Autonics

Digital Pressure Sensor (fluid type)

PSAN Series

INSTRUCTION MANUAL



Thank you very much for selecting Autonics produc 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 follow

**The following is an explanation of the symbols used in the operation manual.
A Caution: Injury or danger may occur under special conditions.

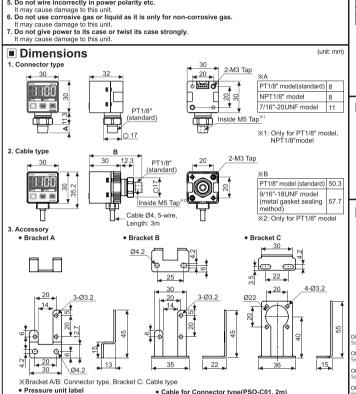
In case of using this unit with machinery(Ex: nuclear power control, medical equipment, ship, vehicle train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.

- This unit shall not be used outdoors.
- 1. Inis 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 2. Do not apply the pressure beyond rated pressure. It may cause damage to this unit.

 3. Do not use it beyond power supply. It may cause damage to this unit.

 4. Do not make a short circuit for the load.

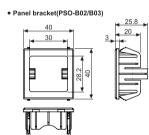
- 5. Do not wire incorrectly in power polarity etc.



Panel cut-out

DISPLAY UNIT LABE

Pressure unit label



• Cable for Connector type(PSO-C01, 2m)

%PSO-B02(white): Connector type PSO-B03(black): Cable type 36+0.5

**Bracket A/B: Connector type, Bracket C: Cable type

Functions

- PUNCTIONS

 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 for polication.

 PSAN-LV01C(P), PSAN-LC01C(P): kPa, kg/cm², bar, psi, mmHg, inHg, mmH₂O

 PSAN-L01C(P), PSAN-L1C(P): MPa, kPa, kg/cm², bar, psi

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

- ※ When using mmH₂O unit, please multiply display value by 100.
 Output mode change Function
 There are 5 kinds of control output mode in order to realize the various pressure detection.
 Hysteresis mode [H∃5.7]: When needed to change hysteresis for detecting pressure.
 Window comparison output mode [F∃ 1.7]: When needed to detect pressure in certain area.
 Hysteresis Window comparison output mode [H∃ 1.2]: When both hysteresis mode and window comparison output mode are required.
 Automatic sensitivity setting mode [R∃L 2.]: When needed to set detection sensitivity automatically at proper position.
 Forced output control mode [F.□L']: 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.
 ※ Note that Normally Open and Normally Closed provide opposite output.
 Response time change function(Chattering prevention)

■ Frror

- from the pressure point [#-04] for 4mA to the pressure point [#-20] for 20mA.

 Hold/Auto Shift input setting
 Hold: A function to hold PV and Control output while signal is input.

 Auto Shift: A function to lod PV and Control output while signal is input.

 Auto Shift: A function to compensate the set value for changed value of reference pressure as threshold level if reference pressure of the device changes.

 (Sey lock function
 The key lock function prevents key operations so that conditions set in each mode. [preset/parameter mode are not inadvertently changed. There are 2 kinds of key lock functions available.

 LoC I: All keys are locked; therefore it is not available to change parameter settings, preset value, zero adjustment, High/Low peak check and [54] and jata initialization. (Lock setting change is available)

 LoC: Partially locked status; therefore it is not available to change parameter settings only(Lock setting change is available).

 JEF: All of the setting is available, all keys are unlocked.

 Zero point adjustment function
 The zero point adjustment function forcibly sets the pressure value to "Zero" when the pressure port is opened The 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. When the zero adjustment is applied, analog output [Voltage or Current] is changed by this function. [Press 🔘 + 🗟 keys over 1 sec. in RUN mode.]

 (b) High Peak / Low Peak Hold Function

osis malfunction of the system caused by parasitic pressure or to check through memorizing the max./min. pressure occurred from the system.

