PSA / PSB Series

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
  Standard pressure : kPa, kgf/cm², bar, psi
- ●Various output modes : Hysteresis mode, Automatic sensitivity setting mode, Individual 2 output mode, Window comparative output mode
- ●Chattering prevention for output
  (Selectable response time : 2.5, 5, 100, 500ms)
- ●Analog output(1−5VDC)
- ●Built−in overcurrent protection circuit, Reverse power polarity protection circuit
- ●Zero point adjustment function
- ●Peak and Buttom hold display

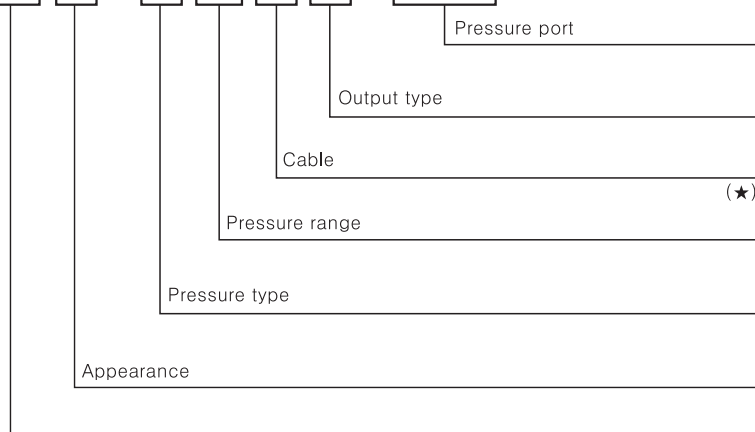> ⚠ **Please read "Caution for your safety" in operation manual before using.**

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		NPN open collector output
	P	PNP open collector output
Cable		Standard(Cable intergral type)
(★)	C	Connector type
Pressure range	01	100kPa
	1	1MPa
Pressure type		Standard 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 ~ −101.3 (5.0 ~ −101.3)	0 ~ −1.034 (0.051 ~ −1.034)	0 ~ −1.013 (0.05 ~ −1.013)	0 ~ −14.70 (0.74 ~ −14.70)	0 ~ −760 (38 ~ −760)	0 ~ −29.9 (1.5 ~ −29.9)	0 ~ −103.4 (5.2 ~ −103.4)
Standard pressure	0 ~ 100.0 (−5.0 ~ 110.0)	0 ~ 1.020 (−0.051 ~ 1.122)	0 ~ 1.020 (−0.050 ~ 1.100)	0 ~ 14.50 (−0.726 ~ 15.96)	——	——	——
	0 ~ 1000 (−50 ~ 1013)	0 ~ 10.20 (−0.51 ~ 11.22)	0 ~ 10.00 (−0.50 ~ 11.00)	0 ~ 145.0 (−7.2 ~ 159.6)	——	——	——
Compound pressure	100.0 ~ −100.0 (110.0 ~ −101.3)	1.020 ~ −1.020 (1.122 ~ −1.034)	1.020 ~ −1.020 (1.100 ~ −1.013)	14.50 ~ −14.50 (15.96 ~ −14.70)	750 ~ −750 (824 ~ −760)	29.5 ~ −29.5 (32.6 ~ −29.9)	102.1 ~ −103.4 (112.3 ~ −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	98069.10	98.06910	0.098069	1	735.5787	10000.20	14.22334	0.980691	28.95979
1mmHg	133.3220	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	6894.939	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	3386.388	3.386388	0.003386	0.034530	25.40000	345.3240	0.491141	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.
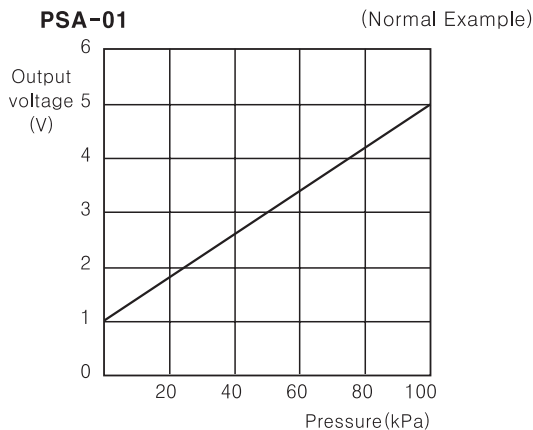
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Pressure Sensor

