USER MANUAL

ITEM : ELECTRIC CONTACTS TYPE PRESSURE GAUGE

MODEL : P510, P520, 531SERIES

WISE® WISE Control Inc.
www.wisecontrol.com

Instructions for proper and safe operation

To use this product correctly and safely, please read this manual carefully before operating.

Misuse of this product might cause damage to the product and serious injury to the user.

WARNING 

1. Do not apply more pressure than given range.
2. Do not use the product with a corrosive fluid. A corrosive fluid can cause the rupture of the measuring elements, and it could lead to injury or destruction.
3. Avoid excessive weight, vibration, and shock on the product.
   These could cause the rupture or damage on the product, and leaked fluid can cause injury to the user and destruction of surroundings.
4. Use the product within the given Temperature range.
   More than given temperature range can cause the damage to the product, and leads to the destruction.
5. When removing the products from its operting line, make sure to close the valve before removing.
   This will prevent the fluid or other substances to release. This release might cause the destruciton of surroundings.
6. Use "Use No Oil" Pressure gauges for the environment where Hydrocarbon or Oxygen is present. General Pressure gauges with the left over oil inside can lead to explosion when it gets mixed with oxygen or Hydrocarbon.
7. When installing the product, please follow the instruciton manual for how to install.
8. Do not modify the product for other purpose.
   Please consult the manufacturer for repair.
9. Do not cut off the oil cap when the product is installed outside because rain can penetrate into the gauge and cause a dew condensation.
   *To check the pressure, please remove the oil cap to release the internal pressure.
10. 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.

CONTENTS

1. Introduction

This product is a contact pressure indicator with the built-in indicator and contact.
It is a pressure gauge equipped with a contact block which is located on a type board and it allows every contact combination.
On the window, there is a handle for adjusting a set point which has set outside.

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) A contact switch pressure indicating has separate indicator and setting scales for easier setting.

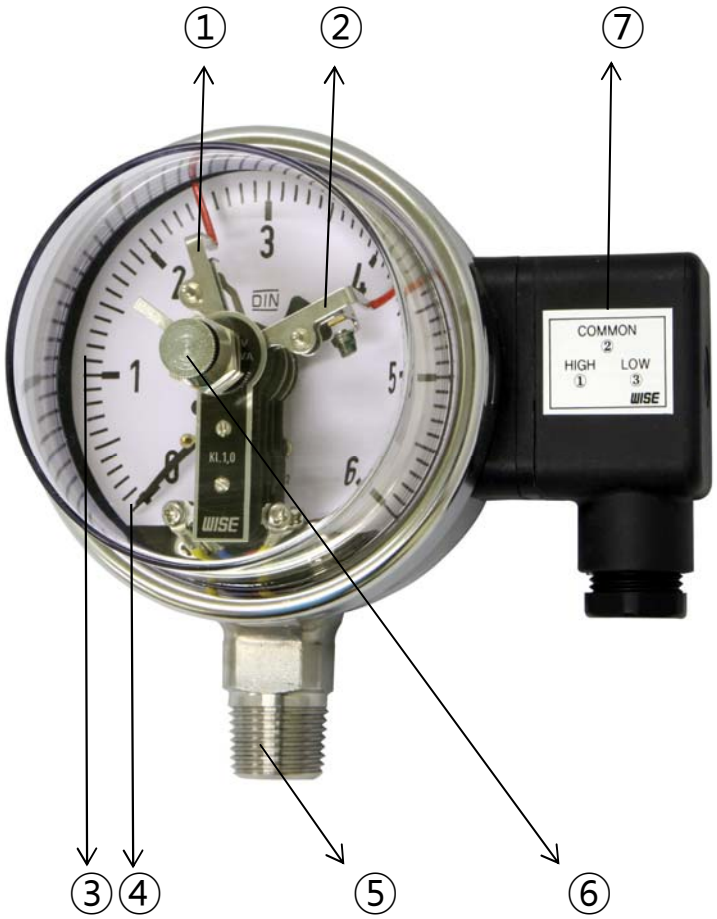
4. Specification and Standards

1) Norminal diameter : 100 and 160mm
2) Accuracy
   - Indication range : ±1.0% of Full Scale
   - Alarm setting : ±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 : 1 X SPDT or 2 X SPDT
6) Working temperature : -20~65℃
7) Notes in accordance with Pressure Equipment Directive 2014/68/EU
   - The pressure gauges are "Pressure accessories" in accordance with Article 1, Paragraph 2.1.4
   - The volume of the pressure bearing parts of pressure gauges is < 0.1 L
   - The pressure gauges carry CE marking for Fluid Group 1 in accordance with Annex 2, Table 1 when their permissible working pressure exceeds 200 bar
   - Pressure gauges that do not carry the CE marking are manufactured in accordance with Article 3, Paragraph 3 "Sound engineering practice".

