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Micro Differential Pressure Switch

Manostar Switch MS65 General purpose type Differential Pressure Switch

RoHS compliant

Utility model registration No.840091

- The setting of activating pressure is simply by turning set dial with scale
- Broad line-up of piping connector, it is easy to replace another type from vinyl or plastic tube type to metal tube type and so on.
- High durability and strength polyester film subjected special treatment can keeps high-accuracy of repeatability for long period in the model of main pressure range.
- Built-in micro switch has high reliability and high electrical rating of contact.
- Even when the pressure becomes excessive, the original mechanism avoid damage to the moving parts.
- Small hysteresis is realized by the silicone rubber diaphragm.
- High-performance air filter prevent the incorrect action of the contact under severe condition. (MS65F type)



MS65



MS65F
(with air filter)

Product code

	M	S	6	5	F	H	VL	300	D	—K
								Pressure range code		(example)

Contact

Blank	For general electrical load
—K	For low electrical load

Unit

D	Pa
E	kPa

Pressure range

Max. value of scale

Piping connector

V	For vinyl or plastic tube	VT straight type
VL		VL rotary loose type
M	For metal tube	MT straight type
ML		ML rotary loose type

Setting of scale

H	For upper limit setting
L	For lower limit setting

Type

Blank	–
F	With air filter

◆If you order or ask, please specify the product code and the pressure range code.

<Example of main use field>

Nuclear facilities
Air conditioning control system of the food factories
Air conditioning control system of the high-rise buildings
Hospital and medical facilities
Production lines of the car and the semi-conductor
Exhaust gas pressure control of coffee-roaster machines

<Example of use>

Measuring the inside pressure of clean rooms
Detection of the pressure loss of an air filter
Measuring air volume and velocity in a ventilator and an exhauster.

＊(refer to p.93)

Specification

Types	Standard type	With air filter
	MS65	MS65F
Pressure units	Pa, kPa	
Pressure measuring method	Measuring differential pressure	
Pressure receiving element	Diaphragm	
Gas to be measured	Air, non-corrosive and non-combustible gases (not liquid)	
Pressure setting method	Dial with scale	
Standard installation position	Installation position from upward horizonral to vertical is available (refer to p.37)	
Medium and ambient temperature	− 10 to + 50 ℃ (no freezing)	
Ambient humidity	90 % RH or less (no dewing)	
Withstanding pressure of instrument body	200 kPa (refer to p.104)	
Withstanding pressure of receiving element	40 kPa (refer to p.104)	
Material of the outer case	Phenol resin and aluminum die cast	
Withstanding vibration	5 to 10 Hz Amplitude : 10 ㎜, 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 direction)	
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	1. Vinyl, plastic or rubber tube (I.D. 6) ⋯ piping applicable model attached with connector for vinyl or plastic tube 2. Metal tube (O.D. 6 ± 0.1) ⋯ piping applicable model attached with connector for metal tube 3. Hard plastic tube (O.D. 6 × I.D. 4) ⋯ Inner sleeve set (XIN 6 × 4) is needed separately for type attached with piping connector for metal tube. (refer to p.92)	
Piping connector polarity	The part of connector piping is marking “H” on high pressure side and “L” on low pressure side.	
Air filter	−	Polyvinyl pholmor porous sheet
Mass	Approximately 380 g	Approximately 550 g

Pressure range codes	Pressure ranges	Accuracy of switching point (at 20 ℃)	Max. switching difference pressures	Materials of pressure receiving element
60 D	10 ～ 60 Pa	± 2.0 Pa	15.0 Pa	Polyester film
120 D	20 ～ 120 Pa	± 4.0 Pa	20.0 Pa	
300 D	50 ～ 300 Pa	± 8.0 Pa	40.0 Pa	
600 D	100 ～ 600 Pa	± 15 Pa	60 Pa	
1.2 E	0.2 ～ 1.2 kPa	±0.030 kPa	0.120 kPa	
3 E	0.5 ～ 3 kPa	±0.080 kPa	0.400 kPa	
6 E	1 ～ 6 kPa	± 0.15 kPa	0.60 kPa	Silicone rubber
12 E	2 ～ 12 kPa	± 0.30 kPa	1.20 kPa	
30 E	5 ～ 30 kPa	± 0.75 kPa	4.00 kPa	

◆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 mesuring combustible gas and using in combustible gas area, specify the product for low electrical load and combine contact signal transducer. Use with intrinsically safe apparatus construction.

