



# Pressure Sensor

## ■ Pressure conversion chart

from to	Pa	kPa	MPa	kgf/cm <sup>2</sup>	mmHg	mmH <sub>2</sub> O	psi	bar	inHg
1Pa	1	0.001	0.000001000	0.000010197	0.007501	0.101972	0.000145038	0.000010000	0.0002953
1kPa	1000.000	1	0.001000	0.010197	7.500616	101.9716	0.145038	0.010000	0.2953
1MPa	1000000	1000	1	10.197162	7500.61683	101971.553	145.038243	10	295.299875
1kgf/cm <sup>2</sup>	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 <sub>2</sub> O	9.80665	0.00980	-	0.000099	0.0735578	1	0.00142	0.000098	0.002895
1psi	6894.757	6.89757	0.00689	0.070307	51.71630	703.07	1	0.068947	2.036003
1bar	100000.0	100.0000	0.100000	1.019689	750.062	10196.89	14.50339	1	29.52998
1inHg	3386.417	3.388418	0.003386	0.034532	25.40022	345.31849	0.491158	0.033863	1

Ex) For 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							
		Negative pressure		Standard pressure		Compound pressure			
Model	Voltage(1-5VDC) output	PSAN-(L)V01C(P)V-□		PSAN-(L)01C(P)V-□		PSAN-(L)1C(P)V-□			
	Current(DC4-20mA) output	PSAN-(L)V01C(P)A-□		PSAN-(L)01C(P)A-□		PSAN-(L)1C(P)A-□			
	Hold/Auto shift input	PSAN-(L)V01C(P)H-□		PSAN-(L)01C(P)H-□		PSAN-(L)1C(P)H-□			
Rated pressure range		0.0 to -101.3kPa		0.0 to 100.0kPa		0 to 1,000kPa			
Display pressure range		5.0 to -101.3kPa		-5.0 to 110.0kPa		-50 to 1,100kPa			
Min. display unit		0.1kPa		0.1kPa		1kPa			
Max. pressure range		2 times of rated pressure		2 times of rated pressure		1.5 times of rated pressure			
Applied vapor		• <b>Pneumatic type</b> - Air, Non-corrosive gas							
Applied fluid		• <b>Fluid type</b> - Air, Non-corrosive gas and fluid that will not corrode SUS316L							
Power supply		12V-24VDC ±10%(ripple P-P:Max. 10%)							
Current consumption		Max. 50mA(Analog Current Output type Max 75mA)							
Control output		NPN or PNP open collector output • Load voltage: Max. 30VDC • Load current: Max. 100mA • Residual voltage - NPN: Max. 1V, PNP: Max. 2V							
Hysteresis ※2		Min. display range							
Repeat error		±0.2%F.S. ± Min. display range							
Response time		Selectable 2.5ms, 5ms, 100ms, 500ms, 1000ms							
Short circuit protection		Built-in							
Analog output ※3	Voltage output	• Output voltage: 1-5VDC ±2% F.S. • Linear: Within ±1% F.S. • Output impedance: 1kΩ • Zero point: Max. 1VDC ±2% F.S. • Span: Max. 4VDC ±2% F.S. • Response time: 50ms • Resolution: Automatically changed to 1/1000 or 1/2000 by display unit							
	Current output	• Output current: DC4-20mA ±2% • Linear: Max. ±1% F.S. • Zero-point: Max. DC4mA ±2% F.S. • Span: Max. DC16mA ±2% F.S. • Response time: 70ms • Resolution: Automatically changed to 1/1000 or 1/2000 by display unit							
Display digit		4½digit							
Display method		7 segment LED Display							
Min. Display interval ※4	Resolution	1000	2000	1000	2000	1000	2000	1000	2000
	Pressure unit	—	—	—	—	—	—	—	—
	MPa	—	—	0.001	—	0.001	—	—	—
	kPa	0.1	—	0.1	—	1	—	—	0.1
	kgf/cm <sup>2</sup>	0.001	—	0.001	—	0.01	—	—	0.001
	bar	0.001	—	0.001	—	0.01	—	—	0.001
	psi	—	0.01	—	0.01	—	0.1	—	0.02
	mmHg	—	0.4	—	—	—	—	—	0.8
	inHg	—	0.02	—	—	—	—	—	0.03
	mmH <sub>2</sub> O	0.1	—	—	—	—	—	—	0.1
Display accuracy		0°C to 50°C : Max. ±0.5% F.S., -10 to 0°C : Max. ±1% F.S.							
Dielectric strength		1000VAC 50/60Hz for 1 minute							
Insulation resistance		Min. 50MΩ(at 500VDC megger)							
Vibration		1.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z direction for 2 hours							
Environment	Ambient temperature	-10 to 50°C, storage : -20 to 60°C							
	Ambient humidity	30 to 80%RH, storage : 30 to 80%RH							
Protection		IP40(IEC specification)							
Material		• <b>Pneumatic type</b> - Front case: PC, Rear case: PC, Pressure port: Nickel Plated Brass • <b>Fluid type</b> - Front case: PC, Rear case: PA6, Pressure port: SUS316L							
Cable		Connector cable (ø4, 5-wire, Length: 2m) (AWG 24, Core diameter : 0.08mm, Number of cores : 40, Insulator out diameter: ø1mm)							
Approval		CE							
Weight ※5		• <b>Pneumatic type</b> - Approx. 165g(Approx. 80g) • <b>Fluid type</b> - Approx. 173g(Approx. 88g)							

※1: For '(L)', '(P)', '□' of model name, refer to 'Ordering information'.

※2: In hysteresis output mode, detection difference is variable.

※3: It is allowed to select one analog output type only.

※4: Resolution(1000/2000) of min. Display interval is automatically selected depend on pressure units.

※5: This weight is with packaging and the weight in parentheses is only unit weight.

※F.S. : Rated pressure.

※ There may be ±1digit error in hysteresis by pressure unit calculation error.

※ Environment resistance is rated at no freezing or condensation.

(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 mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/Logic panel

(S) Field network device

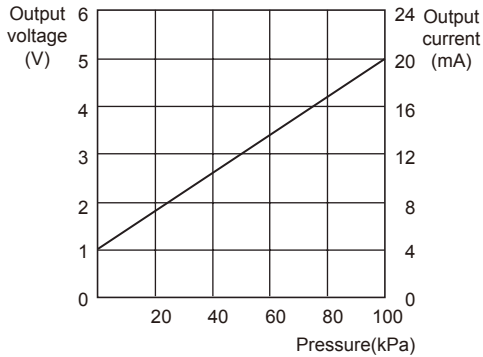
(T) Software

(U) Other

# PSAN Series

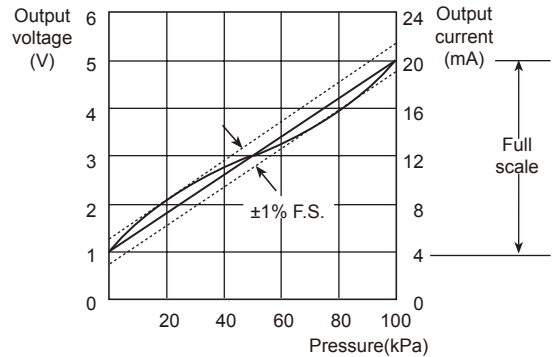
## ● Analog output voltage and current - Pressure characteristic

