No.: PS##-OMA0069

Technical Specifications

Product name : Air catch sensor

Model : ISA1# series

SMC CORPORATION

AIRCATCH SENSOR OPERATION MANUAL

Thank you very much for purchasing **SMC** aircatch sensor.
Please read this operation manual carefully and operate the product correctly.

SMC CORPORATION P5025—11

<Precaution> Please be sure to follow cautions for operation since important factors for safety are described in them.

⚠ Warnings, Notes, Cautions for Operation

Operation

- Do not give excessive shock (1000m/s²) such as dropping and hitting during operation. Even if switch case is not damaged, the inside may be broken and malfunction may occur.
- Tensile strength of cord is 49N(5kgf). Tensile strength more than that will cause failure. Hold the body for handling.
- Foreign matter should not be allowed to enter the air catch sensor, as it utilizes small-bored orifices. Apply only dried air which has been filtered with 5μm filter. Periodically drain the filter. Extra attention must be paid in particular to those air catch sensors operated at low temperatureas-the drain or other moisture may solidify from freezing.
- Please keep operating pressure at 0.2MPa or less as air catch sensor uses semiconductor pressure sensor.
- Don't use equipments and fitting causing as leakage and resistance between the switch body and detecting nozzle of piping. Pipings need to be fully flushed before piping.
- Rapid ON/OFF of supply pressure might turn on output for approximately 0.5sec.

Operating Environment

- If the air catch sensor is to be operated inside a sealed enclosure, the interior must be at atmospheric pressure.
- This Pressure switch does not have explosion—proof structure. Do not use in the atmosphere of explosive gas because it may bring about explosion accidents.
- Air catch sensor is for IP66. On the occasion when moist and oil might enter the case from exhaust port, please locate the port from away moist and oil by connecting M5 fitting. If the sensor is equipped with a gauge in this case, please remove the gauge and plug it. Otherwise, moist and oil enter to the gauge and might cause malfunction.
  When the gauge is mounted outside, please keep the piping as short as possible so as not to slow the response time.

Wiring

- Connect wire confirming wiring colors and terminal No. with operation manual since wrong wiring causes damage to switch, malfunction and wrong operation.
- If bending stress and tensile stress are applied to lead wire repeatedly, wiring will be disconnected.
- For wiring, insulation failure (using the same wires as other circuit, ground fault, insulation failure between terminals) should be avoided. Too much current is flowed into switch and damage may occur.
- Wiring for switch should be separated from power line. Control circuit including switch may malfunction due to noise.
- Do not short—circuit load. If load has a short—circuit , switch will be broken immediately as excessive load is flowed into switch. Especially, take care for switching of power line (brown) and output line (black,white).

※Be careful that the colors of lead wires have been changed by revision of the IEC standards for wiring. The old wiring colors correspond to the new ones shown in the table below.

	Old colors	New colors
Power supply wire	Red	Brown
GND wire	Black	Blue
Wire for Output 1	White	Black

Desigh/Selection

- Operate with proper power supply voltage. If voltage other than The specified one is used, it will cause fire and electric shock.
- Ensure load exceeding max is not to used. load capacity. Switch may be broken or life may end too early.
- Do not use load generating surge voltage. Although surge protection is provided for output of circuit, it may be broken if surge voltage is applied repeatedly. When load,which generates surge, such as relay and solenoid valve is operated directly, use the type built—in surge absorbing element.
- If there are devices which generate strong surge around pressure switch (electromagnetic type lifter, high frequency induction furnace, motor etc.), take measures for devices generating surge and avoid using the same line.
- Be sure to follow setting pressure range and max. operating pressure. Operation out of the pressure range causes failure. If switch is operated at exceeding max. operating pressure, it will be broken.
- Do not use with corrosive and inflammable gas or fluid.
- If the detecting nozzle is exposed to scattering water and machine oil, install the switch at the highest position from the detecting nozzle to prevent reverse flow.

