

# Autonics

## DIGITAL PRESSURE SENSOR PSA/PSB SERIES



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

### Caution for your safety

- Please keep these instructions and review them before using this unit.
- Please observe the cautions that follow;
  - Warning** Serious injury may result if instructions are not followed.
  - Caution** Product may be damaged, or injury may result if instructions are not followed.
- The following is an explanation of the symbols used in the operation manual.
  - Warning** Injury or danger may occur under special conditions.

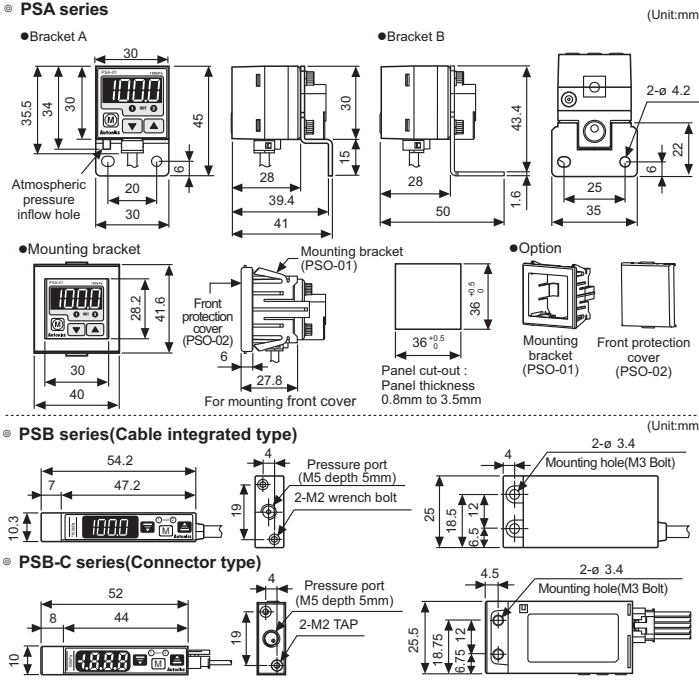
### Warning

- In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device. It may cause a fire, human injury or damage to property.
- Do not use it in flammable gas because it does not have an explosion proof construction. It may cause explosion.

### Caution

- Do not apply the pressure beyond rated pressure. It may cause damage to this unit.
- Do not use it beyond power supply. It may cause damage to this unit.
- Do not make a short circuit for the load. It may cause damage to this unit.
- Do not wire incorrectly in power polarity etc. It may cause damage to this unit.
- Do not use corrosive gas or liquid as it is only for non-corrosive gas. It may cause damage to this unit.
- Do not give power to its case or twist its case strongly. It may cause damage to this unit.
- This unit shall not be used outdoors. It may shorten the life cycle of the product or cause electric shock. This unit is produced only for the indoor environment.

