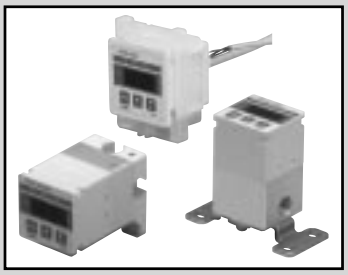
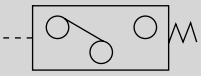


Electronic pressure switch with digital display (pressure switch)

PPD3/PPD3-S Series



Refer to a file list on Ending 88.

Overview

The PPD3 Series is a pressure switch optimum for the pneumatic line.
The various port options allow a variety of applications including base pressure confirmation, suction confirmation and seating confirmation.

Features

- A series of semiconductor pressure sensors and stainless steel diaphragm pressure sensors has been realized with a common mounting structure. The models can be easily replaced when the air line conditions deteriorate or when improvements are needed.
- A resin port with push in joint (6HD, 6HT, H6) is available. Lighter weights and space saving can be achieved.
- A through type port (6T, 6HT, H6) is available. This type is suitable for suction confirmation and seating confirmation. Only the minimum piping space is required.
- Installation and settings can be completed efficiently with convenient functions including the peak hold function, forced switch function and pressure reading function.
- CE marking compliant.

Sensor integrated type/sensor separate type specifications

Descriptions	PPD3			PPD3-S		
	R10	R03	R01	R10	R03	R01
Pressure sensitive element	Diffused semiconductor pressure sensor			Single stainless steel diaphragm pressure sensor		
Applicable fluid Note 2	Air/dry compressed air			Air/compressed air (including moisture/drain) Note 3		
Rated pressure range	-100 to 980kPa	-100 to 300kPa	-100 to 100kPa	-100 to 980kPa	-100 to 300kPa	-100 to 100kPa
Display unit	kPa	kPa	kPa	kPa	kPa	kPa
Display min. unit Note 1	1kPa					
Guaranty withstanding pressure	1.5MPa	0.6MPa	0.2MPa Note 4	2MPa	0.6MPa	0.6MPa
Display accuracy (25 ℃)	±2%F.S.					±3%F.S.
Temperature characteristics (0 to 50 ℃)	±4%F.S.					±5%F.S.
Leakage	1cm^3/min (ANR) or less					
Display	3-digit LED display character height 8mm					
Power voltage	12 to 24VDC ±10%					
Current consumption	50mA or less (sensor separate type is 60mA or less.)					
Switch output type	Sensor Integrated type: N : NPN transistor open collector output 2 points P : PNP transistor open collector output 2 points NA: NPN transistor open collector output 1 point + analog output 1 point PA: PNP transistor open collector output 1 point + analog output 1 point					
	Sensor Separate type: NA: NPN transistor open collector output 2 points + analog output 1 point PA: PNP transistor open collector output 2 points + analog output 1 point					
Switch output current	50mA or less					
Switch output Voltage drop value	2.4V or less					
Switch output response time	Approx. 5msec					
Analog output	1 to 5V ±0.1V					
Set value holding	EEPROM					
Radial lead wire	The body: oil resistance vinyl code 4-conductor (0.3mm^2) 1m (sensor separate type is 5-conductor.) Sensor section of sensor separate type: Oil resistance vinyl code 3-conductor (0.15mm^2) 3m					
Working temperature/humidity	0 to 50℃/0 to 85%RH (without dew condensation.)					
Vibration proof	10 to 55Hz compound amplitude 1.5mm, 2 hours for XYZ directions					
Protective structure	Equivalent to IP65 Note 5 (Equivalent to IP40 for sensor section of sensor separate type)					
Protective circuit Note 6	Power supply and switch output reverse connection protections, switch output load short-circuit protection					

Note 1: This indicates the minimum pressure display unit, and does not guarantee the display accuracy.
Note 2: Only the PPD3-S-*-P70/P80/P90 are ozone resistant.Contact CKD when ozone resistance is required.
Note 3: Contact CKD for applications involving water or other fluids.
Note 4: The pressure is 0.3MPa for the sensor separated type.
Note 5: This applies when the atmosphere introduction port is treated.(Refer to 5 on Page 830.)
Note 6: This product's protective circuit is effective only for specific incorrect connections and load short-circuits, and does not provide protection against all incorrect connections.
Note 7: Do not clean the product's resin sections with an organic solvent such as alcohol.The resin could be impregnated.

