

CB33

Pressure Switch

Improved
environmental
proof
CE compliance



RoHS



Outline

This deadband adjustable pressure switch with excellent vibration-proof accomplished through the use of double snap acting design, utilizing Belleville spring, is suitable for direct control of equipment.

Features

- CE compliance
- IP66 (Waterproof with equivalent NEMA4 protection)
- Adjustable range of deadband is 3 to 20% max.P.
(Excluding rated pressure range of 1.5 to 13 (1.5 to 15) MPa)
- Finished by acid-proof coating on surface to prevent from rust by salt damage.

Recommended switch set point range

Upper limit type: (10%max.P.+Deadband) to 90%max.P.
Lower limit type: 10%max.P. to (90%max.P.-Deadband)

* To maintain high accuracy and long life, switch set point should be adjusted within 30 to 65% of full scale range of pressure. Ensure that wetted parts are compatible with process gasses and liquids to be measured.

Specification 1

Item	Description
Model	General process use
Fluid	Gases and fluids (Install in location where no inflammable, toxic, explosive, and hazardous gases or liquids exist.)
Operating condition	Places where there are no inflammable liquids or gases which may cause ignition or explosion under normal conditions.
Mounting	Panel mounting
Connection	G3/8B, G1/2B, Rc1/4, Rc1/2, 1/4NPT Female * For other connections, please contact us.
Wetted parts material	Bellows SUS316L Tank SUS316 or SUS316L (Depends on pressure range) Connecting part SUS316
Pressure range (MPa)	-0.1 to 0, 0.01 to 0.1, 0.02 to 0.2, 0.03 to 0.3, 0.04 to 0.4, 0.06 to 0.6, 0.1 to 1, 0.15 to 1.5, 0.2 to 2, 0.3 to 3, 0.5 to 5, 0.7 to 7, 1 to 10, 1.5 to 13, (1.5 to 15) *1
Withstand pressure	0.15 to 21MPa (Depends on pressure range)
Operating temperature range	-20 to 60°C (Labeled by 20T 60) *2
Accuracy	±0.5%max.P.
Temperature coefficient	0.05%max.P./°C
Deadband	Refer to specification 2 for details
Switch	Micro switch
Number of contacts	One contact (Standard, direct current use) or two contacts (Setting dual circuit)
Setting system	Internally adjustable
Outlet for electric wire	Conduit type G1/2
Case material, finishing	ADC12, Blue/ Gray two-tone epoxy painted
Protection	IP66 (Waterproof property is equivalent to NEMA4)
Pollution degree	3 (2 for interior)
RoHS Compliance	Applicable
Check terminal (Option)	Although the wire used to have to be removed from the terminal plate and the tester terminal pressed against it when measuring contact resistance, with the provision of a check terminal, simply remove the screws on the terminal plate and insert the terminals of the tester. This ensures stability when measuring and eliminates the trouble of removing the wire from the terminal plate.
Operation lamp (Option)	The on/off state of the pressure switch and the operating state of the microswitch can also be confirmed at a glance. (It is possible at the time of the simultaneous operation of CB33 standard. Are not possible for direct current.) *Terminal box and operation lamp cannot be installed together.
Weight	Approx. 2 kg

*1 1.5 to 15MPa rated pressure range can be made by non-CE compliant specification only.

*2 [20T 60] represents official label in accordance with EN60730-2-6. It is not possible to use as safety accessories.

CE compliance

Applicable Directive

Low Voltage Directive	2014/35/EU
RoHS Directive	2011/65/EU

Applicable Standards

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

Example

ELECTRICAL RATING			
RESISTANCE LOAD	INDUCTIVE LOAD	RESISTANCE LOAD	INDUCTIVE LOAD
AC 125V 20A	AC 125V 20A	AC 125V 20A	AC 125V 20A
AC 250V 20A	AC 250V 20A	AC 250V 20A	AC 250V 20A
DC 125V 0.5A	DC 125V 0.05A	DC 125V 0.5A	DC 125V 0.05A
DC 250V 0.25A	DC 250V 0.03A	DC 250V 0.25A	DC 250V 0.03A

