

INSTRUCTION MANUAL

ITEM : PRESSURE INDICATING SWITCH

MODEL : P535, P536



WISE[®] WISE Control Inc.
www.wisecontrol.com

Instructions for proper and safe operation

Please read instructions carefully prior to using the instrument for proper and safe operations.

Mishandling could cause device malfunctions and result in disastrous injuries or accidents.

WARNING

1. Do not exceed the pressure range allowed.
2. Do not use it to measure the pressure of corrosive fluid.
Damage or rupture of pressure gauge may cause release of fluid which could lead to bodily injury or destroy surrounding area.
3. Do not apply excessive load, vibration or impact.
4. Please use within the specified temperature ranges.
Exceeding the temperature range may cause disruption in nearby area due to damage to the temperature indicator.
5. Please use this within the rated input and output specification range stipulated in the specification, or it may cause equipment trouble.
6. Please use a compression terminal with insulation sheath at the end of wire.
7. Please use a cable gland of the same class or upper class.
8. Please construct wiring in accordance with consumers' electrical installation guide and electrical facilities technical standards.
9. Make sure to turn off the valve to prevent the measuring fluid leak when dismounting the gauge.
10. Use a pressure gauge with no oil in an environment with hydrocarbon or oxygen.
Oil contained in the gauge may react with oxygen which may be flammable or explosive.
11. Please always follow the mounting instructions in the manual in cases of field installation.
12. Do not make any modifications to the product or to add more functions.
Please consult with us for any repair.
13. Please be sure to close a valve and cut off pressure in advance in opening the case of this product.
Please be sure to cut off power because there is a risk of electric shock if wiring
14. Work is carried out while electricity is applied.
This product cannot be used in explosion proof area.
Please use PN990(explosion proof type electric contact pressure indicator)
that is the product of our company, if necessary.

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1. Introduction

This is a contact switch pressure indicating with built-in indicator and micro switch. Please read the user manual carefully and thoroughly before using the product for proper and safe operations.

2. Applications

The product can be used as an indicator to process control, error alarm or warning, in accordance with on or off signal if pressure reaches the predetermined setting.

3. Features

- 1) A contact switch pressure indicating is desirable when a pressure indication is needed.
- 2) There are independent measuring probes for the indicator and contact switch, so that the indications are very accurate even after the switch is mounted.
- 3) The micro switch performs stable on or off operations with snap actions.
- 4) A contact switch pressure indicating has separate indicator and setting scales for easier setting.

4. Specification and Standards

- 1) Nominal diameter : 100 and 150mm
- 2) Accuracy
 - Indication range : $\pm 1.0\%$ of Full Scale
 - Alarm setting : $\pm 3.0\%$ of Full Scale
 - Repeatability : $\pm 1.0\%$ of Full Scale
- 3) Materials of wetted part : Stainless Steel
- 4) Connection type : 3/8", 1/2" PT, NPT & PF
- 5) Number of contacts : 1X SPDT or 2X SPDT
- 6) Working temperature : -10~60°C

