

# Digital Pressure Switch Operation Manual



ISE35

Thank you for purchasing an SMC ISE35 Series Digital Pressure Switch. Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain more detailed information about operating this product, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage.

These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger". They are all important notes for safety and must be followed in addition to International standards (ISO/IEC) and other safety regulations.

- Caution:** CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning:** WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- Danger:** DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

### Operator

- ◆ This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ◆ Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

### Safety Instructions

#### Warning

Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.

Do not operate the product outside of the specifications. Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.

Do not operate in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. This product is not designed to be explosion proof.

Do not use the product in a place where static electricity is a problem. Otherwise it can cause failure or malfunction of the system.

If using the product in an interlocking circuit:  
 • Provide a double interlocking system, for example a mechanical system  
 • Check the product regularly for proper operation  
 Otherwise malfunction can result, causing an accident.

The following instructions must be followed during maintenance:  
 • Turn off the power supply  
 • Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance work  
 Otherwise an injury can result.

#### Caution

Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the product can result.

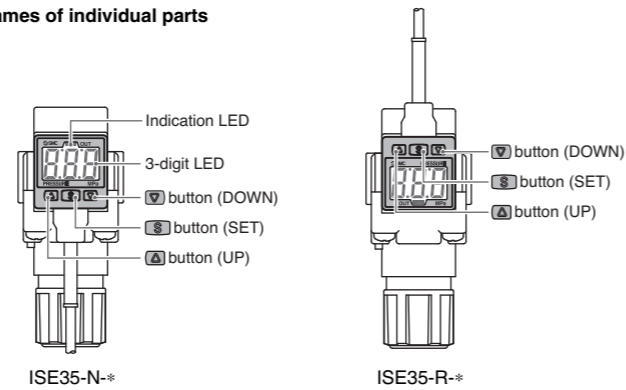
After maintenance is complete, perform appropriate functional inspections and leak tests. Stop operation if the equipment does not function properly or there is a leakage of fluid. When leakage occurs from parts other than the piping, the product might be faulty. Disconnect the power supply and stop the fluid supply. Do not apply fluid under leaking conditions. Safety cannot be assured in the case of unexpected malfunction.

### NOTE

- The direct current power supply to be used should be UL approved as follows: Circuit (of Class2) which is of maximum 30 Vrms (42.4 V peak), with UL1310 Class2 power supply unit or UL1585 Class2 transformer.
- The product is a UL approved product only if it has a UL mark on the body.

## Summary of Product parts

### Names of individual parts



- Indication LED (green): Displays the switch condition.
- 3-digit LED: Displays the current status of pressure, setting mode and error code. Four display modes can be selected: display always in red or green, or display changing from green to red, or red to green, according to the output status.
- UP button (UP): Selects the mode or increases the ON/OFF set value. Press this button to change to the peak display mode.
- DOWN button (DOWN): Selects the mode or decreases the ON/OFF set value. Press this button to change to the bottom display mode.
- SET button (SET): Press this button to change to another mode and to set a value.

## Mounting and Installation

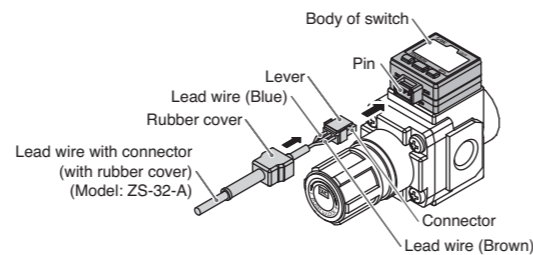
### Wiring

- Connection
  - Connections should only be made with the power supply turned off.
  - Use separate routes for the Pressure switch wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.
  - Ensure that the FG terminal is connected to ground when using a commercially available switch-mode power supply. When a switch-mode power supply is connected to the product, switching noise will be superimposed and the product specification can no longer be met. This can be prevented by inserting a noise filter, such as a line noise filter and ferrite core, between the switch-mode power supply and the product, or by using a series power supply instead of the switch-mode power supply.

Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about wiring.

### Connector

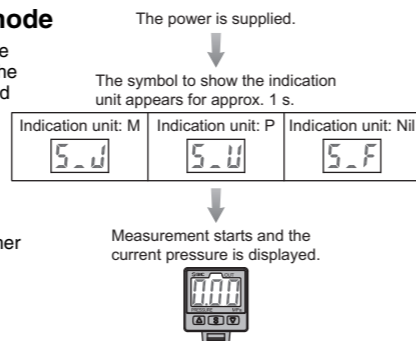
- Connecting / Disconnecting
  - When mounting the connector, insert it straight into the socket, holding the lever and connector body, and push the connector until the lever hooks into the housing, and locks.
  - When removing the connector, press down the lever to release the hook from the housing and pull the connector straight out.



## Pressure Setting

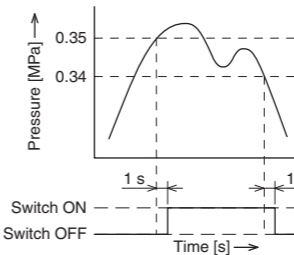
### Measurement mode

The measurement mode is the condition where the pressure is detected and displayed, and the switch function is operating. This is the basic mode, and the other modes should be selected for setting changes and other function settings.