ELECTRICAL RATING WHICH CONFORMS TO THE SAFETY STANDARD	
CE	INDUCTIVE LOAD
	AC 250V 3A(AC-15)
	DC 125V 0.5A(DC-13)
	EN 60947-5-1

Specification 2

Electric characteristics:

Switch	Switching capacity			Safety standard compliance rating	Withstand voltage	Insulation resistance
		Resistance load	Inductive load			
1 contact standard	125V AC	20 A	20 A	AC-15 250V AC 3 A DC-13 125V DC 0.5 A	2000V AC	500V DC 100MΩ or higher
	250V AC	20 A	20 A			
	125V DC	0.5 A	0.05 A			
	250V DC	0.25 A	0.03 A			
1 contact direct current	125V AC	10 A	6 A	DC-13 125V DC 6 A	2000V AC	500V DC 100MΩ or higher
	250V AC	3 A	1.5 A			
	125V DC	10 A	6 A			
	250V DC	3 A	1.5 A			
2 contacts simultaneous operation	125V AC	10 A	6 A	DC-12 125V DC 0.1 A	Between terminals and case for 1 minute	Between terminals and case
	250V AC	10 A	4 A			
	125V DC	0.5 A	0.05 A	DC-13 60V DC 0.1 A		
	250V DC	0.25 A	0.03 A			
•Inductive load: Power factor 0.4 or higher (AC) Time constant 7ms and under (DC) * 1 contact direct current: Direct current rating is bigger than standard.						

Pressure range, deadband, withstand pressure and wetted parts material:

Pressure range MPa	Deadband MPa (Adjustable range)	Withstand pressure MPa	Wetted parts material		
			Tank	Bellows	Connecting part
-0.1 to 0	0.003 to 0.02	0.15	SUS316	SUS316L	SUS316
0.01 to 0.1	0.003 to 0.02	0.15			
0.02 to 0.2	0.006 to 0.04	0.3			
0.03 to 0.3	0.009 to 0.06	0.45			
0.04 to 0.4	0.012 to 0.08	0.6			
0.06 to 0.6	0.018 to 0.12	0.9			
0.1 to 1	0.03 to 0.2	1.5			
0.15 to 1.5	0.045 to 0.3	2.25			
0.2 to 2	0.06 to 0.4	3			
0.3 to 3	0.09 to 0.6	4.5			
0.5 to 5	0.15 to 1	7.5	SUS316		
0.7 to 7	0.21 to 1.4	10.5			
1 to 10	0.3 to 2	15			
1.5 to 13	0.75 to 3	21			
1.5 to 15*	0.75 to 3	21			

How to choose suitable pressure range

- Suitable pressure range for accurate and stable set value operation: 30% of max.P. or greater
- Pressure range for long life use: Approx. 65% of max.P. or less
- Accurate and long life operation (ideal): Approx. 30 to 65% of max.P.

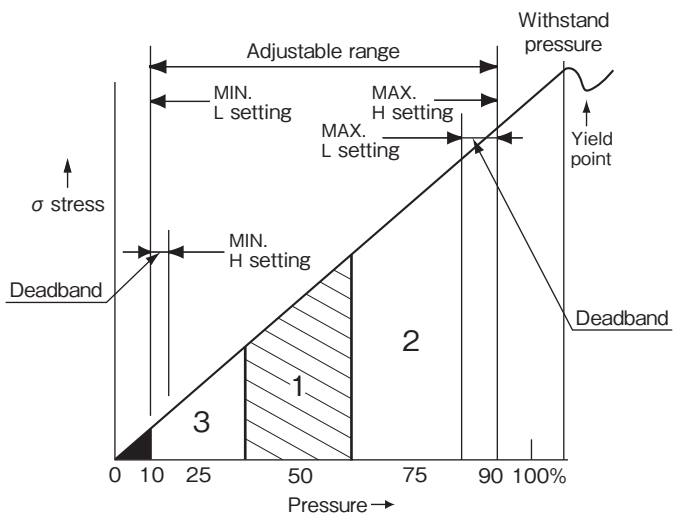
In the right figure

- Range 1: Selection of both accuracy and longevity
- Range 2: Selection of valuing accuracy
- Range 3: Selection of valuing longevity

Recommended switch set point range

- Upper limit type: (10%max.P.+Deadband) to 90%max.P.
- Lower limit type: 10%max.P. to (90%max.P.-Deadband)

* 1.5 to 15MPa rated pressure range can be made by non-CE compliant specification only.

