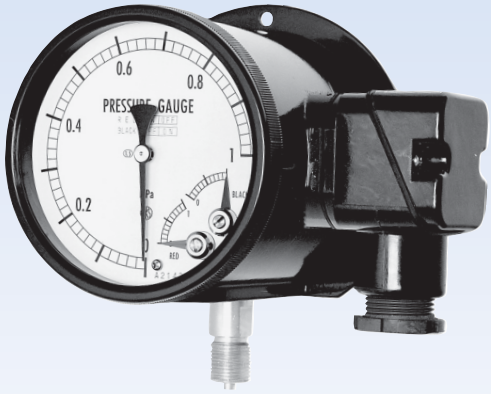
JM_ _
Pressure Gauge with Electric Contact (Micro Switch Type)

Overview

This pressure gauge with electric contacts incorporating mechanical switch function. ON/OFF electrical switch action utilizes Buzzer, Bell, Pilot lamp warning system and motor, pump and control valve process control.



Features

- **Pressure indication at facility**
- **Direct control of device possible with large switching current**
- **Pressure indication after switch operates is accurate as pressure sensing element for indication and switch action are both independent**
- **Micro switch assures stable snap action switching**
- **Pressure indication and switch operating setting dial are independent for arbitrary switch setting**

*To maximize performance, select full scale pressure range to indicate normal operating pressure which comes to conditions below.
For constant pressure : The maximum operating pressure should not exceed three-quarters of the full-scale range.
For fluctuating pressure: The maximum operating pressure should not exceed two-thirds of the full-scale range.
Select appropriate wetted parts compatible with process fluid (gas and liquid) which the gauge will be subjected.
Please refer to JIS B 7505-1 for details.

Recommended pressure setting range
Upper limit: (10%F.S. + deadband) to 90%F.S.
Lower limit: 10%F.S. to (90%F.S. - deadband)
%F.S. refers max.P. for receiver range.

Specifications 1

Media:
φ100, φ150·····Gases or liquids (Non-freezing)
φ200 ·····Gases

Operating environment:
Install in location where no gases or liquids may exist that have the potential to become flammable or ignitable under normal operating condition

Size:
φ100 (Model: JM11・16), φ150 (Model: JM21・26),
φ200 (Model: JM31・36・41・46)

Type:
Stem···· B type (Mounting hole)
Panel···· D type (Mounting clamp・Mounting hole)

Connection:
G3/8B, G1/2B, R3/8, R1/2, 3/8NPT,
1/2NPT, Rc1/4 (JM26 For receiver only)
※Consult us for other nonstandard connections.

Wetted parts:
General type
Socket CAC203
C3604BD for JM41
Bourdon tube (φ100, φ150)
C5191T (Receiver) C6872T or SUS316
(Varies depending on pressure ranges)
Bellows (φ200)
C5212R
Corrosion resistant type
Socket SCS14 SUS316 for JM36, JM41, JM46
Bourdon tube (φ100, φ150) SUS316
Bellows (φ200) SUS316L

Pressure range:
0 to 1.5kPa→0 to 100MPa
-1.5 to 0kPa→-0.1 to 2MPa
20 to 100kPa (Receiver)
※Refer to Specification 2 for more detail.

Operating temperature range:
-5 to 40℃

Indication accuracy:
1.5%F.S. (For receiver range ±0.75%F.S.)

Setting accuracy:
±3%F.S.

Switch accuracy:
±1%F.S.

Deadband:
Fixed within 6 to 15%F.S. (Varies depending on pressure range)

Switch accuracy:
Micro switch

Number of contacts:
One contact or two contacts
(One contact only for JM41・46)

Setting method:
Internally adjustable
After removing front cover followed by adjustment of setting screw by screwdriver, set switch operating point moving setting pointer downward from high pressure scale for upper limit, and moving setting pointer upward from low pressure scale for lower limit.
※External adjustable type also available. (Option)

Electrical wire outlet:
φ100·····Gland JIS 20b (4P terminal)
φ150, φ200····Gland JIS 20b (6P terminal)

Case material・finish:
ADC12 or AC7A・Black

Enclosure rating:
Drip-proof type (Equivalent to IP43)