■ Specifications

Pressure type		Gauge pressure			
		Vacuum pressure type	Standard 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~−101.3kPa	0~100.0kPa	0~1,000kPa	−100.0~100.0kPa
Display and set pressure range		5.0~−101.3kPa	−5.0~110.0kPa	−50~1,100kPa	−101.2~110.0kPa
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		12V−24VDC ±10%(Ripple P−P:Max. 10%)			
Current consumption		Max. 50mA			
Control output		• NPN open collector output ☞ Load current : Max. 100mA, Load voltage : Max. 30VDC, Residual voltage : Max. 1V • PNP open collector output ☞ Max. sink current : Max. 100mA, Residual voltage : Max. 2V			
	Hysteresis	(∗1)	1digit (2digit/psi)fixed		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	Includes			
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℃ ~ +50℃ (at non−freezing status)			
	Storage temperature	−20℃ ~ +60℃ (at non−freezing status)			
	Ambient humidity	35 ~ 85%RH			
	Storage humidity	35 ~ 85%RH			
	Vibration	1.5mm amplitude at frequency of 10 ~ 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		φ4mm, 5P, Length : 2m(Connector type:3m)			
Approval		CE			
Unit weight		PSA : Approx. 120g, PSB : Approx. 70g, PSB−C : Approx. 80g			

※F.S.(Full Scale) : Specified pressure range.
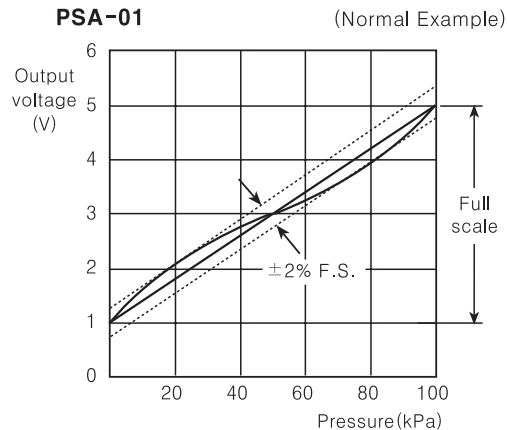※(∗1) The Hysteresis is changeable in output operation of F−1 mode.
※(∗2) It is based on the pressure of 25℃ within 0~50℃.

● Analog output voltage−Pressure characteristic

PSA-01 (Normal Example)

● Analog output voltage linear characteristic

PSA-01 (Normal Example)

PSA / PSB Series

▣Dimensions

(Unit:mm)

●PSA

30
20
13

38.5
23   15.5

30
34   30   35.5

5.5

PSA-01   100kPa
① OUT ②
M ▼ ▲
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2–M3
Hexagon
wrench bolt

Atmospheric
pressure inflow hole

Pressure port
●Standard(Sliver)
  : RT1/8×7L
●Option(Black)
  : NPT1/8×6L

20   30

9
8.5   φ4
13.4
18.4   31.5

10.5

●PSB

(Cable intergral type)

54.2
7   47.2
10.3

100kPa   ▼ M Cat.sh.)

4
Pressure port
(M5 depth 5mm)
19   2–M2 wrench bolt

4   2–φ3.4
Mounting hole
(M3 Bolt)

25   18.5   12
6.5

(Connector type)

52
8   44
10

100kPa   M

4
Pressure port
(M5 depth 5mm)
19   2–M2 TAP

4.5   2–φ3.4
Mounting hole
(M3 Bolt)

25.5   18.75   12
6.75

●Fixing bracket A (PSA type)

PSA-01   100kPa
① OUT ②
M ▼ ▲
Autonics

45

6
20
30

28
39.4
41

15

20 ±0.1
14 +0.1 0
5
20 ±0.1
12.7
2–φ4.2
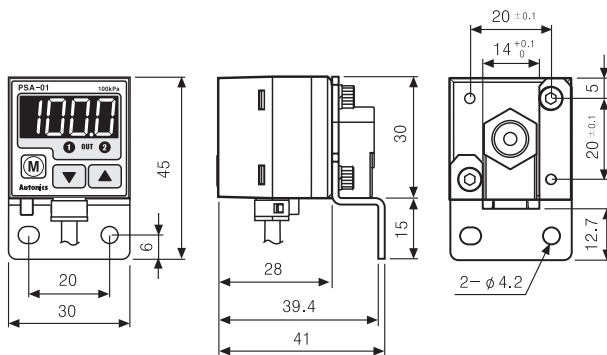
●Fixing bracket B for mounting(PSA type)

PSA-01   100kPa
① OUT ②
M ▼ ▲
Autonics

45

28
50

43.4
1.6

20 ±0.1
14 +0.1 0
5
20 ±0.1

2–φ4.2
22
6
25
35
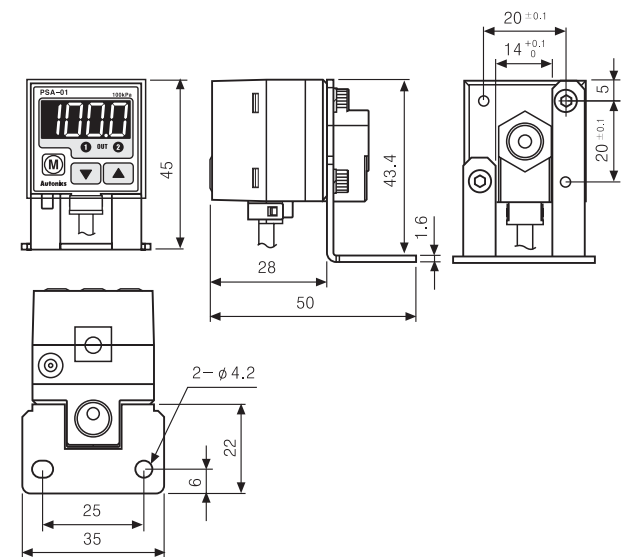
●Bracket for mounting (PSA type)

