



Pressure Gauges with Electric Contact (Micro Switch Type)

OUTLINE

In the design of this unit, a mechanical contact mechanism has been built in an indicator i.e. a pressure gauge with contacts. At a pre-set pressure, electric signals of ON/OFF are transmitted, giving a warning of buzzer, bell, pilot lamp or being able to control the processes such as motor, pump and control valve etc.

FEATURE

- Confirmation can be made on the pressure at measuring site.
- As the switching current is large, this type is best suited for direct control over machines and apparatuses.
- Elements are independent for indication and contacts. Therefore, indication after switching is correct.
- Adoption of a microswitch design assures you of stable switching by snap action.
- Indicating and setting scales are separate, resulting in being possible to set optionally.

* When selecting a pressure range, select it in such a way that the working pressure is within 30-65% of the pressure range so that its capacity can be displayed.

The setting range of pressure recommended is 20-80% of the pressure range. At the same time, materials used for solvents are suited for gas and solvent to be measured.

SPECIFICATIONS 1

Fluid:

100 DIA., 150 DIA. Gas or Liquid
200 DIA. Gas


Operating Condition:


Under the normal condition, where there is no inflammable gas or liquid which cause the ignition or explosion.

Size:

100 DIA. (Model : JM11·16), 150 DIA. (Model : JM21·26),
200 DIA. (Model : JM31·36·41·46)

Mounting:

Stem  Type B (Mounting holes)

Panel  Type D (Mounting clamps · Mounting holes)

Connection:

G3/8B(PF), G1/2B(PF), R3/8(PT), R1/2(PT),
3/8NPT, 1/2NPT, Rc 1/4(JM26 Receiver gauge only)
* For other connections, please contact us.

Wetted parts material:

General use

Socket YBsC3
(JM41 C3604BD)
Bourdon tube (100 DIA., 150 DIA.)
C6872T or 316st.st. (Depend on range)

Bellows (200 DIA.)

C5212R
* Available up to 35MPa

Corrosion-proof use

Socket 316 st.st.
Bourdon tube (100 DIA., 150 DIA.) 316 st.st.
Bellows (200 DIA.) 316L st.st.

Pressure range:

0 ~ 1.5kPa → 0 ~ 100MPa (0 ~ 150mmH₂O → 0 ~ 1000kgf/cm²)
-0.1 ~ 0 → -0.1 ~ 2MPa
(76cmHg ~ 0kgf/cm² → 76cmHg ~ 20kgf/cm²)

20 ~ 100kPa (Receiver) (0.2 ~ 1kgf/cm²)

* For details, please refer to the table of Minimum Graduation in specification 2.

Operating temperature:

-5 ~ 40°C

Indication accuracy:

Within ±1.5%F.S. (Receiver range ±0.75%F.S.)

Setting accuracy:

Within ±3.0%F.S.

Switching accuracy:

Within 1%F.S.

Dead band:

Fixed within 6 ~ 15%F.S. (Depend on range)

Switch:

JIS C4505 Industrial Microswitch

Number of contact: One contact or two contact

(JM41, 46 are one contact only)

Setting:

Internal adjustment

Remove a cover and turn an adjustment screw on the front side to a setting point by a screw driver, shifting a pointer from the high pressure side for upper limit type or from the low pressure side for lower limit type.

* External adjustment is available (Option)

Outlet for electric wire:

100 DIA. JIS 20b Gland (4P Receptacle)
150 DIA., 200 DIA. ... JIS 20b Gland (6P Receptacle)

Case material finishing:

ADC12 or AC7A·Black

Weight:


Approx. 1.4kg ~ 9.5kg



SPACIFICATION 2

Electric characteristics:

	Rating				Withstand voltage	Insulation Resistance
	Resistance Load		Inductance Load			
	100 DIA.	150 DIA. - 200 DIA.	100 DIA.	150 DIA. - 200 DIA.		
125V AC	5A	15A	4A	15A	1500V AC Between terminals and case 1min	500V DC megger over 100MΩ Between terminals and case
250V AC	5A	15A	4A	15A		
125V DC	0.4A	0.5A	0.4A	0.05A		
30V DC	5A	2A	4A	1A		
Inductive load is power factor 0.4 (AC) ,time constant 7ms (DC) max. (100 DIA.0.7 (AC))						