Weight:
Approx. 1.4kg to 9.5kg

Specification 2

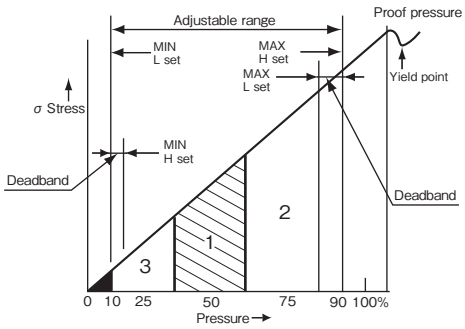
Electrical rating: (Standard)

Rating					Withstand voltage	Insulation resistance
	Resistance load		Inductive load			
	φ100	φ150・φ200	φ100	φ150・φ200		
125V AC	3A	15A	2A	15A	1500V AC Between terminal and case for 1 minute	500V DC 100MΩ or over Between terminal and case
250V AC	3A	15A	2A	15A		
125V DC	0.4A	0.5A	0.05A	0.05A		
30V DC	3A	2A	2A	1A		
Power factor 0.4 and above (AC) *0.6 to 0.7 (AC) for φ100 Time constant 7ms and below (DC)						

How to select effective operating pressure range
- Set value is accurate and stable: 30%max.P. and above
- Maintain long life: 65%max.P. and below
- Set value is accurate maintaining long life (ideal): 30 to 65% of adjustable range

Below figure

Range 1. Effective range both for accuracy and long life
Range 2. Effective range for maintaining accuracy
Range 3. Effective range for maintaining long life



Recommended pressure setting range
Upper limit: (10%F.S.+deadband) to 90%F.S.
Lower limit: 10%F.S. to (90%F.S.-deadband)
%F.S. refers max.P. for receiver range.

Select rated pressure range considering that switch operating point at ±5%F.S. around zero is likely to become unstable.

Minimum scale:

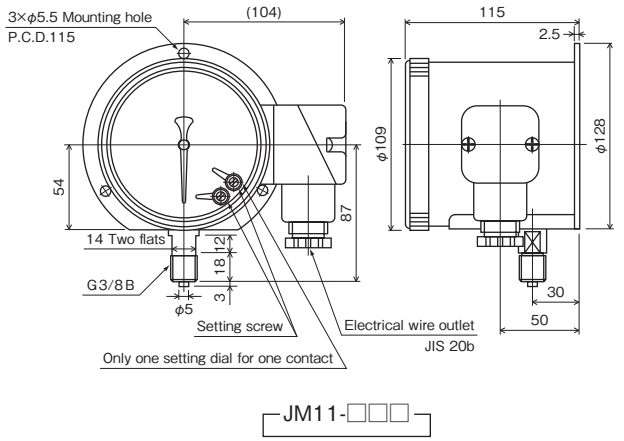
Size	Pressure sensing element	Pressure range	Minimum scale for indicator	Minimum scale for switch setting dial		Deadband %F.S.	
				φ100	φ150	φ100	φ150
φ100 φ150	Bourdon tune type	20 to 100kPa				15	15
		0 to 0.1MPa	0.002MPa	0.01MPa	0.01MPa		
		to 0.2	0.005	0.02	0.02		10
		to 0.3	0.01	0.05	0.05		
		to 0.4	0.01	0.05	0.05		8
		to 0.6	0.02	0.1	0.1		
		to 1	0.02	0.1	0.1		6
		to 1.5	0.05	0.2	0.1	10	
		to 2	0.05	0.2	0.2		
		to 2.5	0.05	0.5	0.2		
		to 3.5	0.1	0.5	0.5		
		to 5	0.1	0.5	0.5		
		to 7	0.2	1	1		
		to 10	0.2	1	1		
		to 15	0.5	2	1		
		to 25	0.5	5	2		
		to 35	1	5	5		
		to 50	1	5	5		
		to 70	2	10	10		
		to 100	2	—	10	—	
		-0.1 to 0MPa	0.002MPa	0.01	0.01	15	15
		-0.1 to 0.1	0.005	0.02	0.02		
		to 0.2	0.01	0.05	0.05		10
		to 0.3	0.01	0.05	0.05		
		to 0.4	0.01	0.05	0.05		8
		to 0.6	0.02	0.1	0.1		
		to 1	0.02	0.1	0.1		6
		to 1.5	0.05	0.2	0.2	10	
		to 2	0.05	0.2	0.2		

