Air Catch Sensor

Operation Manual

ISA2

Thank you for purchasing an SMC ISA2 Series Air Catch Sensor.
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.

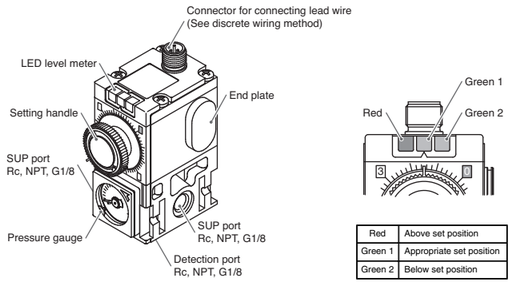
■**After maintenance is complete, perform appropriate functional inspections and leak tests.**
Stop operation if the equipment does not function properly or there is a leakage of fluid.
When leakage occurs from parts other than the piping, the product might be faulty.
Disconnect the power supply and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

■NOTE

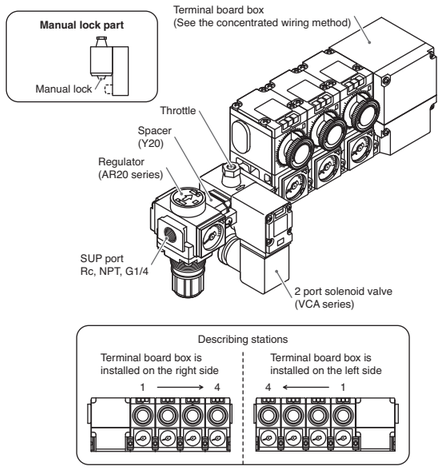
- If the detection nozzle is exposed to splashes of water or cutting oil, do not allow backflow from the detection nozzle to the switch body. Install the switch body at a position higher than the detection nozzle wherever possible.
- The air outlet is provided on the setting dial section of the air catch sensor. Do not turn off air supply to the switch if water or cutting oil splashes around the setting dial.
- The switch enclosure conforms to IP66 and the solenoid valve conforms to IP65. The pressure gauge and the regulator have open constructions. Take greater protection measures in an environment where water splashes, oil or spatters from welding may occur.

Summary of Product parts

○Names of individual parts



Red	Above set position
Green 1	Appropriate set position
Green 2	Below set position

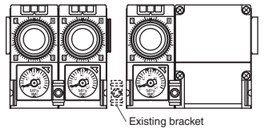


Mounting and Installation

■Mounting

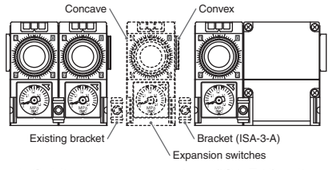
○Manifold expansion

1. Disassembly



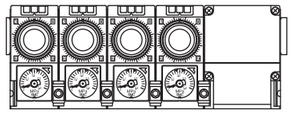
1. Loosen the screws to remove two brackets, one each from the front and back surfaces.
2. Split the switch slowly so as not to disengage the O-ring of the SUP port.

2. Assembly



1. Set the expansion packing (ISA-7-B) in the concave of the SUP port for expansion switches.
2. Mount the convex of the expansion switch onto the existing switch.
3. Mount the two brackets (ISA-3-A) in their positions.
   ∗: Fasten the screws temporarily.
4. Make sure that an expansion packing is set in the concave of the existing switch SUP port.
5. Fit the convex of the existing switch onto the concave of the added switch.
6. Mount the existing bracket.
   ∗: Fasten the screws temporarily.

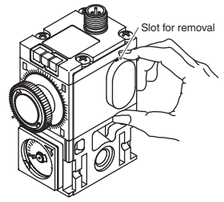
3. Tightening



1. Tighten the fasteners to a torque of 1.2 Nm.
2. Install the air pipes and confirm that there is no air leakage.

○How to remove the end plate

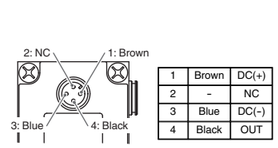
The end plate can be removed by levering under the slot for removal, and pulling the end plate.



