

Autonics Digital Pressure Sensor (fluid type)

PSAN Series

INSTRUCTION MANUAL



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.
- Caution:** Injury or danger may occur under special conditions.

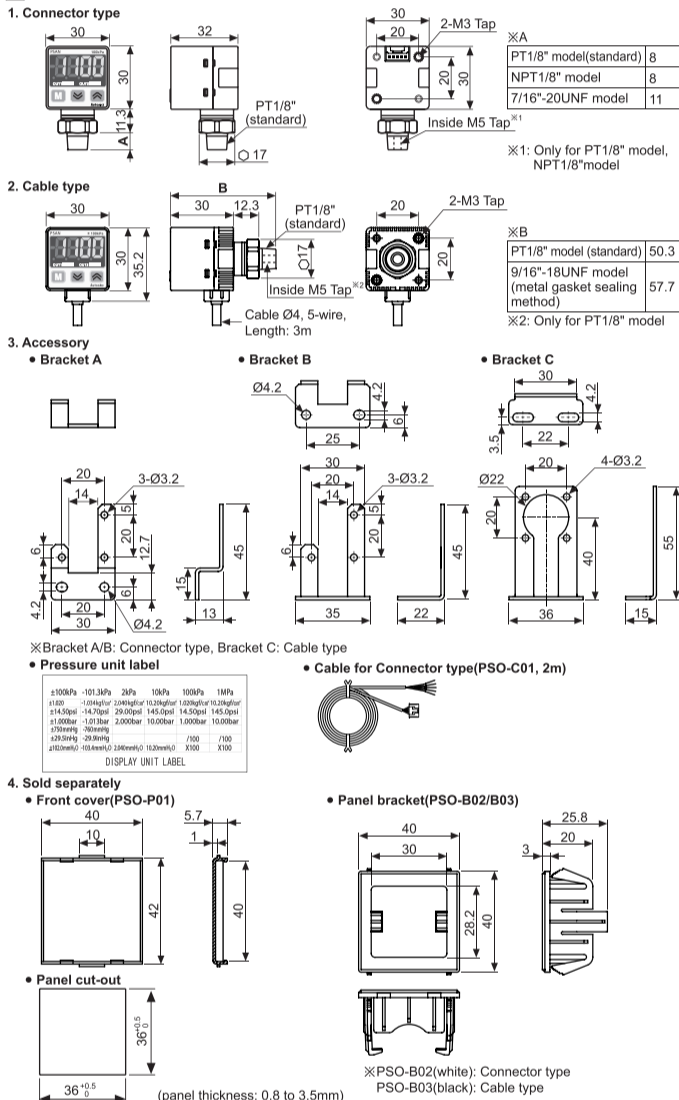
Warning

- In case of using this unit with machinery(Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crane/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 structure. It may cause explosion.

Caution

- This unit shall not be used outdoors.
- It might shorten the life cycle of the product or cause electric shock. This unit is proper indoor environment.
- 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.
- Do not give power to its case or twist its case strongly. It may cause damage to this unit.

Dimensions



Functions

- Pressure unit change function** PSAN-LV01C(P) and PSAN-LC01C(P) has 7 kinds of pressure unit, PSAN-L01C(P) and PSAN-L1C(P) has 5 kinds of pressure unit. Please select the proper unit for application.
- Output mode change function** There are 5 kinds of control output mode in order to realize the various pressure detection.
- Automatic sensitivity setting mode (RUT)** 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 set value.
- Control output change function** Type of control output for OUT1 and OUT2 can be able to set Normally Open and Normally Closed.
- Response time change function (Chattering prevention)** It can prevent chattering of control output by changing response time.
- Analog output scale setting and Hold/Auto Shift setting function** Analog voltage output scale setting: The scale function for analog output voltage (1-5VDC) is not fixed to the rated pressure range.
- Key lock function** The key lock function prevents key operations so that conditions set in each mode. (presel/parameter mode are not inadvertently changed.)
- Zero point adjustment function** The zero point adjustment function forcibly sets the pressure value to "Zero" when the pressure port is opened to atmospheric pressure.
- High Peak / Low Peak 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.

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 set 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.	Apply pressure within display pressure range.
-HH-, -LL-, -HL-	Auto shift correction error.	Set the corrected set value within setting pressure range.

The above specifications are subject to change and some models may be discontinued without notice.