7) Electrical properties

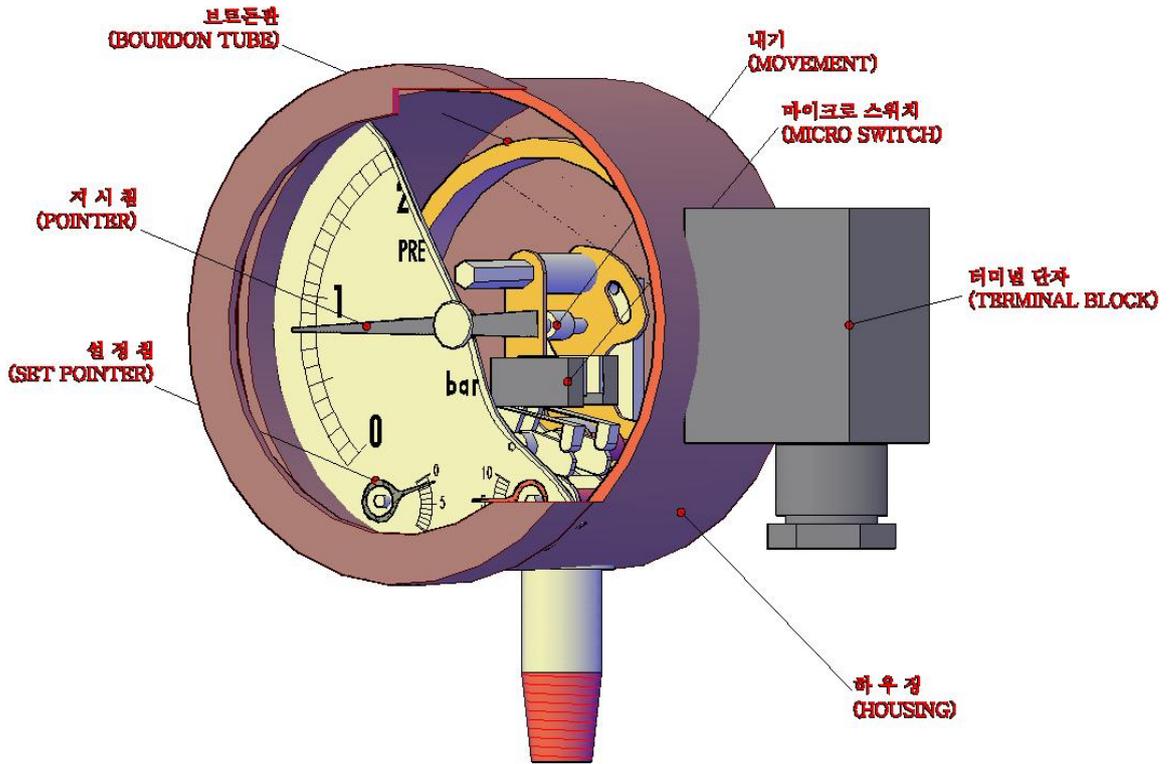
Rated voltage		Withstand voltage	Insulation resistance
Resistance load	Inductive load		
125V AC 15A	125V AC 15A	1500V AC, 50/60Hz one minute (Between each terminal and case)	100MΩ or more on 500VDC (Between each terminal and case)
250V AC 15A	250V AC 15A		
30V DC 2A	30V DC 1A		
125V DC 0.5A	125V DC 0.05A		
30V DC 2A	30V DC 1A	(Between each terminal and case)	100MΩ 이상 (Between each terminal and case)
125V DC 0.5A	125V DC 0.05A		