### PSAN-01



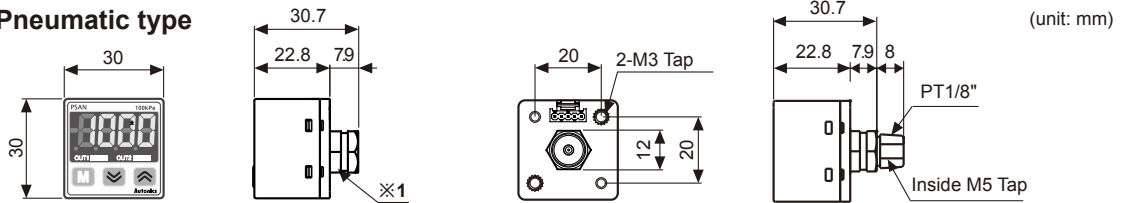
## ● Analog output voltage and current - Linear characteristic

### PSAN-01



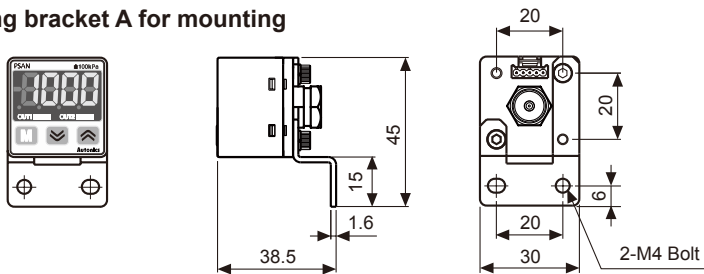
## ■ Dimensions

### ◎ Pneumatic type

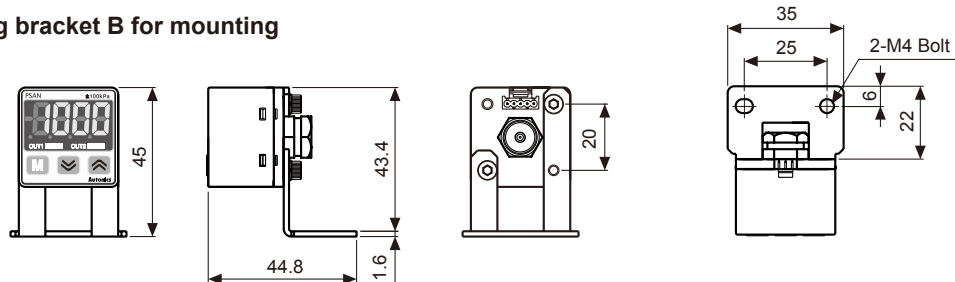


※1: PT1/8"(Standard), NPT1/8"(Option) Depth 8mm

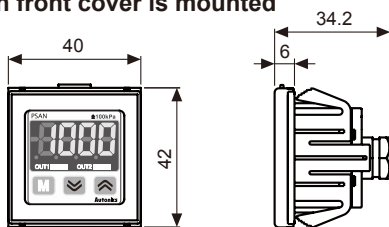
### ● Fixing bracket A for mounting



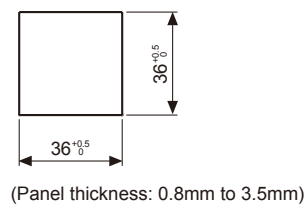
### ● Fixing bracket B for mounting



### ● When front cover is mounted



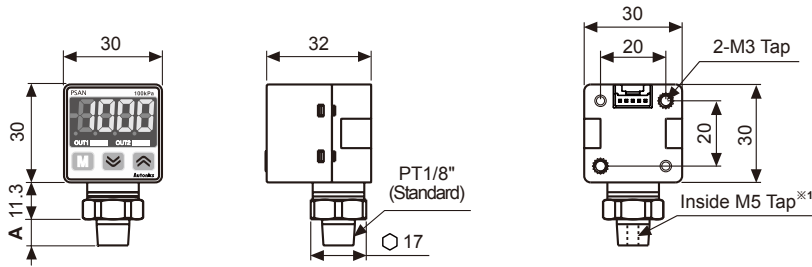
### ● Panel cut-out



# Pressure Sensor

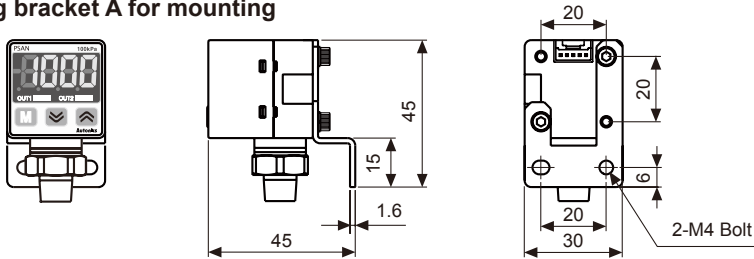
## ◎ Fluid type

(unit: mm)

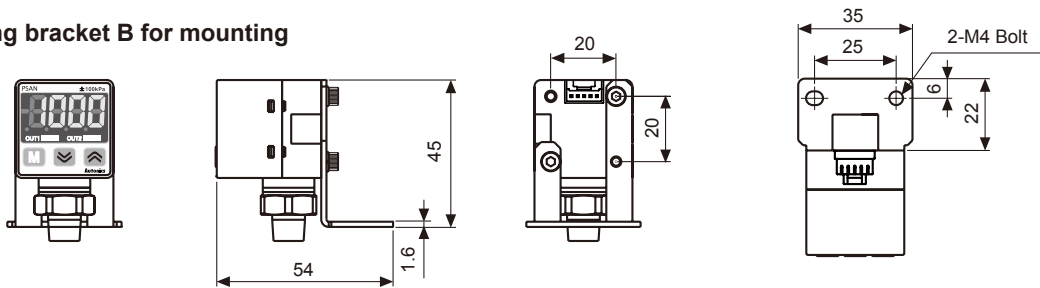


※ (A) PT1/8" model(Standard): 8, NPT1/8" model: 8, 7/16"-20 UNF model: 11  
 ※ 1: Only for PT1/8" model, NPT1/8" model

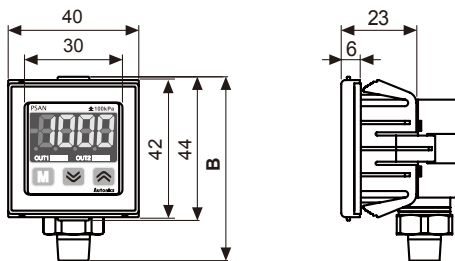
## ● Fixing bracket A for mounting



## ● Fixing bracket B for mounting

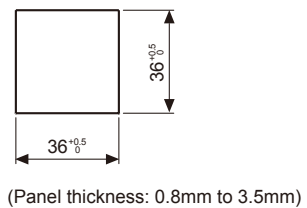


## ● When front cover is mounted



※ (B) PT1/8" model(Standard): 56.3, NPT1/8" model: 56.3, 7/16"-20 UNF model: 59.3

## ● Panel cut-out



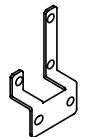
## ◎ Accessory

### ● Pressure unit label

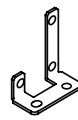
±100kPa	-101.3kPa	2kPa	10kPa	100kPa	1MPa
±1.020kgf/cm <sup>2</sup>	-1.034kgf/cm <sup>2</sup>	2.040kgf/cm <sup>2</sup>	10.20kgf/cm <sup>2</sup>	1.020kgf/cm <sup>2</sup>	10.20kgf/cm <sup>2</sup>
±14.50psi	-14.70psi	29.00psi	145.0psi	14.50psi	145.0psi
±1.000bar	-1.013bar	2.000bar	10.00bar	1.000bar	10.00bar
±750mmHg	-760mmHg			/100	/100
±29.5inHg	-29.9inHg				
±102.0mmH <sub>2</sub> O	-103.4mmH <sub>2</sub> O	2.040mmH <sub>2</sub> O	10.20mmH <sub>2</sub> O	X100	X100

