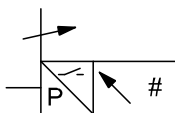




ORIGINAL INSTRUCTIONS

Instruction Manual Digital Pressure Switch Series ISE35



The intended use of this digital pressure switch is to measure, monitor and display pressure and provide an output signal.

1 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.

^{*)} ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components.

IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements.

ISO 10218-1: Robotics - Safety requirements - Part 1: Industrial robots.

• Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.

• Keep this manual in a safe place for future reference.

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

Warning

- Always ensure compliance with relevant safety laws and standards.
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- This product is class A equipment intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted or radiated disturbances.
- Refer to the operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for more safety instructions.

2 Specifications

2.1 General specifications

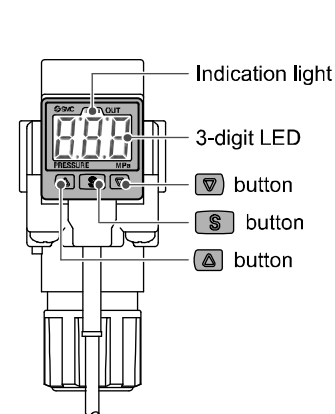
Model No.	ISE35	
Rated pressure range	0 to 1 MPa	
Set pressure range	-0.1 to 1 MPa	
Proof pressure	1.5 MPa	
Setting and display resolution	0.01 MPa	
Applicable fluids	Air, inert gases, incombustible gases	
Power supply voltage	12 to 24 VDC \pm 10% with voltage ripple or less	
Current consumption	55 mA or less (with no load)	
Switch output	NPN or PNP open collector output	
	Max. load current	80 mA
	Max. applied voltage	30 V (during NPN output)
	Residual voltage	1 V or less (80 mA load current)
	Response time	1 s (0.25, 0.5, 2, 3 selectable)
	Chattering-proof function	
	Protection	Short circuit protection
Repeatability	\pm 1% F.S.	
Hysteresis	Hysteresis mode	Variable (from 0)
	Window comparator mode	
Display method	3-digits 7-segment dual-colour display (Red/Green), A switch can be operated simultaneously.	
Indication accuracy	\pm 2% F.S. \pm 1 digit (25 \pm 3 °C reference)	
Indicator light	OUT: LED ON when ON (Green)	
Environment	Enclosure	IP40
	Ambient temperature	-5 to 50 °C (No freezing)
Lead wire with connector (for option "L")	Oil resistance vinyl cabtyre cable 3 cores ϕ 3.4, 2 m Sectional area of conductor: 0.2 mm ² (AWG25) Outside diameter of insulator: 1.12 mm	

Warning

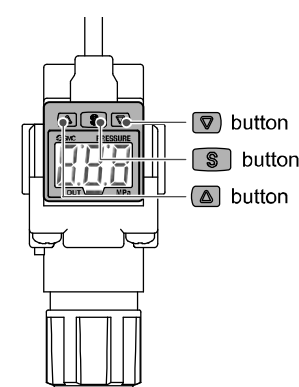
Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

3 Name and function of parts

ISE35-N-#



ISE35-R-#



Indication light (Green LED): Displays the operation condition of the Pressure switch.

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 only, or switch from green to red, or red to green linked to the output.

button: UP button: Increases the mode and ON/OFF set value. Press this button to change to the peak display mode.

button: DOWN button: Decreases the mode or ON/OFF set value. Press this button to change to the bottom display mode.

button: Set button: Press this button to change to another mode and to set a set value.

4 Installation

4.1 Installation

Warning

Do not install the product unless the safety instructions have been read and understood.

4.2 Mounting

The ISE35 digital pressure switch is suitable for mounting on an ARM10 / ARM11 or AR/AW regulator. The mounting adapter, O-ring, lock pin and mounting screws are supplied.

4.3 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact. Check the product specifications.
- Do not mount in a location exposed to radiant heat.

4.4 Lubrication

Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, use turbine oil Class 1 (no additive), ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.