Size	Pressure sensing element	Pressure range	Minimum scale for indicator	Minimum scale for switch setting dial	Deadband %F.S.
φ200 Low pressure range	Bellows type	0 to 5kPa	0.1kPa	0.5kPa	10
		to 7	0.2	0.5	
		to 10	0.2	1	
		to 15	0.5	1	
		to 20	0.5	2	
		to 30	1	2	8
		to 40	1	5	
		to 50	1	5	
		to 70	2	5	
φ200 Low pressure range	Bellows type	0 to 1.5kPa	0.05kPa	0.1kPa	12
		to 2	0.05	0.1	
		to 3	0.1	0.2	
		to 4	0.1	0.2	

Dimensions

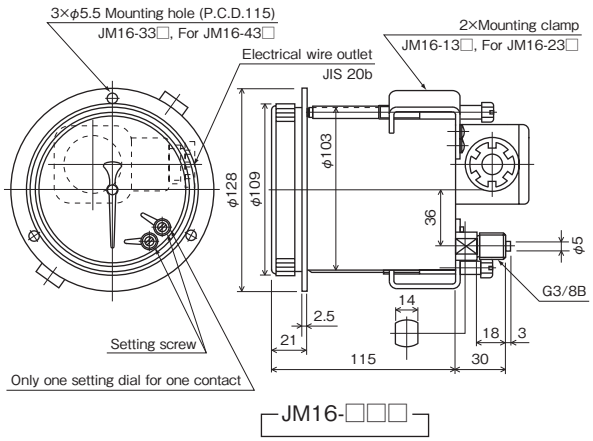
Unit: mm

φ100 Type B



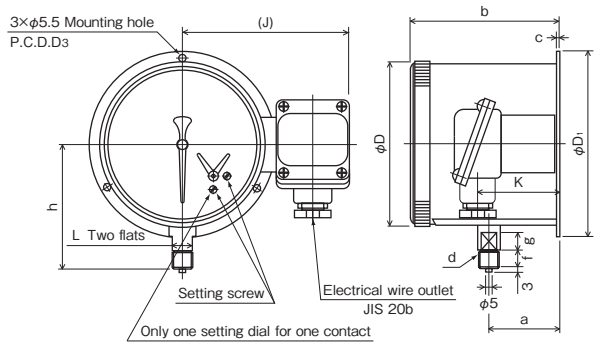
JM11-□□□

D type

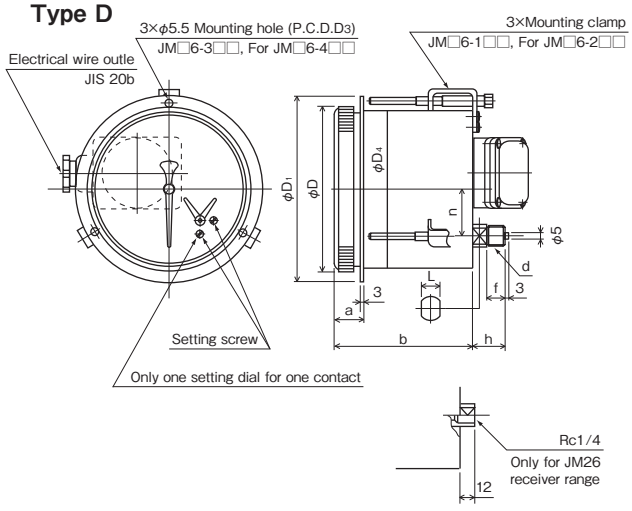


JM16-□□□

φ150・200 Type B



Type D



Model	D	D1	D3	a	b	c	J	K	d	f	g	h	L
JM21-□□□	159	178	165	65	140	3	159	76	G3/8B	18	15	120	17
									G1/2B	20		122	
JM31-□□□	210	235	220	108	166	3	179	99	G3/8B	18	12	150	17
									G1/2B	20		152	
JM41-□□□	210	235	220	135	212	5	179	163	G3/8B	18	12	150	14
									G1/2B	20		152	17