PSA-01   100kPa
① OUT ②
M ▼ ▲
Autonics

28.2   42

30
40

Panel mounting
bracket(PSO–01)

Front
protecting
(PSO–02)

6   41.5

When front cover
is mounted

●Panel cut–out

36 +0.5 0

36 +0.5 0

(Panel thickness :
0.8mm~3.5mm)

●Accessory(Option)

〈 PSO–01 〉   〈 PSO–02 〉

●Bracket–A

13

30

30   20

13

20 ±0.05

20 ±0.05
45
6
2–φ4.2
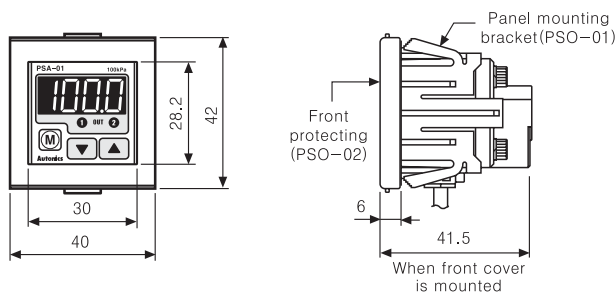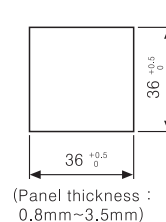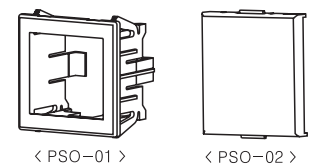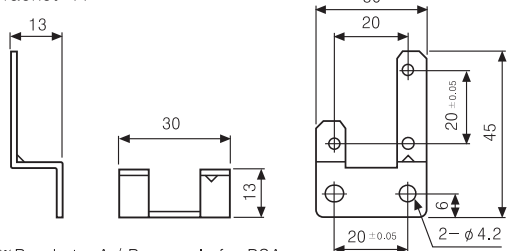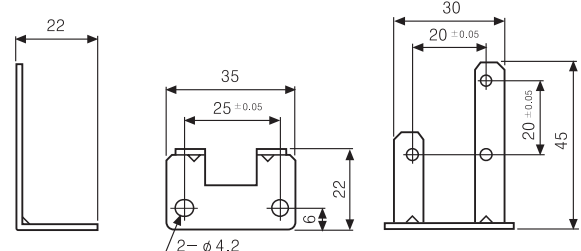
※Bracket– A / B are only for PSA.

●Bracket–B

22

30

35
25 ±0.05

2–φ4.2
6
22

30
20 ±0.05

20 ±0.05
45

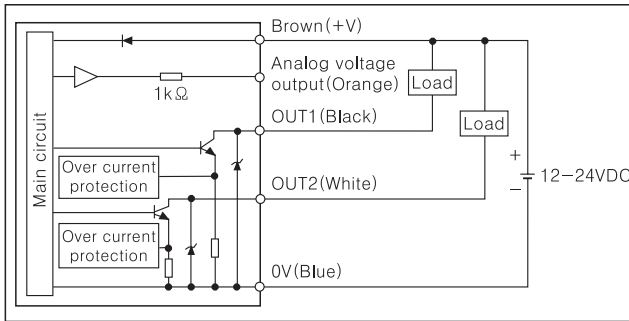Autonics

Pressure Sensor

■Control output diagram(PSA/PSB)

●NPN open collector output

●PNP open collector output

Brown(+V)
Analog voltage output(Orange)   Load
1kΩ
OUT1(Black)   Load
Over current protection
OUT2(White)   + 12－24VDC －
Over current protection
Over current protection
0V(Blue)

