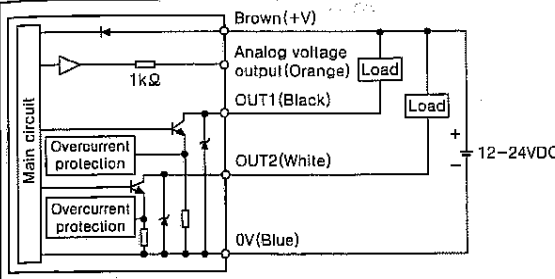


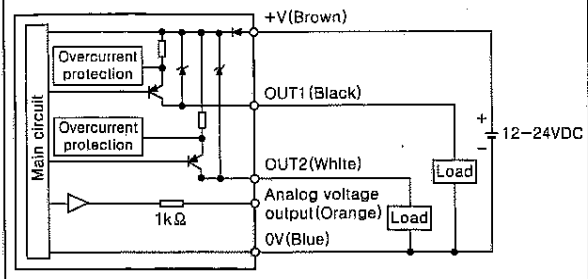
Pressure Sensor

Control output diagram(PSA/PSB)

●NPN open collector output



●PNP open collector output

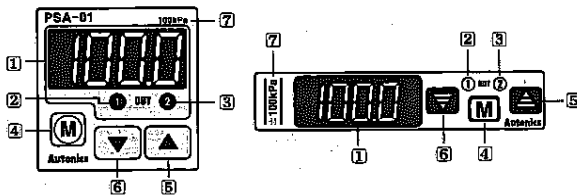


※There is no short-circuit protection in analog voltage output. Do not connect this output to power supply or capacitive load directly.
 ※Please observe input impedance of connected equipment when use analog voltage output.
 And be sure to check voltage drop caused by resistance of extended wire.

Front panel identification

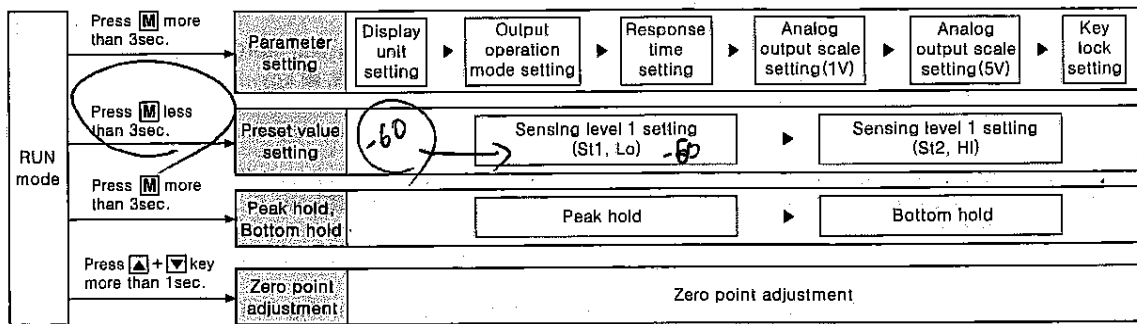
(PSA Type)

(PSB Type)

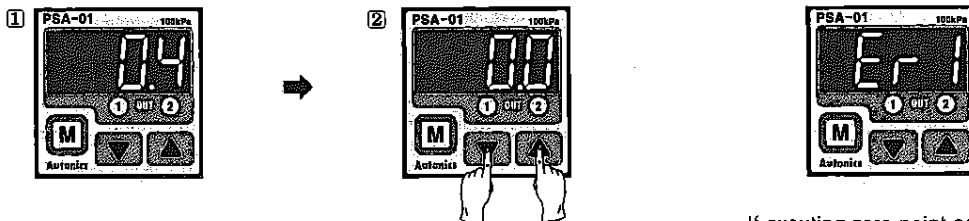


- ① 3 1/2 LED display (Red) : Display sensing pressure, every setting value and display error
- ② 1 output Indicator (Red) : Output 1 is ON, LED will be ON
- ③ 2 output Indicator (PSA:Red, PSB:Green) : Output 2 is ON, LED will be ON
- ④ Mode key : Parameter setting mode or preset setting mode, save setting value
- ⑤ Up key : Set the setting value to lower step in preset setting or pressure unit, output mode, response time, analog output scale, key lock, peak hold value, bottom hold value display in parameter setting
- ⑥ Down key : Set setting value to upper step in preset setting or pressure unit, output mode, response time, analog output scale, key lock, peak hold, bottom hold display in parameter setting
- ⑦ Range of rated pressure : It is possible to change the pressure unit in PSA series. Please use different unit as label for your application.