7) Electrical properties

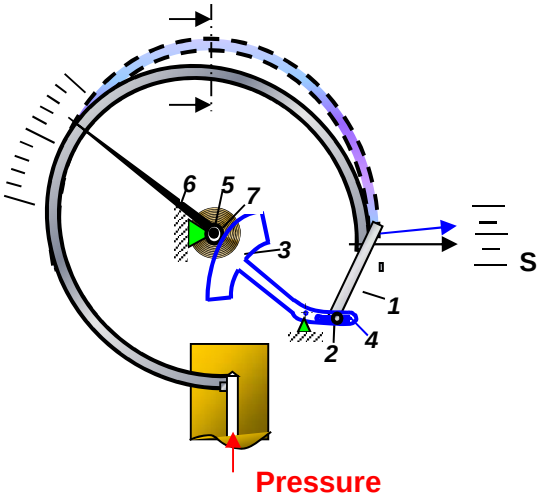
Maximum contact rating with non-inductive (ohmic) load	Electric contacts type pressure gauge model P510/P520 series	
	dry gauges	liquid filled gauges
Maximum voltage	250V	250V
Current ratings:		
Make ratings	1,0 A	1.0 A
Break ratings	1,0 A	1.0 A
Continuos load	0,6 A	0.6 A
Maximum load	30W 50VA	20W 20VA
Material of contact points	Silver-Nickel Alloy (80% Ag / 20%Ni / 10㎛) gold-plated	
Ambient operating temperature	-20℃...+70℃	
Max. no. of contacts	2	
Voltage test	Circuit / protective earth conductor - 2000 vac 1 minute	
	Circuit /circuit - 2000 vac 1 minute	

5. Structure and Function



NO	Description	Remark
①	NO.1 Setting Pointer (NO.1 Setpoint Indicator)	
②	NO.2 Setting Pointer (NO.2 Setpoint Indicator)	
③	Scale Plate	
④	Indicator	
⑤	Process Connection	
⑥	Setpoint Adjustment Dial Cap	
⑦	Terminal Box	

6. Operating Principle



1. Pull Rod
2. Pull Rod Control Point
3. Toothed Segment
4. Segment Opening
5. Spiral Spring
6. Pointer

When pressure is applied to the Bourdon Tube, it extends vertically. This vertical movement of Bourdon Tube is delivered to the Movement, and the Movement changes this vertical movement User's Manual

Movement is consist of lever and gear, and its main role is converting vertical movement into a rotating motion.

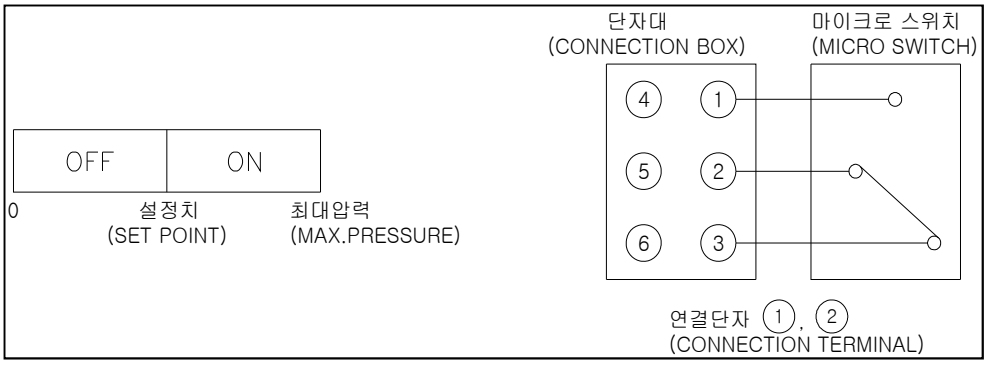
Generally, the vertical movement of Bourdon Tube ranges from 3~4mm, and its principle is to point currently applied pressure by using a turn angle 270º

Therefore, Bourdon Tube and Movement are the most important, and these parts must be well assembled in the pressure gauge because these parts leads to precise machining accurracy.

