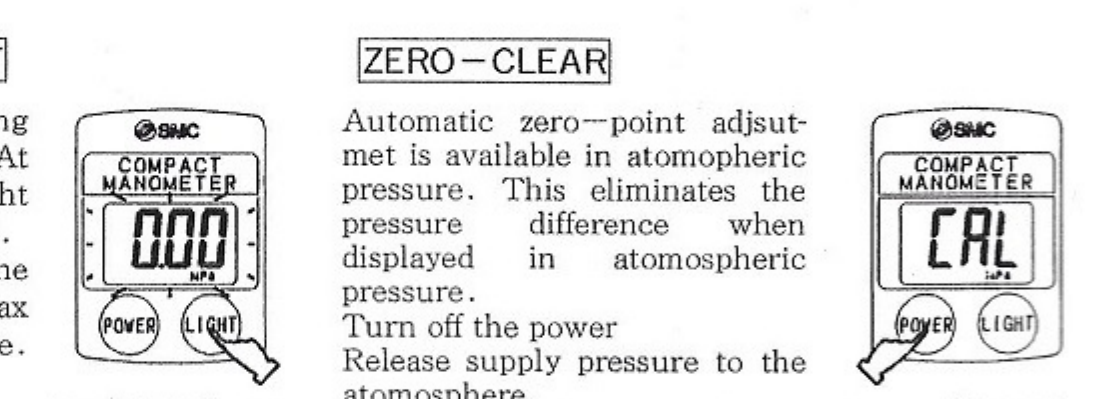
**AUTO POWER OFF FUNCTION**

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.

**LIGHTS THE BACK LIGHT**

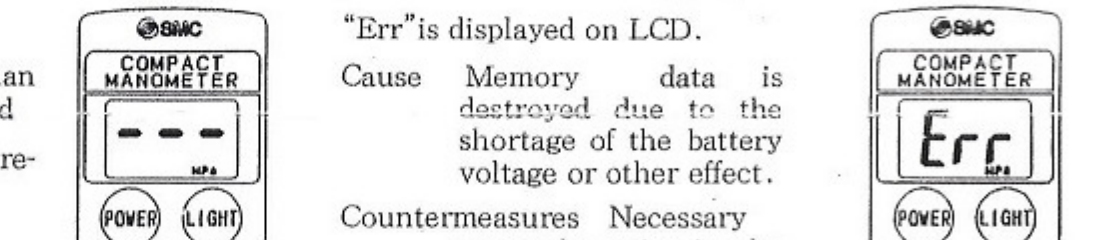
The back light lights during pressing "LIGHT" button. At lock mode, the back light lights by pressing the button. And it puts out by pressing the button again. But the max lighting time is about 1 minute.



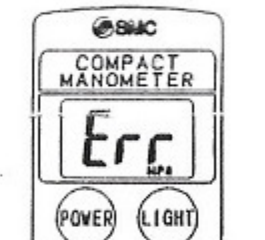
●ERROR AND REMEDIES

EXCESSIVE PRESSURE ERROR

"—" is displayed on LCD.
Cause Pressure more than rated pressure is applied
Countermeasures Keep rated pressure.

**MEMORY DATA ERROR**

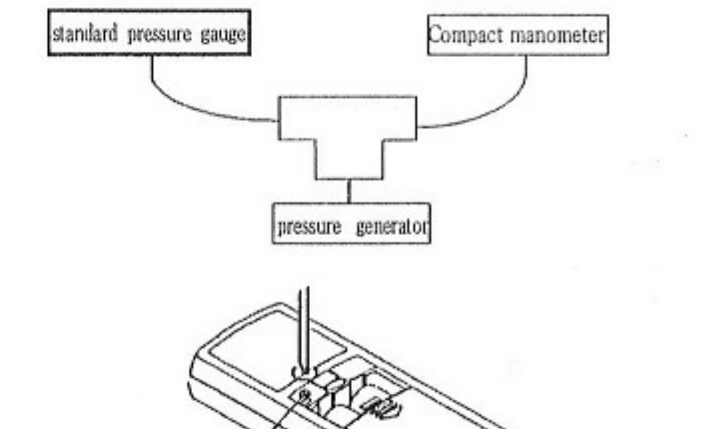
"Err" is displayed on LCD.
Cause Memory data is destroyed due to the shortage of the battery voltage or other effect.
Countermeasures Necessary to newly write in the memory data.
Perform zero clear.



●Span calibration

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

- ① Perform zero-clear under atmospheric pressure
- ② Apply rated maximum pressure, and calibrate the span comparing with the standard pressure gauge.
- ③ Calibration 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 conversion table(the rough estimate)

	bar	kgf/cm ²	mmHg	PSI	Pa	inHg
1bar	1	1.020	750.062	14.50	1 × 10 ⁵	29.530
1kgf/cm ²	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