Specifications

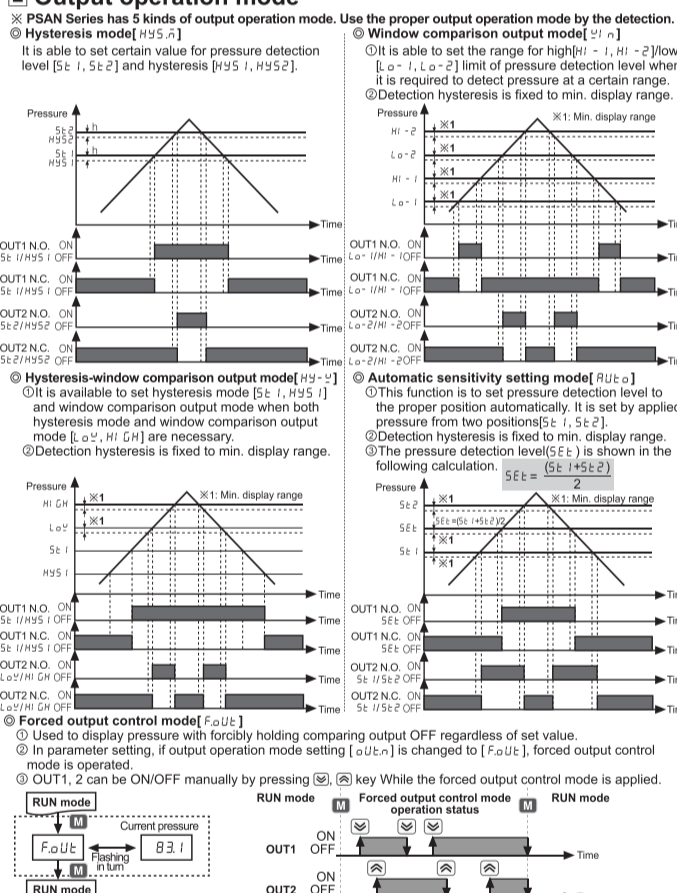
Pressure type	Sealed gauge pressure (In case of 100.0kPa/Standard pressure is gauge pressure.)			
	Negative pressure	Standard pressure	Compound pressure	Compound pressure
Model*	PSAN-LV01C(P)-□	PSAN-L01C(P)-□	PSAN-L1C(P)-□	PSAN-LC01C(P)-□
Voltage output	Connector: PSAN-LV01C(P)-□	PSAN-L01C(P)-□	PSAN-L1C(P)-□	PSAN-LC01C(P)-□
Current output	Connector: PSAN-LV01C(P)-□	PSAN-L01C(P)-□	PSAN-L1C(P)-□	PSAN-LC01C(P)-□
Rated pressure range	0.0 to -101.3kPa	0.0 to 100.0kPa	0 to 1,000kPa	-101.3kPa to 100.0kPa
Display pressure range	5.0 to -101.3kPa	-5.0 to 110.0kPa	0 to 1,100kPa	-101.3kPa to 110.0kPa
Min. display unit	0.1kPa	0.1kPa	1kPa	0.1kPa
Max. pressure range	2 times of rated pressure			
Applied fluid	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 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	Voltage output Current output			
Display method	7segment LED Display			
Pressure unit Resolution	1000	2000	1000	2000
MPa	0.001	0.001	0.001	0.001
kPa	0.1	0.1	1	0.1
kgf/cm ²	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	0.4	4	0.8
inHg	0.02	0.02	0.2	0.03
mmH ₂ O	0.1	0.1	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 temp. -10 to 50°C, storage: -20 to 60°C Ambient humi. 30 to 80%RH, storage: 30 to 80%RH			
Protection	Connector type: IP40 (IEC standards), Cable type: IP65 (IEC standards)			
Material	Front case: PC, Rear case: PA6, Pressure port: SUS316L			
Cable	Connector cable (Ø4, 5-wire, Length: 2m) (AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator outer diameter: Ø1mm)			
Approval	CE			
Weight**3	Connector type: Approx. 173g (approx. 88g), Cable type: Approx. 167g (approx. 90g)			

(P) is PNP output type, □ of model name is as pressure port.
R1/8: PT1/8" model (standard), NPT1/8: NPT1/8" model, 9/16-18UNF: 9/16"-18UNF model (cable type), 7/16-20UNF: 7/16"-20UNF model (connector type).
**2: In hysteresis output mode, detection differential is variable.
**3: It is allowed to select one analog output type only.
**4: Resolution (1000/2000) of min. display interval is automatically selected by pressure units.
**5: This weight is with packaging and the weight in parentheses is only unit weight.
**6: The unit is sealed structure. It is based on atmospheric pressure 101.3kPa.