DISPLAY UNIT LABEL

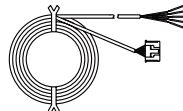
### ● Bracket A



### ● Bracket B

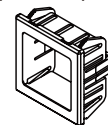


### ● Connector cable (PSO-C01, 2m)

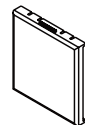


## ◎ Sold separately

### ● Panel mounting bracket (PSO-P01)



### ● Front protection cover (PSO-B02)



### ● M5 Gender (PSO-Z01)



(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 mode power supply

(Q) Stepper motor& Driver&Controller

(R) Graphic/ Logic panel

(S) Field network device

(T) Software

(U) Other

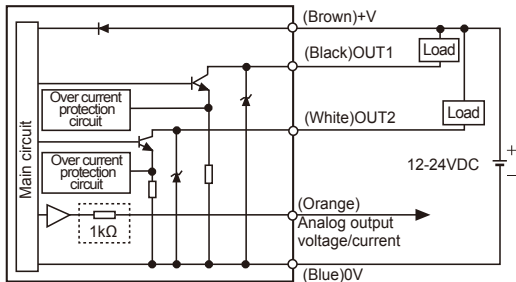
# PSAN Series

## Control output diagram

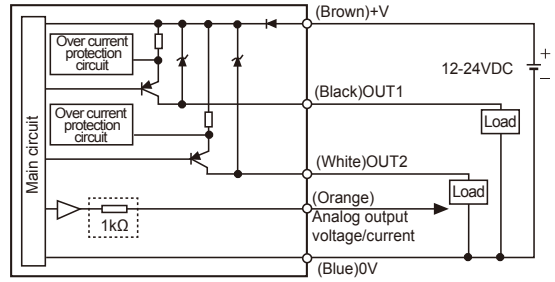
⊙ Voltage (1-5VDC) output type (PSAN-□□□□□V-□)

Current(DC4-20mA) output type (PSAN-□□□□□A-□)

### • NPN open collector output type



### • PNP open collector output type



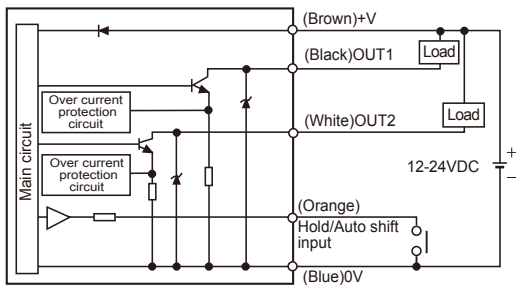
※In case of analog voltage output type models short-circuit protection is not embodied. ( : For voltage output type only.) Do not connect with power source or load directly.

※Be careful with input impedance of connecting devices when using analog voltage output type models.

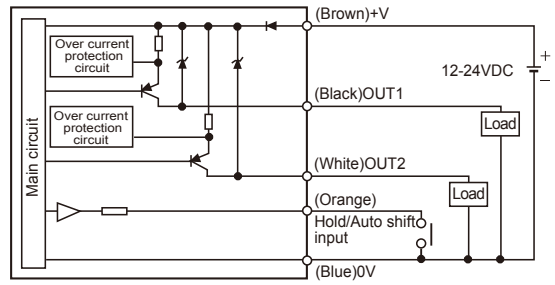
※Be careful with voltage drop due to cable resistance when extending sensor cable.

⊙ Hold/Auto shift input (PSAN-□□□□□H-□)

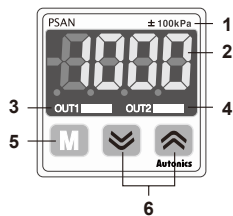
### • NPN open collector output type



### • PNP open collector output type



## Front panel identification and function



### 1. Range of rated pressure

: It is possible to change the pressure unit in Pressure sensor.  
Use different unit as label for your application.

### 2. 4digit LED display(Red)

: Used to indicate measured pressure value, setting value and error message.

### 3. Output1 indicator(Red): Output 1 is ON, LED will be ON.

### 4. Output2 indicator(Green): Output 2 is ON, LED will be ON.

### 5. M key: Used to enter into Preset/Parameter setting mode and to save Setting mode.

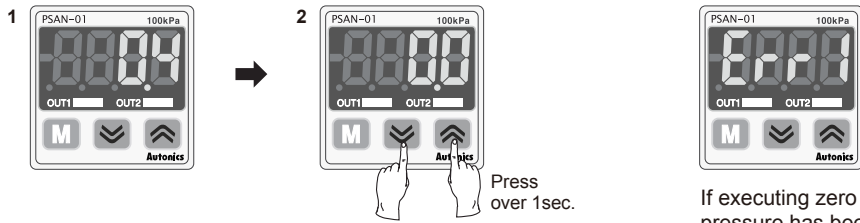
### 6. (Peak Hold) key: Used to set parameter and preset, peak value check mode, function setting or output operation mode.

(Peak Hold) + (Zero-Point) key : Used for zero point adjustment function by pressing (Peak Hold) + (Zero-Point) keys over 1 sec simultaneously in RUN mode.

## Setting

RUN mode	Press (M) key over 3sec.	Parameter setting	Pressure unit setting	Output operation mode setting	Output type setting	Response time setting	Analog output scale and Hold/Auto Shift input setting	Key lock setting	
	(M)	Preset value setting	Detection level 1 setting (out1) ▶ Detection level 2 setting (out2)						
	Press (Peak Hold) key over 3sec.	Forced output control mode setting	The forced output control mode is applied with pressing (M) key after selecting forced output control mode [F_oU_t] in output operation mode [oU_t_s] parameter. For more detailed information, refer to '• Forced output control mode' '■ Output operation mode'						
	Press (Peak Hold) key over 3sec.	Peak hold	High peak value check	Low peak value check	Auto shift input setting (In case of Hold/Auto shift input type model)				
	Press (Peak Hold) + (Zero-Point) keys over 1sec.	Zero-point adjustment	Zero-point adjustment						