Maintenance/Check

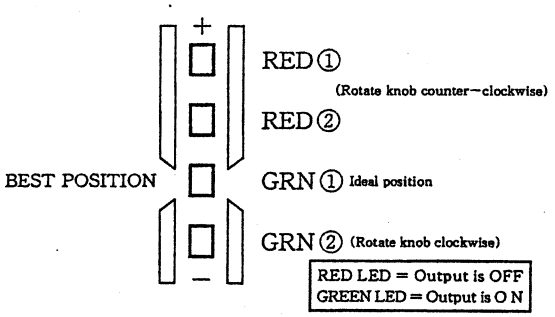
- Perform periodic check to confirm if it operates correctly since safety may not be guaranteed because of unexpected misoperation or mishandling.
- If it is used for interlock circuit, multiply interlock circuit preparing for failure, and perform periodic check to confirm if it operates normally.
- Wipe off dirt with soft cloth. For heavy dirt, wipe with cloth rinsed in neutral detergent diluted with water and squeezed, afterwards then finish with dry cloth.

1. Specifications

Fluid	Dried air (filtrated with the filter of 5 μ m)	
Operating press.	0.05MPa~0.2MPa	
Recommended distance range.	0.1MPa~0.2MPa	
Detection distanse range.	0.01~0.3mm	
Repeatability incl. temp. characteristic	±0.01mm (0~60℃ when 25℃ is the standard. temp.)	
Hysteresis	0.01mm (Detection distance 0.01~0.15mm)	
Detection nozzle bore size	ϕ1 standard	
Indication	Operation lamp; Green lamp at on state	
Power supply voltage	DC12~24V (Ripple ±10%) or less	
Current consumption	≦30mA	
Type of Output	I S A 1 1	NPN Open collector 30V≦80mA
	I S A 1 5	PNP Open collector ≦80mA
Operating temp. range	0~60℃ (No dew formation)	
Vibration resistance	10G	
Proof pressure	0.5MPa	
Proof noise	Direct input 1000Vp-p Pulse duration 1 μ s pulse rise 1ns	
Weight	250g (incl. gauge and 5m lead wire)	
Port size	Rc1/8	
Air consumption	16 ℓ /min (@0.10MPa supply pressure)	
	21 ℓ /min (@0.15MPa supply pressure)	
	25 ℓ /min (@0.20MPa supply pressure)	

2. Setting

View the LED level meter while rotating the calibration knob to adjust the air catch sensor, as dctailed below.



1 In order to ensure an accurate calibration, insert feeler gauges between the work and the detect nozzle to simulate the maximum allowable distance between the two.

2 Verify the unit is connected to a pneumatic pressure supply. If the calibration knob is fully closed, all LED lamps should be extinguished.

3 When turning the calibration knob towards the plus mark (counter-clockwise), the LED lamps will light in the following sequence:

RED ① → RED ② → GRN ① → GRN ②

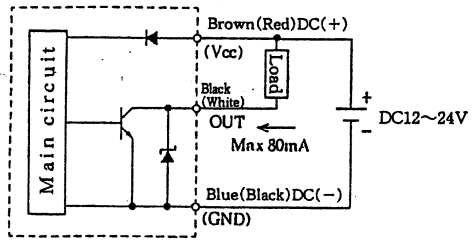
4 The output turns on when GRN ① illuminates; adjustment is complete once GRN ① has illuminates.

5 Place the feeler gauge over the detect nozzle again and vetify the GRN ① LED illuminates.

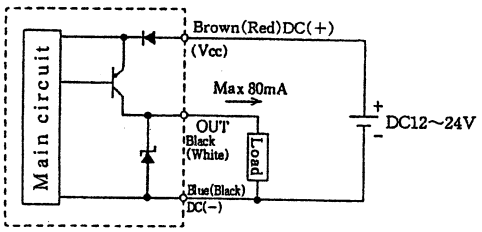
6 Hold the calibration knob in the set position with
one hand and tighten the locknut with a spanner wrench using the other. Tighten until the calibration knob no longer rotates.