Micro Differential Pressure Switch

Manostar Switch MS65

Contact rating

Contact types	Specifications	Rated voltages	Resistive loads	Inductive loads	Loads on motor
For general electrical load	Contact composition SPDT (Single pole double throw type) Electrical life 100,000 switching cycles Contact material Silver (round rivets point)	30 V DC	3 A	2 A (time constant 7 ms)	——
		125 V AC	5 A	3 A (Power factor 0.4)	1 A
		250 V AC	5 A	3 A (Power factor 0.4)	0. 5 A
For low electrical load	Contact composition SPDT (Single pole double throw type) Electrical life 100,000 switching cycles Contact material Gold alloy(cross point)	30 V DC	0. 1 A	——	——
		125 V AC	0. 1 A	——	——

◆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).

Characteristics of built-in air filter

Material	Polyvinyl pholmor porous sheet (t = 2 mm)	Average collection rate	97.1 % (ratio in terms of weight)
		Retaining capacity	300 g/m^2

Name plate

Name plate for upper limit setting type



Name plate for lower limit setting type



Rated contact
Low electrical load type label



Pasting this label on the top of instrument body discriminate low electorical load type and general electrical load type.

Setting scale table (actual size)



Pressure range	Min. scale
10 ～ 60 Pa	5 Pa



Pressure range	Min. scale
20 ～ 120 Pa	5 Pa



Pressure range	Min. scale
50 ～ 300 Pa	10 Pa



Pressure range	Min. scale
100 ～ 600 Pa	50 Pa



Pressure range	Min. scale
0. 2 ～ 1. 2 kPa	0. 05 kPa



Pressure range	Min. scale
0. 5 ～ 3 kPa	0. 1 kPa



Pressure range	Min. scale
1 ～ 6 kPa	0. 5 kPa



Pressure range	Min. scale
2 ～ 12 kPa	0. 5 kPa



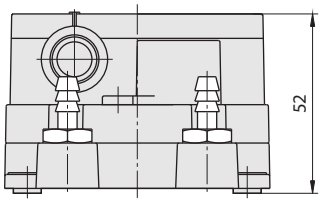
Pressure range	Min. scale
5 ～ 30 kPa	1 kPa

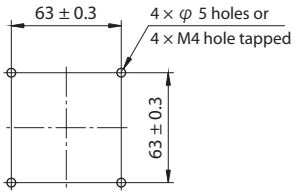
Caution

Do not apply excessive torque more than necessary, otherwise it will damage the instrument body.
Clamp the screw of terminal with the torque from 1.0 to 1.3 N·m.

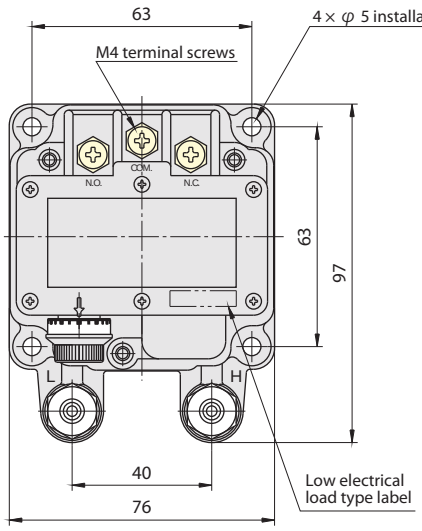
Outline drawing

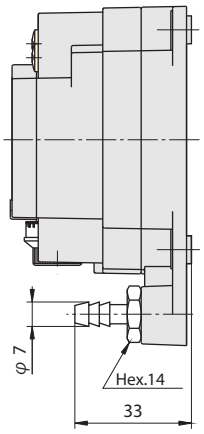
MS65 (VT type connector)