+V(Brown)
Over current protection
OUT1(Black)
Over current protection
OUT2(White)   + 12－24VDC －
1kΩ
Analog voltage output(Orange)   Load
Load
0V(Blue)
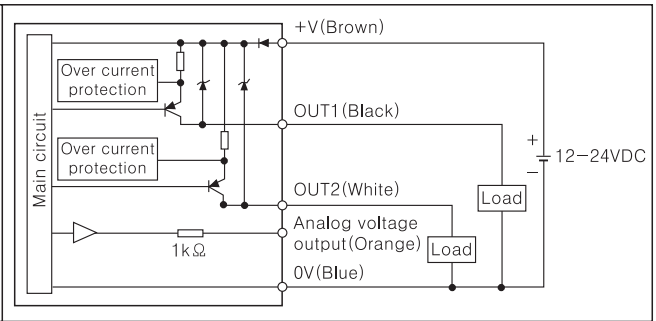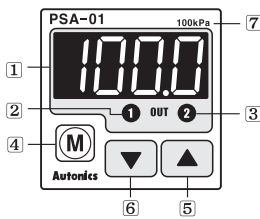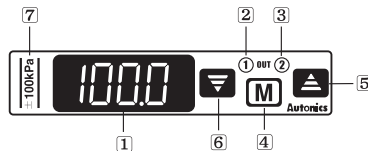
※There is no short－circuit protection in analog voltage output. Do not connect this output to power source or capacitive load directly.
※Please observe input impedance of connected equipment when use analog voltage output.
   And be sure to check voltage drop caused by resistance of extended wire.
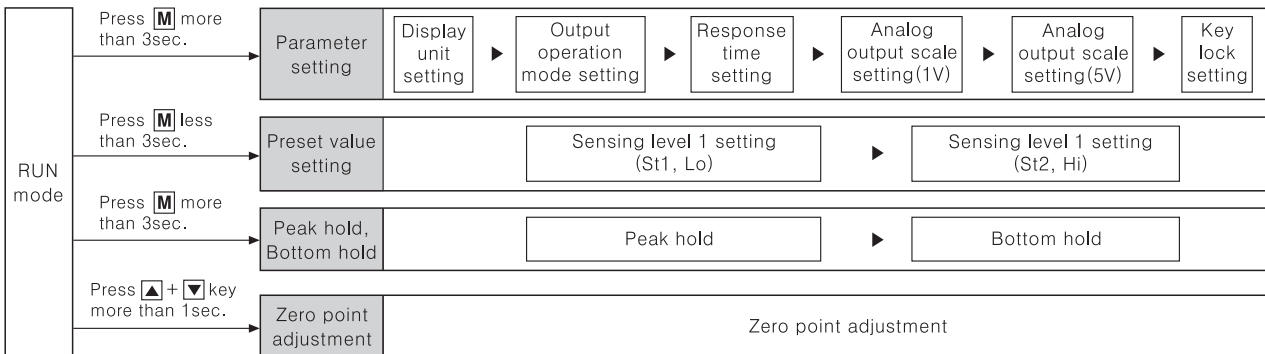
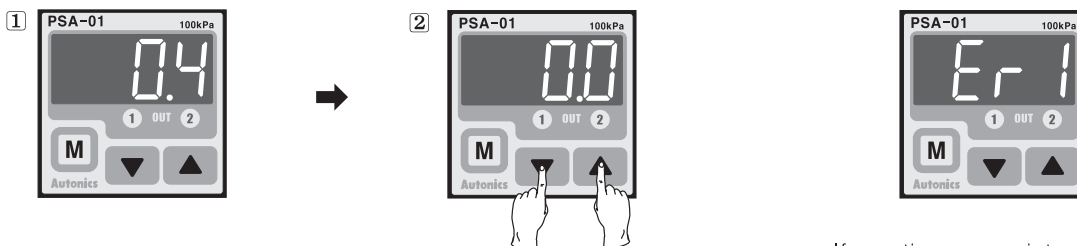## ■Front panel identification

(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 rating 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 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 less than 3sec. → Preset value setting	Sensing level 1 setting (St1, Lo) ▶			Sensing level 1 setting (St2, Hi)		
	Press M more than 3sec. → Peak hold, Bottom hold	Peak hold ▶			Bottom hold		
	Press ▲ + ▼ key more than 1sec. → Zero point adjustment	Zero point adjustment					

■Operations(PSA/PSB)

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 0.0 and return to RUN mode automatically.
※Please execute Zero point adjustment regularly.

