CD71
Flame Proof Type
Differential Pressure Switch

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

- 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	Flame proof construction (ExdⅡB+H_2 T4)
Fluid	Gas, liquid (For an inflammable fluid, always use the diaphragm type)
Operating environment	Hazardous area　See explanation of type of protection for details.
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	-5 to +40℃
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	Flame proof gasket type
Case material, finishing	AC7A or ADC12, Blue/ Gray two-tone epoxy painted
Protection	IP65
RoHS Compliance	Applicable
Weight	Approx. 9 kg

Specification 2

Electric characteristics:

Rating					Withstand voltage	Insulation resistance
	Resistance load		Inductive load			
	1 contact	2 contacts	1 contact	2 contacts		
125V AC	15A	5A	15A	3A	1500V AC Between terminals and case for 1 minute	500V DC 100MΩ or higher Between terminals and case
250V AC	15A	5A	15A	3A		
30V DC	2A	5A	1A	3A		
125V DC	0.5A	0.4A	0.05A	0.05A		
·Two contacts are set simultaneously ·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
			1 contact		2 contacts		
	1 contact	2 contacts	Upper limit type, reverse upper limit type	Lower limit type, reverse lower limit type	Upper limit type, reverse upper limit type	Lower limit type, reverse lower limit type	
*0 to 25kPa	4kPa and under	6kPa and under	4 to 22.5kPa	0 to 18.5kPa	6 to 22.5kPa	0 to 16.5kPa	Gas Note 2) Note 5)
*0 to 50kPa	6kPa 〃	9kPa 〃	6 to 45kPa	0 to 39kPa	9 to 45kPa	0 to 36kPa	
5 to 25kPa	3.5kPa 〃	5.5kPa 〃	8.5 to 22.5kPa	5 to 19kPa	10.5 to 22.5kPa	5 to 17kPa	
10 to 50kPa	5kPa 〃	8kPa 〃	15 to 45kPa	10 to 40kPa	18 to 45kPa	10 to 37kPa	
0.02 to 0.1MPa	0.007MPa 〃	0.012MPa 〃	0.027 to 0.09MPa	0.02 to 0.083MPa	0.032 to 0.09MPa	0.02 to 0.078MPa	Gas, liquid Note 3) Note 5)
0.04 to 0.2MPa	0.014MPa 〃	0.024MPa 〃	0.054 to 0.18MPa	0.04 to 0.166MPa	0.064 to 0.18MPa	0.04 to 0.156MPa	
0.06 to 0.3MPa	0.018MPa 〃	0.03 MPa 〃	0.078 to 0.27MPa	0.06 to 0.252MPa	0.09 to 0.27MPa	0.06 to 0.24MPa	
0.08 to 0.4MPa	0.02 MPa 〃	0.032MPa 〃	0.1 to 0.36MPa	0.08 to 0.34MPa	0.112 to 0.36MPa	0.08 to 0.328MPa	
0.1 to 0.5MPa	0.025MPa 〃	0.04 MPa 〃	0.125 to 0.45MPa	0.1 to 0.425MPa	0.14 to 0.45MPa	0.1 to 0.41MPa	
0.12 to 0.6MPa	0.03 MPa 〃	0.048MPa 〃	0.1 to 0.54MPa	0.12 to 0.51MPa	0.168 to 0.54MPa	0.12 to 0.492MPa	
0.16 to 0.8MPa	0.04 MPa 〃	0.064MPa 〃	0.2 to 0.72MPa	0.16 to 0.68MPa	0.224 to 0.72MPa	0.16 to 0.656MPa	
0.2 to 1 MPa	0.05 MPa 〃	0.08 MPa 〃	0.25 to 0.9MPa	0.2 to 0.85MPa	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 affect on NBR.

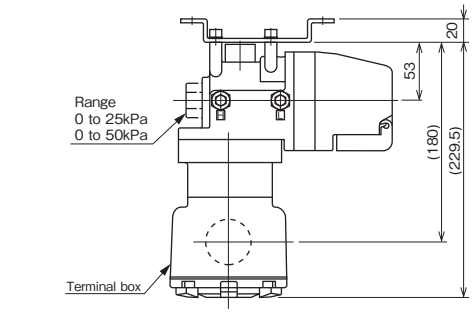
Note 4) Be sure that foreign matter, especially rust, in the piping does not flow in the instrument.

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.

