



CL71 Differential Pressure Switch CD71 Explosion-Protected Construction Differential Pressure Switch

OUTLINE

These are high proof pressure low differential pressure differential pressure switches used for liquid level alarm in sealed tanks and for checking clogging of pipeline strainers. Miniaturization has been achieved by substantially reducing their volume ratio compared to that of conventional models.

FEATURES

- Special pressure sensing part construction makes a high proof pressure of 8MPa possible.
- Since they can be operated from the front and setting uses a rotary system, precision setting is possible.
- Acid-proof coating prevents rusting of the coated surface by salt damage.

* When selecting a differential pressure switch, select the differential pressure range over which the gauge will demonstrate top performance in a working differential pressure range within 30 to 65% of full scale. Also check whether the wetted parts material is suitable for the gas or fluid to be measured. When the liquid to be measured is water, please check whether or not the water treatment agent is suitable for the wetted parts material (especially NBR).

SPECIFICATION 1

Model:

CL71 General process use
CD71 Explosion-protected construction (Exd IIB+H₂ T4)

Fluid:

Gas or liquid
(For an inflammable fluid, always use the diaphragm type.)

Operating environment:

CL71
Places where there are no inflammable liquids or gases which may cause ignition or explosion under normal conditions.
CD71
Hazardous area Refer to the explosion-protected construction item for more information.

Mounting:

Panel mounted, 2B pipe installation

Connection:

Rc 1/4 (PT female)
* For other connections, please contact us.

Wetted parts materials:

Diaphragm SUS316+NBR (Buna-N)
O ring NBR
Body SCS14
Spring SUS304

Differential pressure range:

0.005~0.025→0.2~1 MPa
0~0.025MPa, 0~0.05 MPa

Working differential pressure range:

1 MPa

Base pressure:

8 MPa

One side pressure tight:

8 MPa

Operating temperature:

CL71 -20~60 °C
CD71 -5~40 °C

Accuracy:

±1.5%max.P.

Dead band:

0.0035~0.08 MPa or less
(Depends on the differential pressure range and number of contacts.)

Switch:

Microswitch

Number of contacts:

1 contact or 2 contacts
(Two contacts: Simultaneous operation only)

Setting system:

Internal adjustment

Outlet for electric wire:

CL71 Conduit type PF3/4 female
Gland JIS 20b
CD71 Flame-proof packing type

Case material & finish:

AC7A or ADC12·Blue & Gray Epoxy painted

Case construction:

IP65

Weight:

CL71 Approx. 5kg
CD71 Approx. 9kg

SPECIFICATION 2

Electrical characteristics:

	Rating				Withstand voltage	Insulation resistance
	Resistance load		Inductive load			
	One contact	Two contacts	One contact	Two contacts		
125V AC	15A	5A	15A	3A	1500V AC	500V DC 100MΩ or over
250V AC	15A	5A	15A	3A		
125V DC	0.5A	0.4A	0.05A	0.05A		
30V DC	2A	5A	1A	3A		
• Two contacts are set simultaneously. • Inductive load : Power factor 0.4 or over (AC) Time constant 7ms or less (DC)						
					Between terminals and case for 1 minute	Between terminals and case

Differential pressure range and dead band:

