PSA / PSB Series — Pressure Sensor

Small size, High accuracy pressure control digital pressure sensor

■Features

- High accuracy digital pressure sensor
- High brightness red LED(LED height : 9.5mm)
- High resolution : 1/1000
- Convertible pressure unit
  Vacuum pressure, Compound pressure :
  kPa, kgf/cm², bar, psi, mmHg, mmH₂O, inHg
  Positive pressure : kPa, kgf/cm², bar, psi
- Various output modes : Hysteresis mode, Automatic sensitivity setting mode, Independent 2 output mode, Window comparative output mode
- Chattering prevention for output
  (Selectable response time : 2.5, 5, 100, 500ms)
- Analog output(1−5VDC)
- Reverse power polarity and overcurrent protection circuit
- Zero−point adjustment function
- Peak and Bottom hold display

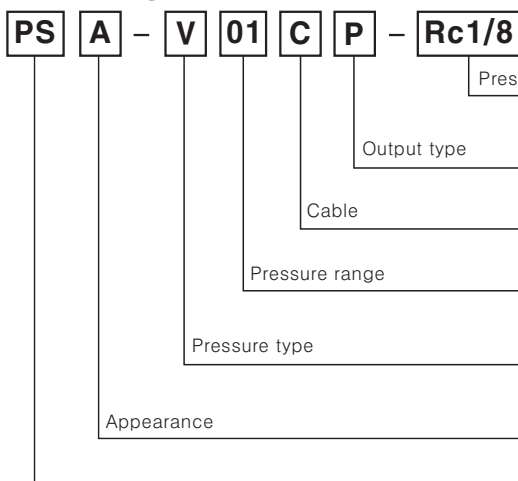⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

PSA Type

PSB Type

PSB Connector Type

■Ordering information

PS A – V 01 C P – Rc1/8

Pressure port		
	Rc1/8	Standard(PSA Type)
	NPT1/8	Option(PSA Type)
	M5	Standard(PSB Type)

Output type		
	Blank	NPN open collector output
	P	PNP open collector output

Cable		
	Blank	Positive(Cable integrated type)
(★)	C	Connector type

Pressure range		
	01	100kPa
	1	1MPa

Pressure type		
	Blank	Positive pressure type
	V	Vacuum pressure type
	C	Compound pressure type

Appearance		
	A	Regular square(30mm×30mm)
	B	Rectangular(10.2mm×54mm)

	PS	Pressure Sensor

※(★) is only applied to PSB Series.

■Pressure and Max. pressure display range

Type	kPa	kgf/cm²	bar	psi	mmHg	inHg	mmH₂O
Vacuum pressure	**0 to −101.3** (5.0 to −101.3)	**0 to −1.033** (0.051 to −1.034)	**0 to −1.013** (0.05 to −1.013)	**0 to −14.70** (0.74 to −14.70)	**0 to −760** (38 to −760)	**0 to −29.9** (1.5 to −29.9)	**0 to −103.4** (5.2 to −103.4)
Positive pressure	**0 to 100.0** (−5.0 to 110.0)	**0 to 1.020** (−0.051 to 1.122)	**0 to 1.020** (−0.050 to 1.100)	**0 to 14.50** (−0.726 to 15.96)	——	——	——
	0 to 1000 (−50 to 1100)	**0 to 10.20** (−0.51 to 11.22)	**0 to 10.00** (−0.50 to 11.00)	**0 to 145.0** (−7.2 to 159.6)	——	——	——
Compound pressure	**100.0 to −100.0** (110.0 to −101.2)	**1.020 to −1.020** (1.122 to −1.034)	**1.020 to −1.020** (1.100 to −1.012)	**14.50 to −14.50** (15.96 to −14.70)	**750 to −750** (824 to −760)	**29.5 to −29.5** (32.6 to −29.9)	**102.1 to −103.4** (112.3 to −103.4)

※( ) is Max. pressure display range.
※When using a unit mmH₂O, please multiply display value by 100.

■Pressure conversion chart

from \ to	Pa	kPa	MPa	kgf/cm²	mmHg	mmH₂O	psi	bar	inHg
1kPa	1000.000	1	0.001000	0.010197	7.500616	101.9689	0.145038	0.010000	0.2953
1kgf/cm²	98066.54	98.066543	0.09806	1	735.5595	10000.20	14.22334	0.980665	28.95878
1mmHg	133.322368	0.133322	0.000133	0.001359	1	13.5954	0.019336	0.001333	0.039370
1mmH₂O	9.80665	0.00980	——	0.000099	0.0735578	1	0.00142	0.000098	0.002895
1psi	6894.757	6.89493	0.00689	0.070307	51.71630	703.07	1	0.068947	2.036074
1Pa	100000.0	100.0000	0.100000	1.019689	750.062	10196.89	14.50339	1	29.52998
1inHg	3386.417	3.386388	0.003386	0.034532	25.40022	345.31849	0.491158	0.033863	1

Ex) In case of calculating 760mmHg as kPa :
According to above chart, 1mmHg is 0.133322kPa, therefore 760mmHg will be 760×0.133322kPa=101.32472kPa.

