

CL71

Differential Pressure Switch

NEW

**Improved
environmental
proof**

CE compliance



RoHS



Outline

This differential pressure switch for low pressure measurement with high proof pressure is available in monitor and alarm for closed tank level measurement and detecting clogged strainer in pipeline.

Miniaturization has been achieved by substantially reducing their volume ratio compared to that of conventional models.

Features

- CE compliance
- IP66 (Waterproof with equivalent NEMA4 protection)
- Unique pressure sensing part construction makes a high 8MPa proof pressure possible.
- Setting can be operated at front side.
- Finished by acid-proof coating on surface to prevent from rust by salt damage.

Recommended switch set point range

Pressure setting range varies by pressure range, please refer to the specifications.

* When selecting differential pressure range of switch, ensure that operating pressure becomes within 30 to 65% of nominal pressure range to get full performance of pressure switch. Also ensure that the wetted parts are compatible with gas or liquid media and NBR, especially for the case that water with water treatment agent is the media.

Specification 1

Item	Description
Model	General process use
Fluid	Gas, liquid (For an inflammable fluid, always use the diaphragm type)
Operating environment	Places where there are no inflammable liquids or gases which may cause ignition or explosion under normal conditions.
Mounting	Panel mounting, 2B pipe mounting
Connection	Rc1/4 * For other connections, please contact us.
Wetted parts material	Diaphragm SUS316+NBR (Buna-N) O-ring NBR Body SCS14 Spring SUS304
Differential pressure range	0 to 25kPa, 0 to 50kPa, 5 to 25kPa, 10 to 50kPa, 0.02 to 0.1MPa, 0.04 to 0.2MPa, 0.06 to 0.3MPa, 0.08 to 0.4MPa, 0.1 to 0.5MPa, 0.12 to 0.6MPa, 0.16 to 0.8MPa, 0.2 to 1MPa
Working differential pressure range	1MPa
Base pressure	8MPa
Single withstand pressure	8MPa
Operating temperature	-20 to +60°C
Accuracy	± 1.5%max.P.
Deadband	Refer to specification 2 for details
Switch	Micro switch
Number of contacts	1 contact or 2 contacts (2 contacts: Simultaneous operation only)
Setting system	Internally adjustable
Outlet for electric wire	Conduit type G3/4 Gland JIS 20b
Case material, finishing	AC7A or ADC12, Blue/ Gray two-tone epoxy painted
Protection	IP66 (Waterproof property is equivalent to NEM4)
RoHS Compliance	Applicable
Weight	Approx. 5 kg

CE compliance

Applicable Directive
Low Voltage Directive 2014/35/EU

Applicable Standard
EN60947-5-1 Low-voltage switch gear and control gear
Part 5 Circuit devices and switching elements
Section 1 Electromechanical control circuit devices
EN60730-2-6 Automatic electrical controls for household and similar use
Part 2-6 Particular requirements for automatic pressure sensing controls
including mechanical requirements

ELECTRICAL RATING	
RESISTANCE LOAD	INDUCTIVE LOAD
AC 125V 15A	AC 125V 15A
AC 250V 15A	AC 250V 15A
DC 30V 2A	DC 30V 1A
DC 125V 0.5A	DC 125V 0.05A

ELECTRICAL RATING WHICH CONFORMS TO SAFETY STANDARD	
CE	RESISTANCE LOAD
	DC 125V 0.1A (DC-12)
	INDUCTIVE LOAD
	DC 60V 0.1A (DC-13)
EN60947-5-1	

Specification 2

1 contact type

Electric characteristics:

Electrical rating			Withstand voltage	Insulation resistance
	Resistance load	Inductive load		
125V AC	15 A	15 A	1500V AC	500V DC 100MΩ or higher
250V AC	15 A	15 A		
30V DC	2 A	1 A		
125V DC	0.5 A	0.05 A		
Safety standard compliance rating				
	Resistance load	Inductive load	Between terminals and case for 1 minute	Between terminals and case
125V DC	0.1 A	—		
60V DC	—	0.1 A		
·Inductive load: Power factor 0.4 or higher Time constant 7ms and under				

Differential pressure range and deadband:

