Autonics

DIGITAL PRESSURE SENSOR(Fluids)

PSAN SERIES

 ϵ

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

Caution for your safety

XPlease keep these instructions and review them before using this unit.

XPlease 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

XThe following is an explanation of the symbols used in the operation manual.

▲ Caution: Injury or danger may occur under special conditions.

Marning

1. In case of using this unit with machinery(Ex: nuclear power control, medical equpment, 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.

2. Do not use it in flammable gas because it does not have an explosion proof construction.

It may cause explosion.

⚠ Caution

- It might shorten the life cycle of the product or give an 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.

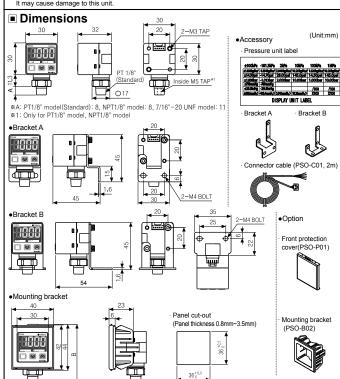
 4. Do not make a short circuit for the load.

 It may cause damage to this unit.

- It may cause damage to this unit.

 5. Do not wire incorrectly in power polarity etc. It may cause damage to this unit.

 6. Do not use corrosive gas or it iquid as it is only for non-corrosive gas It may cause damage to this unit.
- 7. Do not give power to its case or twist its case strongly.



■ Front panel identification and function



Range of rating pressure: It is possible to change the pressure unit in Pressure sensor.
 Please use different unit as label for your application.
 4digit LED display(Red): Used to indicate measured pressure value, setting value and error

el: 56.3, 7/16"-20 UNF model: 59.3

| 23.4digit LEU display(rect). Used to influence incessince pressure value, standy value and a standy standy and standy output operation mode.

Functions

■ 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 4 kinds of pressure unit. Please select the proper unit for application.

- PSAN-LV01C(P), PSAN-LC01C(P): RPa, kgffcm*, bar, psi, m+Hg, inHg, mmH2O

- PSAN-LV01C(P), PSAN-LC01C(P): RPa, kgffcm*, bar, psi

※ 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(HYS.M): When needed to change hysteresis for detecting pressure.

- Window comparison output mode(WIN): When needed to detect pressure in certain area.

- Hysteresis in-Window comparison output mode(WIN): When needed to detect pressure in certain area.

- Hysteresis in-Window comparison output mode(WIY-W): When both hysteresis mode and window comparison output mode are required

- Automatic sensitivity setting mode(AUTO): When needed to set detection sensitivity automatically at proper position.

- Forced output control mode(F.OUT): When needed to display pressure with remaining comparison output OFF regardless of setting value

*Control output change function

*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)
It can prevent chattering of control output by changing response time.
It is able to set 5kinds 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 of digital filter.

**Analog output scale setting and Hold/Auto Shift setting function

Analog voltage output scale setting: The scale function for analog output voltar range. It can be changed for User's application. Analog output is 1-5VDC with alog output voltage (1 ut is 1-5VDC within the

- 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 is 1-5VDC within the pressure range from the pressure point (R-1_u) for 1VDC to the pressure point (R-5_u) for 5VDC.

- 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 is 4-20mA within the pressure range from the pressure point (R-2^u) for 20mA.

- Hold/Aulo Shift input setting:

- Hold function: A function to hold PV and Control output while signal is input.

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

- Key lock function

- The key 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 [: All keys are locked; therefore it is not available to change parameter settings, preset value, zero adjustment, High/Low peak check and SHJ /n data initialization. (Lock setting change is available).

- Jo F: F: 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 to atmospheric pressure. When the zero adjustment is applied, analog output [Voltage or Current] is changed by this function. (Press@1+@1keys over 1 sec. in RUN mode.)

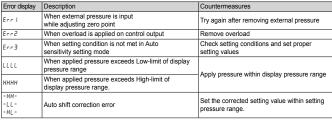
- High Peak / Low Peak Hold Function

High Peak / Low Peak Hold Function This function is to diagnosis malfunction of the system caused by parasitic pressure or to check through

XThe above specifications are subject to change without notice.

memorizing the max./min. pressure occurred from the system.

