ACCESSORIES
MPS-33

For your safety, please read the following before using.

① Do not use corrosive or flammable gas or liquid with this product.
② Please use within the operating pressure range. Do not apply pressure beyond recommended maximum pressure, permanent damage to the pressure sensor may occur.
③ Do not drop, hit or allow excessive shock (1000m/s^2 or 100G). Even if switch body appears undamaged, internal components may be broken and can cause malfunction.
④ Turn power off before connecting wiring. Wrong wiring or short circuit will damage and / or cause malfunction.
⑤ Do not use in environment containing steam or oil vapor.
⑥ This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.
⑦ Wiring for pressure sensor should avoid power source line and high voltage line. If use in the same circuit, noise may cause malfunction.

SPECIFICATIONS		MPS-V33 (Vacuum)	MPS-R33 (Compound)	MPS-P33 (Positive)
Rated pressure range		-101 ~ 0kPa	-101 ~ 500kPa	0 ~ 1MPa
Operating /Setting pressure range		10.0 ~ -101.3kPa	-101~ 500kPa	-0.100 ~ 1.000MPa
Withstand pressure		0.3MPa	0.8MPa	1.5 MPa
Fluid		Air, Non-corrosive gases ,incombustible gases		
Set pressure resolution	kPa	0.1	1	—
	MPa	—	—	0.001
	kgf/cm^2	0.001	0.01	
	bar	0.001	0.01	
	psi	0.01	0.1	
	InHg	0.1	—	
	mmHg	1	—	
	mmH$_2$O	0.1	—	
Power supply voltage		12 to 24VDC ±10%, Ripple (P-P) 10% or less		
Current consumption		≦55mA		
Switch output		NPN:open collector 2 outputs Max. load current : 80mA Max. supply voltage: 30VDC Residual voltage :≦1V (load current 80mA)		PNP:open collector 2 outputs Max. load current : 80mA Max. supply voltage: 24VDC Residual voltage :≦1V (load current 80mA)
Repeatability(Switch output)		≦±0.2% F.S. ±1digit		
Hysteresis	Hysteresis mode	Adjustable		
	Window comparator mode	Fixed(3 digits)		
Response time		≦2. 5ms (chattering-proof function: 24ms, 192ms and 768ms selections)		
Output short circuit protection		Yes		
7 segment LED display		3 1/2 digit LED display (Sampling rate: 5 times/1sec.)		
Indicator accuracy		≦±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)		
Indicator		Green LED (OUT1) Red LED (OUT2)		
Analog output ***(Only type** MPS-□33□-□GA-□**)**		Output voltage: 1 to 5V ≦±2.5%F.S. (within rated pressure range) Linearity: ≦±1% F.S.		
Environment	Enclosure	IP40		
	Ambient temp. range	Operation: 0 ~ 50°C,Storage:-20 ~ 60°C (No condensation or freezing)		
	Ambient humidity range	Operation/Storage: 35 ~ 85% RH (No condensation)		
	Withstand voltage	1000VAC in 1-min (between case and lead wire)		
	Insulation resistance	50Mohm min. (at 500VDC M, between case and lead wire)		
	Vibration	Total amplitude 1.5mm,10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X,Y and Z		
	Shock	980m/s^2(100G),3 times each in direction of X,Y and Z		
Temperature characteristic		≦±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C		
Port size		RC:1/8"PT, N:1/8"NPT, G: G1/8"		
Lead wire		Oil-resistance cable(0.15mm^2)		
Weight		Appro*105g(with 2-meter lead wire),Appro*71g(with male connector)		

※품질 향상을 위해 예고없이 사양이 변경될 수 있음
Specifications subject to change without notice.

ORDERING INFORMATION

MPS - ① V 33 ② RC - ③ N ④ G ⑤ A - ⑥ M

① Pressure range

V	Vacuum(-101~0kPa)
P	Positive(0~1MPa)
R	Compound(-101~500kPa)

② Pressure Port

RC	1/8" PT
N	1/8" NPT
G	G1/8"

Option spare part

MPS-ACCK8	Mounting bracket (L3+F3)
MPS-ACCH8	Panel adapter + Front protective lid (PA-1+PA-2+FPC-1)

③ Output Specifications

N	NPN output
P	PNP output

④ Cable specification

G	4-Core 2m lead wire 5-Core 2m lead wire

⑤ Analog output

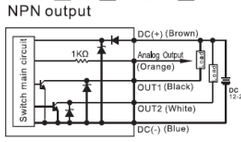
Blank	Without Analog
A	Analog type

⑥ Unit specification

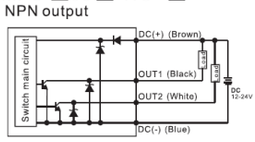
Blank	Unit unchangeable
M	Unit changeable