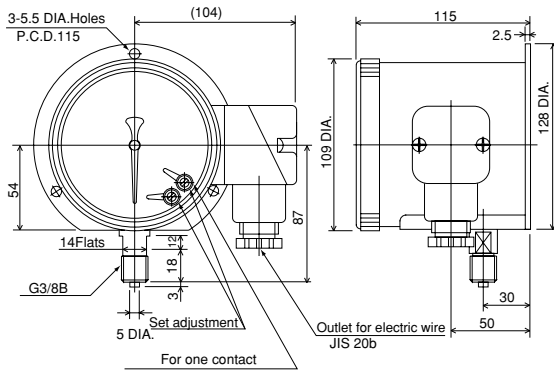
Minimum graduation:

Size	Element	Pressure range	Min.Indication	Min.Setting scale		Dead band within%F.S.			
				100 DIA.	150 DIA.	100 DIA.	150 DIA.		
100 DIA. 150 DIA.	 Bourdon tube	20 ~ 100kPa (0.2 ~ 1kgf/cm ²)				15	15		
		0 ~ 0.1MPa (0 ~ 1kgf/cm ²)	0.002MPa (0.02kgf/cm ²)	0.01MPa	0.01MPa				
		~ 0.2 (~ 2)	0.005 (0.05)	0.02	0.02			10	
		~ 0.3 (~ 3)	0.01 (0.1)	0.05	0.05				
		~ 0.4 (~ 4)	0.01 (0.1)	0.05	0.05			8	
		~ 0.6 (~ 6)	0.02 (0.2)	0.1	0.1				
		~ 1 (~ 10)	0.02 (0.2)	0.1	0.1			10	6
		~ 1.5 (~ 15)	0.05 (0.5)	0.2	0.1				
		~ 2 (~ 20)	0.05 (0.5)	0.2	0.2				
		~ 2.5 (~ 25)	0.05 (0.5)	0.5	0.2				
		~ 3.5 (~ 35)	0.1 (1)	0.5	0.5				
		~ 5 (~ 50)	0.1 (1)	0.5	0.5				
		~ 7 (~ 70)	0.2 (2)	1	1				
		~ 10 (~ 100)	0.2 (2)	1	1				
		~ 15 (~ 150)	0.5 (5)	2	1				
		~ 25 (~ 250)	0.5 (5)	5	2				
		~ 35 (~ 350)	1 (10)	5	5				
		~ 50 (~ 500)	1 (10)	5	5				
		~ 70 (~ 700)	2 (20)	10	10				
		~ 100 (~ 1000)	2 (20)	-	10				
		-0.1 ~ 0 MPa (76cmHg ~ 0kgf/cm ²)	0.002MPa (2cmHg)	0.01	0.01	15	15		
		-0.1 ~ 0.1 (76cmHg ~ 1kgf/cm ²)	0.005 (5cmHg ~ 0.05kgf/cm ²)	0.02	0.02				
		~ 0.2 (76cmHg ~ 2kgf/cm ²)	0.01 (5cmHg ~ 0.1 kgf/cm ²)	0.05	0.05			10	
		~ 0.3 (76cmHg ~ 3kgf/cm ²)	0.01 (10cmHg ~ 0.1 kgf/cm ²)	0.05	0.05				
		~ 0.4 (76cmHg ~ 4kgf/cm ²)	0.01 (10cmHg ~ 0.1 kgf/cm ²)	0.05	0.05			8	
		~ 0.6 (76cmHg ~ 6kgf/cm ²)	0.02 (10cmHg ~ 0.2 kgf/cm ²)	0.1	0.1				
		~ 1 (76cmHg ~ 10kgf/cm ²)	0.02 (50cmHg ~ 0.2 kgf/cm ²)	0.1	0.1			10	6
		~ 1.5 (76cmHg ~ 15kgf/cm ²)	0.05 (50cmHg ~ 0.5 kgf/cm ²)	0.2	0.2				
		~ 2 (76cmHg ~ 20kgf/cm ²)	0.05 (50cmHg ~ 0.5 kgf/cm ²)	0.2	0.2				