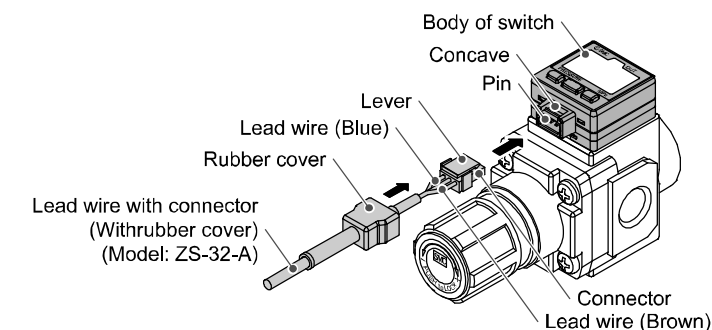
5 Wiring

5.1 Wiring connections

- Connections should be made with the power supply turned OFF.
- Use a separate route for the product wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.
- If a commercially available switching power supply is used, be sure to ground the frame ground (FG) terminal. If the switching power supply is connected for use, switching noise will be superimposed and it will not be able to meet the product specifications. In that case, insert a noise filter such as a line noise filter/ferrite between the switching power supplies or change the switching power supply to a series power supply.

5.2 Connector attaching / detaching

- When connecting the connector, insert it straight onto the pins, holding the lever and connector body, and lock the connector by pushing the lever hook into the concave groove on the housing.
- To detach the connector, remove the hook from the groove by pressing the lever down, and pull the connector straight out.

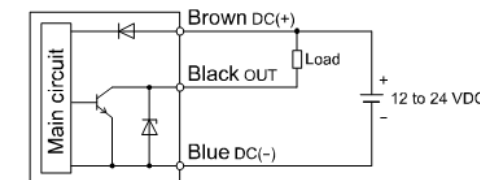


5.3 Wiring diagram

When the lead wire with connector provided by SMC is used, the wire colours (Brown, Black, Blue) will apply as shown in the diagrams.

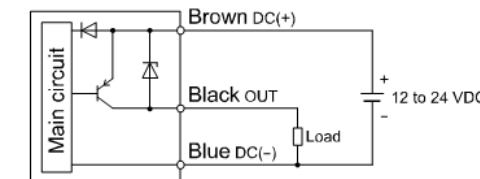
ISE35-25

NPN open collector output
Max. 30 V, 80 mA
Residual voltage 1 V or less



ISE35-65

PNP open collector output
Max. 80 mA
Residual voltage 1 V or less

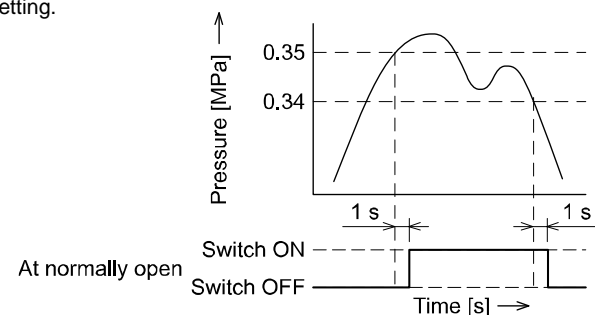


6 Pressure Setting

Operation

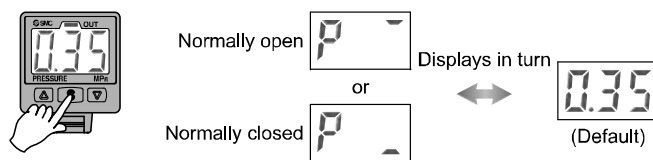
When the pressure exceeds the set value, the switch will turn ON. When the pressure falls below the set value by amount of hysteresis or more, the switch will turn OFF.

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 the operation shown below does not cause any problem, keep this setting.



Setting

1. Press the SET button in 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 digit.
- Press the DOWN button once to decrease by one digit and press it continuously to keep decreasing the set figure.

3. Press the SET button to finish the setting.

For setting in window comparator mode, refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>).

7 Function Setting

7.1 Default setting

At the time of shipment, the following settings are provided.

If this setting is acceptable, keep it for use.

If a different setting is required, change the setting.