OUTPUT CIRCUIT WIRING GRAPH

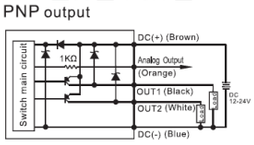
MPS-□33□-NGA-□
NPN output



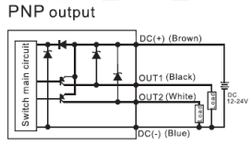
MPS-□33□-NG-□
NPN output



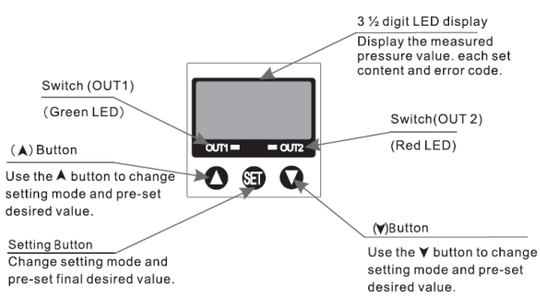
MPS-□33□-PGA-□
PNP output

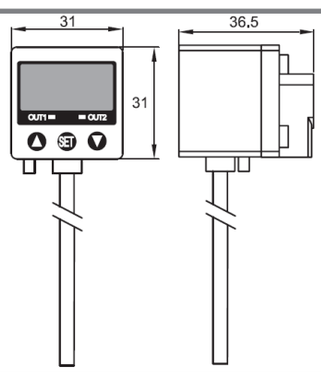


MPS-□33□-PG-□
PNP output



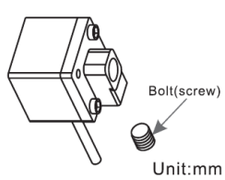
UNIT DIMENSION / PANEL INSTRUCTIONS





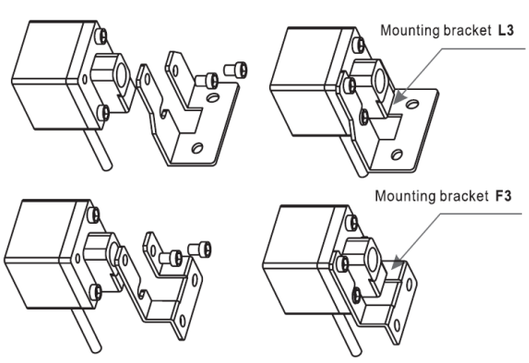
INSTALLATION

1. This product has two inlet pressure ports, select the one most convenient for installation.
2. Please plug the unused inlet port with supplied port plug. Use seal tape to prevent pressure leak.

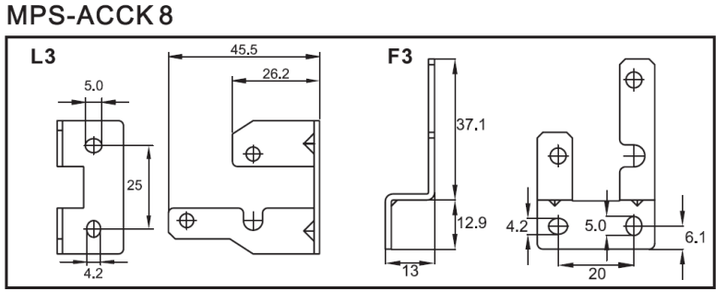


TYPE OF SPARE PARTS / DIMENSION GRAPH

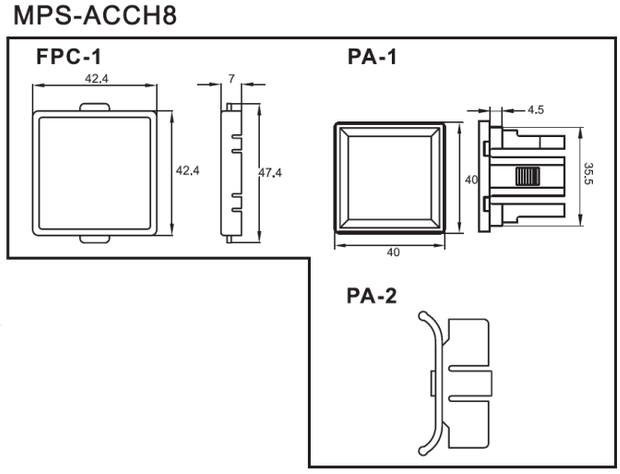
① Mounting bracket



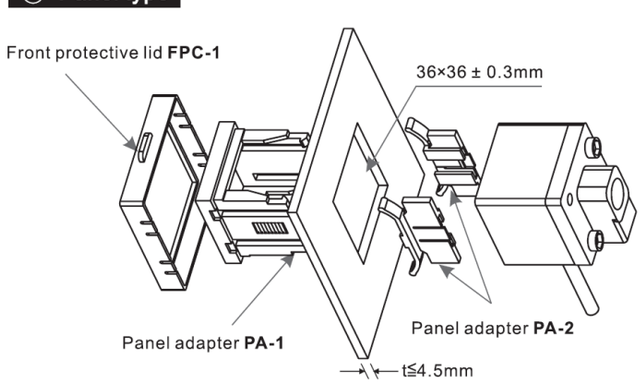
MPS-ACCK 8



MPS-ACCH8



② Panel type



Unit:mm

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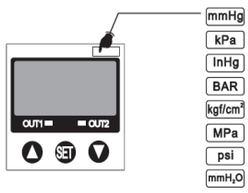
CHANGE PRESSURE UNIT TAG

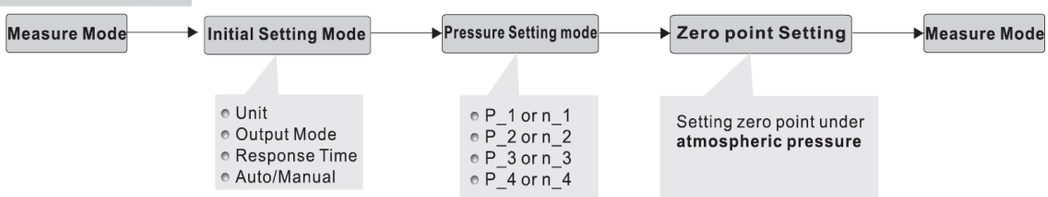
When the pressure setting is not kPa or MPa, please remove the pressure unit tag and place the selected tag on the indicated area of the faceplate to assure the pressure unit is not misemployed and that setting error does not occur.