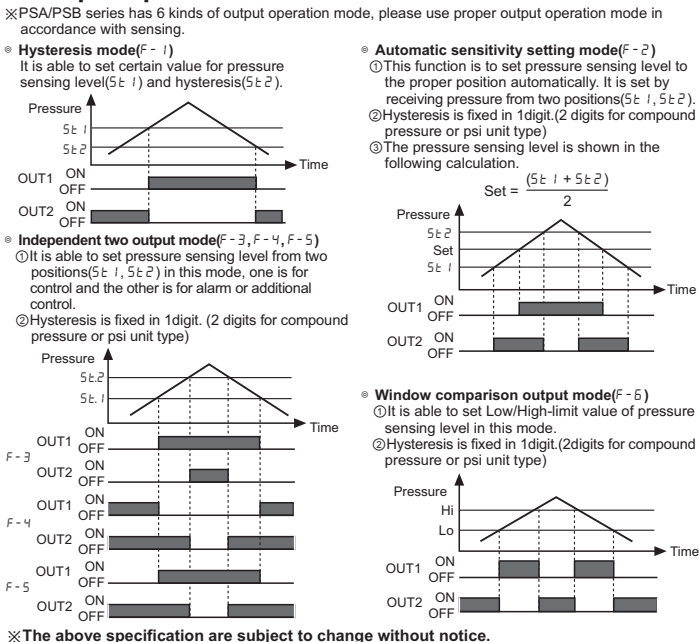
### Dimensions



### Functions

- Pressure display unit change function**  
PSA: -V01(C)(P) and PSB: -C01(C)(P) has 7 kinds of pressure unit, PS-C: -01(C)(P) and PS-D: -1(C)(P) has 4 kinds of pressure unit. Please select the proper unit for application.
  - PSA: -V01(C)(P), PSB: -C01(C)(P): kPa, kgf/cm<sup>2</sup>, bar, psi, mmHg, inHg, mmH<sub>2</sub>O
  - PS-C: -01(C)(P), PS-D: -1(C)(P): kPa, kgf/cm<sup>2</sup>, bar, psi
  - ※When using mmH<sub>2</sub>O unit, multiply display value by 100.
- Output operation mode change function**  
There are 6 kinds of control output mode in order to realize the various pressure sensing. Select a mode for your proper application.
  - Hysteresis mode(F-1): When needed to change hysteresis for sensing pressure.
  - Automatic sensitivity setting mode(F-2): When needed to set sensing sensitivity automatically at proper position.
  - Independent two output mode(F-3, F-4, F-5): When needed to detect pressure from two position with one unit.
  - Window comparison output mode(F-5): When needed to detect pressure in certain area.
- Response time change function(Chattering prevention)**  
It can prevent chattering of control output by changing response time. It is able to set 4kinds of response time(2.5ms, 5ms, 100ms, 500ms) and if the response time is getting longer, the sensing will be more stable by increasing the number of digital filter.
- Analog output scale setting function**  
It is not fixed the analog output(1-5VDC) scale as the rated pressure range but this is a function to change properly for user's application. When the position(R-1) for 1VDC output and the position(R-5) for 5VDC output are set, the pressure range of R-1 to R-5 is to 1-5VDC analog output.
- Key lock function**  
This unit has 2 kinds of key lock function in order to prevent wrong operation.
  - Loc: All keys are locked therefore it is impossible to change any parameter setting/ preset, zero point adjustment, peak hold and bottom hold check. (It is able to change the status of lock)
  - PAR: This is partial locked status, therefore 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 of the setting is available, all keys are unlocked.
- Zero point adjustment function**  
This function is to set the display value of pressure as zero point forcibly in case that of port is opened to atmospheric pressure. Zero point adjustment affects analog output voltage.
- Peak hold and bottom hold function**  
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.

### Output operation mode

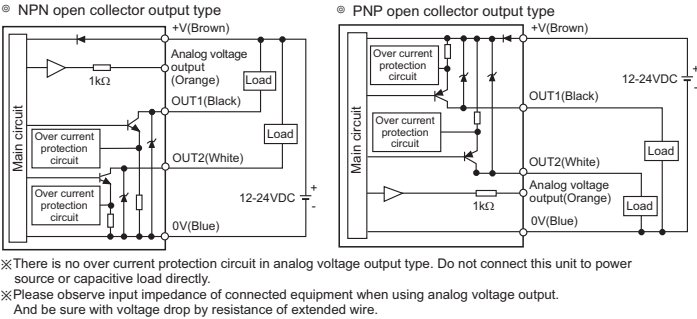


※The above specification are subject to change without notice.