Model	D	D1	D3	D4	a	b	n	d	f	h	L
JM26-□□□	159	178	165	152	26	129.5	45	G3/8B	18	30	17
								G1/2B	20	32	
JM36-□□□	210	235	220	203	27	166	45	G3/8B	18	32	14
								G1/2B	20	34	17
JM46-□□□	210	235	220	203	27	212	70	G3/8B	18	32	14
								G1/2B	20	34	17

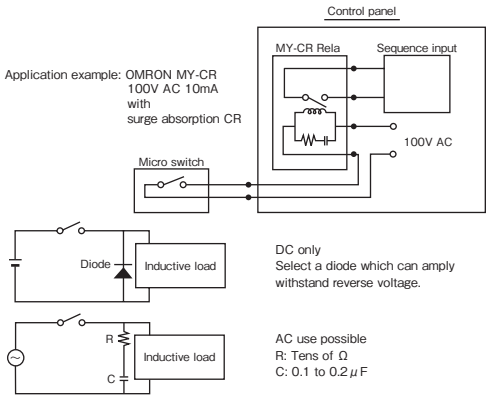
Attention

1. As for sequencer input

The contact resistance of micro switch increases as time passes especially in short period for use in atmosphere including Si with SiO_2 accumulation as switch operates. Ensure the use in clean and well-ventilated atmosphere. When the pressure switch is used as sequencer input as controller, input it through 100V AC relay because of failure for the reason.

2. Insertion of contact protection circuit

Insert protection circuit to protect contact with inductive load switching circuit.
When using relay, specify contact protection circuit built-in type.

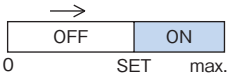


Switch action and wiring

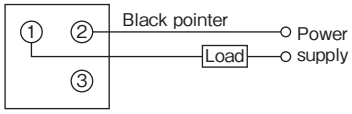
1. Upper limit H

＊When pressure goes up and reaches at set point, switch operates and turn circuit ON.

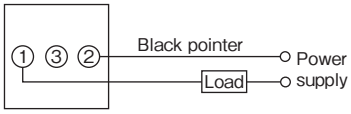
Operating diagram



Wiring diagram (φ100)



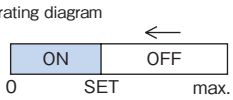
(φ150, φ200)



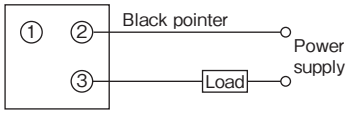
2. Lower limit L

＊When pressure goes down and reaches at set point, switch operates and turn circuit ON.

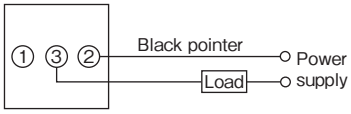
Operating diagram



Wiring diagram (φ100)



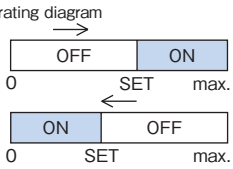
(φ150, φ200)



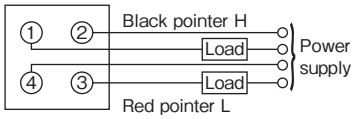
3. Upper and lower limit with two contacts HL

Independently operates with combination of upper and lower limit.

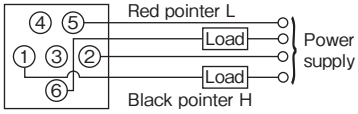
Operating diagram



Wiring diagram (φ100)



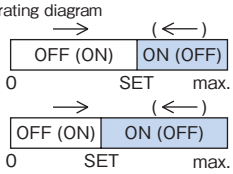
(φ150, φ200)



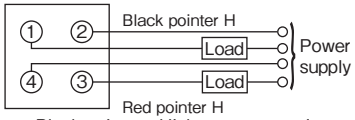
4. Uppper limit with two contacts (2H)

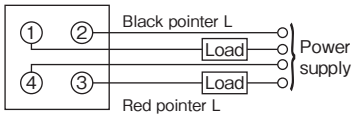
Independently operates with combination of two upper limits.

