2 Specifications

Protect the unit from impact and dropping during transfer and when mounted. This may cause failure of the unit.
- Do not use the unit in places with high humidity and temperature. This may cause malfunction.
- Do not use this product outside of the range of its specifications, as this can cause failure.

### Type
- Single action
- Double action

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<tr>
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<tr>
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<td>Input resistance</td>
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</tr>
<tr>
<td>Pressure</td>
<td>0.14~0.7 MPa</td>
</tr>
<tr>
<td>Standard stroke</td>
<td>60 ± 100°</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Within 0.5% F.S.</td>
</tr>
<tr>
<td>Linearity</td>
<td>Within ±2% F.S.</td>
</tr>
<tr>
<td>Hysteresis</td>
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</tr>
<tr>
<td>Repeatability</td>
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<tr>
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### Control
- NPT1/4 (Female) : IP8100-041-A-L-X83
- Rc1/4 (Female) : IP8100-041-A-X84

### Electrical wiring

- Connection Port: G1/2 (Female)
- Power Supply: 12-35 V (for output current detection)
- Resistance Load: 20 mADC
- Output characteristic: ±2% F.S.
- Hysteresis: 1% F.S.
- Temperature coefficient: ±0.05% F.S/°C
- Material: Body - Aluminum diecast
- Weight: Approx. 2.6 kg
- Protection Classification: JS80807, IP65 (IEC 60529)

- 1: 1:0 split range is possible using the standard type (by adjusting the span).
- 2: The stroke is adjustable for 0 to 60° and 0 to 100°.
- 3: Standard air (JIS B0210): temp. 20°C, absolute press. 760 mm Hg, ratio humidity 65%.

### 2 Specifications (continued)

- Actuation
  - J: Normal actuation
  - JR: Reverse actuation
- ROTARY TYPE
- PRESSURE GAUGE (SUPP. OUT)
- D: DIRECT ACTION
- R: REVERSE ACTION
- WITH 4~20 mA OUTPUT (NON-EXPLOSION PROOF) PRESSURE DISPLAY: MPa/bar
  - AIR PORTS: NPT 1/4 (Female)
- WITH 4~20 mA OUTPUT (INN EXPLOSION PROOF) PRESSURE DISPLAY: MPa
  - AIR PORTS: Rs 1/4 (Female)

### Accessories
- N/A: NO ACCESSORIES (STANDARD)
- A: WITH PILOT VALVE 0.6mm DIAM ORIFICE FOR REJECTING OUTPUT
- B: WITH PILOT VALVE 1.0mm DIAM ORIFICE FOR REJECTING OUTPUT
- C: X83 - F0RK LEVER ASSEMBLY TYPE MX (IP86100-30), M8x1
- D: X83 - F0RK LEVER ASSEMBLY TYPE EX (IP86100-30), M8x1
- E: X83 - F0RK LEVER ASSEMBLY TYPE F5 (IP60100-30, 25), M8x1
- G: WITH GAIN SUPPRESSION SPRING (A).
- H: WITHOUT STANDARD SPINDLE
- I: WITH EXTERNAL SCALE PLATE UNIT

### NOTE:
- WHEN MORE THAN 2 ACCESSORIES ARE REQUIRED, SPECIFY IN ALPHABETICAL ORDER.

3 Installation

### 3.1 Installation

- Do not install the product unless the safety instructions have been read and understood.
- Since the zero point varies depending on the mounting position, the zero point should be adjusted after installation.
- Avoid hitting the product with metal objects.
- Avoid using the product in non-explosive environments which can become explosive due to air leakage!

### 3.2 Environment

- Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.
- The product should not be exposed to prolonged sunlight. Use a protective cover.
- Do not mount the product in a location where it is subjected to strong vibrations and/or shock.
- Do not mount the product in a location exposed to radiant heat.
- Allow sufficient space for maintenance and adjustment around the product when mounted.

### 3.3 Piping

- Before piping make sure to clean out chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port.
- When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings according to appropriate tightening torque.

### 3.4 Lubrication

- The Positioner has a fixed orifice and nozzle, which contain fine paths. Use filtered, dehydrated air and avoid the use of lubricators as this may cause malfunction of the Positioner.
- Ensure that the air supply system is filtered to 5 microns.

### 3.5 Handling

- Avoid impact to the body and torque motor of the positioner, and applying excessive force to the armature, because this may lead to failure. Handle with care during transportation and operation.
- If the Positioner is left at the operation site for a long time before installation, cover it to prevent rain water from entering the positioner. If the atmosphere is of high temperature or humidity, take measures to avoid condensation inside the positioner. Condensation condensation should not be left, but be taken thoroughly during export shipment.
- Avoid setting the positioner near magnetic fields because the characteristics will be affected.