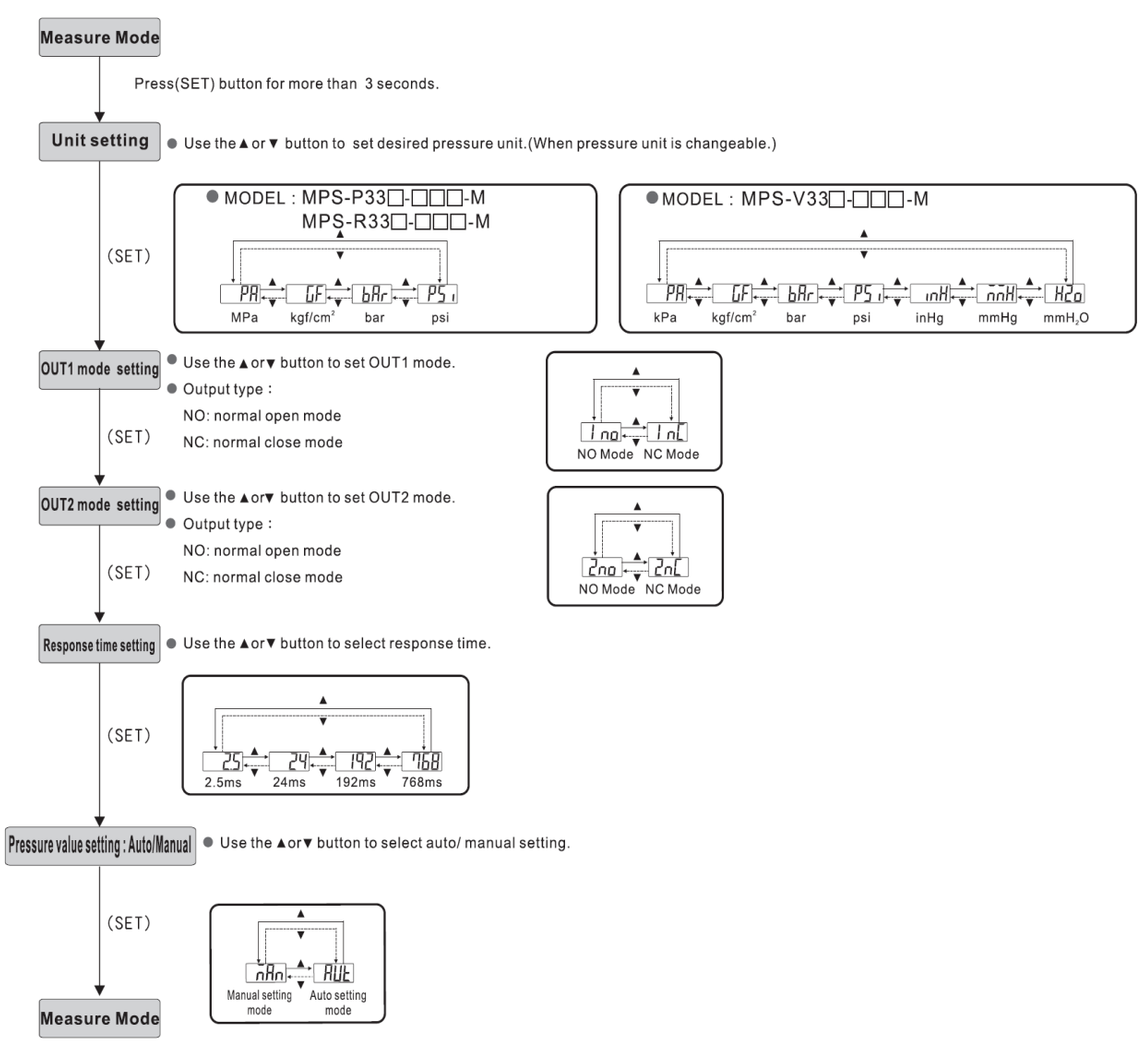
From \ To	Pa	kPa	MPa	kgf/cm²	mmHg	psi	bar	inHg	mmH₂O
1 Pa	1	0.001	0.000001	0.000010197	0.00750062	0.000145038	0.00001	0.0002593	0.101968
1 kPa	1000.000	1	0.001000	0.010197	7.500616	0.145038	0.010000	0.2953	101.9689
1 MPa	1000000	1000	1	10.197	7500.616	145.038	10	295.2998	101968.9
1 kgf/cm²	98066.5	98.0665	0.0980665	1	735.559	14.2233	0.980665	28.95979	10000.20
1 mmHg	133.32	0.13332	0.000133	0.0013595	1	0.019336	0.0013332	0.039370	13.5954
1 psi	6895	6.895	0.006895	0.07031	51.7157	1	0.06895	2.036074	703.07
1 bar	100000.0	100.0000	0.100000	1.01972	750.062	14.5038	1	29.52998	10196.89
1 inHg	3386.388	3.386388	0.003386	0.034530	25.40000	0.491141	0.033863	1	345.324
1 mmH₂O	9.80665	0.00980	-	0.000099	0.0735578	0.00142	0.000098	0.002895	1

【Note :】When using a unit mmH_2O ,please multiply display value by 100.

SETTING STEPS



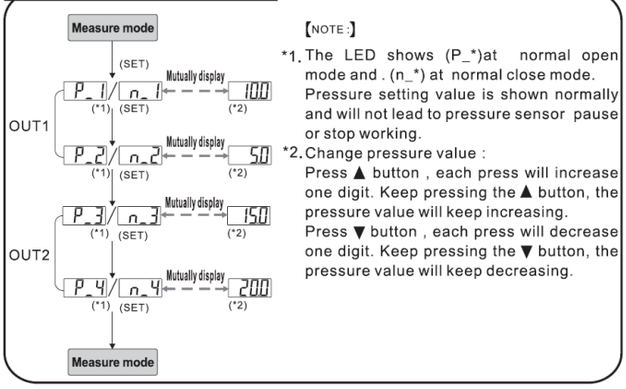
INITIAL SETTING MODE



PRESSURE SETTING MODE

Select auto/manual setting mode during initial set-up

Manual setting mode

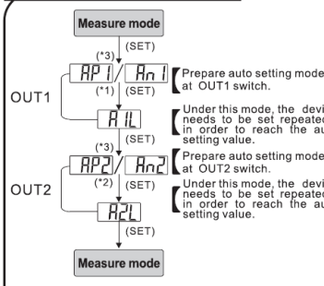


【NOTE :】

*1. The LED shows (P_*)at normal open mode and . (n_*) at normal close mode. Pressure setting value is shown normally and will not lead to pressure sensor pause or stop working.