Differential pressure range MPa	Dead band MPa		Setting range MPa				Fluid
	One contact	Two contacts	One contact		Two 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 ~ 0.025	0.004 or less	0.006 or less	0.004 ~ 0.0225	0 ~ 0.0185	0.006 ~ 0.0225	0 ~ 0.0165	Gas Note 2)
*0 ~ 0.05	0.006 or less	0.009 or less	0.006 ~ 0.045	0 ~ 0.039	0.009 ~ 0.045	0 ~ 0.036	
0.005 ~ 0.025	0.0035 or less	0.0055 or less	0.0085 ~ 0.0225	0.005 ~ 0.019	0.0105 ~ 0.0225	0.005 ~ 0.017	
0.01 ~ 0.05	0.005 or less	0.008 or less	0.015 ~ 0.045	0.01 ~ 0.04	0.018 ~ 0.045	0.01 ~ 0.037	Gas Liquid Note 3)
0.02 ~ 0.1	0.007 or less	0.012 or less	0.027 ~ 0.09	0.02 ~ 0.083	0.032 ~ 0.09	0.02 ~ 0.078	
0.04 ~ 0.2	0.014 or less	0.024 or less	0.054 ~ 0.18	0.04 ~ 0.166	0.064 ~ 0.18	0.04 ~ 0.156	
0.06 ~ 0.3	0.018 or less	0.03 or less	0.078 ~ 0.27	0.06 ~ 0.252	0.09 ~ 0.27	0.06 ~ 0.24	
0.08 ~ 0.4	0.02 or less	0.032 or less	0.1 ~ 0.36	0.08 ~ 0.34	0.112 ~ 0.36	0.08 ~ 0.328	
0.1 ~ 0.5	0.025 or less	0.04 or less	0.125 ~ 0.45	0.1 ~ 0.425	0.14 ~ 0.45	0.1 ~ 0.41	
0.12 ~ 0.6	0.03 or less	0.048 or less	0.15 ~ 0.54	0.12 ~ 0.51	0.168 ~ 0.54	0.12 ~ 0.492	
0.16 ~ 0.8	0.04 or less	0.064 or less	0.2 ~ 0.72	0.16 ~ 0.68	0.224 ~ 0.72	0.16 ~ 0.656	
0.2 ~ 1	0.05 or less	0.08 or less	0.25 ~ 0.9	0.2 ~ 0.85	0.28 ~ 0.9	0.2 ~ 0.82	

Note 1) For ranges indicated by the * mark, please use the 0.005~0.025MPa and 0.01~0.05MPa 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 0.05MPa or greater range and a diaphragm type. 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.

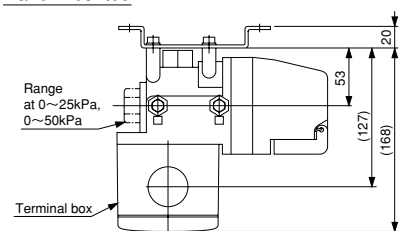
Note 3) When measuring water, use a water treatment agent that has no effect on NBR.

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

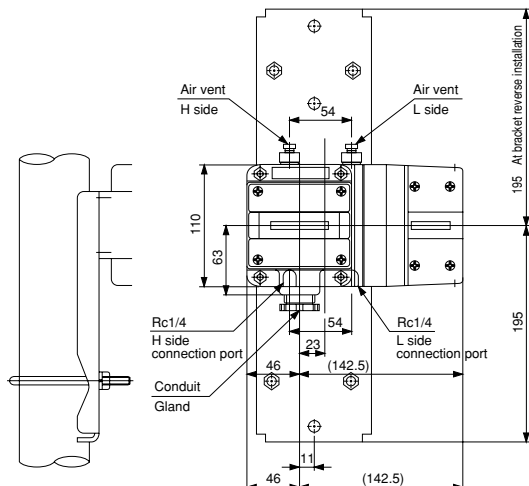
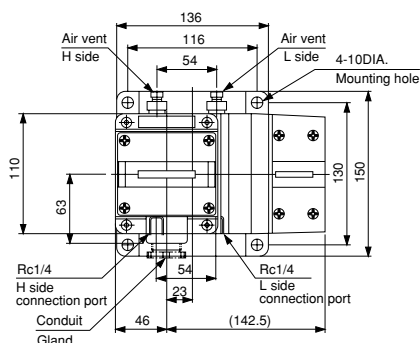
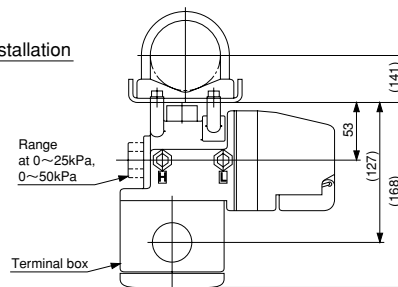
DIMENSIONS 1