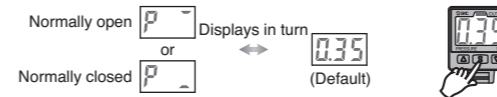
### Operation

When the pressure exceeds the set value, the Pressure switch will turn ON. When the pressure falls below the set value by the amount of hysteresis or more, the Pressure switch will turn OFF. As a default setting, the Pressure switch is set to turn ON when the pressure exceeds 0.35 MPa, and turn OFF when it is below 0.34 MPa. If this condition, shown to the right, is acceptable, then keep these settings.



### How to perform

1. Press the SET button in the measurement mode to display set values.

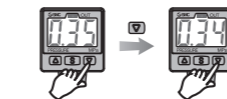


2. Press the UP or DOWN button to change the set value. The UP button is to increase and the DOWN button is to decrease.

- Press the UP button once to increase by one digit, and press it continuously to keep increasing the set value.



- Press the DOWN button once to decrease by one digit, and press it continuously to keep decreasing the set value.



3. Press the SET button to complete the setting.

The Pressure switch operates within a set pressure range during window comparator mode. Set P<sub>L</sub>, P<sub>L</sub> (switch lower limit) and P<sub>H</sub>, P<sub>H</sub> (switch upper limit) with the setting procedure above.

## Function Setting

### Default setting

At the time of shipment, the following settings are provided. If the setting is acceptable, keep it for use. When the SET button is pressed for 2 seconds or longer, the parameter settings can be changed. Refer to the SMC website (URL <http://www.smcworld.com>) for more detailed information about setting changes, or contact SMC.

Setting item	Default setting
<b>Switch output</b> Selects whether or not the Pressure switch output is made available. If the switch output is unnecessary, it is available just like a pressure gauge.	ON
<b>Display colour</b> Selects the display colour.	ON: Green OFF: Red
<b>Response time</b> Sets a response time to prevent chattering in the output.	1 s
<b>Operation mode</b> Selects the mode to operate the Pressure switch.	Hysteresis mode
<b>Hysteresis</b>	0.01 MPa (1 psi)
<b>Output type</b> Sets the method to generate the switch output.	Normally open
<b>Power saving mode</b> Selects the power saving mode.	OFF
<b>Security code input</b> Selects the security code option for key lock.	OFF

The value in ( ) is for the indication unit "P".

### Setting of special function

Setting item
<b>Display reverse mode</b> Selects the reverse display mode
<b>Indication unit (available with unit conversion function)</b>

### NOTE

When the default setting is changed, since the different setting item appears in order depending on how many times the SET button is pressed, confirm the item which needs to be set appears correctly and prevent undesired setting.

## Other Settings

- Peak / Bottom hold display
- Zero clear
- Key lock

To set each of these functions, refer to the SMC website (URL <http://www.smcworld.com>) for more detailed information, or contact SMC.

## Maintenance

### How to reset the product after a power cut or forcible de-energizing

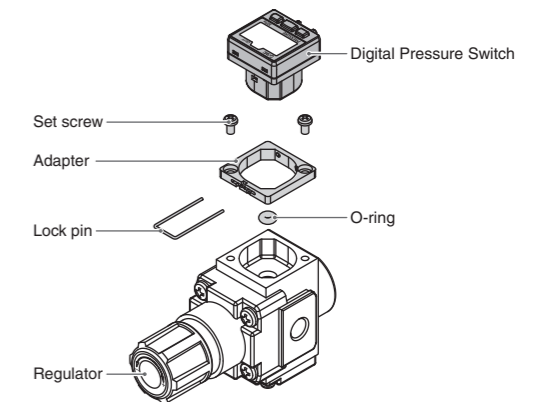
The setting of the product will be retained as it was before a power cut or de-energizing. The output condition is also basically recovered to that before a power cut or de-energizing, but may change depending on the operating environment. Therefore, check the safety of the whole installation before operating the product. If the installation is using accurate control, wait until the product has warmed up (approximately 20 to 30 minutes).

### Mounting on to a regulator

- Cut the power supply to the Pressure switch when assembling. Also, turn the set pressure of the regulator to zero.
- Mount O-ring to the O-ring groove of the regulator. Attention should be taken not to damage the O-ring.
- Set the adapter with 2 set screws.

Modular AR/AW series	0.6±0.05 Nm
ARM10/11 series	0.32±0.03 Nm

- Mount the main body of the Pressure switch.
- Insert the lock pin to the adapter to the end firmly.
- Supply pressure slowly, and ensure no air leaks.
- The Pressure switch can be assembled rotated 180 degrees.



## Troubleshooting

### Error indication

This function is to display error location and content when a problem or an error occurs.

Error name	Error display	Error type	Troubleshooting method
Over current error	Er1	The switch output load current is more than 80 mA.	Turn the power off and remove the cause of the over current. Then turn the power on.
Residual pressure error	Er3	During the zero clear operation, pressure above ±10%F.S. has been applied. After 3 s, the mode will reset to the measurement mode. The zero clear range can vary ±1 digit with individual product differences.	Perform zero clear operation again after restoring the applied pressure to an atmospheric pressure condition.
Pressurizing error	HHH	Pressure has exceeded the upper limit of the set pressure range.	Reset applied pressure to a level within the set pressure range.
	LLL	Pressure has exceeded the lower limit of the set pressure range.	
System error	Er4	Displayed in the case of an internal data error.	Turn the power off and turn it on again. If resetting fails, an investigation by SMC Corporation will be required.
	Er6		
	Er7		
	Er8		

If the error can not be reset after the above measures are taken, then please contact SMC.

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about troubleshooting.

## Specifications Outline with Dimensions (in mm)

Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about the product specifications and outline dimensions.

SMC Corporation URL <http://www.smcworld.com>

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.  
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