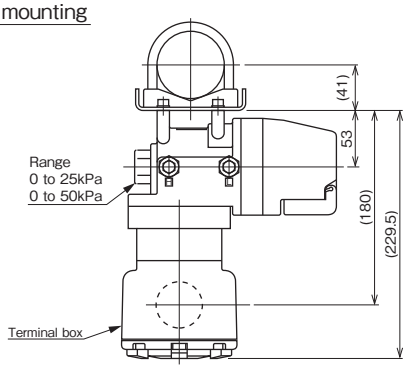
Dimensions

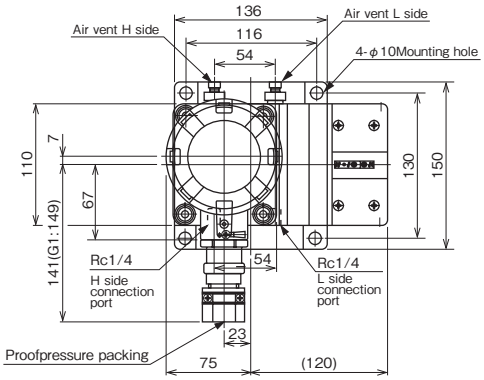
Unit: mm

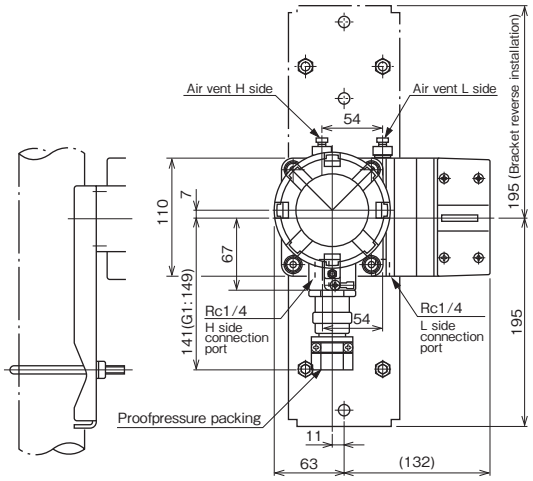
Panel mounting



2B pipe mounting

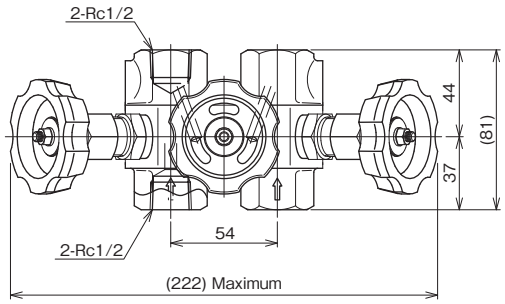




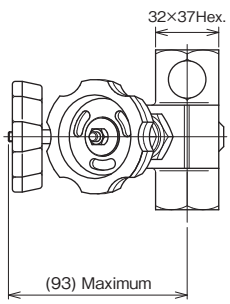


Valve-manifold: (Option)

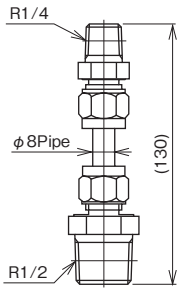
Three-way valve manifold which combined the stop valve for high and low pressure and strap valve. This valve manifold is suitable for checking zero point or zero adjustment during operation and also available to prevent excess differential pressure or reversal differential pressure.



FV42-993



Manifold fitting: (Option)



FJ92-001

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

Flame proof construction

Type approval number certified for explosion protected equipment:

Type approval number refers approval by Ministry of Labor notification that meets the appropriate requirement of technical standard and new guideline for explosion protection in accordance with IEC standard.

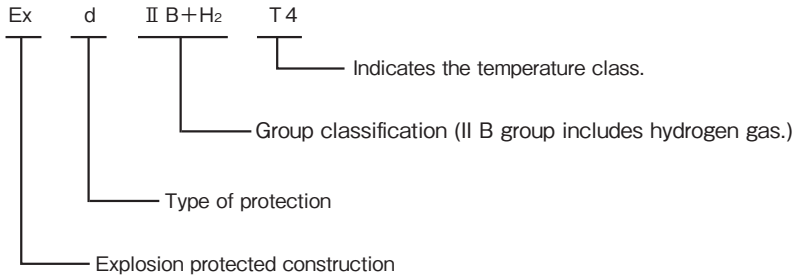
Model	Type approval number
CD71 1 contact	No. TC14424
CD71 2 contacts	No. TC14425

Flameproof enclosure:

Flameproof enclosure refers all-sealed enclosure construction that can withstand the pressure of explosion of the potentially explosive mixture inside, and prevent the transmission of explosion to the potentially explosive atmosphere surrounding the enclosure.

Our pressure switch manufactured in accordance with the principle can be located at factory and other workplaces for use in potentially explosive atmosphere where flammable gas or vapor of combustible liquid exists.

About Exd ⅡB+H_2 T4:



Group classification

Electrical equipment intended for use in potentially explosive atmosphere is classified into group I and II. This pressure switch is classified into II which means suitable for non-mine locations or other workplaces that could be endangered by potentially explosive atmosphere.

