

# JD1\_ Pressure Gauge with Electric Contact

Fluids and gases measurement  
(Featuring stainless diaphragm)  
\*SUS316L diaphragm

## Overview

This gauge enables pressure monitoring with easy-to-read analog pressure indication coupled with small and high performance pressure sensor and relay contact with high accurate ON/OFF control.

## Features

- Analog indication helps for easy monitoring line pressure or remaining pressure even when electricity is shut off.
- By simplified digital setting (4 digit LED), the setting of the activating point can be implemented with high precision and reliability.
- The semiconductor strain gauge, strain-generating portion and pressure connection portion are unified in construction, demonstrating excellent durability and stability.
- Various functions including loop checking and analogue output are featured.



JD15  
(Panel mounting)

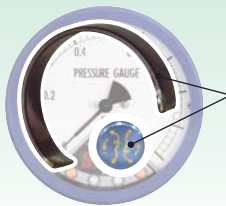


JD10  
(Stem mounting)

## Analog pressure indication and control function are integrated into One design.

This gauge enables pressure monitoring with easy-to-read analog pressure indication coupled with small and high performance pressure sensor and relay contact with high accurate ON/OFF control.

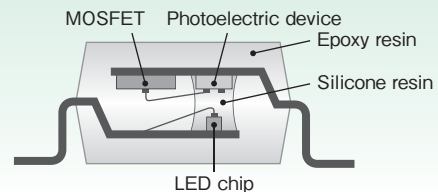
Analog indication helps for easy monitoring line pressure or remaining pressure even when electricity is shut off.



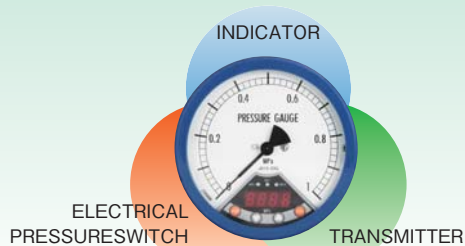
Incorporating both bourdon tube utilizing for analog pressure indication and semiconductor strain gauge(SS).

Featuring semiconductor relay for switching method.  
(A and B contact can be used as if Micro Switch)  
No "mechanical contact" exists.  
(No arc, bounce or noise)

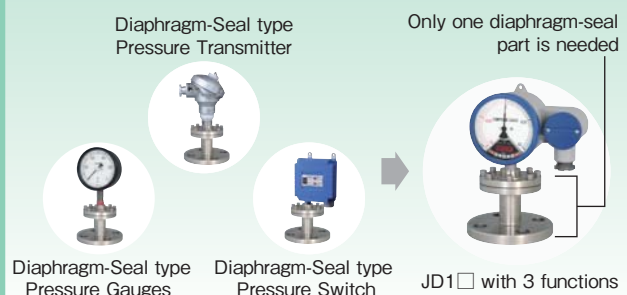
●PhotoMOS® Principle of semiconductor relay



It can replace three functions.  
(Pressure indication • Electrical switch • Transmitter)



Saving total cost



### Specifications 1

Item	Description
Media	Air or liquid (Non-corrosive to the wetted material)
Installation environment	Install in location where no gases or liquids may exist that have the potential to become flammable or ignitable under normal operating condition
Analog indication part dia.	φ 100
Type	Stem mounting (A type) or panel mounting (Mounting clump) ※Mounting bracket for surface mounting (B type) is optionally provided.
Connection	G3/8B or G1/2B, R3/8 or R1/2 ※For other connection, please contact us.
Wetted parts	Fitting : SCS14 (SUS316) Bourdon tube : SUS316 Pressure sensor: SUS316L
Pressure range	0 to 0.3→0 to 35MPa -0.1 to 0.1→-0.1 to 2MPa
Power source	24V DC±10%
Consumption current	100mA or less
Comparator output	Relay contact×2 output (PhotoMOS® Relay AC/DC combined use type 100V, 0.1A)*1 Setting accuracy : ±0.2%F.S. Temperature coefficient: ±0.1%F.S./°C (Zero • Span) Response time : Within 5ms
Analog output (Option)	4 to 20 mA DC (Load resistance 400Ω or less) or 1 to 5 V DC (Load resistance 10kΩ over) Output accuracy: ±1%F.S. Response time : Within 50ms
Digital setting control part	Pressure • set point display : 4 digit LED digital display (Character height: 8 mm) Setting accuracy : ± (1%F.S.±1digit) Display • setting resolution : 1/2000 max. Comparator operating lamp : Red LED× 2 Setting mode operating lamp: Orange LED
Analog indication accuracy	±1.0%F.S.
Operating temperature	-5 to 45°C (No freezing or condensation)
Storage temperature	-20 to 60°C (No freezing or condensation)
Outlet for electric wire	Gland JIS 20b
Case materials	Case : ADC12 Cover: Poly-carbonate resin
Case finishing	Two-tone [Blue (Cover) / Gray (Case)] ※Acid resistant epoxy coating against enclosure
Window	Acrylic
Enclosure	Stem mounting : Drip-proof type (IP43) Panel mounting: Indoor use
Weight	Approx. 1.2kg (Stem mounting) Approx. 1.0kg (Panel mounting)