Setting(PSA/PSB)



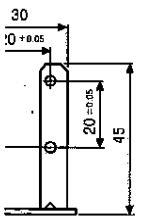
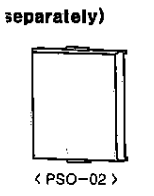
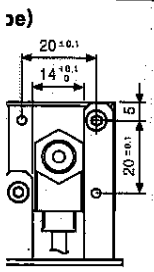
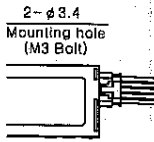
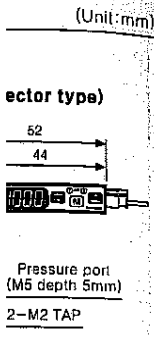
Operations(PSA/PSB)



1. In state of atmospheric pressure during RUN mode, press [M] key and [Up/Down] key at the same time for over 1sec.
 2. When the zero point adjustment is completed, it will display [0.0] and return to RUN mode automatically.
- ※Please execute Zero point adjustment regularly.

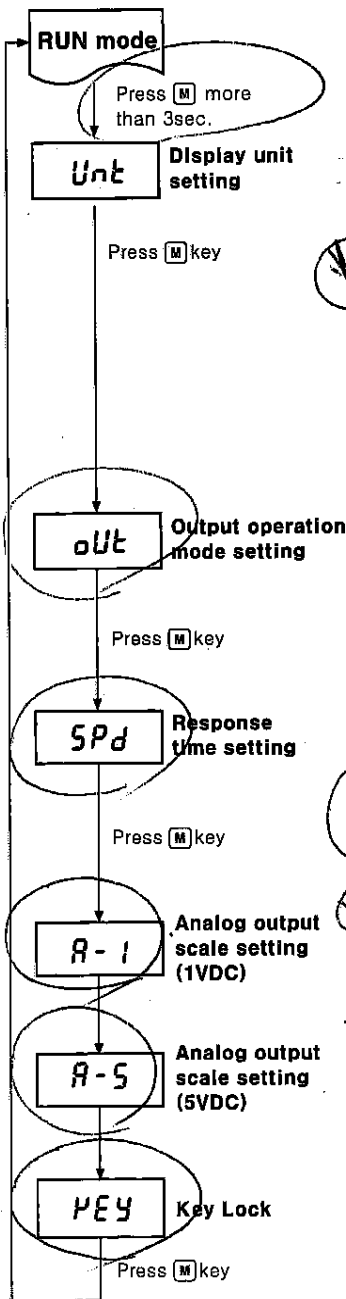
If executing zero point adjustment when external pressure has been applied, [E r 1] will be flashing. Please execute Zero point again in state of atmospheric pressure.

- (A) Counter
- (B) Timer
- (C) Temp. controller
- (D) Power controller
- (E) Panel meter
- (F) Tacho/Speed/Pulse meter
- (G) Display unit
- (H) Sensor controller
- (I) Switching power supply
- (J) Proximity sensor
- (K) Photo electric sensor
- (L) Pressure sensor
- (M) Rotary encoder
- (N) Stepping motor & Driver & Controller
- (O) Graphic panel
- (P) Production stoppage models & replacement



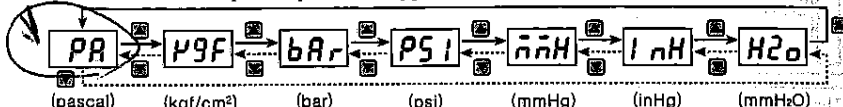
PSA / PSB Series

Setting parameter(PSA/PSB)

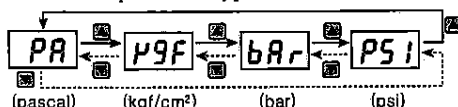


Unit and previous unit will flash by turning on.(0.5sec.)
 Select the unit with \uparrow , \downarrow key. (Press \square key momentarily, the unit will be saved, then move to the next mode.)