PSA / PSB Series

■Specifications

| Pressure type		Gauge pressure			
		Vacuum pressure type	**Positive pressure type**		**Compound pressure type**
Model	NPN output	**PSA-V01** **PSB-V01** **PSB-V01C**	**PSA-01** **PSB-01** **PSB-01C**	**PSA-1** **PSB-1** **PSB-1C**	**PSA-C01** **PSB-C01** **PSB-C01C**
	PNP output	**PSA-V01P** **PSB-V01P** **PSB-V01CP**	**PSA-01P** **PSB-01P** **PSB-01CP**	**PSA-1P** **PSB-1P** **PSB-1CP**	**PSA-C01P** **PSB-C01P** **PSB-C01CP**
Rated pressure range		**0.0 to −101.3kPa**	**0 to 100.0kPa**	**0 to 1,000kPa**	**−100.0 to 100.0kPa**
Display and set pressure range		5.0 to −101.3kPa	−5.0 to 110.0kPa	−50 to 1,100kPa	−101.2 to 110.0kPa
Max. pressure range		2 times of rated pressure		1.5 times of rated pressure	2 times of rated pressure
Applicable fluid		Air, Non−corrosive gas			
Power supply		12−24VDC ±10%(Ripple P−P : Max. 10%)			
Current consumption		Max. 50mA			
Control output		• NPN open collector output ☞ Sink current : Max. 100mA, Applied voltage : Max. 30VDC, Residual voltage : Max. 1V • PNP open collector output ☞ Source current : Max. 100mA, Residual voltage : Max. 2V			
	Hysteresis	**(∗1)**	1digit fixed (2digit/psi)		2digits fixed
	Repeat error	±0.2% F.S ±1digit			±0.2% F.S ±2digits
	Response time	Selectable 2.5ms, 5ms, 100ms, 500ms			
	Short circuit protection	Built−in			
Analog output		• Output voltage : 1−5VDC ±2% F.S • Zero−point:Within 1VDC ±2% F.S • Span: Within 4VDC ±2% F.S • Linear : Within ±2% F.S • Resolution : Approx. 1/200 • Output impedance : 1kΩ			
Display method		3½ digit LED 7Segment			
Min. display interval		1digit (2digit/psi)			2digits
Pressure unit		kPa, kgf/cm², bar, psi, mmHg, mmH₂O, inHg	kPa, kgf/cm², bar, psi		kPa, kgf/cm², bar, psi, mmHg, mmH₂O, inHg
Characteristic of control output and displayed temp.		**(∗2)**	Max. ±1% F.S		Max. ±2% F.S
Analog output temper−ature characteristic		**(∗2)**	Max. ±2% F.S		
Environment	Ambient temperature	−10℃ to 50℃ (at non−freezing status)			
	Storage temperature	−20℃ to 60℃ (at non−freezing status)			
	Ambient humidity	35 to 85%RH			
	Storage humidity	35 to 85%RH			
	Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Material		• **PSA** ☞ Front case : PC, Rear case : PC(Insert glass), Pressure port : die−cast(Zn) • **PSB** ☞ Case, Pressure port : PA, **PSB−C** ☞ Case, Pressure port, Cover : IXEF			
Protection		IP40(IEC standard)			
Cable		• **Cable intergrated type** ☞ φ4, 5P, Length : 2m, AWG24, Insulation diameter : φ1.0 • **Cable intergrated type** ☞ 5P, Length : 3m, AWG24, Insulation diameter : φ1.4			
Approval		CE			
Unit weight		PSA : Approx. 120g, PSB : Approx. 70g, PSB−C : Approx. 80g			

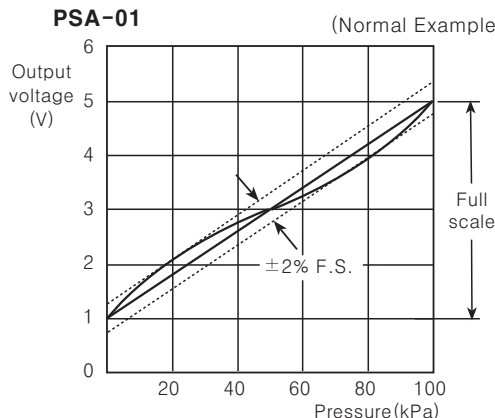※**(∗1)** F−1 : In F ı mode, hysteresis is variable.　　　※**(∗2)** Display pressure at 25℃ within 0 to 50℃.
※F.S(Full Scale) is the rated pressure.
※The specification of pressure port is marked on the upper part of the case. Pressure ports are distinguished by the colors, silver[Rc(PT)1/8] or black[NPT1/8].

●Analog output voltage−Pressure characteristic

PSA-01　　　　　　　(Normal Example)
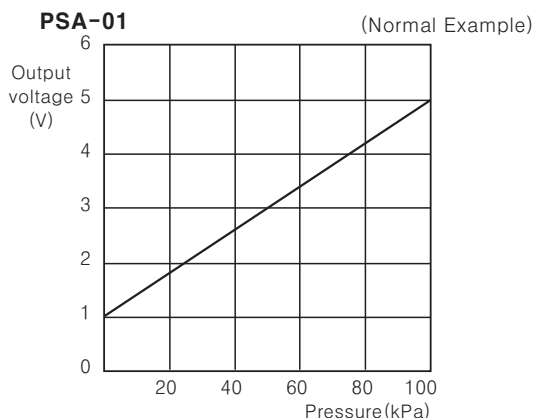
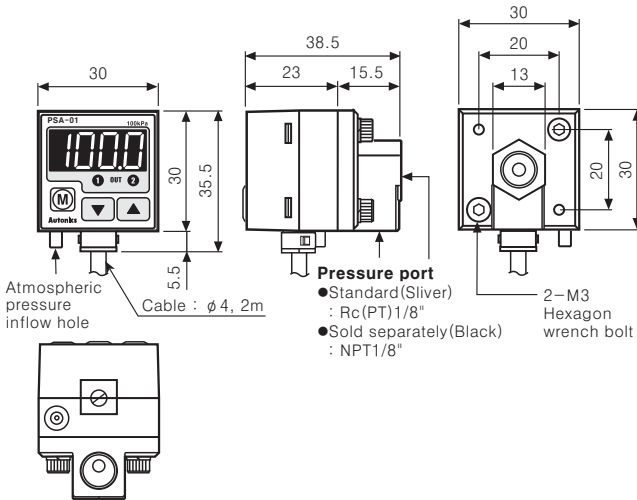●Analog output voltage−Linear characteristic

