## Micro Differential Pressure Switch

WO81

WO70

FR51A

MS30

MS61A

MS65

EB3C

EMD8

EMD7

EMT6

EMT1

EMTGP1

EMT1H

EMP5

EMA3

EMRT1

HWS15

Combination

of Manosys

Accessories

Application

Cautions for use

Maintenance

Manostar Switch MS61A General purpose compact type

Micro Differential Pressure Switch

(For low electrical load- single pole double throw sealed type with a build-in reed switch)

Utility model registration No.840091 No.3133580

RoHS compliant

- · UL standards conformity
- · Compact and lightweight type
- · The setting of activating pressure is easy by turning set dial with scale
- · Even when the pressure becomes excessive, the original mechanism avoid damage to the moving parts.
- · Small hysteresis is realized by the silicone rubber diaphragm.



(For low electrical load)

#### <Example of main use field>

Manufacturing machine parts of semi-conductors

Measuring negative pressure in bag filter and differential pressure in air

Monitoring of pressure loss in filters Production lines of precision machine Air conditioning control system of factory

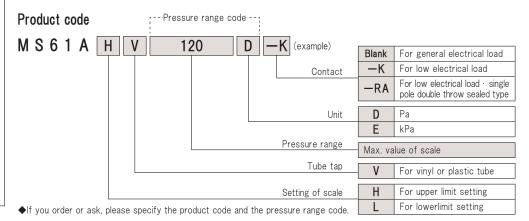
#### <Example of use>

Measuring inner pressure of indoor equipments

Detector of a pressure loss in an air filter Detector of a pressure loss in a bag filter Measuring of dynamic pressure in a ventilator and an exhauster

Measuring the inside pressure of clean rooms

\*(refer to p.93)



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## MS61A

## Specification

Туре	3	For upper limit setting			For lower limit setting				
Items		MS61AHV			MS61ALV				
Pressure unit	Pa, kPa		Withstanding vibration		ation	ion 5 to 10 Hz Amplitude : 10 mm,			
Pressure measuring metho	d Measurir	ng differential pressure					10 to 50 Hz Acceleration (each two hours on triaxi	*	
Pressure receiving elemen	t Diaphrag	m (silicone rubber)		Withstand	ling imp	pact	100 m/s² (each six times on triaxial direction)		
Gas to be measure	d Air, non-	Air, non-corrosive and non-combustible gases (not liquid)			resista	ance	Between each terminal and cas	e 20 MΩor more (500 V DC megger)	
Pressure setting metho	d Dial with	Dial with scale			Withstand voltage		For general electrical load, For low electrical load     Between each terminal and case 1500 V AC 50/60 Hz For one minute		
Standard installatio positio		Installation position from upward horizonral to vertical is available					For low electrical load—single pole normal seald type     Between each terminal and case 500 V AC 50 / 60 Hz For one minute		
Medium and ambien temperatur		- 10 to + 50 °C (no freezing)			Applicable piping Vinyl, plastic or rubber tube (I.D. 4)		· · · ·		
Ambient humidit		90 % RH or less (no dewing)			Tube tap polarity   The part of tube tap is marking "H" on high pressure si  "L" on low pressure side.			king "H" on high pressure side and	
Withstanding pressur	100 kPa				Conformed Standards UL		Approximately 140 g		
of instrument bod	<b>y</b>	100 KF3 (refer to p.104)					UL and C-UL recognition component		
Withstanding pressur of receiving elemen	t 20 kPa	20 kPa (refer to p.104)			UL standards		The applicable request standards ·· UL508 File No. ·····E240648		
Material of outer cas	uter case Polyamide			Caution		ıtion	In case of mesuring combustible gas and using in combustible gas area, use with intrinsically safe apparatus construction.		
			I				gas area, use with mitrisical	ly safe apparatus construction.	
Pressure range codes		Accuracy of s (at 20)		ewitching point 0°C)			Max. switching difference pressures		
							general electorical load, r low electorical load	For low electrical load- single pole double throw sealed type	
120 D		20 ~ 120 Pa ± §		. 0 Pa		25. 0 Pa		37. 5 Pa	
300 D	300 D 50 ~ 300 Pa ±		±	15 Pa		40 Pa		60 Pa	

 $\pm$  0.30 kPa ♦In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.

