



Installation & Maintenance Manual

Air Catch Sensor

Series ISA2



EMC Directives 89/336/EEC
 EN61000-6-2:2001 Electromagnetic Compatibility (EMC). Generic standards - Immunity for industrial environments.
 EN55011 A1+A2:2001 Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical radio-frequency equipment and light industrial environments.

1. SAFETY

The Air Catch Sensor and this manual contain essential information for the protection of users and others from possible injury and property damage and to ensure correct handling. Please check that you fully understand the definition of the following messages (signs) before going on to read the text, and always follow the instructions. Please read and understand the operation manuals of related apparatus before operating the air catch sensor.

IMPORTANT MESSAGES

Read this manual and follow its instructions. Signal words such as WARNING and NOTE, will be followed by important safety information that must be carefully reviewed.

WARNING

Indicates a potentially hazardous situation which could result in death or serious injury if you do not follow instructions.

NOTE

Gives you helpful information.

WARNING

Do not disassemble, modify (including change of printed circuit board) or repair.

An injury or failure can result.

Do not operate outside of the specification range.

Fire, malfunction or air catch sensor damage can result.

Please use it after confirming the specification.

Do not operate in a combustible gas or explosive gas atmosphere.

Fire, an explosion and corrosion can result.

This air catch sensor is not an explosion-proof type.

NOTE

Follow the instructions given below when handling the air catch sensor. Failure to do so may potentially cause damage or failure and malfunctions.

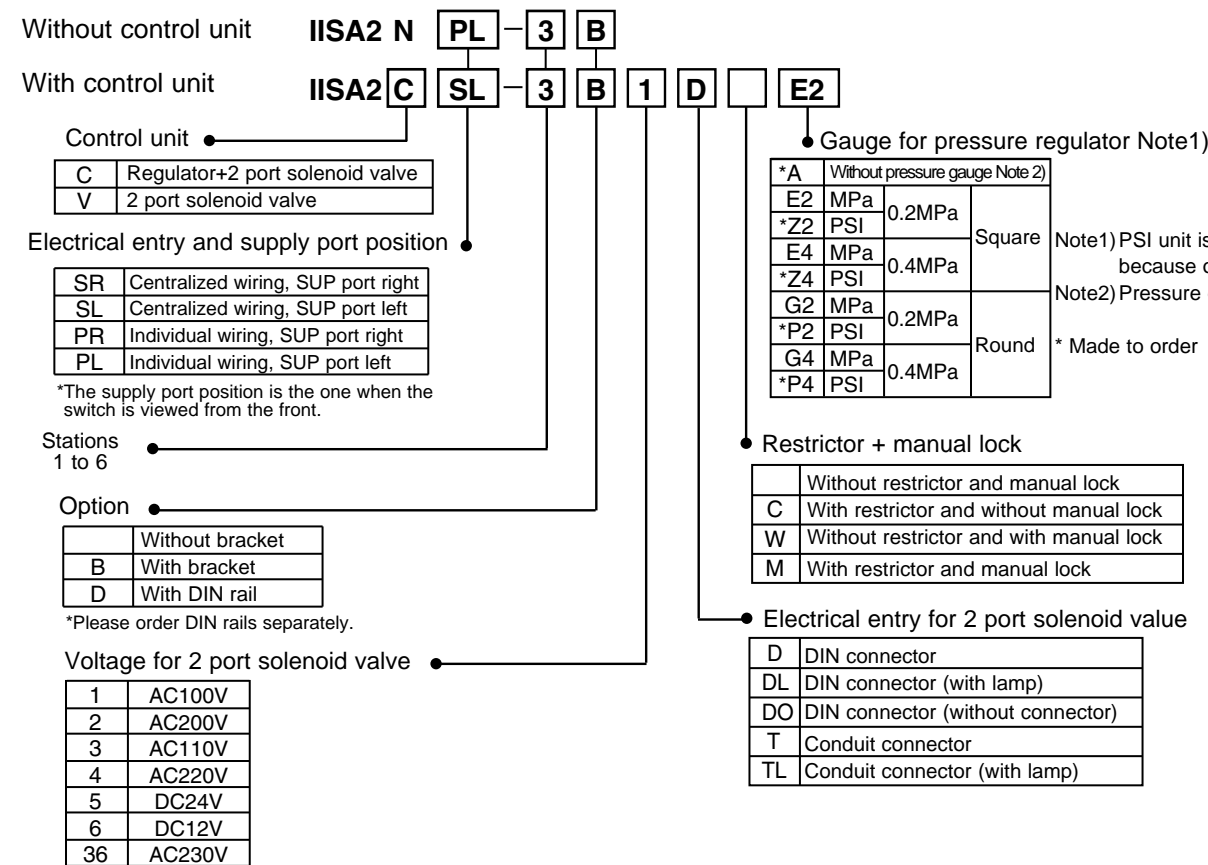
- Do not drop, bring into collision with other objects or apply excessive shock (980m/s² or more without a control unit and with bracket, 150m/s² or more for others).
- Where water, a cutting fluid or other liquid splashes onto the detection nozzle, make sure that such liquid does not go back into the switch body. Install the switch body in a place higher than the detection nozzle.
- An exhaust port is provided in the setting handle section. Do not stop the supply of air to the switch if water, cutting fluid or oil splashes near the handle). The enclosure protection of the Switch part conforms to IP66 and the solenoid valve conforms to IP65. The Pressure gauge and the pressure reducing valve do not have any protection rating.
- If the LED level meter or Output do not operate normally, turn the power off and check that the wiring is connected correctly.
- Do not perform wiring while power is on.
- Install the sensor wire in a route, which is separate from that for power cable or high-voltage cable.
- Ground Terminal FG in case a switching power supply sold on the market is used.