3. Wiring

NPN output

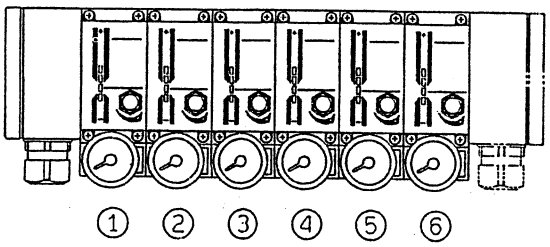


PNP output



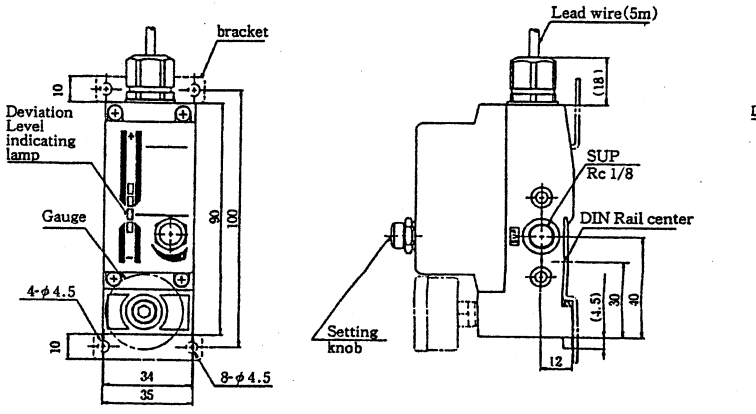
Terminal box wiring

OUT 1	OUT 2	OUT 3	OUT 4	OUT 5
GND	Vcc	NC	OUT 6	

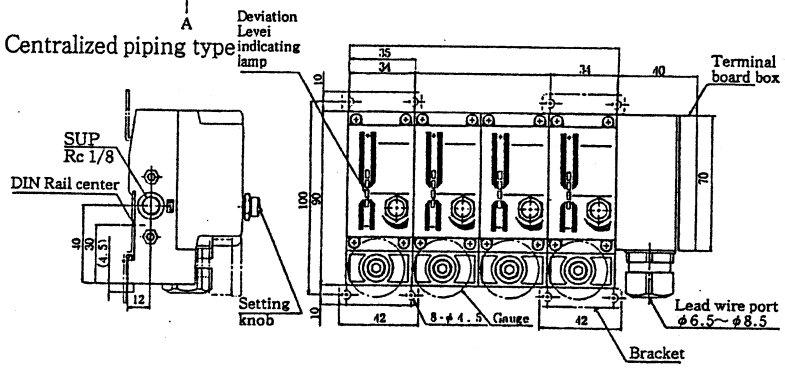


4. Outside dimensions

Individual piping type

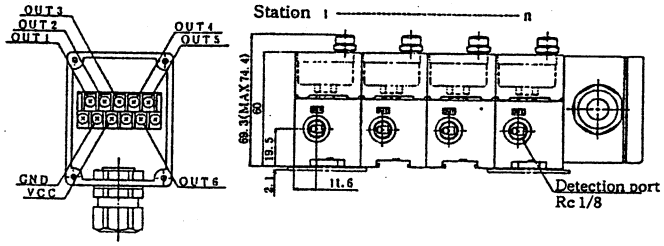


Centralized piping type



Dimensions

Stations	2	3	4	5	6
L_1	70	105	140	175	210
L_2	—	36	71	106	141



Terminal board box wiring diagram

Note

1. Same dimension as shown here when the terminal box is mounted at the left side of switches.
2. When 2-station type is used, the terminal box is mounted on the second switch if it is on the right side, and is mounted on the first switch if it is on the left side.