*2. Change pressure value :
Press ▲ button , each press will increase one digit. Keep pressing the ▲ button, the pressure value will keep increasing.
Press ▼ button , each press will decrease one digit. Keep pressing the ▼ button, the pressure value will keep decreasing.

Auto setting mode



【NOTE :】

*1. In case of without need of OUT1 pressure value setting, press ▼+▲ at the same time to enter (AP2)/(An2).

*2. In case of without need of OUT2 pressure value setting,press ▼+▲ at the same time to enter measure mode.

3. The LED show 「AP」 at normal open mode and 「An*」 at normal close mode.

【Calculation of Setting value】

A=The max. pressure value under auto setting mode.
B=The min. pressure value under auto setting mode.

$$P1(n1),\ P3(n3) = A - \frac{A-B}{4}$$

$$P2(n2),\ P4(n4) = B + \frac{A-B}{4}$$

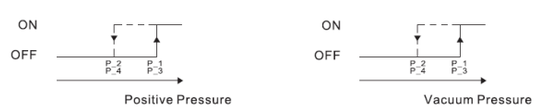
OUTPUT TYPE

Hysteresis Mode : P1(n1)>P2(n2) P3(n3)>P4(n4)

Output hysteresis value can be pre-set.

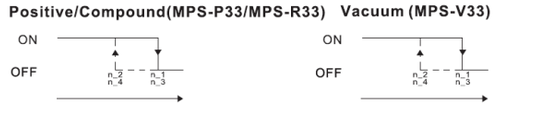
Normal open mode

Positive/Compound(MPS-P33/MPS-R33) Vacuum (MPS-V33)



Normal close mode

Positive/Compound(MPS-P33/MPS-R33) Vacuum (MPS-V33)



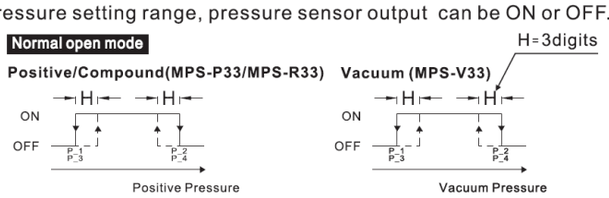
【Note :】 When hysteresis mode setting is within 2 digits, if the input and pre-set pressure is quite near, pressure sensor output might cause chattering.

Window comparator mode : P1(n1)<P2(n2) P3(n3)<P4(n4)

Within pressure setting range, pressure sensor output can be ON or OFF.

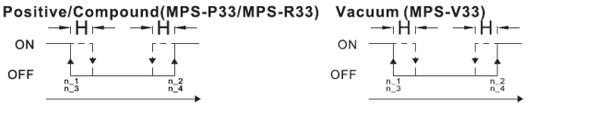
Normal open mode

Positive/Compound(MPS-P33/MPS-R33) Vacuum (MPS-V33)



Normal close mode

Positive/Compound(MPS-P33/MPS-R33) Vacuum (MPS-V33)



Note : Hysteresis is fixed in 3 digits.
Pressure value level setting : At least 6 digits.

ZERO POINT SETTING / THE MAX. & MIN. DISPLAY MODE

Zero setting :

- Press the ▼+▲ button at the same time until the "00" is shown. Release the button to end zero setting.

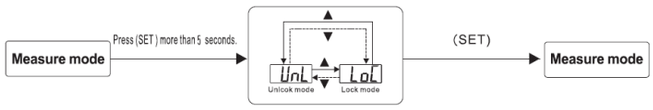
The Max. value display mode :

- Press▲button 2 seconds to enter the max. value mode, pressure sensor will detect the max. value and keep display.
- Press▲button 2 seconds to return to measure mode.

The Min. value display mode :

- Press▼button 2 seconds to enter the min. value mode, pressure sensor will detect the min.. value and keep display.
- Press▼button 2 seconds to return to measure mode.

KEY LOCK/UNLOCK MODE



- Use▼or▲to select key lock/unlock mode.
- Key lock mode can prevent operation mistakes.

ERROR CODE INSTRUCTION

Error Name		Error code	Error instruction	Troubleshooting
Excess load current error	OUT1	Er1	Excess load current of 80 mA	Turn power off and check the cause of overload current or lower the current load under 80 mA, then restart.
	OUT2	Er2		
Residual pressure error		Er3	During zero reset, ambient pressure is over ±3%F.S.	Change input pressure to ambient pressure and perform zero reset again.
Applied pressure error		----	The applied pressure is excess the upper limit of pressure setting.	Adjust the pressure within applied pressure range.
		____	The applied pressure is excess the lower limit of pressure setting.	
System error		Er4	Internal data error	Turn power off, and then restart. If error condition remains, please return to factory for inspection.
		Er6	Internal system error	
		Er7	Internal data error	
		Er8	Internal system error	

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.

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/㎠	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.

※품질 향상을 위해 예고없이 사양이 변경될 수 있음
Specifications subject to change without notice.

▣Pressure conversion chart

from \ to	Pa	kPa	MPa	kgf/㎠	mmHg	mmH_2O	psi	bar	inHg
1kPa	1000.000	1	0.001000	0.010197	7.500616	101.9689	0.145038	0.010000	0.2953
1kgf/㎠	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
1mmH_2O	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.

