Autonics



Dual Display Type Pressure Sensors

PSQ Series

PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Safety Precautions

- 'Safety Precautions' are provided to ensure safe and proper use of the product and to prevent accidents or hazards. Please make sure to follow them carefully.
- ⚠ symbol indicates a caution, warning of potential hazards under certain conditions.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime / disaster prevention devices, etc.)**
    Failure to follow this instruction may result in personal injury, economic loss or fire.
02. **Do not use or store the unit in the place where flammable / explosive / corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
    Failure to follow this instruction may result in explosion or fire.
03. **Install on a device panel or to a pressure port directly to use.**
    Failure to follow this instruction may result in fire.
04. **Do not connect, repair, or inspect the unit while connected to a power source.**
    Failure to follow this instruction may result in fire.
05. **Check 'Connections' before wiring.**
    Failure to follow this instruction may result in fire.
06. **Do not disassemble or modify the unit.**
    Failure to follow this instruction may result in fire or electric shock.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. **Use the unit within the rated specifications.**
    Failure to follow this instruction may result in fire or product damage.
02. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
    Failure to follow this instruction may result in fire.
03. **This product is designed to detect the pressure of noncorrosive medium. Do not use for corrosive medium.**
    Failure to follow this instruction may result in product damage.
04. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
    Failure to follow this instruction may result in fire or product damage.

Cautions During Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Use the product, 3 sec after supplying power.
- When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded and connect a noise suppression capacitor between the 0 V and F.G. terminals.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
- LCD performance may vary depending on the usage environment. Check the environmental conditions, and do not install the device in places where direct sunlight or high temperatures may be present.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 3
  - Installation category II

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

PSQ - ❶ ❷ ❸ ❹ ❺ - ❻

❶ Applicable medium
No mark: Pneumatic type
(air, non-corrosive gas)
B: Fluid type (gas, liquid)

❷ Pressure type
C: Compound

❸ Pressure range [unit: kPa]
01: -100.0 to 100.0
1: -100 to 1,000

❹ Cable
No mark: Cable type (fluid type)
C: Connector type (pneumatic type)

❺ Option input / output
No mark: No support
U: Support (analog output or external input)

❻ Pressure port

Medium / Pressure port	Pneumatic type	Fluid type
R1/8	○	○ (default)
Rc1/8	○ (default)	○
NPT1/8	○	-
R1/4	-	○
NPT1/4	-	○
9/16-18UNF (Metal gasket sealing)	-	○

Product Components

- Product
- Pneumatic type: bracket A, B
- Connector type: Connector wiring (PSO-C01)
- Instruction manual
- Fluid type: bracket C

Sold Separately

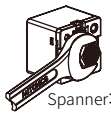
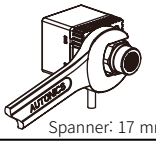
- Integrated installation set: Front cover (PSO-P01), Panel bracket (PSO-B02)
- Separate installation set[01]: Front cover (PSO-P02), Front / rear panel bracket set (PSO-B04)
- M5 gender[01] (PSO-Z01)

01) Only for pneumatic type model

Installation

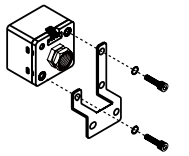
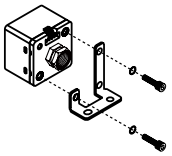
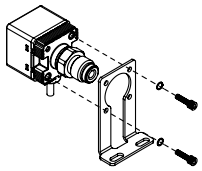
■ One touch fitting

Use a spanner at the metal part of the unit in order not to overload on the body when connecting one touch fitting.

Pneumatic type	Fluid type
 Spanner: 12 mm	 Spanner: 17 mm

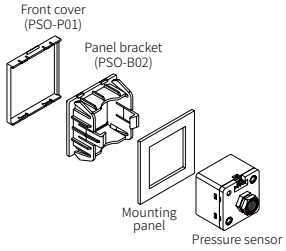
■ Bracket

Select proper bracket with considering your application environments, and install by using spring washer and hexagon wrench bolt. (tightening torque: ≤ 3 N·m)

Pneumatic type		Fluid type
• Bracket A	• Bracket B	• Bracket C
		

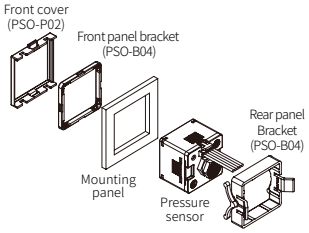
■ Integrated installation set

- Supported model: Pneumatic / Fluid type model
- Sold Separately: Integrated installation set
- Panel thickness: 0.8 to 3.5 mm