Differential pressure range	Deadband	Setting range		Process media
		Upper limit type, reverse upper limit type	Lower limit type, reverse lower limit type	
*0 to 25kPa	4kPa and under	4 to 22.5kPa	0 to 18.5kPa	Gas Note 2) Note 5)
*0 to 50kPa	6kPa /	6 to 45kPa	0 to 39kPa	
5 to 25kPa	3.5kPa /	8.5 to 22.5 kPa	5 to 19kPa	
10 to 50kPa	5kPa /	15 to 45kPa	10 to 40kPa	
0.02 to 0.1MPa	0.007MPa /	0.027 to 0.09MPa	0.02 to 0.083MPa	Gas, liquid Note 3) Note 5)
0.04 to 0.2MPa	0.014MPa /	0.054 to 0.18MPa	0.04 to 0.166MPa	
0.06 to 0.3MPa	0.018MPa /	0.078 to 0.27MPa	0.06 to 0.252MPa	
0.08 to 0.4MPa	0.02 MPa /	0.1 to 0.36MPa	0.08 to 0.34MPa	
0.1 to 0.5MPa	0.025MPa /	0.125 to 0.45MPa	0.1 to 0.425MPa	
0.12 to 0.6MPa	0.03 MPa /	0.1 to 0.54MPa	0.12 to 0.51MPa	
0.16 to 0.8MPa	0.04 MPa /	0.2 to 0.72MPa	0.16 to 0.68MPa	
0.2 to 1 MPa	0.05 MPa /	0.25 to 0.9MPa	0.2 to 0.85MPa	

2 contacts type

Electric characteristics: Standard contact type

Electrical rating			Withstand voltage	Insulation resistance
	Resistance load	Inductive load		
125V AC	5 A	3 A	1500V AC	500V DC 100MΩ or higher
250V AC	5 A	3 A		
30V DC	5 A	3 A		
125V DC	0.4 A	0.05 A		
Safety standard compliance rating				
	Resistance load	Inductive load	Between terminals and case for 1 minute	Between terminals and case
125V DC	0.1 A	—		
30V DC	—	0.1 A		
·Inductive load: Power factor 0.4 or higher Time constant 7ms and under				

Gold clad type

Electrical rating	
	Resistance load
125V AC	0.1 A
8V DC	0.1 A
14V DC	0.1 A
30V DC	0.1 A
Safety standard compliance rating	
	Resistance load
30V DC	0.1 A

Differential pressure range and deadband:

Differential pressure range	Deadband	Setting range		Process media
		Upper limit type, reverse upper limit type	Lower limit type, reverse lower limit type	
*0 to 25kPa	6kPa and under	6 to 22.5kPa	0 to 16.5kPa	Gas Note 2) Note 5)
*0 to 50kPa	9kPa /	9 to 45kPa	0 to 36kPa	
5 to 25kPa	5.5kPa /	10.5 to 22.5 kPa	5 to 17kPa	
10 to 50kPa	8kPa /	18 to 45kPa	10 to 37kPa	
0.02 to 0.1MPa	0.012MPa /	0.032 to 0.09MPa	0.02 to 0.078MPa	Gas, liquid Note 3) Note 5)
0.04 to 0.2MPa	0.024MPa /	0.064 to 0.18MPa	0.04 to 0.156MPa	
0.06 to 0.3MPa	0.03 MPa /	0.09 to 0.27MPa	0.06 to 0.24MPa	
0.08 to 0.4MPa	0.032MPa /	0.112 to 0.36MPa	0.08 to 0.328MPa	
0.1 to 0.5MPa	0.04 MPa /	0.14 to 0.45MPa	0.1 to 0.41MPa	
0.12 to 0.6MPa	0.048MPa /	0.168 to 0.54MPa	0.12 to 0.492MPa	
0.16 to 0.8MPa	0.064MPa /	0.224 to 0.72MPa	0.16 to 0.656MPa	
0.2 to 1 MPa	0.08 MPa /	0.28 to 0.9MPa	0.2 to 0.82MPa	

Note 1) For ranges indicated by the * mark, please use the 5 to 25kPa and 10 to 50kPa ranges as much as possible. Also, the ranges indicated by the * mark can be set near differential pressure 0 for lower limit type and reverse lower limit type. However, some instruments have an inherent accuracy, temperature coefficient, etc., so take into account that the switch operation pressure changes and select the set point so that there is an ample system safety factor.