▣Specifications

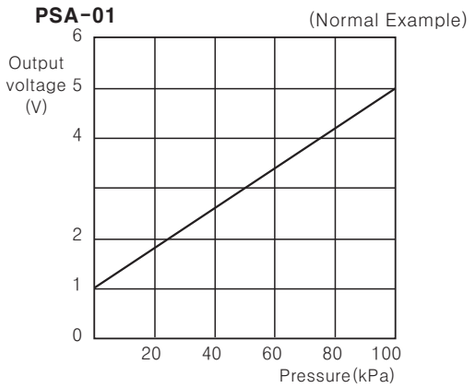
Pressure type		Gauge pressure			
		Vacuum pressure type	**Positive pressure type**		**Compound pressure type**
Model	NPN output	**PSA-V01 PSB-V01 PSB-V01C**	**PSA-01 PSB-01 PSB-01C**	**PSA-1 PSB-1 PSB-1C**	**PSA-C01 PSB-C01 PSB-C01C**
	PNP output	**PSA-V01P PSB-V01P PSB-V01CP**	**PSA-01P PSB-01P PSB-01CP**	**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/cm^2, bar, psi, mmHg, mmH_2O, inHg	kPa, kgf/cm^2, bar, psi		kPa, kgf/cm^2, bar, psi, mmHg, mmH_2O, 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		φ4, 5P, Length : 2m			
Approval		CE			
Unit weight		PSA : Approx. 120g, PSB : Approx. 70g, PSB−C : Approx. 80g			

※**(*1)** F−1 : In F1 mode, hysteresis is variable.
※F.S(Full Scale) is the rated pressure.
※Gross weight is except for packing

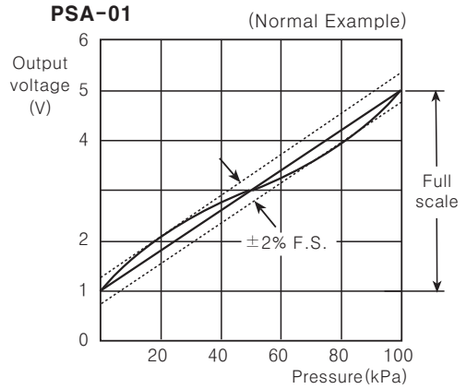
※**(*2)** Display pressure at 25℃ within 0 to 50℃.

※품질 향상을 위해 예고없이 사양이 변경될 수 있음
Specifications subject to change without notice.

●Analog output voltage−Pressure characteristic



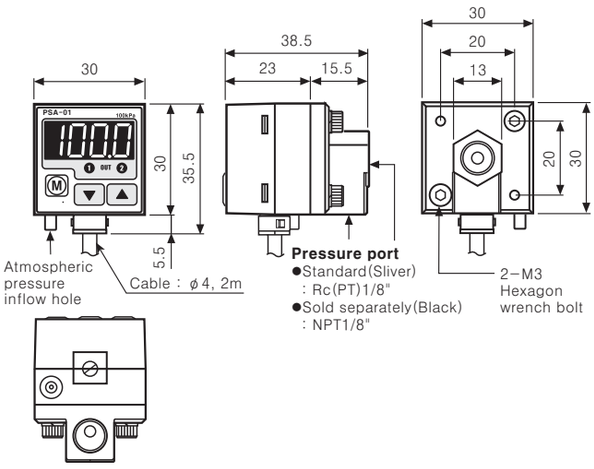
●Analog output voltage−Linear characteristic



▣Dimensions

(Unit:mm)

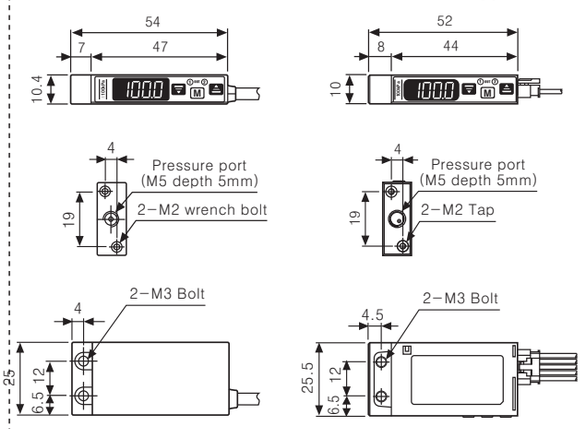
●PSA



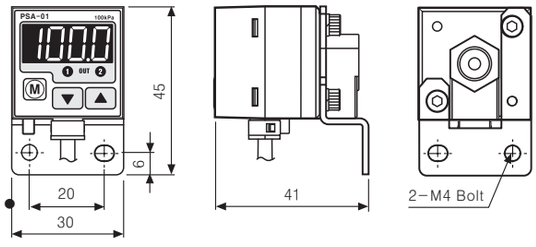
●PSB

(Cable integrated type)

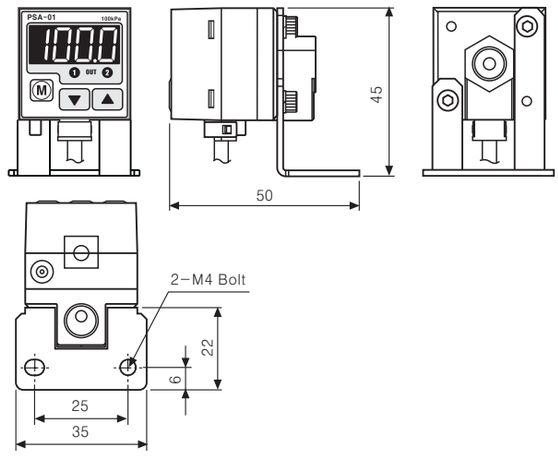
(Connector type)



●Fixing bracket A for mounting(PSA type)

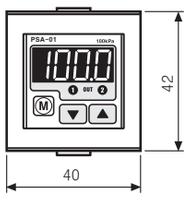


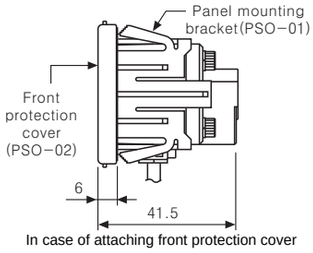
●Fixing bracket B for mounting(PSA type)



※품질 향상을 위해 예고없이 사양이 변경될 수 있음
Specifications subject to change without notice.