PSA-01　　　　　　　(Normal Example)

Pressure Sensor
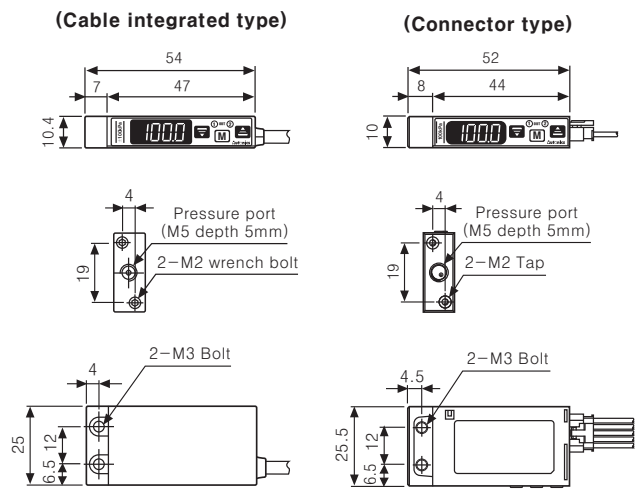
(A)
Photo electric sensor

(B)
Fiber optic sensor

(C)
Door/Area sensor

(D)
Proximity sensor

(E)
Pressure sensor

(F)
Rotary encoder

(G)
Connector/ Socket

(H)
Temp. controller

(I)
SSR/ Power controller

(J)
Counter

(K)
Timer

(L)
Panel meter

(M)
Tacho/ Speed/ Pulse meter

(N)
Display unit

(O)
Sensor controller

(P)
Switching power supply

(Q)
Stepping motor & Driver & Controller
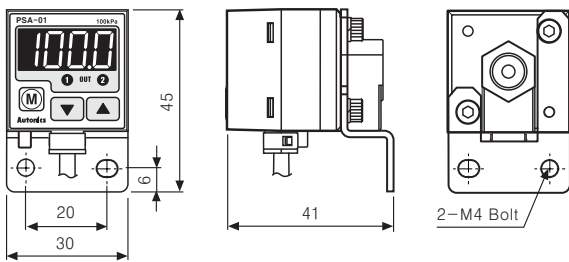
(R)
Graphic/ Logic panel

(S)
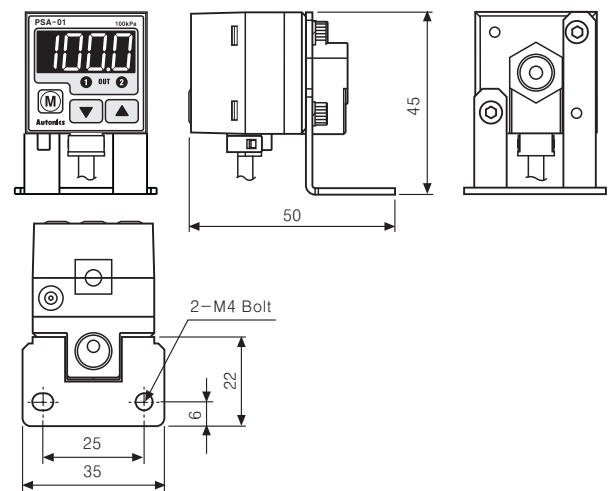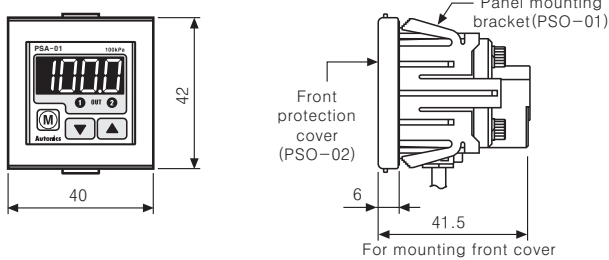Field network device

(T)
Production stoppage models & replacement

▣Dimensions

(Unit：mm)

●PSA

Atmospheric pressure inflow hole

Cable : φ4, 2m

Pressure port
●Standard(Sliver) : Rc(PT)1/8"
●Sold separately(Black) : NPT1/8"

2－M3 Hexagon wrench bolt

●PSB

(Cable integrated type)

(Connector type)

Pressure port (M5 depth 5mm)
2－M2 wrench bolt

Pressure port (M5 depth 5mm)
2－M2 Tap

2－M3 Bolt

2－M3 Bolt

●Fixing bracket A for mounting(PSA type)

2－M4 Bolt

●Fixing bracket B for mounting(PSA type)

2－M4 Bolt

●Panel mounting bracke(PSA type)

Panel mounting bracket(PSO-01)

Front protection cover (PSO-02)

For mounting front cover

●Panel cut-out

(Panel thickness : 0.8mm to 3.5mm)
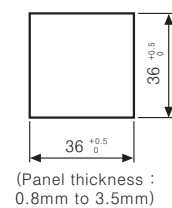
●Accessory(Sold separately)