■ Separate installation set

- Supported model: Pneumatic type model
- Sold Separately: Separate installation set
- Panel thickness: 0.5 to 7 mm



Specifications

Model	PSQ-C□C□-□	PSQ-BC□□-□
Applicable medium	Pneumatic type (air, non-corrosive gas)	Fluid type (non-corrosive gas and fluid that do not corrode stainless steel 316L)
Pressure type	Gauge pressure	Sealed gauge pressure [01]
Rated pressure range	-100.0 to 100.0 kPa / -100 to 1,000 kPa model	
Display and setting pressure range	Different by rated pressure range	
-100.0 to 100.0 kPa model	-101.3 to 110.0 kPa	
-100 to 1,000 kPa model	-101 to 1,100 kPa	
Display type	PV / SV display part: 12 segment LCD, 4-digit	
Display accuracy	-10 to 0 °C: ≤ ± 1 % F.S., 0 to 50 °C: ≤ ± 0.5 % F.S.	
Min. display unit	Different by rated pressure range	
-100.0 to 100.0 kPa model	0.1 kPa	
-100 to 1,000 kPa model	1 kPa	
Min. display interval	Different by pressure unit [02]	
Max. pressure range	Different by rated pressure range	
-100.0 to 100.0 kPa model	Rated pressure × 2	Rated pressure × 3
-100 to 1,000 kPa model	Rated pressure × 1.5	
Connection	Connector type	Cable type
Cable	Ø 4 mm, 5-core, 2 m	Ø 4 mm, 5-core, 3 m
Wire	AWG 24 (0.08 mm, 40-seam), insulator diameter: Ø 1 mm	
Material	Front case: PC back case: PBT + G15 % pressure port: SUS303	Front case: PC back case: PA6 pressure port: SUS316L
Protection structure	IP40 (IEC standard)	IP65 (IEC standard)
Certification	CE UKCA cULus EAC	
Unit weight (packaged)	≈ 80 g (≈ 165 g)	≈125 g (≈ 210 g)

01) The unit is sealed structure. It is based on atmospheric pressure 101.3kPa.
02) Refer to 'Minimum Display Interval per Pressure Unit'.

Power supply	12 - 24 VDC⎓ (ripple P-P: ≤ 10 %)
Allowable voltage range	90 to 110 % of rated voltage
Current consumption	≤ 50 mA (analog output model: ≤ 70 mA)
Control output	NPN or PNP open collector output
Load voltage	≤ 30 VDC⎓
Load current	≤ 100 mA
Residual voltage	≤ 2 VDC⎓
Hysteresis	Different by output operation mode (parameter) [01]
Repeat error	±0.2% F.S. ±min. display interval
Response time	2.5 to 5,000 ms (parameter)
Protection circuit	Output short over current protection circuit
Insulation resistance	≥ 50 MΩ (500 VDC⎓ megger)
Dielectric strength	Between the charging part and the case: 1,000 VAC~ 50 / 60 Hz for 1 min
Vibration	1.5mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours
Ambient temperature	-10 to 50 °C, storage: -20 to 60 °C (no freezing or condensation)
Ambient humidity	30 to 80 %RH, storage: 30 to 80 %RH (no freezing or condensation)

01) Refer to 'Output Operation Mode'.

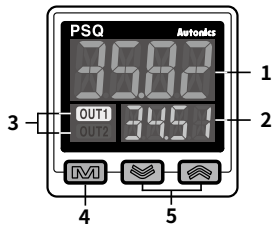
External input	Auto shift - Remote zero - Hold (parameter)
ON / OFF voltage input	ON voltage: ≤ 0.4 VDC⎓ OFF voltage: 5-Vin or open input impedance: ≈ 100 kΩ
Resolution	1 / 2,000
Option output	Analog voltage - Analog current output (parameter)
Analog voltage output	1 - 5 VDC⎓ ± 2.5 % F.S., output impedance: ≈ 240 Ω
Analog current output	DC4 - 20 mA ± 2.5 % F.S., output impedance: ≈ 100 kΩ
Linearity	≤ ± 1 % F.S.
Resolution	1 / 2,000
Response time	50 ms

Minimum Display Interval per Pressure Unit

Pressure unit	Display interval	
	Pressure range -100.0 to 100.0 kPa model	Pressure range -100 to 1,000 kPa model
MPa	0.001	0.001
kPa	0.1	1
kgf/cm²	0.001	0.01
bar	0.001	0.01
psi	0.02	0.2
mmHg	1	-
inHg	0.1	-
mmH_2O	0.1 [01]	-

01) Multiply display value by 100.