## Zero point adjustment

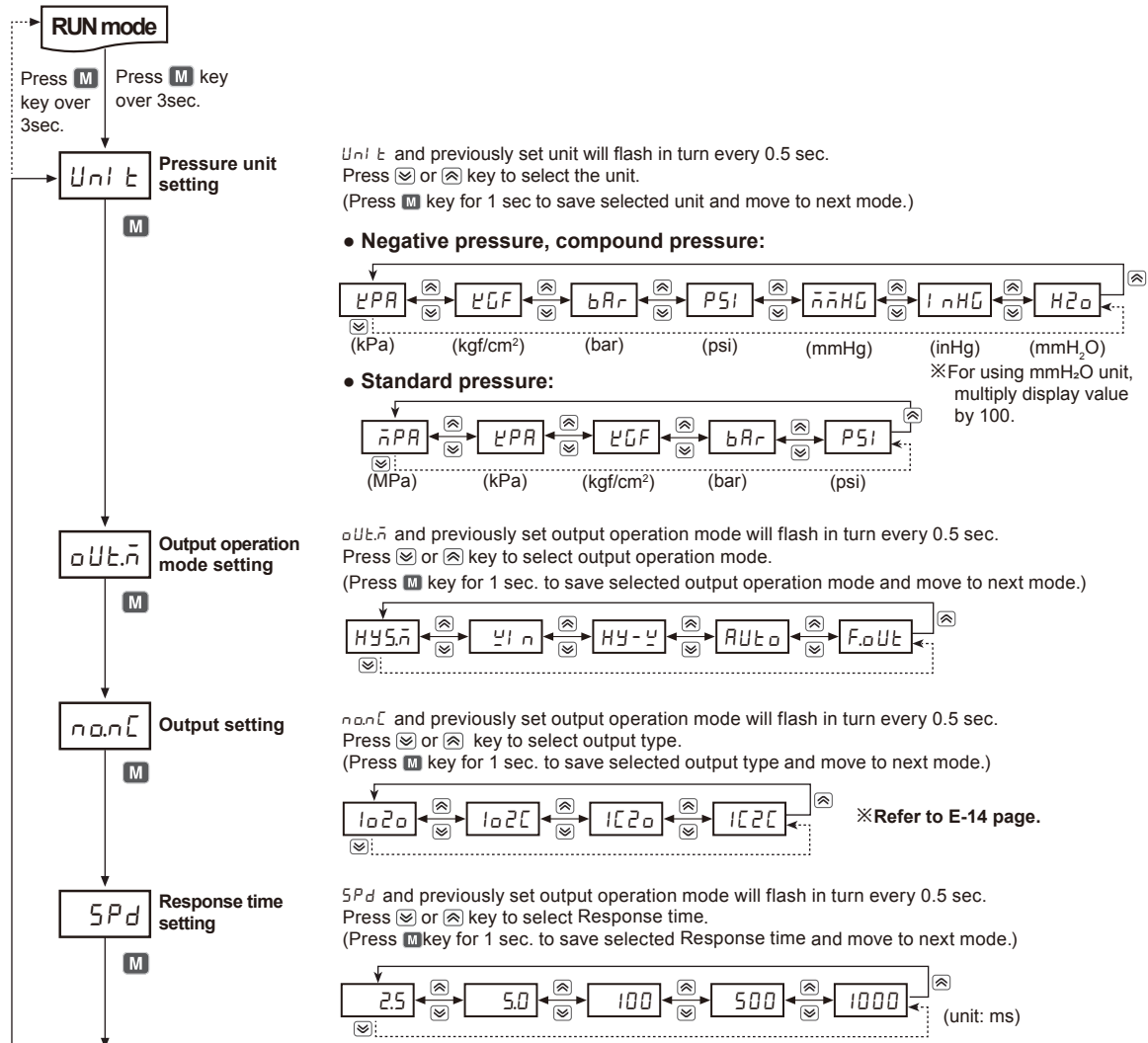


1. In state of atmospheric pressure during RUN mode, press  $\checkmark$  key and  $\otimes$  key at the same time for over 1sec.
  2. When the zero-point adjustment is completed, it will display 0.0 and return to RUN mode automatically.
- ※Please execute zero-point adjustment regularly.

If executing zero point adjustment when external pressure has been applied, *Error* will flash. Please execute zero-point adjustment again in state of atmospheric pressure without external pressure.

## Parameter setting

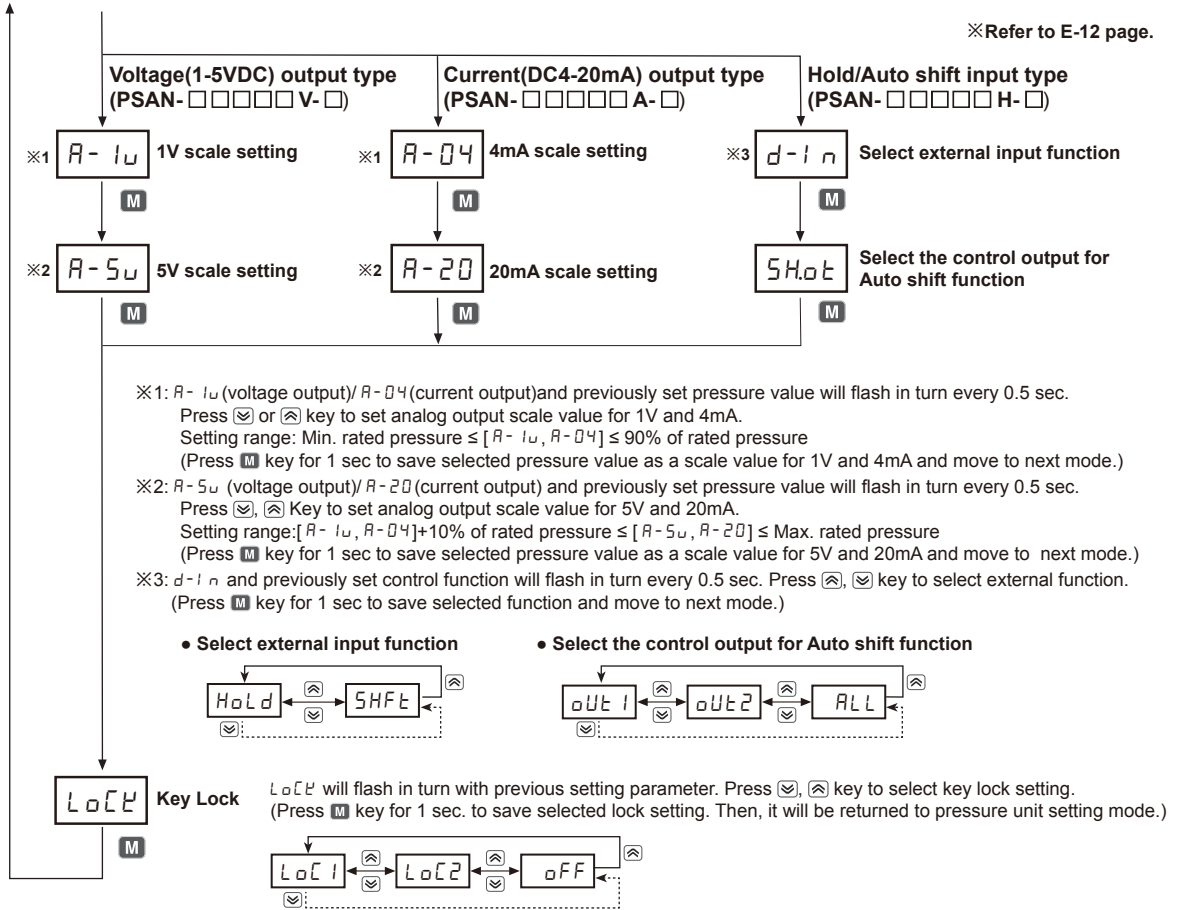
1. It is able to set pressure unit, display resolution, output operation mode, output type, Response time, analog output scale, Hold/Auto shift and key lock setting in parameter setting mode.
2. If the key lock is set (lock1 or lock2), unlock the key lock before setting parameters. (Refer to Key Lock setting below.)



(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 mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/ Logic panel
(S)	Field network device
(T)	Software
(U)	Other

# PSAN Series

※Refer to E-12 page.

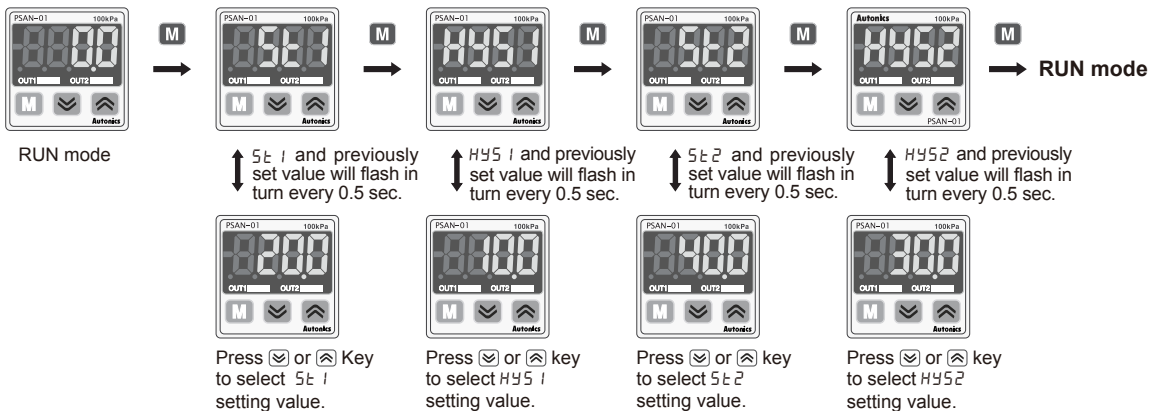


※When pressing **M** key for 3 sec. in the middle of parameter setting, current setting value will be saved in EEPROM and it will be returned to RUN mode.