• Panel mounting bracket

• Front protection cover

〈 PSO-01 〉

〈 PSO-02 〉

●Bracket A

3－φ3.2

2－M4 Bolt

●Bracket B

2－M4 Bolt

3－φ3.2
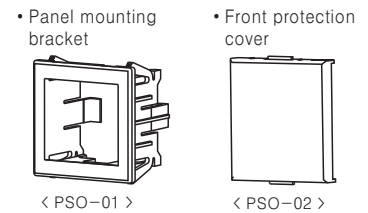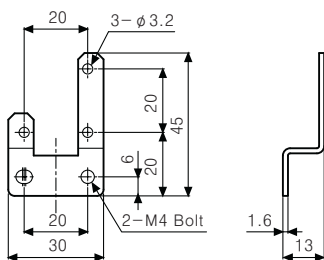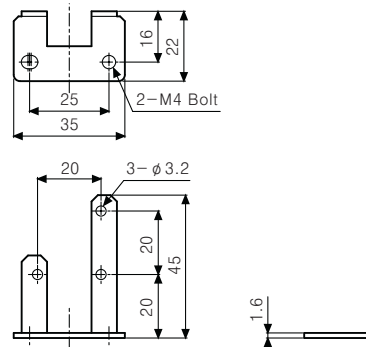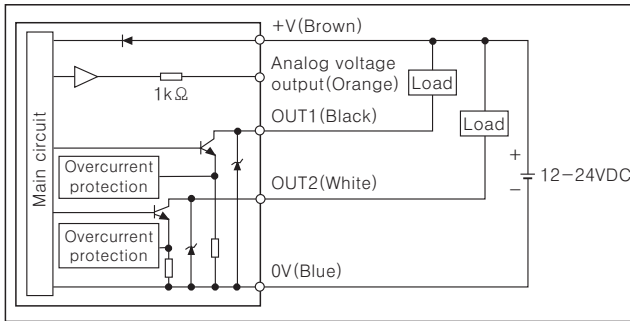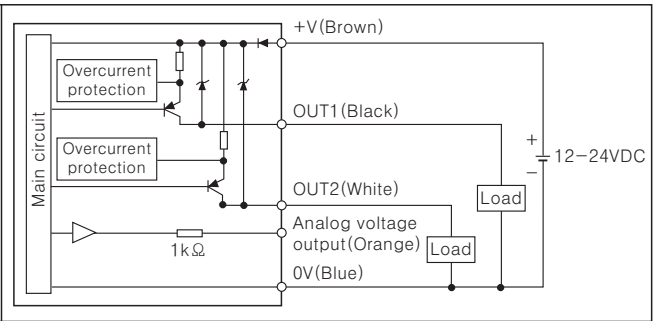
PSA / PSB Series

▣ 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)

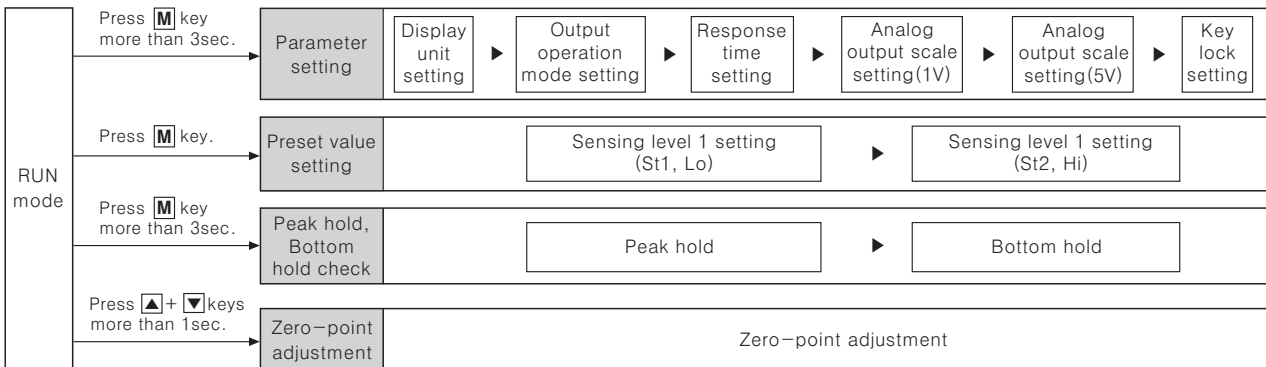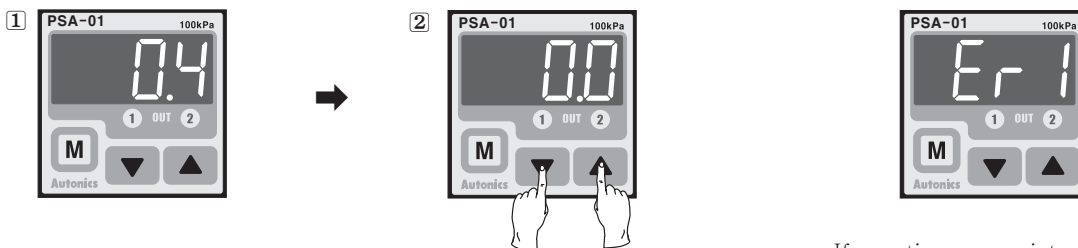**(PSB type)**
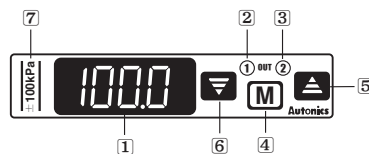
① **3½ LED display(Red)** : Display sensing pressure, every setting value and display error.
② **1 output indicator(Red)** : Output 1 is ON, LED will be ON.
③ **2 output indicator(PSA:Red, PSB:Green)** : Output 2 is ON, LED will be ON.