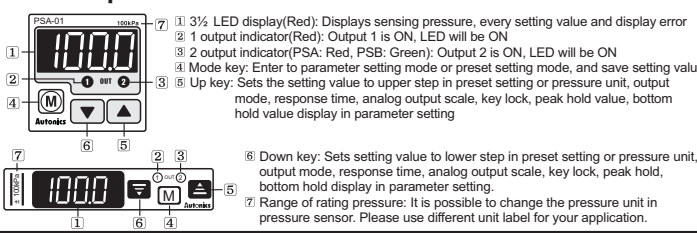
### Specifications

Pressure type	Gauge pressure			Compound pressure type
	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□
	PNP output	PSA-V01P□ PSB-V01P□ PSB-V01CP□	PSA-01P□ PSB-01P□ PSB-01CP□	PSA-1P□ PSB-1P□ PSB-1CP□
Rated pressure range	0.0 to -101.3kPa	0.0 to 100.0kPa	0 to 1,000kPa	-100.0 to 100.0kPa
Display 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	12V-24VDC ± 10%(Ripple P-P:Max. 10%)			
Current consumption	Max. 50mA			
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	1digit fixed(2digits for psi unit)		2digit fixed	
Repeat error	± 0.2% F.S. ± 1digit		± 0.2% F.S. ± 2digit	
Response time	Selectable 2.5ms, 5ms, 100ms, 500ms			
Short circuit protection	Built-in			
Analog output	● Output voltage: 1V-5VDC ± 2% F.S. ● Linear: Within ± 2% F.S. ● Zero point: Within 1VDC ± 2% F.S. ● Span: Within 4VDC ± 2% F.S. ● Resolution: Approx. 1/200 ● Output impedance: 1kΩ			
Display method	3 1/2 digit LED 7segment			
Min. Display interval	1digit(psi unit: 2 digits are fixed)		2digits	
Pressure unit	kPa, kgf/cm <sup>2</sup> , bar, psi, mmHg, mmH <sub>2</sub> O, inHg		kPa, kgf/cm <sup>2</sup> , bar, psi, mmHg, mmH <sub>2</sub> O, inHg	
Display accuracy	0 to 50°C: Max. ± 1% F.S., -10 to 0°C: Max. ± 2% F.S.			
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Environment	Ambient temperature: -10 to 50, Storage: -20 to 60°C Ambient humidity: 35 to 85%RH, Storage: 35 to 85%RH			
Material	● PSA: Front case: PC, Rear case: PC(Insert glass), Pressure port: die-cast(Zn) ● PSB: Case, Pressure port: PA ● PSB-C: Case, Pressure port, Cover: IXEF			
Protection	IP40(IEC standard)			
Cable	Cable integrated type: ø 4, 5-wire, Length: 2m(AWG 24, Core diameter: 0.08mm, Number of cores: 40, Insulation diameter: ø 1mm) Connector type: 5-wire, Length: 3m(AWG 24, Insulation diameter: ø 1.4mm)			
Unit weight	PSA: Approx. 120g, PSB: Approx. 70g, PSB-C: Approx. 80g			

### Input/Output circuit and connection diagram

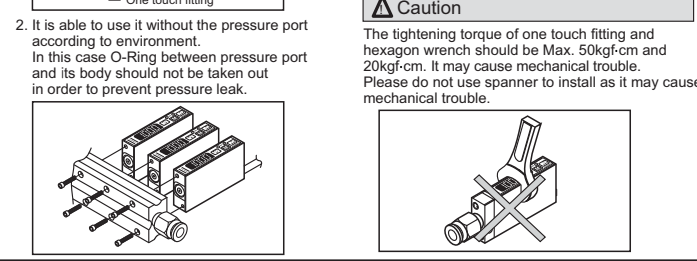


### Front panel identification and function



### Installation

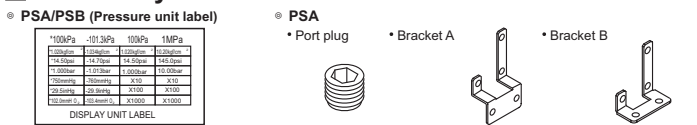
- When installing pressure port it is able to bring pressure from 3 directions by changing the mounting direction of the pressure port.
- Pressure port has two types, PT1/8 and NPT1/8, therefore be sure to use proper port when using one touch fitting.
- Please use seal tape at port plug in order to prevent pressure leak.
- Please block another two pressure ports not used with port plug.
- Please connect it by using spanner(13mm) at the metal part in order not to overload on the body when connecting one touch fitting.