Unit Descriptions

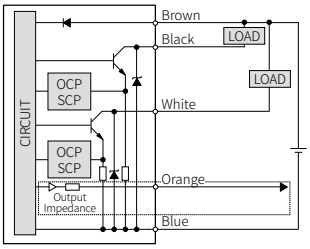


1. PV display part (green, red, orange)
RUN mode: Displays PV (present value).
Setting mode: Displays parameter.
2. SV display part (green)
RUN mode: Displays SV (setting value), unit, etc.
Setting mode: Displays SV.
3. Output (OUT1, OUT2) indicator (orange)
Turns ON while the control output turns ON.
4. [M] key
Enters parameter, selects the setting item and returns RUN mode.
5. [▼] , [▲] key
Sets preset of output operation mode, executes modes and changes parameters.

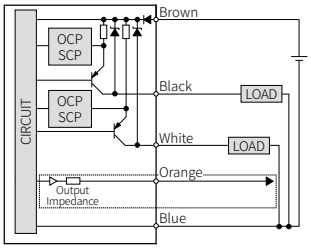
Connections

Color	Function
Brown	+V
Blue	0 V
Black	OUT 1
White	OUT 2
Orange	Analog output / External input (not available at the same time.)

■ NPN open collector output



■ PNP open collector output



- OCP (Over Current Protection), SCP (Short Circuit Protection)
- The control output is abnormal when the control output circuit is shorted or over current is supplied.
- The [ ] circuit is supported only for option input/output models.

Error

Display	Cause	Troubleshooting
ERR1	When zero-point adjustment is executed while external pressure is input.	Try again after removing external pressure.
ERR2	When over-current is applied on control output.	Remove the over current conditions such as adjusting load resistance.
ERR3	When the range of 'ST1', 'ST2' ('auto sensitivity setting mode') is set incorrectly.	Check the setting range and set 'ST1', 'ST2'.
ERR4	When connection between master and slave is wrong during copying parameters.	Check if the cable connection is correct and the models are same.
ERR5	When entering invalid password.	Enter valid password.
HHHH	When applied pressure exceeds the high-limit of display pressure range.	Apply pressure within the display pressure range.
LLLL	When applied pressure exceeds the low-limit of display pressure range.	
-HH-	When the correction value of auto shift or remote zero exceeds the high-limit of the setting range.	Set the correction value of auto shift or remote zero within the setting range.
-LL-	When the correction value of auto shift or remote zero exceeds the low-limit of the setting range.	
-HL-	When '-HH-', '-LL-' occur both.	

Mode Setting

RUN
- [M] for over 2 sec → **Parameter 1 group** → [M] for over 2 sec →
- [M] for over 4 sec → **Parameter 2 group** → [M] for over 2 sec →
- [▼] or [▲] → **Preset setting** → [M] for over 2 sec →
- [▼] + [▲] for over 1 sec after remove external pressure → **Zero-point adjustment** → Auto →
- [M] + [▼] for over 1 sec → **Key lock switching** → Display LOCK / ON or OFF 1 sec →
- [M] + [▲] for over 1 sec → **Max. / Min. value monitoring** 01) → [M] → Reset: [▼]+[▲] for over 1 sec →

→ RUN

01) PV display part: displays maximum value, SV display part: displays minimum value

Parameter Setting

- Some parameter are activated / deactivated depending on other parameters. Refer to the description.
- It returns to RUN mode when there is no additional key input for 60 sec in each parameter group.
- When pressing the [M] key once within 2 sec when returning RUN mode from parameter groups, it enters the previous parameter group.

■ Parameter 1 group

Parameter		Display	Default	Setting range	Condition
1-1	OUT1 operation mode	oUt1	EASY	EASY: easy, HYS.M: hysteresis, WIN: window comparison output, AUTO: auto sensitivity setting, F.OUT: forced output control	-
1-2	OUT2 operation mode	oUt2	oFF	OFF, EASY: easy, HYS.M: hysteresis, WIN: window comparison output	1-1 OUT1 operation mode: EASY, HYS.M, WIN
				Auto setting (following OUT1 setting)	1-1 OUT1 operation mode: AUTO, F.OUT
1-3	Analog output / external input terminal 01)	I/O	A-V	[Option input / output model] A-V: analog voltage output, A-C: analog current output, SHFT: auto shift, ZERO: remote zero, HOLD: hold	-
1-4	Auto shift applied terminal	SHot	oUt1	[Option input / output model] OUT1, OUT2, ALL: OUT1 & OUT2	1-3 analog output / external input terminal: SHFT
1-5	Remote zero applied terminal	ZEot	oUt1	[Option input / output model] OUT1, OUT2, ALL: OUT1 & OUT2	1-3 analog output / external input terminal: ZERO
1-6	Output type	No.NC	No	NO: Normally Open / OFF NC: Normally Closed / OFF	1-2 OUT2 operation mode: OFF
				1O2O: Normally Open / Normally Open 1O2C: Normally Open / Normally Closed 1C2O: Normally Closed / Normally Open 1C2C: Normally Closed / Normally Closed	1-1 OUT1 operation mode: AUTO or 1-2 OUT2 operation mode: HYS.M, WIN
1-7	Response time	SPd	2.5	2.5, 5, 10, 25, 50, 100, 250, 500, 1,000, 5,000 ms	-
1-8	PV display part color	CLoR	R-oN	• Display color: default / output R-ON: green / red, G-ON: red / green, RED: red / red, GREN: green / green	-
1-9	Display color linked output	diSP	oUt1	OUT1, OUT2, ALL: OUT1 & OUT2 • Select the output terminal which apply the setting of 1-8 PV display part color.	1-2 OUT2 operation mode: EASY, HYS.M, WIN & 1-8 PV display part color: R-ON, G-ON
1-10	Display unit	UNIt	kPA	kPa, MPa, KGF: kgf/cm^2, bar, psi, mmHg, inHg, H2O: mmH$_2$O	-

