Air Checker:
Electronic Pressure Switch
Operation Manual
PS1000/PS1100

Thank you for purchasing the SMC PS1000/PS1100 Series Air Checker: Electronic Pressure Switch.
Please read this manual carefully before operating the product and make sure you understand the product, its capabilities and limitations.
Please keep this manual handy for future reference.

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.

⚠ 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.
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

○Follow the instructions given below when designing, selecting and handling the Air Checker:Electronic Pressure Switch.

●How to handle
- Do not drop, hit or apply excessive shock (980 m/s²) to the product. The inner parts can be damaged leading to malfunction even if the switch case body is not damaged.
- The tensile strength of the lead wire is 49 N. Exceeding this value can cause breakdown. Hold the body when handling the product.
- Do not insert metal wires or other foreign objects into the pressure measurement port. This may damage the pressure sensor, leading to malfunction.

●Operating environment
- This pressure switch is not waterproof. Do not use in a location where it could be splashed by water or oil.
- The maximum operating pressure of the pressure switch is 1 MPa. Do not apply a pressure exceeding 1 MPa.

●Design and selection
- Operate with the correct power supply voltage. Operation with voltages other than the specified values can cause fire and electric shock.
- Do not use a load which generates surge voltage. The pressure switch output has a surge voltage suppressor, but it can be damaged if surge voltage is repeatedly applied. When the product is used to drive directly a load which generates surge voltage, such as a relay or solenoid valve, use a type with a built-in surge suppressor.
- When there is a machine or equipment generating large surge (magnetic type lifter, high frequency inductive furnace, motor, etc.) near the pressure switch, this can result in malfunction (display of incorrect value), deterioration and damage of the pressure switch internal elements. Take measures against the surge sources, and prevent the lines from coming into close contact.
- Be sure to operate the equipment within its maximum operating pressure and set pressure range. Operation outside the pressure range may cause a failure.
- Never use the pressure switch with corrosive and inflammable gases or fluids.
- If the entering of foreign material to the fluid is possible, install and pipe a filter or separator to the inlet to avoid failure and malfunction.
- The pressure switch is CE marked, but not immune to lightning strikes. Take measures against lightning strikes in the system.
- Operation under low temperature leads to cause damage or operation failure due to frozen moist in the fluid or air.
- For the two-wire pressure switch, current flows to the load to operate the internal circuit (leakage current) even when it is off. (1 mA or less) If the load operating current (input off current for the controller) is not greater than the leakage current, a switch reset failure will occur, (switch stays on). When n pressure switches are connected in parallel, the current which flows to the load will be multiplied by n.
- The input and the output can be reversed depending on the starting-up time (1 s or less) and pressure setting states when power is supplied.

●Wiring
- Incorrect wiring may cause damage to the pressure switch, breakdown and malfunction. Confirm the colour of the wires with the operation manual before wiring.
- Wiring applying repeated bending and tensile stress to the lead wire can break the circuit.
- The recommended bend radius of the lead wire is 6 times the outside diameter of the sheath, or 33 times the outside diameter of the insulation material, whichever is larger.
- Avoid defective insulation (crossed lines with other circuit, ground fault, defective insula tion between terminals, etc.) with the wiring. Excessive current can flow through the pressure switch, which may cause damage.
- Route the wires separately from the power line. The control circuit including the pressure switch may malfunction due to noise.
- If the pressure switch is turned on with no load connected to the switch, over current will flow, causing the pressure switch to break instantly.
- The pressure switch has no reverse connection protection for the brown (+) and blue (-) of the power supply line.
- Do not exceed the specified maximum allowable load (24 VDC, 40 mA).

●Maintenance and Inspection
- Perform regular maintenance and inspections.
- With the pressure switch, it may be impossible to guarantee safety due to unexpected malfunction or erroneous operation. Perform regular inspections and confirm normal operation.
- Use a soft cloth to clean the pressure switch. For heavy stains, use a cloth soaked with diluted neutral detergent and fully squeezed, then wipe up the stains again with a dry cloth.