●Vacuum and compound pressure type :

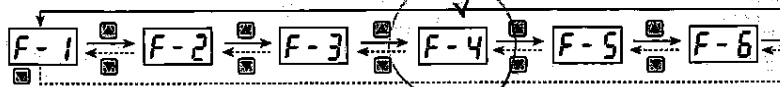


●Standard pressure type :

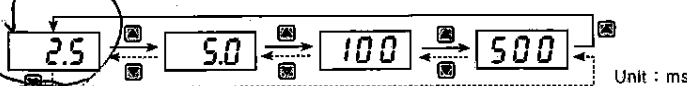


※When using a unit mmHgO, please multiply display value by 100.

OUT and previous output operation mode will flash by turning on.(0.5sec.)
 Select the output operation mode with \uparrow , \downarrow key. (Press \square key momentarily, the output operation mode will be saved, then move to the next mode.)



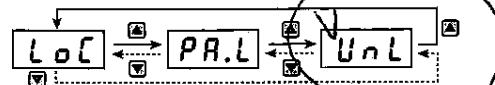
SPd and the previous response time will flash by turning on.(0.5sec.)
 Select the output operation mode with \uparrow , \downarrow key. (Press \square key momentarily, the response time will be saved, then move to the next mode.)



A-1 and the previous pressure will flash by turning on.(0.5sec.)
 Set the pressure which will output 1VDC with \uparrow , \downarrow key.
 Allowable setting range :
 Min. value of rated pressure \leq **A-1** \leq 90% of rated pressure

A-5 and the previous pressure will flash by turning on.(0.5sec.)
 Set the pressure which will output 5VDC by \uparrow , \downarrow key.
 Allowable setting range :
A-1 +10% of rated pressure \leq **A-5** \leq Max. value of rated pressure

LoC and the previous key lock will flicker by turning on.(0.5sec.)
 Select key lock with \uparrow , \downarrow key.



※Key lock functions

- LoC : Disable to change Preset value and Parameter value (Enable to change PEY mode only)
- PA.L : Enable to change Preset value, Disable to change Parameter value
- UnL : Enable to change Preset value and Parameter value(Lock off)

※When advance to Parameter setting mode and preset setting mode, it displays "Setting item" and "Previous setting value" by 0.5 sec. turn. This display will stop by pressing \square or \square key (Display setting value), if any key is untouched for over 1 sec., it will display old value by 0.5sec. turn again.

※When \square Key is pressed for 3sec. during setting, it will return to RUN mode with memorizing on EEPROM. However, when there is any key is untouched for 60sec., it turns to RUN mode with keeping the previous setting value not current setting value.

※There is memory protection by EEPROM, but life cycle of EEPROM is 100,000 times.

Preset value

Hysteresis



Press \square key to Run mode. (Within 3sec)

Automatic



Press \square key to Run mode. (Within 3sec)

Window mode



Press \square key to Run mode. (Within 3sec)

- If no key is touched
- When changing
- Whenever key is continuously

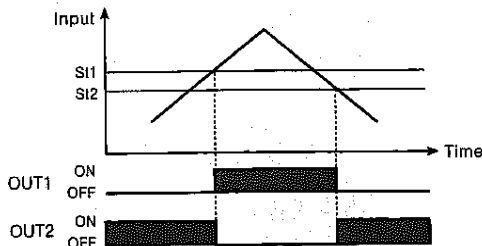
Peak Hold

1. Press \triangle key
 2. PEH and n (0.5sec.)
 3. boH and r (0.5sec.)
 4. If pressing return to F
- ※When the F On the opp

PSA / PSB Series

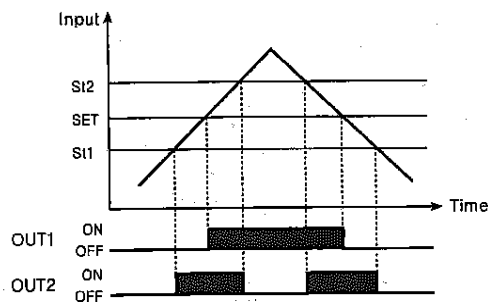
Output operation mode(PSA/PSB)