Size	Element	Pressure range	Min.Indication	Min.Setting scale	Dead band within%F.S.
200 DIA. Midiam Low Range	 Bellows	0 ~ 5kPa (0 ~ 500mmHzO)	0.1 kPa (10mmHzO)	0.5kPa	10
		~ 7 (~ 700)	0.2 (20)	0.5	
		~ 10 (~ 1000)	0.2 (20)	1	
		~ 15 (~ 1500)	0.5 (50)	1	
		~ 20 (~ 2000)	0.5 (50)	2	
		~ 30 (~ 3000)	1 (100)	2	8
		~ 40 (~ 4000)	1 (100)	5	
		~ 50 (~ 5000)	1 (100)	5	
		~ 70 (~ 7000)	2 (200)	5	
200 DIA. Low Range	 Bellows	0 ~ 1.5kPa (0 ~ 150mmHzO)	0.05kPa (5mmHzO)	0.1kPa	12
		~ 2 (~ 200)	0.05 (5)	0.1	
		~ 3 (~ 300)	0.1 (10)	0.2	
		~ 4 (~ 400)	0.1 (10)	0.2	

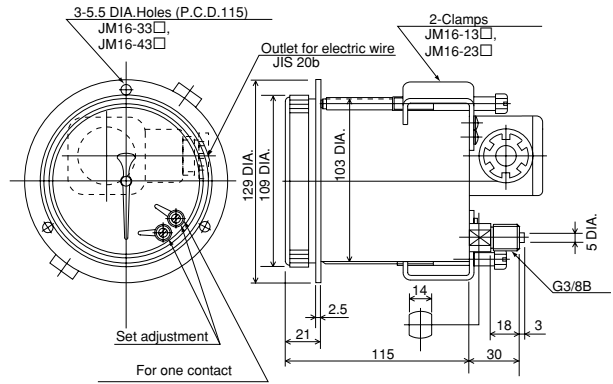
DIMENSIONS (Unit: mm)