■ Error



Specifications

Pressure type		Gauge pressure										
1 1000	ourc ty	,pc		ressure type		pressure typ						
Model	Vol	tage output	PSAN-LV0		PSAN-L01	- (/ =		IC(P)V-□				
×1	Cui	rrent output	PSAN-LV0	. ,	PSAN-L01	. ,		IC(P)A-□	_	. ,		
	Holo	d/Auto shift input	PSAN-LV0	1C(P)H- □	PSAN-L01	C(P)H-	PSAN-L1	IC(P)H-	PSAN-L	to 110.0kPa of rating pressure e: 1kΩ 2000 0.1 0.001 0.02 0.8 0.03 0.1		
Rated pressure range		0.0 to -101	.3kPa	0.0 to 100.	0kPa	0 to 1,00	0kPa	-101.3 to 100.0kPa				
		ssure range	5.0 to -101	.3kPa	-5.0 to 110	.0kPa	-50 to 1,1	I00kPa		o 110.0kPa		
Min.display unit			0.1kPa		0.1kPa		0.1kPa		0.1kPa			
Max. pressure range			2 times of rating pressure 2 times of rating pressure 2 times of rating pressure									
Applicable fluid		Air, Non-corrosive gas and fluid that will not corrade SUS316L										
Powe	er su	oply	12-24VDC	±10%(Ripple	P-P: Max.	10%)						
Curre	ent co	onsumption	Max. 50mA(Analog Current Output type Max 75mA)									
Conti		•	NPN or PNP open collector output Load voltage: Max. 30VDC Load current: Max. 100mA Residual voltage-NPN: Max. 1V, NPN: Max. 2V									
[Hyst	eresis ^{×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									
Analo		Voltage output	- Output voltage: 1-5VDC ±2% F.S. · Linear: Max. ±1% F.S. · Output impedance: 1kΩ · Zero point: Max. 1VDC ±2% F.S. · Span: Max. 4VDC ±2% F.S. · Span: Max. 4VDC ±2% F.S. · Resolution: 1/2,000(equal to display resolution) · Response Time: 50ms									
±3	JI.	Current output	Output voltage: DC4-20mA ±2% F.S. · Linear: Max. ±1% F.S. Zero point: Max. DC4mA ±2% F.S. · Span: Max. DC16mA ±2% F.S. Resolution: 1/2,000(equal to display resolution) · Response Time: 70ms									
Displ	ay m	ethod	7 Segment	LED Display	,							
3	Resolution Pressure Unit		1000	2000	1000	2000	1000	2000	1000	2000		
- Ka	kPa		0.1	-	0.1	-	1	-	-	0.1		
i i	kgf/c	:m²	0.001	-	0.001	-	0.01	-	-	0.001		
á	bar		0.001	-	0.001	-	0.01	-	1-	0.001		
g	psi		-	0.01	-	0.01	1-	0.1	-	0.02		
Min. Display interval [™]	mmŀ	-lg	-	0.4				_	. -	0.8		
Σ	inHg		-	0.02		$\overline{}$		_	. T-	0.03		
- 1	mmH₂O		0.1	-				_	Ţ-	0.1		
		-	0 to 50°C:	Max. ±0.5%	F.S., -10 t	-10 to 0°C; Max. ±1% F.S.						
Display accuracy Insulation resistance		Min. 50MΩ(at 500VDC megger)										
Dielectric strength			1000VAC 50/60Hz for 1 minute									
Vibration			1.5mm am	plitude at free	quency of 10	to 55Hz in	each of X	Y, Z direction	ons for 2 hou	irs		
A te	Ambient temperature		-10 to 50°C, Storage: -20 to 60°C									
	Ambient humidity		30 to 80%RH, Storage: 30 to 80%RH									
Desta	- 62		ID40/IEO C									

Front case: PC, Rear case: PA6, Pressure port: SUS304/SUS316L Material Connector cable (ø4, 5-wire, Length: 2m, AWG 24, Core diameter: 0.08mm, Number of cores: 40, Insulator diameter: ø1mm) Cable

Approx. 87.5g

Unit weight

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

R1:8. P11/8"model(Standard), NPT1/8. NPT1/8"model(Option)

7/16-20UNF: 7/16"-20 UNF model(Option)

X2: In hysteresis output mode, detection difference is variable.