※All settings are saved in EEPROM regardless of power failure. Make sure that EEPROM has a limited write life cycle(100,000 times).

## ■ Preset setting

### ◎ Hysteresis mode [HY5 $\bar{n}$ ]



※5t1 setting range : Min. display pressure < 5t1  $\leq$  Max. display pressure

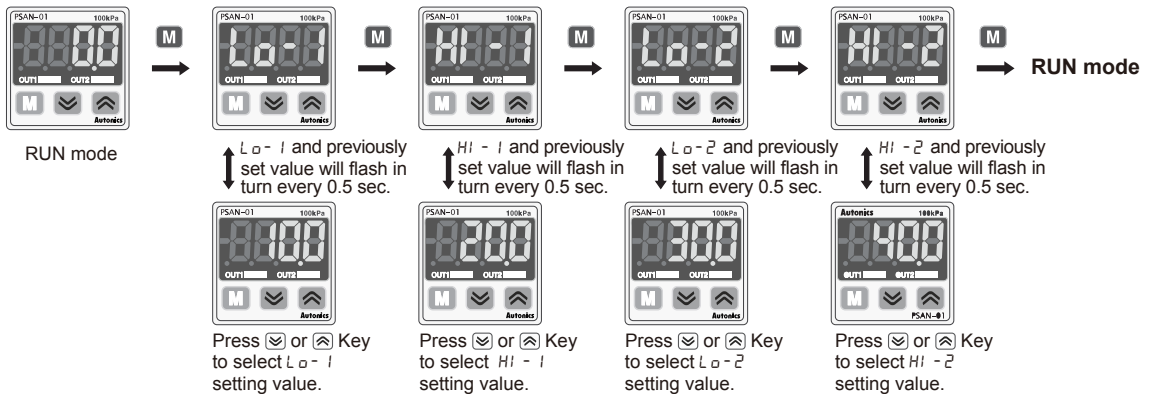
※HY51 setting range : Min. display pressure < HY51  $\leq$  5t1

※5t2 setting range : Min. display pressure < 5t2  $\leq$  Max. display pressure

※HY52 setting range : Min. display pressure < HY52  $\leq$  5t2

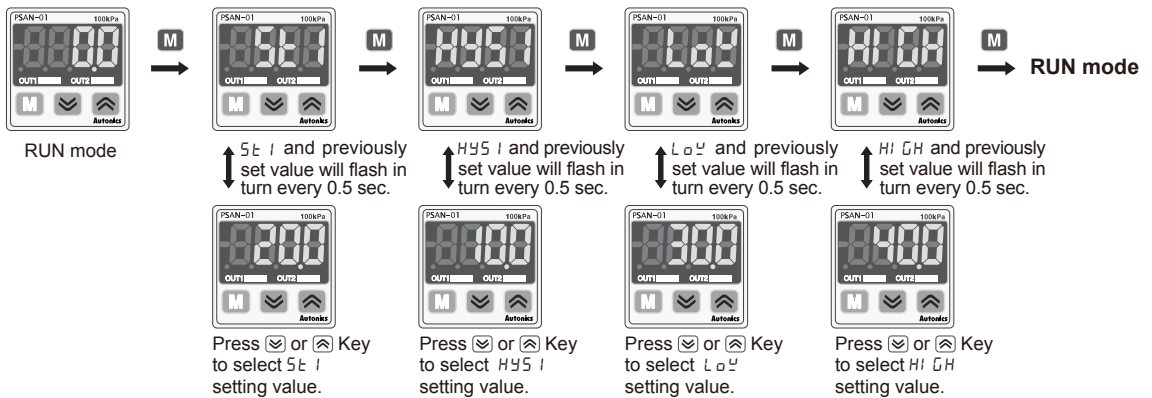


## ◎ Window comparison output mode [ ㉞ ㉟ ]



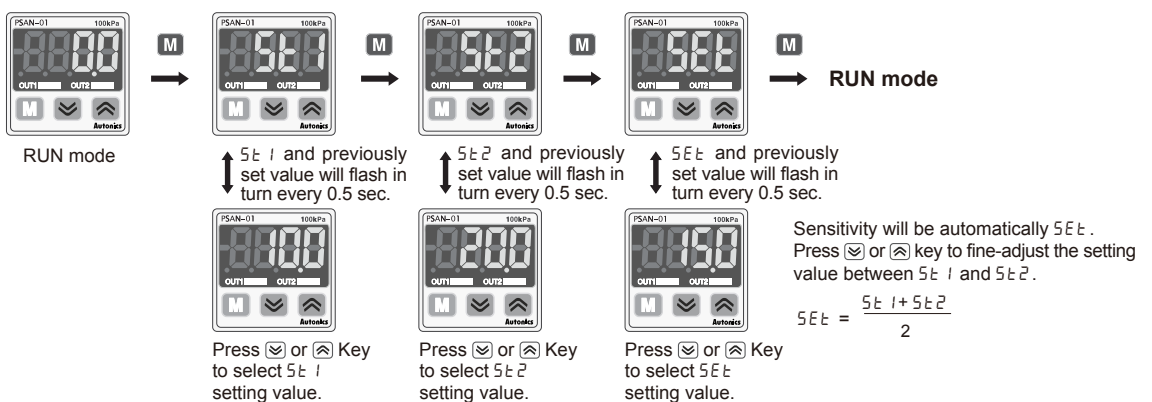
- ※ **LO-1** setting range: Min. display pressure < **LO-1** ≤ Max. display pressure - (3×Min. display interval)
- ※ **HI-1** setting range: **LO-1** + (3×Min. display interval) ≤ **HI-1** ≤ Max. display pressure
- ※ **LO-2** setting range: Min. display pressure < **LO-2** ≤ Max. display pressure - (3×Min. display interval)
- ※ **HI-2** setting range: **LO-2** + (3×Min. display interval) ≤ **HI-2** ≤ Max. display pressure
- ※ The minimum display interval for hysteresis is fixed to 1.

## ◎ Hysteresis-Window comparison output mode [ ㉞ ㉟ ]



- ※ **5E1** setting range: Min. display pressure < **5E1** ≤ Max. display pressure
- ※ **HYS1** setting range: Min. display pressure < **HYS1** ≤ **5E1**
- ※ **LO2** setting range: Min. display pressure < **LO2** ≤ Max. display pressure - (3×Min. display interval)
- ※ **HI2** setting range: Low value + (3×Min. display interval) ≤ **HI2** ≤ Max. display pressure
- ※ In case **HYS1** and **5E1** have the same setting values, it will have the minimum display unit as a hysteresis.

## ◎ Automatic sensitivity setting mode [ ㉞ ㉟ ]



- ※ **5E1** setting range: Min. display pressure < **5E1** ≤ Max. display pressure - 1% of rated pressure
- ※ **5E2** setting range: **5E1** + 1% of rated pressure < **5E2** ≤ Max. display pressure
- ※ If certain detection level difference is not ensured, or setting conditions are not met, **ERR3** message will flash three times and returned to **5E2** setting mode. Check all setting conditions and set proper setting values.