Note 2) When a fluid to be measured is a fluid, we recommend that you use the 50kPa or greater range with diaphragm seal. When water is to be measured, the error may increase noticeably because water does not have a lubricating ability. The error may increase due to the effect of the surface tension of the liquid, etc. Therefore, calibrate using the same liquid as the liquid to be measured. In this case, take into account the liquid head error.

Note 3) When measuring water, use a water treatment agent that has no effect on NBR.

Note 4) Be sure that foreign matter, especially rust, in the piping does not flow in the instrument.

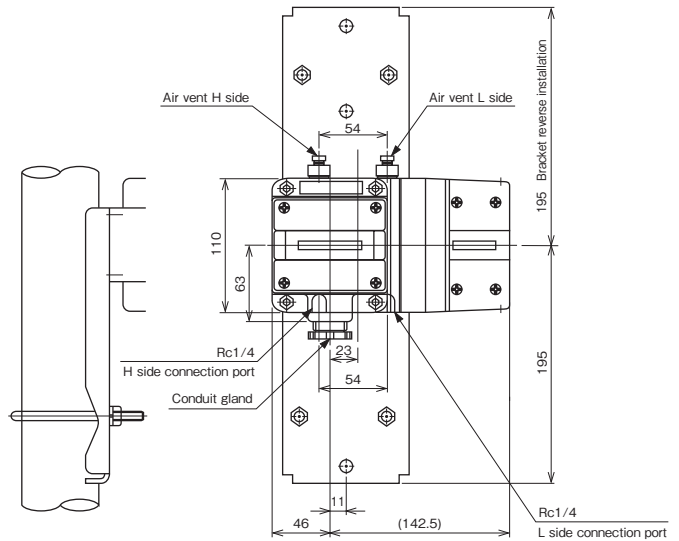
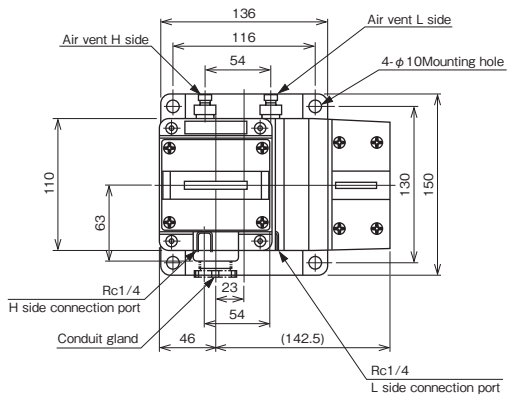
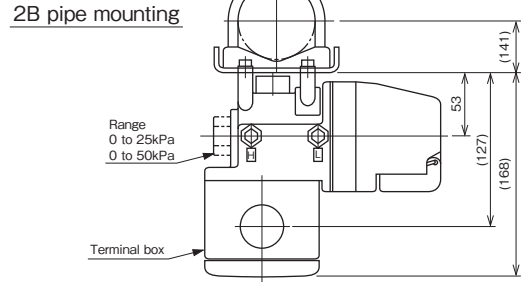
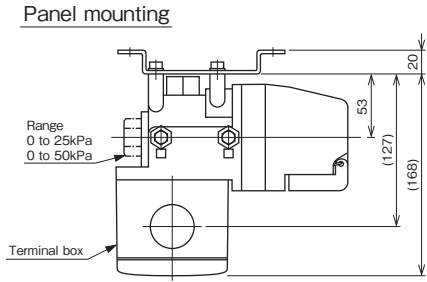
Note 5) Ensure that process media is inflammable when the media to be sensed is fluid. Add diaphragm seal to isolate the fluid media from pressure switch when fluid is flammable.

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Differential Pressure Switch

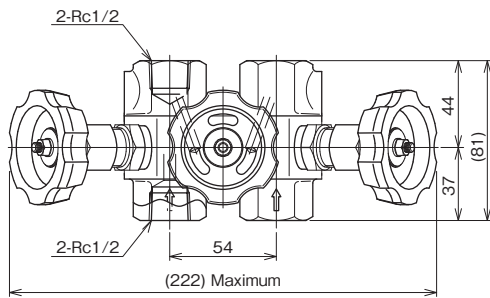
Dimensions

Unit: mm



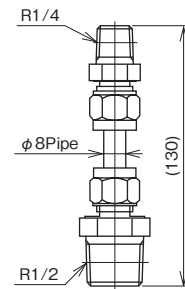
Valve-manifold: (Option)

Three-way valve manifold which combined the stop valve for high and low pressure and strap valve. This valve manifold is suitable for checking zero point or zero adjustment during operation and also available to prevent excess differential pressure or reversal differential pressure.