X3: It is allowed to select one analog output type only.

X4: Resolution(1000/2000) of min. Display interval is automatically selected depend on pressure units.

*There may be ±1digit error in hysteresis by pressure unit calculation error. *Environment resistance is rated at no freezing or condensation.

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1 It is able to set the range for high(HI - I, HI - 2) Now

②Detection hysteresis is fixed to min. display range

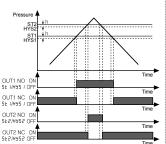
(Lo-1, Lo-2) limit of pressure detection level when it is required to detect pressure at a certain range

Output operation mode

 PSAN series has 5 kinds of output o with detection. se use proper output operation mode in accordance •Window comparison output mode(≝l n)

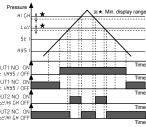
Approval

It is able to set certain value for pressure detection level(5£ 1, 5£2) and hysteresis(H95 1, H952).



Off is available to set hysteresis mode(5£ 1, H95 1) and window comparison output mode when both hysteresis mode and window comparison output mode(Lag, HI GH) are necessary.

②Detection hysteresis is fixed to min. display range.



OUT2 NC ON Automatic sensitivity setting mode($\beta U E_0$)

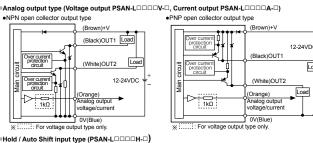
①This function is to set pressure detection level to the proper position automatically. It is set by applied pressure from two positions($5 E \ 1, 5 E 2$).
②Detection hysteresis is fixed to min. display range.
③The pressure detection leve($5 E \ 1$) is shown in the following calculation. $5 E E = \frac{(5 E \ 1 + 5 E 2)}{(5 E \ 1 + 5 E 2)}$ 5Et = (5t 1+5t2) OUT1 NC C

•Forced output control mode(F.o⊔E)
⊙Used to display pressure with forcibly holding comparing output OFF regardless of setting value @In parameter setting, if output operation mode setting 'oUt or' is changed to 'F.oUt', forced output control mode is operated.

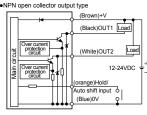
JT1, 2 can be ON/OFF manually by pressin	g 🖄, 🖄 key	y While the forced output control mode is app	olied.
RUN mode	RUN mode	Forced output control mode operation status	RUN mode
Current pressure	OUT1	ON OFF	—► Time
RUN mode	OUT2	ON S S	→ Time

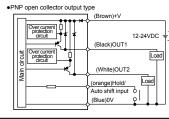
■ Input/Output circuit and diagram

®Analog output type (Voltage output PSAN-L□□□□V-□, Current output PSAN-L□□□□A-□)



NPN open collector output type



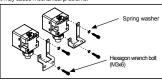


Installation

.Pressure port is divided as basic and option specification.
Therefore, be sure that to use commercially available one touch fitting. (Standard: R(PT)1/8", Option: NPT1/8", 7/16" - 20 UNF)

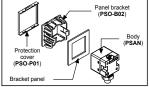
htting, (Standard: N(H'1)16*, Option: NH'116*, 7/16*-20 UNH)
2Please connect it by using spanner(17mm) at the metal part in
order not to overload on the body when connecting one touch
fitting.

3. Two different fixing brackets are provided for PSAN model. Select
proper one with considering your application environments.
4.4 first, please unscrew heazigon whench bot and assemble the
bracket on this unit by fixing hexagon the wrenchbott. In this case,
tightening forque of hexagon wrench should be max. 30kgfcm.
It may cause mechanical problems. It may cause mechanical problems.





5.Bracket(PSO-B02) and front protection of Please see the pictures for installation.



Zero point adjustment ■ Parameter setting

■ Setting

ess M 3sec.

Press M

Press 🔊 3sec.

