

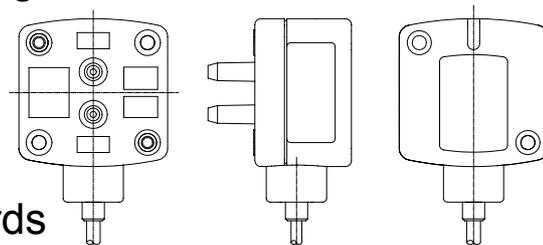
# Low Differential Pressure Sensor PSE550-X501/-X502/-X505

SMC CORPORATION  
4-14-1, SOTO-KANDA, CHIYODA-KU,  
TOKYO 101-0021, JAPAN  
URL: <http://www.smcworld.com>

## Feature 1: Rated differential pressure range, nonstandard specifications

- - X501: 0 to 500Pa (0.5kPa)
- - X502: 0 to 1000Pa (1kPa)
- - X505: 0 to 5000Pa (5kPa)

\*Standard (PSE550) range: 0 to 2 kPa



## Feature 2: Comply with overseas standards CE, UL (CSA), RoHS

## Specifications

Model	PSE550-X501	PSE550-X502	PSE550-X505
Rated differential pressure range	0 to 500 Pa	0 to 1 kPa	0 to 5 kPa
Operating pressure range *1)	- 25 to 25 kPa	- 50 to 50 kPa	- 50 to 50 kPa
Proof pressure	25 kPa	50 kPa	65 kPa
Applicable fluid	Air, Non-corrosive gas, Non-inflammable gas		
Power supply voltage	24VDC, Ripple(p-p)10% or less (with power supply polarity protection)		
Current consumption	15 mA or less		
Output specification *2)	5VDC (Output impedance: approx. 1kΩ)		
Accuracy (Ambient temp. of 25°C)	±3% F.S. or less		±1%F.S. or less
Linearity	±1%F.S. or less		±0.5%F.S. or less
Repeatability	±0.3%F.S. or less		
Indication light	Orange light (ON: when energized)		
Environmental resistance	Enclosure	IP40	
	Operating temp. range	Operating: 0 to 50 °C, Stored: - 20 to 70 °C (No freezing or condensation)	
	Operating humidity range	Operating/Stored: 35 to 85 RH (No condensation)	
	Withstand voltage	1000 V AC, 50/60 Hz for 1 min. between live parts and case	
	Insulation resistance	50 MΩ or more (500 VDC, insulation resistance tester) between live parts and case	
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 100m/s <sup>2</sup> acceleration in X, Y, Z directions, for 2 hours each (De-energized)	
	Impact resistance	300 m/s <sup>2</sup> in X, Y, Z directions, 3 times each (De-energized)	
Temperature characteristics	±3% F.S. or less (Based on 25 °C)		
Port size	Ø4.8 (Ø4.4 in the end), resin piping (Applicable to I.D. Ø4 air tubing)		
Material of wetted parts	Resin pipe: Nylon, Piston area of sensor: Silicon		
Sensor cable	Oil proof cab tyre cable (Oval) 3-wire 2.7 × 3.2 3m Conductor section area: 0.15 mm <sup>2</sup> Insulation O.D.: Ø0.9mm		
Weight	With sensor cable	75g	
	Without sensor cable	35g	
Standard	CE, UL (CSA), RoHS		

\*1) Rated differential pressure can be detected within the operating pressure range. As for -X501, if we supply pressure of 25.0 kPa to HI resin pipe and 24.5 kPa to LO resin pipe, it can detect differential pressure of 500Pa.

\*2) If you need a monitor display and switching output (ON/OFF), please consider the product as well as ur pressure sensor controllers.

For specifications and details, refer to attached drawing. **(Part No.: PSE300-(M)\*-X503)**

# How to Order

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PSE550--X50  1

Bracket \*3)

Nil	Without bracket
A	Bracket

\*3) Brackets are unassembled in the factory, but are included with the shipment.

Connector \*4)

Nil	Without connector
C2	Connector for PSE300 multiple channel pressure controller 1 pc

\*4) Connectors are unassembled in the factory, but are included with the shipment.