8) Measuring Pressure Range and Dead Band

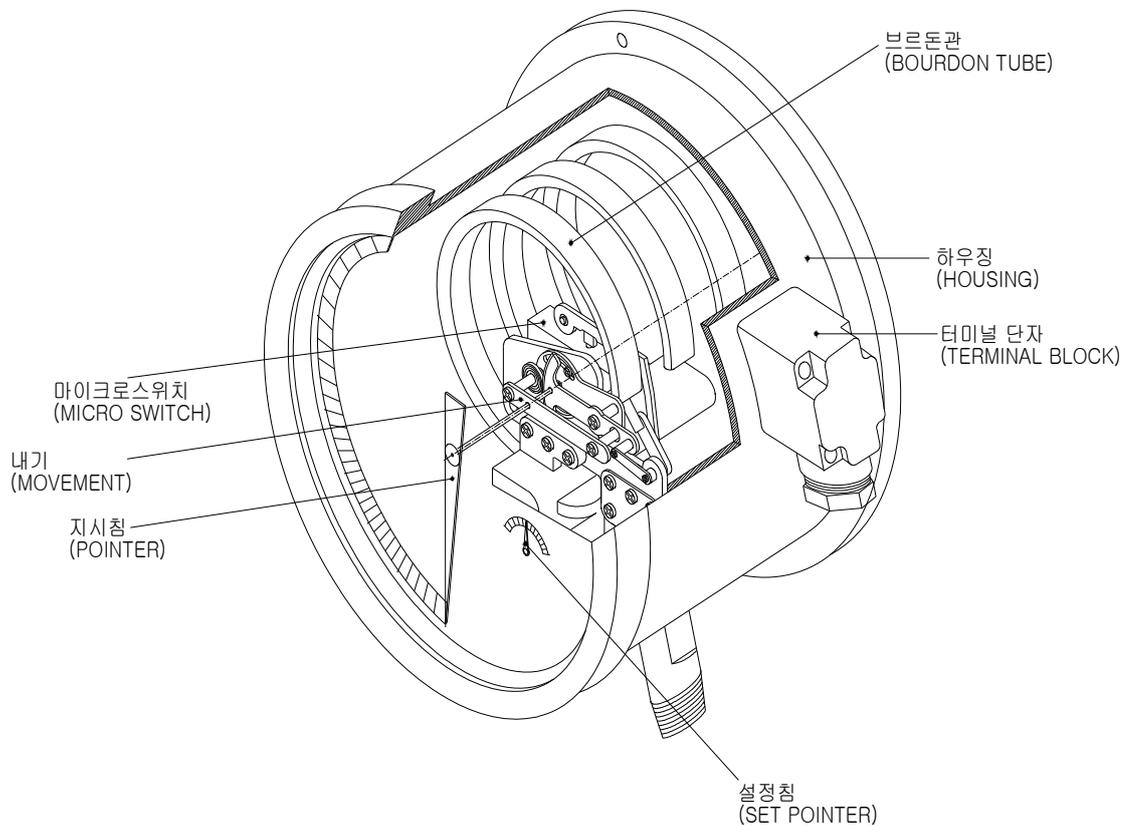
ADJUSTABLE SETTING RANGE		DEAD BAND		OVER RANGE
		ONE SPDT SET POINT	TWO SPDT SET POINT	PROOF RANGE
bar	kPa	mmH ₂ O(bar)		
-1	-100	Within 5% of Adjustable Range	Within 10% of Adjustable Range	150% of Adjustable Range
1	100			
1.6	160			
2	200			
2.5	250			
3	300			
4	400			
6	600			
10	1000			
15	-			
16	-			
20	-			
25	-			
35	-			
40	-			
50	-			
60	-			
70	-			
100	-			
150	-			
160	-			
250	-			
350	-			
400	-			
-1~1	-100~100			
-1~1.6	-100~160			
-1~2	-100~200			
-1~2.5	-100~250			
-1~3	-100~300			
-1~4	-100~400			
-1~5	-100~500			
-1~6	-100~600			
-1~9	-100~900			
-1~10	-100~1000			
-1~15	-100~1.5MPa			
-1~20	-100~2MPa			
-1~25	-100~2.5MPa			

5. Structure and Function

1) Indicating type pressure switch(100mm)

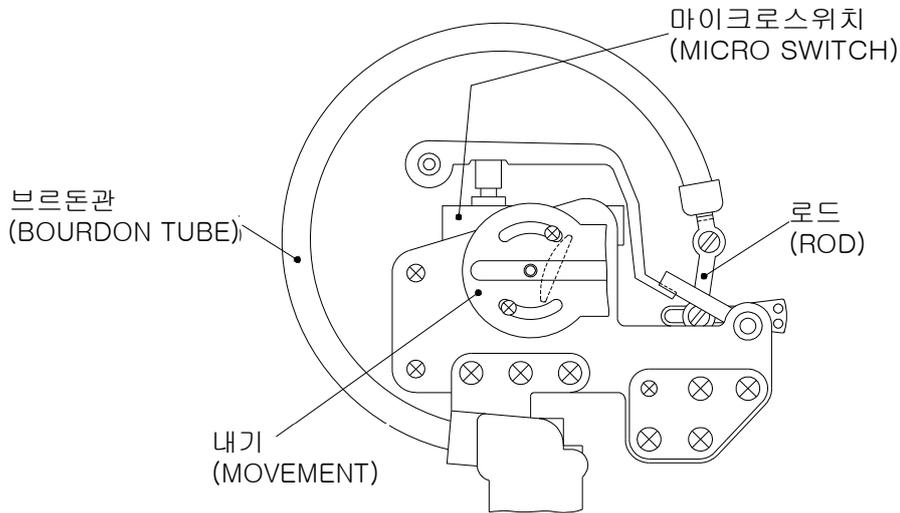


2) Indicating type pressure switch(150mm)



6. Operating Principle

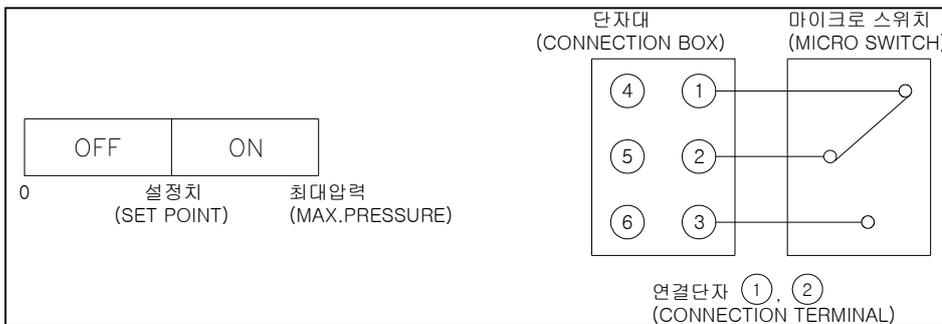
As shown in diagram below, the bourdon tube transmits the position change according to pressure change through a lever to open or close the micro switch.