1. Hysteresis mode(F-1)



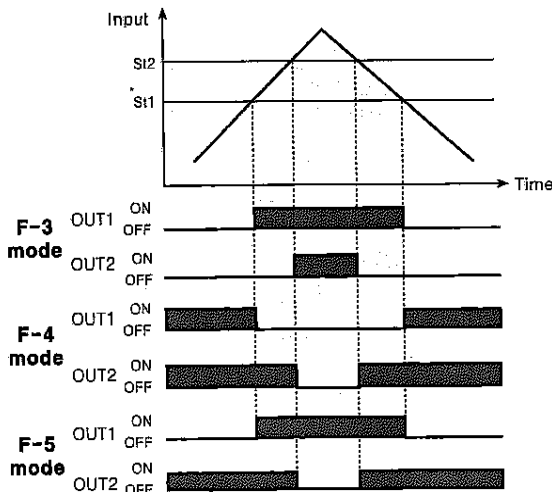
- *It can be set for pressure sensing level(St1) and sensing difference(St2).
- *St1 setting range : Min. value of specified pressure \leq St1 \leq Max. value of specified pressure
- St2 setting range : Min. value of specified pressure \leq St2 \leq St1
- OUT 1 : When applying pressure is larger than St1, it will be ON.
- OUT 2 : When applying pressure is lower than St2, it will be ON.

2. Automatic sensitivity setting mode(F-2)



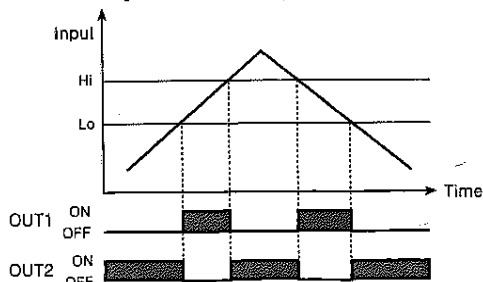
- *This function is to set pressure sensing level to the proper position automatically, it is set by received pressure from two position(St1, St2).
 - *The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
 - *Sensing(SET) value will be calculated as below.
- $$\text{SET setting value} = \frac{(\text{St1 setting value} + \text{St2 setting value})}{2}$$
- OUT 1 : When applying pressure is larger than SET value, it will be ON.
 - OUT 2 : When applying pressure is between St1 and St2, it will be ON.
- Note1) If it is not enough for difference of sensing level between St1 and St2, **[E-3]** will be displayed. Please set again after applying enough pressure.
- Note2) St2 setting range : St1+1% of rated pressure \leq St2 \leq Max. value of specified pressure
- Note3) If fine adjustment for sensing level is required, adjust sensing level by **[F-2]**, **[F-3]** key.
(Adjustment range : Between St1 and St2)

3. Independent 2 output mode(F-3, F-4, F-5)



- *St1 and St2 can be set independently within specified pressure range. One is for control, the other is for alarm or optional control.
 - *The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
 - *St1 setting range : Min. value of specified pressure \leq St1 \leq Max. value of specified pressure
 - St2 setting range : Min. value of specified pressure \leq St2 \leq Max. value of specified pressure
- Independent 2 output mode(F-3)
 - OUT 1 : It will be ON, when it is over St1.
 - OUT 2 : It will be ON, when it is over St2.
 - Independent 2 opposite mode(F-4)
 - OUT 1 : It will be OFF when it is over St1.
 - OUT 2 : It will be OFF, when it is over St2.
 - Independent 2 cross mode(F-5)
 - OUT 1 : It will be OFF when it is under St1.
 - OUT 2 : It will be ON, when it is under St2.

4. Window comparative output mode(F-6)



- *It is able to set Lo/Hi-limit value of pressure sensing level in this mode.
- *The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
- *Lo setting range : Min. value of specified pressure \leq Lo \leq Max. value of specified pressure
- Hi setting range : Lo < Hi \leq Max. value of specified pressure
- OUT 1 : It will be ON between High limit value(Hi) and Low limit value (Lo)
- OUT 2 : It will be ON when it is over High limit value(Hi) and Low limit value(Lo).

Function

1. Change of

PS□-V01 (of pressure) has 4 kinds of Please select

- PS□-V01 kPa, kgf/cm
- PS□-01 (kPa, kgf/cm

*When using

2. Change of

There are 6 to provide Select a mo

- Hysteresis When var detection.
- Automatic When it i auto-mat
- Independent When it is position v
- Window c When is r range.

3. Change of

It can prev changing re response ti the respons more stable l

4. Change of

It is not o 5VDC) sca can be use application and A2 pos output will

5. Key lock f

This unit h: to prevent

- **Loc** : All k any adjus
- **P.A.L** : Thi to c the the
- **UnL** : All l

6. Zero point

This functi at zero w pressure.