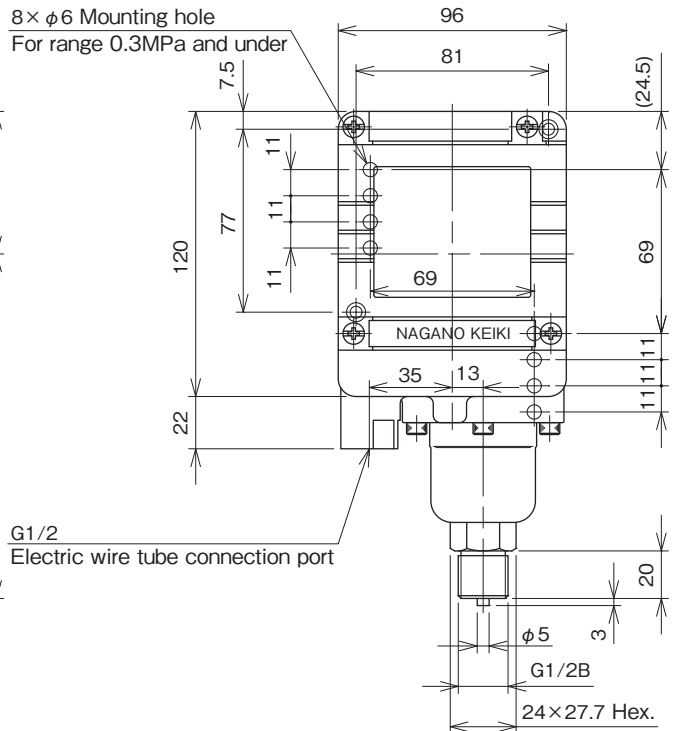
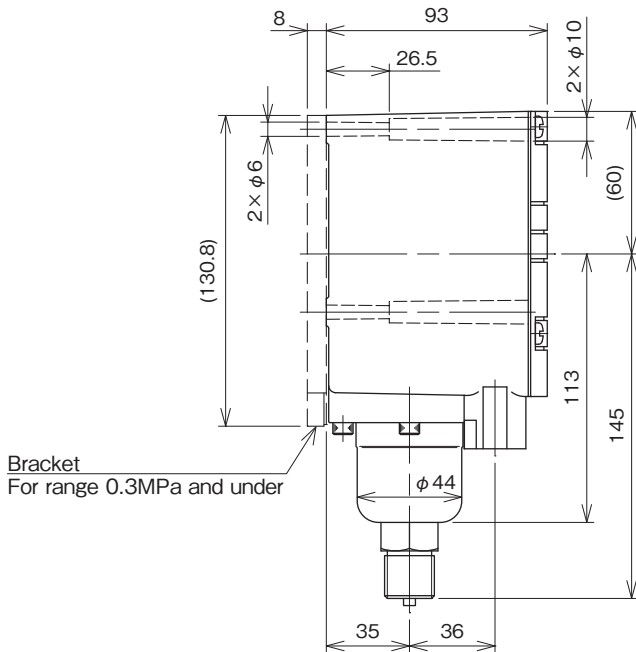


CB33

Pressure Switch

Dimensions

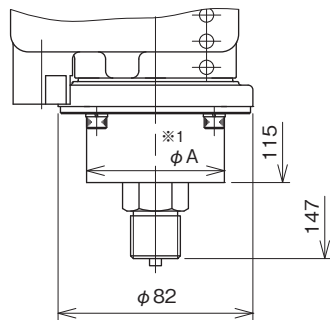
Unit: mm



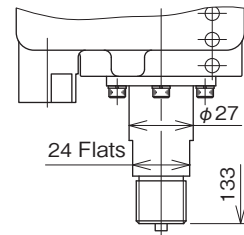
Pressure range 0.4, 0.6, 1, 1.5, 2, 3MPa

