

Digital Pressure Switch Operation Manual



ISE70/ISE75(H)

Thank you for purchasing an SMC ISE70/ISE75(H) 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.

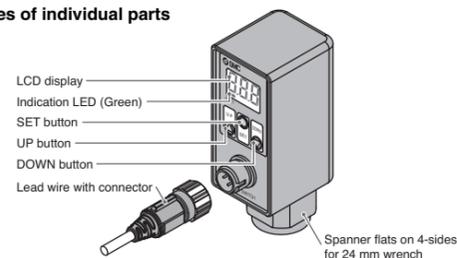
After maintenance is complete, perform appropriate functional inspections and leak tests. Stop operation if the equipment does not function properly or there is a leakage of fluid. When leakage occurs from parts other than the piping, the product might be faulty. Disconnect the power supply and stop 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.
- Do not use with a corrosive or inflammable gas or liquid. (ISE70 Series)
- Do not use SUS630, SUS430 and SUS304 for a corrosive or inflammable gas or liquid. (ISE75/ISE75H Series)

Summary of Product parts

Names of individual parts



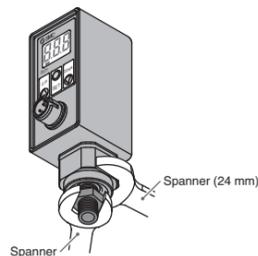
- Indication LED (Green): Displays the switch condition. LED is ON when the output (OUT1) is turned ON.
- LCD display: Displays the current status of pressure, setting mode and error code. Four display modes can be selected: display always in red or green, or display changing from green to red, or red to green, according to the output status.
- UP button: Selects the mode or increases the ON/OFF set value. Press this button to change to the peak display mode.
- DOWN button: Selects the mode or decreases the ON/OFF set value. Press this button to change to the bottom display mode.
- SET button: Press this button to change to another mode and to set a value.

*: This picture applies to all output specifications except -27 and -67. (If the output specification shown in a part number is -27 or -67, the Indication LED OUT2 (Red) is added.)

Mounting and Installation

Piping

- Piping connection
 - Connect the piping to the fitting.
 - When piping, tighten to an appropriate torque of 13.6 to 15 Nm for ISE70 series and 25 to 28 Nm for ISE75/75H series.



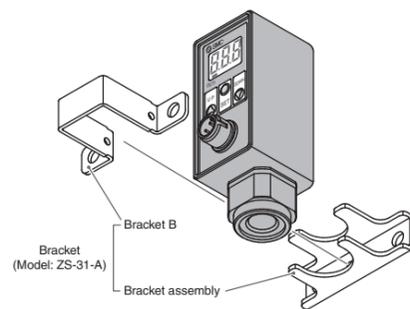
Installation

Mounting

- Install using a bracket (Model: ZS-31-A) available as an option.

Mounting with bracket

- Assemble the bracket assembly and bracket B around the pipe fitting.
- Then, mount the product on a panel using M6 screws.
- Reinforce the mounting using M6 nuts etc. if the panel has a thickness of less than 5 mm.



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

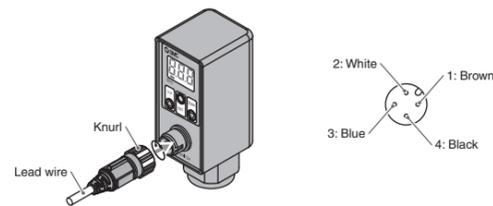
Wiring

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.

Connector mounting / removal

Insert the lead wire with connector with reference to key grooves. Tighten the connector by hand using the knurl, rotating clockwise.



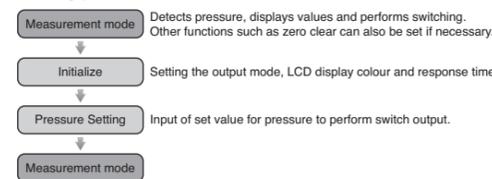
Output	Color	Function
Output -43	1 Brown	DC(+)
	2 White	OUT1 (PNP)
	3 Blue	DC(-)
	4 Black	OUT1 (NPN)
Output -65	1 Brown	DC(+)
	2 White	NC
	3 Blue	DC(-)
	4 Black	OUT1 (PNP)
Output -27/-67	1 Brown	DC(+)
	2 White	OUT2 (NPN or PNP)
	3 Blue	DC(-)
	4 Black	OUT1 (NPN or PNP)

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

Function Setting

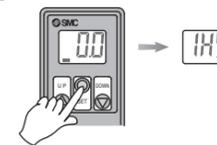
Setting

Setting procedures

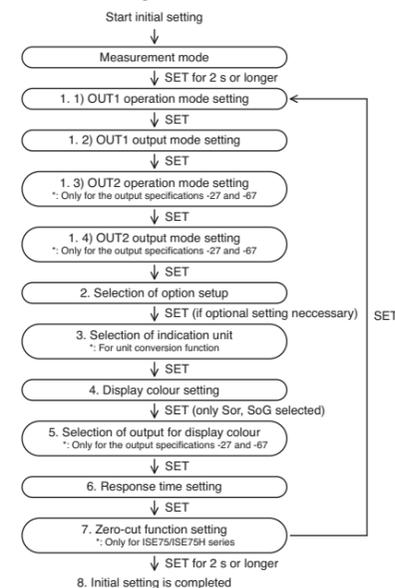


Initial setting

Press the SET button continuously for 2 seconds or longer. The display shown to the right will appear to allow initial settings. To complete the initialization and proceed to measurement mode, press the SET button continuously for 2 seconds, or this will happen automatically if no buttons are pressed for 30 seconds.



It is possible to return to measurement mode from any setting item by pressing the SET button for 2 seconds or longer.

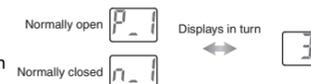


Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about settings.

Pressure Setting

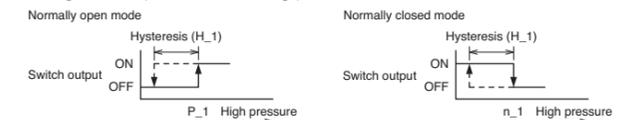
Pressure input mode for OUT1

Press the SET button in measurement mode to display set values. [P_1] or [n_1] and the current set value will be displayed in turn. Press the SET button to display the next set value. (Hysteresis: H_1) Press the UP or DOWN button to enter the value change mode. (See "Value setting")



Hysteresis mode

In hysteresis mode, [H_1] and the set value of hysteresis will be displayed in turn, for [P_1] or [n_1]. Press the SET button to return to the normal measurement mode. Press the UP or DOWN button to enter the value change mode. (See "Value setting")



If the hysteresis is set to 2 digits or less, the switch output may chatter if the input pressure fluctuates near the set value.

Window comparator mode

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

Value setting

- To input a value for pressure setting or other purposes:
- Press the UP or DOWN button to enter the set value change mode. The first digit will flash.
 - Press the UP or DOWN button to set a desired value. (No operation for 30 seconds after the set value change mode was selected results in automatic setting of the value appearing in the display, and set value indication returns.)
 - Press the SET button to move to the left digit. The 2nd digit will flash. (In the case that the SET button is pressed at the left end digit, the 1st digit will flash.)
 - Press the SET button continuously for 1 second or longer to return to the set values.

Other Settings

- Fine adjustment mode (Fine adjustment function of display value)
- Peak / Bottom hold display
- Key lock
- Zero clear

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).

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	OUT1	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.
	OUT2	Er2	
Residual pressure Error	Er3	During the zero clear operation, pressure above ±7%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.

*: Only for the output specifications -27 and -67.

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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