7. Peak hold

This funct system cal through m occurred ir

Pressure Sensor

Function(PSA/PSB)

1. Change of display unit

PS□-V01(C) (P)/PS□-C01(C) (P) has 7 kinds of pressure unit and PS□-01(C) (P)/PS□-1(C) (P) has 4 kinds of pressure unit.

Please select the proper unit for application.

- PS□-V01(C) (P), PS□-C01(C) (P) : kPa, kgf/cm², bar, psi, mmHg, inHg, mmH₂O
- PS□-01(C) (P), PS□-1(C) (P) : kPa, kgf/cm², bar, psi

* When using mmH₂O, multiply the display value by 100.

2. Change of output mode

There are 6 kinds of control output modes in order to provide the various detection.

Select a mode for your proper application.

- Hysteresis mode (F-1) : When variable hysteresis is required for pressure detection.
- Automatic sensitivity setting mode (F-2) : When it is required to set detecting sensitivity automatically at proper position.
- Independent 2 output mode (F-3, F-4, F-5) : When it is required to detect pressure from two position with one product.
- Window comparative output mode (F-6) : When is required to detect pressure in a certain range.

3. Change of response time(Chattering prevention)

It can prevent chattering of control output by changing response time. It is able to set 4 kinds of response time(2.5ms, 5ms, 100ms, 500ms) and if the response is getting longer, the sensing will be more stable by increasing the number of digital filter.

4. Change of Analog output scale

It is not only used to set the analog output(1-5VDC) scale for a rated pressure range, but also can be used to change the range for proper user's application. Setting A1 position for 1VDC output and A2 position for 5VDC output. Therefore, analog output will be 1-5VDC between A1 and A2.

5. Key lock function

This unit has 2 kinds of key lock function in order to prevent wrong operation.

- **Loc** : All keys are locked, it is impossible to change any parameter setting/preset. Zero point adjustment, Peak hold and Bottom hold.
- **P.A.L** : This is partial locked status, it is impossible to change parameter setting(Able to change the status of lock) only, the other functions can be changed.
- **UnL** : All keys are unlocked.

6. Zero point adjustment function

This function is to set the display value of pressure at zero when port is opened to atmospheric pressure.

7. Peak hold and Bottom hold function

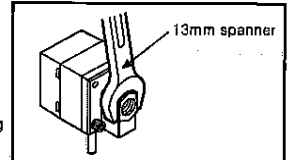
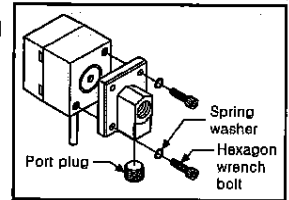
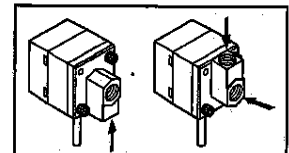
This function is diagnosis malfunction of the system caused by parasitic pressure or to check through memorizing the max./min. pressure that occurred in the system.

8. Error

Error display	Problem	Solution
E-r1	External pressure is applied, when adjusting Zero point	Please try again after external pressure removing
E-r2	When it is overloaded on control output	Remove overload
E-r3	When the setting value is not matched with setting condition	Set proper setting value after checking setting condition
HHH	When the applied pressure exceeds the upper display pressure range up	Apply pressure within display pressure range
LLL	When the applied pressure exceeds the lower display pressure range down	

Installation(PSA)

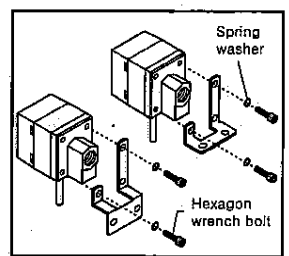
1. When installing pressure port, it is able to bring pressure from 3 directions by changing the mounting direction of the pressure port.
2. Basic spec of pressure port is NPT 1/8(Color:Black). [Option:PT 1/8(Color:Silver)] It is able to use general one touch fitting.
3. Please use seal tape at port plug in order to prevent pressure leak.
4. Please block another two pressure ports not used with port plug.
5. Please connect it by using spanner(13mm) at the metal part in order not to overload on the body when connecting one touch fitting.



Caution

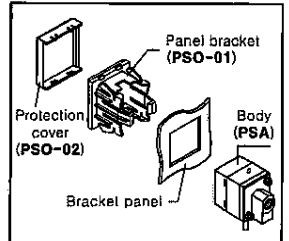
The tightening torque of one touch fitting should be max. 10N · m. It may cause mechanical trouble.

