

THIN-FILM PRESSURE SWITCHES

# PAS91



## FEATURES

- 1 ABSOLUTE PRESSURE SWITCH DESIGNED FOR SAFETY INTERLOCK
- 2 TESTED FOR CONFORMANCE TO UL991, THIRD PARTY TEST REPORT AVAILABLE
- 3 ANALOG OUTPUT (VOLTAGE 1-5V)  
+ SWITCH OUTPUT (RELAY OR OPEN COLLECTOR)
- 4 SUS316L DIAPHRAGM
- 5 ELECTROPOLISHING FINISH

**NIDEC COPAL ELECTRONICS CORP.**

# NEW PRODUCT

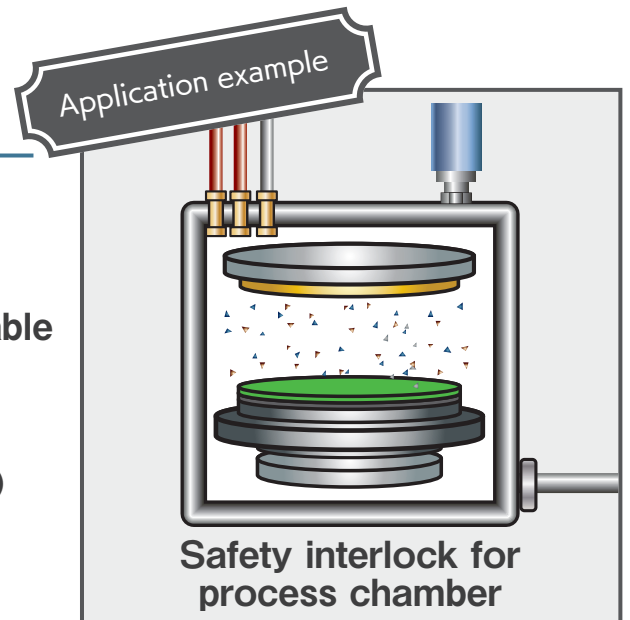


## THIN-FILM PRESSURE SWITCHES

# PAS91

## FEATURES

- Absolute pressure switch designed for safety interlock
- UL991 Tested, third party test report available (PNP open collector output model)
- Analog output (Voltage 1~5V)  
+ Switch output (Relay or Open collector)
- SUS316L diaphragm
- Electropolishing finish



## PART NUMBER DESIGNATION

PAS91 - 102A - P1V0 - VC

① Series name	PAS91					
② Rated pressure range (A: Absolute)	102A	0~14.5 psi abs (0~100 kpa abs)				
	352A	0~50.8 psi abs (0~350 kpa abs)				
	502A	0~72.5 psi abs (0~500 kpa abs)				
	702A	0~101.5 psi abs (0~700 kpa abs)				
③ Switch output interface	P	PNP Open Collector				
	T	Relay				
④ Switch Specification	1	1 ch Upper mode				
	2	1 ch Lower mode				
	3	2 ch Upper Upper mode				
	4	2 ch Upper Lower mode				
	5	2 ch Lower Lower mode				
⑤ Analog Output	V0	1~5 V				
⑥ Pressure port	VC	9/16-18 UNF				

※ Please refer to our website for a List of Model Numbers.