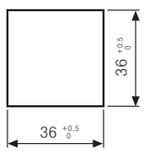
●Panel mounting bracke(PSA type)





In case of attaching front protection cover

●Panel cut-out



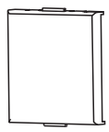
(Panel thickness : 0.8mm to 3.5mm)

●Accessory(Sold separately)

• Panel mounting bracket

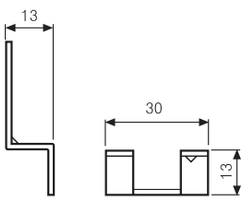
〈 PSO-01 〉

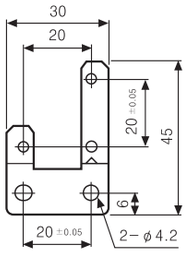
• Front protection cover



〈 PSO-02 〉

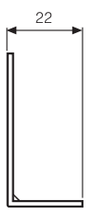
●Bracket A

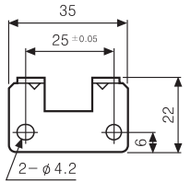


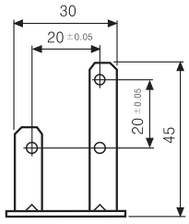


※Bracket A,B are exclusive for PSA

●Bracket B

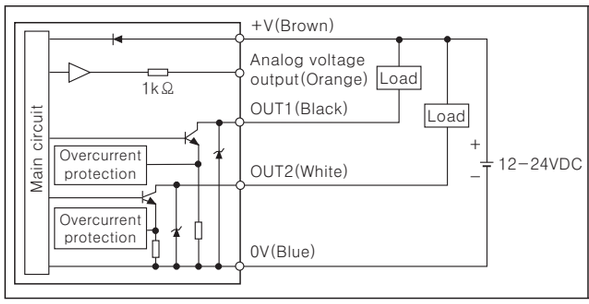




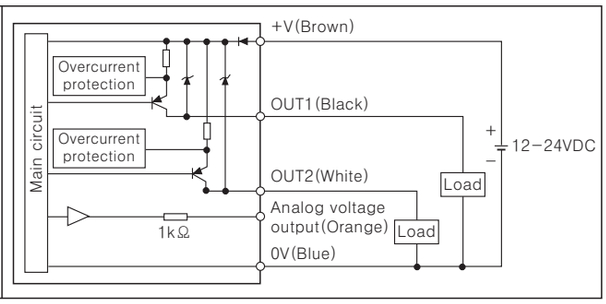


▣Control output diagram(PSA/PSB)

●NPN open collector output



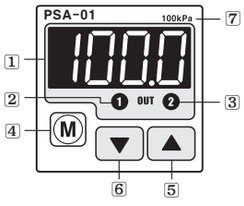
●PNP open collector output



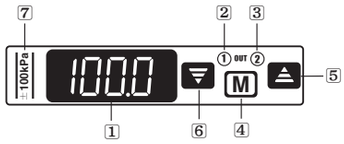
※There is no short-circuit protection in analog voltage output. Do not connect this output to power supply or capacitive load directly.
※Please observe input impedance of connected equipment when use analog voltage output.
And be sure to check voltage drop caused by resistance of extended wire.

▣Front panel identification

(PSA type)

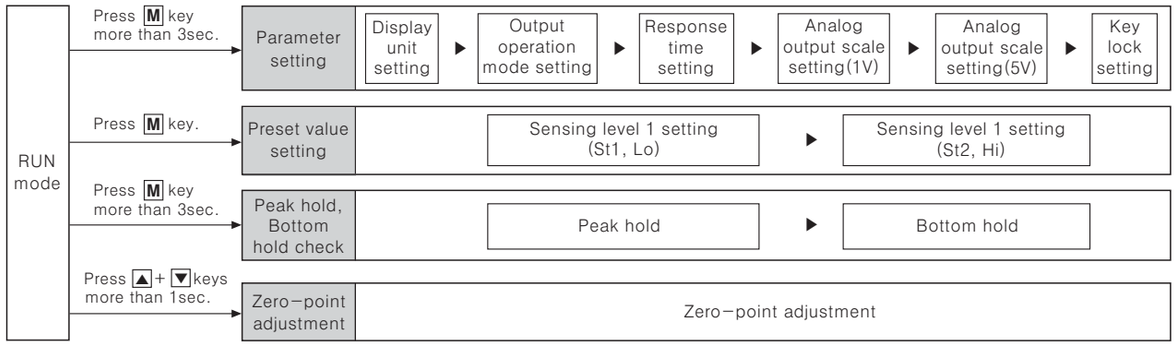


(PSB type)

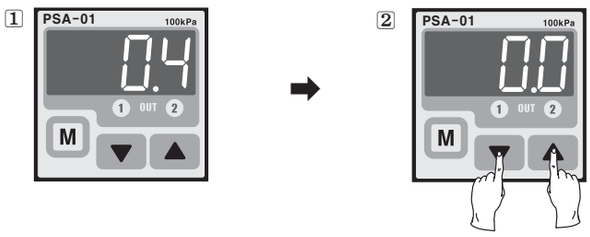


1 **3½ LED display(Red)** : Display sensing pressure, every setting value and display error.
2 **1 output indicator(Red)** : Output 1 is ON, LED will be ON.
3 **2 output indicator(PSA:Red, PSB:Green)** : Output 2 is ON, LED will be ON.
4 **Mode key** : Parameter setting mode or preset setting mode, save 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)

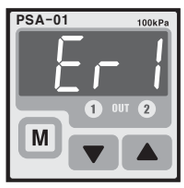


▣Zero point adjustment(PSA/PSB)



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.