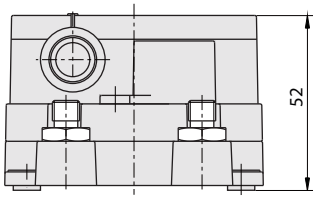


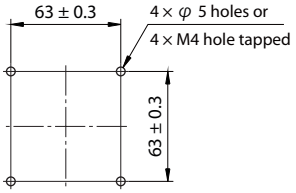
Panel cut size



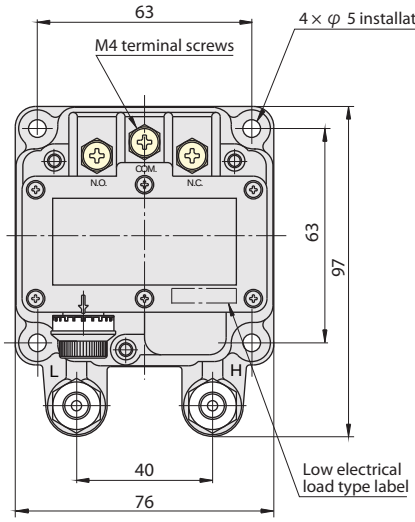


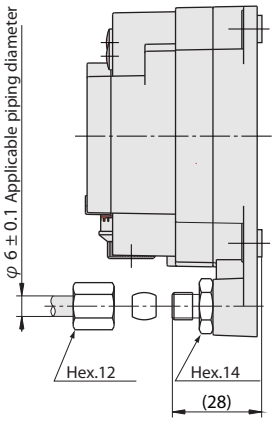
MS65 (MT type connector)



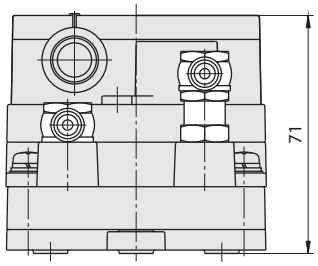


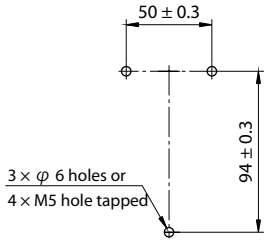
Panel cut size



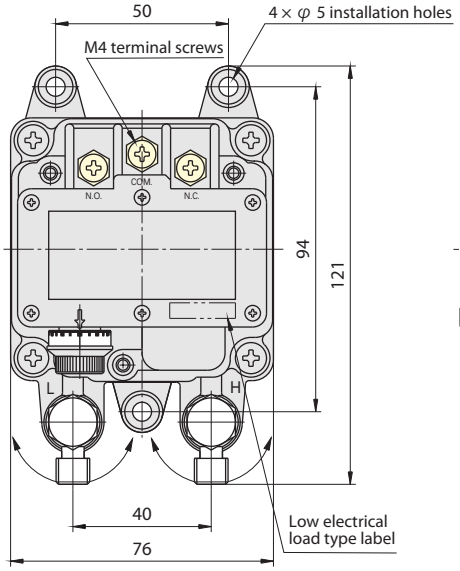


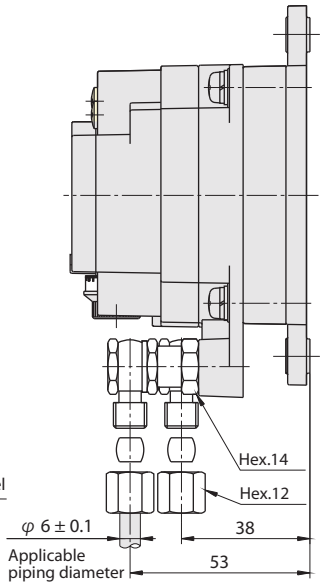
MS65F (ML type connector)