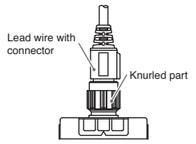
■Wiring

○Discrete wiring method

1. Insert the lead wire connector into the connector key groove.
2. Tighten the connector by hand using the knurl, rotating clockwise.
3. Install the other end of the wires using the correct colours.

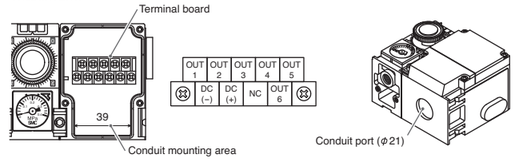


1	Brown	DC(+)
2	-	NC
3	Blue	DC(−)
4	Black	OUT



○Concentrated wiring method

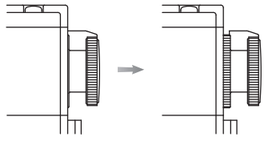
1. Mount the conduit in the terminal board box. Refer to the manufacturers catalogue for the conduit mounting method.
2. Insert the cable through the conduit and install the wires according to the terminal board layout below.
3. Tighten the conduit. Do not hold down the terminal board box or switch while tightening the conduit. The tightening torque should be 5 Nm maximum.



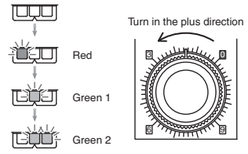
Refer to the product catalogue or SMC website (URL http://www.smcworld.com) for more information about wiring.

Setting

Set the detection distance using the LED level meter and setting handle.
While setting, pull out the setting handle illustrated right.
Do not release the setting handle, as it will return to its normal position and the handle will no longer turn.



1. Apply a thickness gauge onto the detection nozzle to set the position for accurate detection.
2. Confirm that supply pressure is applied. If the setting handle is fully closed, the LED will turn off.
3. Pull the setting handle and turn in the plus direction to turn on the LEDs in the following order.
4. When the Green LED turns on, the sensor output turns ON. This completes the LED setting.
5. Apply a thickness gauge again and check that the Green LED turns on.

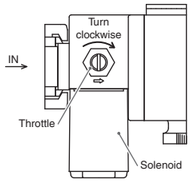


○Setting of 2-port solenoid valve

Throttle setting for air blasting to prevent water, cutting fluid or other liquids from entering the nozzle.
Clockwise: Throttle close
Counterclockwise: Throttle open

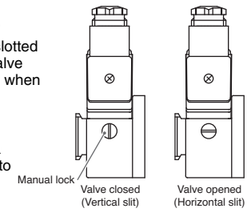
∗: This setting is not required if the valve of your sensor does not have a throttle.

1. Turn the power of the valve off.
2. Adjust the throttle turning clockwise so that water, cutting fluid or other liquid does not splash up from the detection nozzle.
3. Turn the power of the valve on, then turn the power OFF again. Confirm that water, cutting fluid or other liquid does not splash up from the detection nozzle.
   ∗: Do not rotate more than 5 times from fully closed, as the orifice will be pulled out.



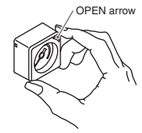
○Manual operation

Slotted locking type (Tool required)
Valve opening: Turn the screw 90° clockwise using a slotted screwdriver. The valve remains open even when the screwdriver is removed.
Valve closing: Turn the screw 90° anticlockwise from a valve open position to its original position.
Make sure that the screw is in the valve closed position during normal operation.

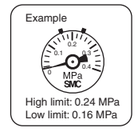


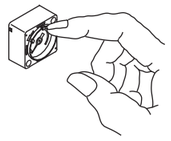
○Setting of limit gauge indicator

1. Cover removal
   Hold the edge of the front cover and turn in the OPEN arrow direction until it stops (15°). Pull the cover forward to remove it.

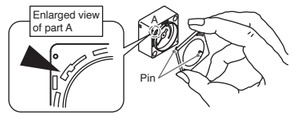


2. Installing referential needles
   Move the referential needle using fingertips. Adjust high and low limits of pressure by two green referential needles.





3. Cover mounting
   After finishing setting the referential needles, mount the cover back to its original position. Insert the cover pin into the hole in the case (mark ◣ in enlarged view of part A) and turn it clockwise till it stops. (Direction opposite the OPEN arrow direction) Confirm that the cover is held securely.



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 10 minutes).

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.

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