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.
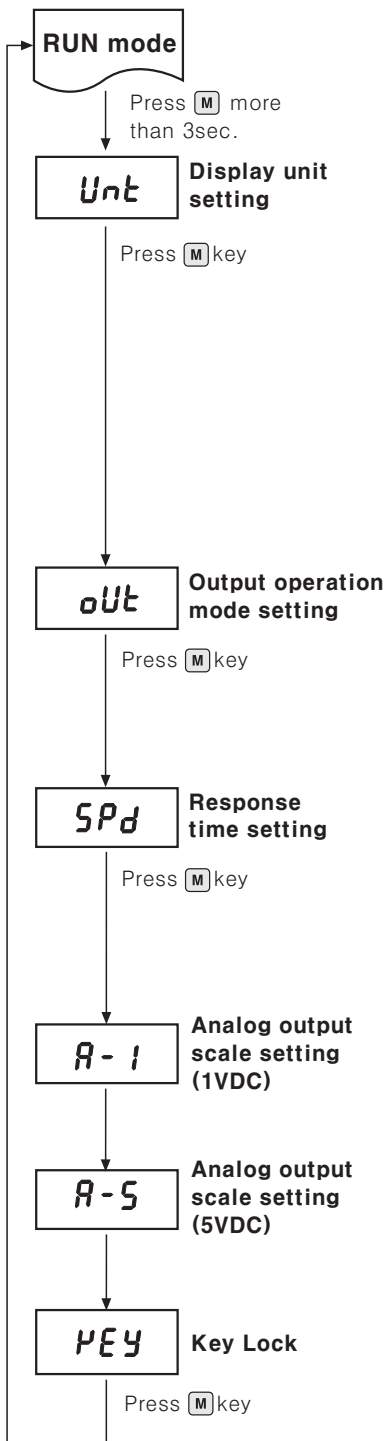
▣ Setting(PSA/PSB)

RUN mode	Press M key more than 3sec.	Parameter setting	Display unit setting	▶ Output operation mode setting	▶ Response time setting	▶ Analog output scale setting(1V)	▶ Analog output scale setting(5V)	▶ Key lock setting		
	Press M key.	Preset value setting		Sensing level 1 setting (St1, Lo)		▶	Sensing level 1 setting (St2, Hi)			
	Press M key more than 3sec.	Peak hold, Bottom hold check		Peak hold		▶	Bottom hold			
	Press ▲+▼ keys more than 1sec.	Zero−point adjustment		Zero−point adjustment						

▣ Zero point adjustment(PSA/PSB)

① ➡ ②

1. In state of atmospheric pressure during RUN mode, press ▼ key and ▲ key at the same time for over 1sec.
2. When the zero point adjustment is completed, it will display ⃞0.0⃞ and return to RUN mode automatically.
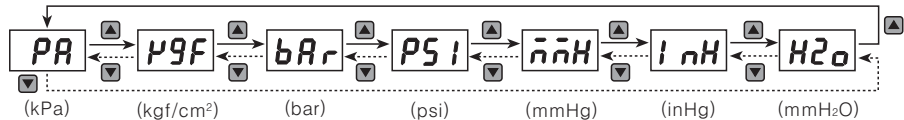※ Please execute zero point adjustment regularly.

If excuting zero point adjustment when external pressure has been applied, ⃞Er 1⃞ will be flashing. Please execute zero point again in state of atmospheric pressure.
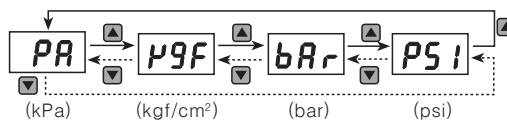
Pressure Sensor

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/ Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching power supply

(Q) Stepping motor & Driver & Controller

(R) Graphic/ Logic panel

(S) Field network device

(T) Production stoppage models & replacement

■Parameter setting(PSA/PSB)

RUN mode

Press Ⓜ more than 3sec.

Unt — **Display unit setting**

Press Ⓜkey

`Unt` and previous unit will flash by turning on.(0.5sec.)
Select the unit with ▲, ▲ key. (Press Ⓜ key momentarily, the unit will be saved, then move to the next mode.)

●Vacuum and compound pressure type :

PA ↔ ʮ9F ↔ bAr ↔ PS1 ↔ m̄m̄H ↔ 1nH ↔ H2o
(kPa) (kgf/cm²) (bar) (psi) (mmHg) (inHg) (mmH₂O)

※When using a unit mmH₂O, please multiply display value by 100.

●Positive pressure type :

PA ↔ ʮ9F ↔ bAr ↔ PS1
(kPa) (kgf/cm²) (bar) (psi)

oUt — **Output operation mode setting**

Press Ⓜkey

`oUt1` and previous output operation mode will flash by turning on.(0.5sec.)
Select the output operation mode with ▲, ▲ key. (Press Ⓜ key momentarily, the output operation mode will be saved, then move to the next mode.)

F-1 ↔ F-2 ↔ F-3 ↔ F-4 ↔ F-5 ↔ F-6

SPd — **Response time setting**

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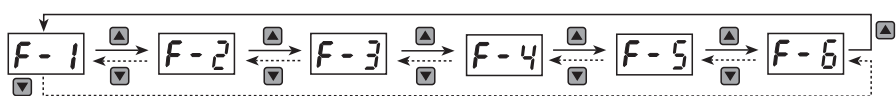
`SPd` and the previous response time will flash by turning on.(0.5sec.)
Select the output operation mode with ▲, ▲ key. (Press Ⓜ key momentarily, the response time will be saved, then move to the next mode.)

2.5 ↔ 5.0 ↔ 100 ↔ 500
(Unit : ms)

A-1 — **Analog output scale setting (1VDC)**
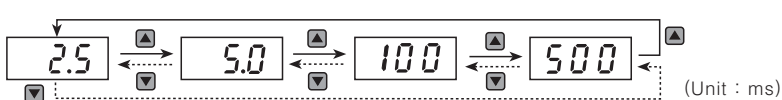
`A-1` and the previous pressure will flash by turning on.(0.5sec.)
Set the pressure which will output 1VDC with ▲, ▼ key.
Allowable setting range :
Min. value of rated pressure ≤ `A-1` ≤ 90% of rated pressure

A-5 — **Analog output scale setting (5VDC)**

`A-5` and the previous pressure will flash by turning on.(0.5sec.)
Set the pressure which will output 5VDC by ▲, ▼ key.
Allowable setting range :
`A-1` +10% of rated pressure ≤ `A-5` ≤ Max. value of rated pressure

ʮEY — **Key Lock**

Press Ⓜkey

`LoC` and the previous key lock will flash by turning on(0.5sec.)
Select key lock with ▲, ▼ key.