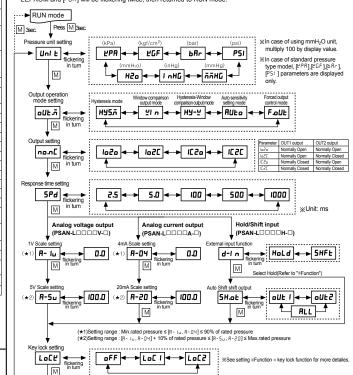
Peak hold

※ When pressing M key for 3 sec in the middle of parameter setting, current setting value will be saved in EEPROM and [- ⊔n] will be flickering twice, then returned to RUN mode.

▶ [

High peak value check
Low peak value check
Low peak value check
Auto Shift Input Checking (In case of Hold/Auto Shift input type model)

Zero point adjustment



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

Preset Setting

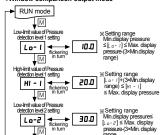
M

 $\underset{\mathbb{R}}{\mathbb{R}^{n}} \ \text{will be flickering twice when returning to RUN mode.}$ $\underset{\mathbb{R}}{\mathbb{R}^{n}} \ \text{Press } \underset{\mathbb{R}}{\mathbb{R}^{n}} \ \text{key to change setting values.}$ $\underset{\mathbb{R}}{\mathbb{R}^{n}} \ \text{Press } \underset{\mathbb{R}}{\mathbb{R}^{n}} \ \text{key to save setting value in each parameter and move to next parameters.}$

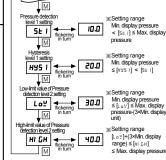
 Hysteresis mode ► RUN mode \mathbb{I}_{M} 5t / flickering in turn H95 I flickering in turn **↓**[M] 5£2 flickering in turn flickering in turn

•Window comparison output mode

High-limit value of Pressure detection level 2 setting



HI -2 flickering in turn Hysteresis-Window comparison output mode ► RUN mode



•Zero point adjustment 1. Please press ♥+® keys for over 1sec. at the same time putting an applied pressure in state of the atmospheric pressure.

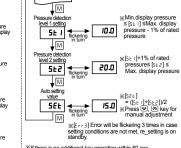
2. When the zero point adjustment is completed, it will display

0.0 and return to RUN mode automatically.

"If executing zero point adjustment on external pressure being at pressure port [_rr] will be flickered Stimes. Please execute it in the atmospheric pressure after removing external pressure.

*Please execute zero point adjustment regularly.

 Automatic sensitivity setting mode ➤ RUN mode



XIf 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. XIn case of changing output operation mode, no preset values will be initialized, instead, previous output operation settings will become the preset values. XVhen changing pressure display unit, resolution and Hold/Aulo 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.)

(Unit: kPa Output mode 95.ñ 1:0 1:500 2:0 2:500 1:50.0 5 1:-50.0 5:-50.0 GH:50.0 5E 1:0 5E 2:500 5E E:250 5Et:25.0 5Et:-25.0

Peak Hold / Auto Shift Check/Change RUN mode Press key for 3se H.PEĽ dickering in tum M L.PEL dickering -2.7 М Reference pressure for Auto Shift

1) SHJ n flickering in turn

50.0 JМ

 $(\bigstar1)$ PSAN-L \Box \Box \Box \Box \Box \Box Displayed only when $\boxed{d-1}$ $\stackrel{}{\cap}$ is set to

Auto shift reference pressure can be set within display error range.(Low_Range \$5#J n \$ High_Range)

-Low_Range=Min.display pressure-Min. preset setting value -High_Range=Max.display pressure-Max preset setting value

and return to next operation ※[r੫n] will be flickering twice, then return to RUN mode.

Caution for using

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

2. Be sure that this unit must avoid direct touch with water, oil, thinner etc.

3. 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.

It may cause malfunction.

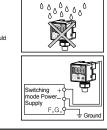
It may cause malfunction.

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 settling 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.



■ Major products

- Proximity sensors Fiber optic sensors
- Photoelectric sensors
 Door/Door side sensors
 Timers
 Power controllers
 Graphic/Logic panels
- Temperature/Humidity transducers ■ Stepping moters/drivers/motion controllers
 ■ Laser marking system (CO₂, ND:YAG)
 ■ Laser welding/soldering system

Area sensors
Pressure sensors
Rotary encoders
Sensor controllers

EP-KE-77-0019D