If excuting zero point adjustment when external pressure has been applied, Er 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
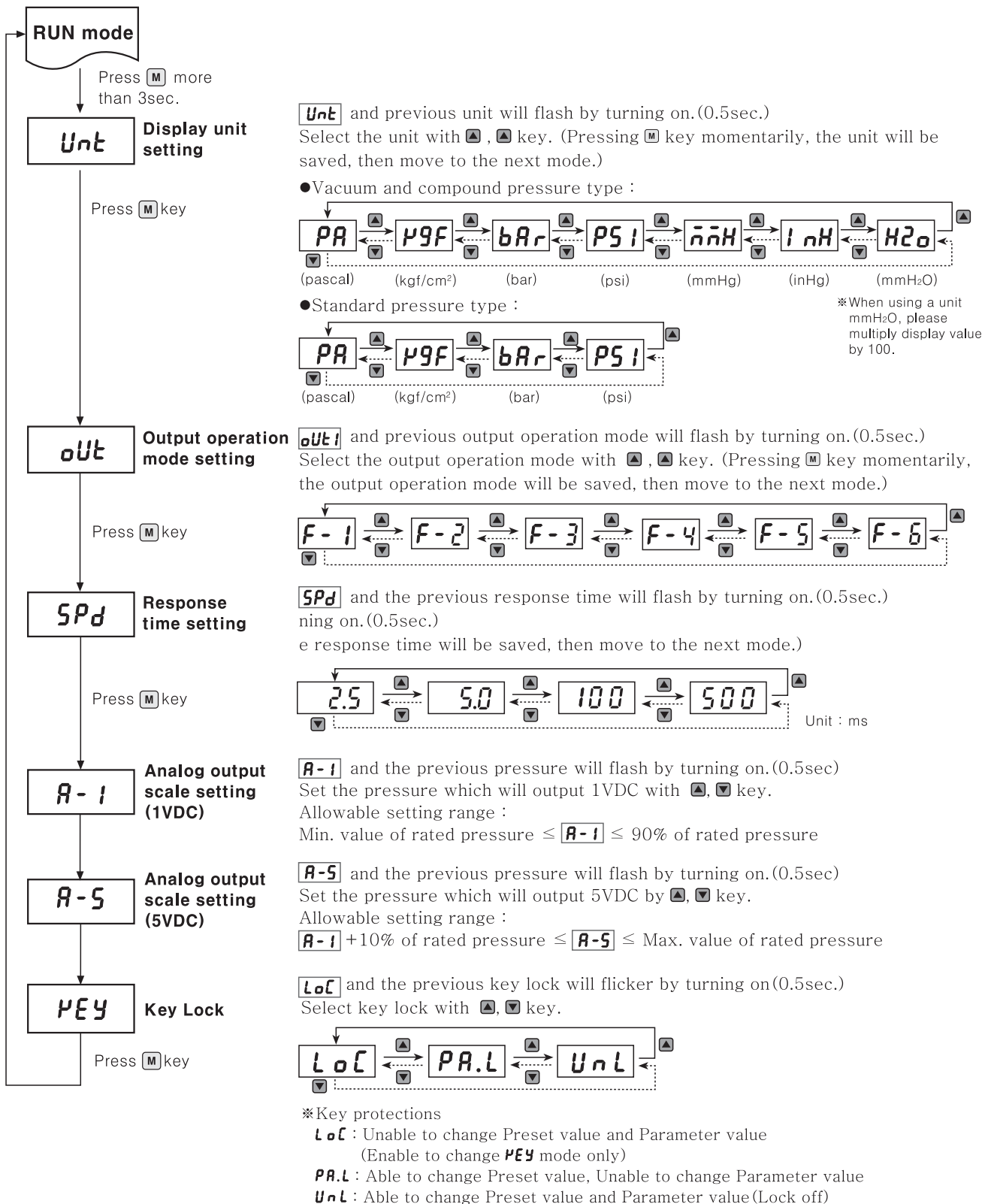**(L) Pressure sensor**
(M) Rotary encoder
(N) Stepping motor & Driver & Controller
(O) Graphic panel
(P) Production stoppage models & replacement

PSA / PSB Series

▣ Setting parameter(PSA/PSB)

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. (Pressing Ⓜ key momentarily, the unit will be saved, then move to the next mode.)

● Vacuum and compound pressure type :

PA ⇄ kgf ⇄ bAr ⇄ PSI ⇄ mmH ⇄ InH ⇄ $H2o$

(pascal)　(kgf/cm²)　(bar)　(psi)　(mmHg)　(inHg)　(mmH₂O)

● Standard pressure type :

PA ⇄ kgf ⇄ bAr ⇄ PSI

(pascal)　(kgf/cm²)　(bar)　(psi)

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

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oUt — Output operation mode setting

Press Ⓜ key

`oUt` and previous output operation mode will flash by turning on.(0.5sec.)
Select the output operation mode with ▲, ▲ key. (Pressing Ⓜ 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.)
ning on.(0.5sec.)
e 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

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KEY — Key Lock

Press Ⓜ key

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

LoC ⇄ $PA.L$ ⇄ UnL

※ Key protections
`LoC` : Unable to change Preset value and Parameter value
　　　(Enable to change `KEY` mode only)
`PA.L` : Able to change Preset value, Unable to change Parameter value
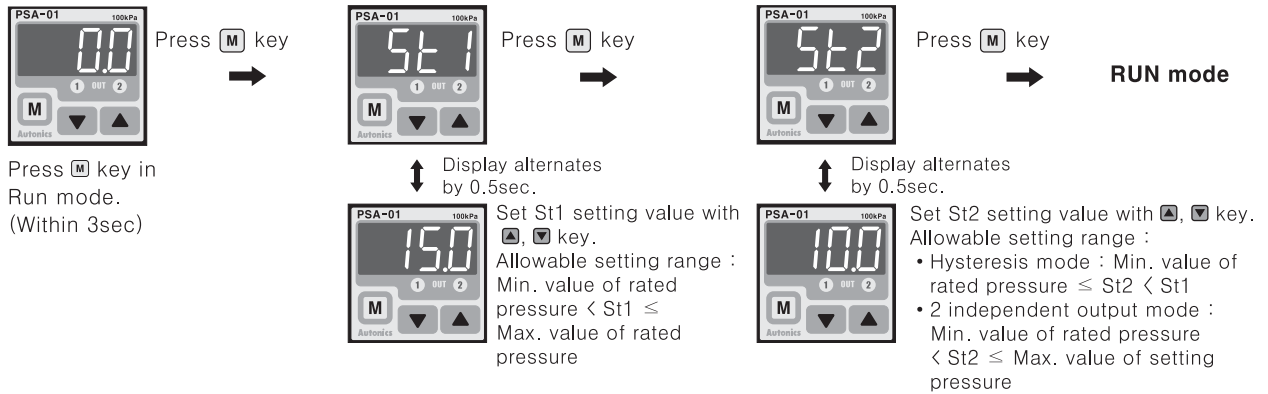`UnL` : Able to change Preset value and Parameter value (Lock off)

