

Micro Differential Pressure Switch

NEW

Manostar Switch MS30 Compact type connecting electric connector Micro Differential Pressure Switch

Patent pending



RoHS compliant

- UL standards and CE directive (CE marking) conformity
- It is easy to wire by the 3P mini-clamp connector produced by 3M Co., Ltd.
- Small hysteresis is realized by the silicone rubber diaphragm.
- The optimum specification for the product that is needed to control difference pressure, in cooperation with the semi-conductor manufacturing company.



MS30

* The electric connector on wiring side is not attachment for a product. When you need it, use the optional 3P wire install plug. (refer to p.28)

<Example of main use field>

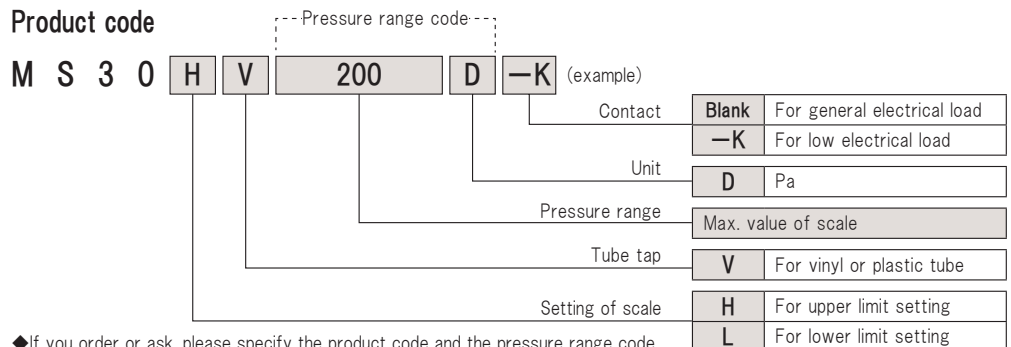
- Manufacturing machine parts of semi-conductors
- Measuring negative pressure in bag filter and differential pressure in air conditioners
- Monitoring of pressure loss in filters
- Production lines of precision machine
- Air conditioning control system of factory

<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)

Product code



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

Specification

Items	Types		For upper limit setting		For lower limit setting			
			MS30HV		MS30LV			
Pressure unit	Pa							
Pressure measuring method	Measuring differential pressure							
Pressure receiving element	Diaphragm (silicone rubber)							
Gas to be measured	Air, non-corrosive and non-combustible gases (not liquid)							
Pressure setting method	Dial with scale							
Standard installation position	Vertical In case of installing horizontal position, set the dial kept to add 20Pa against setting pressure value.							
Medium and ambient temperature	- 10 to + 60 °C (no freezing)							
Ambient humidity	90 % RH or less (no dewing)							
Withstanding pressure of instrument body	10 kPa (refer to p.104)							
Withstanding pressure of receiving element	10 kPa (refer to p.104)							
Material of the outer case	Polycarbonate							
			Withstanding vibration		5 to 10 Hz Amplitude : 10 mm, 10 to 50 Hz Acceleration : 39 m/s ² (each two hours on triaxial directions)			
			Withstanding impact		100 m/s ² (each six times on triaxial directions)			
			Insulation resistance		Between each terminal and case 20 MΩ or more (500 V DC megger)			
			Withstand voltage		Between each terminal and case 1500 V AC 50 / 60 Hz, for one minute			
			Applicable piping		Vinyl, plastic or rubber tube (I.D. 4)			
			Tube tap polarity		The part of tube tap is marking "H" on high pressure side and "L" on low pressure side.			
			Electric connector		3P mini-clamp Connector (produced by 3M Co., Ltd.) The electric connector wiring side is not attachment for a product. When you need it, use the optional electric connector.			
			Mass		Approximately 120 g .			
			Conformed Standards		EU directive EMC directive UL standards UL and C-UL recognition component The applicable request standards···UL508 File No.·········· E240648			
			Caution		In case of mesuring combustible gas and using in combustible gas area, use with intrinsically safe apparatus construction.			
Pressure range codes	Pressure ranges		Accuracy of switching point (at 20 °C)		Repeatabilities		Max. switching difference pressures	
200 D	For upper limit setting 30 ~ 200 Pa		± 10 Pa		± 2 Pa		30 Pa	
	For lower limit setting 20 ~ 200 Pa							
500 D	50 ~ 500 Pa		± 25 Pa		± 5 Pa		40 Pa	
1000 D	100 ~ 1000 Pa		± 50 Pa		± 10 Pa		60 Pa	