\* 1 Factory default setting: Hysteresis mode, 50%F.S. set point, 20%F.S. deadband

### Specifications 2

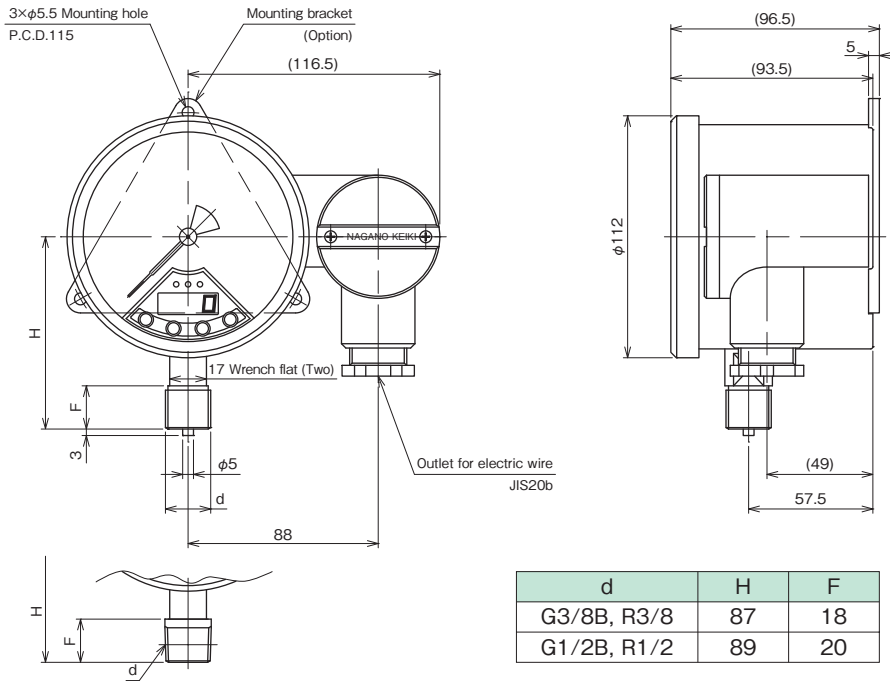
#### Pressure range and maximum display value

Pressure range	Maximum display value	Pressure range	Maximum display value	Pressure range	Maximum display value
-0.1 to 0.1MPa	0.100	0 to 0.3MPa	0.300	0 to 5MPa	5.000
-0.1 to 0.3MPa	0.300	0 to 0.6MPa	0.600	0 to 7MPa	7.00
-0.1 to 0.6MPa	0.600	0 to 1MPa	1.000	0 to 10MPa	10.00
-0.1 to 1MPa	1.000	0 to 2MPa	2.000	0 to 15MPa	15.00
-0.1 to 2MPa	2.000	0 to 2.5MPa	2.500	0 to 25MPa	25.00
		0 to 3.5MPa	3.500	0 to 35MPa	35.00

