



Installation & Maintenance Manual
Digital Pressure Switch
Series ISE70/ISE75/ISE75H



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), Japan Industrial Standards (JIS) and other safety regulations.

To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

Caution	Operator error could result in injury or equipment damage.
Warning	Operator error could result in serious injury or loss of life.
Danger	In extreme conditions, there is a possibility of serious injury or loss of life.

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.**
Otherwise an injury can result.

Safety Instructions (Continued)

Caution

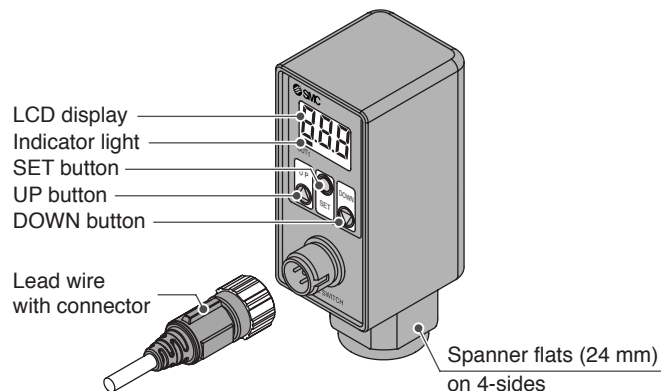
- **Do not touch the terminals and connectors while the power is on.**
Otherwise electric shock, malfunction or damage to the product can result.
- **After maintenance is complete, perform appropriate functional inspections and leak tests.**
Stop operation if the equipment does not function properly or there is a leakage of fluid.
When leakage occurs from parts other than the piping, the product is 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.

Model Indication and How to Order

Refer to the operation manual and catalogue for this product.

Names and Functions of Individual Parts

- Indicator light: Displays the switch operation condition.
- LCD display: Displays the current status of pressure, setting mode and error code. Four display modes can be selected to display either red or green only, or changing from green to red, red to green according to the output status.
- UP button: Increases the mode and ON/OFF set value. Press this button to change to the peak display mode.
- DOWN button: Decreases the mode or 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.

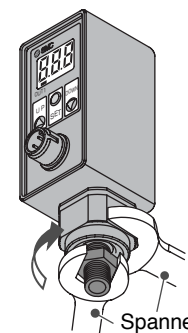


*: This picture applies to all output specifications except -27 and -67.
(If the output specification is -27 or -67, the indicator light OUT2 is added.)

Installation

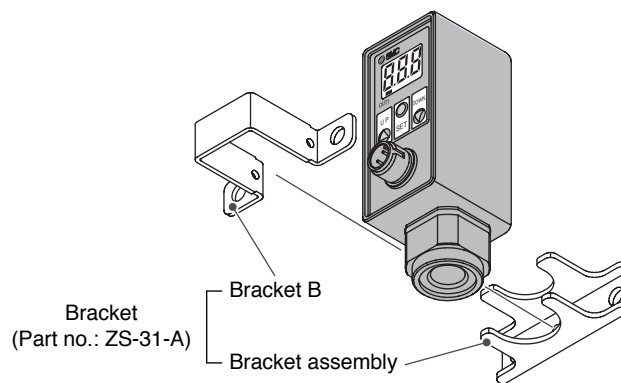
Piping connection

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



Mounting with bracket

Install using the bracket (Part no. ZS-31-A) available as an option.
Mount the bracket assembly and bracket B around the fitting.
Then, mount on to the panel using M6 screws, taking care to prevent shrinkage and play. Reinforce the mounting by using nuts etc. for panels of 5 mm thickness or less.