CL71

Panel mounted



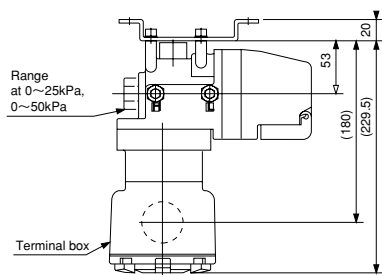
2B pipe installation



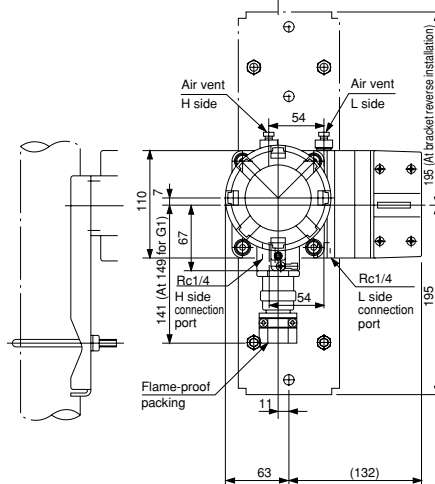
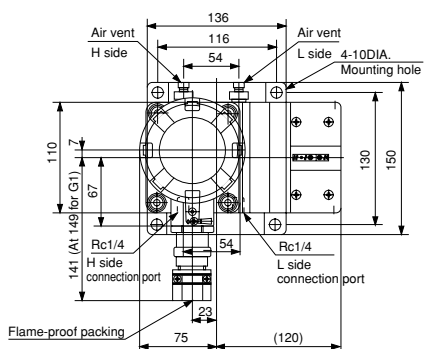
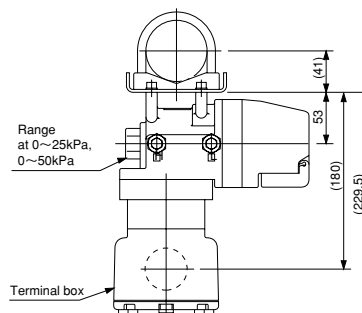
DIMENSIONS 2

CD71

Panel mounted

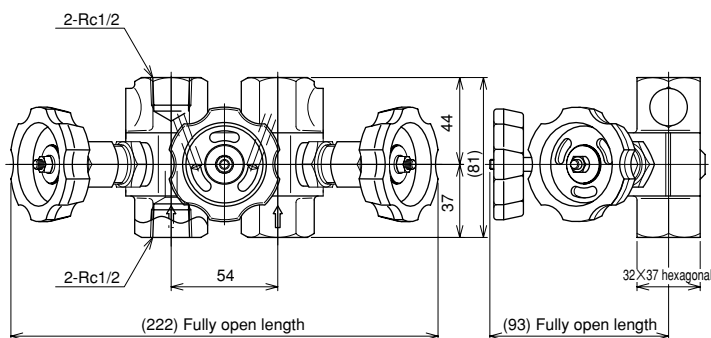


2B pipe installation



Valve manifold: (Option)

Three-way valve manifold incorporating high pressure and low pressure stop valves and an equal pressure valve. It can be used to check the zero point during operation and to prevent excess differential pressure and reverse differential pressure during zero adjustment and at the start (stop) of operation.



Model number: FV42-993

* Differential pressure gauge and valve manifold connection requires two FJ92-001.

EXPLOSION-PROTECTED

Explosion-protected type approval: (CD71)

Approval is obtained in conformity with technical standards matched to IEC international standards by the Ministry of Labor Notification and new explosion-proof policy.