LoC ↔ PA.L ↔ UnL

※Key lock functions
`LoC` : Disable to change preset value and parameter value
(Enable to change ʮEY 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 ▼ or ▲ key(Display setting value), if any key is untouched for over 1 sec., it will display old value by 0.5sec. turn again.

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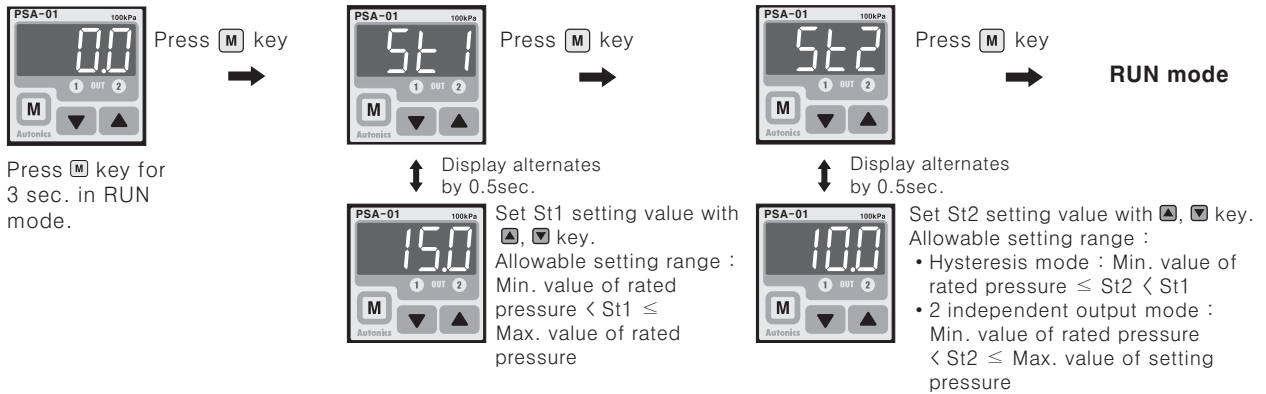
※There is memory protection by EEPROM, but life cycle of EEPROM is 100,000 times.

PSA / PSB Series

▣Preset value setting(PSA/PSB)

●Hysteresis mode(F-1) and independent(F-3, F-4, F-5) 2 output mode

PSA-01 100kPa **0.0** Press M key ➡ **PSA-01** 100kPa **St1** Press M key ➡ **PSA-01** 100kPa **St2** Press M key ➡ **RUN mode**

Press M key for 3 sec. in RUN mode.

↕ Display alternates by 0.5sec.

PSA-01 100kPa **15.0** Set St1 setting value with ▲, ▼ key. Allowable setting range : Min. value of rated pressure 〈 St1 ≤ Max. value of rated pressure

↕ Display alternates by 0.5sec.

PSA-01 100kPa **10.0** Set St2 setting value with ▲, ▼ key. Allowable setting range :
• Hysteresis mode : Min. value of rated pressure ≤ St2 〈 St1
• 2 independent output mode : Min. value of rated pressure 〈 St2 ≤ Max. value of setting pressure

●Automatic sensitivity setting mode(F-2)

PSA-01 100kPa **0.0** Press M key ➡ **PSA-01** 100kPa **St1** Press M key ➡ **PSA-01** 100kPa **St2** Press M key ➡ **PSA-01** 100kPa **SEt** Press M key ➡ **RUN mode**

Press M key for 3 sec. in RUN mode.

↕ Display alternates by 0.5sec.

PSA-01 100kPa **10.0** After applying St1 into Pressure port, then press ▲ key. (It is able to set repeatedly by ▲ key)

↕ Display alternates by 0.5sec.

PSA-01 100kPa **20.0** After applying St2 into Pressure port, than press ▲ key.

Setting ragne : St1+1% of rated pressure ≤ St2 ≤ Max. rated pressure

↕ Display alternates by 0.5sec.

PSA-01 100kPa **15.0** SET value will be calculated automatically and fine adjustment is available between St1 and St2 by ▲, ▼ key.

$$SET = \frac{St1 + St2}{2}$$

Adjustable range of set value : Between St1 and St2.

●Window comparison output mode(F-6)

PSA-01 100kPa **0.0** Press M key ➡ **PSA-01** 100kPa **Lo** Press M key ➡ **PSA-01** 100kPa **HI** Press M key ➡ **RUN mode**

Press M key for 3 sec. in RUN mode.

↕ Display alternates by 0.5sec.

PSA-01 100kPa **10.0** Set Low setting value with ▲, ▼ key. Allowable setting range : Min. rated pressure ≤ Lo 〈Max. value of rated pressure

↕ Display alternates by 0.5sec.

PSA-01 100kPa **20.0** Set High setting value with ▲, ▼ key. Allowable rated range : Lo 〈 Hi ≤ Max. value of rated pressure

• If no key is touched for 60sec., it will return to RUN mode. [Automatic sensitivity setting mode(F-2) is exception]
• When changing the display unit, preset value will be calculated according to the display unit.
• Whenever key touched one time, it is increased(decreased) as 1 digit(2 digits for psi unit and compound pressure) but it will be continuously increasing(decreasing) by pressing ▲, ▼ key constantly.