How to Order

PS [10] 00 - [R06] L - [ ]

Output specification
10	For Positive pressure
11	For vacuum and residual puressure

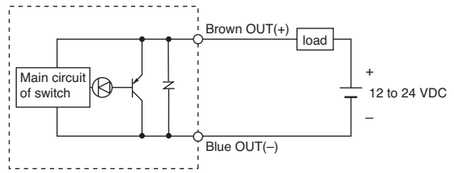
Piping specification
R06	ø6 reducer
R07	1/4” reducer

Lead wire length
L	3 m

CE-compliant
Nil	No
Q	CE-compliant

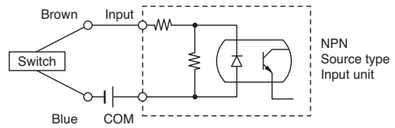
Internal Circuit/Wiring

●Circuit

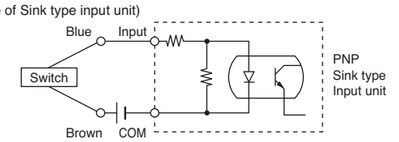


●Example of connection with a PLC(Sequence contoller)

(In case of Source type input unit)

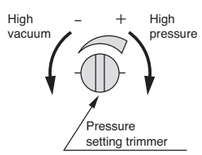


(In case of Sink type input unit)



Setting

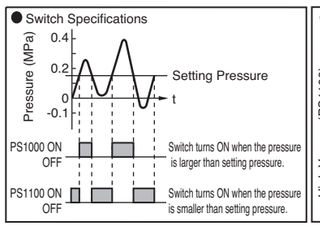
●Setting of Pressure Switch
- Use the calibration adjustment to set ON pressure.
- Rotate clockwise to increase the set pressure. For setting vacuum,rotate anticlockwise.
- For setting, use a flat blade screwdriver suitable for a trimmer. Rotate lightly to adjust.
- There is a stop provided to prevent the trimmer from rotating beyond its limits. Rotation beyond the limits can damage the trimmer Adjust the trimmer gently within the rotation angle.



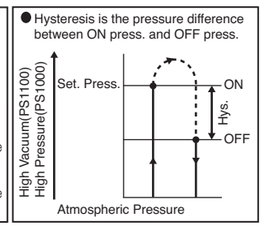
Specifications

Model	PS1000	PS1100
Switch output	Pressure ≧ Set Pressure: ON	Pressure ≦ Set Pressure: ON
Max.operating pressure	1 MPa	
Setting pressure range	-0.1 to 0.45 MPa	-0.1 to 0.4 MPa
Applicable fluid	Air/Non-corrosive non-flammable gas	
Indication light	Switch ON: red LED turns on	
Temperature characteristics	±3%F.S. or less	
Repeatability	±1%F.S. or less	
Hysteresis	4%F.S. or less	
Load voltage	12 to 24 VDC±10%, Ripple(p-p) 10% or less	
Load current	5 to 40 mA	
Leakage current	1 mA or less	
Int.voltage.drop	5 V or less	
Operating temperature range	0 to 60 °C (With no condensation)	
Insulation resistance	2 MΩ or more (at 500 VDC by megameter) between live parts and case	
Withstand voltage	1000 VAC 50/60 Hz for 1 minute between live parts and case	
Vibration resistance	10 to 500 Hz Pulse width 1.5 mm or acceleration 98 m/s² (at the smaller vibration) in X, Y, Z directions (2 hours) (De-energized)	
Impact resistance	980 m/s² X, Y, Z directions (3 times for each direction) (De-energized)	
Mass	5 g (Excluding lead wire)	
Port size	R06: ø6 reducer, R07: 1/4” reducer	
Enclosure	IP40	
Lead wire	Grommet oil-resistant vinyl cabtire code 2 cores, ø2.55, 3 m Cross section: 0.18 mm², insulator O.D.: 0.96 mm	
Wetted part material	Sensor part: Silicon, Body part: PBT/PA, O-ring: HNBR	

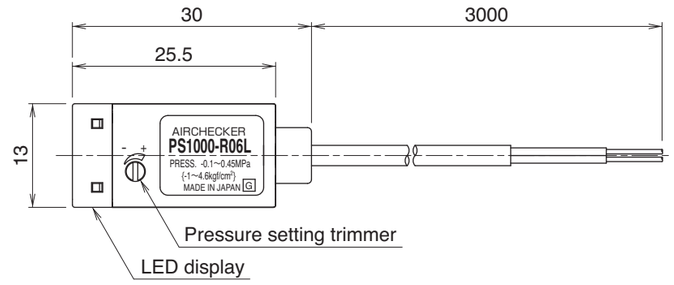
●Switch Specifications

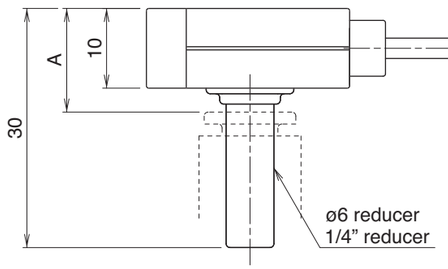


●Hysteresis is the pressure difference between ON press. and OFF press.



Dimensions





A dimension table

Application One-touch fittings	A
KQ2 HLT SY 06/07-M5	16
Other Series KQ2/KS	13
Series KJ	16

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