



ORIGINAL INSTRUCTIONS

Instruction Manual
Compact Pressure Switch
PSE57#-#-L2/A/B



The intended use of the pressure sensor is to measure the pressure of fluids and provide an output signal while connected to IO-Link.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)⁽¹⁾, and other safety regulations.

⁽¹⁾ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components.

IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements.

ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.

- Refer to the product catalogue, Operation manual and Handling precautions for additional information.
- Keep this manual in a safe place for future reference.

	Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning

- Ensure compliance with relevant safety laws and standards.
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

2 Specifications

2.1 General specifications

Product No.	PSE57#-#-L2/A/B
Enclosure	IP65
Ambient temperature	Operation: -10 to 60°C Storage: -20 to 70°C (no condensation or freezing)
Ambient humidity	Operation, Storage: 35 to 85% RH (no condensation)
Withstand voltage	500 VAC or more (50/60 Hz), 1 minute (between terminals and housing)
Insulation resistance	100 MΩ or more at 500 VDC (between terminals and housing)
Standards	UL/CSA (E216656), CE/UKCA marked

2 Specifications (continued)

2.2 IO-Link specifications

Product No.	PSE570 -#-L2	PSE573 -#-L2	PSE574 -#-L2	PSE575 -#-L2	PSE576 -#-L2	PSE577 -#-L2	
Applicable fluid	Gas or liquid that will not attack or corrode the materials of parts in contact with fluid						
Pressure	Rated pressure range	0 to 1 MPa	-100 to 100 kPa	0 to 500 kPa	0 to 2 MPa	0 to 5 MPa	0 to 10 MPa
	Set pressure range	-0.105 to 1.050 MPa	-105.0 to 105.0 kPa	-50 to 525 kPa	-0.105 to 2.1 MPa	-0.10 to 5.25 MPa	-0.10 to 10.5 MPa
	Minimum setting unit	0.001 MPa	0.1 kPa	1 kPa	0.001 MPa	0.01 MPa	0.01 MPa
	Proof pressure	3 MPa	600 kPa	1.5 MPa	5 MPa	12.5 MPa	30 MPa
Power Supply	Used as switch output device	12 to 24 VDC (±10%), and power supply ripple (p-p) 10% at max.					
	Used as IO-Link device	18 to 30 VDC, ripple max.10% (p-p)					
	Current consumption	35 mA or less					
Protection	Polarity protection						
Output	Output type	Select from NPN open collector 2 output, PNP open collector 2 output					
	Output mode	Hysteresis mode, window comparator mode, error output					
	Switch operation	Normal output, Reversed output					
	Max. load current	80 mA					
	Max. applied voltage (NPN output)	30 V					
	Internal voltage drop (Residual voltage)	1.5 V or less (Load current 80 mA)					
	Delay time	3.4 ms or less, variable from 0 to 60 s / 0.01 s increments					
Accuracy	Accuracy (at 25°C)	±1.0% F.S		±2.5% F.S			
	Linearity	±0.5% F.S.					
	Repeatability (at 25 °C)	±0.2% F.S		±0.5% F.S			
	Temperature characteristics	±2%F.S. (0 to 50 °C) ±3%F.S. (-10 to 60 °C)	±3% F.S. (0 to 50 °C) ±4% F.S. (-10 to 60 °C)	±5% F.S. (-10 to 60 °C)			

2.3 Communication specifications

Product No.	PSE57#-#-L2	
IO-Link type	Device	
IO-Link version	V1.1	
Communication speed	COM2 (38.4 kbps)	
Configuration file	IODD file	
Min. cycle time	3.4 ms	
Process data length	Input Data: 4 byte, Output Data: 0 byte	
On request data communication	Available	
Data storage function	Available	
Event function	Available	
Vendor ID	131 (0x0083)	
Device ID	PSE570-#-L2	0x0002A8
	PSE573-#-L2	0x0002A9
	PSE574-#-L2	0x0002AA
	PSE575-#-L2	0x0002AB
	PSE576-#-L2	0x0002AC
	PSE577-#-L2	0x0002AD
Operation light	SIO mode: Lights up when switch output turned on. OUT1: Green, OUT2: Red IO-Link communication: Light up when switch output turned on. In IO-Link mode, Operation light is ON or flashes. OUT1: Green, OUT2: Red In Error mode, Operation light is flashes. OUT2: Red	