6. PSA series has 2 kinds of brackets so it is able to install it in two different ways.
7. At first, please unscrew hexagon wrench bolt and assemble the bracket on this unit by fixing the hexagon wrench bolt.



In this case, tightening torque of hexagon wrench should be max. 3N · m. It may cause mechanical trouble.

8. Bracket(PSO-01) and front protection cover(PSO-02) are sold separately. Please see the pictures for installation.



(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/ Speed/ Pulse meter

(G) Display unit

(H) Sensor controller

(I) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

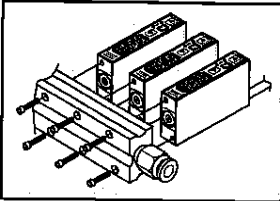
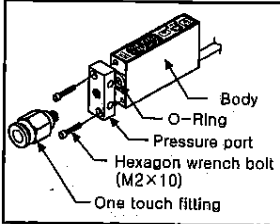
(O) Graphic panel

(P) Production stoppage models & replacement

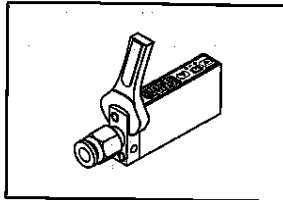
PSA / PSB Series

Installation (PSB)

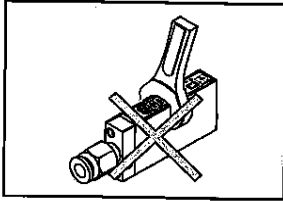
1. Pressure port is M5.
It is able to use general one touch fitting.
2. It is able to use it without the pressure port according to environment. In this case, O-Ring between pressure port and its body should not be taken out in order not to prevent pressure leak.
3. Please connect it by using spanner(10mm) at pressure port in order not to overload on the body when connecting one touch fitting.



Caution
The tightening torque of one touch fitting and hexagon wrench should be Max. 5N · m and 2N · m. It may cause mechanical problem.



Please do not use spanner to install as it may cause mechanical problem.



Accessory

PSA/PSB

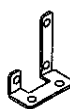
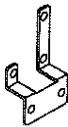
- Pressure unit label

±100kPa	-10.3kPa	10MPa	1MPa
1.000kPa	1.000kPa	10.000MPa	1.000MPa
0.1kPa	0.1kPa	1.000MPa	0.1MPa
0.01kPa	0.01kPa	0.100MPa	0.01MPa
0.001kPa	0.001kPa	0.010MPa	0.001MPa
0.0001kPa	0.0001kPa	0.001MPa	0.0001MPa
0.00001kPa	0.00001kPa	0.0001MPa	0.00001MPa
0.000001kPa	0.000001kPa	0.00001MPa	0.000001MPa
0.0000001kPa	0.0000001kPa	0.000001MPa	0.0000001MPa

DISPLAY UNIT LABEL

PSA

- Port plug
- Bracket A
- Bracket B

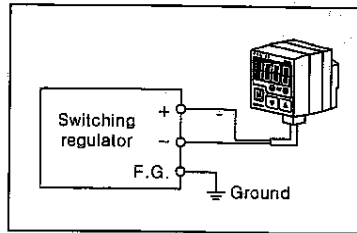


Proper usage

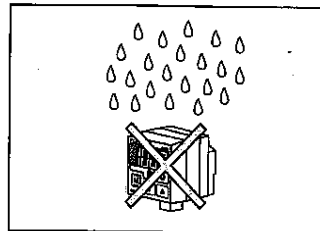
Caution

PSA, PSB Series is for sensing of non corrosive gas. Do not use this product at corrosive gas or flammable gas etc.

- Please using this unit within range of specification, if applying pressure is larger than specification, it may not be working properly due to damage.
- After supplying power, it takes 3 sec. to work.
- When using switching regulator as power supply, it must be grounded (F · G).



- It may cause malfunction by noise, when wiring with power line or high voltage line.
- Do not insert any sharp or pointed object into pressure port. It may cause mechanical problem due to sensor damage.
- Do not use this unit with flammable gas, this is not an explosion proof structure.
- Be sure that this unit should not be contacted directly with water, oil, thinner etc.



- Wiring must be done with power off.