Operating diagram

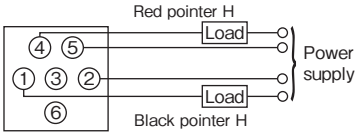


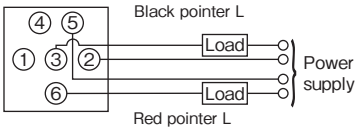
Wiring diagram (φ100)





(φ150, φ200)

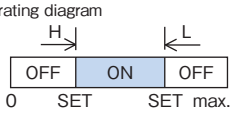




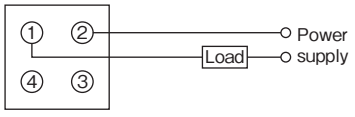
5. Center setting type with two contacts HLR

Upper and lower limit type connected with series system when two contacts are ON the circuit is also turned on.

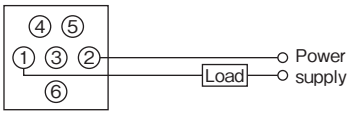
Operating diagram



Wiring diagram (φ100)



(φ150, φ200)



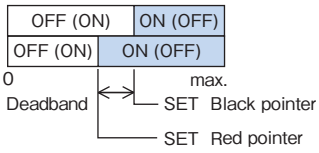
6. Special upper limit type (Special lower limit type) with two contacts SH (SL)

Upper and lower limit (HL) with combination of keep relay generating difference of operating point (deadband) when pressure increased / decreased.

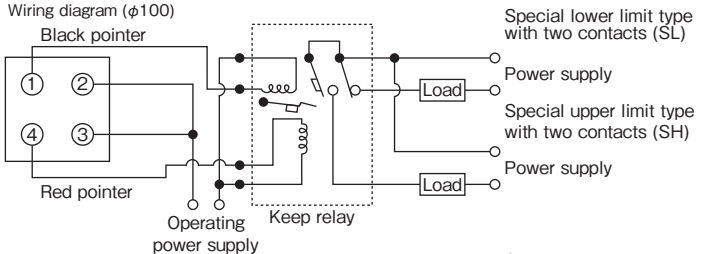
Keep relay: Option (Accessory)

Specify operating power supply voltage and power supply voltage.

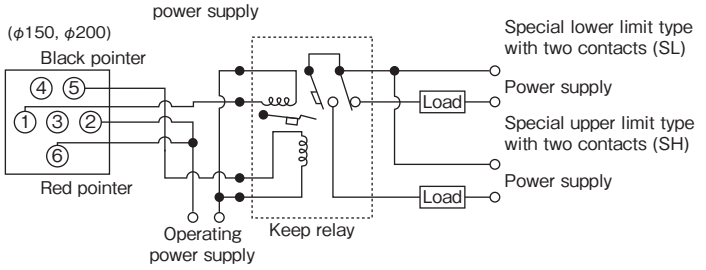
Operating diagram



Wiring diagram (φ100)



(φ150, φ200)



Model number configuration

Please specify for ordering the model number and each specs.

Model

J	M	1		—				—				0	7				×	×	×	×	
					①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	

Pressure Gauge with Electric Contact (Micro Switch Type) (φ100)

Model number		Product specifications	Additional specifications (Optional)
Mounting	1	Stem	
	6	Panel	

① Type		Stem	Panel
	1	B type (Mounting hole) One contact	D type (Mounting clamp) One contact
	2	B type (Mounting hole) Two contact	D type (Mounting clamp) Two contacts
	3	————	D type (Mounting hole) One contact
	4	————	D type (Mounting hole) Two contacts

② Connection		
	3	G3/8B
	G	R3/8
	L	3/8NPT
		Others

③ Wetted parts		
	1	General use (Available up to 35MPa range) Socket: CAC203 Bourdon tube: C5191T (Receiver) C6872T or SUS316
	3	Corrosion resistant Socket: SCS14 Bourdon tube: SUS316

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

④ Pressure range (MPa)		
	1	20 to 100kPa Receiver
	2	-0.1 to 0.1, 0.2, 0.3, 0.4, 0.6, 1, 1.5, 2 Compound range, -0.1 to 0
	3	0 to 0.1, 0.2, 0.3, 0.4, 0.6, 1, 1.5, 2, 2.5, 3.5
	4	0 to 5, 7, 10
	5	0 to 15, 25, 35
	6	0 to 50, 70