01) When '1-1 OUT1 operation mode' is set as 'F.OUT' or applied pressure is higher / lower than the display pressure range, auto shift [SHFT], remote zero [ZERO] functions are not available.

■ Parameter 2 group

Parameter		Display	Default	Setting range	Condition
2-1	SV display part	SUb	Std	STD: preset, UNIT: pressure unit, OFF: no display	-
2-2	Parameter copy	CoPY	oFF	OFF, ON, ON-L: key lock after copying • Refer to 'Parameter Copy'.	-
2-3	Parameter reset	INIt	oFF	OFF, ON: parameter reset	-
2-4	Password	PWd	0000	0000: off, 0001: checking parameter setting value only, 0002 to 9999	-
2-5	Control output switching	SoUt	NPN	NPN, PNP	-
2-6	Easy mode hysteresis 01)	HYS	III	I to IIIIIIII (display bar type, 1 to 8) • Hysteresis value per 1 bar 0.1 kPa (pressure range -100.0 to 100.0 kPa model), 1 kPa (pressure range -100 to 1,000 kPa model)	1-1 OUT1 operation mode or 1-2 OUT2 operation mode: EASY

01) Although the display unit is changed, standard unit of hysteresis for easy mode is not changed.

Preset Setting

■ Setting method

- Setting name and value are cross-displayed in SV display part.

1. Set the operation mode in parameter 1 group.
2. Enter the preset setting mode by pressing [▼] or [▲] key from RUN mode.
3. Select the setting item by [M] key and change the preset by [▼] or [▲] key.
4. Press [M] key over 2 sec or no key input over 2 sec, save setting and return to RUN mode. (except forced output control mode)

■ Preset setting by operation mode

- 'Default' values are based on rated pressure range -100.0 to 100.0 kPa model. The values in parenthesis '()' is for -100.0 to 1,000 kPa model.

Operation mode		Preset		Default	Setting range
Easy	EASY	Pressure detection level	P	50.0 (500)	Min. value of display pressure < 'P' ≤ max. value of display pressure
Hysteresis	HYS.M	Pressure detection level	St	50.0 (500)	Min. value of display pressure < 'ST' ≤ max. value of display pressure
		Hysteresis level	HYS	-50.0 (0)	Min. value of display pressure ≤ 'HYS' < 'ST'
Window comparison output	WIN	Pressure detection low limit	Lo	-50.0 (0)	Min. value of display pressure ≤ 'LO' ≤ max. value of display pressure - (3 × min. display unit)
		Pressure detection high limit	HI	50.0 (500)	'LO' + (3 × min. display unit) ≤ 'HI' ≤ max. value of display pressure
Auto sensitivity setting	AUto	Pressure level 1	St1	-50.0 (0)	Min. value of display pressure ≤ 'ST1' ≤ max. value of display pressure - 1 % of rated pressure range
		Pressure level 2	St2	050.0 (500)	'ST1' + 1 % of rated pressure range ≤ 'ST2' ≤ max. value of display pressure
		Pressure detection level	SEt	0.0 (250)	'ST1' ≤ 'SET' ≤ 'ST2', SET= (ST1+ST2)/2 • Manual setting is possible by [▼] or [▲] key.
Forced output control	F.oUt	-	-	-	-
Analog voltage output scale	A-V	1 V output	A-1V	-100.0 (0)	Min. value of display pressure < 'A-1V' < max. value of display pressure
		5 V output	A-5V	100.0 (1,000)	'A-1V' + 10 % of rated pressure range < 'A-5V' < max. value of display pressure, or min. value of display pressure< 'A-5V' < 'A-1V' - 10 % of rated pressure range
Analog current output scale	A-C	4 mA output	A-04	-100.0 (0)	min. value of display pressure < 'A-04' < max. value of display pressure
		20 mA output	A-20	100.0 (1,000)	'A-04' + 10 % of rated pressure range < 'A-20' < max. value of display pressure, or min. value of display pressure < 'A-20' < 'A-04' - 10 % of rated pressure range