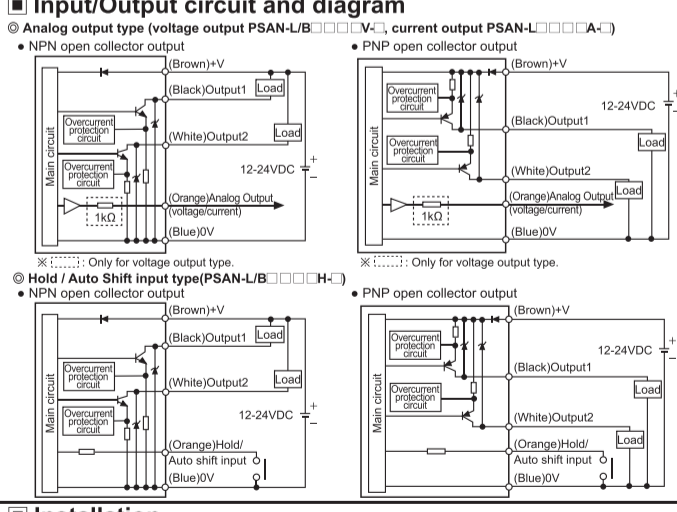
Part descriptions

- Range of rated pressure: It is possible to change the pressure unit in Pressure sensor. Please use different unit as label for your application.
- 4 digit LED display (Red): Used to indicate measured pressure value, set value and error message.
- Output 1 indicator (Red): Output 1 is ON, LED will be ON.
- Output 2 indicator (Green): Output 2 is ON, LED will be ON.
- 5 key: Used to enter into Preset/Parameter setting mode and to save Setting mode.
- 6 key: Used to set parameter and preset, peak value check mode, function setting or output operation mode.
- +/- key: Used for zero point adjustment function by pressing (+/-) keys over 1 sec. simultaneously in RUN mode.

Output operation mode



Input/Output circuit and diagram



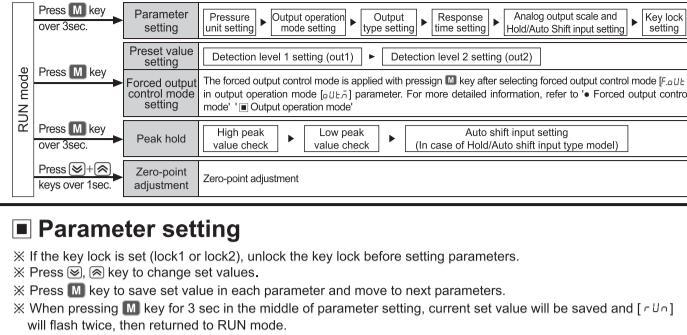
Installation

- Pressure port is provided as basic and option specification. Therefore, be sure that to use commercially available one touch fitting (Standard: R(P)T1/8", Option: NPT1/8", 9/16-18UNF, 7/16-20UNF).
- Please connect it by using spanner (17mm) at the metal part in order not to overload on the body when connecting one touch fitting.
- PSAN Series provides 2 brackets for connector type, 1 bracket for cable type. The 2 types of installation is available for installation environments.
- At first, please unscrew hexagon wrench bolt and assemble the bracket on this unit by fixing hexagon the wrench bolt. In this case, tightening torque of hexagon wrench should be max. 30kgf-cm. It may cause mechanical problems.
- Panel bracket (PSO-B02/B03) and front protection cover (PSO-P01) are sold separately. Please see the figure for installation.