(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 mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/ Logic panel
(S)	Field network device
(T)	Software
(U)	Other

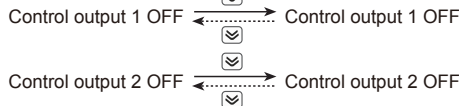
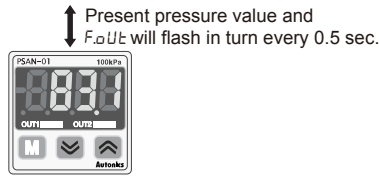


# PSAN Series

## ◎ Forced output control mode [ F.oUt ]



If forced output control mode is selected, pressure value is displayed only. (No output will be provided.)



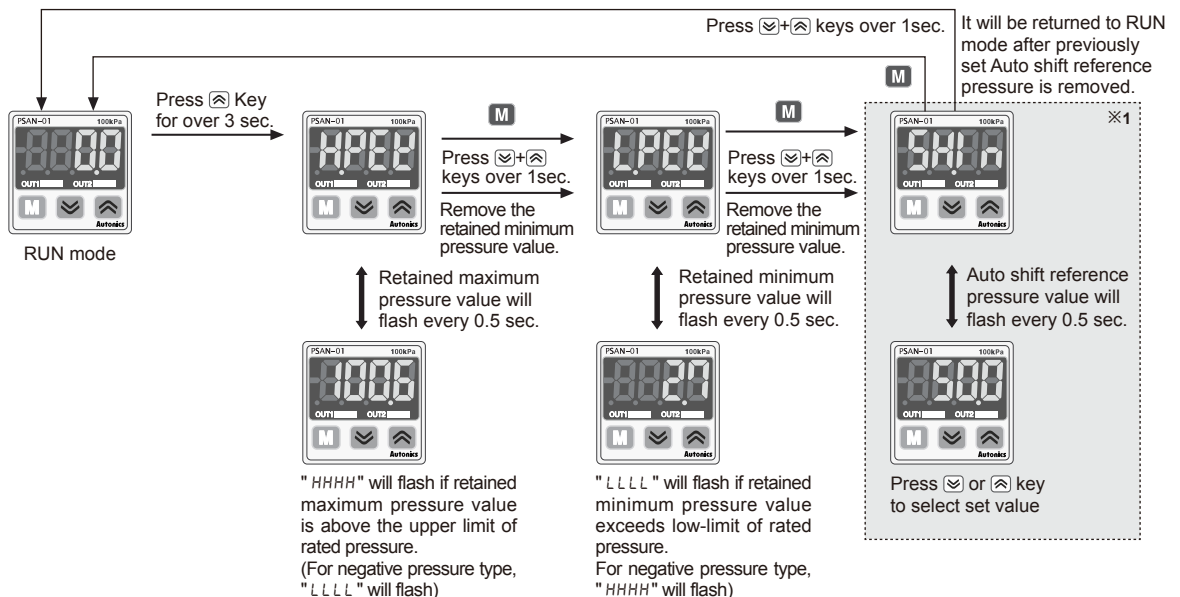
- ※If there is no additional key operation within 60 sec while setting, it is returned to Run mode (Except for force output mode). Previously set values are remained.
- ※In case of changing output operation mode, no preset values will be initialized. Instead, previous output operation settings will become the preset values.
- ※When using the forced output function, Hold/Auto shift function is not available to use in Hold/Auto shift model.
- ※When changing pressure display unit, resolution, and Hold Auto shift input function, preset values will be initialized as shown the next table. (When changing pressure display unit, preset value will be automatically switched to changed pressure unit.)

### ● Factory default

(unit: kPa)

Output mode	Negative pressure 0.0 to -101.3	Standard pressure 0.0 to 100.0	Standard pressure 0 to 1,000	Compound pressure -101.3 to 100.0
HYS-n	SE 1:-50.0 HY5 1:0.0 SE 2:-50.0 HY5 2:0.0	SE 1:50.0 HY5 1:0.0 SE 2:50.0 HY5 2:0.0	SE 1:500 HY5 1:0 SE 2:500 HY5 2:0	SE 1:50.0 HY5 1:-50.0 SE 2:50.0 HY5 2:-50.0
HL-n	Lo- 1:0.0 HI- 1:-50.0 Lo- 2:0.0 HI- 2:-50.0	Lo- 1:0.0 HI- 1:50.0 Lo- 2:0.0 HI- 2:50.0	Lo- 1:0 HI- 1:500 Lo- 2:0 HI- 2:500	Lo- 1:-50.0 HI- 1:50.0 Lo- 2:-50.0 HI- 2:50.0
HY-u	SE 1:-50.0 HY5 1:0.0 LoP:0.0 HIGH:-50.0	SE 1:50.0 HY5 1:0.0 LoP:0.0 HIGH:50.0	SE 1:500 HY5 1:0 LoP:500 HIGH:0	SE 1:50.0 HY5 1:-50.0 LoP:-50.0 HIGH:50.0
AUto	SE 1:0.0 SE 2:-50.0 SEt :-25.0	SE 1:0.0 SE 2:50.0 SEt :25.0	SE 1:0 SE 2:500 SEt :250	SE 1:-50.0 SE 2:50.0 SEt :0.0

## ■ High peak/Low peak function and Auto shift reference pressure check/change

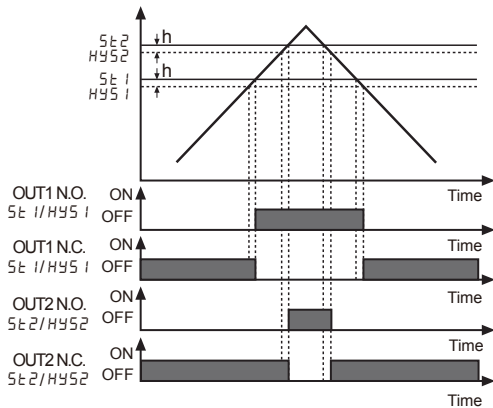


- ※1: Displayed only when d-i n is set to SHrE (PSAN-□□□□H□ models only)
- ※If there is no Auto shift input, "0" will be displayed. (Refer to E-14 page for more details.)

## Output operation mode

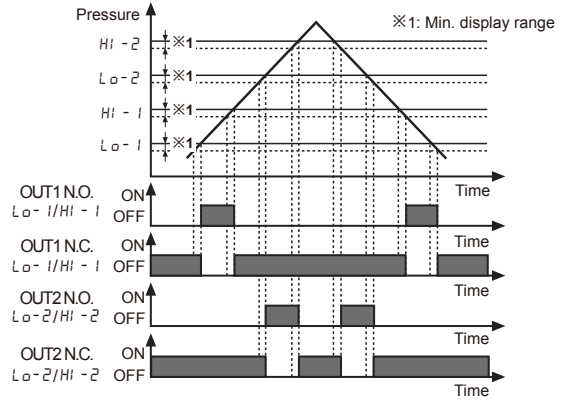
### 1. Hysteresis mode [HY5n]

It is able to set certain value for pressure detection level [SE1, SE2] and hysteresis [HYS1, HYS2].



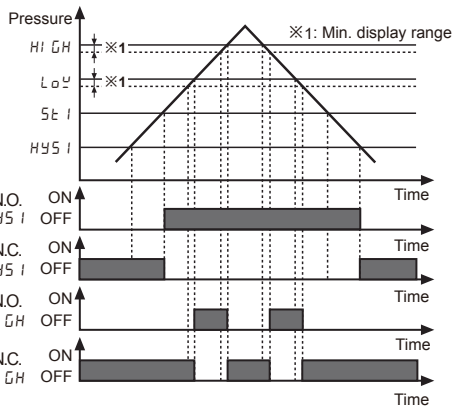
### 2. Window comparison output mode [ULn]

- ① It is able to set the range for high [HI-1, HI-2], low [LO-1, LO-2] limit of pressure detection level when it is required to detect pressure at a certain range.
- ② Detection hysteresis is fixed to min. display range.