2. SPECIFICATION

Model	ISA2-G**1*	ISA2-G**5*	ISA2-H**1*	ISA2-H**5*
Fluid	Dry air (Filtered through a 5µm filter)			
Operating pressure range	30 to 200kPa		50 to 200kPa	
Detection Zone	0.01 to 0.25mm		0.03 to 0.5mm	
Detection nozzle size	φ 1.5		φ 2	
Repeatability including temperature characteristics	± 0.01mm or less Detection distance : 0.01 to 0.15mm Supplied pressure : 100 to 200kPa		± 0.01mm or less Detection distance : 0.03 to 0.15mm Supplied pressure : 100 to 200kPa	
Hysteresis	0.01mm or less Detection distance : 0.01 to 0.15mm		0.01mm or less Detection distance : 0.03 to 0.15mm	
Power supply voltage	12 to 24VDC (Ripple ± 10% or less)			
Current consumption	15mA or less at 24VDC			
Output	NPN open collector	PNP open collector	NPN open collector	PNP open collector
Max. load current	80mA			
Max. load voltage	30VDC (NPN Output)			
Residual voltage	1.5V or less at 80mA			
Indicator light	"LED level meter (Red : 1, Green : 2) (Green is lit when red disappears.)"			
Lead wire (for independent wiring)	"For M12 pre-wired connector with 4 pins, Length is 5m"			
Terminal board box (for centralized wiring)	Front wiring (Electrical entry size : φ 21)			
Operating temp. range	0 to 60°C (No condensation, No freezing)			
Operating humidity range	35 to 85%RH			
Flow consumption l/min (ANR)	Supplied pressure	50kPa	100kPa	200kPa
		5 or less	8 or less	12 or less
		10 or less	15 or less	22 or less
Withstand voltage	1000VAC 50/60Hz for 1minute between lead block and case			
Insulation resistance	2M Ω or more between lead block and case (500VDC M)			
Vibration resistance	"1.5mm amplitude in 10 to 500Hz or acceleration 98m/s ² without a control unit and with bracket. Other 30m/s ² whichever is smaller for 2 hours in X, Y, Z direction, 3 times each (De-energized)"			
Impact resistance	"980m/s ² (without a control unit and with bracket) or 150m/s ² (others) three times for each direction of X, Y, Z"			
Port size	NIL : Rc1/8 N : NPT1/8 F : G1/8			
Enclosure	"IP66 (Solenoid valve : IP65, Pressure gauge and pressure reducing valve doesn't have protective structure)"			
Weight	540g (for independent wiring including 5m cable with straight connector)			