Display	Description	Troubleshooting
Err I	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
нннн	When applied pressure exceeds High-limit of display pressure range.	range.
-HH-,-LL-,-	HL - Auto shift correction error.	Set the corrected set value within setting

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

Specifications

Current consumption

Pressure type			dealed gauge pressure. (In case of 100.0kf arotandard pressure is gauge pressure.)			
			Negative pressure	Standard pressure		Compound pressure
Model*	Voltage output	Connector	PSAN-LV01C(P)V-	PSAN-L01C(P)V-	PSAN-L1C(P)V- □	PSAN-LC01C(P)V-
		Cable	_	_	PSAN-B1(P)V- □	PSAN-BC01(P)V-
	Current output	Connector	PSAN-LV01C(P)A-	PSAN-L01C(P)A-□	PSAN-L1C(P)A-□	PSAN-LC01C(P)A-□
	Hold/Auto shift input	Connector	PSAN-LV01C(P)H-	PSAN-L01C(P)H-	PSAN-L1C(P)H-	PSAN-LC01C(P)H-
		Cable	_	_	PSAN-B1(P)H-	PSAN-BC01(P)H-
Rated pressure range		re range	0.0 to -101.3kPa	0.0 to 100.0kPa	0 to 1,000kPa	-101.3kPa to 100.0kPa
Display pressure range		ure range	5.0 to -101.3kPa	-5.0 to 110.0kPa	-101.3 to 1,100kPa	-101.3kPa to 110.0kPa
Min.display unit		nit	0.1kPa	0.1kPa	1kPa	0.1kPa
Max. pressure range		e range	2 times of rated pressure			
Applied fluid			Air, Non-corrosive gas and fluid that will not corrode SUS316L			
Power supply			12V-24VDC +10%(rin	/-24VDC ±10%(ripple P-P:Max. 10%)		

12V-24VDC ±10%(ripple P-P-Max. 10%)
Max. 50mA(Analog Current Output type Max 75mA)
NPN or PNP open collector output
*Load oltage: Max. 30VDC *Load current: Max. 100mA * Residual voltage - NPN: Max. 1V, PNP: Max. 2V
Min. display range
±0.2% F.S. ± Min. display range
±0.2% F.S. ± Min. display range ontrol output

electable 2.5ms, 5ms, 100ms, 500ms, 1000ms hort circuit pro

Output voltage: 1-5VDC $\pm 2\%$ F.S. • Linear: Max. $\pm 1\%$ F.S. • Output impedance: $\pm 1\%$ Caro point: Max. $\pm 1\%$ F.S. • Span: Max. $\pm 1\%$ F.S. • Response time: 50ms Resolution: Automatically changed to $\pm 1\%$ F.S. • Response time: 50ms Qutput current: DC4-20mA $\pm 2\%$ • Linear: Max. $\pm 1\%$ F.S. • Caro-point: Max. DC4mA $\pm 2\%$ F.S. • Span: Max. DC16mA $\pm 2\%$ F.S. • Span: Max. DC16mA $\pm 2\%$ F.S. • Response time: $\pm 1\%$ F.S. • Caro-point: Max. DC4mA $\pm 2\%$ F.S. • Response time: $\pm 1\%$ F.S. • Caro-point: Max. DC4mA $\pm 2\%$ F.S. • Span: Max. DC16mA $\pm 2\%$ F.S. • Response time: $\pm 1\%$ F.S. • Caro-point: Max. DC4mA $\pm 2\%$ F.S. • Caro-point: Max. • Caro output 7segment LED Display Display method .001 .001 .001 .001 0.001 nmHg inHg mmH₂O 0.5% F.S.. -10 to 0°C : Max. ±1% 0°C to 50°C : Max. ±

1000VAC 50/60Hz for 1 minute Min. 50MΩ(at 500VDC megger) .5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z direction for 2 hours -10 to 50°C, storage : -20 to 60°C 30 to 80%RH, storage: 30 to 80%RH
Connector type: IP40(IEC standards), Cable type: IP66 (IEC standards)
Front case: PC, Rear case: PA6, Pressure port: SUS316L
Connector cable (Ø4, 5-wire, Length: 2m)
(AWG24, Core diameter: 0.08mm, Number of cores: 40, Insulator out diameter: Ø1mn Protection Approval Weight^{×5} Connector type: Approx. 173g (approx. 88g), Cable type: Approx. 167g (approx. 90g)

| X1: (P) is PNP output type, | of model name is as pressure port. | X1: (R) is PNP output type, | of model name is as pressure port. | X1: (R) is PNP output type, | of model name is as pressure port. | X1: (R) is PNP output type, | X1: (R) is PN

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.
 digit LED display(Red): Used to indicate measured pressure value, set value

- and error message.