▣Peak hold and bottom hold check

1. Press ▲ for more than 3sec. in RUN mode.
2. **PE.H** and memorized max. pressure(Vacuum pressuretype is for max. vacuum pressure) will flash by turning on (0.5sec.) then display peak hold value.
3. **bo.H** and memorized min. pressure(Vacuum pressure type is for min. vacuum pressure) will flash by turning on (0.5sec.) then display bottom hold value.
4. If pressing ▲ key one time shortly, memorized peak hold and bottom hold value will be removed then return to RUN mode.

※When the peak hold and bottom hold value is over the max. display pressure value, it displays **HHH** .
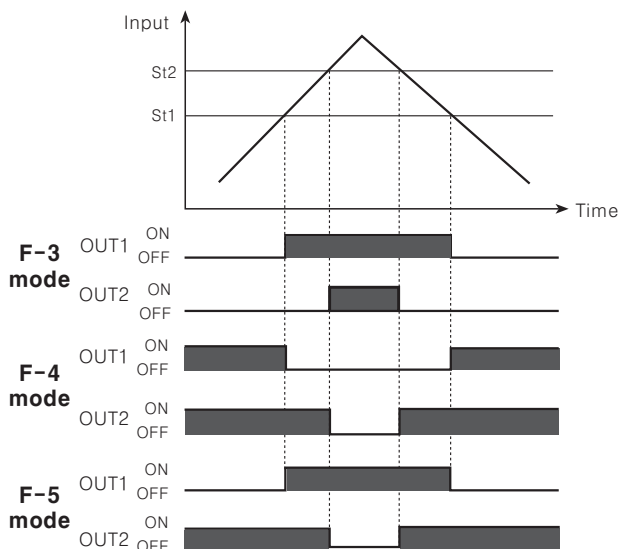On the opposite, it displays **LLL** . Please remove peak hold and bottom hold value by using ▲ key.

Autonics

Pressure Sensor

■Output operation mode(PSA/PSB)

1. Hysteresis mode(F-1)
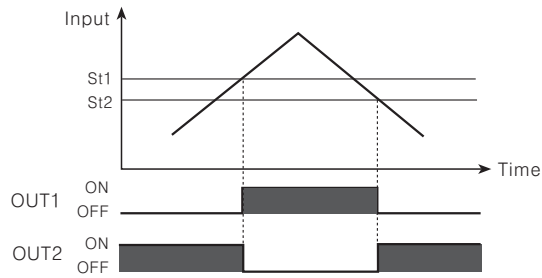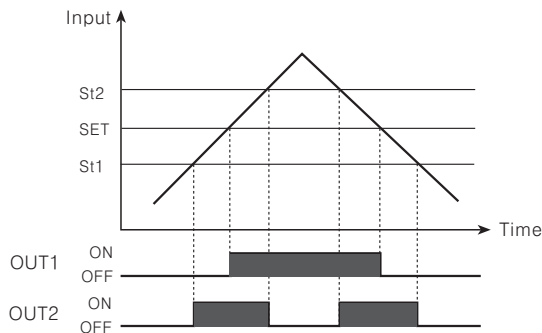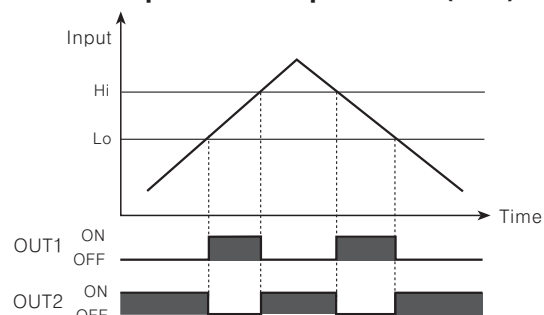
※It can be set for pressure sensing level(St1) and sensing difference(St2).
※St1 setting range : Min. display pressure ≤ St1 ≤ Max. display pressure
St2 setting range : Min. display pressure ≤ St2 ≤ St1
 • OUT 1 : When applying pressure is larger than St1, it wil be ON.
 • OUT 2 : When applying pressure 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, $\boxed{\text{Er3}}$ will be displayed.
 Please set again after applying enough pressure.
Note2) St2 setting range : St1+1% of rated pressure ≤ St2 ≤ Max. display pressure
Note3) If fine adjustment for sensing level is required, adjust sensing level by ▲, ▼ 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 display 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. display pressure ≤ St1≤ Max. display pressure
St2 setting range : Min. display pressure ≤ St2 ≤ Max. display 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 comparison 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(psi unit and compound type 2 digits)
※Lo setting range : Min. display pressure ≤ Lo ≤ Max. display pressure
Hi setting range : Lo < Hi ≤ Max. display 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).

(A) Photo electric sensor
(B) Fiber optic sensor
(C) Door/Area sensor
(D) Proximity sensor
(E) Pressure sensor
(F) Rotary encoder
(G) Connector/ Socket
(H) Temp. controller
(I) SSR/ Power controller
(J) Counter
(K) Timer
(L) Panel meter
(M) Tacho/ Speed/ Pulse meter
(N) Display unit
(O) Sensor controller
(P) Switching power supply
(Q) Stepping motor & Driver & Controller
(R) Graphic/ Logic panel
(S) Field network device
(T) Production stoppage models & replacement

PSA / PSB Series

▣ Functions(PSA/PSB)

1. Pressure unit change function

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, mmH$_2$O
- PS□-01(C)(P), PS□-1(C)(P) :
  kPa, kgf/cm², bar, psi

※When using mmH$_2$O, multiply the display value by 100.

2. Output mode change function

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 auto-matically 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 comparison output mode(F-6) :
  When is required to detect pressure in a certain range.