Rated differential pressure range

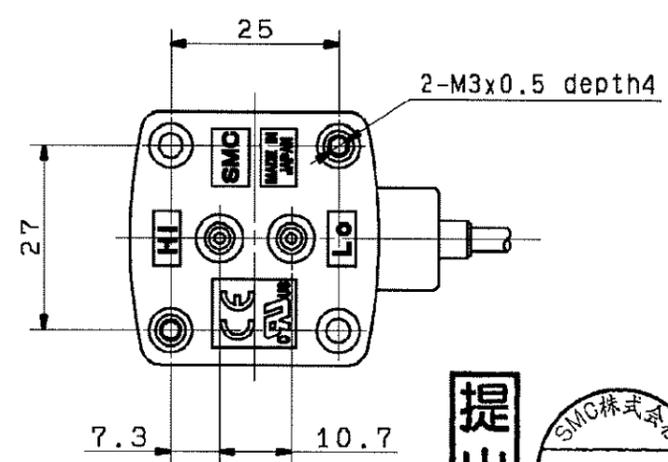
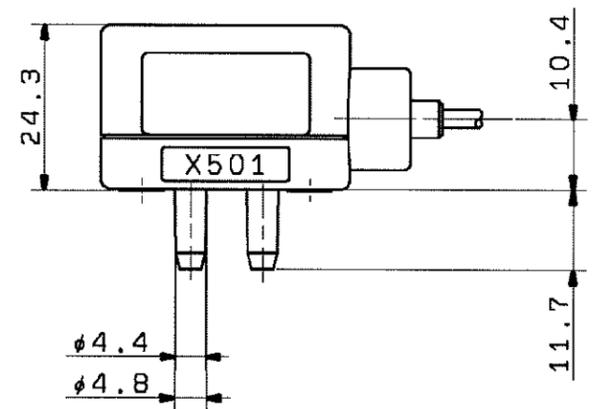
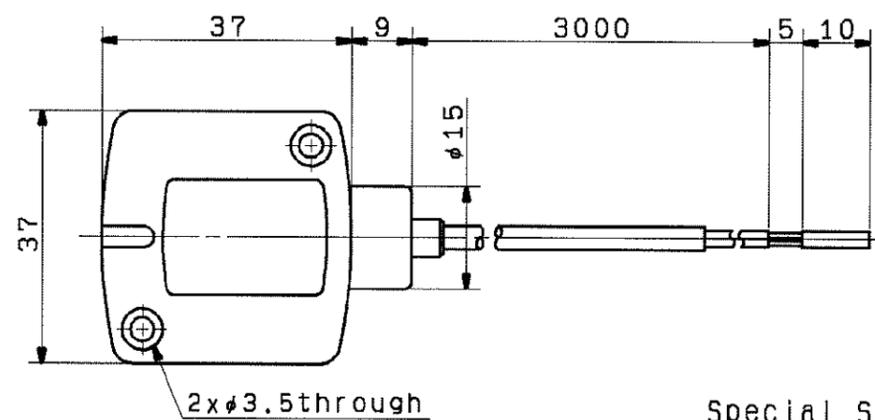
1	0 to 500 Pa
2	0 to 1 kPa
5	0 to 5 kPa

## Dimensions: mm (Refer to the drawing attached to the last page)

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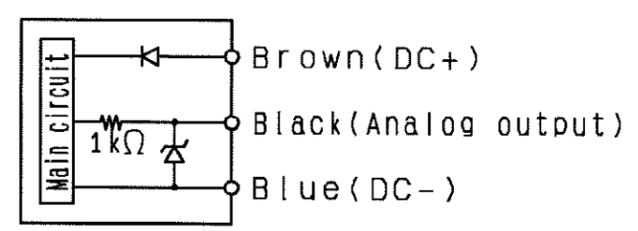
**Caution** To ensure the safest possible operation of this product, please be sure to read thoroughly the "Safety Instructions" in our "Best Pneumatics" catalog before use.



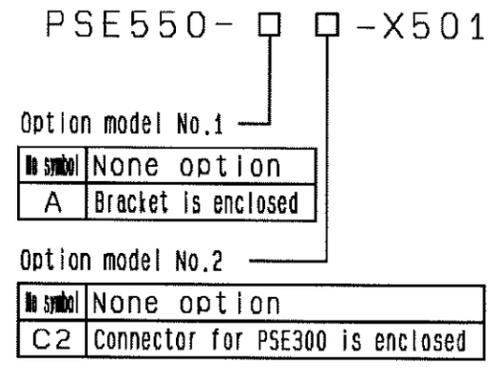
**Note1**  
In range from -25 to 25kPa, differential pressure between 0 to 500Pa can be detected. For example, if 25.0kPa is applied to resin piping at High while 24.5kPa is applied to resin pipe at Low, differential pressure of 500Pa can be detected.