100 DIA. Type B



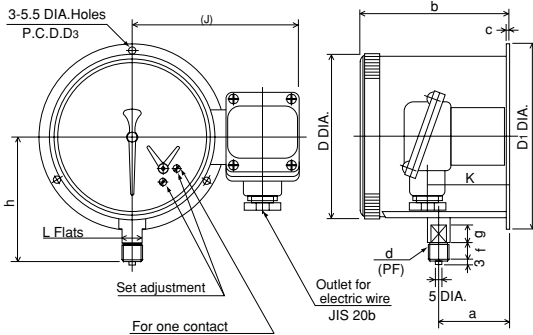
JM11-□□□

Type D

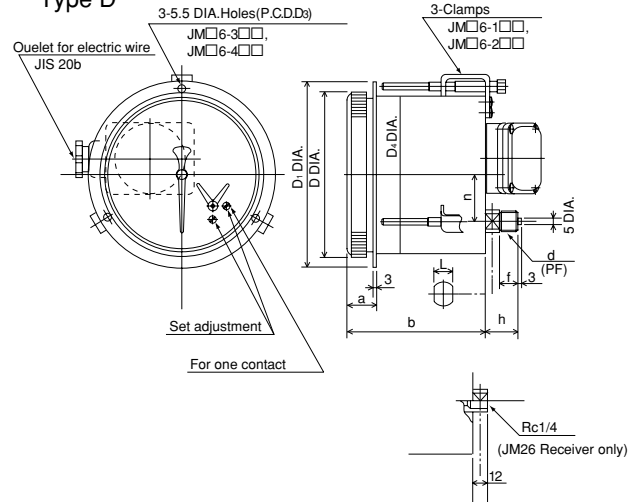


JM16-□□□

150 DIA., 200 DIA. Type B



Type D



Type No.	D	D ₁	D ₃	a	b	c	J	K	d	f	g	h	L
JM21-□□□	159	178	165	65	140	3	159	76	G ³ / ₈ B	18	15	120	17
									G ¹ / ₂ B	20		122	
JM31-□□□	210	235	220	108	166	3	179	99	G ³ / ₈ B	18	12	150	17
									G ¹ / ₂ B	20		152	17
JM41-□□□	210	235	220	135	212	5	179	163	G ³ / ₈ B	18	12	150	14
									G ¹ / ₂ B	20		152	17

Type No.	D	D ₁	D ₃	D ₄	a	b	n	d	f	h	L
JM26-□□□	159	178	165	152	26	129.5	45	G ³ / ₈ B	18	30	17
								G ¹ / ₂ B	20	32	17
JM36-□□□	210	235	220	203	27	166	45	G ³ / ₈ B	18	32	14
								G ¹ / ₂ B	20	34	17
JM46-□□□	210	235	220	203	27	212	70	G ³ / ₈ B	18	32	14
								G ¹ / ₂ B	20	34	17

REMARKS

1. As a sequencer input ;

Use this switch gauge in the ventilated condition.
Otherwise the following might be caused.

The contact resistance of the microswitch increases gradually as time passes.

For the application in the atmosphere, especially including Si, SiO₂ will be accumulated on the contact part as switch operated. Then the contact resistance will be increased, so that switch may be not operated.

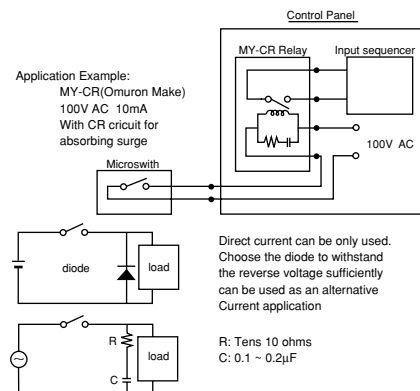
Therefore, above is suggested for the application condition, including Si atmosphere.

When you use this switch gauge as sequencer input for controlling, input or connect through 100V AC Relay.

2. Installation of protection circuit for contact

In the inductive load open and close circuit, install the protection circuit to protect the contact.

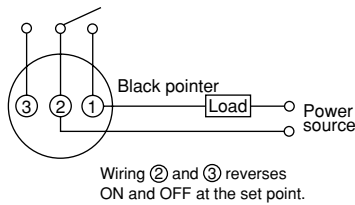
When you use the relay, choose the built-in protection circuit for the contact.



TYPE OF CONTACT POINTS AND WIRING SYSTEM

1. Upper limit type with one contact H

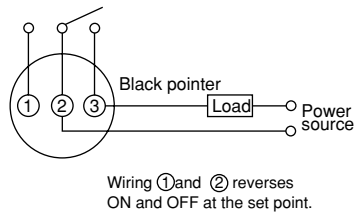
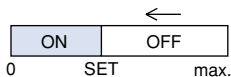
* When the pressure rises to a set value, contact points work to turn a circuit ON



Note: If this type is applied as the lower limit type, setting should be corrected by the dead band

2. Lower limit type with one contact L

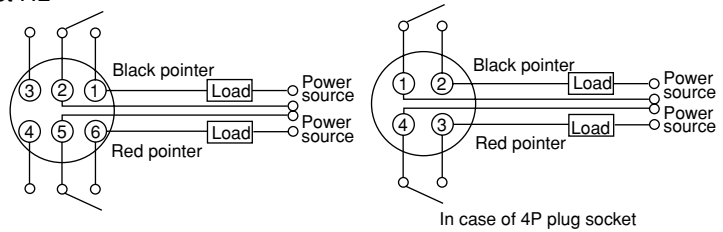
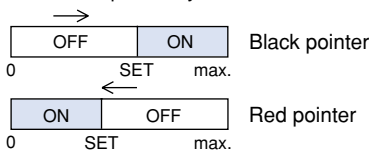
* When the pressure decreases to a set value, contact points work to turn a circuit ON.