◆ 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 to p.39) Use with intrinsically safe apparatus construction.

Contact rating

Contact types	Specifications	Rated voltages	Resistive loads	Inductive loads
For general electrical load	Contact composition SPDT (single pole double throw type) Electrical life 7000 times or more Material of the contact Silver	30 V DC	3 A	2 A (Time constant 7 ms)
For low electrical load	Contact composition SPDT (single pole double throw type) Electrical life 100,000 switching cycles Material of the contact Gold alloy	30 V DC	0.1 A	—

Rated authorized standard for safety

Conformed Standards UL standards UL and C-UL recognition component
The applicable request standards···· No.UL508
File No.·········· E240648

Types		Rating
For general electrical load	MS30HV, MS30LV	DC 2 A—30 V
For low electrical load	MS30HV—K, MS30LV—K	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).

- WO81
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WO81

Manostar Switch MS30

WO70

Outline drawing

FR51A

MS30

MS61A

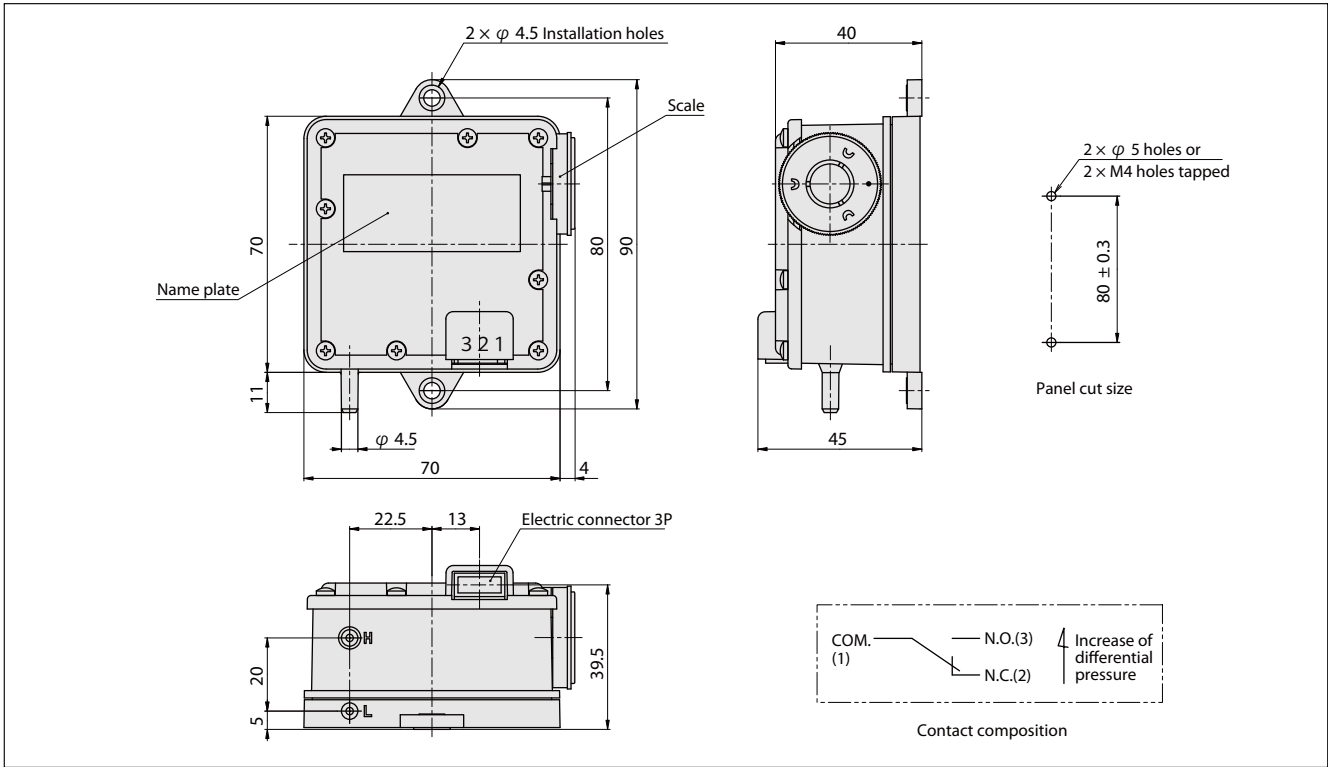
MS65

EB3C

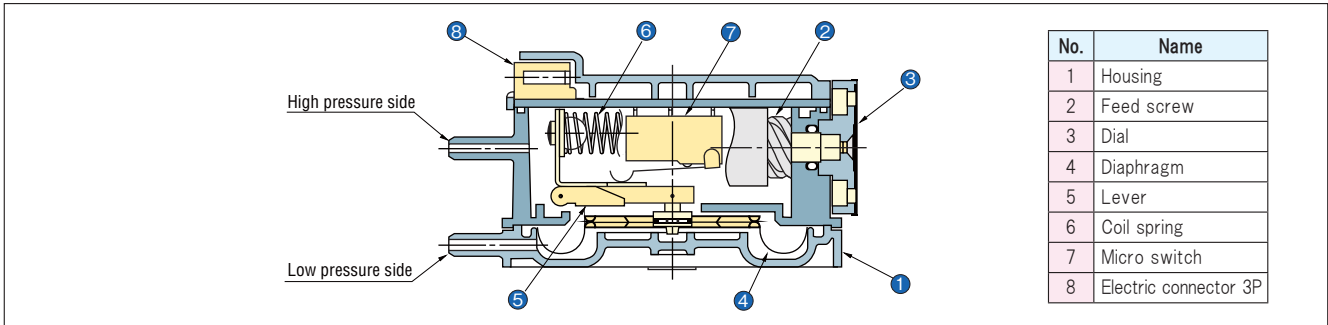
EMD8

EMD7

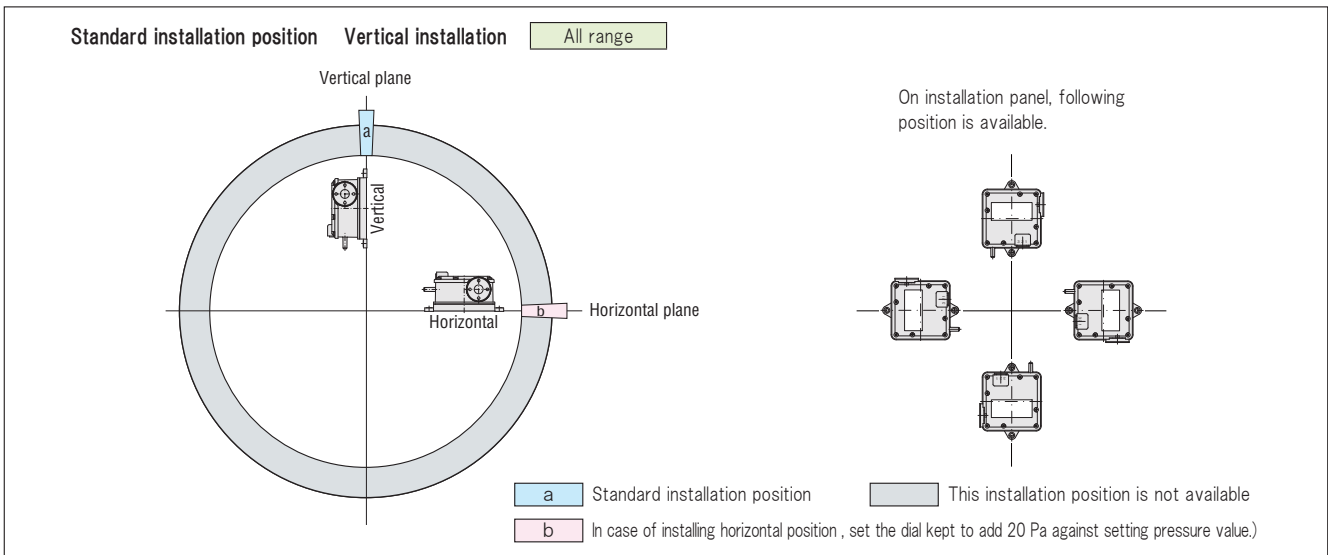
EMT6



Main structure



MS30 Installation position



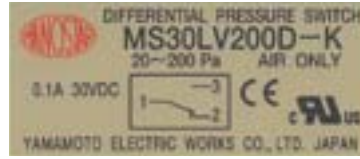