▣Parameter setting(PSA/PSB)

RUN mode

Press [M] more than 3sec.

Unt — **Display unit setting**

Press [M] key

oUt — **Output operation mode setting**

Press [M] key

SPd — **Response time setting**

Press [M] key

A-1 — **Analog output scale setting (1VDC)**

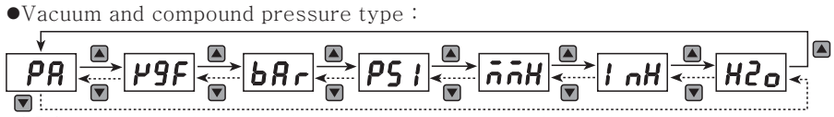
A-5 — **Analog output scale setting (5VDC)**

PEY — **Key Lock**

Press [M] key

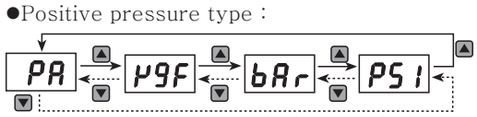
Unt and previous unit will flash by turning on.(0.5sec.)
Select the unit with ▲ key. (Press [M] key momentarily, the unit will be saved, then move to the next mode.)

●Vacuum and compound pressure type :



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

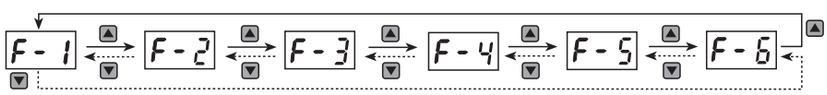
●Positive pressure type :



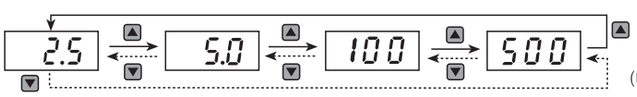
(kPa) (kgf/cm²) (bar) (psi)

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

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

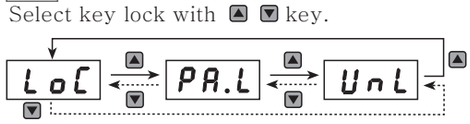


(Unit : ms)

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 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

PEY and the previous key lock will flash by turning on(0.5sec.)
Select key lock with ▲ ▼ 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 ▼ 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 [M] 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 setting(PSA/PSB)

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

Press M key for 3 sec. in RUN mode.

Press M key →

Press M key →

Press M key → **RUN mode**

↕ Display alternates by 0.5sec.

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.

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)

Press M key for 3 sec. in RUN mode.

Press M key →

Press M key →

Press M key →

Press M key → **RUN mode**

↕ Display alternates by 0.5sec.

After applying St1 into Pressure port, then press ▲ key. (It is able to set repeatedly by ▲ key)

↕ Display alternates by 0.5sec.

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.

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)

Press M key for 3 sec. in RUN mode.

Press M key →

Press M key →

Press M key → **RUN mode**

↕ Display alternates by 0.5sec.

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

↕ Display alternates by 0.5sec.

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.

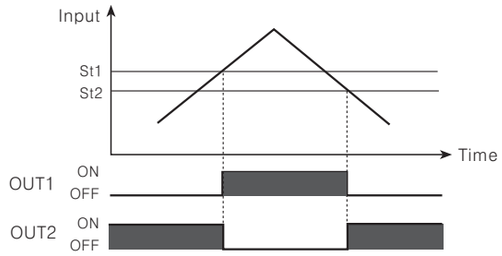
▣Peak hold and bottom hold check

1. Press ▲ for more than 3sec. in RUN mode.
2. PEAH and memorized max. pressure(Vacuum pressuretype is for max. vacuum pressure) will flash by turning on (0.5sec.) then display peak hold value.
3. boAH 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.

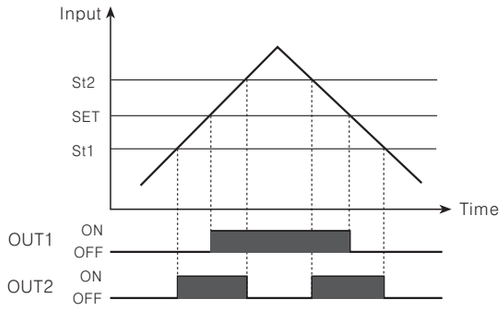
▣Output operation mode(PSA/PSB)

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)

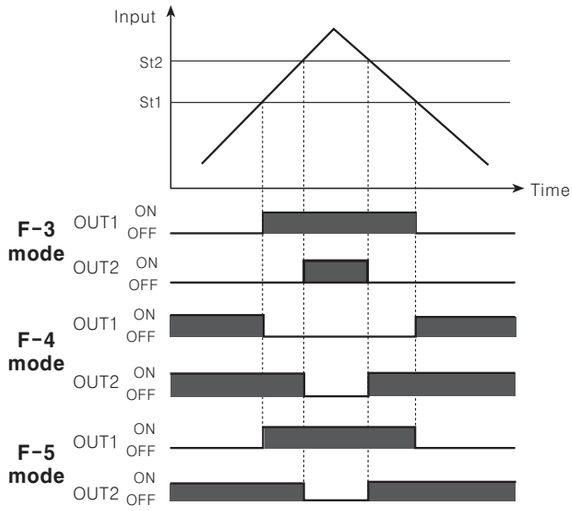


※This function is to set pressure sensing level to the proper position automatically, it is set by received pressure from two position(St1, St2).
※The sensing hysteresis fixed to 1 digit(2 digits for psi unit and compound type)
※Sensing(SET) value will be calculated as below.