7. Contact Point Working Type and Connection

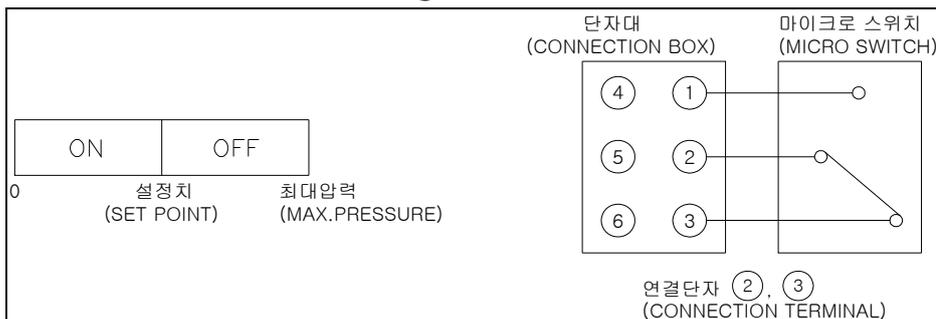
1) Upper limit contact type (HIGH ALARM)

There is one contact point to turn the circuit ON if the pressure is above the setting or OFF if it is below the setting.



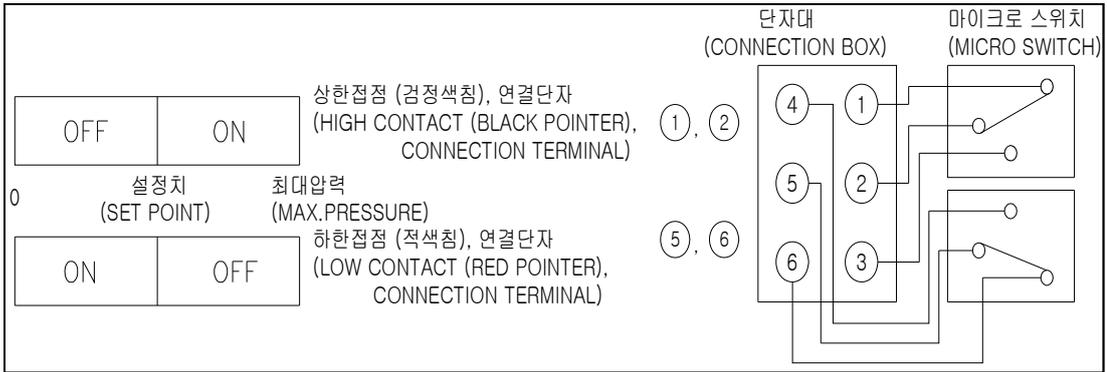
2) Lower limit contact type (LOW ALARM)

There is one contact point to turn the circuit ON if the pressure is below the setting or OFF if it is above the setting.



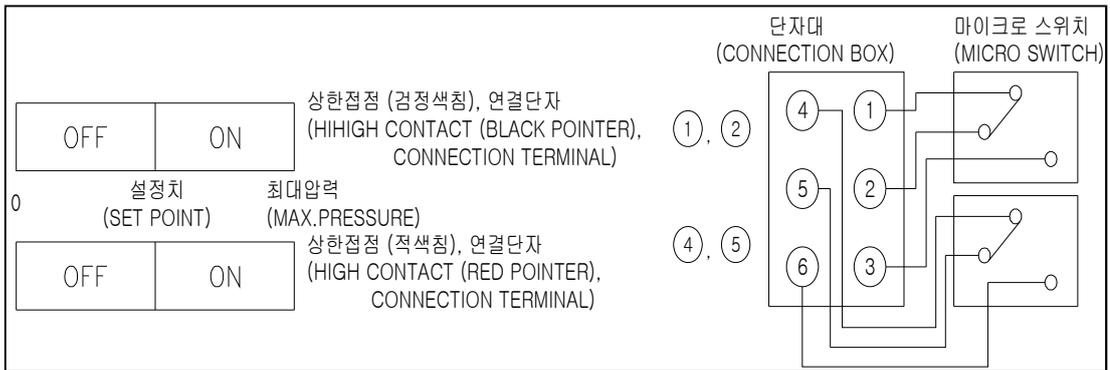
3) Upper and lower limits contacts type (HIGH & LOW ALARM)