Applicable group and classification of gas or steam

Classification of gas or steam	Applicable group		
A	ⅡA	ⅡB	ⅡC
B	—	ⅡB	ⅡC
C	—	—	ⅡC

Ignition point of gas or steam which T4 can apply

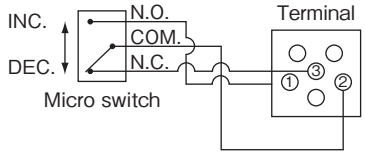
Ignition point of gas or steam	Applicable temperature class					
Higher than 450℃	T1	T2	T3	T4	T5	T6
Higher than 300℃	—	T2	T3	T4	T5	T6
Higher than 200℃	—	—	T3	T4	T5	T6
Higher than 135℃	—	—	—	T4	T5	T6
Higher than 100℃	—	—	—	—	T5	T6
Higher than 85℃	—	—	—	—	—	T6

Example of applicable gas or steam

Group \ Temperature class	T1	T2	T3	T4	T5	T6
ⅡA	Acetone Ammonia Carbon monoxide Ethane Acetic acid Ethyl acetate Toluene Propane Benzene Methanol Methane	Ethanol 1-butanol Butane	Hexane	Acetaldehyde		
ⅡB		Ethylene Ethylene oxide		Ethyl methyl Ether		
ⅡC	Hydrogen	Acetylene			Carbon bisulfide	Nitric acid ethyl

Wiring

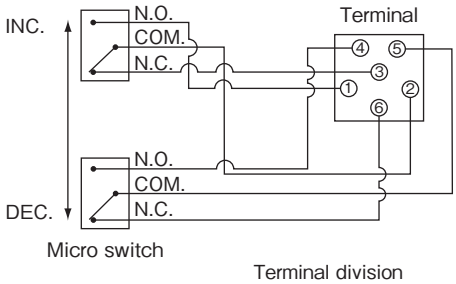
1SW



Terminal division

①: N.O.1
②: COM.1
③: N.C.1

2SW

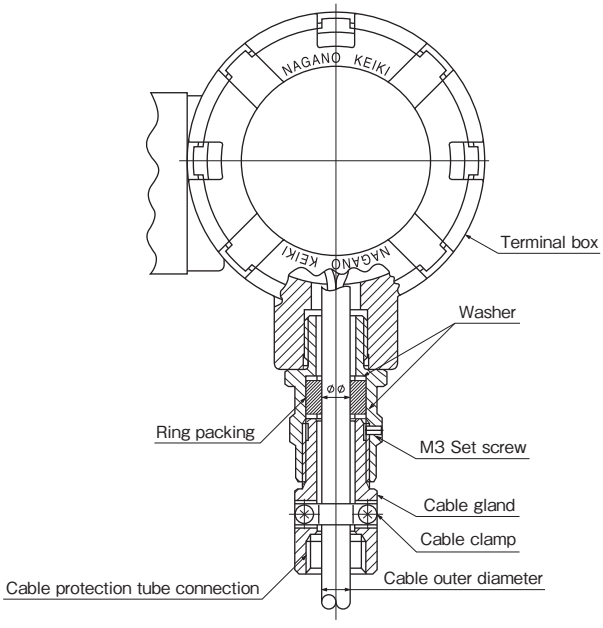


Terminal division

①: N.O.1
②: COM.1
③: N.C.1
④: N.O.2
⑤: COM.2
⑥: N.C.2

Outlet for electric wire

Conduit connection	Packing inner diameter (d) ϕ	Applicable cable outer diameter ϕ	Protection tube connection
G1/2	ϕ8 to ϕ12 (Available in 1DIA. Steps)	ϕ7.0 to ϕ12.0	G1/2
G3/4	ϕ13 to ϕ16 (Available in 1DIA. Steps)	ϕ12.0 to ϕ16.0	G3/4
G 1	ϕ17 to ϕ20 (Available in 1DIA. Steps)	ϕ16.0 to ϕ20.0	G 1



Model number configuration

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

Model

C	D	7	1	—	①	7	3	—	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Flame Proof Type Differential Pressure Switch															×	×	×	×	×	

Model number		Selective spec.	Additional spec. (Option)

① Mounting type

3	Panel mounting Flame-proof packing type 1 contact
4	Panel mounting Flame-proof packing type 2 contacts
7	2B pipe mounting Flame-proof packing type 1 contact
8	2B pipe mounting Flame-proof packing type 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

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

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

＊Gold clad type (2 contacts only)

⑦ Outlet for electric wire

オ	Gasket inner diameter φ11 (G1/2)
カ	Gasket inner diameter φ12 (G1/2)
コ	Gasket inner diameter φ14 (G3/4)
シ	Gasket inner diameter φ16 (G3/4)
タ	Gasket inner diameter φ17 (G 1)

＊Gasket inside diameter can be manufacturedin 1mm steps. For other sizes, contact NKS.

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

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 CL71 for non-flameproof enclosure.