Tested for conformance to

**UL991**

Third party test report available

## SPECIFICATIONS

General Specifications				
Pressure reference	Absolute			
Model number	102A	352A	502A	702A
Rated pressure range	0~14.5 psi abs (0~100 kPa abs) (0~750.2 Torr·mmHg)	0~50.8 psi abs (0~350 kPa abs) (0~2625.9 Torr·mmHg)	0~72.5 psi abs (0~500 kPa abs) (0~3751.2 Torr·mmHg)	0~101.5 psi abs (0~700 kPa abs) (0~5251.7 Torr·mmHg)
Maximum pressure	50.8 psi abs (350 kPa abs) (2625.9 Torr·mmHg)	72.5 psi abs (500 kPa abs) (3751.2 Torr·mmHg)	108.8 psi abs (750 kPa abs) (5626.9 Torr·mmHg)	145 psi abs (1000 kPa abs) (7502.5 Torr·mmHg)
Break-down pressure	72.5 psi abs (500 kPa abs) (3751.2 Torr·mmHg)	0~101.5 psi abs (0~700 kPa abs) (0~5251.7 Torr·mmHg)	145 psi abs (1000 kPa abs) (7502.5 Torr·mmHg)	203.1 psi abs (1400 kPa abs) (10503.5 Torr·mmHg)
Operating temp.	-10 ~ 70°C			
Compensated temp.	0 ~ 50°C			
Operating humidity	35 ~ 85% RH (No condensation)			
Storage temp.	-20 ~ 80°C			
Media	Gases and liquids compatible with SUS316L			
Insulation resistance	50 MΩ minimum ※125VDC between the bundled electrical wirings and the pressure port			
Dielectric strength	125VDC, 1 minute ※Between the bundled electrical wirings and the pressure port (Leakage current 1mA max.)			
Pressure port	VC 9/16-18 UNF (SUS316L)			
Clean specification	Electro-polishing, Clean rinse, Clean packing			
Net weight	Approx. 130 g			
Supply voltage	24 VDC ± 10 % (Including ripple)			
Consumption current	25 mA maximum (SW spec: P1 / P2, No load) 30 mA maximum (SW spec: P3 / P4 / P5, No load) 40 mA maximum (SW spec: T1 / T2, No load, Relay ON) 55 mA maximum (SW spec: T3 / T4 / T5, No load, Relay ON)			
Analog Output				
Output voltage	1~5 V			
Zero voltage	0 ± 0.04 V			
Span voltage	4 ± 0.04 V			
Output resistance	Approx. 10 Ω			
Linearity / Hysteresis	± 0.5% F.S.			
Thermal error	ZERO: ± 0.12% F.S./°C, SPAN: ± 0.10% F.S./°C ※0~50°C (Reference temp. 25°C)			
Response	Approx. 2ms			
Switch Output				
	PNP Open Collector Output ※Pch MOS FET Switch		Magnet Relay Output ※SPDT (Single Pole, Double Throw)	
Number of output	1 (P1/P2) / 2 (P3/P4/P5)		1 (T1/T2) / 2 (T3/T4/T5)	
Switching capacity	26.4 VDC, 100 mA maximum		30 VDC, 1 A maximum	
Setting method	Adjustable by VR			
Switch setting range	Upper mode: 3.5~100% F.S. / Lower mode: 0.5~97% F.S.			
Display	Red LED lighted when output is ON			
Hysteresis	3.0% F.S. maximum			
Operating accuracy	3.5% F.S. ※0~50°C (Reference temp. 25°C)			
Response	Approx. 2ms		Approx. 15ms	

## ENVIRONMENTAL CHARACTERISTICS

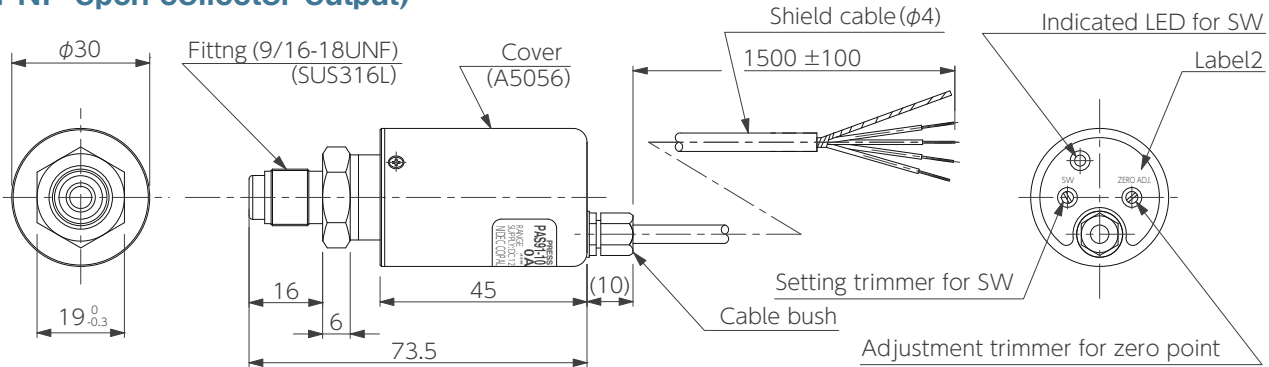
Test Item	Test Conditions	
	PNP Open Collector Output (P1~5)	Relay Output (T1~5)
Vibration	10 ~ 500Hz, 1.5mm maximum / 98.1m/s <sup>2</sup> 3 directions for 2 hours each	10 ~ 55Hz, half amplitude 1.65mm maximum 3 directions 6 cycles
Shock	490m/s <sup>2</sup> , 3 directions for 3 times each	100m/s <sup>2</sup> , 3 directions for 3 times each
Humidity	40°C, 90 ~ 95% RH, 240 hrs	40°C, 90 ~ 95% RH, 240 hrs
Pressure cycling	0 ~ Pr, 10 <sup>6</sup> cycles	0 ~ Pr, 10 <sup>6</sup> cycles, No load
Relay electrical life	—	Min. 10 <sup>5</sup> operations with 30VDC, 1 A Resistance