7. Contact Point Working Type and Connection

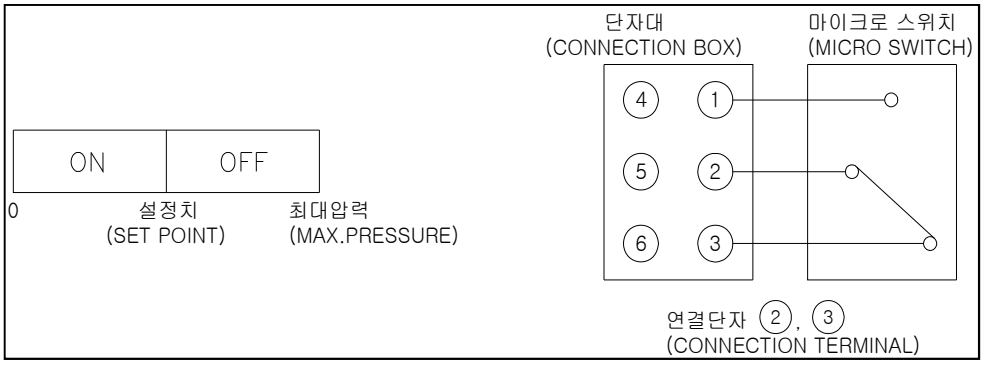
1) HIGH ALARM

As a Single Contact, when the pressure reaches higher than its set point, User can set it as either ON or Off.



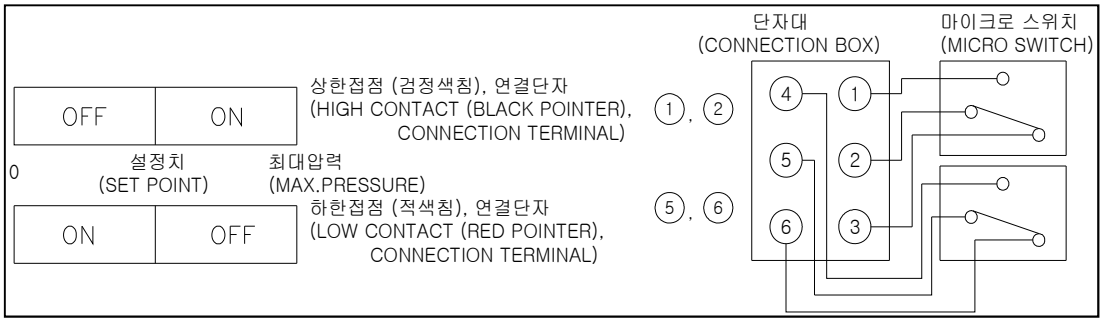
2) LOW ALARM

As a Single set point, when the pressure reaches lower than its set point, either User can set it as ON or Off.



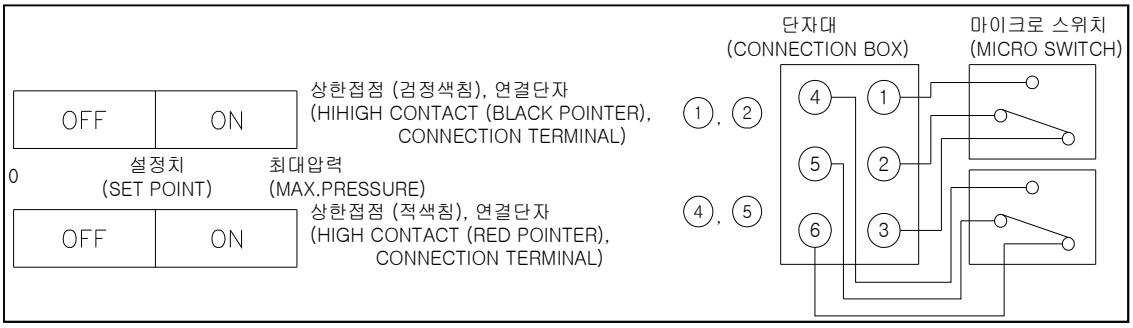
3) HIGH & LOW ALARM

As a dual set point, this provides the combination of two independent single set points metioned above.