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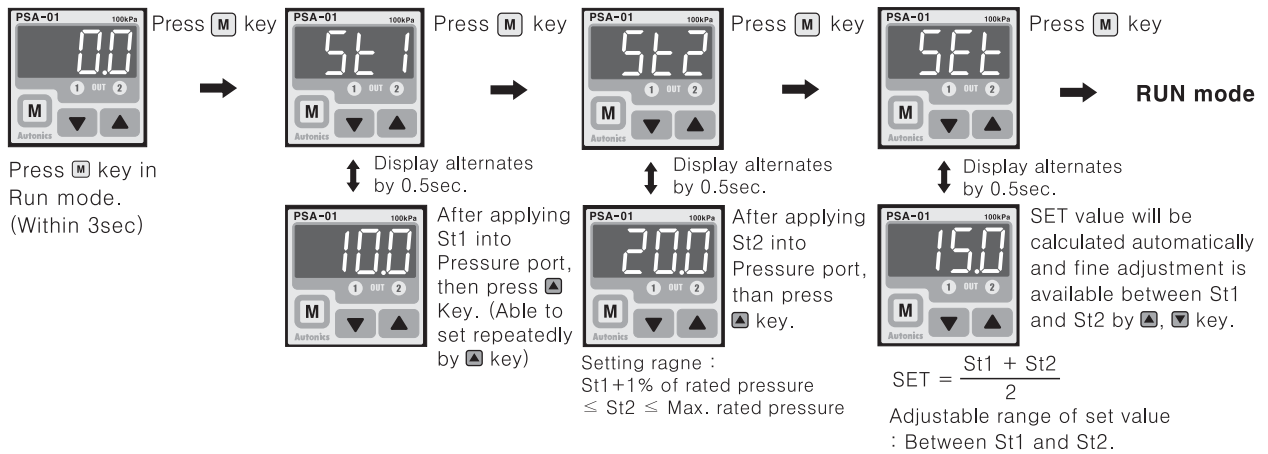
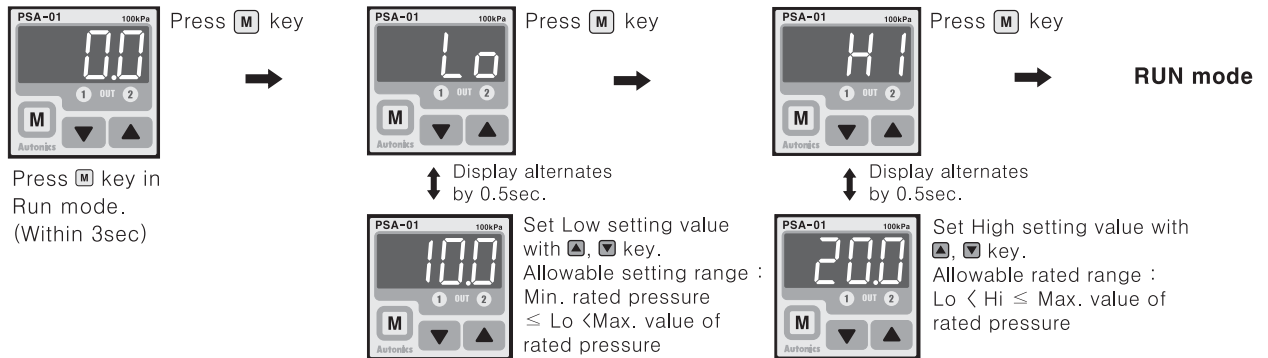※ There is memory protection by EEPROM, but life cycle of EEPROM is 100,000 times.

Autonics

Pressure Sensor

(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

■Preset value setting(PSA/PSB)

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

Press M key in Run mode. (Within 3sec)

Set St1 setting value with ▲, ▼ key.
Allowable setting range :
Min. value of rated pressure < St1 ≤ Max. value of rated pressure

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

RUN mode

●Automatic sensitivity setting mode(F-2)

Press M key in Run mode. (Within 3sec)

After applying St1 into Pressure port, then press ▲ Key. (Able to set repeatedly by ▲ key)

After applying St2 into Pressure port, than press ▲ key.
Setting ragne :
St1+1% of rated pressure ≤ St2 ≤ Max. rated pressure

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.