■ Preset setting by external input mode

- Apply 0 VDC⎓ to orange cable over 1 ms to operate auto shift or remote zero mode.
- Press [▼] + [▲] key over 1 sec to delete set auto shift correction.

Operation mode		Preset		Default	Setting range
Auto shift	SHFt	Auto shift correction	SHIN	0	Min. value of preset setting < 'SH.IN' ≤ max. value of preset setting
Remote zero	ZERo	Remote zero correction	ZEIN	0	Min. value of preset setting < 'ZE.IN' ≤ max. value of preset setting
Hold	Hold	-	-	-	-

■ Precaution

- The operation modes (easy, hysteresis, window comparison, auto sensitivity setting) that can be set separately per each output (OUT1 / 2) display parameter name with identification number.
- The preset is reset when changing '1-10 Display unit', '1-3 Analog output / external input terminal' parameter.
- The preset is reset to default when changing '1-1 / 1-2 OUT1 / 2 operation mode' parameter.
  But, if there is the previous preset in changed operation mode, it is set the value.

■ Setting guide

• NPN or PNP open collector output (OUT1/2)

1. Set the output operation mode to use in '1-1 / 1-2 OUT1 / 2 operation mode' parameter.
2. Enter preset setting mode from RUN mode. The items are displayed in the order of OUT1 - OUT2.
3. Set the preset for each item.

Setting example - OUT1: hysteresis mode, OUT2: window comparison output mode			
OUT1 operation mode	Hysteresis mode	St1	Pressure detection level
		HYS1	Hysteresis level
OUT2 operation mode	Window comparison output mode	Lo2	Pressure detection low limit value
		HI2	Pressure detection high limit value

• Analog output / external input

1. Set the operation mode to use in '1-3 Analog output / external input terminal' parameter.
2. Enter preset setting mode from RUN mode. (analog output/external input items are displayed after OUT1 - OUT2)
3. Set the preset for each item.

Setting example - analog current output scale			
Analog output / external input terminal	Analog current output	A-04	4 mA output SV
		A-20	20 mA output SV

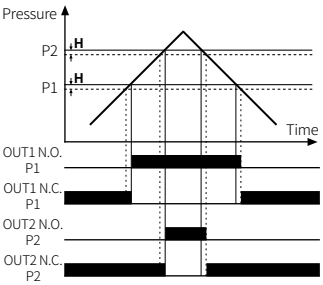
Output Operation Mode

Change the output operation mode to change pressure detection method.

ON: ▬▬ **OFF:** ＿＿ **H:** hysteresis **A:** Min. display interval

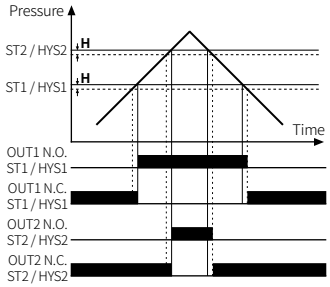
■ Easy mode

- Pressure is detected by applying the hysteresis which is set in '2-6 Easy mode hysteresis' parameter.
- Setting: Pressure detection level (P1, P2)



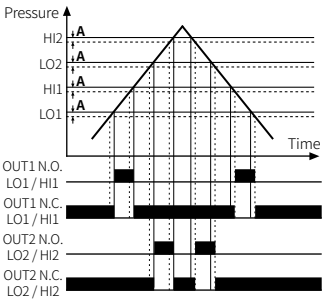
■ Hysteresis mode

- Set the hysteresis for pressure detection directly.
- Setting: Pressure detection level (ST1, ST2), hysteresis (HYS1, HYS2)



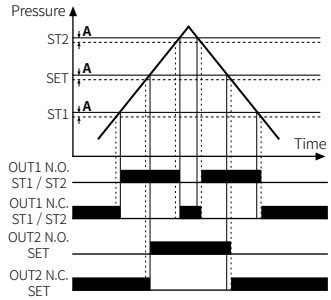
■ Window comparison output mode

- It detects pressure at the desired range.
- Hysteresis is fixed as min. display interval.
- Setting: High limit (HI1, HI2), low limit (LO1, LO2) of pressure detection level



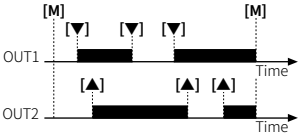
■ Auto sensitivity setting mode

- It sets the proper detection sensitivity for pressure detection level (SET) automatically by applying two pressure point (ST1, ST2) .
  SET= (ST1+ST2)/2
- Hysteresis is fixed as min. display interval.