Circuit diagram and connection methods

Refer to Page 828 and 829.

How to order

PPD3 - R03 NA D - 6HT - P70

- Ⓐ Sensor type
- Ⓑ Pressure range
- Ⓒ Output type
- Ⓓ Shape
- Ⓔ Port type
- Ⓕ Clean room specifications *1/*2

Symbol		Descriptions
Ⓐ Sensor type		
PPD3		Semiconductor sensor
PPD3-S		Stainless steel diaphragm sensor
Ⓑ Pressure range		
R10		-100 to 980kPa
R03		-100 to 300kPa
R01		-100 to 100kPa
Ⓒ Output type		
N	For sensor integrated type	NPN transistor output 2 points
P	For sensor integrated type	PNP transistor output 2 points
NA	For sensor integrated type	NPN transistor output 1 point + analog output 1 point
PA	For sensor integrated type	PNP transistor output 1 point + analog output 1 point
NA	For sensor separate type	NPN transistor output 2 points + analog output 1 point
PA	For sensor separate type	PNP transistor output 2 points + analog output 1 point
Ⓓ Shape		
Blank		Sensor integrated type
D		Sensor separate type
Ⓔ Port type		
6B	For sensor integrated type	Rc1/8, 2 direction port rear sides, lower outlet
6T	For sensor integrated type	Rc1/8, through port horizontal both sides outlets
6HD	For sensor integrated type	Light weight port with 6mm push in joint (downward)
6HT	For sensor integrated type	Light weight through port with two 6mm push in joints (horizontal both sides)
6	For sensor separate type	R1/8 — For PPD3 (semiconductor sensor)
H6	For sensor separate type	6mm push in joint — For PPD3 (semiconductor sensor)
H6-B	For sensor separate type	6mm plugs — For PPD3 (semiconductor sensor)
6B	For sensor separate type	Rc1/8 — For PPD3-S (stainless steel diaphragm sensor)

Sensor separate type discrete model No.

● Indicator discrete model No.

E.g.) **PPD3 - R10 NA D - P70**

- Ⓐ Sensor type
- Ⓑ Pressure range
- Ⓒ Output type
- Ⓕ Clean room specifications

(Select the models for items Ⓑ and Ⓒ from the table on the right.)

● Sensor discrete model No.

E.g.) **PPD3 - R03 A - H6 - P70**

- Ⓐ Sensor type
- Ⓑ Pressure range
- Ⓔ Port type (Compatible only with 6, H6, H6-B and 6B.)
- Ⓕ Clean room specifications

(Select the models for items Ⓐ, Ⓑ, Ⓔ and Ⓕ from the table on the right.)

Ⓕ Clean room specifications

	Structure/treatment	Material restriction
P70	Particle occurrence prevention	-
P74	Particle occurrence prevention	Copper-based, silicon-based, halogen-based (fluorine, chlorine, oxalic) unacceptable.
P80	Oil treatment prohibited	-
P84	Oil treatment prohibited	Copper-based, silicon-based, halogen-based (fluorine, chlorine, oxalic) unacceptable.
P90	Stainless steel specifications/ Oil treatment prohibited	-
P94	Stainless steel specifications/ Oil treatment prohibited	Copper-based, silicon-based, halogen-based (fluorine, chlorine, oxalic) unacceptable.

*1: Refer to the following table for the correspondence of options and clean room specifications.
*2: The clean specifications P74, P84 and P94 are special order parts.