Note: If this type is applied as the upper limit type, setting should be corrected by the dead band

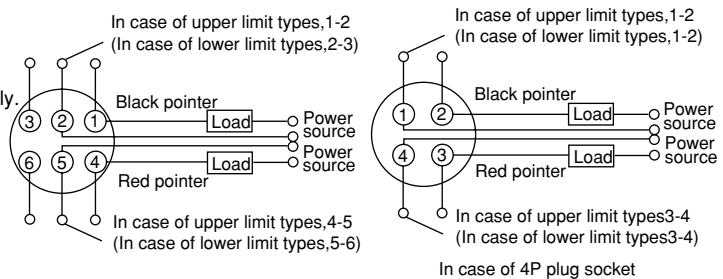
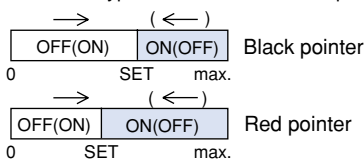
3. Upper and lower limit type with two contact HL

This is the combination of the upper limit type and the lower limit type and each works independently.



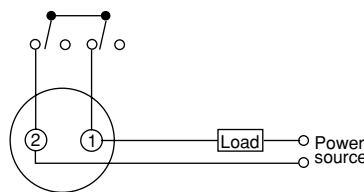
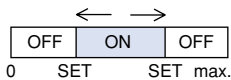
4. Upper limit type (or Lower limit type) with two contact 2H (2L)

This is the combination of two upper limit types or two lower limit types and each works independently.



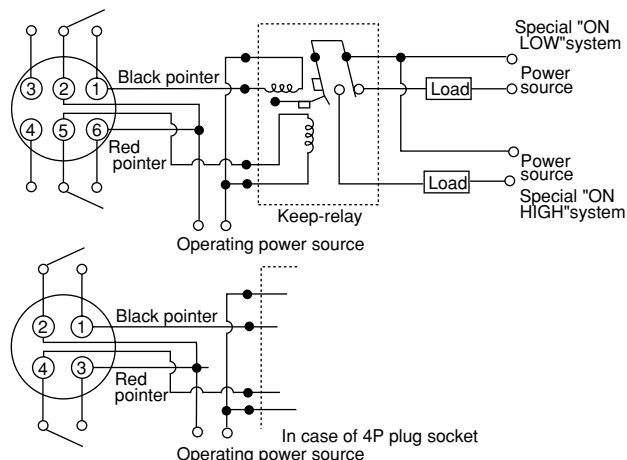
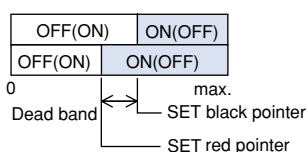
5. Center part setting type with two contact HLR

This is the series combination of the upper limit type and the lower limit type. When both contact points are ON, the circuit turns ON.



6. Special ON-HIGH and special ON-LOW system two contacts SH.SL

This is the combination of an "ON-HIGH" and "ON-LOW" system (HL type) and keep-realy. The difference between the operating point in pressure rising and that in pressure decreasing (dead band) exists.



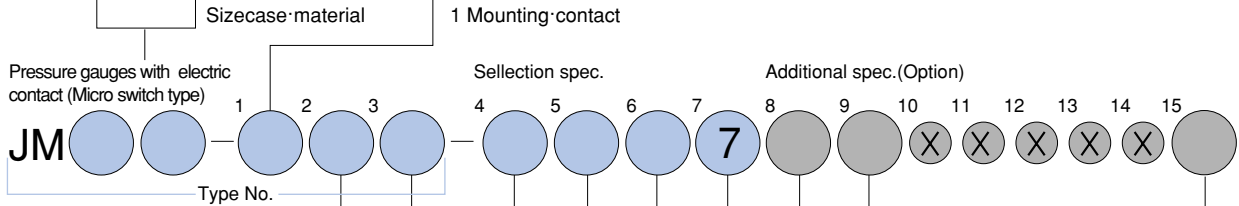
Type No. constitution

Please specify Type No.,each specification and range,when ordering.