■ Forced output control mode

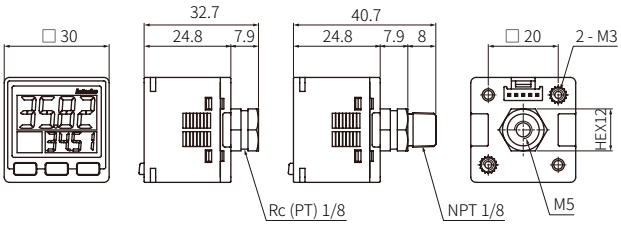
- Regardless of setting value, it maintains comparison output OFF and displays present pressure.
- During forced output control mode, press the [M], [▼] or [▲] key to turn ON/OFF OUT1, 2 manually.



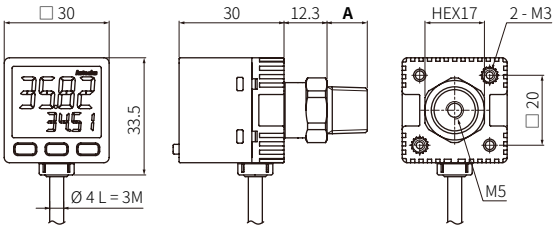
Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

■ Pneumatic type

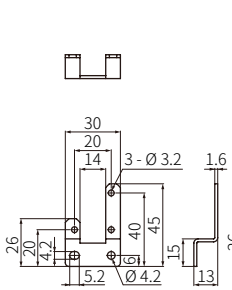


■ Fluid type

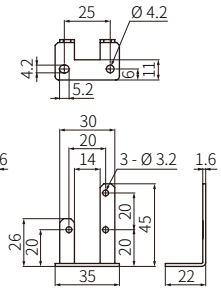


Pressure port	R1/8	Rc1/8	R1/4	NPT1/4	9/16-18UNF
A	8	0	11.5	11.5	15.4

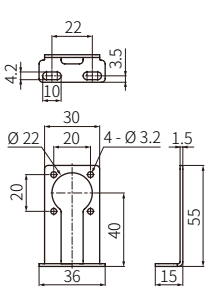
■ Bracket A



■ Bracket B



■ Bracket C

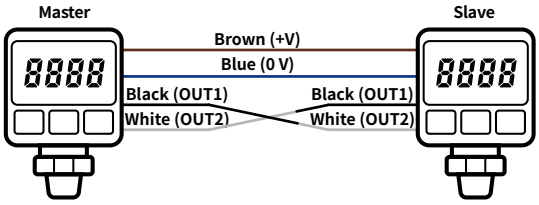


Parameter Copy

It is function to copy parameter setting from master to slave by 1 : 1.

- Master and Slave should be the same specification model.

1. Select 'ON' or 'ON-L' of master '2-2 Parameter copy' parameter to activate the ready status of parameter copy.
   ON: Copys setting values of parameters.
   ON-L: After copying the setting values of parameters, activate the key lock function of slave.
2. Check the 'REDY' on SV display part of the master, and turn OFF the master power.
3. Connect the master and slave by referring the below diagram.



4. Turn ON the master power with pressing the [M] of the slave. Parameter copy function is executed.

- When connecting master and slave incorrectly, the PV display of master displays 'ERR4'. After checking the connection, turn OFF the master power and turn ON it.

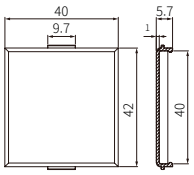
5. If parameter copy is in progress, the following message is displayed.
   Master - PV display part: arbitrary value (orange) / SV display part: 'COPY'
   Slave - PV display part: arbitrary value (green) / SV display part: 'OK'
6. When completing copy, the PV display parts of master and slave display the same arbitrary value. Turn OFF the master and slave power and disconnect them. Repeat from step 3 to proceed with additional copying.

Sold Separately: Front Cover, Panel Bracket

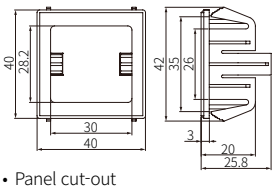
- Unit: mm, For the detailed drawings, follow the Autonics website.