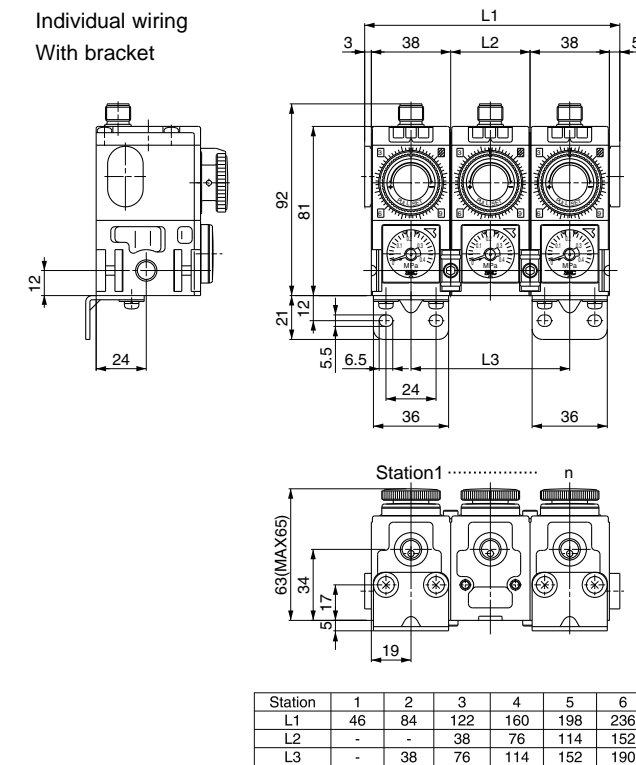
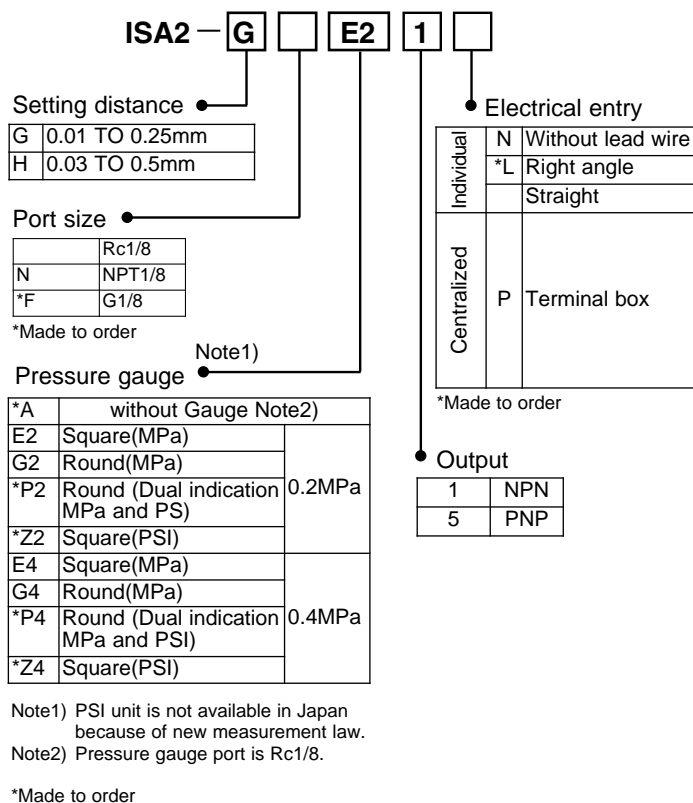
3. MODEL INDICATION METHOD