⑤ Contact		
	A	H: Upper limit with one contact
	B	L: Lower limit with one contact
	C	HL: Upper and lower limit with two contacts
	D	2H: Upper limit with two contacts
	E	2L: Lower limit with two contacts
	Q	HLR: Center setting type
	R	SH: Special upper limit (When keep relay is in use)
	S	SL: Special upper limit (When keep relay is in use)
		Others

⑥ Switch		
	0	Standard

⑦ Electrical wire outlet		
	7	Gland JIS 20b
		Others

⑧ Window		
	0	Inorganic glass (Standard)
	1	Organic glass
	2	Tempered glass
	3	Non-glare coated glass
	6	Non-frost coated glass
	7	Plugged external adjustment
	9	Others

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 (Specify required additional spec.) Custom dial

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 Standard inspection report Strength calculation sheet Attending inspection

「Scope of manufacturing」
- Indication accuracy: ±1.5%F.S. (±1.6% available)
  Receiver : ±0.75%F.S.
- Setting accuracy : ±3%F.S.
- Switching accuracy: ±1%F.S.
- Treatment: Available up to 50MPa range
  (Use no water available up to 70MPa)

○ As setting scale on dial includes setting error, ensure the use of master gauge and reference pressure gauge to maintain accurate setting.

＊Specify code "X" to refer N/A

Model number configuration

Please specify for ordering the model number and each specs.

Nodel

J	M	2		—				—				7				×	×	×	×	
Pressure Gauge with Electric Contact (Micro Switch Type) (φ150)			①	②	③				④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number		Product specifications	Additional specifications (Optional)
Mounting	1	Stem	
	6	Panel	

① Type		Stem	Panel
	1	B type (Mounting hole) One contact	D type (Mounting clamp) One contact
	2	B type (Mounting hole) Two contacts	D type (Mounting clamp) Two contacts
	3	————	D type (Mounting hole) One contact
	4	————	D type (Mounting hole) Two contacts

② Connection		
	3	G3/8B
	4	G1/2B
	G	R3/8
	H	R1/2
	L	3/8NPT
	M	1/2NPT
	7	Rc1/4 (Receiver range only for JM26)
		Others

③ Wetted parts		
	1	General use (Available up to 35MPa range) Socket: CAC203 Bourdon tube: C6872T or SUS316
	3	Corrosion resistant Socket: SCS14 Bourdon tube: SUS316

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

④ Pressure range (MPa)		
	1	20 to 100kPa Receiver
	2	-0.1 to 0.1, 0.2, 0.3, 0.4, 0.6, 1, 1.5, 2 Compound range, -0.1 to 0
	3	0 to 0.1, 0.2, 0.3, 0.4, 0.6, 1, 1.5, 2, 2.5, 3.5
	4	0 to 5, 7, 10
	5	0 to 15, 25, 35
	6	0 to 50, 70
	7	0 to 100

⑤ Contact		
	A	H : Upper limit with one contact
	B	L : Lower limit with one contact
	C	HL : Upper and lower limit with two contacts
	D	2H : Upper limit with two contacts
	E	2L : Lower limit with two contacts
	Q	HLR : Center setting type
	R	SH : Special upper limit (When keep relay is in use)
	S	SL : Special lower limit (When keep relay is in use)
		Others

⑥ Switch		
	0	Standard
	1	Ultra high sensitive type
	3	Standard + Gold plated
	4	Ultra high sensitive type + Gold plated

⑦ Electrical wire outlet		
	7	Gland JIS 20b
		Others

⑧ Window		
	0	Inorganic glass (Standard)
	1	Organic glass
	2	Tempered glass
	3	Non-glare coated glass
	6	Non-frost coated glass
	7	Plugged external adjustment
	8	Knob external adjustment
	9	Others

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 (Specify required additional spec.) Custom dial

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 Standard inspection report Strength calculation Attending inspection

「Scope of manufacturing」
- Indication accuracy: ±1.5%F.S. (±1.6% available)
  Receiver : ±0.75%F.S.
- Setting accuracy : ±3%F.S.
- Switching accuracy: ±1%F.S.
- Treatment: Available up to 50MPa range
  (Use no water available up to 70MPa)

○ As setting scale on dial includes setting error, ensure the use of master gauge and reference pressure gauge to maintain accurate setting.

＊Specify code "X" to refer N/A

Model number configuration

Please specify for ordering the model number and each specs.