■ Integrated installation set

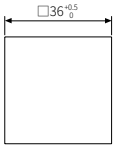
Front cover: PSO-P01



Panel bracket: PSO-B02 (white)



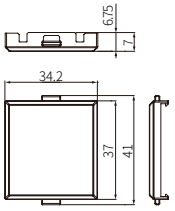
- Panel cut-out



Panel thickness: 0.8 to 3.5 mm

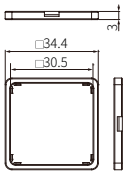
■ Separate installation set (pneumatic type)

Front cover: PSO-P02

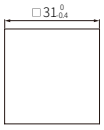


Front / Rear panel bracket set: PSO-B04

[Front]

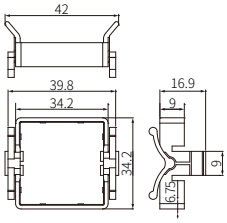


- Panel cut-out

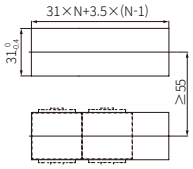


Panel thickness: 0.5 to 7 mm

[Rear]



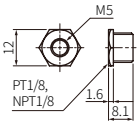
- N unit install in series



Sold Separately: M5 gender

- Unit: mm, For the detailed drawings, follow the Autonics website.

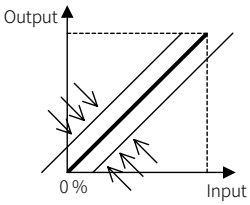
■ PSO-Z01 (pneumatic type)



Zero-point Adjustment

With the pressure port open, the current pressure display value is forcibly set to zero by removing any offset deviation. Zero-point adjustment affects analog output.

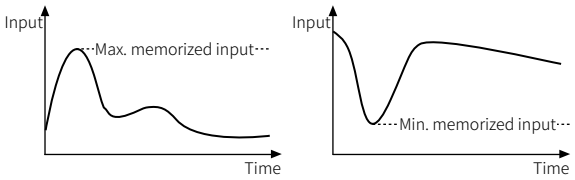
- For precise measurement, execute zero-point adjustment periodically.



Maximum / Minimum Value Monitoring

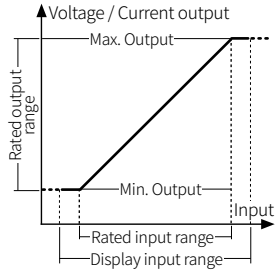
In order to identify abnormal conditions of the system that are not easily identified or to diagnose the max. / min. input that has occurred, save the value and notify the user.

- When the memorized max. / min. pressure is higher / lower than the rated pressure, it displays 'HHHH' / 'LLLL'.

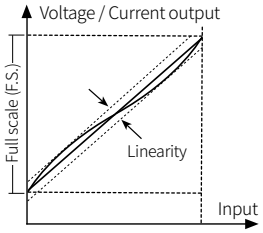


Analog Output Characteristic

■ Input - Output



■ Linearity



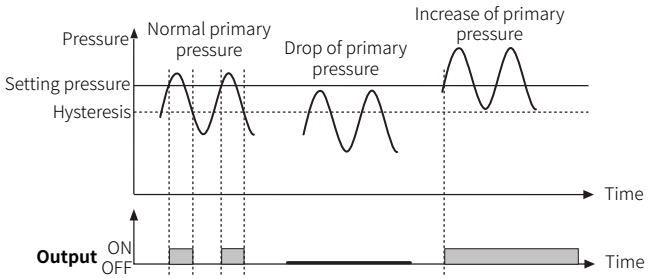
External Input

■ Auto shift

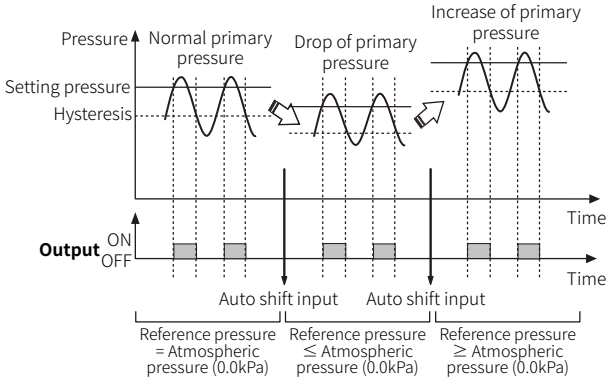
The judgment level is corrected by applying the standard pressure which is set when external input signal is applied.

- Correction set value ST1 = ST1 + SH.IN
  Correction set value HYS1 = HYS1 + SH.IN
  SH.IN = The reference pressure set by Auto shift input.