Manifold



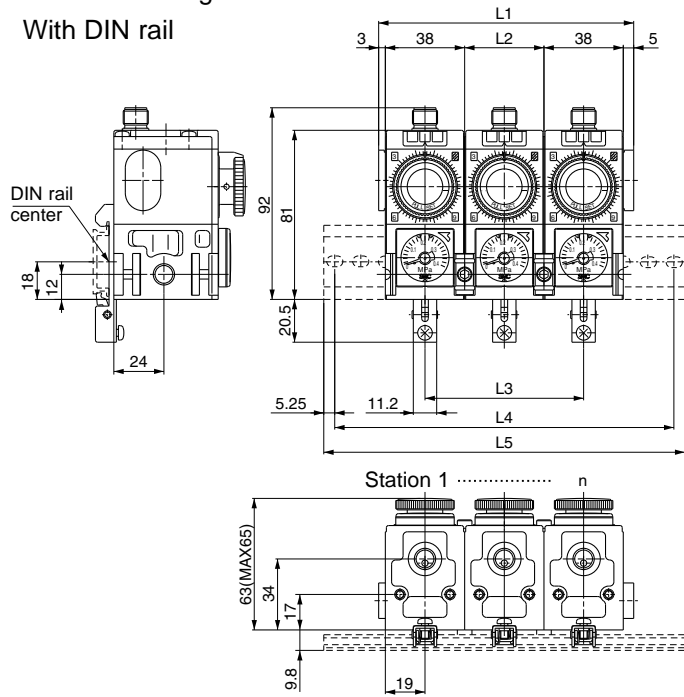
4. OUTLINE VIEW WITH DIMENSIONS

Stations or additional stations



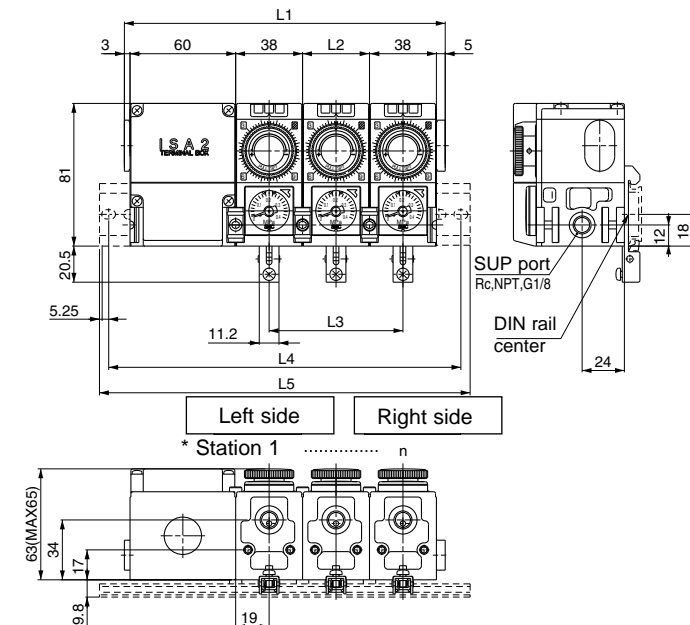
4. OUTLINE VIEW WITH DIMENSIONS (continued)

Individual wiring
With DIN rail



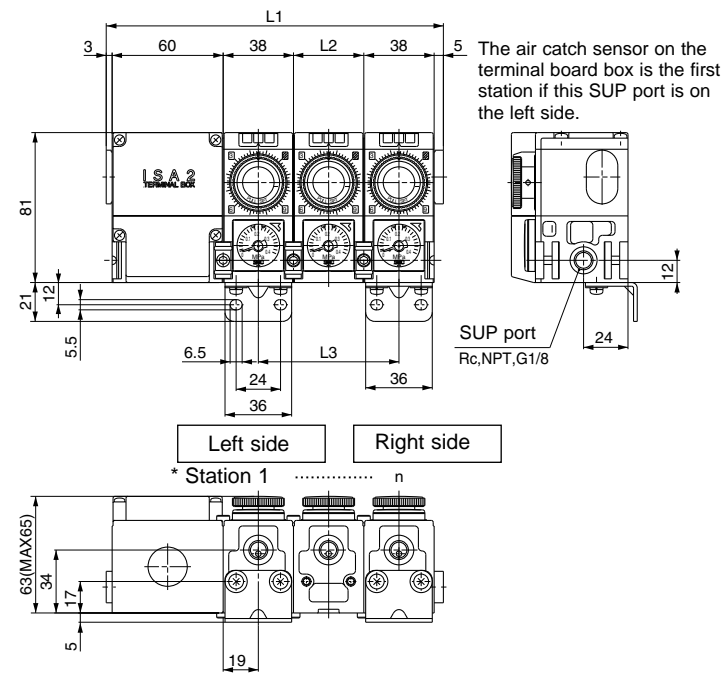
Station	1	2	3	4	5	6
L1	46	84	122	160	198	236
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190
L4	62.5	120	162.5	200	237.5	275
L5	73	135.5	173	210.5	248	285.5
DIN rail No.	ISA-5-*					
*	1	2	3	4	5	6

Centralized wiring
With DIN rail



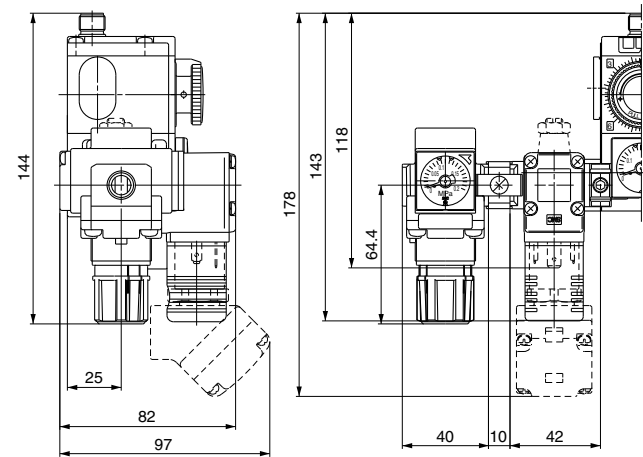
Station	1	2	3	4	5	6
L1	106	144	182	220	258	298
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190
L4	120	162.5	200	237.5	275	312.5
L5	135.5	173	210.5	248	285.5	323
DIN rail No.	ISA-5-*					
*	2	3	4	5	6	7