 $\pm$ 0.050 kPa

 $\pm$  0.15 kPa

25 Pa

 $\pm$ 

♦In case of mesuring combustible gas and using in combustible gas area, specify the product for low electrical load and combine contact signal transducer (refer p.39). Use with intrinsically safe apparatus construction.

#### Contact rating

600 D

1.2 E

3 E

6 E

Contacts	Specifications	Rated voltages	Resistive loads	Inductive loads	Load on motors
	Contact composition SPDT (single pole double throw type)	30 V DC	3 A	2 A (time constant 7 ms)	
For general electrical load	Electrical life 100,000 switching cycles	125 V AC	5 A	3 A (Power factor 0.4)	1 A
	Contact Material Silver (round rivets point)	250 V AC	5 A	3 A (Power factor 0.4)	0.5 A
	Contact composition SPDT (single pole double throw type)	30 V DC	0.1 A		
For low electrical load	Electrical life 100,000 switching cycles Contact Material Gold alloy (cross point)	125 V AC	0.1 A		
Contacts	Specifications	Rating	Switching voltage	Switching electric current	Switching cloatric nawar

Contacts	Specifications	Rating	Switching voltage	Switching electric current	Switching electric power
For low electrical load- single pole double throw sealed type	Contact composition PST (single pole single throw type) Electrical life 100,000 switching cycles Material Reed switch	DC 0. 1 A-30 V	DC 100 V (max.)	DC 0.25 A (max.)	DC 10 W (max.)

## Rated authorized standard for safety

Conformed Standards UL standards UL and C-UL recognition component

100 ∼ 600 Pa

 $0.2 \sim 1.2 \text{ kPa}$ 

3 kPa

6 kPa

0.5 ~

The applicable request standards..... UL508

80 Pa

0.160 kPa

0.40 kPa

0.80 kPa

Contact types	Types	Ratings
For general electrical load	MS61AHV, MS61ALV	AC 5 A—1/6HP—125, 250 V DC 0.5 A—125 V
For low electrical load	MS61AHV—K, MS61ALV—K	AC 0. 1 A—125 V DC 0. 1 A—30 V
For low electrical load- single pole double throw sealed type	MS61AHV—RA, MS61ALV—RA	DC 0.1 A—30 V

- ♦In case of low current or voltage, use the low electrical load type. The general electrical load type is decreased contact reliability. (refer to p.100)
- ♦In case of driving an inductive load such as relay, contact trouble may be happened due to counter electromotive force and rush current, therefore insert the protective circuit for absorbing surge by using diode or varistor (refer to p.32).

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120 Pa

0.240 kPa

0.60 kPa

1.20 kPa

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# Micro Differential Pressure Switch

## Manostar Switch MS61A

## Outline drawing

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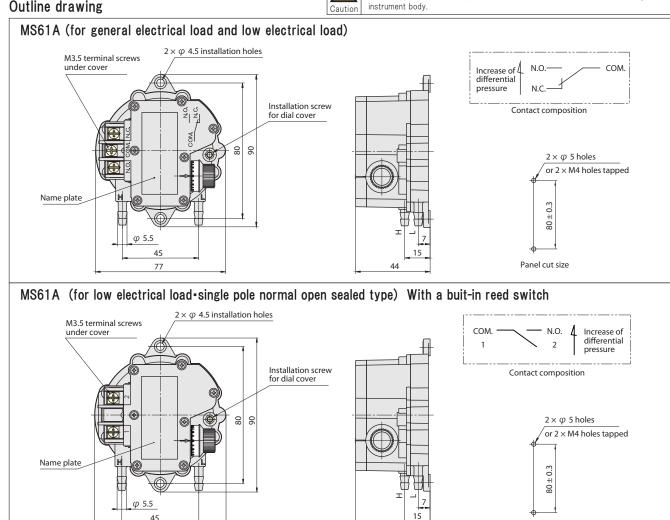
Application

Cautions for use Maintenance

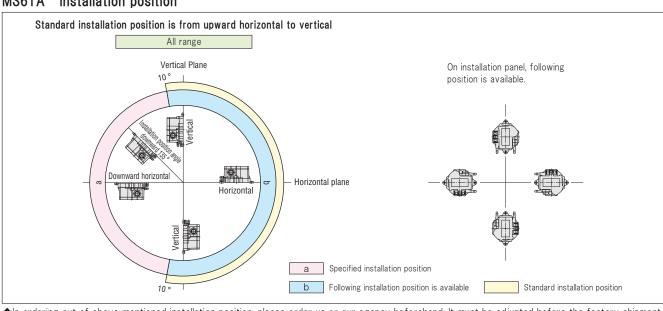


Tighten the screw of terminal with the torque from 0.7 to 1.0 N·m. Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.