• When auto shift is not used



• When auto shift function is used



■ Remote zero

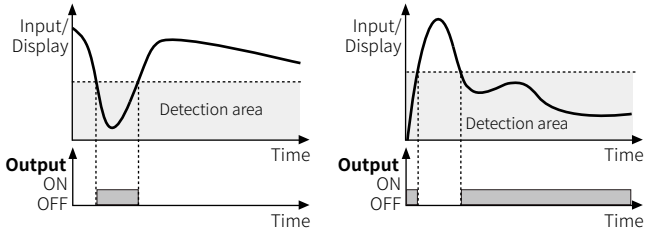
Executes zero-point adjustment function when external input signal is applied.

■ Hold

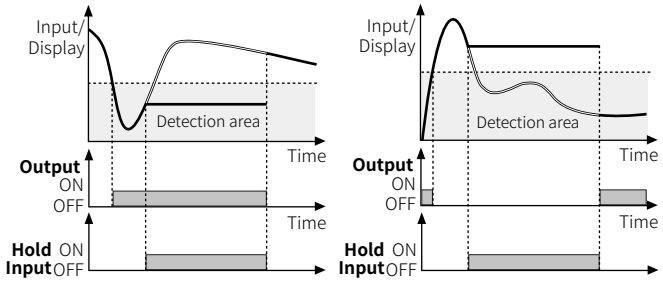
Holds current display value and control output when external input signal is applied.

Input: —— Display: ——

• When hold function is not used



• When hold function is used

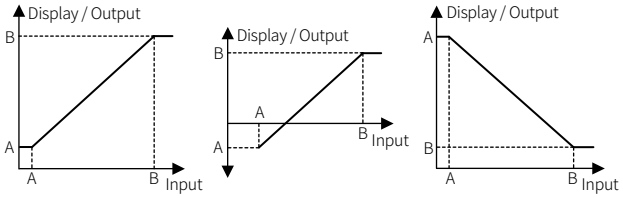


Response Time

Prevents chattering of the output by changing the response time of the control output and pressure display value. When the response time is longer, the number of digital filter increase, so stable measurement is possible, but the measured value may differ from the actual input value.

Display / Output Scale

Customizes the scale of display / output value from rated output range. If the measured input is a, b, and the arbitrary values to be displayed are A, B, the display / output value are outputted for input a and b linearly (a = A, b = B).



Pressure Conversion Chart

	Pa	kgf/cm²	mmHg	mmH_2O	psi	bar	inHg
Pa	1	0.000010197	0.007501	0.101972	0.00014504	0.00001	0.0002953
kgf/cm²	98066.5	1	735.5592	10000.0005	14.223393	0.980665	28.959025
mmHg	133.3224	0.001359	1	13.595099	0.019337	0.001333	0.039370
mmH_2O	9.80665	0.000099	0.073556	1	0.00142	0.000098	0.002896
psi	6894.733	0.070307	51.71475	703.016716	1	0.068947	2.036014
bar	100000.0	1.019716	750.062	10197.1626	14.503824	1	29.529988
inHg	3386.388	0.034532	25.40022	345.315507	0.491156	0.033864	1

• 1,000,000 Pa = 1,000 kPa = 1 MPa

Segment Table

The segments displayed on the product indicate the following meanings. It may differ depending on the product.

7 Segment				11 Segment				12 Segment				16 Segment			
0	0	I	I	0	0	I	I	0	0	I	I	0	0	I	I
1	1	J	J	1	1	J	J	1	1	J	J	1	1	J	J
2	2	K	K	2	2	K	K	2	2	K	K	2	2	K	K
3	3	L	L	3	3	L	L	3	3	L	L	3	3	L	L
4	4	M	M	4	4	M	M	4	4	M	M	4	4	M	M
5	5	N	N	5	5	N	N	5	5	N	N	5	5	N	N
6	6	O	O	6	6	O	O	6	6	O	O	6	6	O	O
7	7	P	P	7	7	P	P	7	7	P	P	7	7	P	P
8	8	Q	Q	8	8	Q	Q	8	8	Q	Q	8	8	Q	Q
9	9	R	R	9	9	R	R	9	9	R	R	9	9	R	R
A	A	S	S	A	A	S	S	A	A	S	S	A	A	S	S
b	B	T	T	b	B	T	T	b	B	T	T	b	B	T	T
C	C	U	U	C	C	U	U	C	C	U	U	C	C	U	U
d	D	V	V	d	D	V	V	d	D	V	V	d	D	V	V
E	E	W	W	E	E	W	W	E	E	W	W	E	E	W	W
F	F	X	X	F	F	X	X	F	F	X	X	F	F	X	X
G	G	Y	Y	G	G	Y	Y	G	G	Y	Y	G	G	Y	Y
H	H	Z	Z	H	H	Z	Z	H	H	Z	Z	H	H	Z	Z

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