Centralized wiring
With bracket



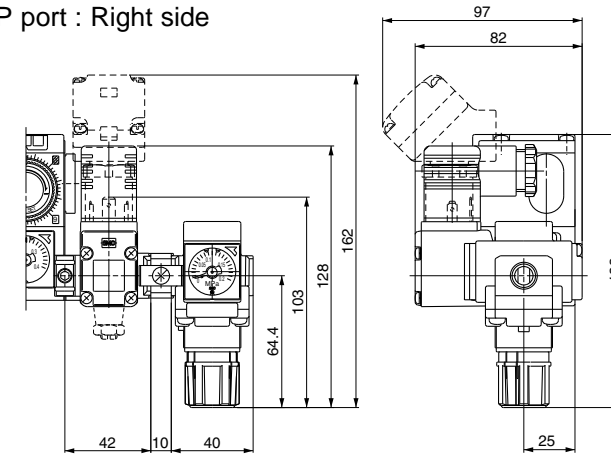
Station	1	2	3	4	5	6
L1	106	144	182	220	258	298
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190

With control unit
SUP port : Left side

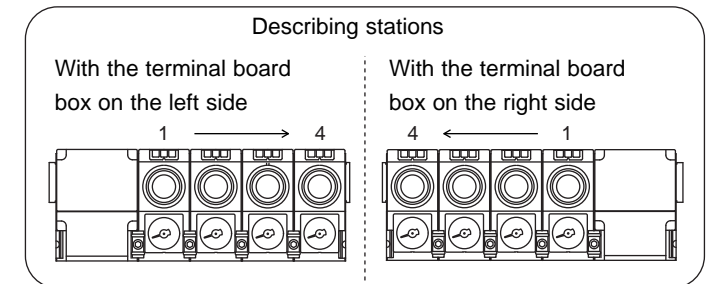
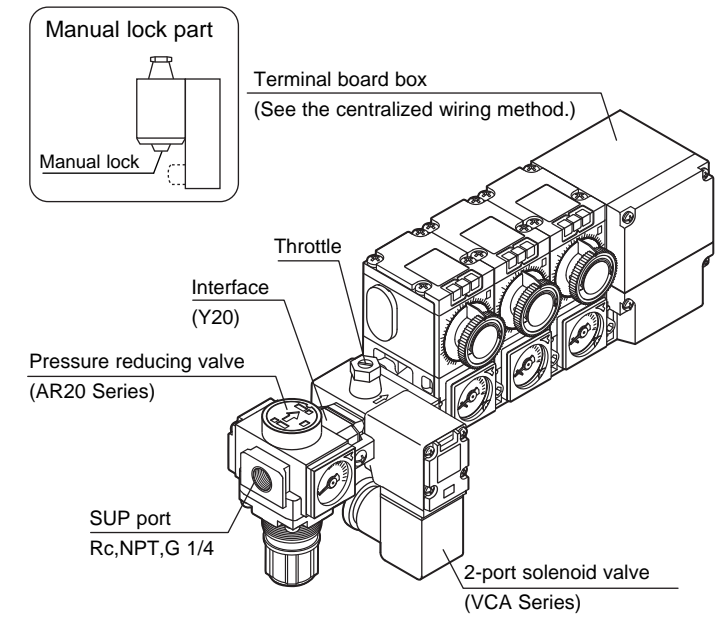