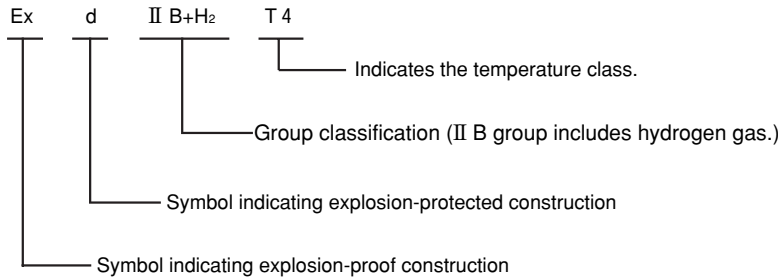
Ministry of Labor type approval name	Ministry of Labor approval number
CD71 One contact	No. C14424
CD71 Two contacts	No. C14425

Explosion-protected construction:

Explosion-protected construction is a totally-enclosed construction such that even if an explosive gas explodes inside the container, the container will withstand the force of the explosion and there is no danger of ignition by external explosive gases.

Our differential pressure switches manufactured under this policy are used in pressure measurements where inflammable gas or the inflammable gas vapors may exist in factories and business offices.

Exd II B+H₂ T4:



Group classification

Explosion-proof electrical equipment are classified into Group I and Group II by the place where they are used. The CL71/CD71 belong to Group II, and come under equipment used in hazardous areas of factories and business offices, except hazardous areas in mines.

Applicable group and classification of gas or steam

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

Ignition point of gas or steam to which T4 can apply

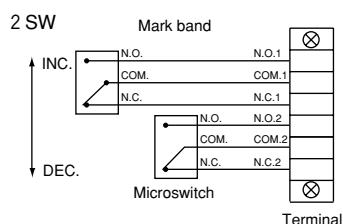
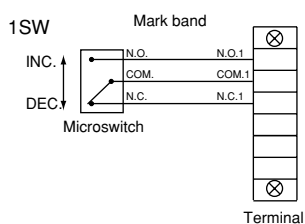
Ignition point of gas or steam	Applicable temperature class					
	T1	T2	T3	T4	T5	T6
Higher than 450°C	T1	T2	T3	T4	T5	T6
Higher than 300°C	—	T2	T3	T4	T5	T6
Higher than 200°C	—	—	T3	T4	T5	T6
Higher than 135°C	—	—	—	T4	T5	T6
Higher than 100°C	—	—	—	—	T5	T6
Higher than 85°C	—	—	—	—	—	T6

Example of applicable gas or steam

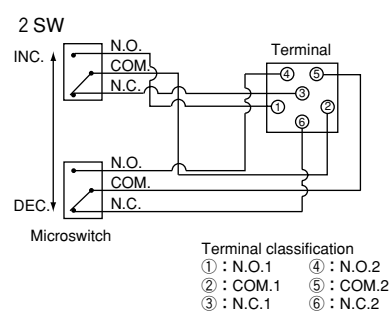
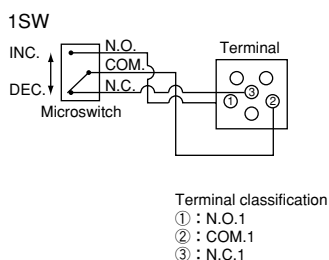
Temperature class / Group	T1	T2	T3	T4	T5	T6
II A	Acetone Ammonia Carbon monoxide Ethane Acetic acid Ethyl acetate Toulene Propane Benzene Menthanol Methane	Ethanol 1-butanol Butane	Hexane	Acetaldehyde		
II B		Ethylene Ethylenoxide		Ethylmethyl Ether		
II C	Hydrogen	Acetone			Carbon bisulfide	Nitric acid ethyl