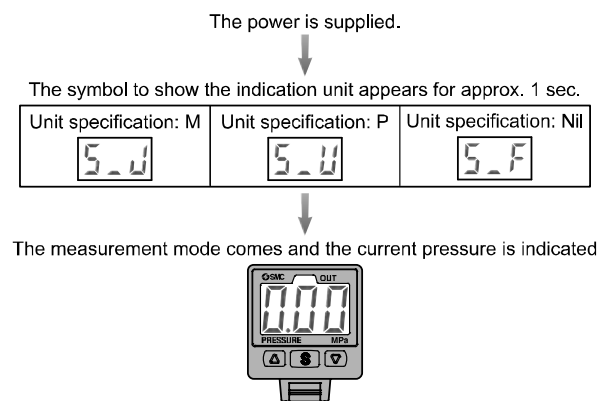
Setting item	Default setting
Switch output Select if the pressure switch output is required. If the switch output is not necessary, it operates just like a pressure gauge.	ON
Display colour Select the colour to display.	ON: Green OFF: Red
Response time Set a response time to prevent chattering of the output.	1 s
Operation mode Select the mode to operate the Pressure switch.	Hysteresis mode
Hysteresis setting	0.01 MPa 0.02 (1 psi)
Output type Set the method to generate the switch output.	Normally open
Power saving mode Selects the power saving mode.	OFF
Security code Select the need for a security code input for key lock.	OFF

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

8 Measurement mode

Measurement mode is the condition in which the pressure is detected and displayed, and the switch function is operating.

This is the basic operating mode; other modes should be selected for set-point changes and function setting.



9 Other Settings

- Power saving mode
- Security code input

For further details refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>).

10 How to Order

Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for How to order information.

11 Outline Dimensions

Refer to the operation manual or catalogue on the SMC website (URL: <https://www.smcworld.com>) for Outline Dimensions.

12 Error indication

Error Name	Error Display	Error Type	Troubleshooting Method
Over current Error	Er 1	A load current of switch output is 80 mA or more.	Turn the power off and remove the cause of the over current. Then turn the power on.
Residual pressure Error	Er 3	During zero clear operation pressure over $\pm 10\%$ F.S. is applied. After 3 s, the mode will reset to measurement mode. ± 1 digit of the zero clear range varies with individual products.	Perform zero clear operation again after restoring the applied pressure to an atmospheric pressure condition.
Pressure 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 is below the lower limit of the set pressure range.	
System Error	Er 4 Er 6 Er 7 Er 8	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.

13 Maintenance

13.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

How to reset the product for 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 facility before operating the product.

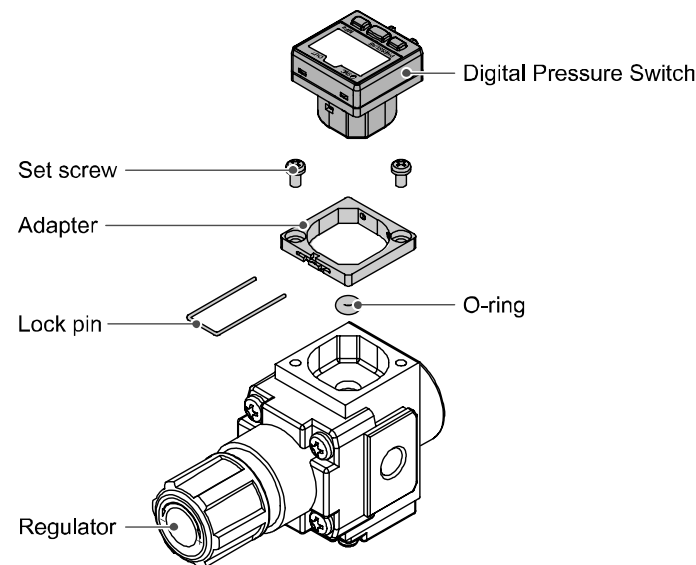
If the facility is under accurate control, wait until it has warmed up. (approximately 20 to 30 minutes).

Mounting on the regulator

- Cut the power supply to the Pressure switch when assembling.
- Turn the set pressure of the regulator to zero.
- Mount an O-ring into the O-ring groove of the regulator. Attention should be taken not to damage the O-ring.
- Mount the adapter using 2 set screws.

Recommended tightening torque:	Modular AR/AW series	ARM10/11 series
	0.6 \pm 0.05 N•m	0.32 \pm 0.03 N•m

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



14 Limitations of Use

14.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

Caution

- SMC products are not intended for use as instruments for legal metrology. Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

15 Product disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

16 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor / importer.

SMC Corporation

URL : <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)
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