4. OUTLINE VIEW WITH DIMENSIONS (continued)

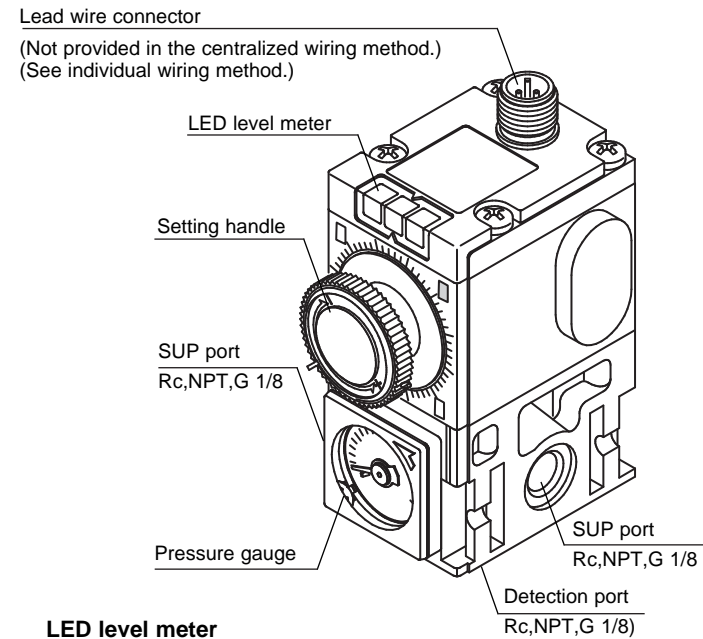
With control unit
SUP port : Right side



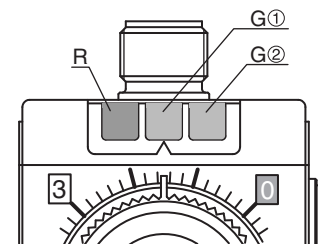
5. NAMES OF INDIVIDUAL PARTS (continued)



5. NAMES OF INDIVIDUAL PARTS



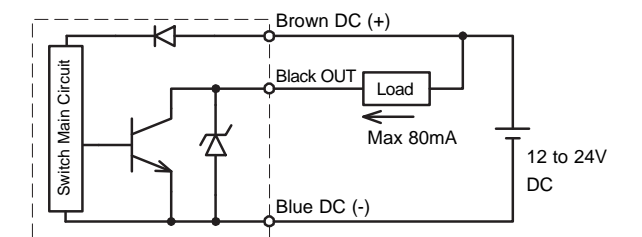
LED level meter



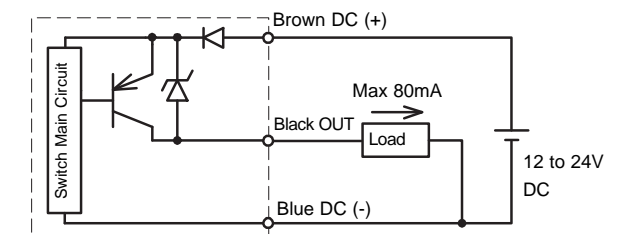
R(Red)	Above set position
G(Green) ①	Appropriate set position
G(Green) ②	Below set position

6. CIRCUIT DIAGRAM

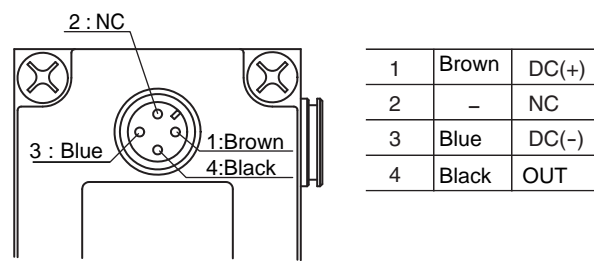
NPN open collector output



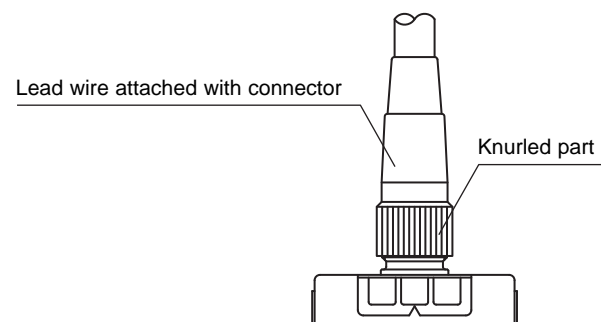
PNP open collector output



7. WIRING METHOD



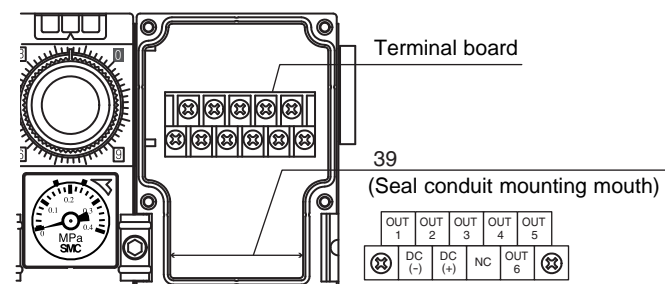
- ① Insert the lead wire connector in line with the key groove.
- ② Hold the knurled part of the connector and turn it clockwise to tighten it. Do not overtighten.