- Special Specification**
1. Standard product is PSE550.
  2. Pressure range: 0 to 500Pa
  3. RoHS compliant product.

**Electrical circuit**



**Model indication method**



**提出用**

SMC株式会社  
2007.12.26  
開発第5部

**Specification**

Model No.	PSE550-X501
Differential pressure range	0 to 500Pa
Operating pressure range	-25 to 25kPa (Note1)
Withstand pressure	25kPa
Fluids	Air, Non-corrosive gases, Incombustible gases
Power supply voltage	<del>±24V</del> 24VDC, ripple(p-p)10% or less (Protection against inverse connection)
Current consumption	15mA or less
Output spec.	Analog output 1 to 5V Output impedance: Approx. 1kΩ
Accuracy(25°C)	±3%F.S. or less
Linearity	±1%F.S. or less
Repeatability	±0.3%F.S. or less
Operation indicator Lamp	Orange(Lit when power is on)
Environment	Enclosure IP40
	Operation temp. range Operation: 0 to 50°, Storage: -20 to 70°(No condensation or no freezing)
	Operation humidity range Operation, Storage: 35 to 85%RH(No condensation)
	Withstand voltage 1000VAC or more, 50/60Hz, 1 minute(Between lead block and case)
	Insulation resistance 50MΩ or more(500VDC M)(Between lead block and case)
	Vibration proof 10 to 150Hz smaller one 1.5mm or 100m/s double amplitude, 2 hours each directions of X, Y and Z
	Impact proof 300m/s <sup>2</sup> , 3times each in directions of X, Y and Z respectively
Temp. characteristic	±3%F.S. or less (25°C)
Port size	φ4.8mm(φ4.4mm at the end) Resin pipe (Corresponding to air tube I.D. φ4mm)
Material	Case: PBT, Resin pipe: nylon Sensor receiving area: silicon
Cable for sensor	3-cores ellipse-shaped cable(0.15mm <sup>2</sup> )
Weight	With cable for sensor 75g
	Without cable for sensor 35g
Standard	CE, UL/CSA(E216656)

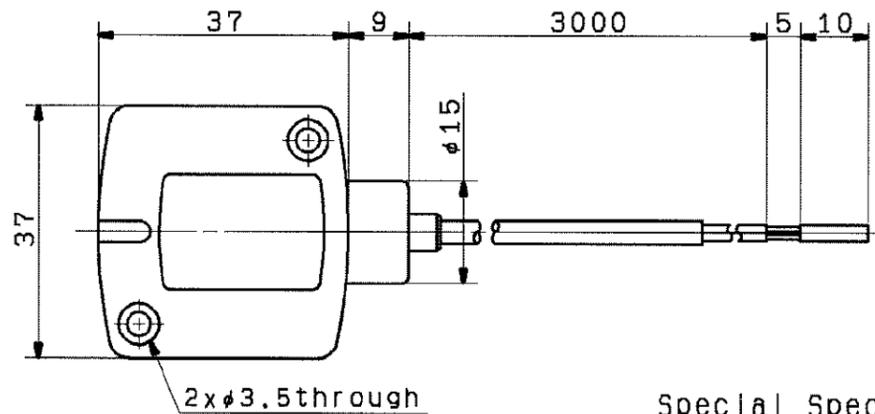
FINISH				
PAINT				
PACKING				
MATERIAL				
MATERIAL SIZE				
THIRD ANGLE				
DWG NAME				
Low Differential Pressure Sensor				
DWG NO				
© PSE550-X501				
REVISION				

REV	QTY	DESCRIPTION	DATE PREPARED	REV NO	MODEL	QTY
1		Document mistake	2007-12-21	N.Oe	PS** -DML0141	
1		RoHS compliant product	2007-06-07	Mi.Kitamura	PS** -DML0036	

TOLERANCES JIS B 0405			DRAWN	I. Suginaka	SCALE	
GRADE			DATE	2006-08-29	1 : 1	
RANGE (mm)	f	m	c	DESIGNED	D. Kanoya	
0.5 < D ≤ 3	0.05	0.1	0.2	DATE	2006-08-30	
3 < D ≤ 6	0.05	0.1	0.3	CHECKED	Mi. Kitamura	
6 < D ≤ 30	0.1	0.2	0.5	DATE	2007-12-21	
30 < D ≤ 120	0.15	0.3	0.8	APPROVED	T. Yamada	
120 < D ≤ 400	0.2	0.5	1.2	DATE	2007-12-26	
400 < D ≤ 1000	0.3	0.8	2			
1000 < D ≤ 2000	0.5	1.2	3			