Options and clean room specifications

		Model	Clean room specifications					
			P70	P74	P80	P84	P90	P94
Sensor integrated type	Semiconductor sensor	PPD3-*-6B/6T	○		○			
		PPD3-*-6HD/6HT	○		○			
	Stainless steel diaphragm sensor	PPD3-S-*-6B/6T	○	○	○	○	○	○
		PPD3-S-*-6HD/6HT	○	○	○	○		
	Bracket/kit	PPD3-KL/KD	○	(Available for P70)				
		PPD3-KC	○	(Available for P70)				
		PPD3-KHS	○	○	○			
Sensor separate type	Semiconductor sensor	PPD3-*D-6	○		○			
		PPD3-*D-H6-B	○		○			
		PPD3-*D-H6	○		○			
	Stainless steel diaphragm sensor	PPD3-S-*D-6B	○	○	○	○	○	○
	Indicator	PPD3-*D	○	(Available for P70)				
		PPD3-*A-6	○		○			
	Semiconductor sensor	PPD3-*A-H6-B	○		○			
		PPD3-*A-H6	○		○			
	Stainless steel diaphragm sensor	PPD3-S-*A-6B	○	○	○	○	○	○
	Bracket/kit	PPD3-KL/KD-D	○	(Available for P70)				
		PPD3-KHS-D	○	(Available for P70)				

Bracket/kit

PPD3 - KL - D - P70

Ⓐ Model
Ⓑ Shape
Ⓒ Clean room specifications

Symbol	Descriptions
Ⓐ Model	
PPD3-KL	Single side foot bracket (radial installation)
PPD3-KD	Both sides foot bracket (axial installation)
PPD3-KC	Operation protective cover *1
Ⓑ Shape	
Blank	Sensor integrated type
D	Sensor separate type
Ⓒ Clean room specifications	
	Structure
P70	Particle occurrence prevention*2

*1 PPD3-K is common for the sensor integrated and separated types so the Ⓑ shape is blank even for the separated type.
*2 The bracket is nickel-plated.
(Model P70 is compatible with the P74, P80, P84, P90 and P94 environment.))

PPD3 - KHS - D - P70

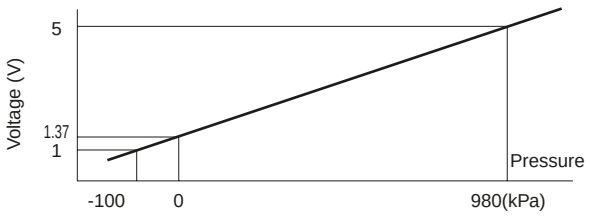
Ⓐ Model
Ⓑ Shape
Ⓒ Clean room specifications *1/*2

Symbol	Descriptions	
Ⓐ Model		
PPD3-KHS	Panel mount bracket set with cover (ϕ6 push-in joint is attached for integrated type.)	
Ⓑ Shape		
Blank	Sensor integrated type	
D	Sensor separate type	
Ⓒ Clean room specifications		
	Structure/treatment	Material restriction
P70	Particle occurrence prevention	-
P74	Particle occurrence prevention	Copper-based, silicon-based, halogen-based (fluorine, chlorine, oxalic) unacceptable.
P80	Oil treatment prohibited	-

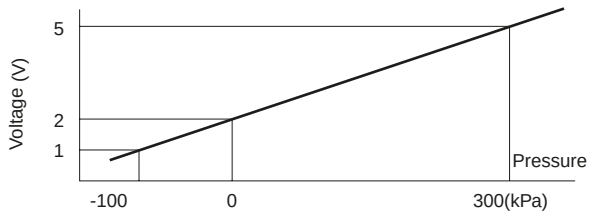
*1 The bracket is nickel-plated.
Designate model P70 for the sensor separate type.
(This is compatible with the P74, P80, P84, P90 and P94 environment.)
Designate P70, P74 or P80 for the sensor integrated type.
(Model P80 is compatible with the P84 environment.)
*2 P74 is custom order.

Analog output voltage - pressure characteristics

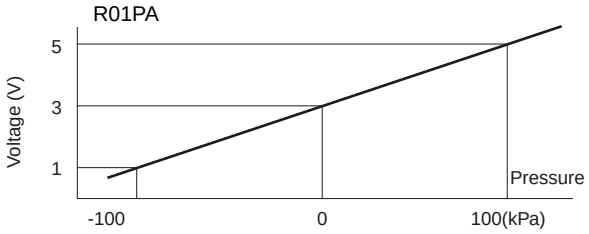
● PPD3 (-S)-R10NA
R10PA



● PPD3 (-S)-R03NA
R03PA



● PPD3 (-S)-R01NA
R01PA



[Precautions]
●The analog output accuracy is affected by the temperature characteristics as well as the heat self-generated when energized. Provide a standby time (5 minutes and over after power ON) when using.