There are two contacts in combination of two previously mentioned types.
They operate independently of each other.



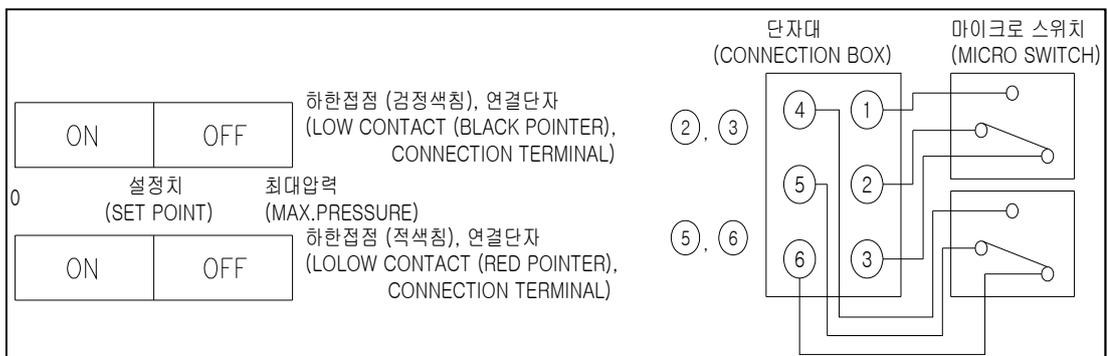
4) Two upper limit contacts (HIGH & HIHIGH ALARM)

There are two contacts combining two upper limit contact types that operate independently.



5) Two lower limit contacts (LOW & LOLOW ALARM)

There are two contacts in combination of two lower limit contact types that operate independently.



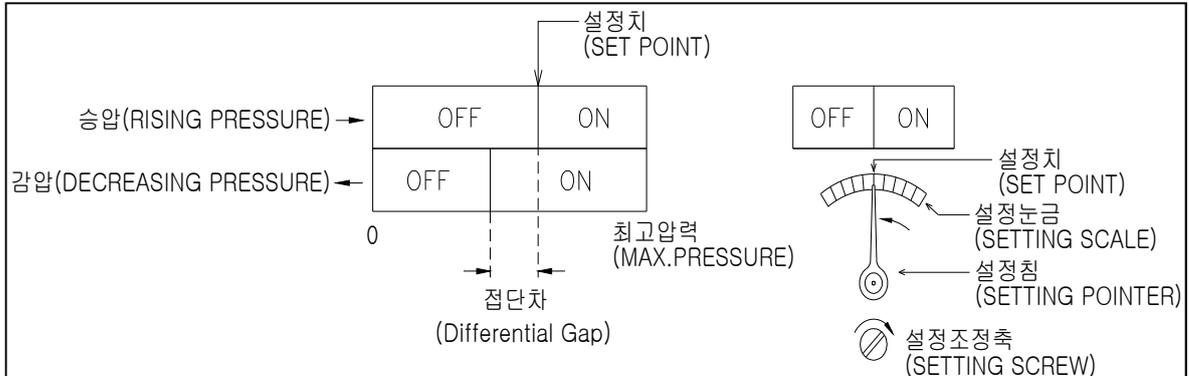
8. How to Set

Use a screw driver to turn the adjustment shaft installed inside.

Settings are shown below according to contact types.