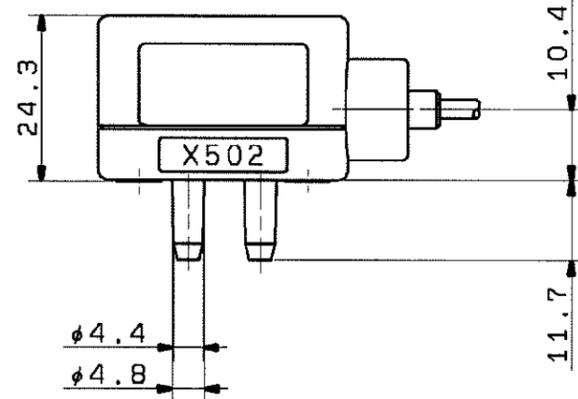
FINISH: 表面処理 / PAINT: 塗装 / PACKING: 包装区分  
MATERIAL: 材質 / MATERIAL SIZE: 材料寸法

DWG NAME: BA07313502 SMC Corporation

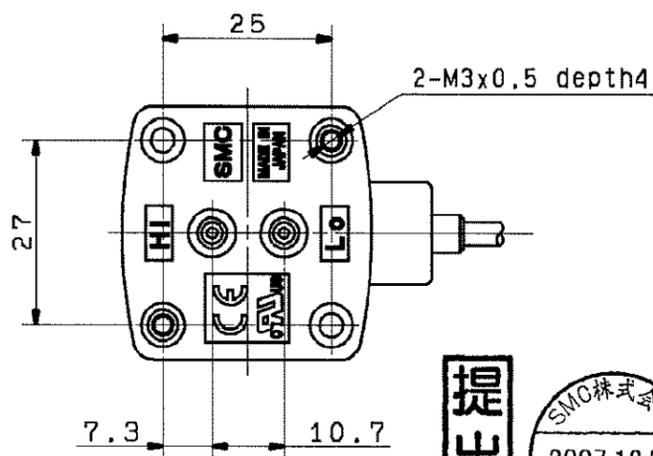
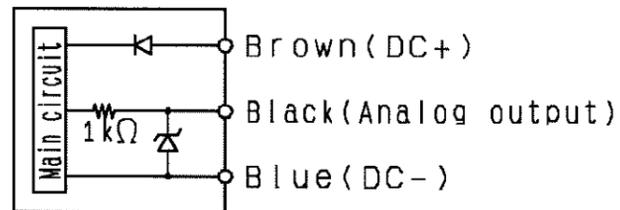


**Note1**  
In range from -50 to 50kPa, differential pressure between 0 to 1kPa can be detected. For example, if 50.0kPa is applied to resin piping at High while 49.0kPa is applied to resin pipe at Low, differential pressure of 1kPa can be detected.

- Special Specification**
1. Standard product is PSE550.
  2. Pressure range: 0 to 1kPa
  3. RoHS compliant product.



**Electrical circuit**



**Model indication method**

PSE550-□□-X502

Option model No.1

No symbol	None option
A	Bracket is enclosed

Option model No.2

No symbol	None option
C2	Connector for PSE300 is enclosed

提出用



**Specification**

Model No.	PSE550-※-X502
Differential pressure range	0 to 1kPa
Operating pressure range	-50 to 50kPa (Note1)
Withstand pressure	50kPa
Fluids	Air, Non-corrosive gases, Incombustible gases
Power supply voltage	24VDC, ripple(p-p)10% or less (Protection against inverse connection)
Current consumption	15mA or less
Output spec.	Analog output 1 to 5V Output impedance: Approx. 1kΩ
Accuracy(25°C)	±3%F.S. or less
Linearity	±1%F.S. or less
Repeatibility	±0.3%F.S. or less
Operation indicator Lamp	Orange(Lit when power is on)
Environment	Enclosure: IP40
	Operation temp. range: Operation: 0 to 50°C, Storage: -20 to 70°C (No condensation or no freezing)
	Operation humidity range: Operation, Storage: 35 to 85%RH (No condensation)
	Withstand voltage: 1000VAC or more, 50/60Hz, 1 minute (Between lead block and case)
	Insulation resistance: 50MΩ or more (500VDC M) (Between lead block and case)
	Vibration proof: 10 to 150Hz smaller one 1.5mm or 100m/s double amplitude, 2 hours each directions of X, Y and Z
	Impact proof: 300m/s <sup>2</sup> , 3 times each in directions of X, Y and Z respectively
Temp. characteristic	±3%F.S. or less (25°C)
Port size	φ4.8mm (φ4.4mm at the end) Resin pipe (Corresponding to air tube I.D. φ4mm)
Material	Case: PBT, Resin pipe: nylon Sensor receiving area: silicon
Cable for sensor	3-cores ellipse-shaped cable (0.15mm <sup>2</sup> )
Weight	With cable for sensor: 75g Without cable for sensor: 35g
Standard	CE, UL/CSA (E216656)