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

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

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

 Key: Used to set parameter and preset, peak value check mode, function
- setting or output operation mode. Set in setting or output operation mode. Setting or output operation mode. Setting set in setting setti

Output operation mode

※ PSAN Series has 5 kinds of output operation mode. Use the proper output operation mode by the detection
⑤ Hysteresis mode[₦95.5]
⑥ Window comparison output mode[♥0 o]

Ott is able to set the range for high[$i_1 - i_1$, $i_1 - i_2$] low [$i_2 - i_1$, $i_2 - i_2$] limit of pressure detection level when it is required to detect pressure at a certain range. ②Detection hysteresis is fixed to min. display range. It is able to set certain value for pressure detection level [5£ 1,5£2] and hysteresis [H35 1, H352]. ×1: Min. display range Lo-c OUT1 N.C OUT2 N.O. OUT2 N.O. OUT2 N.C.

⊕ Hysteresis-window comparison output mode[#J = 2]
 ⊙ Automatic sensitivity setting mode[#J ∈ 0]
 ⊙ Automatic sensitivity setting mode[#J ∈ 0]
 ⊙ This function is to set pressure detection level to the proper position automatically. It is set by applied pressure from two positions[5 ∈ 1, 5 ∈ 2].
 ⊙ Detection hysteresis is fixed to min. display range.
 ⊙ Detection hysteresis is fixed to min. display range.
 ⊙ Detection hysteresis is fixed to min. display range.
 ⊙ Detection hysteresis is fixed to min. display range.

following calculation. $5EE = \frac{(5E + 1 + 5E2)}{2}$ нуѕ UT1 N.O. OUT1 N.O. UT1 N.C. OUT1 N.C. SEE (DUT2 N.O. OUT2 N.O. 5£ 1/5£21

Time i St. //St2CFF

■ Time i St. //St2CFF

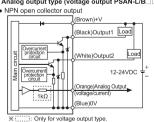
■ Forced output control mode[falt]

① Used to display pressure with forcibly holding comparing output OFF regardless of set value.
② In parameter setting, if output operation mode setting [alten] is changed to [falt], forced output control mode is operated.
③ OUT1, 2 can be ON/OFF manually by pressing ☑, ② key While the forced output control mode is applied.

Forced output control mode operation status RUN mode OUT1 OFF Flashing 83.1 ...₩.. ON OFF

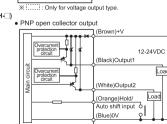
■ Input/Output circuit and diagram

V-□, current output PSAN-L□□□A-□)
PNP open collector output



12-24VDC (Black)Output1 Load (Blue)0V

PN open collector out (Black)Output1 Load Overcurrent protection circuit (Blue)0V

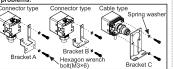


Installation

- Pressure port is divided as basic and option specification. Therefore, be sure that to use commercially available one touch fitting, (Standard: R(PT)18", Option: NPT1/8", 9/16"-18UNF, 7/16" 20 UNF) Please connect it by using spanner(17mm) at the metal part in order not to overload on the body when connecting one touch fitting.
- touch fitting.

 3. PSAN Series provides 2 brackets for connector type, bracket for cable type. The 2 types of installation is an
- bracket for cable type. I he 2 types of installation is available by for installation environments.

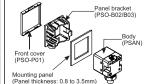
 I. At first, please unscrew hexagon wrench bolt and assemble the bracket on this unit by fixing hexagon the wrench bolt. In this case, tightening torque of hexagon wrench should be max. 30kgf-cm. It may cause mechanical problems.





▲ Caution The tightening torque of one touc fitting should be max. 100kgf.cm. It may cause machanical problem

5 Panel bracket(PSO-B02/B03) and front protection cover(PSO-P01) are sold separately. Please see the figure for installation.



Parameter setting

Setting

Press M ke

Press M key

- If the key lock is set (lock1 or lock2), unlock the key lock before setting parameters.
 % Press ❷, ❷ key to change set values.
 % 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 [r ⊔ n] will flash twice, then returned to RUN mode.