※1

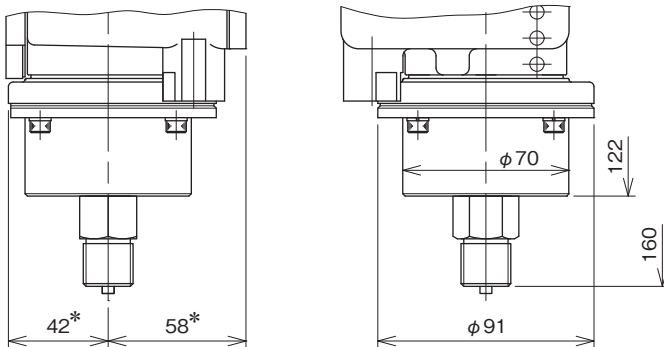
	A
0.2MPa	58
0.3MPa	56



Pressure range 0.2, 0.3MPa

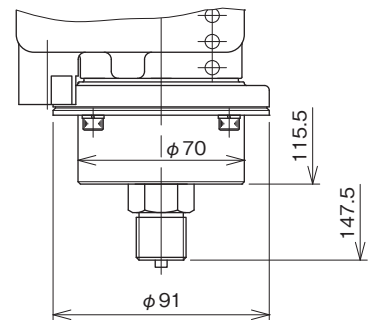


Pressure range 5, 7, 10, 13MPa



Pressure -0.1MPa

Dimensions marked with "*" are also applied to 0.1MPa

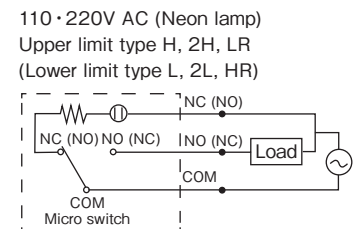
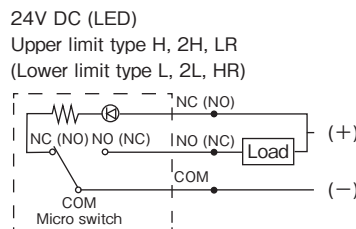
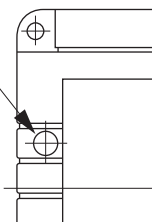


Pressure 0.1MPa

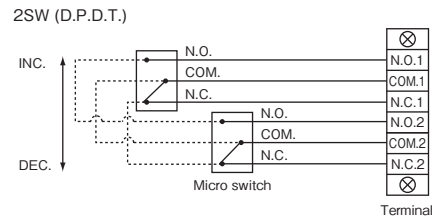
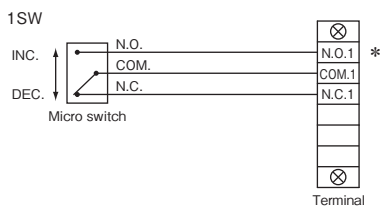
Option (Operation pilot light)

Neon lamp or LED

Micro switch: Gold plated
Not possible for direct current
Contact: The pilot light lights when turning it off.



Wiring



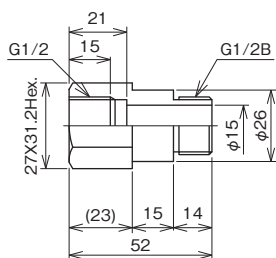
*Please connect the (+) polarity with common terminal COM1 for S.P.D.T. specification for 1 point of contact direct current.

Options

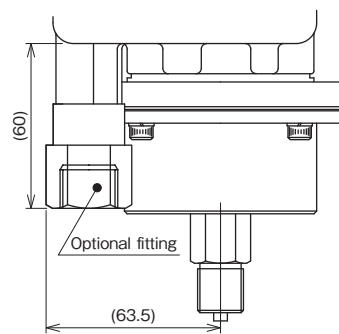
Wire pipe

Outside diameter size of the installed wire tube connector can be enlarged by installing optional joint according to pressure ranges below.

Pressure range MPa	Wire tube connection port Standard G1/2	Option fitting When G1/2 is installed
	Outside diameter of wire tube connector (mm)	Outside diameter of wire tube connector (mm)
-0.1 to 0	φ 29 and under	φ 48 and under
0.01 to 0.1		
0.02 to 0.2	φ 37 and under	φ 60 and under
0.03 to 0.3		
0.4 or higher	φ 73 and under	



Optional fitting (G1/2)



When optional fitting (G1/2) is installed