◆ In case of standard installation position, do not need to specify the product code and the pressure range code.

Name plate

Name plate for general electrical load



Name plate for low electrical load



About mini-clamp connector for MS30 model ▶▶▶

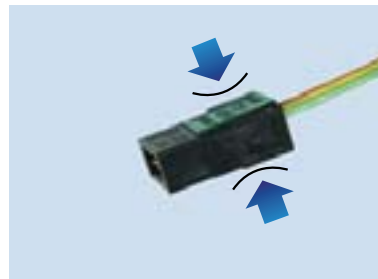
3P mini-clamp connector produced by 3M Co., Ltd. is installed in MS30 model.

Because of wire-press system of the electric connector, wires can be easily crimped without any special tools and wire stripping. You can wire work only to inset the wires and to clamp with the plier.

The type contributes to reduction of the total setup time and cost in comparison with screw terminal block type.



Inset the wire to be connected



Clamp the electric connector with pliers

Comparison terminal block type and mini-clamp connector type

<Wiring process>

Screw terminal type (usual the micro differential pressure switch)		Mini-clamp connector type (MS30 model)	
Process	Number of operation	Process	Number of operation
· Wire cover stripping	3 times	· Wire insertion to connector	3 times
· Wire insertion to crimp terminal	3 times	· Crimping	1 time
· Crimping	3 times	· Loosing terminal screw of the instrument body	3 times
· Loosing terminal screw of the instrument body	3 times	· Crimping screws of the instrument body	3 times
· Crimping screws of the instrument body	3 times	· Connecting with MS30 body	1 time
· Check	1 time	· Check	1 time

Total 16 operations
➔
Total 6 operations

<Wiring time>

* Wiring time is measured by Yamamoto Electric Works

Accessory for MS30 RoHS compliant

3P Wire Mount Plug			
It is the 3P mini-clamp connector of wiring side. After confirming the specifications of applicable wiring(cross-section of conductor, O.D. of the wire cover), select following the applicable wire.			
Product code	Color	Applicable cable	
		Nominal cross-sectional area	Wire cover diameter
37103-2124-000FL	Green	0.3 to 0.5 mm ²	1.0~1.2 mm
37103-2165-000FL	Blue		1.2~1.6 mm
37103-2206-000FL	Gray		1.6~2.0 mm

○The Wire Mount Plug is made by 3M Co., Ltd.

○Wire crimping system was developed by 3M Co., Ltd in 1958. This system is used for computers and factory automation equipments that used in severe environment. There is actual proof of long-reliability in many equipments.

○This Wire Mount Plug can not be used for EMD8 model. (refer to p.41).

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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.



Caution

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

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