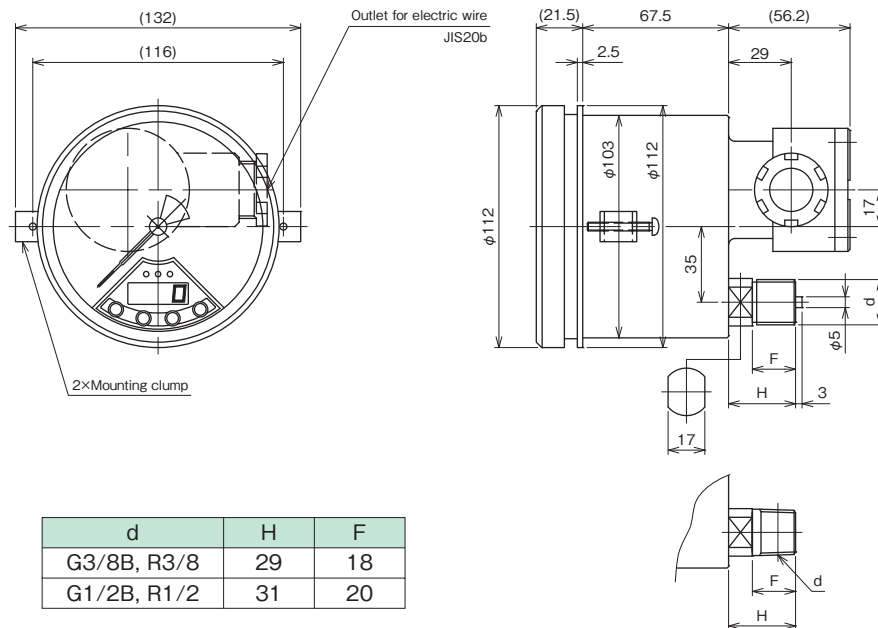
### Dimensions

Unit: mm

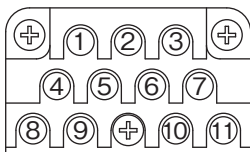
#### JD10 (Stem mounting)



#### JD15 (Panel mounting)



### Input/output connector terminal pin array



Terminal number	Item
1	N.O.
2	COM.
3	N.C.
4	N.O.
5	COM.
6	N.C.
7	Gland
8	Power source +
9	Power source -
10	Analog output +
11	Analog output -

#### How to connect to terminal

Ensure the use of 0.5mm<sup>2</sup> or shorter vinyl cable etc. As terminal utilizes "M2" screw, round type ( $\phi$ 4.5 or smaller) or Y type (width 4.5mm or shorter) crimped terminal can be used.

### Difference of principle between mechanical contact and semiconductor relay

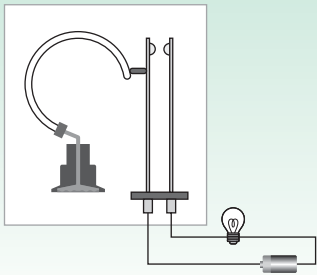
Relay roughly sorted out by two types: Contacting type (Mechanical relay) and Non-contacting semiconductor type (MOS FET relay, Solid-state relay).

General mechanical pressure switch utilizes mechanical relay method that actuate switch along with bourdon tube movement caused by pressure increase or decrease.

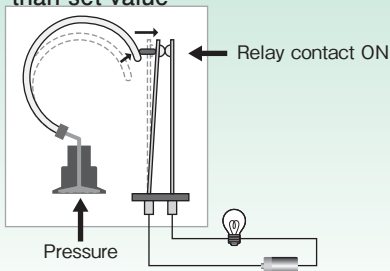
JD1 features semiconductor relay utilizes light emission generated by electricity through LED, and it operates semiconductor element called "MOSFET" that controls ON/OFF at load-side circuit without mechanical switch action.

#### Mechanism of mechanical switch actuation with bourdon tube

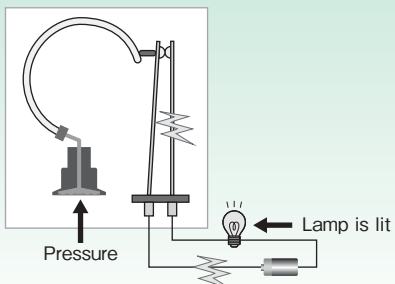
- 1 Switch doesn't actuate at point lower than set value



- 2 Switch is actuated by bourdon tube movement caused by pressure at point higher than set value