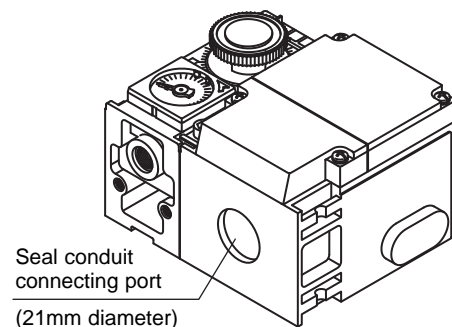
- ③ Install wires of various colors coming out from the end of the cable. Install wires correctly while referring to the circuit diagram and the above table.

7. WIRING METHOD (continued)

Centralized Wiring Method

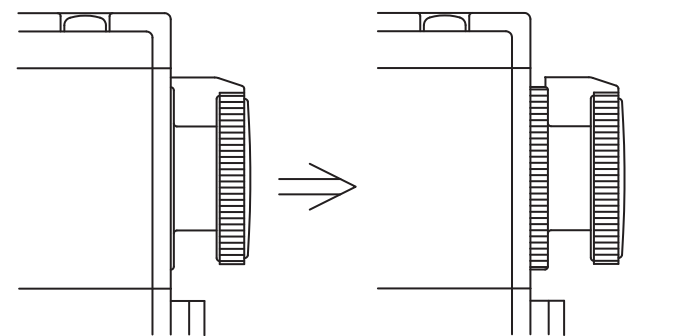


- ① Mount the seal conduit on the terminal board box. Refer to the catalogue and instruction manual of the seal conduit manufacturer for the method to mount the seal conduit.
- ② Insert the cable through the seal conduit and install the wires matching the polarities of the terminal board illustrated above.
- ③ Tighten the seal conduit. Do not hold down the terminal board box or switch while tightening the seal conduit. Tightening torque shall be less than 5N·m.



8. SETTING METHOD

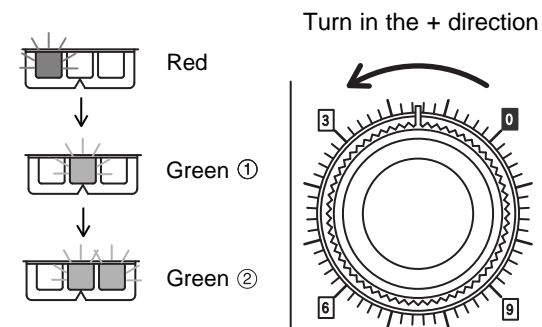
Set the detectable distance using the LED level meter and setting handle. While setting, pull out and turn the setting handle as illustrated below. Releasing the setting handle will return it to its original position and the handle will no longer rotate.



Before pulling out Setting handle pulled out

1. Apply a clearance gauge onto the detection nozzle to replicate the setting conditions for accurate setting.
2. Confirm that supply pressure is applied. If the setting handle is fully closed, the LED level meter will be OFF.
3. Pull the setting handle and turn in the + direction. The LED level meter lights will turn ON in the following order.

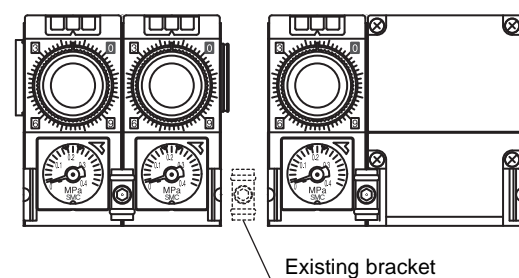
8. SETTING METHOD (continued)



4. When on the LED level meter turns ON, the sensor output turns ON. Finish setting when is illuminated.
5. Apply a clearance gauge again and check that illuminates.

9. METHOD OF ADDITIONAL MANIFOLD STATIONS

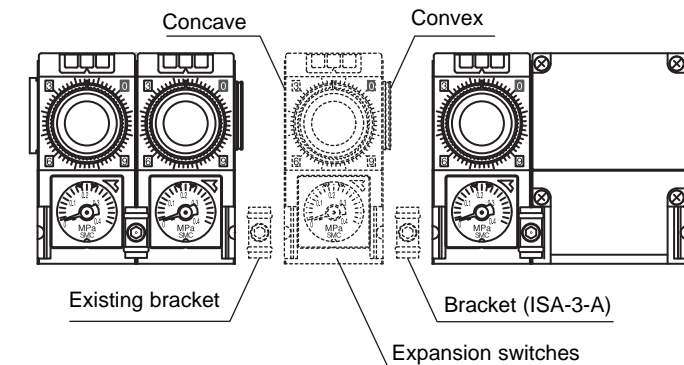
1. Disassemble



- ① Loosen the screws and remove the 2 brackets on the front and back surface.
- ② Dis-assemble the switch slowly so as not to detach the O-ring on the SUP port.