3. Response time change function(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. Analog output scale setting function

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. (Enable to change [KEY] mode only).
- PAL : This is partial locked status, it is impossible to change parameter setting(It is 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 display function

| Error display	Description	Troubleshooting
Er 1	External pressure is applied, when adjusting Zero point	Please try again after external pressure removing
Er2	When it is overloaded on control output	Remove overload
Er3	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 Rc(PT) 1/8"(Color:Silver). [Option:NPT 1/8(Color:Black)] 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.

Spring washer
Port plug
Hexagon wrench bolt

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.


13mm spanner
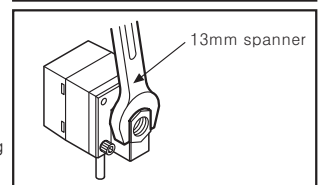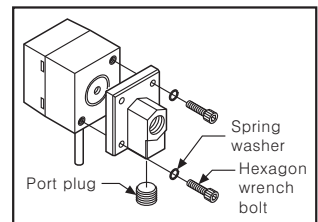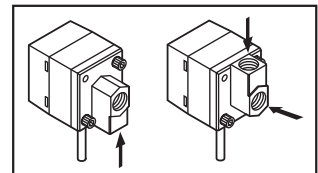
⚠ Caution

The tightening torque of one touch fitting should be max. 100kgf·cm. If not, it may cause mechanical problem.

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.
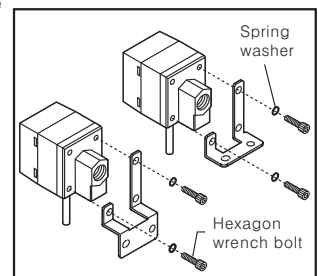
In this case, tightening torque of hexagon wrench should be max. 30kgf·cm. If not, it may cause mechanical problem.

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

Spring washer
Hexagon wrench bolt

Panel bracket (PSO-01)
Protection cover (PSO-02)
Body (PSA)
Bracket panel
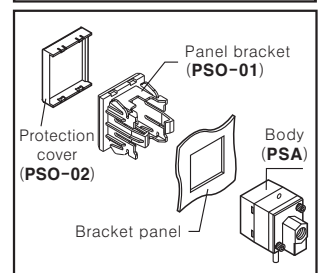
Pressure Sensor

▣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.

Body
O−Ring
Pressure port
Hexagon wrench bolt (M2×10)
One touch fitting
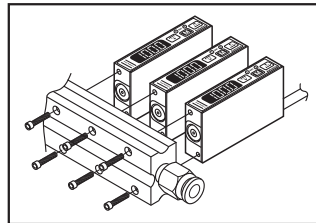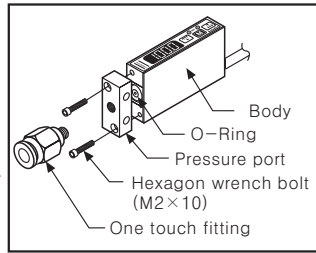
⚠ Caution

The tightening torque of one touch fitting and hexagon wrench should be max. 50kgf・cm and 20kgf・cm.
It may cause mechanical problem.
**Please do not use spanner to install as it may cause mechanical problem.**
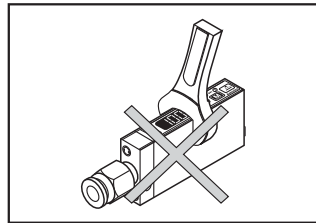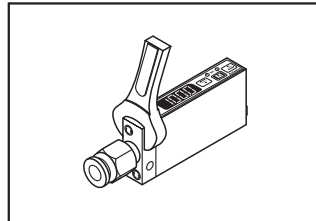
▣Accessory

●PSA/PSB

• Pressure unit label

±100kPa	-101.3kPa	100kPa	1MPa
1.020kgf/cm²	-1.034kgf/cm²	1.020kgf/cm²	10.20kgf/cm²
14.50psi	-14.70psi	14.50psi	145.0psi
1.000bar	-1.013bar	1.000bar	10.00bar
750mmHg	-760mmHg	X10	X10
29.5inHg	-29.9inHg	X100	X100
102.0mmH₂O	-103.4mmH₂O	X1000	X1000

DISPLAY UNIT LABEL

●PSA

• Port plug   • Bracket A   • Bracket B
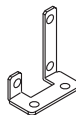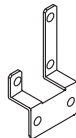
▣Proper usage

⚠ 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.).

Switching regulator
+
−
F.G.
Ground
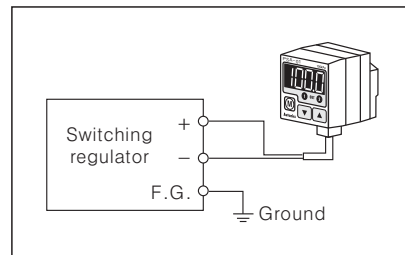
• It may cause malfunction by noise, when wiring with power line or high voltage line.

• 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.
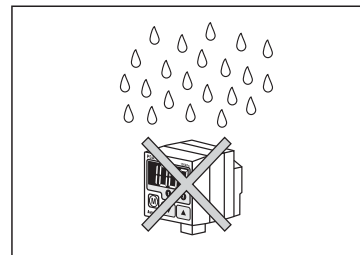
• Wiring must be done with power off.

(A) Photo electric sensor

(B) Fiber optic sensor

(C) Door/Area sensor

(D) Proximity sensor

(E) Pressure sensor

(F) Rotary encoder

(G) Connector/ Socket

(H) Temp. controller

(I) SSR/ Power controller

(J) Counter

(K) Timer

(L) Panel meter

(M) Tacho/ Speed/ Pulse meter

(N) Display unit

(O) Sensor controller

(P) Switching power supply

(Q) Stepping motor & Driver & Controller

(R) Graphic/ Logic panel

(S) Field network device

(T) Production stoppage models & replacement