Model

J	M	3		—				—				7				×	×	×	×	
					①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Pressure Gauge with Electric Contact (Micro Switch Type) (φ200)

Model number		Product specifications	Additional specifications (Optional)
Mounting	1	Stem	
	6	Panel	

① Type		Stem	Panel
	1	B type (Mounting hole) One contact	D type (Mounting clamp) One contact
	2	B type (Mounting hole) Two contacts	D type (Mounting clamp) Two contacts
	3	————	D type (Mounting hole) One contact
	4	————	D type (Mounting hole) Two contacts

② Connection	
3	G3/8B
4	G1/2B
G	R3/8
H	R1/2
L	3/8NPT
M	1/2NPT
	Others

③ Wetted parts	
1	General use Socket: CAC203 Bellows: C5212R
3	Corrosion resistant Socket: SCS14 (JM31) SUS316 (JM36) Bellows: SUS316L

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

④ Pressure range (kPa)	
1	0 to 5, 7, 10, 15, 20, 30, 40, 50, 70
2	-5 to 0, -7, -10, -15, -20, -30, -40, -50, -70
9	Compound range

⑤ Contact	
A	H : Upper limit with one contact
B	L : Lower limit with one contact
C	HL : Upper and lower limit with two contacts
D	2H : Upper limit with two contacts
E	2L : Lower limit with two contacts
Q	HLR : Center setting type
R	SH : Special upper limit (When keep relay is in use)
S	SL : Special lower limit (When keep relay is in use)
	Others

⑥ Switch	
0	Standard
1	Ultra high sensitive type
3	Standard + Gold plated
4	Ultra high sensitive type + Gold plated

⑦ Electrical wire outlet	
7	Gland JIS 20b
	Others

⑧ Window	
0	Inorganic glass (Standard)
1	Organic glass
2	Tempered glass
3	Non-glare coated glass
6	Non-frost coated glass
7	Plugged external adjustment
9	Others

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 (Specify required additional spec.) Custom dial

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 Standard inspection report Strength calculation Attending inspection

「Scope of manufacturing」
- Indication accuracy: ±1.5%F.S.
- Setting accuracy : ±3%F.S.
- Switching accuracy: ±1%F.S.

○ As setting scale on dial includes setting error, ensure the use of master gauge and reference pressure gauge to maintain accurate setting.

＊Specify code "X" to refer N/A

Model number configuration

Please specify for ordering the model number and each specs.

Model

J	M	4		—				—				7				×	×	×	×	
Pressure Gauge with Electric Contact (Micro Switch Type) (ϕ200)			①	②	③				④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number		Product specifications	Additional specifications (Optional)

Mounting

1	Stem
6	Panel

① Type

	Stem	Panel
1	B type (Mounting hole) One contact	D type (Mounting clamp) One contact
3	————	D type (Mounting hole) One contact

② Connection

3	G3/8B
4	G1/2B
G	R3/8
H	R1/2
L	3/8NPT
M	1/2NPT
	Others

③ Wetted parts

1	General use Socket: C3604BD (JM41), CAC203 (JM46) Bellows: C5212R
3	Corrosion resistant Socket: SUS316 Bellows: SUS316L

④ Pressure range (kPa)

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

1	0 to 1.5, 2, 3, 4
2	-1.5 to 0, -2, -3, -4
9	Compound range

⑤ Contact

A	H: Upper limit with one contact
B	L : Lower limit with one contact
	Others

⑥ Switch

0	Standard
1	Ultra high sensitive type
3	Standard + Gold plated
4	Ultra high sensitive type + Gold plated

⑦ Electrical wire outlet

7	Gland JIS 20b
	Others

⑧ Window

0	Inorganic glass (Standard)
1	Organic glass
2	Tempered glass
3	Non-glare coated glass
6	Non-frost coated glass
7	Plugged external adjustment
9	Others

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 (Specify required additional spec.) Custom dial

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 Standard inspection report Strength calculation sheet Attending inspection

「Scope of manufacturing」
- Indication accuracy: ±1.5%F.S.
- Setting accuracy : ±3%F.S.
- Switching accuracy: ±1%F.S.

○ As setting scale on dial includes setting error, ensure the use of master gauge and reference pressure gauge to maintain accurate setting.

＊Specify code "X" to refer N/A