Panel cut size

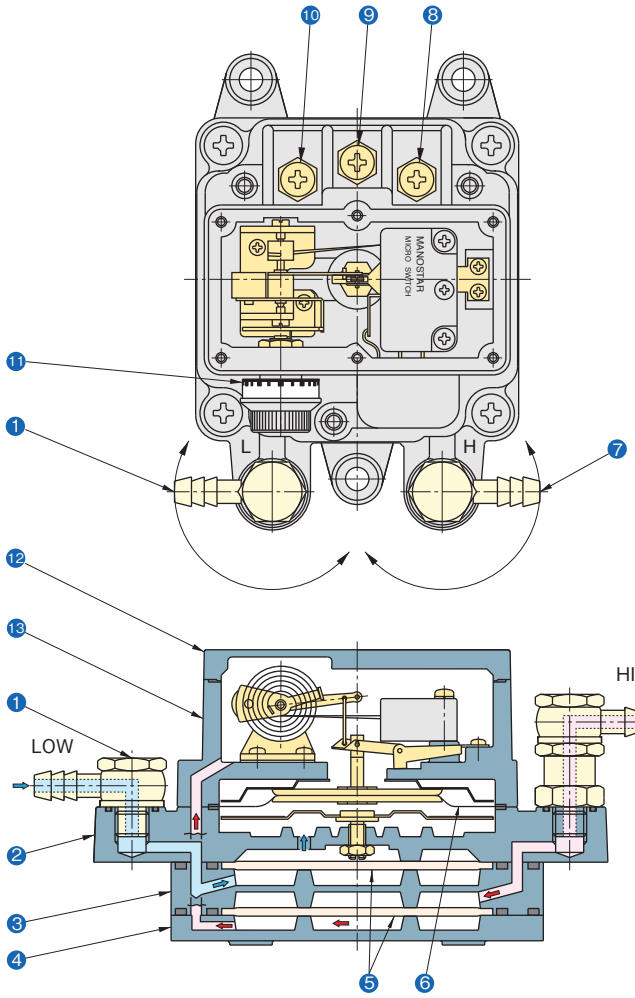




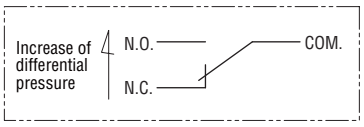
Micro Differential Pressure Switch

Manostar Switch MS65

Main structure



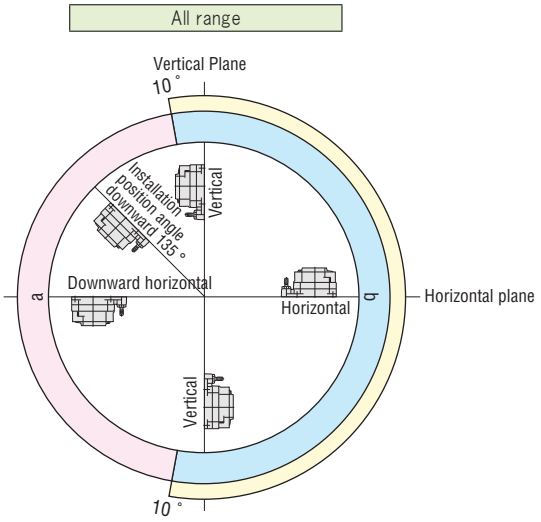
No.	Name
1	Low pressure side piping connector
2	Base
3	Filter case
4	Filter base
5	Filter
6	Diaphragm
7	High pressure side piping connector
8	N.C. terminal
9	COM. terminal
10	N.O. terminal
11	Dial with scale
12	Cover
13	Housing



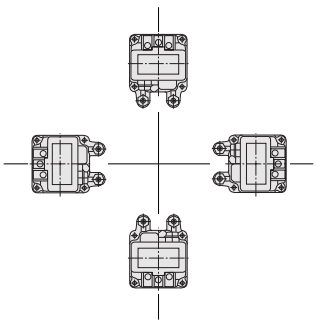
Contact composition

MS65 Installation position

Standard installation position is from upward horizontal to vertical.