WIRING

CL71

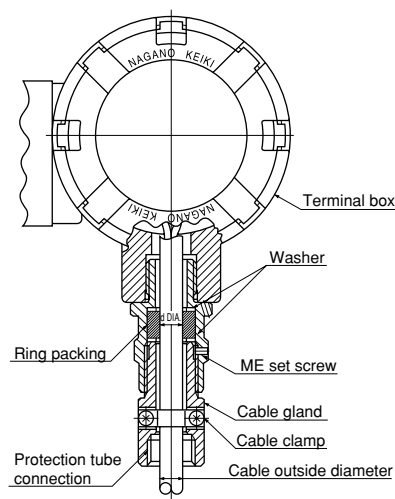


CD71



OUTLET FOR ELECTRIC WIRE

Conduit connection	Gasket inside diameter(d) DIA.	Applicable cable outside diameter DIA.	Protection tube connection
PF1/2	8 DIA.~12 DIA. (Available in 1DIA. steps)	7.0 DIA.~12.0 DIA. (Available in 0.5DIA. steps)	PF1/2
PF3/4	12 DIA.~16 DIA. (Available in 1DIA. steps)	11.0 DIA.~16.0 DIA. (Available in 0.5DIA. steps)	PF3/4
PF1	17 DIA.~20 DIA. (Available in 1DIA. steps)	16.0 DIA.~20.0 DIA. (Available in 0.5DIA. steps)	PF1



CL71 Differential Pressure Switch / CD71 Explosion-Protected Construction Differential Pressure Switch

Model number configuration

For ordering, please specify the model number, each specs and range.

Model name

C L 7 1

7 3

Differential pressure switch

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Model number

Selective spec.

Additional spec. (Option)

① Mounting type	1	Panel mounted, One contact		
	2	Panel mounted, Two contacts		
	3	2B pipe installation, One contact		
	4	2B pipe installation, Two contacts		
② Connection	7	Rc1/4 Other connections are also available.		
③ Wetted parts materials	3	Body: SCS14, Spring: SUS304, Bolt: SUS305, Diaphragm: SUS316+NBR (Buna-N), O ring: NBR		
(When ordering, please specify the range and units separately.)	④ Differential pressure range (MPa)	1	0~0.025, 0~0.05	
		2	0.005~0.025	
		3	0.01~0.05, 0.02~0.1, 0.04~0.2, 0.06~0.3, 0.08~0.4	
		4	0.1~0.5, 0.12~0.6, 0.16~0.8	
		5	0.2~1	
* Two contacts: Simultaneous operation only	⑤ Type of contact & Number of contacts	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	
* Gold clad type (two contacts only)	⑥ Switch	0	Standard	
		1	Ultra high sensitivity type (One contact only)	
		3	Standard + gold plated (One contact only)	
		4	Ultra high sensitivity type + gold plated (One contact only)	
⑦ Outlet for electric wire	C	Conduit PF3/4 female		
	7	Gland JIS 20b		
⑧ Treatment	0	Nil		
	1	Use no oil		
	2	Use no water		
	3	Use no oil & water		
⑨ Other additional specifications	0	Nil		
	1	Required (Please specify the desired documents separately.) Coating specification Valve manifold: FV42-993 (Rc1/2×Rc1/2) FV42-995 (Rc1/2×Rc1/2, high pressure gas minister certified) FV42-DD3 (1/2NPT×1/2NPT) FJ92 for FV42 connection (2 required)		
⑮ Documents	0	Nil		
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability certificate, attended inspection		

Manufacturing range

- Base pressure (One side pressure tight): 8MPa
- Setting system: Internal adjustment, with setting scale

Specify "X" if there is no specification item.

CL71 Differential Pressure Switch / CD71 Explosion-Protected Construction Differential Pressure Switch

Model number configuration

For ordering, please specify the model number, each specs and range.