RUN mode L PR ►БЯг 40F *In case of standard pressure type model, [APA], [PPA], [PSF] [BAA], [PSF] parameters are displayed only. M P51 oUt.ñ ◀ ► ~ HA-~ WFP ► M M 5Pd flashing in turn 5.0 - 100 -500 ←→ 1000 0.0 ×1 A-04 4 M flashing in turn M flashing M flashing in turn 5H.ot ◀ ***2** R-20 **←→** 100.0 onf 1 ← ► onf 5 ALL M flashing in turn 1 flashing in turn

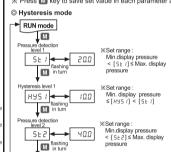
X If there is no additional key operation within 60 sec. while setting, current set value is not valid and previous set

Preset Setting

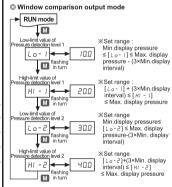
LOCE .

M

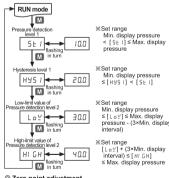
- ※ [r ∪n] flashes twice when returning to RUN mode
- ess 🔊, 🙈 key to change set values
- X Press M key to save set value in each parameter and move to next parameters.



flashing in turn H4255 ◆

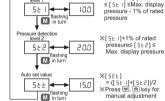


O Hysteresis-Window comparison output mode



 When the zero point adjustment is completed, it will display @@ and return to RUN mode automatically. display LLL and return to KON mode automatically. Kiff executing zero point adjustment on external pressure being at pressure port [Err 1] flashes 5 times. Please execute it in the atmospheric pressure after removing external pressure. KPlease execute zero point adjustment regularly.

O Automatic sensitivity setting mode RUN mode



flashing in turn ※ [Err ∃] Error flashes 3 times in case setting

※ [Err3] Error flashes 3 times in case setting conditions are not met, resetting is on standby.
※If there is no additional key operation within 60 sec. while setting, it is returned to Run mode (Except for force output mode). Previous 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 changing pressure display unit, resolution and Hold/ Auto Shift input function, preset values will be initialized as shown the table below. (When changing pressure display unit, preset value will be automatically switched to changed pressure unit.)

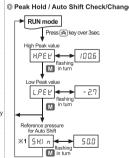
Preset Default > (unit: kPa)

(unit: kPa)

**Conditional Conditional C

.	< Pres	(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.
,	нч5 л	5t 1:-50.0 H95 1:0.0 St2:-50.0 H952:0.0	St 1:50.0 H45 1:0.0 St 2:50.0 H452:0.0	SE 1:500 H42 1:0 SE 2:500	5t 1:50.0 H95 1:-50.0 St2:50.0 H952:-50.0
	91 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
	HA-5	5t 1:-50.0 HY5 1:0.0 Low:0.0 HI GH:-50.0	St 1:50.0 H35 1:0.0 Log:0.0 H1 GH:50.0	St 1:500 H35 1:0 Lag:500 H1 GH:0	5± 1:50.0 H95 1:-50.0 Lag:-50.0 HI GH:50.0
	AUto	5± 1:0.0 5±2:-50.0 5€£:-25.0	5± 1:0.0 5±2:50.0 5E±:25.0	5t 1:0 5t 2:500 5ft :250	St 1:-50.0 St 2:50.0 SEt :0.0
	*When using the forced output function. Hold/Auto shift				

function is not available to use in Hold/Auto shift mode



X1: PSAN-L □□□ H - □ Displayed only when [d-! n] is set to [5HFŁ]. Auto shift reference pressure can be set within display error range.(Low_Range ≤ [5HJ - n] > High_Range)

• Low_Range = Min.display pressure - Min. preset set

value
• High_Range = Max.display pressure - Max. preset set value

set value \$\$ for value \$\$ for over 1 sec. in case of High peak / Low peak / Auto shift reference pressure value, set value will be erase and return to next operation. \$\$ [r U \circ]\$ flashes twice, then return to RUN mode.

Caution for using Do not insert any sharp or pointed object into pressure port. It may cause malfunction and damage the sensor.
 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.

4. When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded.

5. To avoid inductive noise, keep the wiring away from power line, high voltage line.

5. To avoid inductive noise, keep the wiring away from power line, high voltage line. It may cause malfunction.

6. When moving this unit from warm place to cold place, please remove the humidity on the cover then use it.

7. Do not press the setting button with sharp or pointed object.

8. Do not apply a tensile strength in excess of 30N to the cables or connector.

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

10. Installation environment

10. It shall be used indoor.

20. Altitude Max. 2,000m

30. Pollution Degree 2

30. Installation Category II

■ Major products

F.G. T Ground Autonics Corporation

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upplies ber, CO₂, Nd:YAG)

■HEAD QUARTERS