4 Mounting

4.1 Mounting IP8100 to Actuator

The IP8100 positioner is compatible with IP610 and IP610 mounting pitch. If you are using the IP610 or IP610 already, the bracket for these positioners can be used to mount the IP8100 to the actuator. If changing from IP6100 to IP8100 and selecting accessory H (with external scale plate unit), the fork lever type fitting will need to be adjusted to a lower position.

---

**Safety Instructions**

- This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.
- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of “DANGER”, “WARNING”, or “CAUTION”, followed by important safety information which must be carefully followed.
- To ensure safety ISO4414: Pneumatic Fluid power and JIS B 8370: Pneumatic System principles must be observed, along with other relevant safety practices.

### DANGER

- In extreme conditions, there is a possibility of serious injury or loss of life.

### WARNING

- If instructions are not followed there is a possibility of serious injury or loss of life.

### CAUTION

- If instructions are not followed there is a possibility of injury or equipment damage.

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**Installation and Maintenance Manual**

**Electro Pneumatic Positioner - Rotary type with 4-20mA output**


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**Specifications**

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**Caution**

- The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.
- Since the products specified here can be used in various operating conditions, their compatibility with the specific pneumatic system must be based on specifications or after analysis and/or tests to meet specific requirements.
- Only trained personnel should operate pneumatically operated machinery and equipment.
- Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced personnel.
- Do not service machinery/equipment or attempt to remove components until safety is confirmed.
- 1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
- 2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off all air and electrical supplies and exhaust all residual compressed air in the system.
- 3) Before machinery/equipment is re-started, ensure all safety measures prevent sudden movement of cylinders etc. (Supply air into the system gradually to create back pressure, i.e. incorporate a soft-start valve).
- Do not use this product outside of the specifications. Contact SMC if it is to be used in any of the following conditions:
  - Conditions and environments beyond the given specifications, or if the product is to be used outdoors.
  - Installations in conjunction with atomic energy, railway, aerospace, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
  - An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

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**Installation**

- The IP8100 positioner is compatible with IP610 and IP610 mounting pitch. If you are using the IP610 or IP610 already, the bracket for these positioners can be used to mount the IP8100 to the actuator. If changing from IP6100 to IP8100 and selecting accessory H (with external scale plate unit), the fork lever type fitting will need to be adjusted to a lower position.
5 Adjustment (continued)

(4) Check for correct use of the cam face (normal or reverse) and that the flange nut is firmly locked (refer to Fig.5).
(5) Check that the wires are correctly connected to the (+), (-) and Ground terminals.

(1) For this positioner, span and zero point adjustment of each actuator is necessary. Adjustment should be carried out based on each actuator separately.
(2) Keep in mind that the span and zero point adjustment interfere with each other.
(3) Check the characteristics change due to change of mounting position, ambient temperature and supply pressure.
(4) If the positioner takes a long time to operate after initial adjustment, check and adjust the product again.
(5) Sensitive adjustment is effective for only double acting actuators.
(6) Manual change function is effective for single acting actuators which are controlled by using OUT1.

5.1 Electrical wiring

This product has a potentiometer and p.c.board built into it. This is for confirming the actuator's opening by a 4-20 mA/DAC output signal produced by supplying initial power to the potentiometer. This supply power can be set freely between 10-35 VDC.

According to the operating direction of the actuator or feedback lever, the clockwise potentiometer direction gives regular operation, and the counter-clockwise direction gives opposite operation.

5.1.1 Wiring of Input signal & Power source

(1) Connect the input signal wires (for positioner control) to 1 (+) and 2 (-) of the terminal board in the terminal box.
(2) Connect the power source wires (for powering the output current detection circuit) to 3 (+) and 4 (-) of the terminal board.
(3) Connect an ammeter in series between (+) side and 3 (-) side of terminal board, or (+) side and 4 (-) terminals.

NOTE : Allowable load resistance depends on supply voltage

(4) The allowable load resistance is determined using the formula below. Allowable load resistance = (Supply voltage-12V) / 20 mADC

Normal output current is not obtained if the load resistance value exceeds the results of the formula. Please confirm internal resistance when selecting an ammeter.

5.2 Zero / Span adjustment (Output)

Zero point / Span adjustment of the output current of the positioner (with potentiometer) should be carried out after initial zero / span adjustments in 5.6. This product requires zero / span adjustment of the output current according to the actuators rotating angle (rotary type).

Please follow the procedure below:
(1) Set the actuator's output opening or stroke to 0% after adjusting the zero / span.