[FV42-993]

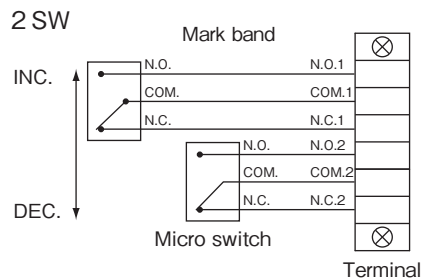
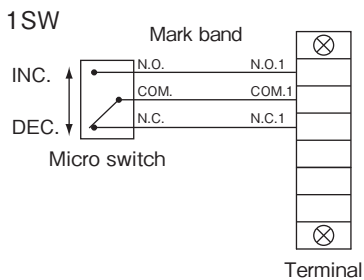
Manifold fitting: (Option)



[FJ92-001]

* As for connection of differential pressure switch and valve-manifold, FJ92-001 (2 pieces) is necessary.

Wiring

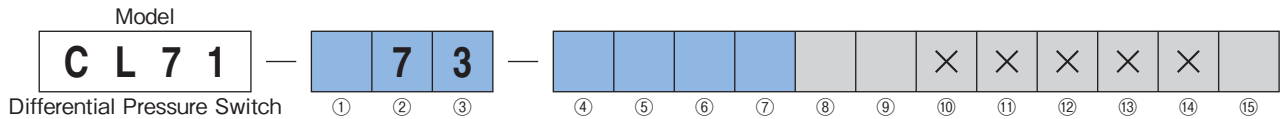


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Differential Pressure Switch

Model number configuration

Please specify the model number, each specs and the range for ordering.



Model number		Selective spec.	Additional spec. (Option)
① Mounting type	1	Panel mounting, 1 contact	
	2	Panel mounting, 2 contacts	
	3	2B pipe mounting, 1 contact	
	4	2B pipe mounting, 2 contacts	
② Connection	7	Rc1/4	
		Others	
③ Wetted parts material	3	Body: SCS14, Spring: SUS304, Bolt: SUS305, Diaphragm: SUS316+NBR (Buna-N), O-ring: NBR	
④ Differential pressure range (MPa)	1	0 to 25, 0 to 50kPa	
	2	5 to 25kPa	
	3	10 to 50kPa, 0.02 to 0.1, 0.04 to 0.2, 0.06 to 0.3, 0.08 to 0.4	
	4	0.1 to 0.5, 0.12 to 0.6, 0.16 to 0.8	
	5	0.2 to 1	
⑤ Type of contacts / quantity of switch	A	H : Upper limit type with 1 contact	
	B	L : Lower limit type with 1 contact	
	D	2H: Upper limit type with 2 contacts	
	E	2L : Lower limit type with 2 contacts	
		Others	
⑥ Switch	0	Standard type	
	1	Ultra high sensitivity type (1 contact only)	
	3	Standard + Gold plated (1 contact), Gold clad type (2 contacts)	
	4	Ultra high sensitivity type + Gold plated (1 contact only)	
		Others	
⑦ Outlet for electric wire	3	Conduit G3/4	
	7	Gland JIS 20b	
⑧ Treatment	0	Nil	
	1	Use no oil	
	2	Use no water	
	3	Use no oil & water	
⑨ Additional specifications	0	Nil	
	1	Required (Please specify the desired documents separately.) Coating specification (Another order) Valve-manifold FV42-993 Rc1/2 FJ92 for FV42 connection (Required 2 pieces)	
⑮ Document	0	Nil	
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill test report, test report (1 pc 1 copy), inspection / traceability certificate, attended inspection	

Please specify applicable range code as well as differential pressure range and engineering unit.

* Gold clad type (2 contacts only)

Manufacturing range
 ·Base pressure: 8MPa, Single withstand pressure: 8MPa
 ·Setting system: Internally adjustable
 ·2 contacts are set simultaneously
 ·For connecting the CL71 and Valve-manifold, FJ92 requires 2 pieces

* Specify by code "X" if there is no applicable specification.

* Refer to catalog for model CD71 for flameproof enclosure.