# OUTLINE DIMENSIONS

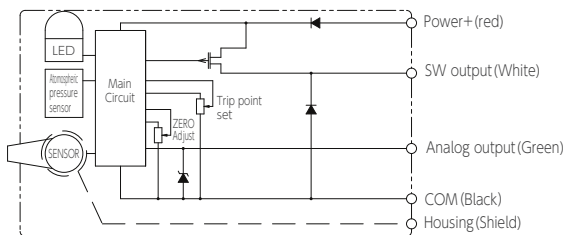
(Unit: mm)

Unless otherwise specified, tolerance:  $\pm 0.5$

## ● PAS91-\*\*\*A-P\*V0-VC (PNP open collector output)



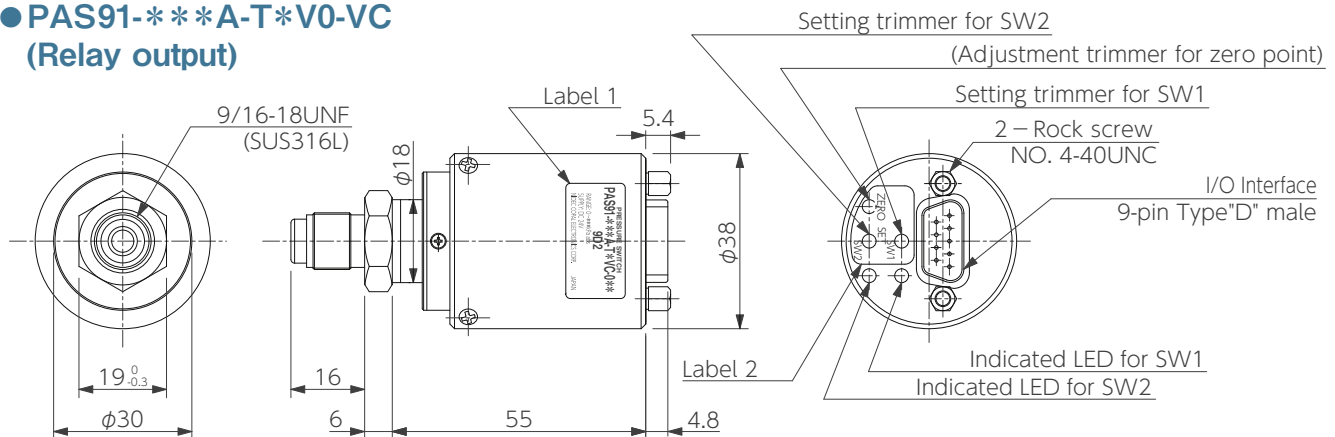
### Internal Electrical Schematics



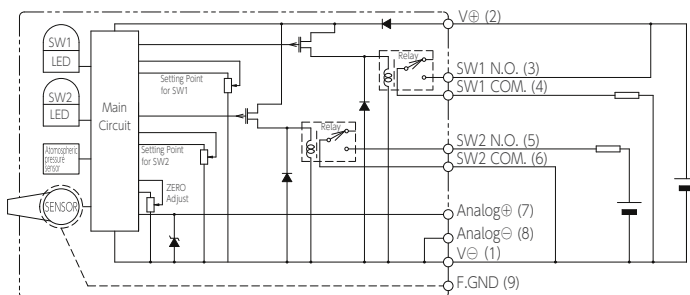
### Wire Color and Functions

Wire color	Connections
Red	Power +
White	Switch output
Green	Analog output
Black	Common
Shield	F.GND

## ● PAS91-\*\*\*A-T\*V0-VC (Relay output)



### Internal Electrical Schematics



### Pin Assignment

Pin No.	Connections
1	V $\ominus$
2	V $\oplus$
3	SW1 N.O.
4	SW1 COM.
5	SW2 N.O.
6	SW2 COM.
7	Analog $\oplus$
8	Analog $\ominus$
9	F.GND

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■ Specifications are subject to change without notice.

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