On installation panel, following position is available.



a Specified installation position　b Following installation position is available　Standard installation position

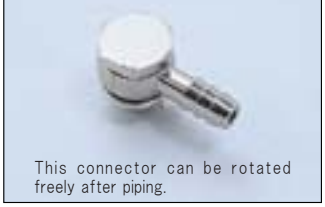
◆In ordering out of above mentioned installation position, please order us or our agency beforehand. It must be adjusted before the factory shipment.
◆In case of ordering standerd installation position, you do not specify installation position. Please specify pressure range code in the specification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

Accessory for MS65 RoHS compliant

VT straight connector type
Product code KGA65VT



VL rotary loose connector type
Product code KGA65VRL



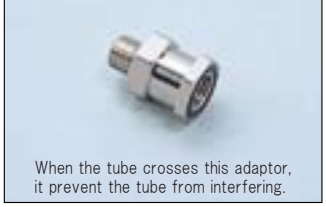
This connector can be rotated freely after piping.

VK rotary lock connector type
Product code KGA65VRK



This connector can be rotated freely and fixed at any position.

The adaptor of level difference connector for rotary type
Product code KGA65ADPA



When the tube crosses this adaptor, it prevent the tube from interfering.

MT straight connector type
Product code KGA65MT



ML rotary loose connector type
Product code KGA65MRL



This connector can be rotated freely after piping.

MK rotary lock connector type
Product code KGA65MRK



This connector can be rotated freely and fixed at any position.

Terminal cover set
Product code TCA-65



MTW straight connector type (double ring joint)
Product code KGA65MTW-S



For stainless tube made from stainless steel

Filter set
Product code AFS65



Two sets of filter, Two sets of packing

Dial cover set
Product code TCLAMPA-65



This cover avoids trouble that someone turn set dial carelessly.

＊Because of improvement of quality or any reason, some specifications are subject to change without notice.

In case of ordering the rotary connector type with the adaptor of level difference connector

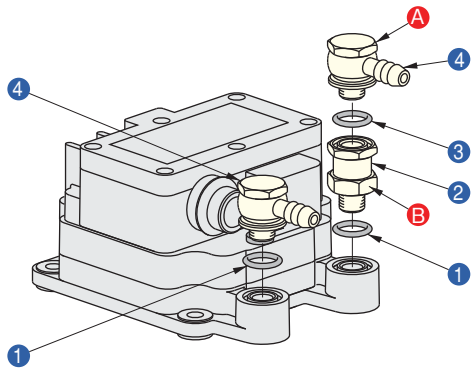
If you want to order rotary connector type with high-neck adaptor, specify the sign of "—ADP" after above mentioned Product code

(example) VL rotary loose connector type with the adaptor of level difference connector.

KGA65VRL-ADP

Installation of rotary connector

- When you change piping connector from straight type to rotary loose or rotary lock type, refer to the assembly drawing on the right.
- After cleaning well around connector area, take off the straight type connector by the spanner. Because of preventing intrusion of dust in internal instrument at the time taking off.
- The O-ring ① of the assembly drawing has been installed already on the instrument body.
  The O-ring ③ has been installed on the adaptor of level difference connector ②.
- Install the adaptor of level difference connector to mainbody to tighten the part Ⓑ by the spanner in advance. Then tighten ground Ⓐ of level difference connector by spanner. Install the rotary connector to both instrument body and the level difference adaptor.
- After installing, make sure that connector part is turned.
  In case of lock type, make sure that connector part is not turned.
  However, in piping, loose the head and move the connector where it is desired to be located and should be tightened again to fix.



No.	Name
1	O-ring
2	Adaptor of level difference connector
3	O-ring
4	Rotary connector

Caution	Tighten the piping connectors with the torque of 1 N·m. Do not apply excessive torque more than necessary, otherwise it will damage the instrument body. (Be sure to use a locking spanner at connectors to tighten the cap nuts of metal tube. Be careful not to let the tightening torque directly loaded to the main body of the instrument.)

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

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