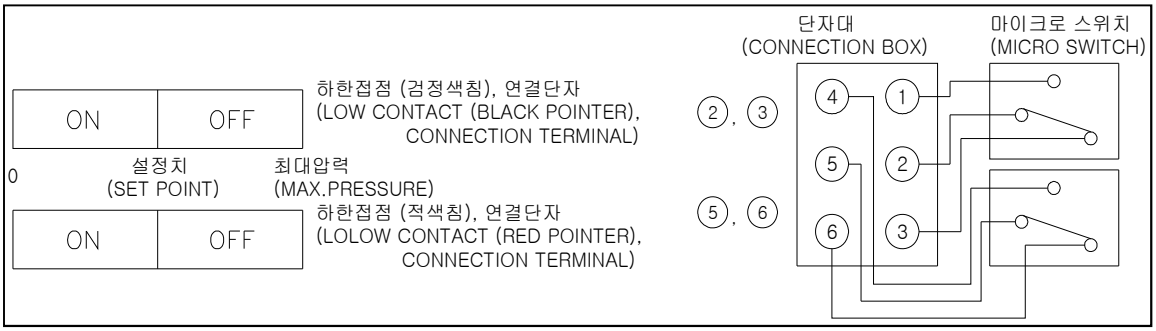
4) HIGH & HIHIGH ALARM

As a dual set point, this provides the combination of two independent High alarm set points.



5) LOW & LOLOW ALARM

As a dual set point, this provides the combination of two independent Low alarm set points.



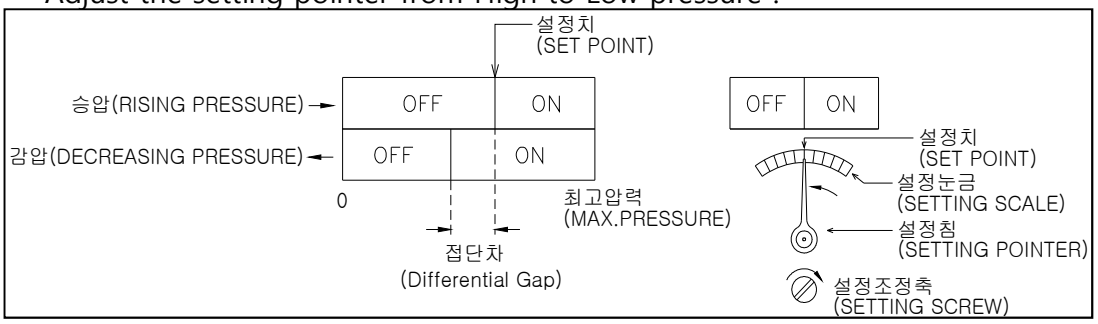
8. HOW TO SET

Set point can be altered by turing the screw inside the gauge. Setting method can be differentiated by its contact type.

- HIGH

  When rising pressure reaches at a set point, the switch status becomes "ON."

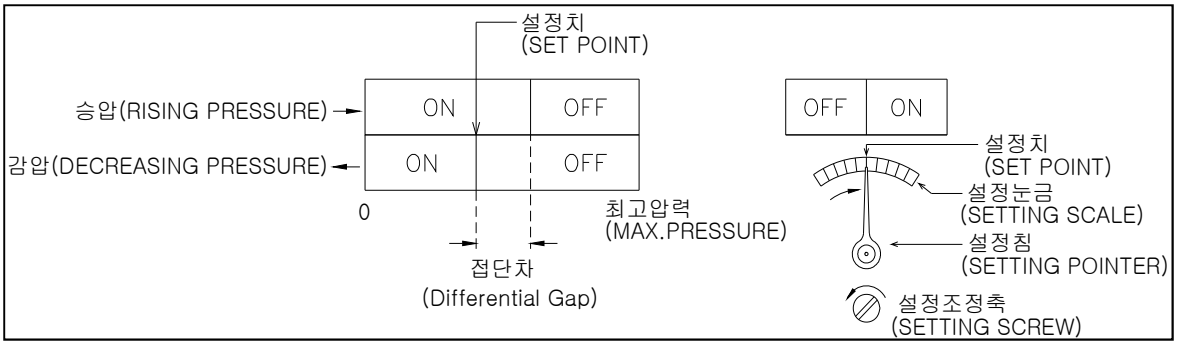
  Adjust the setting pointer from High to Low pressure .



- LOW

  When decreasing pressure reaches at a set point, the switch status becomes "ON."

  Adjust the setting pointer from Low to High Pressure set point.



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) 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 easlily.
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 captire 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.