Note : For this Model,there is no applicable item for the figures X,but please specify with X when ordering.

Stem	J M	1	1	100 DIA. ADC12	1	Type B (Holes)	One contact	Weight Approx. 1.4kg
	J M	2	1	150 DIA. ADC12		2	Type B (Holes)	
	J M	3	1	200 DIA. ADC12 Midiam low range	1		Type B (Holes)	One contact
	J M	4	1	200 DIA. AC7A Low range				

Panel	J M	1	6	100 DIA. ADC12	1	Type D (Clamps)	One contact	Approx. 1.5kg	
	J M	2	6	150 DIA. ADC12		2	Type D (Clamps)		Two contact
	J M	3	6	200 DIA. AC7A Midiam low range	3		Type D (Holes)		One contact
	J M	4	6	200 DIA. AC7A Low range		1	Type D (Clamps)		One contact
	J M	4	6	200 DIA. AC7A Low range	3		Type D (Holes)		One contact



9 Other additional spec.

0	Nil
1	Please specify your requirement. External adjustment

2 Connection

	JM11·16	JM21·26	JM31·36	JM41·46
3	G3/8B	○	○	○
4	G1/2B	—	○	○
G	R3/8	○	○	○
H	R1/2	—	○	○
L	3/8NPT	○	○	○
M	1/2NPT	—	○	○
7	Rc1/4	JM26 receiver range only		

3 Wetted parts material

1	General use (Available up to 35MPa) Socket:YBsC3 or C3604BD Bourdon tube:Bellows:C6872T or 316 st.st.:C5212R
3	Corrosion-proof use Socket:316 st.st. Bourdon tube: Bellows:316 st.st.·316L st.st.

4 Pressure range For Model JM1□,JM2□
(When ordering,please specify pressure range & unit)

	JM1□	JM2□	
1	20 ~ 100kPa (Receiver)	○	○
2	-0.1 ~ 0, 0.1, 0.2MPa -0.1 ~ 0.3, 0.4, 0.6MPa -0.1 ~ 1, 1.5, 2MPa	○	○
3	0 ~ 0.1, 0.2, 0.3, 0.4, 0.6MPa 0 ~ 1, 1.5, 2, 2.5, 3.5MPa	○	○
4	0 ~ 5, 7, 10MPa	○	○
5	0 ~ 15, 25, 35MPa	○	○
6	0 ~ 50, 70MPa	○	○
7	0 ~ 100MPa	—	○

4 Pressure range For Model JM3□
(When ordering,please specify pressure range & unit)

1	0 ~ 5, 7, 10, 15, 20, 30, 40, 50, 70kPa
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4 Pressure range For Model JM4□
(When ordering,please specify pressure range & unit)

1	0 ~ 1.5, 2, 3, 4kPa
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8 Treatment

0	Nil
1	Use no oil
2	Use no water
3	Use no oil-water

7 Outlet for electric wire

7	JIS 20b Gland
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6 Switch

	JM11·16	JM21·26	JM31·36	JM41·46
0	Standard	○	○	○
1	Ultra high sensibility switch	—	—	—
3	Standard+Gold plated	○	○	○

5 Type of contact point

	JM11·16	JM21·26	JM31·36	JM41·46
1	H: Upper limit type with one contact	○	○	○
2	L: Lower limit type with one contact	○	○	○
3	HL: Upper and lower limit type with two contact	○	○	—
4	2H: Upper limit type with two contact	○	○	—
5	2L: Lower limit type with two contact	○	○	—
B	HLR: Center part setting type with two contact	○	○	—
G	SH: Special ON-HIGH	○	○	—
H	SL: Special ON-LOW	○	○	—

15 Document

0	Nil
1	Please specify your requirement. Drawing one sheet,Instruction manual, Inspection procedure,Mill sheet, Test report