Panel cut size



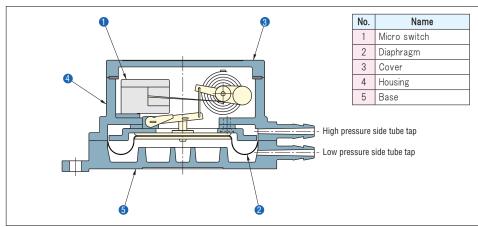
#### MS61A Installation position



- ◆In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.
- ♦In case of ordering standerd installation position, you do not specify installation position. Please specify pressure range code in the specification table.

## MS61A

### Main structure



## Accessory for MS61A



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## Name plate drawing

#### General electrical load type



### Low electrical load type



## Low electrical load and single pole double throw sealed type



## Protection of contact of switch

Contact protection circuit is used to extend the service life of contact.
 It reduces generation of noise at the time of switching on and off. It also minimizes carbide and nitric acid gas generated by arc. Use this circuit correctly, otherwise it will cause reverse effect, making the matter worse.

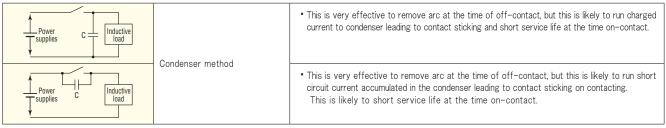
 In case of using contact protection circuit, pay attention the operating time is possibility of delaying a little.

The following are typical examples of contact protection circuit.

#### Typical example of protective circuit

Examples of circuit		Power supply DC AC		Special remarks for application and selection		
Power A Supplies R Inductive load	C · R method	0	0	• It delays a little time to activate or return inductive load such as relay. • As for CR value, to contact current and contact voltage, the estimate value is C:0.5 $\mu$ F/A,R:1.0 $\Omega$ /V. However, it differs according to the characteristics of load, therefore, be sure to confirm to select by experiment.		
Power Inductive load	Diode method	0	×	<ul> <li>This method is intended to consume counter electromotive force of inductive load by diode and avoid to apply high voltage to inbetween the contacts.         This method makes the return time of inductive load slower.     </li> <li>Choose the diode rated current is more than load current and counter withstand voltage more than 10 times of power supply voltage.</li> </ul>		
Power Inductive load	Diode + Zener diode method	0	×	<ul> <li>Diode method proves to be effective when the return time takes too long for inductive load such as relay. When you choose zener voltage of zener diode, choose base on power supply voltage. Be careful with limitations having this method. Because load is too big, larger capacity zener diode is needed for reverse surge power.</li> </ul>		

### Example of wrong protection circuit



## **Product Warranty**

## **Warranty Period**

This product warranty is valid for one year from the date of delivery to a place specified by an ordering party who has transacted directly with Yamamoto Electric Works Co., Ltd.

## Coverage

If a product breaks down due to a reason for which we are responsible during the warranty period and you return the product to us, we will either repair or replace the product free of charge.

This warranty does not cover:

- (1) Usage of the product under any inappropriate conditions or environment contrary to what is described in our product catalog, specifications or manual.
  - Handling or usage of the product other than as described in our product catalog, specifications or manual.
- (2) Breakdown due to a reason other than a fault within our product.
- (3) Any product that has been modified or repaired by a party other than us.
- (4) Any breakdown due to a reason that was not foreseeable based on scientific and technical standards applied at the time of shipment.
- (5) Any breakdown due to a reason not attributable to us such as a natural calamity or other disaster.

These terms of warranty represent our entire liability with respect to the product, and we shall have no liability for any other loss arising in connection with a breakdown of the product.

\*This product warranty is only valid within Japan.

This document is a translation from the original Japanese version, and the original Japanese version has priority over this translation.

Be sure to refer to the original Japanese for the details of this warranty.



The Japanese original document shall always take precedence over the translated versions.

You should be sure to refer to the Japanese original document.