2 Specifications (continued)

2.4 Switch output specifications

Product No.	PSE570 -#-A/B	PSE573 -#-A/B	PSE574 -#-A/B	PSE575 -#-A/B	PSE576 -#-A/B	PSE577 -#-A/B	
Applicable fluid	Gas or liquid that will not attack or corrode the materials of parts in contact with fluid						
Pressure	Rated pressure range	0 to 1 MPa	-100 to 100 kPa	0 to 500 kPa	0 to 2 MPa	0 to 5 MPa	0 to 10 MPa
	Set pressure range	-0.10 to 1.050 MPa	-105.0 to 105.0 kPa	-50 to 525 kPa	-0.10 to 2.1 MPa	-0.10 to 5.25 MPa	-0.10 to 10.5 MPa
	Minimum setting unit	Refer to Product No.					
	Proof pressure	3 MPa	600 kPa	1.5 MPa	5 MPa	12.5 MPa	30 MPa
Power Supply	Used as switch output device	12 to 24 VDC (±10%), and power supply ripple (p-p) 10% at max.					
	Current consumption	35 mA or less					
Protection	Polarity protection						
Output	Output type	NPN open collector 2 output, PNP open collector 2 output					
	Output mode	Hysteresis mode					
	Switch operation	Normal output, Reversed output					
	Max. load current	80 mA					
	Max. applied voltage (NPN output)	30 V					
	Internal voltage drop (Residual voltage)	1.5 V or less (Load current 80 mA)					
Delay time	3.4 ms or less, variable from 0 to 60 s / 0.01 s increments						
Accuracy	Accuracy (at 25°C)	±1.0% F.S		±2.5% F.S			
	Linearity	±0.5% F.S.					
	Repeatability (at 25 °C)	±0.2% F.S		±0.5% F.S			
	Temperature characteristics	±2%F.S. (0 to 50 °C) ±3%F.S. (-10 to 60 °C)	±3% F.S. (0 to 50 °C) ±4% F.S. (-10 to 60 °C)	±5% F.S. (-10 to 60 °C)			

2.5 Piping / Weight specifications

Product No.	PSE570/573/ 574-01	PSE570/573/ 574-02	PSE575/576/ 577-02
Port size	R1/8 M5 x 0.8	R1/4 M5 x 0.8	
Materials of parts in contact with fluid	Piping port	C3604 + nickel plated	
	Pressure sensor	Al ₂ O ₃ (aluminium oxide 96%)	
Weight	Sensor seal	FKM + Grease	FKM
	Without lead wire and M12 connector	88 g	95 g
With lead wire and M12 connector	175 g	182 g	191 g

2.6 Cable Specification

Conductor	Nominal cross section area	AWG23
	Outside diameter	0.72 mm
Insulator	Material	Cross linked vinyl chloride
	Outside diameter	1.14 mm
Sheath	Colours	Brown, Blue, Black, White
	Material	Oil resistant vinyl chloride
Finished outside diameter	φ4	
Length	3 m	

Warning

- Special products (-X) might have specifications which are different from those shown in this section. Contact SMC for specific drawings.

3 Installation

Warning

Do not install the product unless the safety instructions have been read and understood.

- Tighten to the specified tightening torque.
If the tightening torque is exceeded the mounting screws and brackets may be damaged.
If the tightening torque is insufficient, the product can be displaced.

3.1 Piping

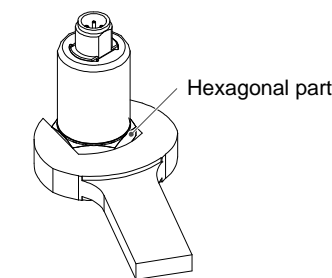
Caution

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.