### 3. Hysteresis-window comparison output mode [HY-U]

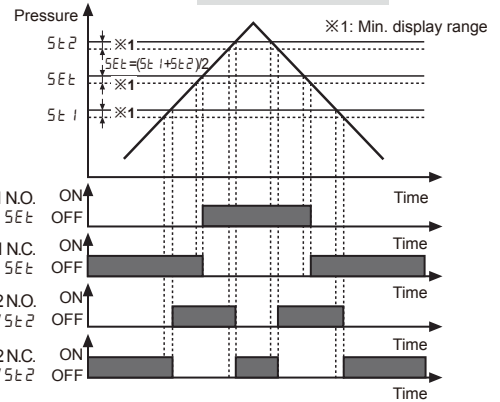
- ① It is available to set hysteresis mode and window comparison output mode when both hysteresis mode [SE1, SE2] and window comparison output mode [LO-U, HI-U] are necessary.
- ② Detection hysteresis is fixed to min. display range.



### 4. Automatic sensitivity setting mode [AUTo]

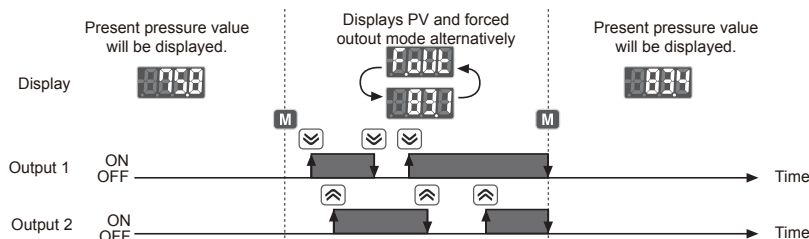
- ① This function is to set pressure detection level to the proper position automatically. It is set by applied pressure from two positions [SE1, SE2].
- ② Detection hysteresis is fixed to min. display range.
- ③ The pressure detection level [SEt] is shown in the following calculation.

$$SEt = \frac{(SE1 + SE2)}{2}$$



### 5. Forced output control mode [FoULt]

- ① Used to display pressure with forcibly holding comparing output OFF regardless of setting value.
- ② In parameter setting, if output operation mode setting 'oULn' is changed to 'FoULt', forced output control mode is operated.
- ③ Output 1, 2 can be ON/OFF manually by pressing [M], [M] key while the forced output control mode is applied.



(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 mode power supply
(Q)	Stepper motor& Driver&Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Software
(U)	Other

# PSAN Series

## ■ Functions

### ◎ Pressure unit change

PSAN-V01C(P) and PSAN-C01C(P) has 7 kinds of pressure unit, PSAN-01C(P) and PSAN-1C(P) has 5 kinds of pressure unit. Please select the proper unit for application.

- PSAN-V01C(P), PSAN-C01C(P)  
: kPa, kgf/cm<sup>2</sup>, bar, psi, mmHg, inHg, mmH<sub>2</sub>O
- PSAN-01C(P), PSAN-1C(P) : MPa, kPa, kgf/cm<sup>2</sup>, bar, psi
- ※When using mmH<sub>2</sub>O unit, multiply display value by 100.

### ◎ Output mode change

There are 5 kinds of control output mode in order to realize the various pressure detection.

- **Hysteresis mode [HYS]**  
When needed to change hysteresis for detecting pressure.
- **Window comparison output mode [WIN]**  
When needed to detect pressure in certain area.
- **Hysteresis - Window comparison output mode [HYS-WIN]**  
When both hysteresis mode and window comparison output mode are required.
- **Automatic sensitivity setting mode [AUT]**  
When needed to set detection sensitivity automatically at proper position.
- **Forced output control mode [FOUT]**  
When needed to display pressure with remaining comparison output OFF regardless of setting value.

### ◎ Control output change

Type of control output for Out1 and Out2 can be able to set Normally Open or Normally Closed.

※Note that Normally Open and Normally Closed provide opposite output.

OUT1 output	OUT2 output	Parameter setting value
Normally Open	Normally Open	1020
Normally Open	Normally Closed	1021
Normally Closed	Normally Open	1120
Normally Closed	Normally Closed	1121

### ◎ Response time change (chattering prevention)

It can prevent chattering of control output by changing Response time. It is able to set 5 kinds of Response time (2.5ms, 5ms, 100ms, 500ms, 1000ms) and if the Response time is getting longer, the detection will be more stable by increasing the number.

### ◎ Analog output scale setting

#### • Analog voltage output scale setting

The scale function for analog output voltage(1-5VDC) is not fixed to the rated pressure range. It can be changed for User's application. Analog output voltage range will be fixed to 1-5VDC within the pressure range from pressure point of 1VDC output [R-1V] to pressure point of 5VDC output [R-5V].

#### • Analog current output scale setting

The scale for analog output Current (DC4-20mA) is not fixed to the rated pressure range. It can be changed for User's application. Analog output voltage will be fixed to 4-20mA within the rated pressure range from pressure point of 4mA output [R-04] to pressure point of 20mA output [R-20].

### ◎ Hold/Auto shift input setting

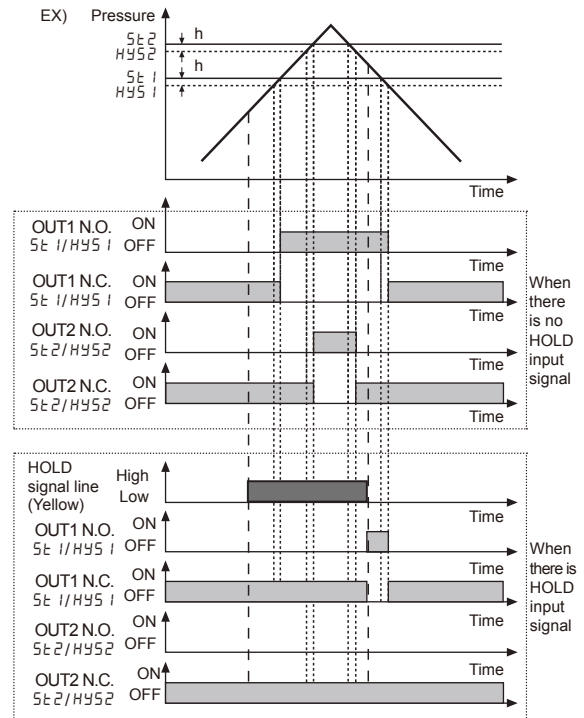
#### • Hold

A function to hold present pressure value and control output at the time of hold signal input.

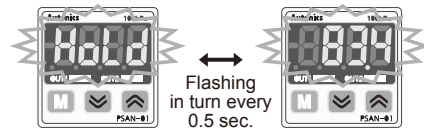
※Present pressure value and Hold message will flash in turn every 0.5 sec. while Hold function is set. Make sure that Hold function is not able to execute while forced output mode is executed.

#### ▶ Control output timing chart

When Hold signal is applied in Hysteresis mode, refer to 'Control output diagram' of E-8 page.



※[Hold] and present pressure value will flash in turn every 0.5 sec. while Hold signal is applied.



#### • Auto shift

A function to use the measured pressure at the moment of auto shift input as a reference pressure in order to correct the set point values of control output when initial pressure changes.

※Reference pressure is fixed to atmospheric pressure (0.0kPa) when Auto shift function is not used.

※SH (Auto shift compensation value) will be reset to 0 when changing control output or preset values.