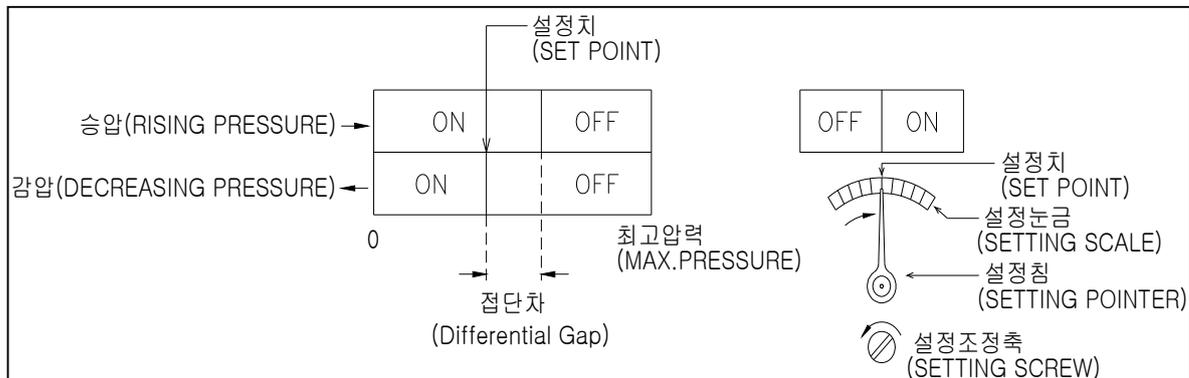
1) Upper limit type (H)

It will be turned ON if the pressure on the rise reaches the set value of the indicator hand. Adjust with the indicator hand to a new setting by moving it from the upper limit to lower limit.



2) Lower limit type (L)

It will be turned ON if the decreasing pressure reaches the set value of the indicator hand. Adjust with the indicator hand to a new setting by moving it from the lower limit to upper limit.



9. Maintenance and Operation

- 1) The commercial pressure shall be below 75% of the max graduation.
- 2) Do not impose a pressure beyond the allowable limit.
- 3) Avoid sudden pressure surge or drop.
- 4) If there is a risk of pulsation or impact pressure, install overpressure protection device like dampener or gauge protector.
- 5) Do not grease the operation parts in the pressure gauge.
- 6) The regular inspection shall be made once or twice in 6 months to check contact operation.

- 7) If the indication instrument makes a big error, remove it from the product for inspection. It may have been caused by wear, corrosion, external shock, vibration, or shock of a part. In this case, you must remove, adjust, or exchange the part.
- 8) The standard rated current shall follow 4. 7) but it may be different when the product is equipped with a special micro software. Please, add some allowance to the rated current written in this product, considering the inrush current.
- 9) The micro switch contact resistance is destined to increase gradually as per the elapsed time. Under minute load in Si environment, in particular, SiO₂ which is accompanied by contact operation may deposit on the contact to increase the contact resistance abruptly, so you must ventilate or move to a clean environment. When you use the product for control sequence input, there is more possibility of contact disorder, so please use an AC 110/220V buffer relay between the contact and the sequence.
- 10) Before you open or close the cover for pressure gauge repair or inspection, be sure to shut off the power.
Malfunctioning of the switch may ignite the explosive gas in the gauge.

10. Use

- 1) When installing a gauge for the first time, it is recommended to use the valve so it can be removed or controlled easily.
- 2) It is required to find out followings before using the gauge.
 - Pulsation exist? If yes, then use Dampner.
 - Vibration exist? If yes, then filled the gauge with oil or use oil filled gauge.
 - Is ambient temperature high? If yes, then use capillary type gauge.
- 3) Before using the gauge, make sure zero point is properly adjusted.
- 4) On the connection screw, use teflon tape or gasket to install the gauge firmly.
- 5) When installation is finished, slowly open the valve to find out the pointer is correctly indicating current pressure.

11. Installation

- 1) Install in a place devoid of moisture, vibration, dust or corrosive gas.
- 2) Avoid areas that might exceed the temperature ranges specified in this manual.
- 3) Make sure to protect from lightning or steam.
- 4) Avoid areas with direct sun light.
- 5) Use M5 nuts and bolts to mount on a panel or wall using the mounting holes.
If mounting brackets are used, make sure it is installed securely.
- 6) Inlet tube should be flexible not to strain the pressure indicating switch.
- 7) Please use specified wrench.

12. Wiring

- 1) Do not stress the main body.
- 2) Please use proper PVC insulated wire or captive cable.
- 3) Use M4 crimps to connect terminals for solid contacts.
- 4) Please confirm contact types in the diagrams before connecting terminals.
- 5) In case of conduit type, use waterproof sealing fittings.
- 6) In case of cable gland type, use waterproof cable glands.