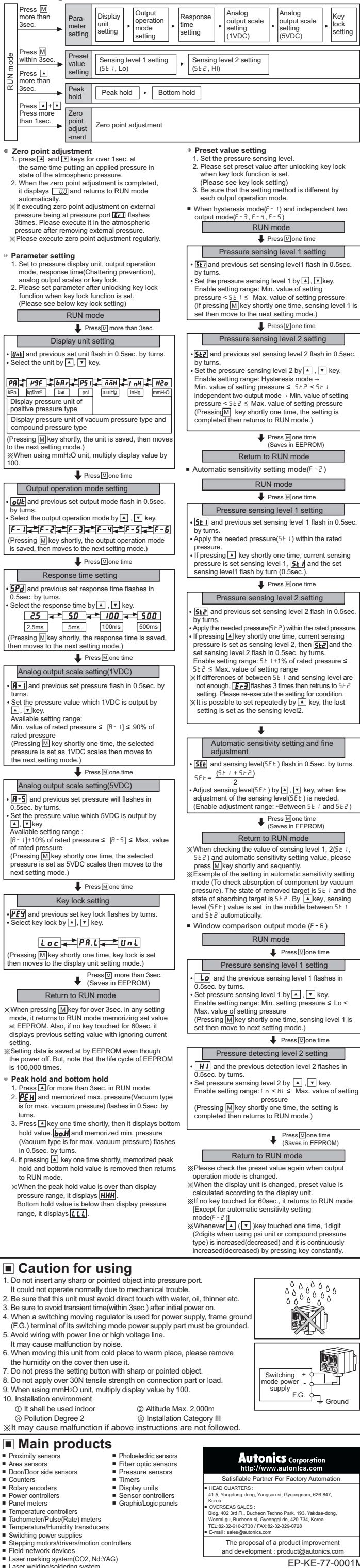
### Error

Error display	Description	Countermeasures
Er1	If external pressure applied, when adjusting Zero point	Please try again after external pressure removing
Er2	When 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	Apply pressure within display pressure range

### Accessory



### Setting



### Caution for using

- Do not insert any sharp or pointed object into pressure port. It could not operate normally due to mechanical trouble.
- Be sure that this unit must avoid direct touch with water, oil, thinner etc.
- Be sure to avoid transient time(within 3sec.) after initial power.
- When a switching moving regulator is used for power supply, frame ground (F.G.) terminal of its switching mode power supply part must be grounded.
- Avoid wiring with power line or high voltage line. It may cause malfunction by noise.
- When moving this unit from cold place to warm place, please remove the humidity on the cover then use it.
- Do not press the setting button with sharp or pointed object.
- Do not apply over 30N tensile strength on connection part or load.
- When using mmH<sub>2</sub>O unit, multiply display value by 100.
- Installation environment
  - It shall be used indoor
  - Altitude Max. 2,000m
  - Pollution Degree 2
  - Installation Category III
- It may cause malfunction if above instructions are not followed.

### Main products

- Proximity sensors
- Area sensors
- Door/Door side sensors
- Counters
- Rotary encoders
- Power controllers
- Panel meters
- Temperature controllers
- Tachometer/Pulse(Rate) meters
- Temperature/Humidity transducers
- Switching power supplies
- Stepping motors/drivers/motion controllers
- Field network devices
- Laser marking system(CO<sub>2</sub> Nd:YAG)
- Laser welding/soldering system
- Photoelectric sensors
- Fiber optic sensors
- Pressure sensors
- Timers
- Display units
- Sensor controllers
- Graphic/Logic panels

### Autonics Corporation

Satisfiable Partner For Factory Automation  
 HEAD QUARTERS: 41-5, Yongdang-dong, Yangsan-si, Gyeongsang, 628-847, Korea  
 OVERSEAS SALES: Bldg. 402 3rd Fl., Bucheon Techno Park, 193, Yakdae-dong, Woomun-gu, Bucheon-si, Gyeonggi-do, 420-734, Korea  
 TEL: 82-32-610-2730 / FAX: 82-32-329-0728  
 E-mail: sales@autonics.com  
 The proposal of a product improvement and development: product@autonics.com

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