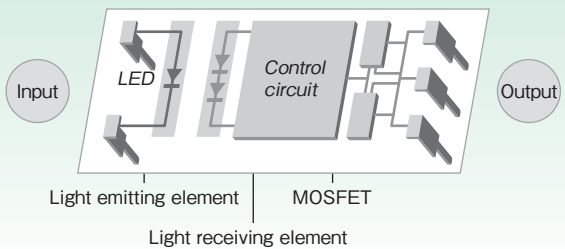
- 3 Switched contact



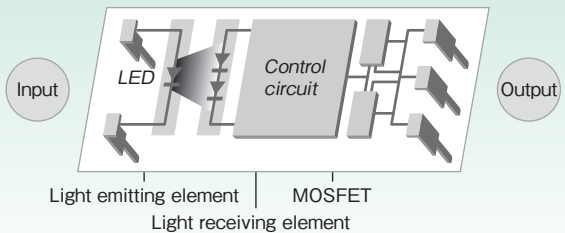
#### Mechanism of semiconductor relay

※PhotoMOS® Relay

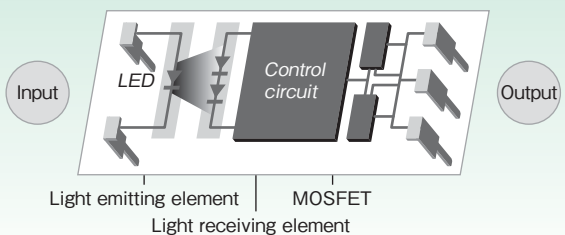
- 1 When the input turned on electricity, light emitting element (LED) is lit.



- 2 The light is received by photoelectric device (solar battery) mounted against it, and it generates electricity generating voltage.



- 3 The voltage flows through control circuit becoming gate voltage and operates MOSFET gate at output.



JD1 can achieve pressure control with higher accuracy and high durability through the use of semiconductor relay

### Seven Primarily Functions

#### Seven points related to function

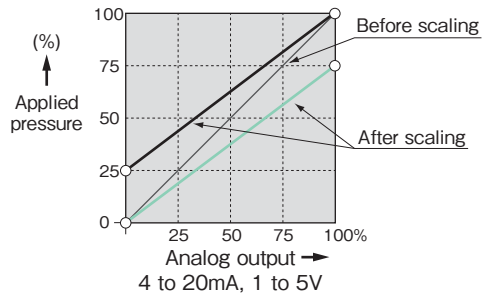
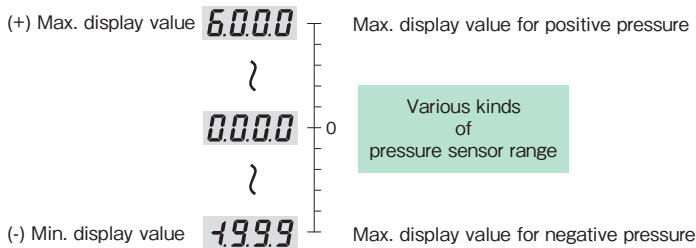
#### 1 Flexible rangeability with accurate pressure value indication and analog output scaling.

##### ● Indication scaling function

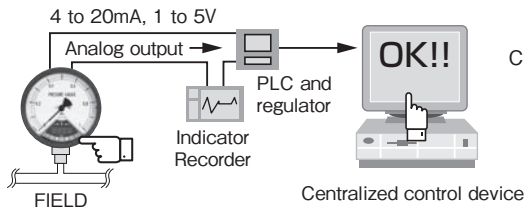
Pressure value can be displayed arbitrarily within the maximum 4 digits (6000) display ability.