TOLERANCES JIS B 0405		FINISH	
GRADE		PAINT	
RANGE (mm)		PACKING	
0.5 ≤ D ≤ 3		MATERIAL	
3 < D ≤ 6		MATERIAL SIZE	
6 < D ≤ 30		SCALE	1 : 1
30 < D ≤ 120		DWG NAME	Low differential pressure sensor
120 < D ≤ 400		DWG NO	© PSE550-※-X502
400 < D ≤ 1000		REVISION	1
1000 < D ≤ 2000			

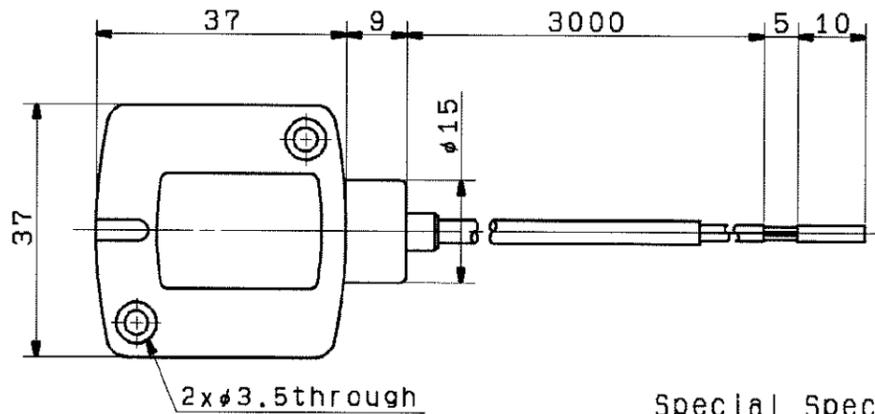
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MATERIAL: 材質 / MATERIAL SIZE: 材料寸法

DWG NAME

DWG REC

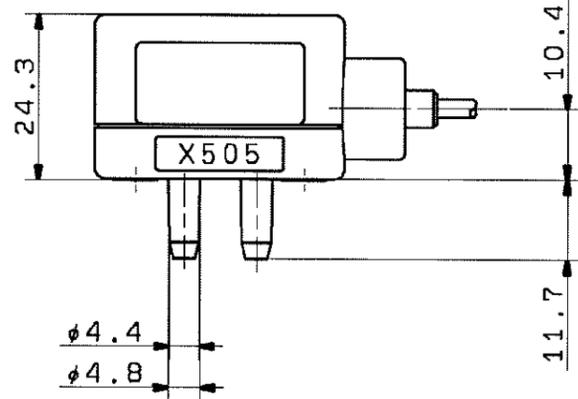
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SMC Corporation

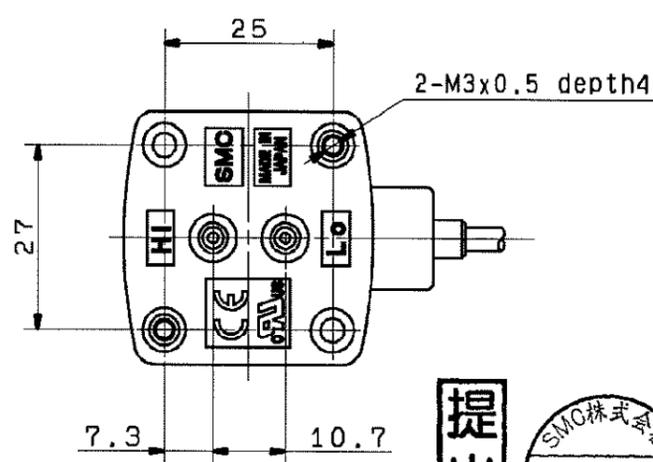
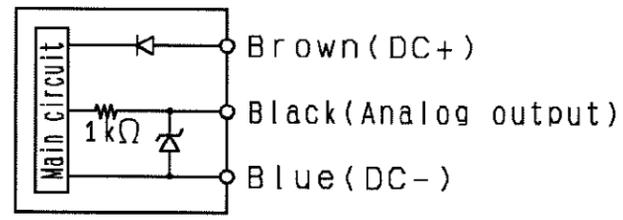


**Note1**  
 In range from -50 to 50kPa, differential pressure between 0 to 5kPa can be detected. For example, if 50kPa is applied to resin piping at High while 45kPa is applied to resin pipe at Low, differential pressure of 5kPa can be detected.