RUN mode

●Window mode(F-6)

Press M key in Run mode. (Within 3sec)

Set Low setting value with ▲, ▼ key.
Allowable setting range :
Min. rated pressure ≤ Lo <Max. value of rated pressure

Set High setting value with ▲, ▼ key.
Allowable rated range :
Lo < Hi ≤ Max. value of rated pressure

RUN mode

• 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

1. Press ▲ for more than 3sec. in RUN mode.
2. PE.H and memorized max. pressure(Negative type is for max. vacuum pressure) will flash by turning on (0.5sec.) then display Peak hold value.
3. bo.H and memorized min. pressure(Negative 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.

PSA / PSB Series

## ▣Output operation mode(PSA/PSB)

1. Hysteresis mode(F-1)
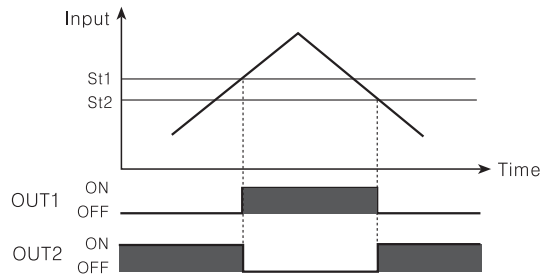
※It can be set for pressure sensing level(St1) and sensing difference(St2).
※St1 setting range : Min. value of specified pressure ≤ St1 ≤ Max. value of specified pressure
St2 setting range : Min. value of specified pressure ≤ St2 ≤ St1
  • OUT 1 : When applying pressure is larger than St1, it wil be ON.
  • OUT 2 : When applying pressure is lower than St2, it will be ON.

2. Automatic sensitivity setting mode(F-2)
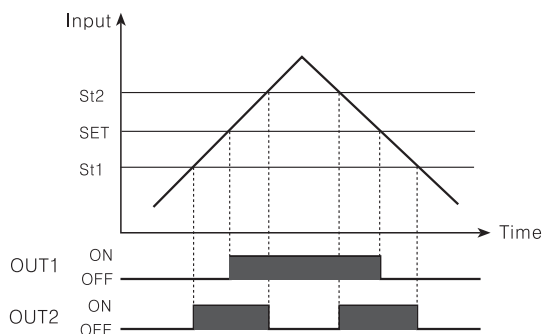
※This function is to set pressure sensing level to the proper position automatically, it is set by received pressure from two position(St1, St2).
※The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
※Sensing(SET) value will be calculated as below.

$$\text{SET setting value} = \frac{(\text{St1 setting value} + \text{St2 setting value})}{2}$$

  • 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, $\boxed{Er\,3}$ will be displayed.
  Please set again after applying enough pressure.
Note2)St2 setting range : St1+1% of rated pressure ≤ St2 ≤ Max. value of specified 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)
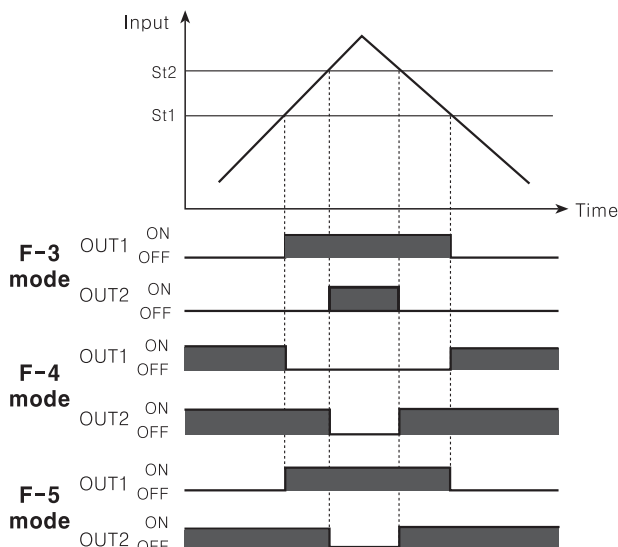
※St1 and St2 can be set independently within specified pressure range. One is for control, the other is for alarm or optional control.
※The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
※St1 setting range : Min. value of specified pressure ≤ St1≤ Max. value of specified pressure
St2 setting range : Min. value of specified pressure ≤ St2 ≤ Max. value of specified pressure
  ●Independent 2 output mode(F-3)
    • OUT 1 : It will be ON, when it is beyond St1.
    • OUT 2 : It will be ON, when it is beyond St2.
  ●Independent 2 opposite mode(F-4)
    • OUT 1 : It will be OFF when it is beyond St1.
    • OUT 2 : It will be OFF, when it is beyond 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 mode(F-6)
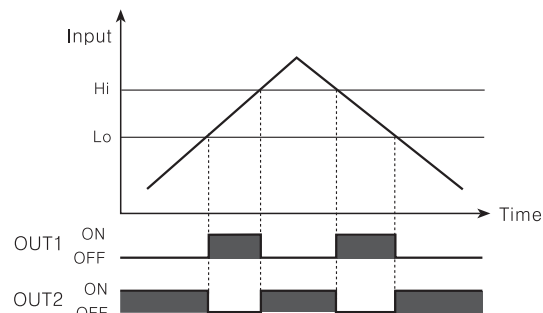
※It is able to set Lo/Hi-limit value of pressure sensing level in this mode.
※The sensing hysteresis fixed to 1 digit(psi unit and compound type 2 digits)
※Lo setting range : Min. value of specified pressure ≤ Lo ≤ Max. value of specified pressure
Hi setting range : Lo < Hi ≤ Max. value of specified 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 beyond High limit value(Hi) and Low limit value(Lo).