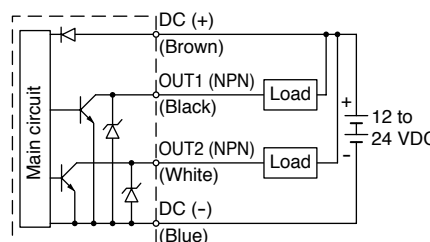


Internal Circuit and Wiring

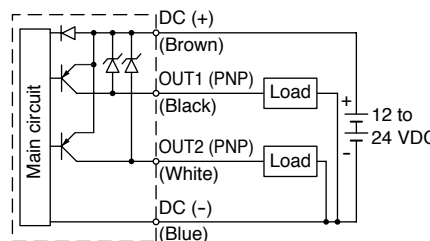
Output Specification

The colours of the wires shown on the schematic (brown, white, blue, and black) apply to circuits where the SMC lead wire with connector is used.
The output specifications -27 and -67 have either NPN 2 output or PNP 2 output. Each output can have an independent pressure setting value.
The output specification -43 has NPN open collector output and PNP open collector output. The NPN output and PNP output can operate with a single pressure setting value. Connect the wire of NPN or PNP output, whichever is required. The unused outputs should remain unconnected.

-27
NPN open collector
2 outputs
Max. 30 V, 80 mA,
Residual voltage 1 V or less

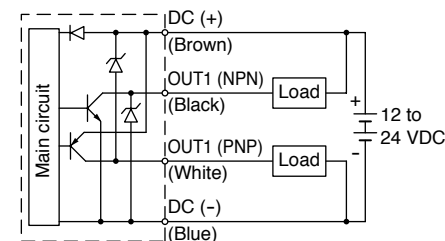


-67
PNP open collector
2 outputs
Max. 80 mA



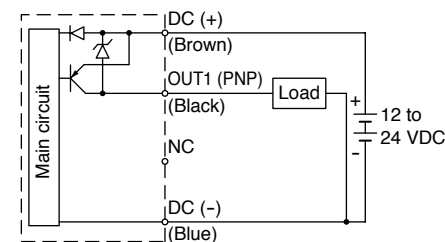
Internal Circuit and Wiring (Continued)

-43
NPN open collector
1 output +
PNP open collector
1 output
Max. 30 V (NPN), 80 mA,
Residual voltage 1 V or less



A pressure set value of switch output for NPN and PNP is common.

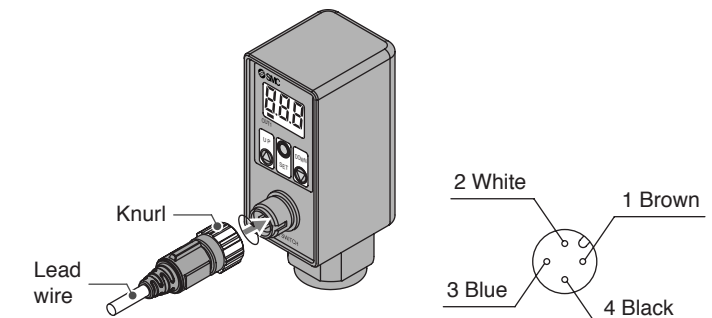
-65
PNP open collector
1 output
Max. 80 mA



Wiring

Connector Mounting/Removal

Insert the lead wire M12 connector with reference to the key grooves.
Grip the knurl with 2 fingers and tighten it rotating clockwise.



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)

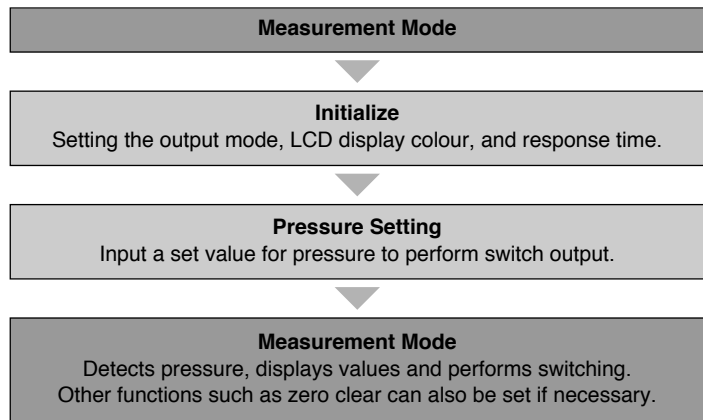
Output -27/-67

1	Brown	DC (+)
2	White	OUT2 (NPN or PNP)
3	Blue	DC (-)
4	Black	OUT1 (NPN or PNP)

Refer to the circuit diagram and the above table for correct wiring.