- Tighten fittings to the specified tightening torque.

Product No.	Thread size	Tightening Torque
PSE57#-01	R1/8	3 to 5 N·m
PSE57#-02	R1/4	8 to 12 N·m

- Only fluids which are non-corrosive to C3604 + electroless nickel plated, Al203 (aluminum oxide) and FKM should be used.
- When piping, apply a spanner to the metal piping section of the sensor.



3.2 Environment

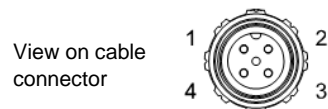
Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in a location where the product could be splashed with oil or chemicals.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product specifications.

4 Wiring

4.1 Wiring connections

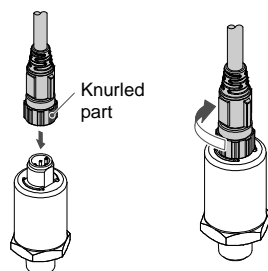
- Connections should be made with the power supply turned OFF.
- Use a separate route for the sensor wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.
- Connector pin numbers
When the lead wire with M12 connector (ZS-37-A or ZS-37-B) designated for the PSE57# is used, the wire colours will apply as shown below.



Pin No.	Description		Colour
	Output specifications: PSE57#-#-L2	Output specifications: PSE57#-#-A/B	
1	L+(DC+)	DC(+)	Brown
2	DO(OUT2)	OUT2	White
3	L-(DC-)	DC(-)	Blue
4	C/Q(OUT1)	OUT1	Black

4.2 Connecting the lead wire

- Align the lead wire connector with the connector key groove and insert.
- Connection is complete when the knurled part is fully tightened. Check that the connection is not loose.

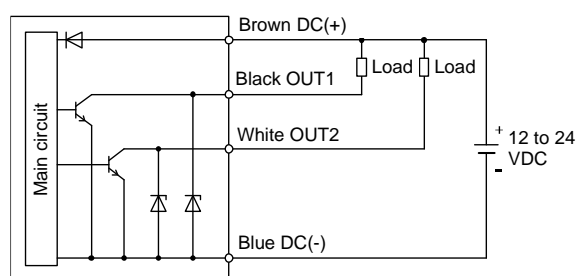


4.3 Internal circuit and wiring examples

- Output specification (used as a switch output device)

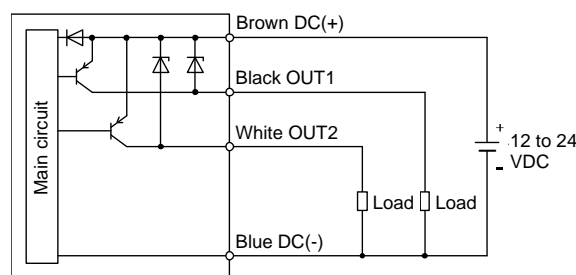
4.3.1 PSE57#-#-A

NPN open collector 2 outputs,
Maximum 30 V, 80 mA
Residual voltage: 1.5 V or less



4.3.2 PSE57#-#-B

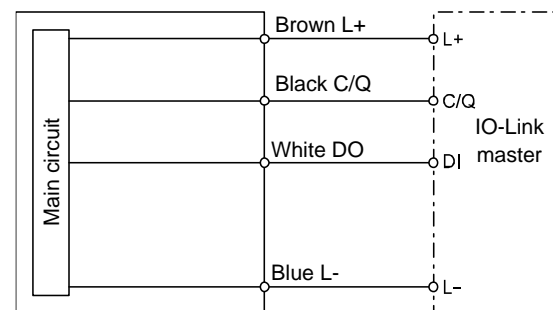
PNP open collector 2 outputs,
Maximum 80 mA
Residual voltage: 1.5 V or less