**Special Specification**  
 1. Standard product is PSE550.  
 2. Pressure range: 0 to 5kPa  
 3. RoHS compliant product.



**Electrical circuit**



**Model indication method**

PSE550-□□-X505

Option model No.1	□	□
No symbol	None option	
A	Bracket is enclosed	
Option model No.2	□	□
No symbol	None option	
C2	Connector for PSE300 is enclosed	

**提出用**  
 SMC株式会社  
 2007.12.26  
 開発第5部

**Specification**

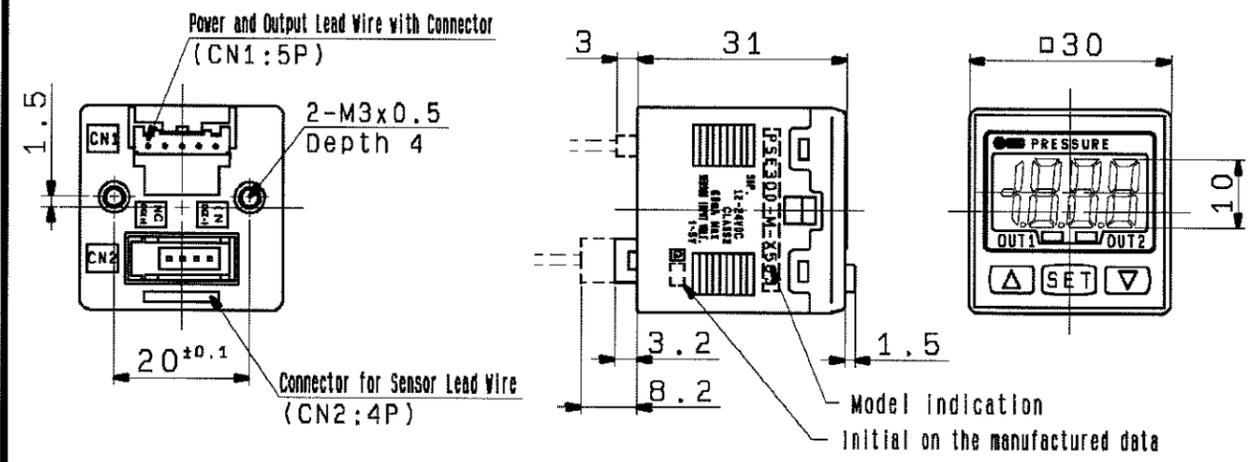
Model No.	PSE550-X505	
Differential pressure range	0 to 5kPa	
Operating pressure range	-50 to 50kPa (Note1)	
Withstand pressure	65kPa	
Fluids	Air, Non-corrosive gases, Incombustible gases	
Power supply voltage	24VDC, ripple(p-p)10% or less (Protection against inverse connection)	
Current consumption	15mA or less	
Output spec.	Analog output 1 to 5V Output Impedance: Approx. 1kΩ	
Accuracy(25°C)	±1%F.S. or less	
Linearity	±0.5%F.S. or less	
Repeatibility	±0.3%F.S. or less	
Operation indicator Lamp	Orange (Lit when power is on)	
Environment	Enclosure	IP40
	Operation temp. range	Operation: 0 to 50°, Storage: -20 to 70° (No condensation or no freezing)
	Operation humidity range	Operation, Storage: 35 to 85%RH (No condensation)
	Withstand voltage	1000VAC or more, 50/60Hz, 1 minute (Between lead block and case)
	Insulation resistance	50MΩ or more (500VDC M) (Between lead block and case)
	Vibration proof	10 to 150Hz smaller one 1.5mm or 100m/s double amplitude, 2 hours each directions of X, Y and Z
Impact proof	300m/s <sup>2</sup> , 3times each in directions of X, Y and Z respectively	
Temp. characteristic	±3%F.S. or less (25°C)	
Port size	φ4.8mm (φ4.4mm at the end) Resin pipe (Corresponding to air tube I.D. φ4mm)	
Material	Case: PBT, Resin pipe: nylon Sensor receiving area: silicon	
Cable for sensor	3-cores ellipse-shaped cable (0.15mm <sup>2</sup> )	
Weight	With cable for sensor	75g
	Without cable for sensor	35g
Standard	CE, UL/CSA (E216656)	