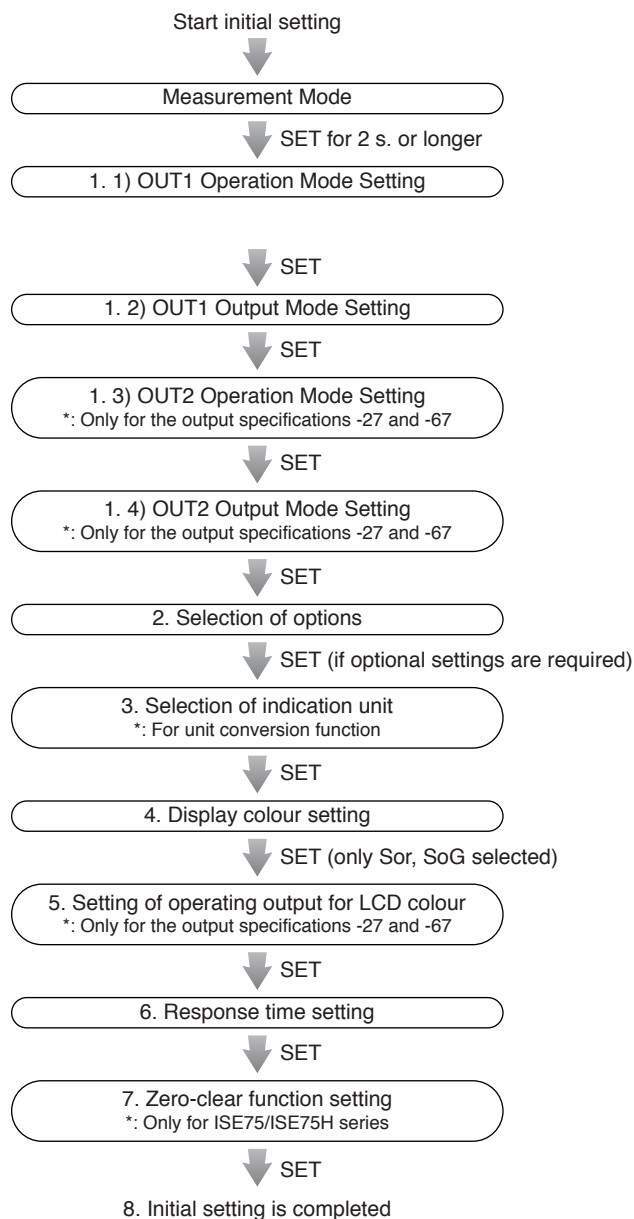
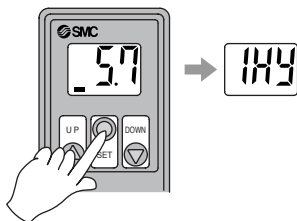
Setting

Setting Procedures



Initializing

Press the SET button continuously for 2 seconds or longer. The display shown to the right will allow initial setting of the operation mode. The operation will return to measurement mode if no buttons are pressed for 30 seconds, or if the SET button is pressed for 2 seconds or longer, during initialization.

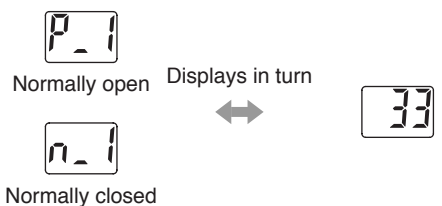


Refer to the operation manual for setting each function in detail.

Pressure Setting

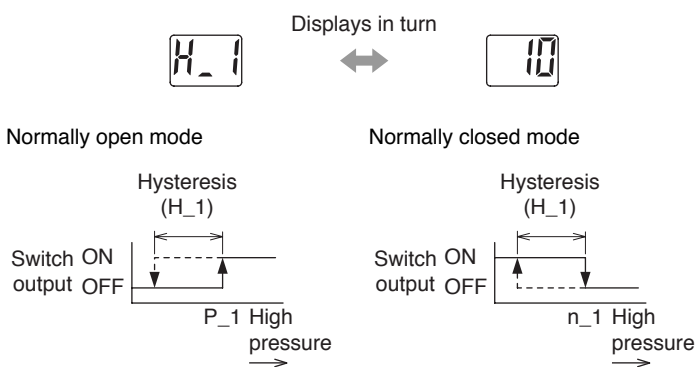
Pressure input mode for OUT1

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.