##### ● Analog output scaling function

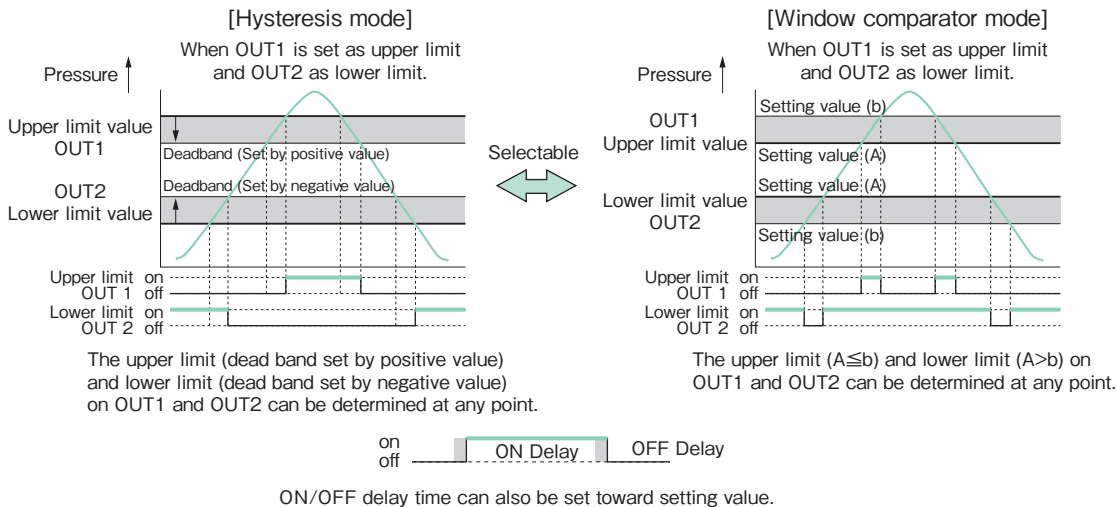
Analog output scaling value can be arbitrarily displayed based on minimum and maximum pressures within the rated pressure range and maximum display ability.



#### 2 Loop check function allows user to check display indication, analog and comparator output manually by using up or down key without actually applying pressure to the unit suitable for checking proper wiring and other simulations.



#### 3 Selectable comparator switch operation.



#### 4 Digital filter function is used when pressure fluctuations can result in erratic pressure indication (Select from: OFF, 1s, 2s, 5s, 10s).

#### 5 Zero adjustment is easily available just pressing [ADJ] key with the pressure port open to atmosphere.

#### 6 The unit keeps the maximum and minimum pressure in the internal memory. They are displayed while holding the up or down keys respectively.

#### 7 Other features include key lock function to prevent inadvertent operation, error message indication when pressure is applied beyond rated pressure range or applied pressure is outside of allowable range during zero point adjustment.

### Model number configuration

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

Model

**J D 1** — **2** **G** — **1** **7** × × × ×

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

Pressure Gauge with Electric Contact

Model number		Product specifications	Additional specifications (Optional)
Model (Enclosure)	0	Stem mounting: φ 100, Drip-proof type (IP43)	
	5	Panel mounting: φ 100, Indoor use	
① Number of contacts	2	2 contacts	
② Process connection	3	G3/8B	
	4	G1/2B	
	8	R3/8	
	9	R1/2	
③ Wetted parts	G	Fitting: SCS14 Bourdon tube: SUS316 Pressure sensor: SUS316L	
④ Pressure range (MPa)	A	-0.1 to 0.1	
	B	-0.1 to 0.3	
	C	-0.1 to 0.6	
	D	-0.1 to 1	
	E	-0.1 to 2	
	F	0 to 0.3	
	G	0 to 0.6	
	H	0 to 1	
	J	0 to 2	
	K	0 to 2.5	
	L	0 to 3.5	
	M	0 to 5	
	N	0 to 7	
P	0 to 10		
Q	0 to 15		
R	0 to 25		
T	0 to 35		
⑤ Power supply voltage	1	24V DC ±10%	
⑥ Comparator output	1	PhotoMOS <sup>®</sup> Relay×2 output (AC/DC combined use 100V 0.1A) ※1	
	9	Others: Specify comparator set value separately when ordering	
⑦ Outlet for electric wire	7	Gland JIS 20b	
⑧ Analog output	1	4 to 20mA DC (Standard)	
	8	1 to 5V DC	
⑨ Treatment	0	Not required	
	1	Use no oil	
	2	Use no water	
	3	Use no oil & water	
⑩ Other additional spec.	0	Not required	
	1	Required (Documents available upon request) JD10 mounting bracket	
⑮ Documents	0	Not required	
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Inspection procedure Mill test report Calibration test report (One-part one sheet) Inspection / Traceability certificate Calibration test report for pressure standard Strength calculation sheet Attending inspection	

Please specify pressure range and unit of measure along with corresponding ordering code.

※Factory default setting: Hysteresis mode, 50%F.S. set point, 20%F.S. deadband

[Manufacturing range]  
 • Analog indication accuracy: ±1.0%F.S.  
 • Digital setting accuracy: ±1%F.S.±1digit

\* Specify code "X" to refer N/A