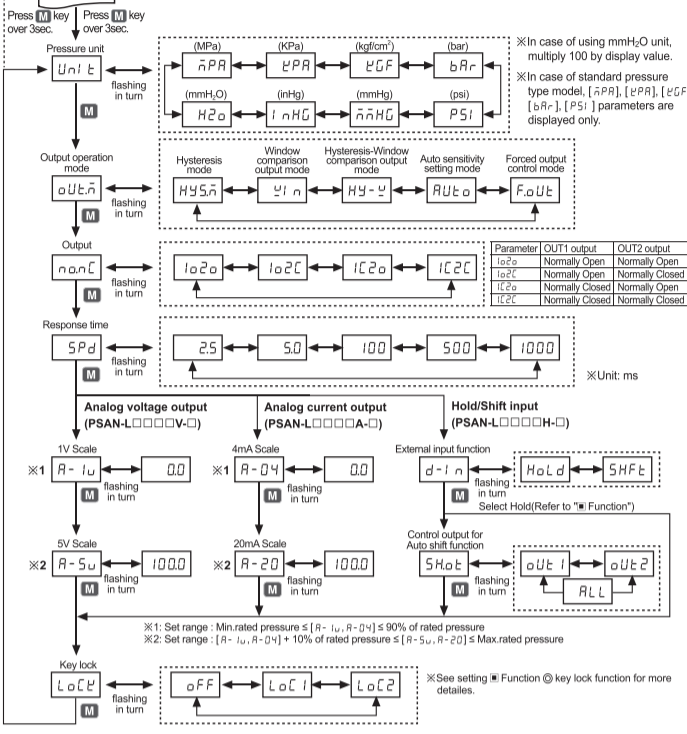
Caution

- The tightening torque of one touch fitting should be max. 100kgf-cm. It may cause mechanical problems.

Setting



Parameter setting



Setting

- Press (+/-) key over 3sec. to enter into Preset/Parameter setting mode.
- Press (M) key to save set value in each parameter and move to next parameters.
- When pressing (M) key for 3 sec in the middle of parameter setting, current set value will be saved and [Err] will flash twice, then returned to RUN mode.

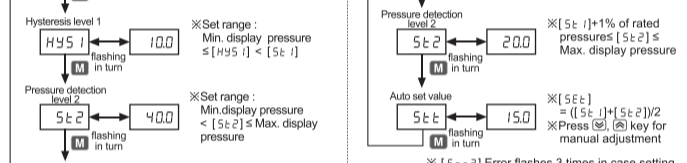
Setting

- If there is no additional key operation within 60 sec. while setting, current set value is not valid and previous set value will be remained.

Setting

- Press (+/-) flashes twice when returning to RUN mode.
- Press (M) key to change set values.
- Press (M) key to save set value in each parameter and move to next parameters.

Setting



Setting

- Window comparison output mode: It is able to set the range for high/low limit of pressure detection level when it is required to detect pressure at a certain range.
- Automatic sensitivity setting mode: This function is to set the pressure detection level to the proper position automatically. It is set by applied pressure from two positions (Hi, Lo).
- Forced output control mode: Used to display pressure with forcibly holding comparing output OFF regardless of set value.
- Hysteresis-window comparison output mode: This function is to set the pressure detection level to the proper position automatically. It is set by applied pressure from two positions (Hi, Lo).
- Zero point adjustment: Please press (+/-) keys for over 1 sec. at the same time putting an applied pressure in state of the atmospheric pressure.

Setting

- When using the forced output function, Hold/Auto shift function is not available to use in Hold/Auto shift mode.

Setting

- Peak Hold / Auto Shift Check/Change: Press (M) key over 3sec. to set High Peak/Low Peak reference pressure.

Setting

- Zero point adjustment: Please press (+/-) keys for over 1 sec. at the same time putting an applied pressure in state of the atmospheric pressure.

Setting

- Caution for using: Do not insert any sharp or pointed object into pressure port. Be sure that this unit must avoid direct touch with water, oil, thinner etc. It is ready to operate 3 sec. after it is turned ON. Be sure not to use the product within 3 sec. When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded. To avoid inductive noise, keep the wiring away from power line, high voltage line. It may cause malfunction. When moving this unit from warm place to cold 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 a tensile strength in excess of 30N to the cables or connector. When using mmH₂O unit, please multiply display value by 100. Installation environment: It shall be used indoor. Altitude Max. 2,000m. Pollution Degree 2. Installation Category II.

Setting

- Major products: Temperature Controllers, Temperature/Humidity Transducers, Door Sensors, SSR/Power Controllers, Counters, Timers, Area Sensors, Proximity Sensors, Pressure Sensors, Display Units, Rotary Encoders, Sensor Controllers, Graphical Panels, Field Network Devices, Control Switches/Relays, Switching Mode Power Supplies, Laser Marking System (Fiber, CO₂, Nd:YAG), Laser Welding/Cutting System.

Setting

- Autonics Corporation: 18, Bansom-ro 513beon-gil, Haerundae-gu, Busan, Korea, 48002. Overseas Sales: #402-303, Bucheon Techno Park, 655, Pyeongcheon-ro, Warrim-gu, Bucheon, Gyeonggi-do, Korea, 14502. TEL: 82-32-619-2700 FAX: 82-32-329-0728. E-mail: sales@autonics.com

Setting

- Autonics Corporation: EP-KK-77-0019G