Autonics

▣ Function(PSA/PSB)

1. Change of display unit
PS□−V01(C)(P)/PS□−C01(C)(P) has 7kinds 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/cm^2 , bar, psi, mmHg, inHg, mmH$_2$O
- PS□−01(C)(P), PS□−1(C)(P) :
  kPa, kgf/cm^2 , bar, psi

※When using mmH$_2$O, 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 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 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.
- **PA.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
$Er1$	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 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.
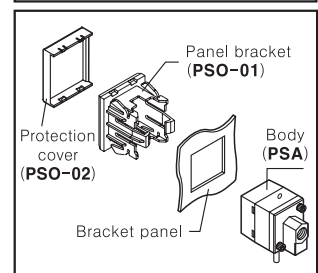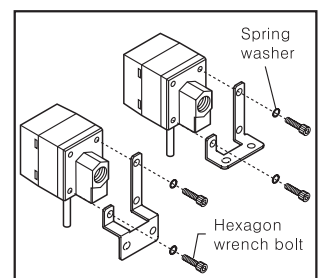
Spring washer
Port plug
Hexagon wrench bolt
13mm spanner
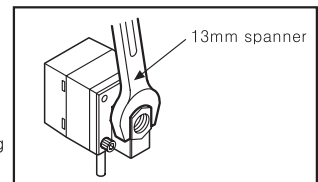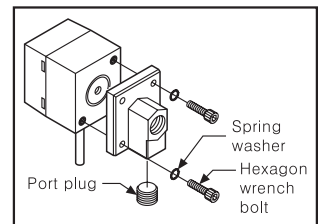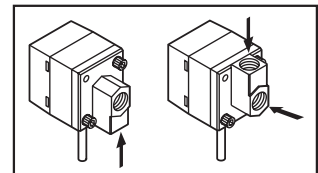
⚠ Caution

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 optional to sell. Please see the pictures for installation.

Spring washer
Hexagon wrench bolt

Panel bracket (**PSO−01**)
Protection cover (**PSO−02**)
Body (**PSA**)
Bracket panel

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.

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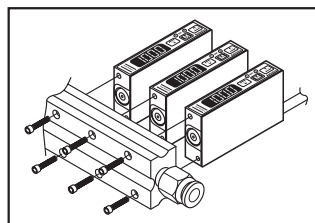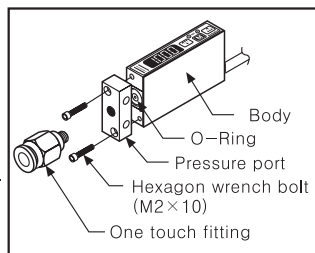
⚠ Caution

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

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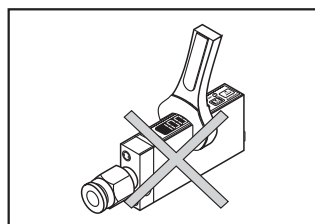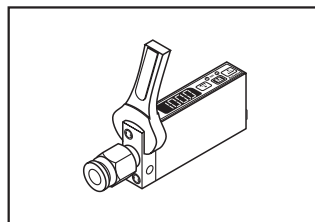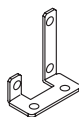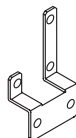
▣ Accessory

●PSA/PSB
• Pressure unit label

±100kPa	-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
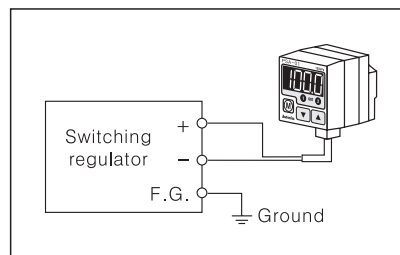
• It may cause malfunction by noise, when wiring with power line or high voltage line.

• 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.
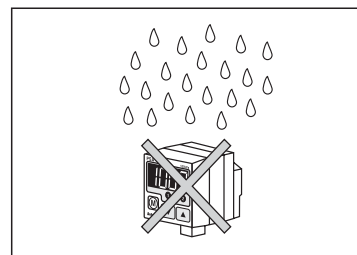
• Wiring must be done with power off.