TOLERANCES JIS B 0405		FINISH	
GRADE		PAINT	
RANGE (mm)	f m c	PACKING	
0.5 ≤ D ≤ 3	0.05 0.1 0.2	REVISION	
3 < D ≤ 6	0.05 0.1 0.3	MODEL	QTY
6 < D ≤ 30	0.1 0.3 0.5	MATERIAL	
30 < D ≤ 120	0.15 0.3 0.8	MATERIAL SIZE	
120 < D ≤ 400	0.2 0.5 1.2	SCALE	1 : 1
400 < D ≤ 1000	0.3 0.8 2	THIRD ANGLE	
1000 < D ≤ 2000	0.5 1.2 3	DWG NAME	Low Differential Pressure Sensor
		DWG NO	
		REVISION	1

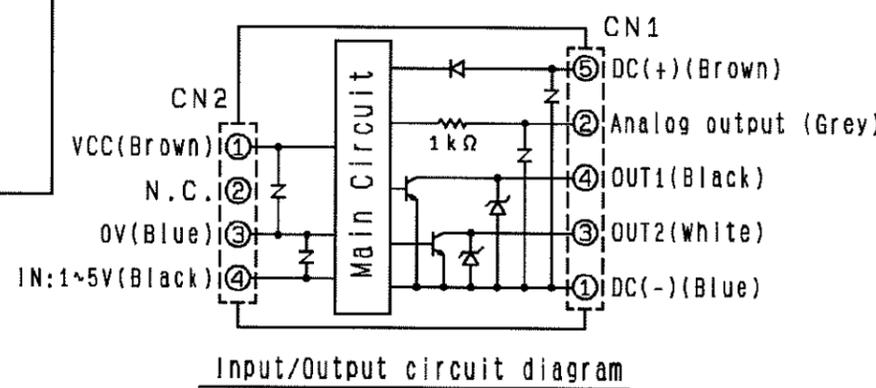
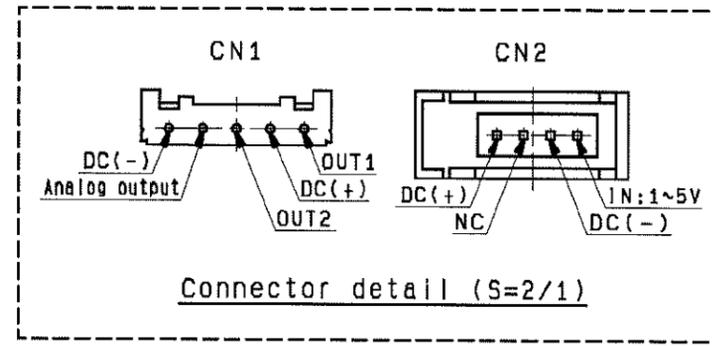
FINISH: 表面処理 / PAINT: 塗装 / PACKING: 包装区分  
 MATERIAL: 材質 / MATERIAL SIZE: 材料寸法

DWG NAME: PSE550-X505  
 DWG ID: AE00805901  
 SMC Corporation

▽ PSE300-(M)\*-X503 (C) ON GMD



- Model Indication Method**
- PSE300- [ ] [ ] [ ] [ ] -X503
- Unit specifications
- Nil With unit display switching function
  - M Fixed SI unit
- Option1
- Nil Without cable
  - L Power supply/Output connection cable
- Option2
- Nil Without bracket/panel mount adapter/front protective cover
  - A Bracket
  - B Panel mount adapter
  - D Panel mount adapter + Front protective cover
- Option3
- Nil Without connector
  - C Sensor connector



**Special specification**

- Set pressure range: low differential pressure. (250Pa, 500Pa, 1kPa, 2kPa, 5kPa)
- The Unit label is changed.