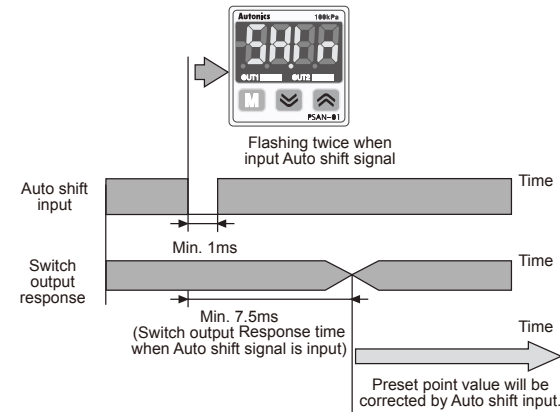
※Auto shift function will not be executed if "HHHH" or "LLLL" error occurs or if forced output mode is set.

- SH: Reference pressure change through setting.
- 01: Changed reference will be applied to control output 1 only.
- 02: Changed reference will be applied to control output 2 only.
- RL: Changed reference will be applied to both control output 1 and control output 2.

## ► When Auto shift is used

When Auto shift input signal remains at low level more than 1ms, the measured pressure at this point will be saved as a reference value to make correct judgment regardless of pressure changes. Corrected preset pressure value will be applied after 7.5ms.

Measured reference pressure value will be saved in [5Hl n].



※When Auto shift function is used, the possible set pressure range will be wider than rated set pressure range.

※The possible set pressure range for Auto shift type models.

Pressure type	Set pressure range	Possible set pressure range for Auto shift type models
Vacuum pressure	-101.3kPa to 5.0kPa	-101.3kPa to 101.3kPa
Vacuum pressure	-5.0kPa to 110.0kPa	-110.0kPa to 110.0kPa
Compound pressure	-101.3kPa to 110.0kPa	-101.3kPa to 110.0kPa

※If the set point value corrected by auto shift input exceeds set pressure range, an error message will flash three times and corrected value is not saved.

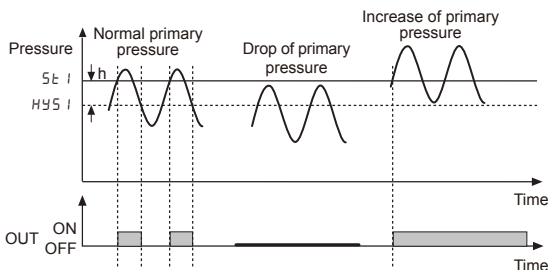
→[-HH-] displayed when the set point value corrected by Auto shift input is above the upper limit of set pressure range.

→[-LLL-] displayed when the set point value corrected by Auto shift input is below the lower limit of set pressure range.

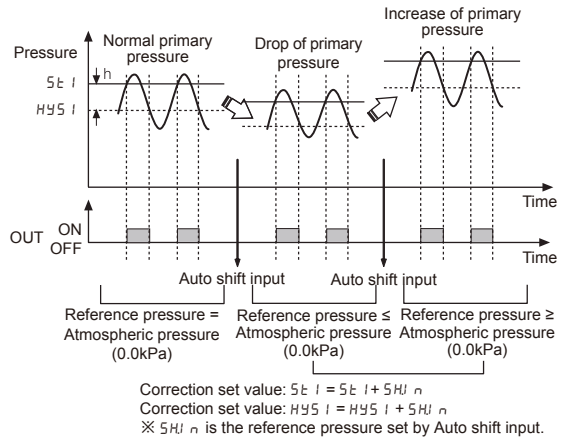
※The correction value will be saved in EEPROM.

## ► Example of Auto shift

### < When Auto shift is not used >



### < When Auto shift is used >



## ◎ Key lock

The key lock function prevents key operations so that conditions set in each mode.

- **LOCK**: All keys are locked; therefore it is not available to change parameter settings, preset value, zero adjustment, High/Low peak check, and  $5H1n$  data initialization. (Lock setting change is available)
- **LOCK**: Partially locked status; therefore it is not available to change parameter settings only (Lock setting change is available). Other settings are still available.
- **OFF**: All of the setting is available, all keys are unlocked. to set detection sensitivity automatically at proper position.

## ◎ Zero-point adjustment

The key lock function prevents key operations so that conditions set in each mode.

The zero-point adjustment function forcibly sets the pressure value to "zero" when the pressure port is opened to atmospheric pressure. When the zero adjustment is applied, analog output [Voltage or Current] is changed by this function.

(Press  $\checkmark$  +  $\text{Ⓜ}$  keys over 1 sec. in RUN mode.)

## ◎ High Peak / Low Peak Hold

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

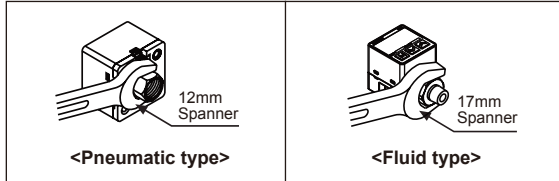
Error display	Description	Troubleshooting
Err1	When external pressure is input while adjusting zero point	Try again after removing external pressure
Err2	When overload is applied on control output	Remove overload
Err3	When setting condition is not met in Auto sensitivity setting mode	Check setting conditions and set proper setting values
LLLL	When applied pressure exceeds Low-limit of display pressure range	Apply pressure within display pressure range
HHHH	When applied pressure exceeds High-limit of display pressure range	
-HH- -LL- -H0-	Auto shift correction error	Set the corrected setting value within setting pressure range.

(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
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(Q)	Stepper motor& Driver&Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Software
(U)	Other

# PSAN Series

## ■ Installation

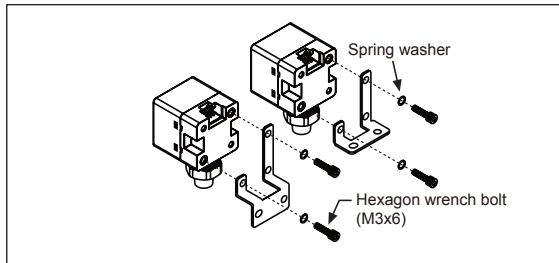
1. Pressure port is divided as basic and option specification. Therefore, be sure that to use commercially available one touch fitting. (Standard: (pneumatic type): Rc1/8", (fluid type): R(PT)1/8", Option: NPT1/8", R1/8")
2. Please connect it by using spanner: (pneumatic type) 12mm, (fluid type) 17mm 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.

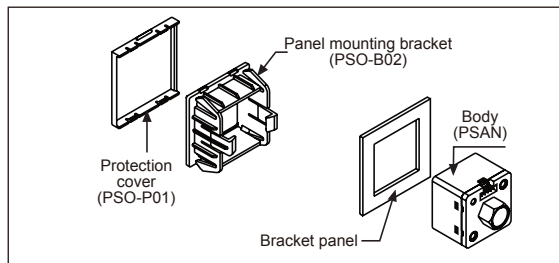
3. Two different fixing brackets are provided for PSAN model. Select proper one with considering your application environments.
4. At first, please unscrew hexagon wrench bolt and assemble the bracket on this unit by fixing hexagon the wrench bolt.



### ⚠ Caution

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

5. Bracket(PSO-B02) and front protection cover (PSO-P01) are sold separately. Please see the pictures for installation.

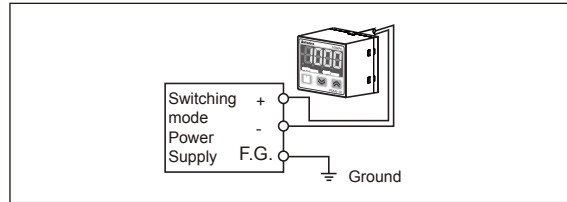


## ■ Proper usage

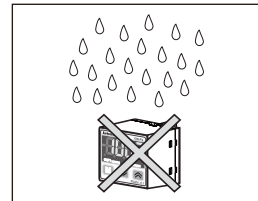
### ⚠ Caution

**PSAN 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 the 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 mode power supply, frame ground (F.G.) terminal of power supply should be grounded.



- 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, because 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.