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

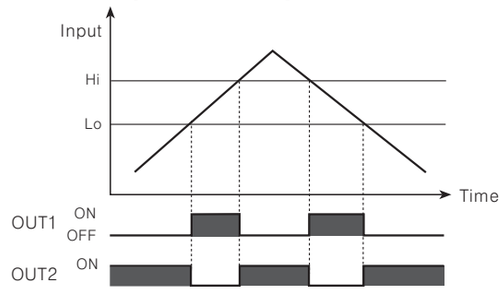
• OUT 1 : When applying pressure is larger than SET value, it will be ON.
• OUT 2 : When applying pressure is between St1 and St2, it will be ON.
Note1) If it is not enough for difference of sensing level between St1 and St2, Er3 will be displayed.
Please set again after applying enough pressure.
Note2) 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).

▣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, mmH₂O
- PS□-01(C)(P), PS□-1(C)(P) :
  kPa, kgf/cm² , bar, psi

※When using mmH₂O, 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

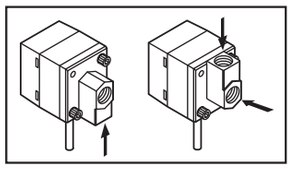
This function is diagnosis malfunction of the system caused by parasitic pressure or to check through memorizing the max./min. pressure that occurred in the system. ---

8. Error display function

Error display	Description	Troubleshooting
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	

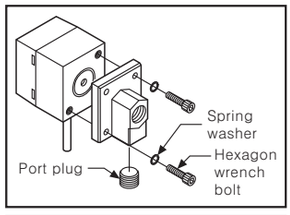
▣Installation(PSA)

1. When installing pressure port, it is able to bring pressure from 3 directions by changing the mounting direction of the pressure port.



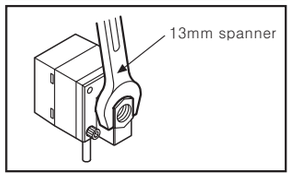
2. Basic spec of pressure port is Rc(PT) 1/8"(Color:Silver). [Option:NPT 1/8(Color:Black)] It is able to use general one touch fitting.

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.

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.

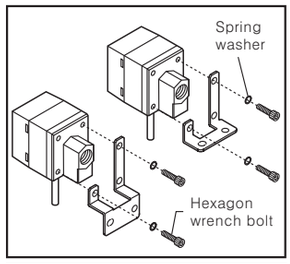


⚠Caution

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

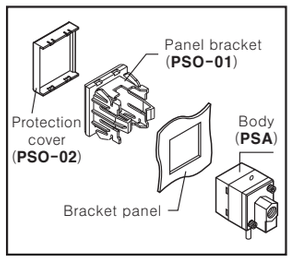
6. PSA series has 2 kinds of brackets so it is able to install it in two different ways.

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.

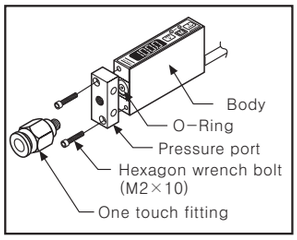


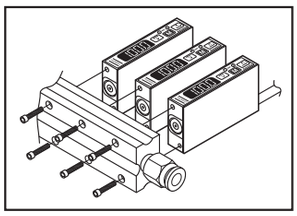
▣Installation(PSB)

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.

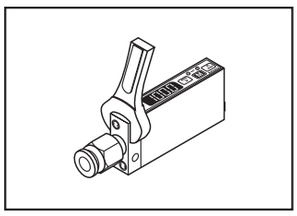
3. Please connect it by using spanner(10mm) at pressure port in order not to overload on the body when connecting one touch fitting.

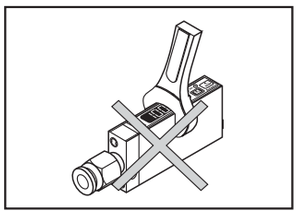




⚠ Caution

The tightening torque of one touch fitting and hexagon wrench should be max. 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

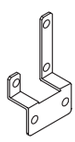
±100kPa	-101.3kPa	100kPa	1MPa
±1.02kgf/cm²	-1.034kgf/cm²	1.020kgf/cm²	10.20kgf/cm²
±14.50psi	-14.70psi	14.50psi	145.0psi
±1.000bar	-1.013bar	1.000bar	10.00bar
±750mmHg	-760mmHg	X10	X10
±29.5inHg	-29.9inHg	X100	X100
±102.0mmH₂O	-103.4mmH₂O	X1000	X1000

DISPLAY UNIT LABEL

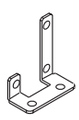
●PSA

• Port plug

• Bracket A



• Bracket B



▣Proper usage

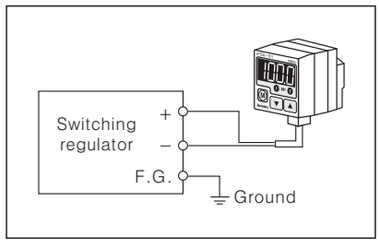
⚠ Caution

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.).

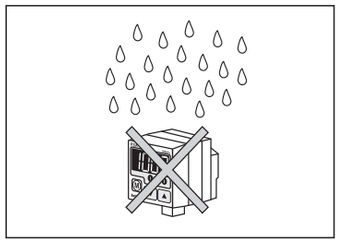


• It may cause malfunction by noise, when wiring with power line or high voltage line.

• 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.