Hysteresis mode

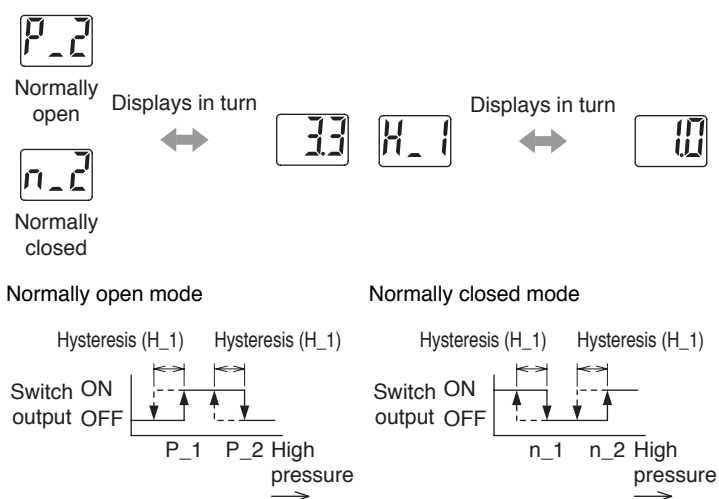
If the Hysteresis mode is set, "H_1" and the set value of Hysteresis will be displayed in turn. Press the SET button to return to the normal measurement mode. Press the UP or DOWN button to enter the value change mode.



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

Window comparator mode

If the Window comparator mode is set, "P_2" or "n_2" 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. Next, "H_1" and the set value of Hysteresis will be displayed in turn. Press the SET button to return to measurement mode. Press the UP or DOWN button to enter the value change mode.



If the initial setting is the normally open mode, "P_1" will be displayed. "n_1" will be displayed if it is normally closed mode. The set pressure value can be checked without holding or stopping the switch output operation.

Pressure input mode for OUT2

(for output specifications -27 and -67) Set a value for "P_3", "P_4" and "H_2" the same as for OUT1. "P_3", "P_4" ("n_3" or "n_4" for reversed output mode) and "H_2" and the current set values for them display in turn.

Value Setting

To input a value for pressure setting or other purposes:

1. Press the UP or DOWN button to enter the set value change mode. The first digit will flash.
2. Press the UP or DOWN button to set a desired value. (No operation for 30 seconds results in automatic setting of the value displayed, and the set value indication returns.)
3. Press the SET button to move to the left digit. The digit will start flashing.
4. Press the SET button continuously for 1 second or longer to return to displaying the set values.

Other Functions

- Fine Adjustment Mode (Fine Adjustment Function of Display Value)
- Peak and Bottom Hold Display Function
- Key Lock Function
- Zero Clear Function

Refer to the operation manual for setting each function in detail.

Maintenance

How to reset the product after 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 system before operating the product. If the system is using accurate control, wait until the pressure sensor has warmed up. (20 to 30 minutes)

Error Indication Function

This function displays error location and content when a problem or an error occurs.

Error Name	Error Display	Error Type	Troubleshooting Method
Over Current Error	OUT1 Er1	A load current of switch output is 80 mA or more.	Turn the power off and remove the output factor for the over current. Then turn the power on.
	OUT2* Er2		
Residual Pressure Error	Er3	During zero clear operation, pressure over $\pm 7\%$ F.S. is applied. After 3 s., the mode will reset to the measurement mode. ± 1 digits of the zero clear range varies 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 Er6 Er7 Er8	Displayed in the case of an internal data error.	Turn the power off and turn it on again.

If the above remedy does not recover the normal operation, the error needs to be investigated by SMC.

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

Troubleshooting

Refer to the operation manual for this product.

Specification

Refer to the operation manual and catalogue for this product.

Outline with Dimensions (in mm)

Refer to the operation manual and catalogue for this product.

Contact

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