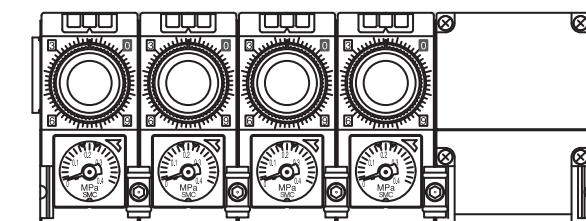
9. METHOD OF ADDITIONAL MANIFOLD STATIONS (continued)

2. Insertion



- ① Fit seal for additional station (ISA-7-B) in the recess of the SUP port of the additional switch.
- ② Mount the protrusion of the additional switch onto the existing switch.
- ③ Mount the two brackets (ISA-3-A) to their positions. NOTE : Fasten the screws temporarily.
- ④ Confirm that the seal is set in the recess of the existing switch SUP port.
- ⑤ Fit the protrusion of the existing switch into the recess of the additional switch.
- ⑥ Mount the existing bracket. NOTE : Fasten the screws temporarily.

3. Tightening



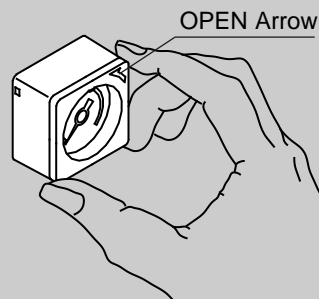
- ① Tighten the joint fasteners by specified torque 1.2N·m.
- ② Install air pipe and confirm that there is no air leakage from new piping.

9. METHOD OF ADDITIONAL MANIFOLD STATIONS (continued)

Handling and setting of limit gauge indicator

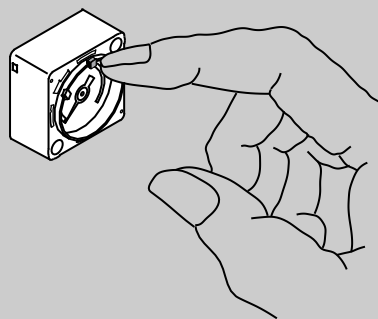
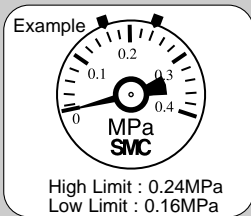
1. Cover removal

Hold the edge of the front cover and turn the cover in the OPEN arrow direction till it stops (15°). Pull the cover in front direction to remove it.



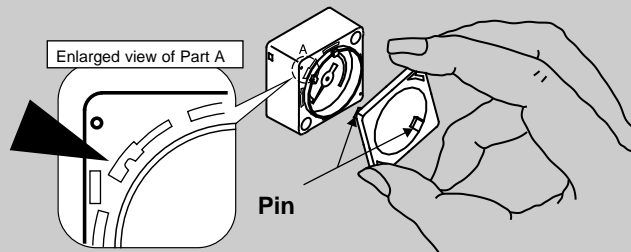
2. Setting reference needles

Move the reference needles by the fingertip. Adjust high and low limits of pressure by two green reference needles.

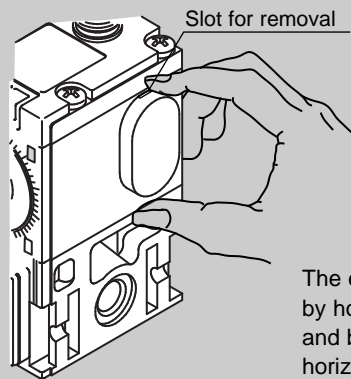


3. Cover mounting

After setting the reference needles, mount the cover back to its original position with the OPEN arrow upper right. 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.



How to remove the end plate



The end plate can be removed by hooking fingers in the top and bottom slot, and pulling horizontally.

□ When you inquire about the product, please contact the following.

SMC Corporation

URL <http://www.smcworld.com>

Phone	
AUSTRIA / (43) 2262-62 280	ITALY / (39) 02-92711
BELGIUM / (32) 3-355 1464	NETHERLANDS / (31) 20-531 8888
CZECH REP. / (420) 5-414 24611	NORWAY / (47) 67 12 90 20
DENMARK / (45) 70 25 29 00	POLAND / (48) 22-548 50 85
FINLAND / (358) 9-859 580	PORTUGAL / (351) 2 610 89 22
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