Product Number	Power and Output Lead Wire	Remark
PSE300-M-X503	None	Applicable to new measurement
PSE300-ML-X503	(2m)	SI units fixed
PSE300-X503	None	Pressure range setting
		Set pressure resolution
		Set pressure resolution
PSE300-L-X503	(2m)	Pressure range setting
		Set pressure resolution
		Set pressure resolution

**Specifications**

Model No.	PSE300-(M)*-X503				
Set pressure range	In0	In1	In2	In3	In4
Rated Pressure range	0~250Pa	0~500Pa	0~1000Pa	0~2kPa	0~5kPa
Setting Pressure Range	-25~250Pa	-50~500Pa	-100~1000Pa	-0.2~2.00kPa	-0.5~5.00kPa
Set/Display resolution	1Pa			0.01kPa	
Power supply voltage	12 to 24VDC±10%, ripple(p-p)10% or less(Protected against inverse connection)				
Current Consumption	50mA or less(At the time of analog output use 60mA or less)				
Sensor signal Input	DC1~5V(Input Impedance:1MΩ)Input protection:With over current protection func.(Max.26.4V)				
Switch output	NPN open collector output 2				
Max. Load Current	80mA				
Max. applied voltage	30V				
Residual Voltage	1V or less(80mA load current)				
Response time	1ms(Chattering-proof func.:20ms, 160ms, 640ms, 1280ms selected)				
Short Circuit Protection	Equipment				
Repeatability	±0.1%F.S. or less				
Analog output	Output voltage:1 to 5V(Within rated pressure range), Output impedance:approx.1kΩ				
Accuracy	±1.5%F.S.	±1%F.S.	±0.6%F.S.	±1.5%F.S.	±1%F.S.
Linearity	±0.2%F.S.				
Response time	150ms or less				
Hysteresis	Hysteresis Mode:Variable, Window Comparator Mode:Variable				
LCD Display	3 1/2digits 7-segment display, Dual-color display(Red/Green), Sampling rate:5 times/1sec				
Indicator Accuracy	±0.5%F.S. ±1digit				
Indicator	OUT1:illuminate ON(Green), OUT2:illuminate ON(Red)				
Temp.Characteristic	±0.5%F.S. or less(25°C reference)				
Enclosure	IP40				
Ambient Temp.Range	Operation:0 to 50°C, Storage:-10 to 60°C(No condensation or freezing)				
Ambient Humidity Range	Operation, Storage:35 to 85%RH(No condensation)				
Withstand voltage	AC1000V, 1minute (Between lead block and case)				
Insulation resistance	50MΩ or more(DC500V by megameter) (Between lead block and case)				
Vibration Proof	10 to 150Hz double amplitude 1.5mm or 98m/s² each in directions of X,Y and Z for 2 hours				
Shock proof	100m/s² 3 times each in directions of X,Y and Z				
Material	Front case:PBT, Back case:PBT				
Mass	30g(Power and output lead wire and sensor lead wire not included)				
Standard	CE, UL/CSA(E216656)				

**Note**

- The color shown on Input/Output Circuit diagram is applies to an IEC standard correspondingly indicates the color of wire when power and output lead wire and sensor lead wire.
- In Japan, Unit selection function provided(PSE300-(L))can't be used with the new Measurement.
- The model indication doesn't describe the indications 'L'(containing lead wire with connector).
- RoHS compliant product.

REV	QTY	DESCRIPTION	DATE PREPARED	REV NO	FINISH	PAINT	PACKING	MATERIAL	MATERIAL SIZE	SCALE	2007.12.26	開発第5報	MODEL	QTY
TOLERANCES JIS B 0405		GRADE	DRAWN	M. Kimura	SCALE		MATERIAL		1 : 1		THIRD ANGLE			
RANGE (mm)	f	m	DATE	2007-12-21	DWG NAME		MATERIAL SIZE		Pressure sensor controller		REVISION			
0.5 ≤ D ≤ 3	0.05	0.1	DESIGNED	Mi. Kitamura	DWG NO				© PSE300-(M)*-X503					
3 < D ≤ 6	0.05	0.1	DATE	2007-12-21										
6 < D ≤ 30	0.1	0.2	CHECKED	N. Oe										
30 < D ≤ 120	0.15	0.3	DATE	2007-12-21										
120 < D ≤ 400	0.2	0.5	APPROVED	T. Yamada										
400 < D ≤ 1000	0.3	0.8	DATE	2007-12-26										
1000 < D ≤ 2000	0.5	1.2												

FINISH: 表面処理 / PAINT: 塗装 / PACKING: 包装区分  
MATERIAL: 材質 / MATERIAL SIZE: 材料寸法

DWG NAME: BA14059400 SMC Corporation