Model name

C D 7 1

7 3

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Explosion-protected construction differential pressure switch

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Model number		Selective spec.	Additional spec. (Option)	
① Mounting type	3	Panel mounted	Flame-proof packing type One contact	
	4	Panel mounted	Flame-proof packing type Two contacts	
	7	2B pipe installation	Flame-proof packing type One contact	
	8	2B pipe installation	Flame-proof packing type Two contacts	
② Connection	7	Rc1/4 Other connections are also available.		
③ Wetted parts materials	3	Body: SCS14, Spring: SUS304, Bolt: SUS305, Diaphragm: SUS316+NBR (Buna-N), O ring: NBR		
(When ordering, please specify the range and units separately.)	④ Differential pressure range (MPa)	1	0~0.025, 0~0.05	
		2	0.005~0.025	
		3	0.01~0.05, 0.02~0.1, 0.04~0.2, 0.06~0.3, 0.08~0.4	
		4	0.1~0.5, 0.12~0.6, 0.16~0.8	
		5	0.2~1	
* Two contacts: Simultaneous operation only	⑤ Type of contact & Number of contacts	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	
* Gold clad type (two contacts only)	⑥ Switch	0	Standard	
		1	Ultra high sensitivity type (One contact only)	
		3	Standard + gold plated (One contact only)	
		4	Ultra high sensitivity type + gold plated (One contact only)	
* Gasket inside diameter can be manufactured in 1mm steps. For other sizes, contact NKS.	⑦ Outlet for electric wire	オ	Gasket inside diameter 11 DIA. (PF1/2 female)	
		カ	Gasket inside diameter 12 DIA. (PF1/2 female)	
		コ	Gasket inside diameter 14 DIA. (PF3/4 female)	
		シ	Gasket inside diameter 16 DIA. (PF3/4 female)	
		タ	Gasket inside diameter 17 DIA. (PF1 female)	
⑧ Treatment	0	Nil		
	1	Use no oil		
	2	Use no water		
	3	Use no oil & water		
⑨ Other additional specifications	0	Nil		
	1	Required (Please specify the desired documents separately.) Coating specification Valve manifold: FV42-993 (Rc1/2×Rc1/2) FV42-995 (Rc1/2×Rc1/2, high pressure gas minister certified) FV42-DD3 (1/2NPT×1/2NPT) FJ92 for FV42 connection (2 required)		
⑮ Documents	0	Nil		
	1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability certificate, attended inspection		

Manufacturing range
 ・Base pressure: 8MPa
 ・Setting system: Internal adjustment

Specify "X" if there is no specification item.



NAGANO KEIKI CO., LTD.

OVERSEAS SALES DEPT

: 1-30-4, HIGASHIMAGOME OHTA-KU, TOKYO, JAPAN

Phone : +81-3-3776-5328

F a x : +81-3-3776-5447

E-mail : overseas_sales_dept@naganokeiki.co.jp

URL : <http://www.naganokeiki.co.jp/>

GERMANY

- ADZ NAGANO GmbH
Bergener Ring 43
01458 Ottendorf-Okrilla
Phone : +49-35205-596930
F a x : +49-35205-596959
- Nagano Keiki Solutions Support Center
Bergener Ring 43
01458 Ottendorf-Okrilla
Phone : +49-35205-75701
F a x : +49-35205-75702

CHINA

- NAGANO FUKUDA (Tianjin)
Instruments CO., LTD.
10 Muning 1st Avenue TEDA Tianjin China
Phone : +86-22-5981-0966
+86-22-6620-4348
F a x : +86-22-5981-0967
+86-22-6620-4349

KOREA

- KOREA NAGANO CO., LTD.
#296-2 Osan-ri,
Dongtan-myun, Hwaseong-shi,
Kyonggi-do, Korea
Phone: +82-31-379-3934
F a x : +82-31-379-3936

JAPAN

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- OVERSEAS PLANT
- OVERSEAS SALES NETWORK

Gets ISO 9001, ISO 14001, ISO/TS 16949 Certification

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