4 Wiring (continued)

- Used as an IO-Link device

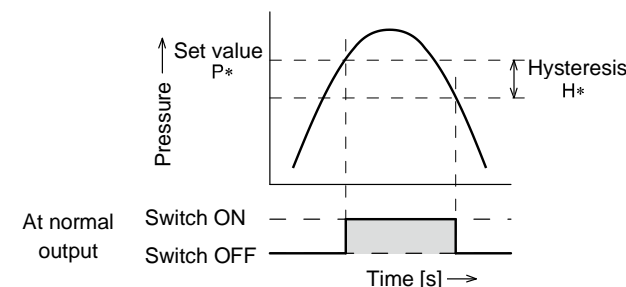
4.3.3 PSE57#-#-L2



5 Settings (continued)

5.2 Pressure setting

- Default setting
When the pressure exceeds the set value, the switch will be turned ON. When the pressure falls below the set value by the amount of hysteresis or more, the switch will be turned OFF.
The default setting is to turn on the pressure switch when the pressure reaches the centre of between atmospheric pressure and the upper limit of the rated pressure range (for output specification -L2).
If this condition shown below, is acceptable, then keep these settings.



• PSE570-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	0.5 MPa	[P2] Set value of OUT2	0.5 MPa
[H1] Hysteresis of OUT1	0.05 MPa	[H2] Hysteresis of OUT2	0.05 MPa

• PSE573-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	50.0 kPa	[P2] Set value of OUT2	50.0 kPa
[H1] Hysteresis of OUT1	5.0 kPa	[H2] Hysteresis of OUT2	5.0 kPa

• PSE574-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	250.0 kPa	[P2] Set value of OUT2	250.0 kPa
[H1] Hysteresis of OUT1	25.0 kPa	[H2] Hysteresis of OUT2	25.0 kPa

• PSE575-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	1.0 MPa	[P2] Set value of OUT2	1.0 MPa
[H1] Hysteresis of OUT1	0.1 MPa	[H2] Hysteresis of OUT2	0.1 MPa

• PSE576-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	2.5 MPa	[P2] Set value of OUT2	2.5 MPa
[H1] Hysteresis of OUT1	0.25 MPa	[H2] Hysteresis of OUT2	0.25 MPa

• PSE577-#-L2

Item	Default setting	Item	Default setting
[P1] Set value of OUT1	5.0 MPa	[P2] Set value of OUT2	5.0 MPa
[H1] Hysteresis of OUT1	0.5 MPa	[H2] Hysteresis of OUT2	0.5 MPa

5 Settings

5.1 IO-Link Configuration

IODD file

- IODD (I/O Device Description) is a definition file which provides all properties and parameters required for establishing functions and communication of the device.
- IODD includes the main IODD file and a set of image files such as vendor logo, device picture and device icon.
- The IODD files are listed below.

No.	Product No.	IODD file
1	PSE570-#-L2	SMC-PSE570-L2-yyyymmdd-IODD1.1
2	PSE573-#-L2	SMC-PSE573-L2-yyyymmdd-IODD1.1
3	PSE574-#-L2	SMC-PSE574-L2-yyyymmdd-IODD1.1
4	PSE575-#-L2	SMC-PSE575-L2-yyyymmdd-IODD1.1
5	PSE576-#-L2	SMC-PSE576-L2-yyyymmdd-IODD1.1
6	PSE577-#-L2	SMC-PSE577-L2-yyyymmdd-IODD1.1

- For more information about the IODD files, refer to the SMC website (URL: <https://www.smcworld.com>) or contact SMC.

6 How to Order

Refer to the catalogue or operation manual on the SMC website (URL: <https://www.smcworld.com>) for How to order information.

7 Outline Dimensions (mm)

Refer to the catalogue or operation manual on the SMC website (URL: <https://www.smcworld.com>) for outline dimensions.

8 Maintenance

8.1 General Maintenance



- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous. Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

How to reset the product after a power cut or forcible de-energizing

The setting of the product will be retained as it was before a power cut or de-energizing. The output condition is also basically recovered to that before a power cut or de-energizing, but may change depending on the operating environment. Therefore, check the safety of the whole installation before operating the product. If the installation is using accurate control, wait until the product has warmed up (approximately 20 to 30 minutes).

9 Limitations of Use

9.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

10 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

11 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
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